COMMERCIAL FARMING AND WOMEN'S LIVELIHOODS IN NORTHERN UGANDA: A CASE OF SOYBEAN PRODUCTION IN LANGO SUB-REGION

BY

ACIRO LUCY EJURA

21/U/1466/MDS/PS

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DECLARATION

I **ACIRO LUCY EJURA** solemnly declare that this is my original work, obtained out of my own initiative to read different journals and other sources of data to come up with a suitable research proposal and conducting his study and it has never been submitted to any institution for academic purposes by any other person.

Signature: Lucy Ejura Date: 26/07/2024



APPROVAL

This thesis was approved for examination by the undersigned University supervisors.

1) **Dr. Kassim Mwanika**

Signature..... Date 26-07-2024

2) **Dr. Owot Godfrey Moses**

Signature..... Date 26/07/2024

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TABLE OF CONTENTS

DECLARATION i
APPROVAL ii
TABLE OF CONTENTS iii
LIST OF TABLES vi
LIST OF FIGURES vii
ACRONYMS AND ABBREVIATIONS viii
Abstract ix
CHAPTER ONE: INTRODUCTION 1
1.0 Introduction 1
1.1 Background of the Study 1
1.2 Problem statement 7
1.3 Purpose of the study 7
1.4 Objectives 8
1.4.1 Major objective 8
1.4.2 Specific objectives 8
1.5 Research questions 8
1.6 Significance of the study 9
1.7 Scope of the Study 10
1.7.1 Geographical scope 10
1.7.2 Content scope 10
1.7.3 Time scope 10
1.8 Conceptual framework 10
CHAPTER TWO: LITERATURE REVIEW 12
2.0 Introduction 12
2.1 Theoretical Framework 12
2.2 Women's Mode of Participation in Commercial Soybean Production 15
2.2.1 Land access condition 15
2.2.2 Nature of Involvement in Soybean Production 15
2.2.3 Farm Ownership 16

2.2.4 Soybean Varieties grown 16
2.2.5 Use of Machines 16
2.2.6 Purposes of Soybean Production 17
2.3 Factors affecting Women's involvement in Commercial Soybean Production 17
2.4 The Contribution of Commercial farming to Women's Livelihoods 20
2.5 Summary of Literature and Existing gaps 22
2.5.1 Summary 22
2.5.2 Existing gaps in Literature 23
CHAPTER THREE: METHODOLOGY 24
3.0 Introduction 24
3.1 Research design 24
3.2 Study area 25
3.3 Study population 26
3.4 Sampling 26
3.4.1 Sample size determination 26
3.4.2 Sampling techniques 27
3.4.3 Exclusion/inclusion criteria 28
3.5 Data collection 29
3.5.1 Sources of data 29
3.5.2 Data collection tools 29
3.6 Data quality control 30
3.7 Data analysis 31
3.8 Ethical considerations 31
CHAPTER FOUR: PRESENTATION OF RESULTS 32
4.0 Introduction 32
4.1 Characterisation of Women involved in Commercial Soybean Production 32
4.2 The mode of women's participation in commercial soybean production 34
4.3 The contribution of commercial soybean production to improvement in women's livelihoods 37
4.4 Constraints to women's participation in commercial soybean production 38
4.5 Measures to curb the constraints faced by women in commercial soybean production .. 42

CHAPTER FIVE: DISCUSSION OF RESULTS 46
5.0 Introduction 46
5.1 Characteristics of women involved in commercial soybean production 46
5.2 The mode of women's participation in commercial soybean production 51
5.3 The contribution of commercial soybean production to improvement in women's livelihoods 54
5.4 Constraints faced by Women in Commercial Soybean Production 58
5.4.1 Individual Constraints 58
5.4.2 Institutional Constraints 61
5.5 Curbing Constraints faced by Women in Commercial Soybean Production 64
CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS 72
6.0 Introduction 72
6.1. Summary of the findings 72
6.1.1 Characterisation of Women involved in Commercial Soybean Production 72
6.1.2 Mode of women's participation in commercial soybean production. 73
6.1.3 The contribution of commercial soybean production to improvement in women's livelihoods. 73
6.1.4 The constraints to women's participation in commercial soybean production. 73
6.2 Conclusions 74
6.3 Recommendations 75
6.3.1 Policy recommendations 75
6.3.2 Recommendations for further research 76
References 77
APPENDICES 87
Appendix A: Informed consent form 87
Appendix B: Data collection tool (Questionnaire) 89
Appendix C: Interview guide for key informants 92
Appendix D: Introductory letter from Gulu University 93
Appendix E: Permission from the CAO, Kole District 94

LIST OF TABLES

Table 1: Description of key informants involved in the study 27

Table 4.1: Continuous characteristics of women involved in soybean production..... 32

Table 4.2: Categorical characteristics of women in commercial soybean production..... 33

Table 4.3: Description of participation of women in commercial soybean production..... 35

Table 4.4: Soybean production and women's livelihoods 37

Table 4.5: Extent of achievement of goals for joining soybean production ……..…..……..… 48

Table 4.6: Individual and institutional constraints to soybean farming..... 40

Table 4.7: Solutions to the constraints faced by women in commercial soybean production 43

LIST OF FIGURES

Figure 1: Conceptual framework..... 11

Figure 2: Map of Kole district showing the sub-counties in the district. 26

Figure 4: Constraints faced by women commercial soybean farmers 39

ACRONYMS AND ABBREVIATIONS

CARE	Cooperative for Assistance and Relief Everywhere:
FAO	Food and Agriculture Organisation
GUREC	Gulu University Research Ethics Committee
IDC	International Development Community
IFAD	International Fund for Agricultural Development
ILO	International Labour Organisation
NGO	Non-Governmental Organisation
OECD	The Organisation for Economic Co-operation and Development
SLA	Sustainable Livelihood Approach
SNV	Stichting Nederlandse Vrijwilligers ("Foundation of Netherlands Volunteers")
SPSS	Statistical Package for the Social Sciences
UN	United Nations

Abstract

This study aimed at examining the contribution of commercial soybean production of women's livelihoods. It characterised women in commercial soybean production, examined their mode of participation, the impact on their livelihoods, and identifying challenges and potential interventions to enhance their contributions. A cross-sectional survey, using semi-structured questionnaires and key informant interviews, collected both qualitative and quantitative data from women in commercial soybean production. Data were analysed using content analysis and descriptive statistics. The results showed that most women cultivate soybeans on their own land, either individually or with family members, predominantly growing local varieties for sale. Commercial soybean production significantly improved both household and individual livelihoods by contributing to asset acquisition, income generation, and food security. Individually, it provided economic empowerment, decision-making opportunities, group networking, and access to business capital. However, women face individual challenges such as limited capital, lack of skills, land scarcity, and adverse weather conditions like prolonged drought. Institutional challenges included low prices, exploitation by middlemen, limited market access, lack of market information, and poor transport infrastructure. Women suggested solutions like providing inputs, training, better market access, and loans. For institutional challenges, they recommended price regulation, extension services, improved information access, and gender sensitization. The study recommends targeted skill development programs for women across the district and providing affordable, accessible capital to encourage their participation in commercial soybean production.

CHAPTER ONE: INTRODUCTION

1.0 Introduction

This study was premised on the larger picture of how rural livelihoods can be improved through commercial farming. The concept of livelihoods was applied contextually, but for clarity, this research adopted a definition by Wedgwood (1855) who conceived livelihoods as a means of securing the basic necessities (food, water, shelter, and clothing) of life. By commercial farming, the study refers to the growing or cultivation of crops for market and sale purposes. The study investigated commercial farming and how it can contribute to improvement of women's livelihoods in Northern Uganda using soybean production in Kole district to examine what it means for women's livelihoods. The livelihoods were studied in terms of selected livelihood indicators such as income, health, education, and food security; constraints faced by women in soybean farming and intervention mechanisms that should be put in place to address those constraints. From this section forward, this dissertation consists of the background, Literature review, methodology and then findings, conclusions and recommendations.

1.1 Background of the Study

Globally, approximately 500 million of the world's farmers are smallholder farmers. Smallholder farmers do not only make up most of the world's farming population today, but more than two billion people depend on them for their livelihoods (Abdullah *et al.,* 2017). These smallholder farmers contribute significantly to the agricultural sector as they generate over 80% of the food consumed in Sub-Saharan Africa (Abdullah *et al.,* 2017). Even though most smallholder farmers prioritise a subsistence level of production in which they only grow enough food for themselves, there is evidence that when they choose to commercialize their

agricultural operations, household incomes, and overall welfare significantly increase (Dorsey, 1999).

Agricultural commercialization is a complex and long-term process (GC and Hall, 2020). Most studies consider commercialization in terms of the volume of marketable commodities in which a farming family is said to be commercialized if it is selling a significant surplus of its agricultural production (Jaleta *et al.,* 2009). The GoN (2016) defines agricultural commercialization as "the transformation from subsistence production (production for own consumption) to production for sale of surplus products and services". However, the concept of commercialization is not limited to selling surplus products in markets. It must simultaneously consider both the production inputs and outputs as well as the decision-making behaviour of farmers in production and marketing (Pingali, 1997; Jaleta *et al.,* 2009; Von and Kennedy, 1994).

Worldwide, the focus on agricultural commercialization has been pronounced in numerous countries (Chrispin et al., 2017). Consequently, this emphasis has led to economic advancements in these nations, primarily by generating employment opportunities and supplying raw materials for agro-based industries, among other benefits. Over the past decade, there has been a surge in foreign interest in acquiring large-scale farmlands, which has raised concerns regarding potential land and livelihood losses among rural communities (Hall et al., 2015; White et al., 2012). However, it also presents opportunities for expanding employment and fostering economic growth (Deininger et al., 2011).

