ASSESMENT OF FUEL SUBSIDY REMOVAL ON TUBER PRODUCTION AMONG SMALLHOLDER FARMERS IN KWARA STATE, NIGERIA

BY

ONI JUMOKE SUSAN
HND/23/AGT/FT/0089

A PROJECT SUBMITTED TO THE DEPARTMENT OF AGRICULTURAL TECHNOLOGY (AGRICULTURAL EXTENSION AND MANAGEMENT UNIT)

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF HIGHER NATIONAL DIPLOMA, KWARA STATE POLYTECHNIC.

JULY, 2025

CERTIFICATION

This is to certify that this research was conducted by ONI JUMOKE SUSAN (HND/23/AGT/FT/0089) has been read, certified and approved as meeting part of the requirements for the award of Higher National Diploma (HND) in Agricultural Extension and Management. Department of Agricultural Extension and Management, Institute of Applied Sciences, Kwara State Polytechnic, Ilorin.

…… ……...
Mr. I.K Banjoko **DATE**
(Project supervisor)

…….. …….
Mr. A.K. Alaya **DATE**
(Head of Unit)

……. ……
Mr. I.K Banjoko **DATE**
(Head of Department)

…….. ……
Mr. S.B. Mohammed **DATE**
(Project Coordinator)

……. …….
External Examiner DATE

DEDICATION

I dedicated this project to my wonderful mother; Mrs Victoria Ayantundun, whose love, sacrifices, and constant support has been the foundation of all my achievements. Your unwavering belief in me has given me the strength to push forward, even in challenging times.

ACKNOWLEDGEMENTS

First and foremost, I give all glory and thanks to God Almighty for His grace, wisdom, strength, and guidance throughout the course of this project. Without Him, this achievement would not have been possible.

I extend my sincere gratitude to my supervisor MR. I.K BANJOKO, who is also the HOD for his invaluable guidance, support, and encouragement. Your mentorship played a key role in the successful completion of this work.

A heartfelt thank you to MRS VICTORIA AYANTUNDUN for her unwavering support, prayers, and encouragement. Your kindness and belief in me have been a constant source of motivation.

To all my lecturers, I am truly grateful for your dedication, knowledge, and commitment to my academic growth. Your efforts have shaped my understanding and contributed immensely to my success.

My sincere gratitude goes to all my families and friends for their unwavering support, may God almighty reward you all abundantly (Amen).

Thank you all for being part of this journey

TABLE OF CONTENTS

ABSTRACT

The study titled "Assessment on the Impacts of Fuel Subsidy Removal on Tuber Crop Production (Yam, Cassava, Potato, and Cocoyam) Among Smallholder Farmers in Kwara State" explores how the removal of fuel subsidies in Nigeria has affected agricultural productivity and economic viability for tuber crop farmers. With fuel being a critical input for land preparation, irrigation, mechanization, and transportation, its rising cost due to subsidy removal has led to a significant increase in overall production costs. This, in turn, has affected farmers' access to inputs, their ability to cultivate large areas, and the timely marketing of their produce. The study adopted a multi-stage sampling technique and gathered data from 120 respondents using structured questionnaires. Analytical tools such as descriptive statistics, profitability analysis, and regression models were employed to interpret the data. The findings reveal that while tuber crop farming remains technically profitable—reflected in an average gross margin of ₦3,859,500—profitability is under threat due to elevated costs in key input areas, especially transportation and labor. Regression results highlighted transportation cost as a statistically significant negative factor affecting farmers' revenue. Furthermore, farmers identified constraints like cost of labor, poor storage, and limited input availability as severe challenges post-subsidy removal. Despite these pressures, some farmers have resorted to coping mechanisms such as reducing farm sizes or switching crops. The study concludes that without targeted policy interventions—such as subsidized inputs, improved infrastructure, and access to affordable energy—smallholder tuber farmers may struggle to sustain production, which could undermine food security and rural livelihoods in the region.

CHAPTER ONE

1.0 INTRODUCTION

Fuel subsides, a policy keeping consumer prices for goods or services below market rates, were initially implemented during the military era to alleviate the burden on the masses. However, overtime these subsides which can be unsustainable, leading to issues like corruption, smuggling and fiscal constraints. (Omoriji, 2012). Despite the vast sums spent on fuel subsides, the benefits largely eluded the majority of Nigerians with funds being mismanaged and diverted from crucial infrastructure projects. (Ohanuga, 2012). Recently there has been an astronomical increase in food prices with resultant indication in food insecurity. This is positively correlated with the total removal of fuel subsidy. (Nkiru et al., 2023). The government introduced a subsidy, on petroleum products to stabilize fuel prices and make them affordable for the general population. Nigeria has been subsidizing fuel since 1970's to ensure Nigerians but petroleum products below the global price. The principle behind oil have been a common pratice in Nigeria for several decades. The government provides these subsides as a means to reduce the cost of fuel for consumer in Nigeria. Subsidy refers to a form of financial aid or support extended to an economic sector, institution, business or individually generally with the aim of promoting economic and social policy (Academic, 2023). Subsidy can also be any measure that keeps the prices consumer pay for a goods or produce below market level for consumers or producers (Alozie, 2009). The removal of subsides refers to the government's decision to eliminate or reduce the subsides provided on certain goods and services particularly petroleum products in Nigeria (Adamu, 2023). In 1999, the then president Olusegun Obasanjo attempted to deregulate the downstream sector of the oil industry which includes fuel subsides. (Adamu 2023).

However, due to public resistance and protest the plan was abandoned 11th May 2016. The president Muhammadu Buhari administration announced the complete removal of fuel subsidy. The removal of fuel subsides in Nigeria in which Kwara state is inclusive gas the potential to impact on farming households in various ways, firstly, the increased cost of fuel may lead to a rise in production costs for farmers, resulting in reduced profit margins (Adenikinju, 2009).

Agriculture plays a significant role in Nigeria economy in recent decades, agricultural productivity in low-land lower-middle income countries, particularly in Africa has fallen

increasingly behind that of upper middle-income countries. Adequate use of agricultural inputs such as improved seeds and inorganic fertilizers has been identified as one way of enhancing agricultural productivity. However, these inputs can be financially unaffordable or unattractive to many poor farmers in developing countries. Subsidies can stimulate firm's new product innovation especially when they are of moderate intensity, it can help increase the duration of innovation for firms as a whole, particularly when they are at a moderate level (Kaichoo and Wang, 2023). (Umeji and Eberechukwu 2021) Affirmed that the majority of the study benefits better-off Nigerians, leading to an unequal distribution of resources. (Kolawole et al., 2024).

The root and tuber crops farming systems is a traditional farming system of the wey humid forest and the forest savannah transitional agroecologyical zones in west and central Africa. (Samuel Adjei - Nsiah et al., 2009). The characteristic root and tuber crops cultivated in the farming system are cassava (manihot esculenta), yam (Dioscorea Spp), cocoyam, (xanthosoma Spp), sweet potato (solanum tuberosum). Farmers cultivate these crops on about 47 percent of the typical farm urban dwellers increasingly prefer potato and sweet potato as a result of the rapidly increasing number of fast food industries and hotels. Farmers allocate a significant portion of their farm to root and tuber crops particularly cassava, yams and sweet potatoes because of their broad agroecological adaptability as well as their adaptation to marginal environments, greater flexibility in mixed cropping systems, ability to produce reasonable yields where most crops cannot and their capacity go provide a larger quantity of carbohydrate. (Samuel Adjei Nsiah et al., 2009).

