UPTAKE OF SUSTAINABLE AGRICULTURE PRACTICES AMONG SMALLHOLDER CROP FARMERS IN NAGONGERA SUB-COUNTY, TORORO DISTRICT, UGANDA

BY

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A RESEARCH REPORT SUBMITTED TO THE DEPARTMENT OF AGRICULTURE, FACULTY OF SCIENCE AND EDUCATION, IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELORS OF SCIENCE IN AGRICULTURE, DOUBLE MAJOR EDUCATION OF

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DECLARATION

I, NAMATEKA SHEDRACK WILLIAM, registration number BU/UP/2023/2221, declare that this research has been conducted by me. I confirm that this work is my own and it has not been submitted for any degree or examination at any institution.

Signature: _____ Date: 2026/02/07

NAMATEKA SHEDRACK WILLIAM

APPROVAL

This is to certify that this research report titled:

"Assessment of Sustainable Agriculture Practices among Smallholder Crop Farmers in Nagongera Sub-County, Tororo District, Uganda"

was carried out by NAMATEKA SHEDRACK WILLIAM under my supervision. The work presented in this report is original and has been submitted to the Department of Agriculture, Faculty of Science and Education, in partial fulfillment of the requirements for the award of the Bachelor of Science Education Degree of Busitema University.

I hereby approve this research report for submission and examination.

Dr. Okirori John

Supervisor

Signature: _____

Date: 15/6/2026

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Table of Contents

LIST OF FIGURES

LIST OF TABLES

LIST OF ABBREVIATIONS AND ACRONYMS

FAO Food and Agriculture Organization of the United Nations

GPS Global Positioning System

IPCC Intergovernmental Panel on Climate Change

MAAIF Ministry of Agriculture, Animal Industry and Fisheries

SAPs Sustainable Agriculture Practices

SPSS Statistical Package for the Social Sciences

UGX Uganda Shillings

UNCST Uganda National Council for Science and Technology

Statistical Symbols

r Pearson Correlation Coefficient

ρ – Spearman's Rank Correlation Coefficient

p – Probability Value (Level of Significance)

ABSTRACT

This study examined the factors affecting the adoption of sustainable agriculture practices (SAPs) among smallholder farmers in Nagongera Sub-County, Tororo District, Uganda. The study objectives were to: describe the sustainable agriculture practices used by smallholder farmers in Nagongera Sub-County; determine the factors influencing the adoption of sustainable agriculture practices; and identify the challenges faced by farmers in the application of sustainable agriculture practices. Data were collected from 40 smallholder farmers (both men and women) using structured questionnaires administered through face-to-face interviews. The data were analyzed using descriptive and inferential statistics.

The results revealed a moderate level of uptake of sustainable agriculture practices among farmers. Seventy percent (70%) of the respondents regularly practiced crop rotation, while sixty-five percent (65%) used improved seed varieties due to their affordability and immediate benefits. However, agroforestry and the use of organic fertilizers were less adopted because of labor requirements, limited technical knowledge, and financial constraints. The study further established that socio-economic factors such as education level, household income, and farm size significantly influenced adoption of SAPs. Institutional factors, particularly access to extension services, training programs, and cooperative membership, positively influenced farmers' adoption of sustainable agriculture practices. Environmental challenges including rainfall variability, declining soil fertility, pests and diseases, and land degradation negatively affected adoption levels.

Farmers coped with these challenges through strategies such as crop diversification, adjustment of planting dates, agroforestry, and the use of drought-tolerant crop varieties, although only 30% of the farmers demonstrated high levels of adoption. The study concluded that the adoption of sustainable agriculture practices among smallholder farmers was constrained by limited financial resources, inadequate institutional support, and environmental pressures. The study therefore recommends strengthening agricultural extension services, improving access to agricultural inputs and credit facilities, promoting farmer training programs, and enhancing institutional support systems to improve the adoption and sustainability of sustainable agriculture practices among smallholder farmers.

CHAPTER ONE

INTRODUCTION

1.1 Introduction

This chapter presents the background of the study, highlighting the concept of sustainable agriculture practices and their importance to smallholder farmers. It also outlines the problem statement, objectives of the study, research questions, scope of the study, significance of the study, and the conceptual framework. The chapter provides the foundation upon which the entire study is based.

1.2 Background of the Study

Agriculture remains the main source of livelihood for many rural households in developing countries, particularly in Sub-Saharan Africa. The sector provides employment, food, and income to a large proportion of the population (World Bank, 2020; FAO, 2021). However, agricultural production is increasingly threatened by challenges such as climate change, soil degradation, declining soil fertility, and rising costs of agricultural inputs (IPCC, 2022; FAO, 2011).

These challenges have increased the need for sustainable agriculture practices that promote environmental conservation while improving farm productivity. Sustainable agriculture practices include crop diversification, agroforestry, conservation agriculture, mulching, integrated soil fertility management, and the use of improved crop varieties (FAO, 2017; Kassam et al., 2019). According to the Food and Agriculture Organization, these practices help improve soil fertility, conserve natural resources, and enhance resilience to climate variability (FAO, 2011; FAO, 2015).

Globally, the adoption of sustainable agriculture practices among smallholder farmers is influenced by several factors such as access to agricultural knowledge, extension services, financial resources, market opportunities, and institutional support (Kassie et al., 2015; Anderson & Feder, 2007). Farmers who have access to extension services and financial resources are more likely to adopt environmentally friendly farming practices that improve productivity and sustainability (Davis et al., 2019; Manda et al., 2016).

In Uganda, agriculture plays a critical role in economic development and employs the majority of the population (MAAIF, 2021; World Bank, 2020). Despite government efforts to promote climate-smart agriculture through agricultural programs and extension services, the adoption of sustainable agriculture practices among smallholder farmers remains uneven (Atube et al., 2021; Kirungi et al., 2023).

In Nagongera Sub-County located in Tororo District, smallholder farmers mainly depend on rain-fed agriculture, which makes them highly vulnerable to irregular rainfall patterns, droughts, and other climate-related shocks (Nabalegwa, 2022; IPCC, 2022). Although several sustainable agriculture practices have been promoted by government institutions and non-governmental organizations, the level of adoption among farmers varies widely (Tororo District Local Government, 2024).

Understanding the factors influencing the adaptability of sustainable agriculture practices among smallholder farmers is therefore essential for improving agricultural productivity, strengthening climate resilience, and promoting sustainable rural livelihoods (Altieri & Nicholls, 2017; Pretty, 2018).

1.3 Problem Statement

Sustainable agriculture practices are widely been recognized for their ability to improve agricultural productivity, enhance climate resilience, and promote environmental sustainability (FAO, 2017; Pretty, 2018). However, the adoption of these practices among smallholder farmers in Nagongera Sub-County remains relatively low (Atube et al., 2021; Kirungi et al., 2023).

Several factors have been identified as barriers to adoption. These include socio-economic factors such as low education levels, limited income, and small farm sizes; institutional factors such as limited access to extension services and agricultural training; and environmental challenges such as soil degradation and climate variability (Mugisha & Nkonya, 2021; Anderson & Feder, 2007; IPCC, 2022).

As a result, many farmers continue to experience low crop productivity and increased vulnerability to climate-related shocks, which threatens household food security and slows the transition toward sustainable agriculture (World Bank, 2020; FAO, 2021).

Therefore, this study assessed the factors affecting the adoption of sustainable agriculture practices among smallholder farmers in Nagongera Sub-County.