Investments in African farmland have been closely intertwined with discussions about the underperformance of African agriculture and the various paths it could follow. These dialogues often promote one form of agricultural commercialization over another and frequently revolve around the comparative advantages of large versus small farms, considering their implications

for land rights for smallholders, labor absorption, rural livelihoods, and economic spillover effects in Africa (Baglioni and Gibbon, 2013; Collier and Decorn, 2009).

Moreover, as agricultural production becomes highly commercialized, it tends to rely more on modern technology and inputs, along with essential infrastructure such as irrigation, electricity, and formal financial systems (Goletti *et al.,* 2003). Agricultural activities are no longer confined to meeting household consumption needs using local resources but evolve into the primary income-generating activities, integrating farmers into the broader market economy, encompassing inputs, labor, agricultural commodities, and consumer goods. The drive for agricultural commercialization is propelled by the pursuit of economic growth and development within agrarian nations, global market integration, and the escalating global demand for agricultural products (Hazell and Wood, 2008; Pingali et al., 2005; Von Braun and Díaz-Bonilla, 2008).

Thus, commercialized farmers need to focus on market demand when making production decisions instead of simply selling the produce due to a production surplus. By changing the current production processes from a highly subsistence level to a commercial level, commercialization can accomplish this goal (Bank, 2007; Barrett *et al.,* 2012). Because agricultural commercialization is thought to be a potential catalyst for growth in development, the economy, and the standard of living for people (Pingali, 2007).

Agriculture has been identified as a critical economic sector in Uganda's transition to a middle-income country, with the government emphasizing the importance of value addition, commercialization, and strengthening resistance to climate change. Uganda's expanded agri-food sector has the potential to create significant job possibilities for the country's primarily young population (World Bank, 2018). Some studies on commercial crops on certain populations, such as young people, demonstrate that commercial farming is an important

component of young people's livelihoods, particularly jobs, income, food security, and poverty (Mwanika, 2022).

According to the World Factbook (2011), the agricultural sector is utterly significant for Uganda, as it accounts for 80% of all employment and occupies 71.2% of the nation's land area. The third National Development Plan (NDPIII) aggrandizes this point in which it is explained that various Agri-value chains including cassava, maize, beans, coffee, soybean and others are very important not only for people's livelihoods but also for the country's economic development (NPA, 2022). In this case, agricultural commercialization is important in improving livelihoods and boosting economic development, especially as a vehicle for sources of income for women.

Furthermore, women constitute the bulk of the world's impoverished and vulnerable population (Quisumbing, 2001) and arguably, outnumber men worldwide and in Uganda (O'Neill, 2022). They live in rural areas where other employment possibilities are few and agriculture dominates the local economy (Allen et al., 2016). Furthermore, women perform most of the labor in subsistence farming (Alila and Atieno, 2006). As a result, shifting from subsistence to commercial agriculture could directly increase their standard of living.

Ugandans are well-known for their commercial crop enterprises, such as growing cotton, tea, sugarcane, coffee, soybeans, maize, and others, with a significant emphasis on which Agro-ecological Zones are most suited for a particular enterprise. According to USAID/MOA (1988), soybean was introduced to Uganda between 1908 and 1913. However, considerable production did not begin until the 1940s, when cultivation reached 14,000-16,000 hectares because of British demand during WWII. Soybean exports peaked at 4,314 tons in 1950, before plummeting after 1952. Due to the need for agricultural diversification, increased demand for imports in Europe, and pressure from human nutritionists, there was a resurgence in interest in

soybean cultivation in 1965. As a result, between 1965 and 1968, annual production increased from less than 1000 tons to 8,000 tons. Each year between 1981 and 1983 saw the planting of 5,000 to 6000 hectares of soybeans, with average yields of more than one ton/ha (Hittle, 1987). Since then, soybean production has increased throughout the nation, and it is currently grown as a significant food and cash crop throughout all of Uganda.

Due to its high commercial value and marketability, soybeans are one of the main crops farmed in Northern Uganda and have drawn the attention of several farmers (Els, 2019). Because of these benefits, many supporters of agricultural development, including the government and other stakeholders like Non-Governmental Organizations (NGOs) like SNV, CARE International, World Vision, and others, have stepped up to support the soy farming industry in various regions of Northern Uganda. Consequently, it is a crucial crop whose commercialization can hasten changes in people's standard of living.

Soybean production has the potential of enhancing their income levels through trade within and amongst the farmers. Soybean has the potential of expanding trade amongst farmers in their rural setups in the form of butter systems in ensuring food availability. Nevertheless, the success of soybean lies within its multiple usages: soybeans can be used in food products (for example, tofu, soybean sauce), an edible vegetable oil, biofuel, and most importantly, its meal can be used as a protein source in livestock feeds (Garrett *et al.,* 2013). As such, there is a need for governments and other proponents of agricultural development to invest in agricultural and rural development, thereby creating favorable conditions for farmers to move from subsistence to commercial farming.

The commercialization drive has also been hindered by contextual factors such as a lack of credit availability, a slow adoption rate of farming techniques, quality issues, a limited supply of input, a lack of infrastructure facilities, trade and marketing restrictions, and a lack of finance

specifically for agriculture (Ellis, 2000). These limitations are magnified for women who also face other sociocultural issues in the community, such as not having ownership or control over resources that can be used for production, such as land, and not being able to make decisions independently for their family (Twinorugyendo, 2019). However, according to the FAO (2011), women in Uganda play a crucial role in agricultural output, making them the cornerstone of enhanced agricultural growth and livelihoods in our communities. Women's access to and control over productive resources, access to extension services, and access to markets are the main gender constraints in agriculture and food security in general (Twinorugyendo, 2019).

To this effect, certain important questions emerge, which this study intended to address. For instance, what socioeconomic or demographic factors affect women's participation in commercial soybean production, how much commercial soybean production contributes to women's livelihoods, what obstacles do women face in commercial soybean production, and what are the best mitigation strategies for these obstacles? Answers to these questions were critical in shading not only a crop specific picture but also, a group specific picture of commercial farming in Uganda.

1.2 Problem statement

The low standards of women's livelihoods have significant global, national, and local implications, as they are among the most severely affected groups (Smith, 2020). Despite these challenging conditions, women continue to bear the primary responsibility for household caregiving, which directly influences their own livelihoods as well as those of their families (Johnson, 2018). In Northern Uganda, agriculture is the main source of livelihood for most rural residents. Women actively participate in this sector to sustain both themselves and their larger households (Anderson, 2019). This involvement has led to a transformation within the sector, moving from traditional subsistence farming towards a more commercialized approach to maximize benefits (Brown, 2020). While there is existing research on the determinants of commercialisation (Jan, 2012; Ekesa et al., 2015), there is a significant gap in understanding the specific dynamics between commercialization and the livelihoods of marginalised groups, especially women. This knowledge gap prompted the study to investigate the mode of women's involvement in commercial soybean production, explore its contribution to their livelihoods, identify the constraints they encounter, and propose strategies to address these issues, thereby facilitating ongoing improvements in their livelihoods.

1.3 Purpose of the study

This study sought to deepen the understanding of the role and contribution of commercial soybean production on women's livelihoods in Kole district. By characterising the women involved in soybean production, the study sought to unravel the attributes of the women involved in soybean production to create an understanding of the kind of women under study. By examining the contribution of soybean production and the constraints faced in soybean production, the study aimed at creating a holistic understanding, cognizant that while soybean production offers significant opportunities for economic empowerment, it also presents various

challenges. Overall, the study aimed at taking an applied focus to contribute to informing tailor-made policy and program development to empower women in commercial soybean production.

1.4 Objectives

1.4.1 Major objective

The major objective of this study was to investigate the relationship between commercial soybean production and Women's livelihoods in Northern Uganda.

1.4.2 Specific objectives

i. To characterise the women involved in commercial soybean production in Northern Uganda.
ii. To assess the mode of women's participation in commercial soybean production in Northern Uganda.
iii. To examine the contribution of commercial soybean production to improvement in women's livelihoods in Northern Uganda.
iv. To assess the constraints to women's participation in commercial soybean production in Northern Uganda.

1.5 Research questions

The study sought to answer the following questions;

i. What are the characteristics of women involved in commercial soybean production in Northern Uganda?
ii. What is the mode/nature of women's participation in commercial soybean production in Northern Uganda?

iii. What is the contribution of soybean production on women's livelihood in Northern Uganda?

iv. a) What constraints are faced by women involved in commercial soybean production in Northern Uganda?

b) What intervention measures (solutions) should be put in place to ameliorate the constraints being faced by women involved in commercial soybean production in Northern Uganda?

1.6 Significance of the study

This study provided an understanding of the commercial soybean production activities in Northern Uganda coupled to which were the following contextual factors:

i. To the farmers, the findings gave an insight into the constraints faced by women in commercial soybean production in the Kole district, the best ways to solve these constraints and the available opportunities in the soybean production that farmers can exploit.

ii. To the agricultural development stakeholders like the government, NGOs and other agencies, this research provided an understanding that can assist them to know the major component activities in commercial soybean production. This was important to identify the activities that should be emphasised to secure improved benefit, employment and better livelihoods of the women involved in commercial soybean production. In this very paradigm, the government agencies in charge of agricultural policy formulation can ably use this information to guide policy formulation.

iii. To the researchers, this study came out with an important knowledge base for furthering related studies in other areas commercial farming and rural livelihoods.

1.7 Scope of the Study

1.7.1 Geographical scope

The study was carried out in Aboke, Alito and Okwerodot sub-counties in Kole District located Lango Sub-region of Northern Uganda.