1.2 STATEMENT OF THE PROBLEM

The removal of fuel subsidies in Nigeria, though aimed at achieving fiscal sustainability and reducing government expenditure, has had far-reaching consequences on various sectors of the economy, particularly agriculture. Smallholder farmers, who form the backbone of tuber crop production in Kwara State, heavily rely on fuel for irrigation, transportation, processing, and other essential farming activities. With the removal of subsidies, the cost of fuel has significantly increased, thereby raising the overall cost of agricultural production.

This policy shift is occurring in an already challenging agricultural environment characterized by limited access to credit, poor infrastructure, and climate variability. Smallholder tuber crop farmers, who often operate on thin profit margins, are particularly vulnerable to such economic shocks. Rising input and transportation costs threaten their productivity, profitability, and ultimately, food security in the region.

Despite the relevance of tuber crops like yam and cassava in ensuring household and national food security, there is limited empirical data on how fuel subsidy removal specifically impacts this critical segment of the agricultural sector in Kwara State. Without adequate assessment, policy responses may remain ineffective misdirected.

Therefore, this research seeks to fill the knowledge gap by assessing the impact of fuel subsidy removal on tuber crop production among smallholder farmers in Kwara State. It aims to explore how changes in fuel prices affect production costs, access to farm inputs, transportation of produce, and overall productivity, while also identifying coping strategies adopted by farmers in response to these changes.

1.3 RESEARCH QUESTIONS

1. What are the socio-economic characteristics of the tuber farmers in the study area.

2. How does the removal of fuel subsidies impact the profitability of tuber production

3. What is the effect of fuel subsidy removal on the tuber farmers in the study area?

4. What challenges arise from the removal of fuel subsidies?

1.4 OBJECTIVES OF THE STUDY

1. To examine the socio-economic characteristics of tuber farmers in the study area.

2. To evaluate the profitability of tuber production after the removal of fuel subsides

3. To analyze the effect of fuel subsidy on tubers farmer in the study area

4. To identify the challenges associated with the removal of fuel subsides.

1.5 HYPOTHESIS

NULL HYPOTHESIS

- The removal of fuel subsides has no significant impact on the production costs of tuber crops in Nigeria (Kwara state).

- The removal of fuel subsides has no significant impact on the prices of tuber crops in different markets (e g, Local, National, International).

ALTERNATIVE HYPOTHESIS

- The removal of fuel subsides will lead to a significant increase in the production costs of tuber in Nigeria (Kwara state).

- The removal of fuel subsides will lead to a significant increase in the price of tuber in different markets (e.g, Local, National, International).

- The removal of fuel subsides will lead to a 20% increase in the production costs of tuber crops in Nigeria.

1.6 JUSTIFICATION OF THE STUDY

The research on "Analysis of the impact of fuel subsidy removal on tuber crops production on small farm holders is of critical importance due to the interconnectedness of fuel costs, agricultural production, and the livelihood of smallholder farmers, particularly in developing economies. Fuel subsidies are a major policy instrument that impacts the costs of agricultural inputs, transportation, and overall farm production cost.

Tuber crops, such as yam, cassava and sweet potatoes are staple foods and vital source of income for small holder farmers, particularly in rural areas.

This research seems to analyze how such a policy shift influences the productivity, income levels, and overall economic stability of small farm holders growing tuber crops. It aims to provide evidence on whether the subsidy removal leads to reduced output, increased market prices or shifts in farming practices.

1.7 DEFINITION OF TERMS

1. Agricultural production; Agricultural production refers to the process of growing, cultivating and harvesting crops, as well as raising livestock for food, fiber and other agricultural products.

2. Tuber crops; Tuber crops refer to a type of root vegetable that grows underground and has a swollen, starchy stem or root. Examples of tuber crops includes; Yam, Cassava, Potatoes e.t.c.

3. Food security; Food security refers to the availability, accessibility, utilization and stability of food supplies to meet the dietary, needs of individuals, households and the communities.

4. Fuel subsidy; A fuel subsidy is a form of government support that reduces the price of fuel (such as gasoline, diesel ur kerosene) to consumers. It is a type of price control that aims to make fuel more affordable for households, business and industries.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 PETROLEUM SUBSIDY REMOVAL AND THE NIGERIAN ECONOMY

Fuel subsidy in Nigeria refers to the government's policy of providing financial support to reduce the cost of petroleum products, primarily fuel, for consumers. For years, the Nigerian government has subsidized fuel prices to make petroleum products affordable to the public.

However, in recent years, there has been growing pressure to remove or reduce these subsidies due to their high fiscal burden on the national economy (Adebayo and Ogundipe, 2021).

The removal of fuel subsides in Nigeria has been a subject of intense debate and scrunity since 2010. Initiated as part of the deregulation of the downstream sector in alignment with IMF requirements, the gradual elimination of subsides gas led to significant increase in fuel costs and subsequent price hikes across various sectors (Akinyemi et al., 2017). This removal has both informational and macro economic implications, with fuel dealers passing in higher costs of consumers, thereby impacting transportation costs and the price of other goods (Olaniyi, 2016).

The Macro-economic effects of subsidy removal are inter-twined with the interdependent between transportation costs, petroleum product prices, and commodity prices increases in fuel costs lead to higher transportation and power generation expenses, ultimately driving up commodity prices (Olaniyi, 2916). Despite arguments in favor of subsidy removal for improved agricultural sector performance (Akinyemi et al., 2017), concerns remain regrading it's impact on transport costs, particularly in low and middle-income countries (Olaniyi, 2016).

While some researchers advocate for the careful planning and implementation of subsidy removal to enhance overall welfare (Obo et al., 2017). Others highlight the need for structural economic models to understand the relationship between oil prices shocks and the broader economy (Kilian, 2014).

2.1.1 TUBER CROPS AND SMALLHOLDER FARMERS IN KWARA STATE

Kwara State, located in the middle-belt region of Nigeria, is known for its production of tuber crops, with yam, cassava, and cocoyam being some of the primary crops grown by small farmers. The smallholder farming system in Kwara state is characterized subsistence farming, with farmers relying on traditional methods and limited access to modern technologies (Akinyemi & Olomola, 2021). Fuel costs are critical in the production, processing and marketing of tuber crops. Small holder farmers in Kwara State face logistical challenges such as poor road infrastructure, which increases the transportation costs of their produce to markets. With fuel price hikes resulting from subsidy removal, the cost of moving tuber crops from rural areas to urban centers becomes higher, leading to reduced profitability for farmers (Sulaimon & Durojaiye, 2020).