1.4 Purpose of the Study

The purpose of this study was to assess the factors affecting the Adoption of sustainable agriculture practices among smallholder farmers in Nagongera Sub-County, Tororo District, Uganda.

1.4 Study Objectives

1.4.1 Main Objective

To examine the factors affecting the adoption of sustainable agriculture practices among smallholder farmers in Nagongera Sub-County.

1.4.2 Specific Objectives

1.To describe the sustainable agriculture practices used by smallholder farmers in Nagongera Sub-County.

2. To determine factors influencing the application of sustainable agriculture practices.

3. To identify challenges faced by farmers in application of sustainable agriculture practices

1.5 Research Questions

The above objectives will be effectively answered through the following research questions:

Objective 1

1. What sustainable agriculture practices were used by smallholder farmers in Nagongera Sub-County?

Objective 2

1. What socio-economic factors influenced the adoption of sustainable agriculture practices among smallholder farmers?

Objective 3

1. How did institutional and policy-related factors affect the adoption of sustainable agriculture practices?

2. What environmental and climate-related constraints affected the adoption of sustainable agriculture practices?

3. What coping and adaptation strategies were used by smallholder farmers to address climate change effects?

1.6 Scope of the Study

1.6.1 Geographical Scope

The study was conducted in Nagongera Sub-County, located in Tororo District in Eastern Uganda. The area was selected because agriculture is the main economic activity practiced by the majority of households, particularly smallholder crop farmers. Nagongera Sub-County experiences various agricultural and environmental challenges such as soil degradation, climate variability, and declining crop productivity, which make it suitable for studying the adaptability of sustainable agriculture practices. The study specifically targeted smallholder farmers within the sub-county to assess the factors influencing their adoption and adaptability to sustainable farming practices.

1.6.2 Content Scope

The study focused on examining the different factors influencing the adaptability of sustainable agriculture practices among smallholder crop farmers. The study concentrated on socio-economic factors such as income levels, education, household size, and farming experience; institutional factors including access to extension services, credit facilities, and government support programs; environmental factors such as soil fertility, climate change, and rainfall patterns; and market-related factors including market access, input availability, and produce prices. The study also assessed the extent to which farmers have adopted sustainable agriculture practices and the challenges affecting their adaptability.

1.6.3 Time Scope

The study covered the agricultural seasons between 2025 and 2026. This period was considered appropriate because it provided recent and relevant information regarding the adoption and adaptability of sustainable agriculture practices among smallholder farmers. Data collected within this timeframe enabled the researcher to examine current farming practices, seasonal variations, and the influence of recent environmental and economic conditions on sustainable agriculture in the study area.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of related literature on sustainable agriculture practices (SAPs), and the factors influencing their adoption among smallholder farmers in Nagongera Sub-County, Tororo District. The review is guided by the study objectives and is organized into key thematic areas: an overview of sustainable agriculture practices in Uganda with relevance to Eastern Uganda; socio-economic, institutional, environmental, and market-related factors affecting the uptake of sustainable agriculture practices among smallholder farmers; and farmers' responses and adaptation strategies to climate change effects in Nagongera Sub-County.

The chapter draws on global, African, and Ugandan empirical studies, examines relevant theoretical perspectives, and identifies research gaps that justify the need for the current study (Neuman, 2014; Creswell & Creswell, 2018).

2.2 Concept of Sustainable Agriculture

Sustainable agriculture is defined as an agricultural system that meets present food and fiber needs without compromising the ability of future generations to meet their own needs (FAO, 2015). It emphasizes long-term productivity, environmental conservation, and social well-being. Key practices include agroforestry, crop rotation, mulching, integrated soil fertility management, improved seed varieties, organic manure application, minimum tillage, and water conservation techniques (Pretty, 2018; Kassam *et al*., 2019).

Globally, sustainable agriculture is recognized as a critical pathway for addressing food insecurity and climate variability (FAO, 2021). With increasing pressure on natural resources, scholars observe that adoption depends on farmers' ability to integrate new technologies with indigenous knowledge and available resources (Altieri & Nicholls, 2017). However, adaptability

is heavily influenced by socio-economic characteristics, institutional frameworks, market access, and environmental challenges (Kassie et al., 2015).

2.2.1 Sustainable Agriculture and Adaptability of Practices

Sustainable agriculture is described as a farming system designed to meet current food and fiber needs without compromising the ability of future generations to meet their own needs (FAO, 2015). The concept emphasizes the integration of environmental conservation, economic viability, and social equity in order to ensure long-term agricultural productivity. By promoting responsible resource use and environmentally sound farming methods, sustainable agriculture supports food security while safeguarding natural ecosystems (FAO, 2011).

The implementation of sustainable agriculture among smallholder farmers is achieved through the adoption of specific farming practices aimed at improving productivity and resource efficiency. These practices include agroforestry, crop rotation, mulching, integrated soil fertility management, the use of improved seed varieties, application of organic manure, minimum tillage, and water conservation techniques (Pretty, 2018; Kassam et al., 2019). Such practices improve soil fertility, enhance moisture retention, increase resilience to climate variability, and reduce dependence on external inputs (Gaba et al., 2015). Consequently, sustainable agriculture practices are particularly suitable for smallholder farmers operating under conditions of limited capital and high environmental risk.

Globally, sustainable agriculture has gained recognition as a key response to challenges related to climate change, environmental degradation, and food insecurity (FAO, 2021; IPCC, 2022). Sustainable agricultural systems contribute to climate change mitigation by reducing greenhouse gas emissions and enhancing ecosystem services, thereby strengthening the adaptive capacity of farming communities (Altieri & Nicholls, 2017).

The adaptability of sustainable agriculture practices is influenced by a combination of socio-economic, institutional, and environmental factors. Farmers' ability to adopt and sustain these practices depends on income levels, education, farm size, and access to information (Mugisha & Nkonya, 2021). Institutional support, particularly access to agricultural extension services, credit facilities, and supportive policies, plays a critical role in facilitating adoption (Anderson & Feder, 2007; Atube et al., 2021). In addition, environmental factors such as climate variability and soil

degradation significantly affect farmers' decisions and capacity to adapt sustainable practices (Nabalegwa, 2022; IPCC, 2022).

At the global level, notable differences exist in the adaptability of sustainable agriculture practices between developed and developing countries. Developed countries demonstrate higher adoption rates due to strong extension systems, advanced mechanization, sustained research investment, and well-developed markets (Di Santo & Bianchi, 2025). In contrast, farmers in developing countries face challenges such as limited financial resources, poor infrastructure, low literacy levels, and weak policy implementation (World Bank, 2020). Nevertheless, evidence indicates that farmers are more likely to adopt sustainable agriculture practices when they perceive direct economic benefits, including improved yields and reduced input costs (FAO, 2021; Manda et al., 2016).

2.4 Sustainable Agriculture in Africa

Agriculture in Sub-Saharan Africa is predominantly rain-fed and highly vulnerable to climate change (IPCC, 2022). Smallholder farmers contribute over 70% of food production but experience persistent yield gaps due to land degradation, pests, droughts, and limited access to agricultural inputs (World Bank, 2020; FAO, 2011). Several African studies reveal that adaptability improves where farmers have access to knowledge, improved inputs, irrigation facilities, and financial services (Atube et al., 2021; Davis et al., 2019).