1.7.2 Content scope

The study concentrated on commercial soybean farmers. It focused on factors which determine farmers' drive to engage in commercial soybean production and the contextual factors which affect the production activities. Finally, the study examined how the engagement in commercial soybean production has affected women's livelihoods using selected livelihood indicators.

1.7.3 Time scope

The research covered information ranging from the year 2019 -2023 looking at the strategic development plan of Kole District.

1.8 Conceptual framework

This study was guided by the conceptual framework given in Figure 1. The participation in commercial soybean production by women is directly dependent on their individual characteristics and institutional factors which either support or hinder commercial soybean production activities. These factors not only determine women's participation in commercial soybean production but also determine the magnitude of influence that commercial soybean production has on livelihoods. In the above conceptual framework, it was anticipated that commercial farming through women's participation in soybean production would lead to improved women's livelihoods.

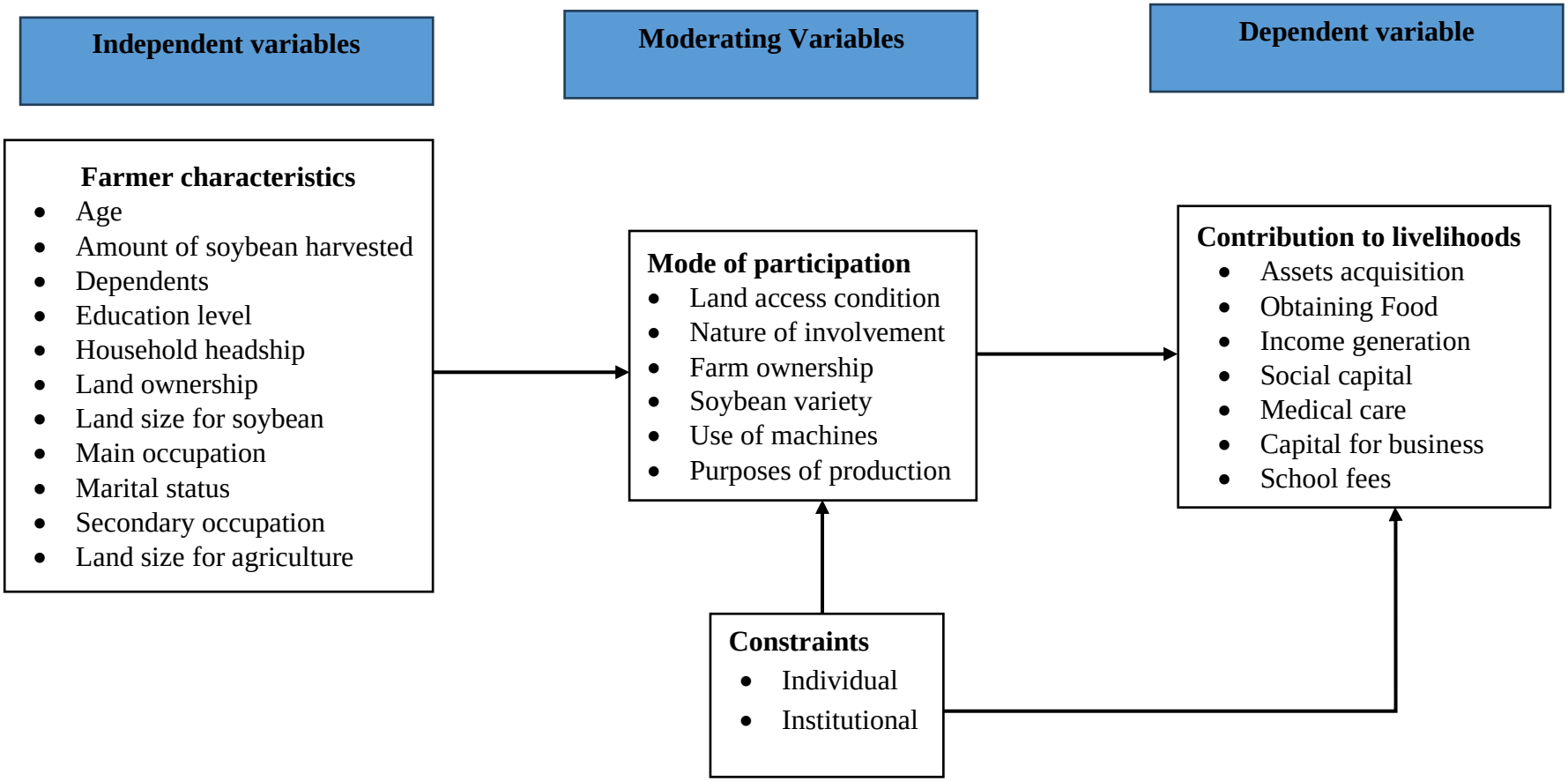


Figure 1: Conceptual framework

Source: Author, 2023

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

This chapter constitutes a review of relevant data from several sources to give a better understanding of the research theme. It includes literature from similar studies and relevant statistics from various studies and organisations to give a better understanding of the study by highlighting what has been studied and the existing knowledge gap. The chapter consists of literature reviewed under the themes of theoretical framework, women's participation in commercial soybean production, factors affecting commercial ting soybean production, and the contribution of commercial farming to women's livelihoods.

2.1 Theoretical Framework

This study was theoretically premised on the Sustainable Livelihoods Approach (SLA) (Chambers, 1988; Chambers et al., 1992). The goal of SLA, according to Chambers et al. (1989), offers a focus for looking ahead to the 21st century and identifies areas of policy and research priority. Implications for policy include social sustainability, equity, and capability enhancement for the poor as well as personal environmental balance sheets for the better living.

The framework makes use of the main factors that affect the daily lives of the impoverished as well as the typical relationships that occur between these factors. It can be applied to both the design of new development projects and the assessment of how well ongoing ones have aided in the maintenance of livelihoods (Virginius et al., 2017). It shows a desire to widen the focus of study on poverty to include social vulnerability and exclusion in addition to its outward physical manifestations (Krantz, 2001).

A framework that aids in comprehending the intricacies of poverty and a set of principles to direct action to confront and eradicate poverty are the two main areas of the SLA's focus (Serrat, 2017). According to the sustainable livelihoods concept, people - and in particular rural poor people—are at the center of a web of interconnected factors that determine how these people provide for themselves and their households. The framework's focal point population is closest to the resources and assets that support their way of life.

Natural resources, technologies, human skills, knowledge, and ability, health, access to education, credit sources, and social support networks are a few examples. Their vulnerability context, which considers trends (such as economic, political, and technological ones), shocks (such as epidemics, natural disasters, and civil unrest), and seasonality (such as prices, production, and job opportunities), has a significant impact on the extent of their access to these assets. The current social, institutional, and political climate has an impact on access because it alters how people combine and use their resources to accomplish their goals (Lusinga-Machikicho and Mutanana, 2022), as their livelihood strategies.

Instead of the resources they utilize or their governments, people should be the primary focus. SLA is used to pinpoint the primary obstacles and opportunities that poor people experience, as described by them. On the foundation of these definitions, it helps the poor overcome obstacles or take advantage of possibilities. The framework is neither a model that tries to include every important aspect of people's livelihoods nor a fix for everyone. Instead, it is a method for encouraging analysis and thought that must be modified and extended based on the circumstance, with this research serving as an example of a situation that might be appropriate for the approach's use.

According to Emas (2015) and Morse and MacNamara (2013), SLA contains seven guiding principles that are adaptable to a variety of local contexts. Among them are the following: (i)

Put people first. SLA begins by examining how people's livelihoods change over time. Throughout the project cycle, the people actively participate. (ii) Be all-encompassing. SLA recognizes that people use a variety of techniques to protect their livelihoods, and that a wide range of entities are involved, including the corporate sector, ministries, community-based organizations, and international organizations. (iii) Be active. SLA tries to comprehend the dynamic nature of livelihoods and the factors that govern them. (iv) Capitalize on people's strengths.

Rather than focusing on people's issues and wants, SLA builds on their perceived strengths and potential. It supplements current livelihood initiatives. (v) Promote micro-macro connections. SLA investigates the impact of policies and institutions on livelihood possibilities, emphasizing the importance of policies being guided by local views and poor priorities. (vi) Encourage broad collaboration. SLA relies on extensive collaborations involving both the public and private sectors. (vii) Strive towards long-term viability. If poverty reduction is to be long-term, it must be sustainable.

This comprehensive analysis methodology offers useful resources for pinpointing the causes of farmer livelihood vulnerability and outlining various fixes. Currently, the Sustainable Livelihood Approach is mainly concentrated on the following aspects: quantitative study of sustainable livelihood capability, investigation of the impact of external interventions on sustainable livelihood capability, and the impact of livelihood capital on farming capability. SLA seeks to pinpoint both the most serious limitations and the most alluring development prospects that farmers must deal with. This creates new opportunities for improving farmers' quality of life and the sustainability of their means of subsistence (Lusinga-Machikicho and Mutanana, 2022).

2.2 Women's Mode of Participation in Commercial Soybean Production

In commercial agriculture, women play important responsibilities and do a variety of duties connected to food production, processing, and marketing (Commonwealth, 2005). Because of this, women are involved in a variety of agricultural tasks, such as planting, weeding, harvesting, processing, and selling (Soubh, 2006). For successful and sustainable development, they must be incorporated into national development planning, policies, and programs (FAO, 2003). Therefore, it is impossible to overemphasize the significance of women in developing nations' agricultural production (Damisa and Yohanna, 2007).