2.2 TUBER CROPS

CASSAVA

Cassava is almost solely grown in the tropics, where it is planted on a total of 13.4 million hectares of land. This area produces close to 180 million tons of the crop, with an average yield of approximately 9t/ha. Although about half the total area planted with cassava is in Africa, yields are higher and productive in Africa than other countries, so the total production is approximately disturbuted as 40% in Africa 40% in Asia and 20% in the America. (Bryan 1983). Cassava (Manihot Esculenta Crantz) can be a powerful poverty fighter in Africa. The cash income from cassava proves more egalitarian than the other major staples because of cassava's low cash input cost (Nweke, 2004).

According to (Egusi et al., 2006), cassava has in recent years transformed from famine reserve commodity and rural staple to a cash crop in extensive use of the various products and by-products as staples to most Nigerians. The consumption of cassava cuts across all parts of the country. It's adaptability to climatic and soil conditions even in marginal soils has endeared cassava to most people that have to do continuous cultivation in limited available land. The general acceotance of cassava and it's products to all classes if Nigerian on it's own draws close attention to the producers to cassava (Olanrewaju et al., 2009).

2.2.1 HEALTH AND CASSAVA PRODUCTION

The process of agricultural production and the output it generates can contribute to both good and poor health among the producers as well as the entire society. Being an agricultural producer is determinant of health relative to increase and labour (Corina and Ruel, 2006).

Labour equally predisposes producers to a range for occupational hazards including accidents, strains, diseases and poisoning. (Akinpelu et al., 2011).

2.2.2 CASSAVA PRODUCTION AND INCREASING DEMAND

The demand for cassava roots and products are high and fast rising. However, the current food production is far from being able to meet the food needs of the geometrically growing production in the sub-region (FAO, 2018). Nigeria currently holds the record of the largest producer of cassava in the world, but the trend in yield performance (production per hectare) remains low. This low yield may be linked to ineffective agronomic practices and inefficient management of production resources.

However, there are increasing concerns that sustaining the availability of cassava products to Nigerian households may be significantly affected by the increasing demand by the expanding agro-allied firms/industries which are using cassava as critical input. (Akinpelu et al., 2011).

2.3 TUBER PRODUCTION AND DEVELOPMENT

Root and tuber crops produce remarkable quantities of energy per day even in comparison to cereals potatoes lead the way in energy production followed by yam.

In addiction some root and tuber crops are important source of vitamins minerals and essential amino acids such as lysine (Scott et al., 2000). In spite of their importance African food policies over the last half a century have focused on achieving growth ans self sufficiency in cereals with growth rates in roots and tubers over this period largely driven by area expansion as opposed to root and tuber crops in Africa.

Production of root and tuber crops as well as other food crops are paramount in order to boost the contribution of agriculture to National Development. Hence, the Root and Tuber Expansion Programme (RTEP) as a National Agriculture Initiative Programme was conceived in 2001 in Nigeria as a follow up phase to extend support support to other roots and tubers production and processing of yam (Dioscorea Spp), potatoes (Solanum tuberosum), and cassava (Manihot Esculenta).

2.4 IMPORTANCE OF TUBER CROP IN NIGERIA

Tuber crops, such as yam, cassava, sweet potatoes and cocoyam are essential components of Nigeria's Agricultural landscape. These crops play a crucial role in food security, economic development, and livelihoods for millins of people across the country. (Komolafe, 2018). Tuber crops are cultivated in diverse agro-ecological zones if Nigeria from the lowlands to the highlands, and are considered staple foods for many Nigerians

This literature review seeks to explore the significance of tuber crops in Nigeria focusing in their nutritional, economic and social Importance. (Adenikinju, 2009).

2.5 NUTRITIONAL VALUE OF TUBER CROPS

Tuber crops are rich in carbohydrates, dietary, fiber, and essential vitamins and minerals, making them an important source of nutrition for the Nigerian population. According to (Okonkwo, 2014), yam, cassava, sweet potato are excellent source of energy, with cassava being particularly high in calories. The high carbohydrate content of tuber crops is vital for the daily energy requirements of the population, especially in rural areas where these crops from the main diet.

In addition to carbohydrates, tuber crops also provide micro nutrients such as vitamin C, potassium, and magnesium. For example, sweet potato, particularly the orange - fleshed variety, is rich in vitamin A, which is essential for maintaining good vision and supporting immune function (Bhandari et al., 2006).

Cassava also contains some level of protein and fat, although it is primarily valued for its carbohydrates contents. This, tuber crops are vital in combating malnutrition,. especially in rural communities where other food sources may be limited.

2.6 ECONOMIC IMPORTANCE OF TUBER CROPS

The contribution of tuber crops in Nigerian's agricultural economy is immense. According to the Food and Agriculture Organization (FAO, 2018), Nigeria is the world's largest producer of cassava, yam and cocoyam, accounting for a significant portion if global production. Tuber crops contributes not only to food security but also to income generation

for small holder farmers. These crops are easy to grow in Nigerian's diverse climates, and many farmers rely on them for their livelihoods.

In addition to local consumption, tuber crops play a key role in the export product, particularly to countries in West Africa, the United States, and Europe (Opara, 2015). Nigeria's yam exports have generated foreign exchange for the country, contributing to its agricultural trade balance. Cassava as a versatile crop is used in a wide range of processed products, including garri, fufu and flour. These processed forms not only increased the shelf life of cassava but also create employment opportunities in the value chain, such as processing,. packaging, and distribution.

The National Root Crops Research Institute (NRCRI) estimates that the tuber crops sectors generates employment for millions of people across Nigeria, including farmers, processors, and traders. Additionally tuber crops have a role in the Nigerian food industry, with several large-scale industries using cassava flour and starch in the production of food items, beverages and industrial products. (Ogunbameru et al., 2013).

2.7 IMPACTS ON AGRICULTURAL PRODUCTION AND LIVELIHOODS

Tuber crops, which are oftens grown in subsistence levels in Kwara state, require consistent labor input and reliable transportation to sustain their market value. The increase in fuel prices can result in farmers reducing the amount of land cultivated or switching to less - fuel - dependent crops. Tuber crops such as yam are highly valued in Nigeria but require substantial energy for irrigation, land preparation, and transportation to urban markets. If fuel prices rise too high, small holder farmers may abandon these crops in favor of less resource - intensive alternatives.

An important study by (Ajayi et al., 2016), concluded that changes in fuel price significantly affects the livelihoods of small holder farmers, as it reduces significantly affect the livelihoods of small holder farmers, as it reduces their disposeable income,.limits their access to credit, and diminishes their ability to finance inputs for subsequent planting seasons. (Olowolayemo et al., 2020).This could result in declining yields, lower income from tuber crop sales, and eventually greater food insecurity.

2.8 OIL AND AGRICULTURAL PRODUCTIVITY IN NIGERIA

Oil is a major player in the global economy as its role in the macro economic platform of the world has not diminished despite the inclinations to alternative renewable natural energy source like water, solar power, nuclear and wind. (Ani et al., 2021). Agriculture provided food at a subsistence but self sufficient level (Komolafe and Adeoti, 2018).