However, institutional weaknesses remain significant barriers to adoption. Limited extension personnel, low government funding, and poor technology dissemination constrain the widespread adoption of sustainable agriculture practices (Anderson & Feder, 2007). Women and youth face additional constraints such as limited land ownership and access to credit (World Bank, 2020). Adoption rates are highest in areas where farmer cooperatives and development interventions operate, although sustainability after project withdrawal is often limited (Davis et al., 2019).

2.5 Ugandan Context of Sustainable Agriculture

Uganda has prioritized sustainable agriculture through several national policies, including the Climate Smart Agriculture Program (MAAIF, 2021). Despite these policy frameworks, adoption levels vary widely across districts. Studies indicate that smallholder farmers adopt sustainable

agriculture practices when they have access to training, improved seed varieties, market information, and financial support (Kirungi et al., 2023; Atube et al., 2021).

However, adoption continues to face several challenges. Inadequate extension staffing and limited logistical support reduce farmers' access to technical guidance (Anderson & Feder, 2007). Economic barriers such as high costs of inputs limit adoption, particularly among low-income farmers (Mugisha & Nkonya, 2021).

Poor rural infrastructure further limits agricultural development by restricting market access and increasing post-harvest losses (World Bank, 2020). Climate variability, particularly in Eastern Uganda, continues to affect agricultural productivity due to erratic rainfall and extreme weather events (Nabalegwa, 2022; IPCC, 2022).

Nevertheless, areas with strong institutional support, including NGOs, demonstration farms, and farmer groups, record higher adoption levels due to improved knowledge sharing and reduced risk perception (Davis et al., 2019). In Tororo District, adoption is influenced by similar factors, including input costs, infrastructure, and climate variability (Tororo District Local Government, 2024).

2.6 Review of Key Variables

2.6.1 Socio-Economic Factors

Socio-economic attributes such as age, education level, household income, land size, and farming experience significantly influence adoption decisions. Educated farmers are more willing to adopt new technologies and manage risks effectively (Mugisha & Nkonya, 2021).

Household income enables farmers to purchase inputs, while larger land holdings provide flexibility for experimentation (Manda et al., 2016). Gender dynamics also affect adoption, with women facing constraints in accessing land, credit, and inputs (World Bank, 2020).

2.6.2 Institutional and Policy Factors

Institutional support plays a crucial role in adoption. Access to extension services, government programs, and training initiatives enhances farmers' knowledge and confidence (Anderson & Feder, 2007; Atube et al., 2021).

Conversely, weak extension systems and limited policy implementation reduce adoption rates (Atube et al., 2021). Policy incentives such as subsidies and credit schemes encourage adoption, although inconsistent funding limits effectiveness (MAAIF, 2021).

2.6.3 Environmental Factors

Environmental conditions such as soil fertility, rainfall variability, and pest infestations influence adoption decisions. Farmers often observe climatic trends before adopting new practices (Nabalegwa, 2022).

In areas with declining soil fertility, farmers are more likely to adopt soil fertility management practices (FAO, 2011). However, extreme weather events discourage long-term investments (IPCC, 2022).

2.6.4 Market and Input Accessibility

Market access and availability of inputs significantly influence adoption. Farmers are more likely to invest in sustainable practices when reliable markets and fair prices exist (World Bank, 2020).

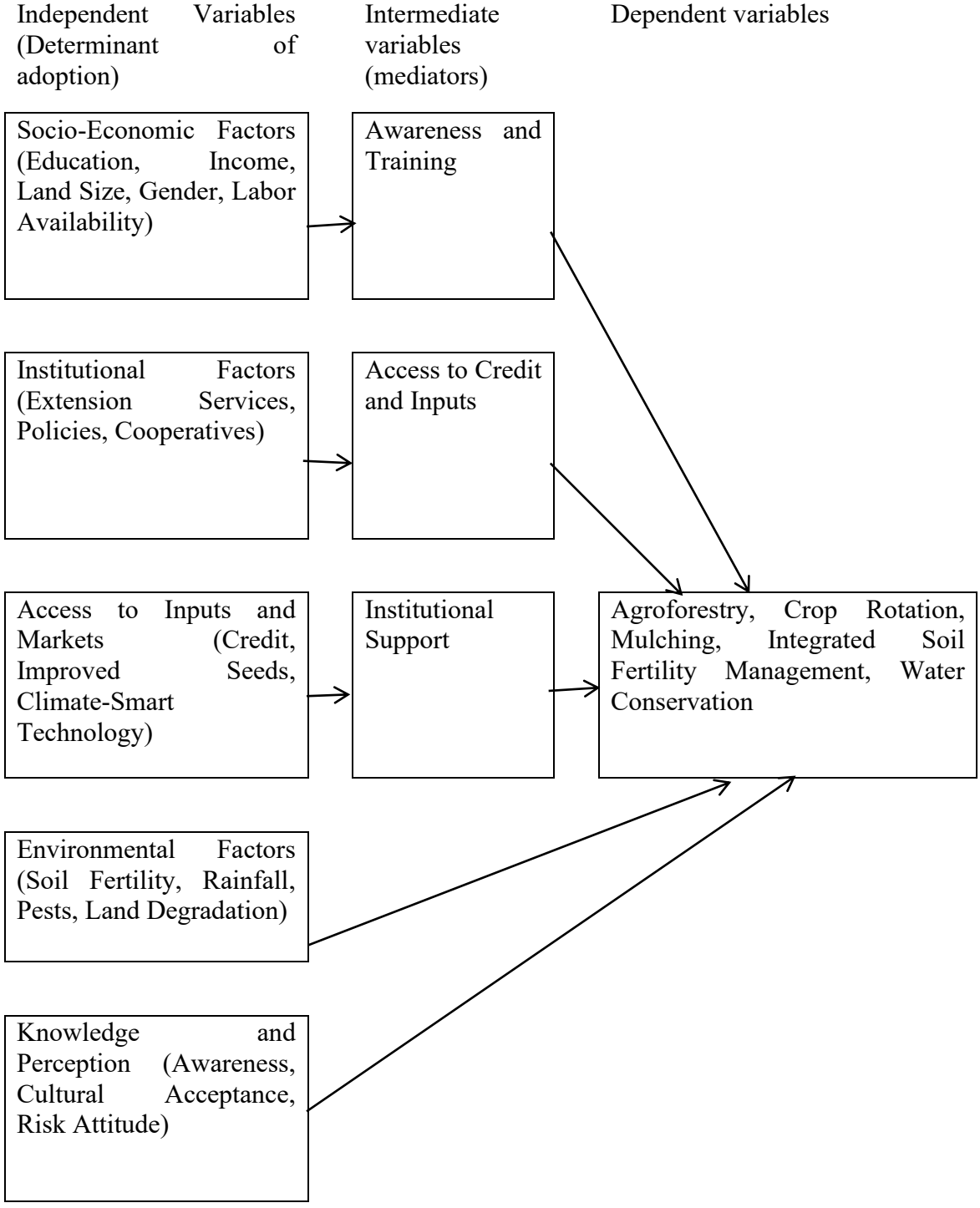
Access to inputs such as improved seeds and fertilizers is critical for adoption (FAO, 2017). Financial services through cooperatives and credit schemes further support investment in sustainable agriculture (Manda et al., 2016).

2.7 Empirical Studies and Identified Gaps

Numerous studies have examined sustainable agriculture practices at global and national levels (Kassie et al., 2015; Kirungi et al., 2023). However, limited research specifically focuses on Nagongera Sub-County in Tororo District. Most studies generalize findings across Eastern Uganda without adequately addressing local socio-economic conditions, farmer perceptions, and institutional capacities that influence adoption decisions (Atube et al., 2021; Nabalegwa, 2022)..