2.2.1 Land access condition

Women's participation in soybean production is significantly influenced by their access to land (Kamara et al., 2022). In many regions, women face legal and cultural barriers that limit their ability to own or control land where traditional inheritance laws often favor men (Hirschon, 2023), making it difficult for women to inherit land. In Northern Uganda, even when women do have access to land, it is often smaller in size and less fertile compared to land owned by men. This restricted access hampers their ability to engage in large-scale commercial soybean farming and limits their capacity for investment and productivity.

2.2.2 Nature of Involvement in Soybean Production

Women's involvement in soybean production can vary widely, ranging from labourers to small-scale farmers to key decision-makers (Mbembe, 2020). Often, women participate as unpaid family labour, involved in planting, weeding, and harvesting (Amin et al., 2009; Farid et al., 2009). They may also engage in processing and marketing activities. However, their roles are frequently undervalued, and they have limited decision-making power regarding farming practices and resource allocation. In some cases, women may lead small-scale soybean farming

enterprises, but they still face numerous challenges in scaling up due to limited access to resources and support services.

2.2.3 Farm Ownership

Farm ownership among women in soybean production is generally low due to patriarchal land ownership patterns and legal constraints (Horst & Marion, 2019). When women do own farms, they are often smaller and less productive (Doss, 2018). Farm ownership is a critical factor because it determines access to credit, inputs, and extension services. This affects the overall mode of women's participation in soybean production in that women who own farms tend to have more control over agricultural decisions and can better invest in and benefit from soybean production. However, several studies including Djurfeldt et al. (2018); Gupta et al. (2017) and Yokying & Lambrecht, (2020) note that most women involved in soybean farming operate on land owned by their husbands or male relatives, limiting their autonomy and access to benefits.

2.2.4 Soybean Varieties grown

The choice of soybean variety can significantly impact production outcomes (Kamara et al., 2022). Women may have limited access to high-yielding and disease-resistant soybean varieties due to constraints in accessing agricultural inputs and extension services. Often, women rely on traditional or lower-quality seed varieties, which can result in lower yields and increased vulnerability to pests and diseases (Puskur et al., 2021). To avert this, extension services that provide training and resources on improved soybean varieties are crucial for enhancing women's productivity and profitability in soybean farming (Agada, 2014).

2.2.5 Use of Machines

The use of machines and mechanization in soybean production is typically lower among women farmers compared to men (Tsusaka et al., 2016). Women often have limited access to

agricultural machinery due to financial constraints (Quisumbing & Pandolfelli, 2010) and gender biases in the distribution of resources. This reliance on manual labour not only increases the workload but also reduces efficiency and productivity. In this guise, enhancing women's access to affordable machinery and training on mechanized farming techniques is essential for improving their participation and success in commercial soybean production.

2.2.6 Purposes of Soybean Production

Women engage in soybean production for various purposes, including food security, income generation, and improving household nutrition (Siamabele, 2021). Soybeans are a valuable source of protein and can be used to supplement family diets. Additionally, women may sell soybeans to generate income, which is often used to support household expenses, children's education, and healthcare. In some communities, women form cooperatives to collectively market their soybean produce, enhancing their bargaining power and access to markets. The multi-purpose nature of soybean production makes it a vital activity for women, contributing to both economic and nutritional well-being.

2.3 Factors affecting Women's involvement in Commercial Soybean Production

The susceptibility of agricultural resources to market forces has increased, and they have been incorporated into the industrial interdependence network, which is primarily shaped by technological innovation, vertical integration, marketing, and consumer preferences (FAO, 2003). Thus, the International Development Community (IDC) has highlighted agriculture as a pillar of growth and poverty reduction in countries where it is the primary activity of the majority of the population. As the agriculture industry has advanced in terms of technology, commercialization, and global integration, developing countries must fully utilize their human resources to capitalize on global opportunities for all agricultural producers, including increasing women's participation in agriculture (FAO, 2011).

At individual level, the fact that women are not allowed to possess resources and do not own the resources in their community is one of the main problems they encounter. The contribution of women to agricultural output is seriously hampered by this problem. Despite making significant contributions to agricultural output, patriarchy prevents them from having full access to agricultural resources. The marginalization of women's contributions in conventional agricultural and economic research is another problem that affects the agricultural sector (Jiggins, 2000). Even though girls contribute significantly to agricultural productivity, they do not always have the same possibilities as males. Even worse, some cultures restrict membership in women's cooperative societies due to women's limited access to financial facilities and money (Prakash, 2003). This reflects the outdated belief that men, not women, are the farmers. The current scenario prevents women from contributing fully to agricultural output.

Another difficulty is the inability to access technology tools for more efficient labor, which inhibits women's ability to engage in entrepreneurship and generate income. Most women do not own assets, making credit exceedingly difficult to obtain, and they also lack collateral security that may be used to purchase technological equipment (UN - Babibat, 2002). The problems that women confront as farmers, employees, and company owners are greater than those that men face.

There is a "gender gap" in agricultural production that prevents women from fully participating in agriculture. They lack access to land essential for participation in mechanized farming, which is mostly conducted by women in rural regions, limiting their contributions to the achievement of broader social goals (FAO, 2011). According to Mutopo (2011), most women are barred or refused access to land because it is assumed that their male counterparts would be better off or more productive in agricultural output. Women are less likely than men to own land, and when they do, their holdings are often smaller and less productive. Due to limited or

nonexistent land resources, women who are knowledgeable and have ideas for agricultural production are unable to achieve much; as a result, they engage in small-scale farming and subsistence agriculture to feed their families and make a meager living (Mutopo, 2011).

Similar to this, the problem of women's training in agricultural production obstructs progress in general. Most women have been denied better access to healthcare and educational opportunities due to gender inequality; as a result, farmers in rural areas are unable to use modern farm technologies. Women's growth in society is significantly hampered by a lack of formal education and training in agricultural operations. According to Fapohunda (2010), most women cultivate and produce agricultural goods utilizing traditional cultural farming methods.

At institutional level, women in commercial soybean production face a myriad of challenges that significantly hinder their involvement and success in this sector. Most rural women face challenges in accessing money from financial institutions (Metu & Nwogwugwu, 2024). Financial institutions often require collateral, which women typically lack due to their limited land ownership (Ackah et al., 2024). Moreover, financial literacy programs and services offering loans, savings, and insurance are less accessible to women (Jabeen, 2024), further constraining their financial independence and capacity to invest in soybean production. Additionally, market access presents another significant challenge in which women frequently encounter barriers such as lack of transportation, information, and market linkages, which are critical for commercial success (Moral et al., 2024). Gender norms can further restrict women’s mobility and participation in market activities, reducing their opportunities to sell their produce at competitive prices.

Further, government policies and regulations often fail to be gender-responsive, neglecting the specific challenges faced by women in agriculture (Huyer, 2021). The lack of supportive policies that promote women’s land rights and access to resources hinders their ability to thrive

in commercial soybean production. Additionally, insufficient institutional support from farmer organizations, cooperatives, and advocacy groups further marginalizes women farmers (Bizikova et al., 2020). Addressing these individual and institutional challenges requires comprehensive policy reforms, capacity-building programs, gender-sensitive agricultural services, and robust advocacy to ensure women's equitable involvement in commercial soybean production.

2.4 The Contribution of Commercial farming to Women's Livelihoods

Women are essential in rural livelihoods for household food security and income generation (Kristjanson et al., 2014; Mutopo, 2014). Livelihoods are the actions and resources utilized to make a living. The most widely accepted definition of livelihood comprises the skills, assets, and activities used to make a living. The livelihood assets (the means of production accessible to communities to generate material resources in order to subsist) are critical to the sustainability of livelihoods (Vercillo, 2016). A sustainable livelihood is one that can adapt to and recovering from hardship. These should be able to maintain their existing and future shape and structure, as well as their capabilities and assets, without having a significant influence on the natural resource base.

The sustainability of rural livelihoods in the face of many constraints is crucial for the empowerment of rural women (Davies et al., 2013). Among the many and varied restrictions are a lack of appropriate technologies, unequal access to productive resources and services, poor or inaccessible infrastructure, restricted access to credit, health care, and education, as well as global food and economic crises and climate change (Garikipati, 2010). Sub-Saharan African rural women depend on agriculture as their main source of food and other sources of income (Mutopo, 2014). Therefore, any initiative that helps them reach their full potential

would not only empower women but also advance socioeconomic development in the society (Frost et al. 2007; Kristjanson et al. 2014).

Rural women across the world contribute to poverty reduction and sustainable development in communities and households through a variety of livelihood strategies (Mutopo, 2014). Women in developing countries make a considerable contribution to rural economies through their means of subsistence, whether as wage workers on their own farms or as farmworkers for hire on the farms of others, producing for their own consumption, selling to others, or doing both (Vercillo, 2016). Despite the fact that their occupations differ widely depending on where they work, they manage complex residences and are involved in a variety of income-generating activities.

Women's roles in agriculture include production, food processing and preparation, gathering firewood and water for domestic use, and home maintenance, according to FAO, IFAD, and ILO (2010). In national accounts, some of these activities are not categorized as "economically active work," although being essential to the survival of many households (SOFA Team & Cheryl, 2011). Even though these livelihood activities require women to work long hours, socioeconomic inequality and marginalization hinder their efforts (Zaidi & Munir, 2014). The empowerment of individuals, especially the poor, is essential for the decrease of poverty and for sustainable development. Providing the poor and rural women with sustainable livelihoods is one approach to give them more power.

2.5 Summary of Literature and existing gaps

2.5.1 Summary

The literature discussed the significant role of women in commercial agriculture, particularly in developing nations. Women are involved in various agricultural tasks, including food production, processing, and marketing. Their inclusion in national development planning, policies, and programs is crucial for successful and sustainable development. The focus then shifts to soybean production in Northern Uganda, where soybean farming has gained attention due to its potential to boost smallholder farmers' incomes and improve livelihoods. Soybean cultivation offers benefits like increased soil fertility and multiple uses as human nourishment, livestock feed, and industrial products. However, the literature highlights several constraints faced by women involved in commercial farming. These constraints include limited access to agricultural resources, such as land and technology tools, gender gaps in agricultural production, and lack of formal education and training. These barriers hinder women's full participation in agriculture and limit their contributions to agricultural output.