Agriculture is an energy process conversion process, converting solar energy through photosynthesis to food energy for humans and feed for animals. Nigeria is the largest oil producer in Africa and the 6th highest as a member of the organization of the petroleum exporting countries (Ani et al., 2021). Despite the challenges brought about by fuel subsidy removal, small holder farmers often adopt various coping mechanisms to mitigate it's effects. These include reducing production costs by adopting more sustainable practices, such as afro forestry or organic farming, of diversifing their crops portfolios. However, these strategies are not always feasible for every farmer, especially those in remote areas with limited access to training it resources. (Ojo et al., 2018).

Furthermore, government policies and support systems , such as subsidized credit, improved market infrastructure, and targeted agricultural programs, can help mitigates the negative effects of fuel subsidy removal. Several studies have emphasized the need for targeted government interventions to support small holder farmers through financial and technical assistance. (Ojo et al., 2018) Suggested that a robust social safety net, ong with price stabilization mechanisms could shield small holder farmers from the most severe impacts of fuel price increases.

The removal of fuel subsides in Nigeria represents a significant policy shift that can have profound effects on small holder farmers, particularly those growing tuber crops in Kwara state. Fuel price increases raise transportation and input costs, which in turn affect farmer's profitability, productivity, and access to markets.

Although, coping strategies exist, the overall impact on the livelihoods of small holder farners can be detrimental without appropriate government interventions and support systems. More research is needed to evaluate the effectiveness of these coping mechanism and assess the long-term impact of fuel removal on small holder farming in Kwara state. (Ojo et al., 2018). The cost of agricultural inputs, including fuel for generator and farm equipment, plays a major role in determining the productivity and cost-effectiveness of tuber crops production. In many rural Nigerian communities, where electricity supply is unreliable, farmers often

depend on fuel-powered generators for irrigation and processing (Amusa & Okunola, 202). The removal of fuel subsides directly raises the cost of operating such equipment, which can deter farmers from investing in these crucial production processes.

Additionally, increased fuel prices affect the cost of fertilizers and other agrochemicals. Many smallholder farmers rely on subsidized agricultural inputs, but as fuel prices rise, the cost of transportation for these inputs increases, reducing their affordability and availability. Consequently, smallholder farmers may face challenges in maintaining soul fertility, pest control, and crop yield levels for tuber crops like cassava and yam (Olawunmi and Akinola, 2021).

2.9 Empirical Studies on Fuel Subsidy and Agriculture

Olomola (2007) conducted a study on the effect of fuel prices on agricultural production in Nigeria and found a significant negative relationship between fuel cost and agricultural output. Similarly, Yusuf and Salihu (2020) observed that fuel price hikes led to a reduction in yam and cassava production in parts of North Central Nigeria, citing high transportation and processing costs.

Other studies (Adeniran et al., 2023) have found that fuel subsidy removal also affects the supply chain, leading to delays in input delivery, post-harvest losses due to inadequate storage, and a decrease in market participation among smallholder farmers.

2.10 Theoretical Framework

This study is underpinned by the Household Production Theory, which explains how households allocate their limited resources (time, labor, capital) to maximize utility, given external constraints. The removal of fuel subsidy represents a significant external constraint, altering production choices and resource allocation among smallholder farmers.

In addition, the Cost-Push Inflation Theory provides a macroeconomic explanation for how increases in input costs (e.g., fuel) can reduce aggregate supply, leading to inflation and declining productivity—key concerns for the agricultural sector.

CHAPTER THREE

3.0 METHODOLOGY

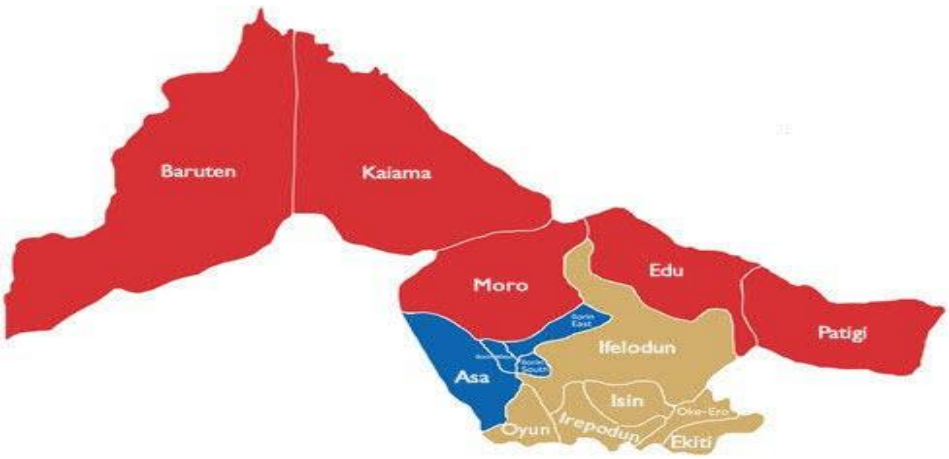
3.1 THE STUDY AREA

This study was conducted in Moro Local Government. Ilorin, Kwara state .

Kwara state has a tropical climate characterized by district wet (April to October) and dry (November to March) seasons Annual rainfall ranges from 800mm to 1200mm,. producing and providing favorable conditions for agriculture. The state is known for the cultivation of tuber crops such as yam, cassava, potatoes and cocoyam which are staole foods and significant sources of income for farmers. Agriculture is the primary economic activities, employing a large portion of the population. Farmers rely on various inputs, Including fertilizers, fuel for mechanized farming and transportation, which are sensitive to changes in fuel prices. With the removal of fuel subsidies, the cost of these inputs may significantly improve tuber production.

The farming system in Kwara state is predominantly small holder-based with farmers cultivating 1-5 hectares of land. However, these are also medium and large-scale farmers. These systems involve both rain-fed and dry. Season farming, with cassava, yam, potatoes, cocoyam being major crops cultivated across the states agro-ecological zones.

There are two main climate seasons, dry and wet seasons in Kwara State; with annual rainfall ranging from 1000mm -1500mm and maximum average temperature ranges between 30°c - 35°c (Oyebanji, 2000)



Map of Nigeria indicating Kwara State
Source by; Akanbi, 2015

The choice of Kwara state as the study area is due to it's significant role in tuber production within the region the diverse farming practices and it's representation of the impact of economic policies like fuel subsidy removal on agriculture productivity in Nigeria.

3.2 RESEARCH DESIGN

This study adopted a descriptive and explanatory research design. It was combined through quantitative and qualitative approaches to examine how the removal of fuel subsides has affected tuber production. The study focuses on identifying the relationship between fuel costs, agricultural inputs costs, and tuber output over-time.

3.3 POPULATION OF THE STUDY

The population of the study compasses of all tuber farmers (Cassava, Yam, potatoes and cocoyam) across Kwara state. This includes both smallholder and commercial farmers, as well as key stakeholders such as extension officers, agricultural input suppliers and marketers.