2.8 Summary of Literature Gaps

Figure 1: Showing the relationship among variables.



2.9 Conceptual Review Summary

The review of literature indicated that the adoption of sustainable agriculture practices (SAPs) among smallholder farmers is influenced by a combination of interrelated factors. These factors were broadly categorized into socio-economic, institutional, environmental, and market-related determinants (Kassie et al., 2015; Kirungi et al., 2023). Each of these determinants plays a significant role in shaping farmers' decisions on whether to adopt or reject sustainable agricultural practices.

Socio-economic characteristics such as farmers' level of education, household income, farming experience, land size, and labor availability were found to strongly influence adoption decisions (Mugisha & Nkonya, 2021; Atube et al., 2021). Farmers with higher education levels and greater farming experience are generally more capable of understanding new agricultural technologies and applying them effectively (Anderson & Feder, 2007). Similarly, farmers with larger farm sizes and higher household incomes tend to have greater financial capacity to invest in improved farming practices such as agroforestry, improved seed varieties, and soil fertility management techniques (Manda et al., 2016; Kassam et al., 2019).

Institutional factors also play a critical role in influencing the adoption of sustainable agriculture practices. Access to agricultural extension services, training programs, government agricultural policies, and support from farmer cooperatives or development organizations improves farmers' knowledge and confidence in adopting sustainable farming practices (Anderson & Feder, 2007; Davis et al., 2019). Extension services in particular serve as an important channel for disseminating agricultural information, demonstrating improved technologies, and supporting farmers during the implementation process (Davis et al., 2019).

Environmental factors were also identified as key determinants of sustainable agriculture adoption. Conditions such as declining soil fertility, unpredictable rainfall patterns, pest infestations, and land degradation influence farmers' perceptions of agricultural risks and encourage the adoption of adaptive farming practices (IPCC, 2022; Nabalegwa, 2022). Farmers operating in areas experiencing severe soil degradation or climate variability are often more motivated to adopt practices such as crop rotation, mulching, and integrated soil fertility management in order to improve productivity and maintain soil health (FAO, 2017; Altieri & Nicholls, 2017).

Market and input accessibility further influences farmers' willingness to adopt sustainable agriculture practices. Reliable access to markets provides incentives for farmers to increase production and invest in improved technologies (World Bank, 2020; Di Santo & Bianchi, 2025). Similarly, access to agricultural inputs such as improved seeds, fertilizers, irrigation equipment, and climate-smart technologies enhances farmers capacity to implement sustainable agricultural systems (FAO, 2021). Access to financial services through rural credit schemes, farmer cooperatives, and Savings and Credit Cooperative Organizations (SACCOs) also enables farmers to overcome financial barriers associated with adopting improved farming practices (Kirungi et al., 2023; Atube et al., 2021).

In addition to these determinants, farmers' knowledge, awareness, and perception of sustainable agriculture practices influence the adaptability of these practices. Farmers who understand the long-term benefits of sustainable agriculture, including improved soil fertility, increased crop yields, and resilience to climate change, are more likely to adopt such practices (Pretty, 2018; FAO, 2015). Cultural beliefs, attitudes toward risk, and previous farming experiences may also shape farmers' adoption behavior (Kassie et al., 2015).

Overall, the conceptual framework of the study demonstrates that the adoption of sustainable agriculture practices among smallholder farmers is determined by a complex interaction between socio-economic conditions, institutional support systems, environmental pressures, and market accessibility (Kassie et al., 2015; Kirungi et al., 2023). These variables interact to influence farmers awareness, training opportunities, and access to resources, which ultimately determine the level of adoption of sustainable agriculture practices such as agroforestry, crop rotation, mulching, integrated soil fertility management, and water conservation (FAO, 2011; Gaba et al., 2015).

This conceptual understanding guided the design of the study methodology presented in Chapter Three and provided a framework for interpreting the study findings discussed in Chapter Four and Chapter Five.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the methodology employed to assess the adoption of sustainable agriculture practices (SAPs) among smallholder crop farmers in Nagongera Sub-County, Tororo District, Uganda. It outlines the study area, research design, target population, sampling techniques, data collection instruments, data collection procedures, data analysis methods, and ethical considerations. The methodology was guided by the study objectives to ensure reliability, validity, and generalizability of the results (Creswell & Creswell, 2018; Kothari, 2004).

3.2 Study Area

The study was conducted in Nagongera Sub-County, Tororo District, located in Eastern Uganda. The sub-county is predominantly rural, with agriculture serving as the main economic activity. Farmers mainly cultivate maize, beans, cassava, groundnuts, and sorghum under rain-fed conditions (Tororo District Local Government, 2024). Nagongera Sub-County was purposively selected due to its observed low adoption of sustainable agriculture practices, despite interventions from government agencies and non-governmental organizations (MAAIF, 2021).

3.3 Research Design

A cross-sectional research design combining descriptive and correlational approaches was employed (Creswell & Creswell, 2018; Neuman, 2014).

Descriptive component: Captured the current levels of adoption of sustainable agriculture practices among farmers.

Correlational component: Examined the relationships between adaptability and key factors, including socio-economic characteristics, institutional support, environmental conditions, and market access.

This design allowed the study to provide a snapshot of adoption patterns and to explore factors influencing farmers' decisions regarding SAPs.

3.4 Study Population

The target population comprised all smallholder farmers engaged in crop production within Nagongera Sub-County, including both male and female farmers practicing subsistence or semi-commercial agriculture on small plots of land (MAAIF, 2021).

3.5 Sample Size and Sampling Procedure

A multi-stage sampling procedure was employed to select respondents as follows (Kothari, 2004):

Sub-County Selection: Nagongera Sub-County was purposively selected due to its agricultural relevance and low adoption of SAPs.

Village Selection: Four villages including Awanya, Mahanga Cell, Police Cell, and Busitema University Nagongera Community Cell were randomly selected using simple random sampling.

Sampling Frames: Lists of smallholder farmers were obtained from village leaders and agricultural extension officers and verified for completeness.

Farmer Selection: A census approach was adopted, including all 40 eligible farmers across the selected villages to minimize sampling error.

3.6 Data Collection Instruments

The primary instrument for data collection was a structured questionnaire, designed based on the study objectives and conceptual framework (Creswell & Creswell, 2018). The questionnaire captured information on demographic, socio-economic, institutional, environmental, and market-related factors influencing the adoption of SAPs.

Table 1:showing a Structure of the Questionnaire.

Section	Focus	Variable Type	Scale / Coding
A	Demographics	Age, gender, education, household size, farm size, farming experience, income, adult labor	Numeric & categorical (codes for gender & education)
B	Farm management & practices	Crops grown, farming system, improved seeds, soil fertility, water management, pest control, records, extension advice	Multiple response, categorical
C	Institutional & policy support	Access to extension, government policies, cooperatives, training	Likert scale: 1=Strongly Disagree to 5=Strongly Agree
D	Environmental & market factors	Soil fertility, rainfall patterns, pest incidence, market access, input availability, selling produce	Numeric, categorical, Likert scale
E	Awareness, adoption, perceptions, intentions	Awareness of SAPs, frequency of use, attitudes, future adoption intentions	Binary (Yes/No), Likert scale (1 to 5)
F	Sources of support & market access	Input types & sources, credit access, training participation	Multiple response, categorical

Data collection procedure

The questionnaire was administered through face-to-face interviews to ensure clarity, completeness, and accuracy of responses, a method widely recommended for improving data

quality in field-based agricultural studies (John W. Creswell & J. David Creswell, 2018; C. R. Kothari, 2004). The study targeted 40 smallholder farmers across the selected villages. Prior to the main data collection, a pilot test was conducted in a neighboring sub-county outside the study area to assess the clarity, relevance, and reliability of the instrument, which is a standard procedure in survey research (Kothari, 2004; W. Lawrence Neuman, 2014).