The concept of women-household-livelihoods in agriculture paradigm underscores the essential role of rural women in household food security and income generation. Sustainable livelihoods are crucial for empowering rural women and reducing poverty. Despite facing various constraints, women contribute significantly to rural economies through diverse livelihood strategies. Opportunities for improving women's livelihoods in agriculture are emphasized, with economic empowerment as a means to promote gender equality and improve the welfare of families. Developing resilient livelihood options and empowering women economically are crucial for sustainable development.

2.5.2 Existing gaps in Literature

While the literature provides valuable insights into the role of women in agriculture and soybean production, it lacks specific data and empirical evidence to support the claims made. The information is primarily based on general statements and references to previous studies, making it challenging to assess the current situation accurately. Furthermore, the literature does not address the specific implications of soybean farming on women's livelihoods, as the focus is on women's roles in agriculture in general. Understanding the direct and indirect impacts of soybean farming on women's economic, social, and environmental well-being would provide a more comprehensive picture. Additionally, the literature does not discuss potential strategies or policies to address the constraints faced by women in agriculture effectively. Identifying and implementing gender-responsive interventions could help overcome the barriers and improve women's livelihoods in the agricultural sector. Overall, the literature serves as a starting point to understand the importance of women in agriculture and soybean production. However, more comprehensive and data-driven research is needed to fully grasp the implications of soybean farming on women's livelihoods and develop targeted interventions for sustainable development.

CHAPTER THREE: METHODOLOGY

3.0 Introduction

This chapter describes the methods that were used for this study. According to Adedoyin (2020), research methodology refers to the precise methods and techniques used to locate, pick, process, and analyze data on a certain subject. The components in this methodology were adopted from other studies with or without modifications as indicated. The following section of the chapter highlights the research design, the study area, the study population, sample size estimation, sampling techniques, types of data, data sources, data collection, data analysis, ethical considerations, and finally, data quality assurance.

3.1 Research design

The fundamental method for carrying out the study is known as research design. This is important because a research design consists of a clear and logical approach to addressing the research topic in order to obtain the necessary and appropriate data to provide answers to the specified research questions (Adedoyin, 2020). This study employed mixed methods cross-sectional survey design. The mixed methods design was chosen because it combines qualitative and quantitative approaches, offering a comprehensive understanding (Åkerblad et al., 2021). It enhances the depth and breadth of data, improves validity through triangulation, and provides a holistic perspective by integrating diverse insights (Dawadi et al., 2021). This approach leads to more robust and actionable recommendations, crucial for addressing complex issues like climate change vulnerability. In a cross-sectional study, the investigator simultaneously measures the result and the exposures in the study participants (Setia, 2016). Because this work entailed determining the existence of causal effects between dependent and independent variables of interest at a certain time in a specific research population (Willmott, 2020), a cross-

sectional study design was appropriate. This design was chosen for its low cost and time-saving features and enabling the examination of many variables at the same time (Setia, 2016).

3.2 Study area

This study was conducted in the Kole district of Northern Uganda. Kole District is situated in the Northern part of Uganda, Lango sub-region between longitudes 320 East and 340 East and latitude 20 North and 30 North. Kole District in Northern Uganda shares a boundary with Oyam District in the West and North, Lira District in the East and Apac District in the South. Administratively, the District has Five (5) Town Councils (Ayer, Bala, Akalo, Alito and Aboke) and six Sub-counties (Akalo, Bala, Ayer, Aboke, Okwerodot and Alito), 54 parishes disaggregated per sub-county and 692 villages/cells. Kole District covers a total area of 2,847 square kilometers of which 9% is under open swamps and water. Forest cover is 15% while about 74% is suitable for arable farming. Subsistence agriculture with animal husbandry is the main economic activity in the district (Kole District Local Government, 2021). Kole district has been chosen because it's one of the major soybean-growing districts in the region. In the same way, the three sub-counties with the highest concentration of soybean growing (Aboke, Alito and Okwerodot) were involved in the study.

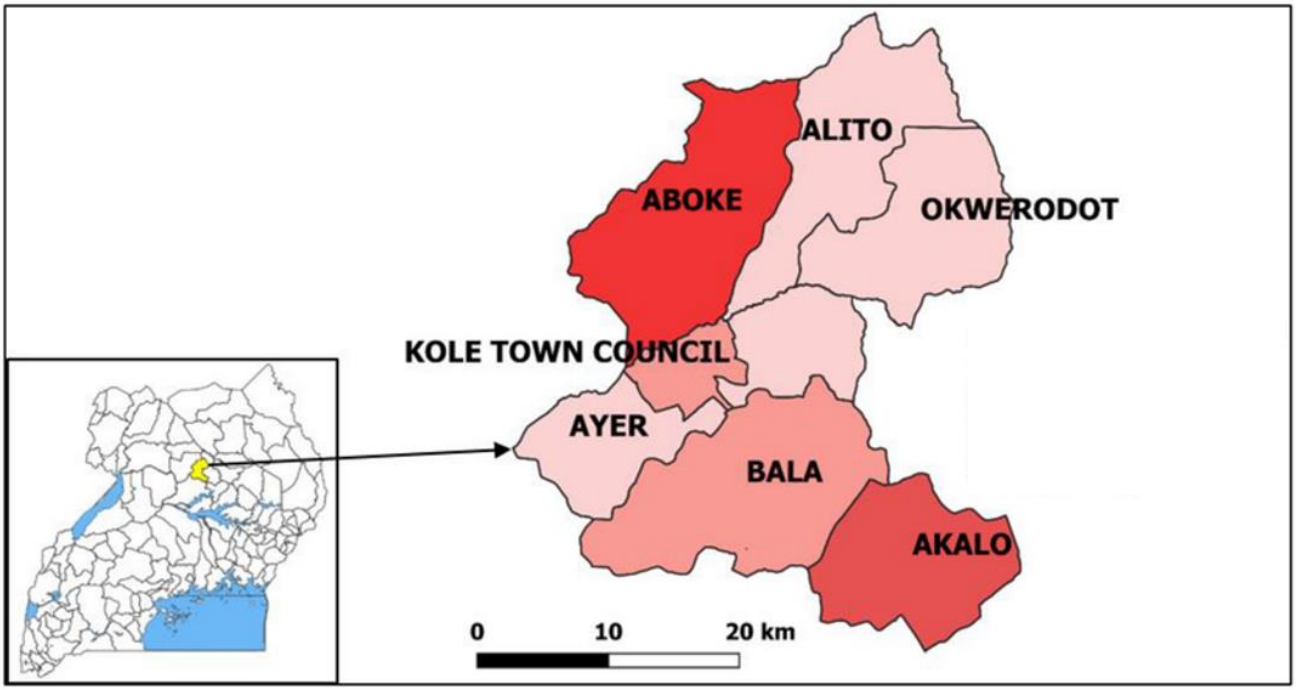


Figure 2: Map of Kole district showing the sub-counties in the district.

Source: Nabatanzi *et al.,* (2022)

3.3 Study population

This study targeted women farmers involved in commercial soybean production as the primary respondents. The study also involved farmer group leaders, local council leaders, NGO project staff especially those promoting soybean farming and sub-county extension officers as key informants.

3.4 Sampling

3.4.1 Sample size determination

The sample size was determined using a standard formula by Yamane (1967) as specified below;

$$n = \frac{N}{1 + Ne^2}$$

Where; *n*- is the sample size, *N* is the target population for the study and *e* signifies the margin error. According to information from the district production department, it is estimated that sub-county can have an average of 600 women soybean commercial farmers. The study considered three sub-counties, making N=1,800

$$n = \frac{1800}{1 + 1800 * 0.05^2}$$

***n* = 327 respondents (women involved in soybean production)**

Therefore, the study involved 327 primary respondents, who are women commercial soybean farmers.

For the case of key informants, the study involved the following key informants;

Table 1: Description of key informants involved in the study

Key informant(s)	**Number**
Assistant agricultural officers (Sub- County level)	02
Community development officers (Sub- County level)	02
District agricultural officer	01
Farmer Cooperative leaders	02
NGO official (Sasakawa Africa)	01
Parish chiefs	02
LC 3 Chairpersons	02
Chairperson LC 5	01
Total key informants	**13**

Source: ***Author, 2023***

3.4.2 Sampling techniques

Sampling techniques refers to the methods and procedures used in obtaining a representative sample from the population to be used in a study (Sarker and AL-Muaalemi, 2022). The study employed a multi-stage sampling procedure which involves taking of samples at different

sampling stages using smaller and smaller sampling units at each stage. From the district level, Kole district was purposively selected. This was because the district has one of the largest concentrations of commercial soybean production according to Otim (2019).

The sub-counties were also purposively selected to include the three sub-counties (Aboke, Alito and Okwerodot) with the highest concentration of commercial soybean production in Kole district. The parishes were randomly selected to include two parishes from each of the sub-counties. The selected parishes included Abongojok, Akwirididi, Alito, Apuru, Ayala and Okwerodot. The villages were also randomly selected to include two villages per parish after which sampling frames were made with the help of Local council chairpersons for each village. The final respondents, who were women involved in commercial soybean production were then randomly selected from the sampling frames established.

The key informants were entirely purposively selected to include those who would give the information as required by the study.