3.4 SAMPLING PROCEDURES

The three stage sampling techniques was adopted for this study. The first was a purposive selection of 3 local government from the 16 local government in Kwara state because there are many Tuber farmers there,the second was a random selection of 2 villages from each of the LGA selected while the last stage was a random selection of 20 farming household from each of the selected villages. This gave us a total of 120 respondents.

3.5 INSTRUMENT FOR DATA COLLECTION

For the purpose of this study, primary source of data was adopted. Primary data was collected with the aid of structured questionnaire.

The structured questionnaire was self-administered to seek relevant information from the respondent on the topic of interes**t; "ASSESSMENT OF FUEL SUBSIDY REMOVAL ON TUBER CROP PRODUCTION (YAM, CASSAVA, POTATO AND COCOYAM).** The questionnaire contained both closed ended and open-ended questions. Prior to completing the questionnaire, each respondent was requested to sign on informed consent form to confirm their readiness to participate in the research. Hence, data gathered from the responses of the samples was prepared for data analysis.

3.6 VALIDITY OF INSTRUMENT

Validity is concerned with how consistent an instrument could measure it purpose to measure, content validity method was adopted for the purpose of the study.

Ten (10) questionnaire structured for this research was served to the lecturers including the supervisor, researchers and other expertise in the area of research study in department of Agriculture, Kwara state Polytechnic for validation. The experts were asked to critically examine the instrument in terms of meeting the objectives of the study, the use of tense as well as clarity of words. Some items in the questionnaire were study, the use of tense as well as clarity of words. Somw items in the questionnaire were modified with the modifications of the items by the experts and it's subsequent corrections by the researcher, the instrument was adjudged valid for the study

3.7 ANALYTICAL TECHNIQUES

The collected data was subjected to both descriptives and inferential statistical analysis. Descriptive statistics, such as frequencies and percentage was used to summarize demographic characteristics of the farmers and the prevalence of different tuber management practices .

The method of analysis of the data collected will involve the use of the following:

1. Descriptive statistic

Descriptive statistics is a branch of statistics,which deals with descriptive of obtained data on the basis of these descriptions,a particular group of population is defined for corresponding characteristics.The descriptive statistics include classification, tabulation, diagrammatic and graphical representation.if data, measures of central tendency and variability.These enable the researchers to know about the tendency of data or the scores, which further enhances the ease in description of the phenomena, such single estimate of the series of data which summarizes the distribution are known as parameters of the distribution.The parameters define the distribution completely.

Descriptive statistics will be used to analyze objectives (1) and (4).

2. .Inferential statistics such as Regression and correlation analysis

Inferential statistics deals with drawing of conclusions about large group of individuals (population)on the basis of observation of a few participants from among them or about the events which are yet to occur on the basis of past events.it provides tools to complete the probabilities of future behavior of the subject.

i. Profitability test

The profitability test is a method to evaluate all products,not just financial and insurance.

Formula =TR- TC =Total revenue - Total cost =Net income.

The profitability test will be used to achieve objectives (2).

ii. Ordinary least squares (OLS)

OLS regression estimates the relationship between one or more independent variables (predictors) and a dependent variable (response). It accomplishes this by fitting a linear equation to observed data.

Y = f (x)

Income = Y

Cost of input = x

X1 + X2 + X3 + X4 ..... Xn

X1_____cost of fertilizer

X2_____cost of transportation

X3_____cost of feed/machineries

X4_____ cost of miscellaneous fees

X5_____cost of renting land

Xn _____ n term.

The OLS regression will be used to achieve objectives (3).

iii. Scale Likert - type

The Likert scale is a type of rating scale is a measure instrument used to determine a respondent's attitude toward self,others or situations.The likert scale is typically used on surveys or questionnaires,which begins with a statement and ask individuals to respond on an agree/disagree continuum.Each response is assigned a point value,an individual's score is determined by adding the point values of all the statements.

Example: | Strongly agree | Agree | Undecided | Disagree | Strongly disagree| will be considered for data collection for this study.

Likert scale test will be used to achieve objectives (4).

CHAPTER FOUR

4.0 RESULT AND DISCUSSION

4 1 Socio-economic Characteristics of Respondents

4.1.1 Distribution of Respondent by Gender

The table 4.1 below shows the distribution of respondents by sex. The table showed that 74.2% of the respondents are male while 25.8% of the respondents are female. This indicates that majority of the tuber farmers in the study area are male

Table 4.1: Frequency Distribution of Respondents by Sex

Gender	Frequency	Percent
Male	89	74.2
Female	31	25.8
Total	120	100.0

Source; Field survey, 2025

4.1.2 Distribution of Respondent by Age

The table 4.2 below showed the distribution of respondents by their age. The table showed that 45.0% are 30 years and below, 25.8% fell between 41 - 50 years, 20.0% fell between 31 - 40 years, 5.0% fell between 51 - 60 and lastly 4.2% of the respondents are 60 years and above.

Table 4.2: Frequency Distribution of Respondent by Age

Age	Frequency	Percent
<= 30	54	45.0
31 - 40	24	20.0

41 - 50	31	25.8
51 - 60	6	5.0
Above 60	5	4.2
Total	120	100

Source; Field survey, 2025

4.1.3 Distribution of Respondent by Marital Status

The table 4.3 below showed the distribution of respondents by their marital status. The table showed that 57.5% of the respondents are married, while 27.5% are single, 8.3% are widowed and 6.7% are divorced. This implies that majority of the respondents in the study area are married and have a sense of responsibility.

Table 4.3: Frequency Distribution of Respondents by Marital Status

Marital Status	Frequency	Percent
Single	33	27.5
Married	69	57.5
Divorced	8	6.7
Widowed	10	8.3
Total	120	100.0

Source; Field survey, 2025

4.1.4 Distribution of Respondent by Education Level

The table 4.4 below shows the distribution of respondents by their educational level. The table showed that 13.3% of the tuber farmers had no formal education, while 19.2% of the tuber farmers had primary education, while 29.2% had secondary education, while 0.8% had tertiary education and finally 37.5% of the farmers had Adult education. This implies that the tubers farmers are literate.

Table 4.4 Frequency Distribution of Respondents by Education Level

Level of Education	Frequency	Percent
No formal Education	16	13.3
Primary	23	19.2
Secondary	35	29.2
Tertiary	1	0.8
Adult Education	45	37.5
Total	120	100.0

Source; Field survey, 2025.

4.1.5 Distribution of Respondent by Household size

The table 4.5 below shows the distribution of tuber farmers by their household size. The table showz that 45.8% of the farming household has household size of 5 persons and below while 38.5% has household of 5 - 10 persons and lastly 18.3% of the household size has the household size of 10 above. This implies that majority of the respondents has a fairly large household size.

Table 4.5 Frequency Distribution of Respondents by Household size

Household size	Frequency	Percent
<= 5	55	45.8
5 - 10	43	38.5
Above 10	22	18.3
Total	120	100.0

Source; Field survey, 2025.

4.1.6 Distribution of Respondent by Farm size

The table below shows the distribution of respondents by their farm size. The table shows that 47.5% of the farmers has a farm size of 5acres and below while 36.7% has a farm size of 6 - 10 acres, 7.5% of the farmers has a farm size of 11 - 15ha while 5.0% has a farm size of 16 - 20 acres and lastly 3.3% of the farmers has a farm size of 20 acres and above.