Reliability of the questionnaire was evaluated using Cronbach's Alpha, with a coefficient of ≥0.70 considered acceptable for all key constructs, consistent with established methodological thresholds (Creswell & Creswell, 2018; Neuman, 2014). Content validity was ensured through expert review by supervisors and agricultural specialists, confirming that the questionnaire items adequately represented the study objectives (Kothari, 2004). A copy of the finalized questionnaire is included in Appendix I.

3.7 Validity and Reliability

To ensure validity, the questionnaire was reviewed by my supervisor in agricultural research and methodology. Their feedback ensured that each question accurately measured the intended variables and aligned with the study objectives (Creswell & Creswell, 2018; Kothari, 2004).

Reliability was assessed during the pilot study using Cronbach' s Alpha, with all key variables exceeding the threshold of 0.70, indicating satisfactory internal consistency and reliability of the instrument (Neuman, 2014).

3.8 Data Coding and Analysis

Data entry and cleaning:

Completed questionnaires were checked for completeness and consistency. Data were coded and entered into SPSS software for analysis, a common approach in quantitative agricultural research (Creswell & Creswell, 2018).

Descriptive statistics:

Frequencies, percentages, means, and standard deviations were computed to summarize demographic characteristics, socio-economic factors, and levels of adoption of sustainable agriculture practices such as crop rotation, agroforestry, soil and water conservation, organic fertilization, and use of improved seeds. These practices are widely recognized as key

components of sustainable agriculture (Food and Agriculture Organization of the United Nations, 2017; Jules Pretty, 2018).

Inferential statistics:

Pearson' s correlation was used to examine relationships among continuous variables such as age, farm size, and income. In addition, Spearman' s rank correlation was employed to analyze ordinal variables including education level and frequency of adoption. These statistical techniques were selected because they are appropriate for measuring the strength and direction of relationships between variables in social science and agricultural research studies (Creswell & Creswell, 2018; Neuman, 2014).

Multiple regression analysis was further conducted to determine the extent to which socio-economic, institutional, environmental, and market factors influenced farmers' adaptability to sustainable agriculture practices. The method enabled the researcher to assess the contribution of each independent variable to the level of adaptability while controlling for the effects of other variables. This approach has been widely applied in studies related to agricultural technology and sustainable agriculture adoption (Marenya Kassie et al., 2015; John Mugisha & Ephraim Nkonya, 2021).

An adoption index was also computed to categorize farmers' adoption levels into low, moderate, and high categories. The index facilitated comparative analysis among different respondent groups and helped in identifying variations in adoption behavior among farmers. The use of adoption indices is common in sustainable agriculture adoption studies because it provides a clear and systematic way of measuring adoption intensity (Kassie et al., 2015; Jane Manda et al., 2016).

3.9 Ethical Considerations

Ethical procedures were strictly observed throughout the study. Ethical approval was obtained from the university, and permission to conduct the study was sought from local authorities. Respondents were informed of the purpose of the study, assured of confidentiality, and provided informed consent before participation, in line with national research ethics guidelines (Uganda National Council for Science and Technology, 2014).

Trained research assistants were engaged to ensure respondents fully understood the questions, minimizing potential errors and biases, which is recommended in field-based surveys involving smallholder farmers (Creswell & Creswell, 2018; Neuman, 2014)

CHAPTER FOUR

PRESENTATION OF RESULTS

4.1 Introduction

This chapter presents the findings of the study on the adoption of sustainable agriculture practices (SAPs) among smallholder farmers in Nagongera Sub-County, Tororo District. The results are organized according to the study objectives and presented using descriptive statistics, tables, and explanatory narratives. The findings provide an understanding of the socio-economic characteristics of respondents, levels of adoption of sustainable agriculture practices, and the key factors influencing adaptability.

4.2 Demographic and Socio-Economic Characteristics of Respondents

Understanding the demographic and socio-economic profile of respondents is crucial in interpreting adoption patterns of sustainable agriculture practices. the findings are presented in table 2.

Table 2: Showing Demographic and Socio-Economic Characteristics of Respondents.

Variable	Category	Frequency/Range	Percentage (%)
Age	30– 45 years	Majority	80
	46– 60 years		15
	Above 60 years		5
Gender	Male		45
	Female		55
Education Level	Not formal		10
	Primary		60
	Secondary		30
Farming Experience	Average years	10 years	-----
Household Size	Range	4– 10 members	Mean = 7
Farm Size	Range	0.5– 5 acres	Majority < 2 acres (70%)
Annual Income	Range	UGX 800,000 to 6,000,000	----

Table 2 shows that respondents were aged between 30 and 60 years, with the majority (80%) falling within the 30 to 45 years age bracket. Older farmers (46 to 60 years) accounted for 15%, while those above 60 years represented 5%.

In terms of gender, male farmers constituted 45% of respondents, while female farmers represented 55%. Regarding education level; 60% had attained primary education, 30% secondary education, and 10% had no formal education. The household sizes ranged from 4 to 10 members, with a mean of 7. Labor availability, mainly family labor, influenced the capacity to implement labor-intensive sustainable practices.

One farming experience, the average farming experience was 10 years, reflecting a mix of traditional and modern agricultural knowledge among respondents. The farm sizes ranged from ½ to 5 acres, with the majority (70%) cultivating less than 2 acres. Annual farm income varied between UGX 800,000 and 6,000,000, indicating differing capacities to invest in improved agricultural practices.

In summary, these characteristics suggest that the population is predominantly middle-aged, with moderate education and small landholdings, factors that may influence the adoption of sustainable practices.

The findings in Table 2 indicate that most respondents are middle-aged farmers (30– 45 years), which suggests an active and productive farming population. The gender distribution shows a slightly higher proportion of female farmers (55%), indicating active participation of women in agriculture.

The majority of respondents had primary education (60%), which implies moderate literacy levels that may influence their ability to access and understand agricultural innovations.

Farm sizes were generally small, with 70% cultivating less than 2 acres, reflecting land fragmentation in the area. The average farming experience of 10 years suggests that respondents possess a blend of traditional knowledge and practical farming exposure.

4.3 Adoption of Sustainable Agriculture Practices

Respondents' adoption of sustainable agriculture practices was assessed using descriptive statistics. Practices considered included crop rotation, agroforestry, mulching, soil and water conservation, organic fertilizer application, minimum tillage, and the use of improved seed varieties.

Table 3: Showing Adoption of Sustainable Agriculture Practices.

Practice	Regularly used (%)	Occasional used (%)	Not used (%)
Crop Rotation	70	20	10
Agroforestry	25	35	40
Mulching	30	40	30
Soil and Water Conservation	40	35	25
Organic Fertilizers	20	30	50
Minimum Tillage	35	30	35
Improved Seed Varieties	65	20	15

Tabe 3 shows that crop rotation (70%) and improved seed varieties (65%) are the most widely adopted practices among farmers. This may be due to their relatively low cost and immediate visible benefits in production.