3.4.3 Exclusion/inclusion criteria

If any of the following applied to a respondent, it would lead to exclusion from the study:

i. If a respondent refused to offer all the information required by the study freely.
ii. If the respondent could not provide the information on his or her own but required someone to speak on their behalf. This was required to avoid distortion of information.
iii. If the respondent was unable to spend the time required to complete all data collection period allocated to him/her.

3.5 Data collection

All respondents (women involved in commercial soybean production) and key informants were interviewed from their places of abode. This approach was deemed appropriate as it avoids collecting respondents in one place which may compromise the quality of data collected. During the actual data collection, the researcher and/or the enumerator(s) asked questions from the questionnaire and/or the key informant interview guide and recorded the response as provided by the respondents. The interview method was used in data collection.

3.5.1 Sources of data

Primary data was collected from women involved in commercial soybean production and key informants (farmer group leaders, village local council leaders, project staff of any NGOs promoting soybean growing and sub-county extension officers). Secondary data sources like farmers' production records, local government production records and reports were also used in the study.

3.5.2 Data collection tools

Data from women involved in commercial soybean production was collected using pre-tested researcher-administered semi-structured questionnaires. A semi-structured questionnaire is a guided interviewing tool in which only some of the responses to the questions are predetermined (close ended) and others are not pre- determined (open-ended). Data from Key informants was collected using key informant interview guides in one-on-one interviews with the proposed key informants.

3.6 Data quality control

The data-gathering tools were pretested to verify that the data collected was of high quality. This was critical in ensuring that the tools were suitable for data collecting in terms of content validity and Reliability. Jaya *et al.*, (2017) pointed out content validity and reliability as one the major quality control attributes that should be given attention. These are explained as follows;

3.6.1 Content validity

This is a reference to how thoroughly a research or measurement addresses all facets of a specific issue. The best method for assessing content validity is to get technical evaluations and advice on data collection devices from people with relevant expertise in the research topic. This was accomplished by making the questionnaire and key informant interview guide available to other senior members who do not supervise but possess the necessary expertise in the fields of education and community development. This ensured that data gathering tools with the requisite level of content validity were developed. Second, the tools were rigorously tested to ensure that the questions are clear, simple, and not redundant. Questions that were discovered to be confusing, difficult to comprehend, or repetitive were eliminated or rebuilt, and the tools were double-checked before data collecting began.

3.6.2 Reliability

Research reliability is the capacity to produce the same results when a study is repeated. By gathering data from two distinct locations, ideally outside the study area, the data collection instruments were tested for reliability during the pretesting stage. The data was then analysed to ensure that the questions were correctly understood and that the responses were consistent.

3.7 Data analysis

After gathering field data, questionnaires were checked for consistency and accuracy to identify questions that were answered incorrectly and any blank spaces that respondents failed to provide responses for while qualitative data was subjected to a content analysis to uncover emerging themes. Quantitative data was organized and coded for analysis using SPSS. Descriptive analyses were performed, and the findings were presented in frequency tables and other statistical figures. To identify emergent themes, qualitative data from key informant interviews was compiled and content analyzed. For a more accurate interpretation of the outcomes, the conclusions were triangulated with quantitative data.

3.8 Ethical considerations

A letter of introduction was obtained from the dean of the faculty of business and development studies. All pertinent district authorities, including those at the district, subcounty, parish and village levels were consulted for permission to collect data while in the field. The purpose of the research field study was explained to each respondent, and their consent to give information was sought beforehand. They were also assured of total confidentiality of the information provided, including their identities.

CHAPTER FOUR: PRESENTATION OF RESULTS

4.0 Introduction

This chapter presents the findings and their interpretation. The chapter presents the characteristics of the farmers, the mode of women's participation in commercial soybean production, the contribution of commercial soybean production to improvement in women's livelihoods, the contribution of soybean production to the personal livelihoods of women, constraints identified and the measures to curb the constraints.

4.1 Characterisation of Women involved in Commercial Soybean Production

This section characterises the women involved in commercial soybean production. This characterization was important because it gives an understanding of the nature of the farmers under study. The continuous and categorical characteristics are presented differently in Table 4.1 and Table 4.2 respectively.

Table 4.1: Continuous characteristics of women involved in soybean production

Variables	Mean
Age (years)	41.6
Dependents (number)	6.0
Total land size under agricultural production (acres)	7.5
Land size cultivated for soybean las season (acres)	4.1
Amount of soybean harvested last season (kg)	264.1

Source: Field data, 2023

The results show that women involved in commercial soybean production had an average age of nearly 42 (41.58) years. This indicates that women involved in soybean farming in Kole district are middle-aged (early forties), suggesting a mature and experienced group of farmers. Regarding the number of dependents, the respondents have on average six dependents. This finding points to the significant family responsibilities, which could influence their decision-making and resource allocation within their farming activities.

Regarding the size of land used for agricultural production, the mean total land size used for agricultural production is 7.5 acres. This shows that these women are managing a substantial amount of land, highlighting their significant involvement in agriculture. Further, the respondents were found to dedicate an average of 4.1 acres of land to soybean cultivation in the previous season. This indicates that soybean plays a crucial role in their overall agricultural activities, representing a substantial portion of their land use. And regarding soybean yield, the average amount of soybean harvested in the last season was 264.1 kg. Compared to the size of land under soybean production, these results reflect a low productivity of soybean, indicating that they have achieved a considerable yield.

Table 4.2: Categorical characteristics of women in commercial soybean production

Variables	Categories	Frequency	Percent
Land ownership	No	29	8.7
	Yes	303	91.3
Education level	No formal education	74	22.3
	Primary	235	70.8
	Secondary	22	6.6
	Tertiary	01	0.3
Household headship	No	127	38.3
	Yes	205	61.7
Marital status	Married	252	75.9
	Not married	80	24.1
Main occupation	Farming	325	97.9
	Business	06	1.8
	Civil servant	01	0.3
Secondary occupation	None	204	61.4
	Business	115	34.6
	Bodaboda	01	0.3
	Brick laying	03	0.9
	Charcoal burning	01	0.3
	Employee in other business	02	0.6
	Stone quarrying	01	0.3
	Skilled service	05	1.5

Source: Field Data, 2023

Pertaining land ownership, the data shows that a very big majority of the women involved in soybean production own the land they cultivate. This high percentage indicates that a significant majority of the women have ownership over the land, which is crucial for their agricultural activities. A noteworthy of the women in the study have completed primary education, indicating a relatively high level of basic education. However, this education level is not good enough, pointing to the high level of school dropouts. However, the attainment of a basic level of primary education could potentially enhance their capacity to adopt modern agricultural practices and access agricultural information.

Among the participants, 61.7% are household heads. This suggests that a substantial proportion of women in soybean production play a significant role in decision-making within their households, which can influence agricultural practices and resource allocation. It also points to the burden of responsibilities laid up on them as primary caregivers aggrandizing the need for their participation in commercial farming. Further, a significant majority of the women were found to be married. This marital status is important in the context of agricultural activities, as it implies collaboration and shared responsibilities within families, which can influence farming decisions and practices. It also has important connotations regarding land access and ownership since most land is family-owned. The data indicates that 97.9% of these women consider farming as their primary occupation. This underscores the central role of agriculture in their livelihoods, highlighting their dedication to and reliance on agricultural activities.

4.2 The mode of women's participation in commercial soybean production

To assess the mode of women's participation in commercial soybean production, the study considered variables that would characterise the soybean production activities in the study area. The variables/indicators include land ownership, land access, nature of involvement in soybean production, soybean farm ownership, soybean varieties grown, mechanization of soybean

growing activities and the purpose for soybean production. The results for this section are presented in Table 4.3.

Table 4.3: Description of the mode of participation of women in commercial soybean production

Variables	Categories	Frequency	Percentage
Land access condition	Own land	303	91.3
	Given	02	0.6
	Rented	24	7.2
	Rented and given	03	0.9
Nature of involvement in soybean production	Farm owner	309	93.1
	Farm owner and labourer	23	6.9
Farm ownership	Individual	128	38.6
	Co-owned with husband/family	202	60.8
	Farming group	02	0.6
Soybean variety	Improved	26	7.8
	Local	273	82.2
	Both improved and local	33	9.9
Use of machines	No	150	45.2
	Yes	182	54.8
Purposes of soybean production	Sale	313	94.3
	Sale and consumption	19	5.7

Source: Field Data, 2023

From the results, the high percentage (91.3%) of women who own their land is a positive sign of landownership among female soybean farmers. Land ownership can empower women by giving them greater control over their agricultural activities and economic independence. This finding suggests that women in this area have access to land for soybean production. Additionally, the fact that 93.1% of women are sole farm owners indicates that they have significant decision-making power in their farming operations. This level of independence suggests that women in this study area are actively engaged in managing their farms. The 6.9% who are both farm owners and laborers might be women who have additional support in their farming activities, possibly family members or hired help. This dual role could signify that they are more closely involved in the daily farm operations.

While 38.6% of women individually own their farms, the majority (60.8%) co-own farms with their husbands or family members. This collaborative approach to farm ownership may indicate that these women are part of a family farming system, where responsibilities and benefits are shared. This also highlights the importance of familial and community support in agriculture. The presence of farming groups (0.6%) could suggest a small, cooperative farming initiative among women. This could promote knowledge sharing and resource pooling, leading to improved agricultural outcomes.

The predominance of local soybean varieties (82.2%) indicates that traditional or native varieties are still highly popular among women farmers. This may be due to their suitability to local conditions and preferences. The presence of both improved and local varieties (9.9%) shows that some women are open to diversifying their crops, possibly to benefit from the qualities of improved varieties or to meet market demands for specific soybean types. The relatively high percentage (54.8%) of women using machines in soybean production is a sign of increasing mechanization in agriculture. This can lead to increased efficiency, reduced labour requirements, and potentially higher yields. It also suggests that women are adopting modern farming techniques. The 45.2% who do not use machines might rely more on traditional farming methods, which could be due to factors like limited access to machinery or financial constraints.