Table 4.6: Frequency Distribution of Respondents by Farm size

Farm size	Frequency	Percentange
<= 5acres	57	47.5
11 - 15ha	9	7.5
16 - 20acres	6	5.0
6 - 10acres	44	36.7
More than 20acres	4	3.3
Total	120	100.0

Source; Field survey, 2025

4.1.7 Distribution of Respondent by Farm experience

The table 4.7 below shows the distribution of respondents by farming experience. The table revealed that 62.5%, 25.8%, 1.7% and 10.0 of the farming households head has farming experience of 10 years and below, 10 - 20 years and 20 - 30 years and 30years above respectively.

Table 4.7: Frequency Distribution of Respondents by Farming Experience

Farming experience	Frequency	Percent
<= 10years	75	62.5
10 - 20years	31	25.8
20 - 30years	2	1.7
Above 30years	12	10.0
Total	120	100.0

Source; Field survey, 2025.

4.1.8 Distribution of Respondent by Farming system

The table 4.8 shows the distribution of respondents by farming system. The table 4.8 revealed that 52.5% of the farmers engage in rainfed farming while 10.8% engage in irrigation farming, 35.8% engage in mixed farming and 0.8 engage in other farming systems. This table shows that most tuber farmers engage in rainfed farming system.

Table 4.8: Frequency Distribution of Respondents by Farming system

Farming system	Frequency	Percent
Rainfed	63	52.5
Irrigation farming	13	10.8
Mixed farming	43	35.8
Other	1	0.8
Total	120	100.0

Source; Field survey, 2025.

4.2.1 PROFITABILITY OF TUBER CROP PRODUCTION FARMERS IN THE STUDY AREA

This table 4.2 shows that 54.2% of the respondents accept that tuber crop production is still profitable even after the subsidy removal while 25.0% of the respondents shows that tuber crop production is not profitable after the subsidy removal and 20.8% of the respondents are unsure whether it is profitable or not after the removal of fuel subsidy.

4.2 Profitability of Tuber Crop Production

Valid	**Frequency**	**Percent**
Yes	65	54.2
No	30	25.0
Unsure	25	20.8
Total	120	100.0

Source; Field Survey, 2025

Statistics

N		Fer_CA	Trans_CA	Mac_CA	Ren_CA	Lab_CA	Annual income
	Valid	120	120	120	120	120	120
	Missing	0	0	0	0	0	0
Mean		30400.00	21900.00	40300.00	21100.00	41000.00	3988200.0

Fer_CA = 30400

Trans_CA = 21900

Mac_CA = 40300

Ren_CA = 21100

Lab_CA = 41000

Revenue = 3988200

Gross Margin (REVENUE-TVC)

3,988,200 - 128,700 = 3,859,500

The facts that the Gross Margin is 3,859,500, this means that tuber farming is profitable from the Gross Margin analysis.

4.3.1 DISTRIBUTION OF THE RESPONDENTS ACCORDING TO THE EFFECT OF FUEL SUBSIDY REMOVAL ON TUBER CROP PRODUCTION

Table 4.3 Regression Analysis showing the relationship between Socio-economic Characteristics of Respondents and Effect of fuel subsidy removal

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B		Beta		
1	(Constant)	3676035.275	1471336.587		2.498	0.014
	Age	-6008.854	5500.772	-0.118	-1.092	0.277
	Household size	-8929.353	14368.712	-0.067	-0.621	0.536
	Farm size	5021.326	8285.468	0.058	0.606	0.546
	Years of experience	7979.841	6850.866	0.136	1.165	0.247
	Gender	-168008.471	128296.138	-0.132	-1.310	0.193
	Level of education	-9365.673	37536.376	-0.025	-0.250	0.803
	Trans_CA	-176.442	86.351	-1.384	-2.043	0.043
	Mac_CA	46.562	24.445	*2.086	1.905	0.059
	Rent_CA	11.838	6.094	0.680	1.942	0.055
	Lab_CA	-30.740	15.500	-1.369	-1.983	0.050
	Average yield per hectare after subsidy removal	83.667	660.293	0.012	0.127	0.899
	Average market price after the subsidy removal	1.017	0.814	0.120	1.250	0.214

Significant at 1%

a. Dependent variable: revenue

The table 4.3 above shows that the average cost of machinery after the subsidy removal has significant impacts in improving the revenue of the respondents, the cost of machines after the subsidy removal can greatly improve the revenue of the respondents by getting machines and tractors that can work in the farmland makes farm activities more faster and easier instead of manual labor hiring. While other variables (household size, years of experience,

gender, level of education, farm size, transportation cost, age, land rent cost, labour cost) are not statistically significant ($p>0.05$), meaning their impacts on revenue are not strong enough to be considered meaningful in this model.

4.4 CONSTRAINTS FACED BY TUBER CROP FARMERS IN THE STUDY AREA

Table 4.4.1 Shows the Constraints faced and Identified by the Respondents.

It shows that the problems of transportation cost, market price and cost of fertilizer are the three least severe constraints faced by the farmers in the study area while the cost of labour, quantity of produce provided and cost of storage are the three most severe constraints faced by the farmers.

Table 4.4.1 Distribution of the Respondents According to the Challenges associated with the removal of fuel subsidy.

Variables	**NS**	**MS**	**S**	**VS**	**UD**	**Mean SD**	**Rank**
Cost of transportation	4 (3.3)	-----	22 (18.3)	82 (68.3)	12 (10.0)	4.48	1
Market price	2 (1.7)	2 (1.7)	47 (39.2)	57 (47.5)	12 (10.0)	4.29	2
Cost of fertilizer	3 (2.5)	4 (3.3)	28 (23.3)	65 (54.2)	20 (16.7)	4.23	3
Cost of seeds	2 (1.7)	6 (5.0)	25 (20.8)	66 (55.0)	21 (17.5)	4.23	4
Cost of labour	4 (3.3)	4 (3.3)	34 (28.3)	59 (49.2)	17 (14.2)	4.12	5
Quantity provided	3 (2.5)	3 (2.5)	52 (43.3)	44 (36.7)	18 (15.0)	4.09	6
Cost of storage	5 (4.2)	1 (0.8)	43 (35.8)	47 (39.2)	24 (20.0)	4.05	7

Source; Field Survey, 2025.

NS = Not Severe =5

MS = Mildly Severe = 4

S = Severe = 3

VS = Very Severe = 2

UD = Undecided = 1

CHAPTER FIVE

5.0 Conclusion and Recommendations

5.1 Summary

The study titled "Assessment of Fuel Subsidy Removal on Tuber Crop Production Among Smallholder Farmers in Kwara State" investigates the implications of recent government policy changes—specifically the removal of fuel subsidies—on the production capacity, livelihood, and economic sustainability of smallholder tuber crop farmers in the region. Tuber crops such as yam, cassava, and sweet potatoes are critical to food security and rural income in Kwara State.