On the other hand, agroforestry (40% non-adoption) and organic fertilizers (50% non-adoption) recorded low adoption levels, likely due to high labor requirements, limited knowledge, and financial constraints. Overall, the adoption of SAPs is moderate, indicating partial integration into existing farming systems.

4.4 Socio-Economic and Institutional Factors Influencing Adoption

This section presents factors that influence the adoption of sustainable agriculture practices.

Table 4: Showing Socio-Economic and Institutional Factors Influencing Adoption.

Factor	Response/Observation
Extension services access	65% had regular access
Training participation	40% participated in training programs
Cooperative membership	Positively linked to higher adoption (mean score 4.1 vs 2.7)
Income level	Positive correlation ($r = 0.48$, $p < 0.05$)
Farm size	Positive correlation ($r = 0.42$, $p < 0.05$)
Extension services	Positive correlation ($r = 0.52$, $p < 0.05$)

Table 4 shows that rainfall variability of sixty percent (60%) is the most significant environmental challenge affecting farming activities. Declining soil fertility of fifty five percent (55%) and pest and disease incidence of fifty percent (50%) also significantly affect productivity and discourage sustainable practice adoption.

Statistical analysis (Spearman correlation) indicated a negative relationship ($\rho = -0.47$, $p < 0.05$) between environmental constraints and adaptability, meaning that harsher environmental conditions reduce the likelihood of adopting sustainable practices.

4.5 Environmental and Climate-Related Constraints

Environmental and climate-related factors were assessed to determine their impact on the adoption of sustainable agriculture practices.

Table 5: showing Environmental and climate-Related constraints.

Constraint	% Respondents Reporting
Declining Soil Fertility	55
Rainfall Variability	60
Pest and Disease Incidence	50
Land Degradation	45

The findings in table 5 show that rainfall variability of sixty percent (60%) is the most significant environmental challenge affecting farming activities. Declining soil fertility of fifty five percent (55%) and pest and disease incidence of fifty percent (50%) also significantly affect productivity and discourage sustainable practice adoption.

Statistical analysis (Spearman correlation) indicated a negative relationship ($\rho = -0.47$, $p < 0.05$) between environmental constraints and adaptability, meaning that harsher environmental conditions reduce the likelihood of adopting sustainable practices.

4.6 Coping and Adaptation Strategies

Table 6: showing Coping and Adaptation Strategies.

Strategy	**Rate of Uptake (%)**
Crop Diversification	70
Adjustment of Planting Dates	65
Agroforestry and Soil Conservation	45
Drought-Tolerant Crops	40
Water Conservation Techniques	35

The findings in table 7 above indicate that crop diversification of seventy percent (70%) and adjustment of planting dates sixty five percent (65%) are the most commonly used coping strategies. These practices help farmers reduce risk associated with climate variability.

Agroforestry and water conservation techniques are less adopted, likely due to limited knowledge and resource constraints. The adoption index shows that 30% of farmers have high adoption, fifty percent (50%) moderate adoption, and twenty percent (20%) low adoption.

CHAPTER FIVE

DISCUSSION, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the discussion of the study findings, conclusions drawn from the study, and recommendations based on the research results. The discussion interprets the findings presented in Chapter Four in relation to the study objectives and existing literature reviewed in Chapter Two. The chapter further highlights policy implications, study limitations, and areas for future research.

5.2 Summary of Major Findings

The study findings indicate that:

1. Adoption of sustainable agriculture practices is moderate, with crop rotation and improved seeds being the most widely used.
2. Socio-economic factors such as income, education, farm size, and extension services significantly influence adoption levels.
3. Institutional support, particularly training and cooperative membership, enhances adaptability.
4. Environmental constraints such as rainfall variability and soil degradation negatively affect adoption.
5. Farmers employ various coping strategies, though adoption levels vary depending on resource availability and knowledge.

5.3 Discussion of Findings

5.3.1 Sustainable Agriculture Practices Adopted by Smallholder Farmers

The study established that smallholder farmers in Nagongera Sub-County have adopted a range of sustainable agriculture practices (SAPs), including crop rotation, mulching, agroforestry, integrated soil fertility management, use of improved seed varieties, and organic manure application. Among these, crop rotation and improved seed varieties were the most widely adopted due to their relatively low cost and immediate impact on productivity.

This finding is consistent with Kassie et al. (2015), who observed that farmers tend to adopt interrelated agricultural practices that provide immediate and visible benefits. Similarly, pretty (2018) emphasizes that sustainable intensification practices that enhance productivity without requiring high capital investment are more likely to be adopted by smallholder farmers.

The preference for low-cost and easily implementable practices reflects the economic realities of smallholder farmers in Uganda. Farmers are more inclined to adopt technologies that align with existing farming systems and require minimal external inputs. This supports Kirungi et al. (2023), who found that compatibility with traditional practices significantly influences adoption decisions.

However, the relatively low adoption of agroforestry and conservation agriculture highlights structural constraints such as limited technical knowledge, delayed returns on investment, and inadequate extension support. According to FAO (2017), long-term practices like agroforestry often face slow adoption because their benefits are realized over extended periods, making them less attractive to resource-constrained farmers.

5.3.2 Influence of Socio-Economic Factors on Adoption of Sustainable Agriculture Practices

The study revealed that socio-economic characteristics including education level, household income, farm size, farming experience, and gender significantly influence the adoption of sustainable agriculture practices.

Farmers with higher levels of education demonstrated greater awareness and were more likely to adopt improved farming techniques. This aligns with Mugisha and Nkonya (2021), who found that education enhances farmers ability to process agricultural information and adopt new technologies effectively.

Household income was also a critical determinant. Farmers with higher income levels were better positioned to invest in improved seeds, fertilizers, and soil management practices. This finding is supported by Manda et al. (2016), who noted that financial capacity directly affects the adoption of productivity-enhancing technologies.

Farm size further influenced adoption behavior. Farmers with larger landholdings were more willing to experiment with new practices because they could allocate portions of land for trials without risking household food security. This observation is consistent with Atube *al et.,* (2021), who identified land availability as a key factor in the adoption of climate-smart agriculture technologies.

Gender disparities were also evident. Female farmers faced constraints such as limited access to land, credit, and agricultural inputs, which hindered their adoption of sustainable practices. This finding reflects broader structural inequalities highlighted by the World Bank (2020), which emphasizes the need for gender-sensitive agricultural policies.

5.3.3 Influence of Institutional and Policy Factors

Institutional support emerged as a critical determinant of adoption. Access to extension services, farmer training programs, cooperatives, and government initiatives significantly enhanced farmers knowledge and confidence in implementing sustainable agriculture practices.

Farmers who interacted frequently with extension officers demonstrated higher awareness and adoption levels. This finding corroborates Anderson and Feder (2007), who emphasized the central role of agricultural extension in technology dissemination. Similarly, Davis et al. (2019) found that farmer field schools significantly improve agricultural productivity and adoption rates.

However, the study identified key institutional challenges, including inadequate staffing, limited facilitation of extension workers, and irregular training programs. These constraints reduce the effectiveness of knowledge dissemination. According to MAAIF (2021), strengthening extension systems is essential for promoting climate-smart agriculture in Uganda.

The role of farmer cooperatives and community-based organizations was also significant. These institutions facilitated access to inputs, credit, and markets while promoting knowledge sharing. This supports Di Santo and Bianchi (2025), who highlight the importance of institutional networks in driving sustainable agricultural transitions.