The primary goal of producing soybeans for sale (94.3%) reflects the commercial orientation of these women farmers. This may signify that soybean farming plays a crucial role in their livelihoods and contributes to the local economy. The 5.7% who produce soybeans for both sale and consumption are likely balancing economic sustainability with meeting their household food needs. This duality in purpose demonstrates adaptability in their farming strategies.

4.3 The contribution of commercial soybean production to improvement in women's livelihoods

Under this objective, the study sought to understand the contribution of commercial soybean production to the improvement of women's livelihoods. To achieve this, the study used livelihood indicators. In relation to relevancy, majority (94.9%) of the women involved in the study revealed that commercial soybean production is useful to the livelihoods of their households. The results are presented separately in Table 4.4.

Table 4.4: Soybean production and women's livelihoods

Variables	Frequency	Percent (%)
Assets acquisition	272	81.9
Obtaining Food	141	42.5
Income generation	185	55.7
Social capital	41	12.3
Medical care	18	5.4
Capital for business	06	1.8
School fees	43	13.0

Source: Field Data, 2023

Regarding Assets acquisition, the fact that most women see soybean farming as a means to acquire assets signifies its role in wealth creation and economic stability. The assets could include land, equipment, or other valuable resources, which can enhance the financial security and future prospects of these households.

While not as high as other indicators, this percentage still shows that soybean production contributes to household food security. It implies that, beyond generating income, women are producing a substantial portion of the food consumed by their families. This dual role is particularly vital for food-insecure households. The fact that over half of the women mention income generation underscores the direct economic benefits of soybean farming. Additional

income provides households with the means to access goods and services that can lead to an improved quality of life.

The positive impact of soybean production on social capital indicates that women are not only benefiting economically but also building relationships and networks within their communities. Strong social capital can offer support during difficult times, facilitate resource sharing, and foster collaboration among community members. Though having a low percentage, the mention of soybean farming as a source of funding for medical care suggests that the income from this activity is contributing to the overall health and well-being of the household. This underscores the critical role of soybean production in improving healthcare access which is an important livelihood aspect.

The small percentage noting the use of soybean farming income as capital for other businesses indicates a degree of entrepreneurial spirit among these women. They are leveraging their earnings to diversify their income sources, potentially leading to greater economic resilience. Finally, soybean production is noted to be a great contributor to raising school fees for the farmers' children. The allocation of soybean farming income for school fees is particularly important. Education is a pathway to breaking the cycle of poverty, and the fact that a significant number of women are investing in their children's education underscores the long-term impact of soybean production on human capital development in the community.

4.4 Constraints to women's participation in commercial soybean production

After examining the nature of women's participation in commercial soybean production, the study further sought to evaluate the constraints being faced by the women involved. To understand the constraints faced by women in commercial soybean production, women were asked about levels of achievement from commercial soybean production. The results show that majority of the women had achieved the goals ranging from a small extent and to a high extent.

Table 4.5: Extent of achievement of goals for joining soybean production

Extent	Frequency	Percent (%)
High extent	89	26.8
Moderately	6	1.8
Low extent	173	52.1
Not achieved	64	19.3

Source: Field data, 2023

A reasonable number of women had not achieved the goals for which they joined soybean production because of underlying constraints. The study revealed that the largest proportion (99.1%) of the farmers face constraints in commercial soybean production. The constraints faced were found to be individual, institutional and both individual and institutional. The distribution constraints is presented in Figure 4.

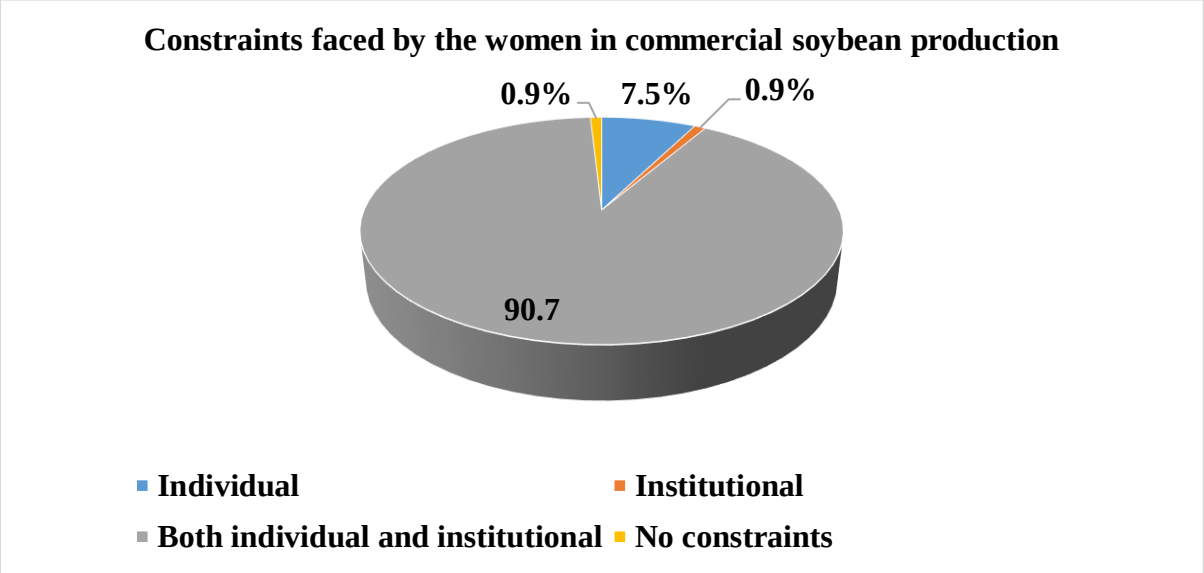


Figure 3: Constraints to women commercial soybean farmers

Source: Field Data, 2023

The results reveal that majority of the women face both individual and institutional constraints which points to the tremendous constraints under which women operate to participate in commercial soybean production. Having a multitude of individual and institutional constraints in soybean farming can have significant effects on the productivity, profitability, and

sustainability of the sector. These constraints can subsequently impact the livelihoods of the farmers engaged in soybean farming.

Further, the study delved into the details of the individual and institutional constraints faced by the women engaged in commercial soybean production and the results are presented in Table 4.6.

Table 4.6: Individual and institutional constraints to soybean farming

Individual	Percent (%)	Institutional	Percent (%)
Limited capital	86.1	Low prices	90.4
Illiteracy	17.8	Exploitation by middlemen	64.5
Land shortage	34.0	Exploitation by farm owners	1.5
Lack of skills	53.6	Low wages	3.0
Low bargaining power	21.4	Poor transport	31.9
Unfavourable weather	29.2	Lack of information	38.9
Pests and diseases	17.2	Shortage of market	39.8
Poor quality inputs	0.9		
Physical disability	0.3		
Gender-based violence	1.2		
Labour shortage	0.6		

Source: Field data, 2023

In the individual constraints facet, several constraints were pointed out. The overwhelming majority of women cite limited capital as a significant individual constraint. This suggests that many women struggle to access the financial resources necessary for investing in soybean production, which may hinder their ability to expand or modernize their farming operations. Additionally, a relatively smaller percentage identifies illiteracy as an issue. This points to a subset of women who may face difficulties in accessing information, technologies, and resources due to their limited educational backgrounds and subsequently hindering the achievement of their full potential in commercial soybean production.

About one-third of the women report land shortage as a constraint. This indicates that a considerable number of women may not have access to sufficient land for soybean farming or may face competition for land in the region affecting their soybean production activities. Further, more than half of the women feel that they lack the necessary skills for soybean production. This underscores the importance of providing training and capacity-building programs to enhance their agricultural knowledge and skills as lack of skills can hinder efficiency in soybean production.

Furthermore, a significant minority expressed concerns about having low bargaining power in the market. This suggests that some women may be vulnerable to unfavorable pricing and conditions when selling their soybeans which denies them the opportunity to fully enjoy the value of their labour. Also, a notable percentage of women consider unfavorable weather conditions as a constraint. This is a common concern in agriculture and highlights the vulnerability of soybean farming to climate variability. Pests and diseases are identified as constraints by a subset of women. This indicates the need for effective pest and disease management strategies to protect soybean crops and prevent crop failures.

While a small percentage reports poor quality inputs as a constraint, it's essential to address this issue, as the quality of inputs can significantly impact crop yields and overall production. In addition, the constraints of Physical Disability and Gender-Based Violence, although mentioned by a very small percentage of women, are critical issues. Physical disability and gender-based violence can severely hinder women's ability to engage in agricultural activities and must be addressed to ensure their well-being and full participation. The low percentage of women mentioning labor shortage may indicate that, in general, they have access to sufficient labor for their farming activities.

Regarding institutional constraints, the most significant institutional constraint reported is the issue of low prices. This suggests that women may face difficulties in obtaining fair and competitive prices for their soybean produce, impacting their income and profitability. A significant majority of women express concerns about being exploited by middlemen. This implies that intermediaries in the value chain might not offer favorable terms, leading to reduced profits for women farmers.

While a small percentage mention exploitation by farm owners, this issue should not be overlooked, as it could affect women's land access and tenure rights. A relatively small number of women report low wages as an institutional constraint, which may be related to labor issues in soybean production. About one-third of the women cite poor transport as a constraint. This could affect their ability to access markets and sell their produce efficiently. A significant percentage expresses concerns about the lack of information. Access to relevant information is vital for making informed decisions and improving farming practices. A substantial percentage of women report a shortage of markets as an institutional constraint. This suggests that they may struggle to find reliable buyers for their soybeans, affecting their income opportunities.