The findings of the study reveal that the increased cost of fuel has led to a surge in the prices of transportation, agro-inputs, and mechanized farming services. This has resulted in reduced access to farm inputs, delayed land preparation, and diminished market access, ultimately reducing farm productivity and profitability. Smallholder farmers, who already operate under resource constraints, are particularly vulnerable to these changes, with many reducing their cultivation area or shifting to less input-intensive crops.

Moreover, the study highlights that the removal of fuel subsidies has had cascading effects on food prices, cost of living, and rural poverty levels. Farmers also reported reduced income and greater difficulty sustaining their households. Access to

extension services and government support was noted to be inadequate, further compounding the challenges faced.

5.2 Conclusion

The removal of fuel subsidies in Nigeria has had significant implications for smallholder farmers in Kwara State, particularly those engaged in tuber crop production. Findings from the study reveal that the increase in fuel prices has led to higher costs of transportation, agro-inputs, irrigation, and farm operations, thereby affecting production efficiency and profitability. Many farmers have been forced to reduce the size of cultivated land, cut back on labor, or rely more heavily on manual practices, resulting in lower productivity.

The study also indicates that the impact of subsidy removal disproportionately affects vulnerable farmers, especially those with limited access to alternative energy sources, credit

facilities, or mechanized farming tools. Despite the adverse effects, some farmers are exploring coping strategies such as cooperative farming, use of organic inputs, and alternative market linkages to mitigate the challenges posed by increased fuel costs.

The removal of fuel subsidies in Nigeria, while aimed at addressing fiscal sustainability and reducing government expenditure, has had far-reaching consequences on key sectors of the economy—most notably, agriculture. This study specifically focused on tuber crop production among smallholder farmers in Kwara State, a region where agriculture forms the backbone of rural livelihoods and food security.

The findings clearly show that the elimination of fuel subsidies has led to a surge in the cost of fuel, which in turn has increased the cost of essential farm operations such as land preparation, irrigation, transportation of inputs and produce, and processing. Many smallholder farmers—who already operate on narrow profit margins—have been unable to absorb these costs. Consequently, some have reduced their farm sizes, shifted to less fuel-dependent crops, or exited farming altogether.

Additionally, the rising fuel costs have disrupted supply chains and made access to markets more difficult, especially for farmers in remote or underserved communities. This has resulted in reduced profitability and increased post-harvest losses. Furthermore, the research highlighted that most of the farmers affected lack access to coping mechanisms such as financial support, mechanization alternatives, or efficient market structures.

Despite these challenges, the resilience of smallholder farmers is evident in the various adaptive strategies they are developing. These include forming cooperative societies, engaging in resource-sharing, and seeking alternative sources of energy. However, these efforts alone are insufficient to counteract the widespread economic stress triggered by subsidy removal.

In essence, fuel subsidy removal has exposed the fragility of rural agriculture in the absence of safety nets, infrastructure, and market resilience. A more balanced approach that supports vulnerable populations through transitionary policies is essential for long-term growth and food security.

5.3 RECOMMENDATIONS

1. Government Intervention and Support:

The government should implement targeted support programs such as fertilizer and input subsidies, low-interest loans, and access to mechanized tools to cushion the effects of subsidy removal on smallholder farmers.

2. Investment in Rural Infrastructure:

Improved rural roads, storage facilities, and irrigation systems can reduce dependence on fuel-powered machinery and transportation, ultimately lowering production costs for farmers.

3. Promotion of Renewable Energy and Alternatives:

Encouraging the use of solar-powered irrigation systems and processing equipment can provide a sustainable alternative to diesel and petrol, reducing energy costs over time.

4. Capacity Building and Training:

Training programs should be organized to educate farmers on cost-effective farming practices, climate-smart agriculture, and the use of organic inputs to maintain productivity under new economic conditions.

5. Strengthening Farmer Cooperatives:

Empowering and expanding farmer cooperatives can help smallholder farmers pool resources, access bulk purchasing of inputs, and negotiate better prices for their produce.

6. Policy Reform and Monitoring:

Policymakers should continuously assess the impact of subsidy removal on the agricultural sector and introduce flexible policies that support rural livelihoods while maintaining macroeconomic stability.

REFERENCES

Adeyonu, A. G., Okunola, A., Alao, M. E., Oyawoye, E. O. and Okonkwo, C. E. (2021). An assessment of broiler value chain in Nigeria. Open Agriculture, Vol. 6, No. 1, 2021, pp. 296-307. https://doi.org/10.1515/opag-2020-0168

Adikwu, O. J., Ochimana, S. O., & Babafemi, A. A. (2025). Economic assessment of yam production before and after subsidy removal in Okpokwu Local Government Area of Benue State, Nigeria. Revista Electronica de Estudios Internacionales y Desarrollo, 7(1), 12–25.https://ojs.ual.es/ojs/index.php/eea/article/view/9888

Adikwu, O., Ochimana, G. A., & Ikegh, G. T. (2024). Fuel subsidy removal and its influence on food security status among rural farmers in Gwer-West LGA, Benue State, Nigeria. Interdisciplinary Journal of Agriculture and Environmental Sciences, 5(2), 45–60. https://doi.org/10.5281/zenodo.14516077

Akinyemi, O., Alege, P.O., Ajayi, O.O., Adediran, O.S., Urhie, E. (2017), A simulation of the removal of fuel subsidy and the performance of the agricultural sector in Nigeria using a dynamic computable general equilibrium approach. Covenant Journal of Business and Social Sciences, 8(1), 60-70.

Amaiquema, J.R.P., Amaiquema, A.R.P. (2017), Consequences of oil and food price shocks on the Ecuadorian economy. International Journal of Energy Economics and Policy, 7(3), 146-151

Academic, edu (2023), https//www. Academia.edu. accessed July, 2023.

Adamu, A. (2023), History of Fuel Subsidy Removal in Nigeria, Blue print Newspapers.

Adenikinju, A. (2009). Pricing and Subsidy in Nigeria, OECD Conference Centre Paris, 9-10 June.

Alozie, E. (2009). The Lies above Deregulation, Nigerian Newsword.

Ani, D. P., Onoja, E. A., & Humbe, I. T. (2021). Partial fuel subsidy removal in Nigeria: Its effects on the economy and agricultural sector.International Journal of Social Ecology & Sustainable Development, 12(1), 1–17. https://doi.org/10.4018/IJSESD.2021010108

Central Bank of Nigeria (2015), Annual Report Available, https//www .cbn.gov.ng.

Fischer, C. (2019), Fuel Subsidy Reform: The Role Of Public Opinion And Civil Society. Energy Policy, 128, 804-811.

Effiong, E. and Umoh G. (2016). Impacts of Power and Market Relations on the Poultry Sector of Akwa Ibom State, Nigeria. Journal of Biology, Agriculture and Healthcare, ISSN 2224-3208 (Paper) ISSN 2225-093X (Online) Vol.6, No.18, 2.