5.3.4 Environmental and Climate-Related Constraints

Environmental factors such as declining soil fertility, unpredictable rainfall, pest infestations, and land degradation significantly influenced farmers' adoption decisions.

Irregular rainfall patterns posed a major challenge, particularly in rain-fed farming systems. This finding aligns with IPCC (2022), which identifies climate variability as a major threat to agricultural productivity in Sub-Saharan Africa. Similarly, Nabalegwa (2022) found that climate variability significantly affects smallholder farming systems in Eastern Uganda.

Interestingly, farmers experiencing severe soil fertility decline were more likely to adopt soil fertility management practices such as composting and crop rotation. This suggests that environmental stress can act as a catalyst for innovation. FAO (2011) supports this observation, noting that resource degradation often drives farmers toward sustainable intensification practices.

5.3.5 Coping and Adaptation Strategies Used by Farmers

The study found that farmers employed several coping and adaptation strategies, including crop diversification, adjustment of planting seasons, adoption of drought-tolerant crop varieties, use of organic manure, and participation in farmer groups.

Crop diversification was the most widely used strategy, as it reduces production risks and enhances household food security. This finding is consistent with Gaba et al. (2015), who highlight the role of diversified cropping systems in improving resilience and ecosystem services.

Participation in farmer groups enhanced information sharing, access to inputs, and collective marketing. This supports Davis et al. (2019), who emphasize the effectiveness of group-based learning approaches in improving agricultural outcomes.

The adoption of drought-tolerant varieties and soil fertility practices reflects farmers' adaptive capacity to climate change. According to FAO (2017), such climate-smart practices are essential for building resilience in smallholder farming systems.

5.4 Conclusions

Based on the study findings, the following conclusions are drawn:

First, smallholder farmers in Nagongera Sub-County have adopted several sustainable agriculture practices, particularly those that are low-cost, easy to implement, and provide immediate benefits. However, adoption of long-term practices remains limited.

Second, socio-economic factors such as education, income, farm size, and gender significantly influence adoption. Farmers with greater access to resources and information are more likely to adopt sustainable practices.

Third, institutional support systems including extension services, training programs, and farmer organizations play a critical role in promoting adoption. Weak institutional capacity limits the effectiveness of these interventions.

Fourth, environmental challenges such as climate variability, soil degradation, and pest outbreaks continue to influence farming decisions and productivity.

Finally, farmers have demonstrated adaptive capacity through strategies such as crop diversification, soil fertility management, and participation in farmer groups, although these efforts require stronger institutional support to be fully effective.

5.5 Recommendations

Based on the findings and conclusions, the following recommendations are proposed:

1. Strengthening Agricultural Extension Services

Government should recruit more extension workers and provide adequate facilitation, including transport and operational resources, to improve outreach and farmer support (MAAIF, 2021).

2. Improving Access to Agricultural Inputs

Policies should focus on subsidizing inputs such as improved seeds, fertilizers, and irrigation technologies to make them affordable to smallholder farmers (World Bank, 2020).

3. Promoting Farmer Training and Awareness Programs

Government and NGOs should expand farmer education through demonstration farms, farmer field schools, and community-based training programs (Davis et al., 2019).

4. Enhancing Access to Agricultural Credit

Financial institutions should design flexible and affordable credit schemes tailored to smallholder farmers to support investment in sustainable practices.

5. Strengthening Farmer Organizations and Cooperatives

Farmers should be encouraged to form and join cooperatives to enhance access to inputs, credit, and markets while promoting knowledge sharing (Di Santo & Bianchi, 2025).

6. Promoting Climate-Smart Agriculture

There is a need to intensify the promotion of climate-smart practices such as agroforestry, conservation agriculture, and water harvesting technologies (FAO, 2017).

5.6 Limitations of the Study

The study was limited to smallholder farmers in Nagongera Sub-County; therefore, the findings may not be generalized to other regions with different socio-economic and environmental conditions. Additionally, the study relied on self-reported data, which may be subject to recall bias and respondent subjectivity (Creswell & Creswell, 2018).

5.7Areas for Further Research

Future research should focus on:

The long-term economic impacts of sustainable agriculture practices on household income and food security

The role of digital agricultural technologies and climate information services in enhancing adoption

Gender-specific barriers to adoption of sustainable agriculture practices

Effectiveness of extension service delivery systems in rural Uganda

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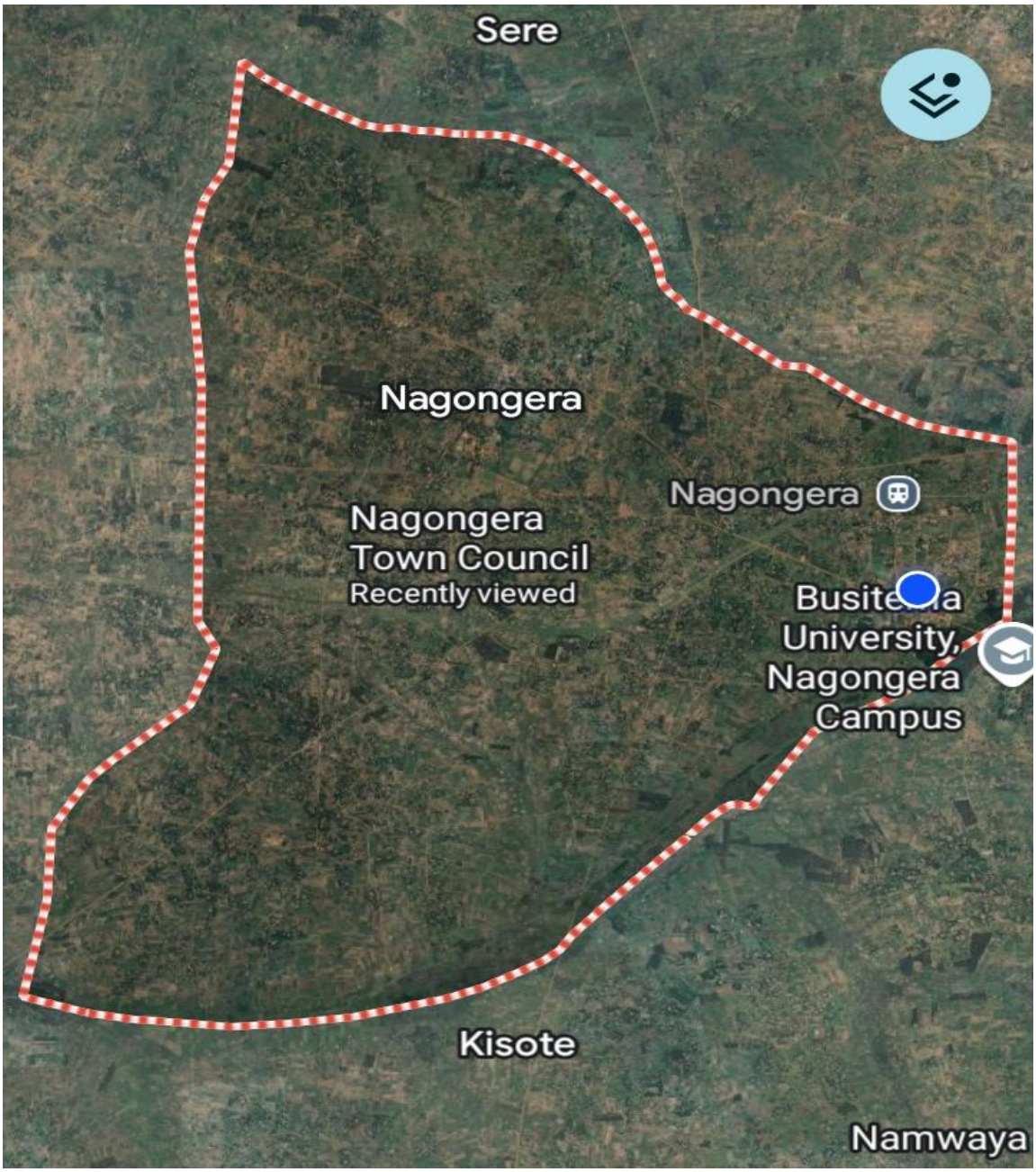
Appendices