Kayode, A. M., & Abdulmajeed, R. A. (2024). The socio-economic implications of fuel subsidy removal on rural households in Kwara State, Nigeria. Malaysian Journal of Business and Economic Management, 4(2), 22–35.https://mjbem.com.my/index.php/mjbem/article/view/94

Kayode, W. F. & Abdulmajeed, T. I. (2025). Assessment of the impact of fuel subsidy removal on market prices in Kwara State, Nigeria (May 2023–present).Malaysian Journal of Business, Economics and Management, 4(1), in press. https://doi.org/10.56532/mjbem.v4i1.94

Meludu, N. T., Komolafe, O. J., & Chilaka, P. C. (2024). Influence of fuel subsidy removal on the prices of major food commodities in Southeastern Nigeria. West African Journal on Sustainable Development, 1(1), 23–39.

Meludu, T. N., Komolafe, R. I., & Chilaka, C. C. (2024). Influence of fuel subsidy removal on prices of major food commodities in Southeastern Nigeria. West African Journal of Sustainable Development, 12(2), 90–106. https://journals.unizik.edu.ng/wajsd/article/view/2928

Okwoli, W. S., Dutse, A. I., & Adegbe, O. V. (2025). Effect of fuel subsidy removal on tomato production in Garun Mallam LGA, Kano State, Nigeria. Kashere Journal of Politics & Int'l Relations, 3(2), 307–318.

Olakunle, K. A., Adepoju, A. O., & Okunlola, J. O. (2023). Challenges faced by crop farmers: A survey of subsistence farmers in Kwara State, Nigeria. Research Journal of Agricultural and Environmental Management, 12(4), 77–89. https://www.researchgate.net/publication/352647233

Onwuaroh, F. C., Mohammed, B. L., & Abdullahi, S. A. (2024). Effects of fuel subsidy removal on maize farmers' profit and production cost in Gombe State, Nigeria. UNIZIK Journal of Agriculture and Extension, 6(1), 45–60. https://journals.unizik.edu.ng/ujaee/article/view/4994

Raifu, I. A. & Afolabi, J. A. (2024). Simulating the inflationary effects of fuel subsidy removal in Nigeria: Evidence from a novel dynamic ARDL approach. Energy Research Letters, 5(4). https://doi.org/10.46557/001c.94368

The Nation (2023, August 24). Kwara female farmers reject rice palliatives, demand land, farm inputs. Retrieved from https://thenationonlineng.net/kwara-female-farmers-reject-rice-palliatives-demand-land-farm-inputs.

APPENDIX

QUESTIONNAIRE ON THE TOPIC:

ASSESSMENT OF FUEL SUBSIDY REMOVAL ON TUBER PRODUCTION AMOUNG SMALLHOLDER FARMERS IN KWARA STATE, NIGERIA.

Please answer all questions as honestly as possible. For multiple choice questions, select the opinion that best matches your experience or opinion.If a question doesn't apply to you,please leave it blank!

SECTION A: Socio-economic characteristics of tuber farmers (respondent)

1. Age: [please specify (----------)]
2. Gender: (a)Male ( ) (b)Female ( )
3. Marital status: (a)single ( ) (b)Married ( ) (c)Divorced ( ) (d)widowed ( )
4. Level of education: (a)No formal level education ( ) (b)Primary school( ) (c) Secondary school( ) (e)Higher education ( ) (f)Others ( )
5. Household size: Number of people living in the household_____
6. Primary occupation: (a)tuber farming ( ) (b)other farming activities ( ) (c)Trading( ) (d) Civil service ( ) (e)others (please specify)_____
7. What are your primary source of income? (a)Farming ( ) (b)Trading ( ) (c) Civil Service( ) (d)Clergy ( )
8. Farm size: [please specify (----------)]
9. Years of farming experience: [please specify (----------)]
10. What is your estimated monthly income from farming? Please specify_____
11. what type of farming system do you practice? (a)Rain-fed farming ( ) (b)Irrigation ( ) (c)Mixed farming( ) (d)other (please specify):_____

SECTION B:Profitability of tuber production after subsidy removal.

Input and Production Details

12. Average cost of production per hectare (before subsidy removal): _____
13. Average cost of production per hectare (after subsidy removal): _____
14. Average yield per hectare (before subsidy removal): _____ (bags/tons)
15. Average yield per hectare (after subsidy removal): _____ (bags/tons)
16. Average market price received per bag of tuber (before subsidy removal): _____
17. Average market price received per bag of tuber (after subsidy removal): _____

18. Estimated profit margin before subsidy removal:[ ] Loss [ ] Low profit[ ] Moderate profit [ ] High profit

19. Estimated profit margin after subsidy removal: [ ] Loss [ ] Low profit

[ ] Moderate profit [ ] High profit

20. Have you made changes to your production methods since the removal of subsidies? [ ] Yes [ ] No

21. If yes, what changes have you made?

[ ] Reduced land under cultivation [ ] Switched crops [ ] Changed input types (e.g., organic) [ ] Adopted new technologies.[ ] Others: _____

22. Do you believe that tuber production is still profitable without subsidies?

[ ] Yes [ ] No [ ] Unsure

23. What support would help improve profitability? (Select all that apply)

[ ] Access to affordable inputs [ ] Training on efficient farming techniques

[ ] Price support programs[ ] Improved infrastructure[ ] Others: _____

24. How much do you spend on the purchase of fertilizer before the subsidy removal? (Cost of fertilizer) Specify? _____

25. How much do you spend on the purchase of fertilizer after the subsidy removal? (Cost of fertilizer) Specify? _____

26. How much do you spend on the cost of transportation before the subsidy removal? (Cost of transportation) Specify? _____

27. How much do you spend on the cost of transportation after the subsidy removal? (Cost of transportation) Specify? _____

28. How much do you spend on the cost of machineries before the subsidy removal? (Cost of machineries) Specify? _____

29. How much do you spend on the cost of machineries after the subsidy removal? (Cost of machineries) Specify? _____

30. How much do you spend on the cost of renting land before subsidy removal? _____

31. How much do you spend on the cost of renting land after subsidy removal? _____

32. How much do spend on the cost of labour hiring before subsidy removal? Specify _____

33. How much do spend on the cost of labour hiring after subsidy removal? Specify _____

34. How much do you make annually (Annual income) from tuber crop production before subsidy removal? _____

35. How much do you make annually (Annual income) from tuber crop production after subsidy removal? _____

SECTION C:

Effect of fuel subsidy removal on tuber farmers

What area does transportation cost affect your production.

Constraints of fuel subsidy removal	**Very severe**	**Severe**	**Moderate**	**Undecided**	**Not a problem**
Yield/ Output					
Productivity					
Marketing Fluctuation					
Demand					
Processing/ value addition					
Highy cost of input					

SECTION D: Challenges associated with the removal of fuel subsidies

Do you face any challenges during fuel subsidy removal Yes ( ) No ( )

Constraints of fuel subsidy removal	**Very severe**	**Severe**	**Moderate**	**Undecided**	**Not a problem**
Cost of transportation					
Cost of fertilizer					
Cost of seed					
Cost of storage					
Cost of labour					
Quantity provided					
Market price					

Thank you for your time and valuable input.