Appendix I

A GPS map or area of study



Appendix II

Assessment of the Adoption of Sustainable Agriculture Practices in Nagongera Sub-County, Tororo District, Uganda

Questionnaire for Farmers in Nagongera Sub-County, Tororo District

Introduction

This questionnaire is designed to collect information for a study assessing the adoption of sustainable agriculture practices in Nagongera Sub-County, Tororo District. You have been identified as a suitable respondent because of your experience as a farmer (smallholder farmer engaged in agricultural production). Please kindly answer the following questions as honestly as possible. Your responses are confidential and will be used for study purposes only. Thank you in advance for your time and effort in answering the questions.

Section A: Demographic characteristics of the respondent

Item	Question	Response Options	Code
A1	Age of respondent(years)		Numerical
A2	Gender	☐ Male ☐ Female	1=Male 2=Female
A3	Education Level	☐ No formal education ☐ Primary ☐ Secondary ☐ Tertiary	0= None, 1=Primary, 2=Secondary, 3=Tertiary
A4	Household size (number of		Numeric

	members)		
A5	Farm size (acres)		Numeric
A6	Farming experience (years)	_____	Numeric
A7	Monthly household income (UGX)		Numeric
A8	Number of adult household members actively involved in farming		Numeric

Section B: Farm Management and Agricultural Practices

Item	Question	Use multiple responses where applicable
B1	Main crops grown	
B2	Farming system practiced	☐ 1=Monocropping ☐ 2=Mixed cropping ☐ 3=Agroforestry
B3	Use of improved seeds or planting materials	☐ 1=Yes ☐ 2=No
B3a	If yes, specify type	
B4	Soil fertility management practices used (tick all that apply)	☐ 1=Composting ☐ 2=Manure ☐ 3=Cover cropping ☐ 4=Chemical fertilizers

		☐ 5=Others:_____
B5	Water management techniques (tick all that apply)	☐ Irrigation ☐ Water harvesting ☐ Drought mitigation ☐ Others: _____
B6	Pest and disease management strategies	☐ Chemical pesticides ☐ Biological control ☐ Integrated Pest Management (IPM) ☐ Others: _____
B7	Which type of farm records do you mainatin (production, inputs, sales)?	☐ production ☐ Sales ☐ Inputs ☐ Others (specify)….

B8	Have you received advice or training from extension officers, NGOs, or other institutions?	☐ Yes ☐ No

Section C: Institutional and Policy Support

Instructions: Tick the box that best represents your opinion about…….

Item	**Statement**	score 1=SD 2= D 3=N 4=A 5= SA
C1	I regularly receive extension advice on sustainable agriculture practice	☐☐☐☐☐
C2	Government policies make it easier for me to adopt new farming practices	☐☐☐☐☐
C3	Farmers in Nagongera TC have been trained on sustainable agriculture	☐☐☐☐☐
C4	Membership in farmer cooperatives has helped me adopt new farming techniques	☐☐☐☐☐
C5	Farmers in Nagongera TC have access to advisory support on sustainable agriculture practices	☐☐☐☐☐

(1=Strongly Disagree/SD; 2=Disagree D; 3=Neutral N; 4=Agree A; 5=Strongly Agree SA)

Section D: Environmental and Market Factors

Part 1: Environmental Conditions

Item	Question	Response Options
D1	How would you rate the fertility of your soil?	☐ 1= Poor ☐ 2= Fair

		☐ 3= Good
D2	Have you experienced irregular rainfall or droughts in the past 5 years?	☐ 1= Yes ☐ 2= No
D3	Pests and crop diseases frequently limit my farming productivity	☐ 1= Strongly Disagree ☐ 2= Disagree ☐ 3= Neutral ☐ 4= Agree ☐ 5= Strongly Agree

Part 2: Market Access

Item	Statement	score 1=SD 2= D 3=N 4=A 5= SA
D4	I have reliable access to markets to purchase seeds, fertilizers, and other inputs	☐☐☐☐☐
D5	I can easily sell my produce at reasonable prices	☐☐☐☐☐

Section E: Awareness, Adoption, and Perceptions of Sustainable Agriculture Practices

Part 1: Awareness of Sustainable Practices

Item	Practice	1= Yes 2= NO	Remarks
E1	Crop rotation	☐ ☐	----------
E2	Organic fertilization	☐ ☐	----------
E3	Agroforestry	☐ ☐	----------
E4	Water conservation	☐ ☐	----------
E5	Integrated Pest Management (IPM)	☐ ☐	----------

Part 2: Adoption / Frequency of Use (1= Never; 2=Rarely; 3=Sometimes; 4=Often; 5=Always)

Item	**Practice**	**Score**				
E6	Soil management techniques	1	2	3	4	5
E7	Water management	1	2	3	4	5
E8	Pest and disease control	1	2	3	4	5
E9	Crop diversification/rotation	1	2	3	4	5

Part 3: Perceptions / Attitudes

Item	Statement	1=Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree				
E10	I am willing to invest in sustainable agriculture practices	1	2	3	4	5
E11	Sustainable practices are effective in improving productivity and soil health	1	2	3	4	5
E12	I am ready to adopt new sustainable agriculture practices	1	2	3	4	5

Part 4: Intentions for Future Adoption

Do you intend to adopt any new sustainable practices in the future? ☐ Yes ☐ No

If yes, specify which practices: _____

Section F: Sources of Support and Market Access

Item	Question	Use multiple responses where applicable
F1	Types of agricultural inputs access	☐ 1=Seeds ☐ 2=Fertilizers ☐ 3=Pesticides ☐ 4=Tools ☐ 5=Others: _____
F2	Sources of inputs	☐ 1=Local market ☐ 2=Cooperatives ☐ 3=Argo-dealers ☐ 4=Government programs

		☐ 5=NGOs
F3	Do financial constraints limit your ability to purchase inputs?	☐ 1=Yes ☐ 2=No
F4	Where do you sell your farm produce?	☐ 1=Local market ☐ 2=Cooperatives ☐ 3=Private buyers ☐ 4=Others: _____
F5	Challenges in accessing markets	☐ 1=Poor infrastructure ☐ 2=Fluctuating prices ☐ 3=Lack of market information ☐ 4=Others: _____
F6	Are you aware of current market prices for your produce?	☐ 1=Yes ☐ 2=No
F7	Institutions providing support	☐ 1=Extension services ☐ 2=NGOs ☐ 3=Farmer groups

		☐ 4=Government programs ☐ 5=Others: _____
F8	Access to credit or financial services	☐ 1= Yes ☐ 2=No
F9	Participation in training or capacity-building opportunities	☐ 1=Yes ☐ 2=No

Thank you for your contribution