4.5 Measures to curb the constraints faced by women in commercial soybean production

The fourth objective was to establish the intervention measures to curb the constraints faced by women involved in commercial soybean production in Kole District. This objective sought for the farmers' opinions regarding the intervention measures which should be put in place to ameliorate the constraints being faced. Data obtained shows that farmers clearly understand the constraints being faced and have well-informed suggestions regarding the remedies that should be undertaken to solve the constraints. The results are shown in Table 4.7.

Table 4.7: Solutions to the constraints faced by women in commercial soybean production

Individual constraints		**Institutional constraints**	
Solution	**%**	**Solution**	**%**
Inputs provision	87.0	Information access	32.5
Training	69.6	Extension service provision	66.3
Giving loans	35.8	Price regulation	92.2
Improved land access	14.2	Labour regulation	4.2
Empowering women's rights	29.5	Gender sensitization	37.0
Connection to better markets	42.5	Better roads	0.6
Processing facilities	10.8	Seed capital for women's projects	0.3
Group formation	0.9		
Irrigation facilities	0.3		

Source: Field Data, 2023

These research results shed light on the intervention measures that women engaged in commercial soybean production in Kole District believe should be implemented to address the constraints they face. The overwhelming majority of women suggest that providing inputs is a key solution. This could involve making seeds, fertilizers, and other essential resources more accessible and affordable, which can improve productivity and crop quality. Further, a significant percentage of women expressed the need for training. This signifies a recognition that enhancing their skills and knowledge is vital for overcoming individual constraints. Training can encompass various aspects of agricultural practices, technology adoption, and other aspects of farm management.

A notable portion of women suggests that access to credit or loans is essential. This can help address the issue of limited capital and empower women to invest in their soybean production. While a smaller percentage mentions land access, it is still an important consideration. This may involve policies or initiatives that facilitate women's access to land for farming, potentially by addressing land tenure issues or promoting equitable land distribution. Nearly a third of the respondents highlight the importance of empowering women's rights. This could involve legal and policy measures to ensure that women have equal access to resources, land, and opportunities like being able to make decisions like marketing/selling of the soybean harvested.

For the amelioration of institutional constraints, a significant percentage suggests that improving access to information is necessary to address institutional constraints. This could involve enhancing communication channels, providing relevant market information, and ensuring that women are informed about agricultural best practices. Additionally, a substantial majority of women believes that expanding extension services is essential. This can involve deploying agricultural extension officers to provide women with guidance, technical support, and training, which can help them overcome constraints related to farming practices and technology.

Most women emphasized the need for price regulation. This underscores the importance of ensuring fair and stable prices for soybeans, which can prevent exploitation and enhance income security. A small percentage mentions the importance of labor regulation. This might relate to concerns about labor conditions, wages, or rights. Addressing labor issues can improve working conditions for women in soybean production. A significant percentage suggests that gender sensitization is crucial. This implies the need for awareness and education efforts to promote gender equality and reduce gender-based discrimination in the agricultural sector. While a relatively small number mentions this, it underscores the importance of infrastructure

development. Improved transportation infrastructure can help women farmers access markets more efficiently.

The small percentage highlighting the need for seed capital indicates a recognition of the financial barriers women face in starting and expanding projects. Seed capital can empower women to initiate income-generating projects within the soybean value chain, for example undertaking affiliated enterprises like livestock production and others. Though associated with a very low percentage, the mention of group formation suggests that some women believe that organizing into collective groups can provide mutual support, resources, and opportunities. Similarly, although mentioned by a very small percentage, the need for irrigation facilities underscores the importance of addressing water scarcity issues, particularly arising due to prolonged drought seasons.

CHAPTER FIVE: DISCUSSION OF RESULTS

5.0 Introduction

This chapter presents the discussion of the findings. The chapter presents the characteristics of the farmers, the mode of women's participation in commercial soybean production, the contribution of commercial soybean production to improvement in women's livelihoods, constraints identified and the measures to curb the constraints.

5.1 Characteristics of women involved in commercial soybean production

5.1.1 Age

The results show that women involved in commercial soybean production had an average age of nearly 42 (41.58) years. This indicates that women involved in soybean farming in Kole district are middle-aged. Converse to most studies in which it is revealed that the average age of farmers is about sixty years of age (Sibiko *et al.,* 2013, Yeboah and Jayne, (2020), this study points out a significantly lower average age of the farmers. Such a middle-age group has several positive implications, both for the soybean sub-sector and society because young farmers tend to be more open to adopting new technologies, innovative farming practices, and agricultural advancements.

Their familiarity with technology and willingness to explore new methods can lead to increased productivity, efficiency, and sustainability in farming. In addition, relatively young farmers often bring a fresh perspective and entrepreneurial spirit to agriculture (Abay *et al.,* 2023). They are more likely to explore value-added activities, diversify their farm enterprises, and engage in agribusiness ventures. This has tremendous connotations on household livelihoods and has widespread contributions to rural economic growth, job creation, and the development of vibrant agricultural value chains.

5.1.2 Total land size under agricultural production and land soybean production

On average, the women involved in soybean growing had about six dependents which is a characteristic of village family sizes in Africa, where most people tend to produce high numbers. Resultantly, this has direct implications on the level of responsibilities carried by the women involved in commercial soybean production in the study area. The implication of family size on participation in commercial soybean farming is multifaceted and can be both negative and positive. For example, a larger family size generally means a larger labor force within the household (Villagómez-Cortés and Pérez, 2017).

This can be advantageous for commercial farming as it provides more manpower to carry out various agricultural activities such as planting, weeding, harvesting, and post-harvest handling. The greater labor availability can help in meeting the demands of running a commercial soybean growing efficiently. Commercial farming can be financially demanding, requiring significant investment in inputs, machinery, infrastructure, and market access. A larger family size can provide a diversified income base, with family members engaged in both on-farm and off-farm activities. Therefore, findings from this study imply that households have the required labour to engage in commercial agricultural activities. This can enable diversification to enhance economic stability, as income from non-farm sources can offset potential risks and fluctuations associated with soybean production.

In relation to land, the average total land size under agricultural production was found to be 7.5 acres while the average land size under soybean production was about 4 acres. This indicates that, on average, farmers dedicate about half of their total agricultural land to commercial soybean production. Dedicating such a significant proportion of land to soybean farming is an indicator of how crucial soybean growing is to women in Kole district. Interactions with respondents revealed that soybean is a priority enterprise to them, and they not only allocate

approximately large portions of land to it but also choose the best plots in terms of location and fertility for the crop. During data collection, one of the technical officers in the Kole district agriculture office said, "our farmers have currently embraced soybean growing more than other crops because the biggest gardens in our community now are under soybean growing". Farmers additionally revealed that this allocation of land to soybean growing is influenced by the high commercial value of the crop and its resultant direct implications on their livelihoods. These results are in consonance with findings by Michigan State University which found out that soybean production contributed about $45 million to the Uganda's economy by 2018.

5.1.3 Soybean yield

In terms of harvest, the average soybean yield for the previous season was found to be 264.11 kg. Compared to the average land size under commercial soybean production, the average output points to a low soybean productivity in the study area. These results typically represent the low agricultural productivity in Uganda as pointed out by several studies including Amone et al., (2017); Nabbumba and Bahiigwa, (2004). When productivity is low, farmers can only increase their total yield by cultivating more land which denotes low technology levels in farming. Low agricultural productivity can have significant implications for the welfare of farming households in several aspects. Agriculture is often the primary source of income for farming households. Low productivity means reduced crop yields leading to lower incomes. Insufficient income can limit their ability to meet basic needs such as food, healthcare, education, and housing. It can also result in increased vulnerability to poverty and economic instability. Efforts to improve agricultural productivity through access to better technology, training, credit, market opportunities, and supportive policies are crucial to uplift the welfare of farming households and promote sustainable rural development. The vehement low agricultural productivity is among others attributed to institutional and individual constraints facing soybean production.

5.1.4 Land ownership

Regarding ownership of land on which commercial soybean production is carried out, the study revealed that majority (91.3%) of the women own the land which they use. Only a small proportion of the women use land which is given and/or rented for soybean production. These findings point to the availability of land for soybean production meaning that land is not a major constraint to commercial soybean production.

5.1.5 Education level

The majority of the farmers were found to have attained a maximum of primary education followed by those who did not attain any formal education at all. A very small proportion of the farmers was found to have attained secondary and tertiary education. The highest proportion of farmers having attained primary education could be majorly attributed to the introduction of Universal Primary Education (UPE). This makes education at primary level affordable which encourages most people to at least attain primary education. Though the second largest proportion of farmers was found to have attained secondary education, an observation which can be attributed to the Universal Secondary Education, the proportion is smaller which indicates a high school drop-out rate at primary level in study area.

In general, the results about education point to the low education level attained by most of the farmers in the study area. These results are in line with several studies which point out low education levels among farmers especially in rural settings (Oduro-ofori et al., 2015; Epeju, 2020; Paramitha et al., 2018). While the national literacy level stood at 79% by 2019 (Macrotrends, 2023), regional specific data indicates relatively lower literacy rates for Northern Uganda. According to Reliefweb (2006), by 2006, the Northern region had one of the lowest literacy levels in Uganda standing at 54 percent compared to the national average of 68 percent by then, an observation that was majorly attributed to the war in the region. Therefore, it is not

surprising that most of the respondents ended up in lower classes, since that is the age group whose education was affected by the conflict. With this low education achievement, women are rendered less competitive in other sectors outside farming, which makes soybean, due to being lucrative, a fall back for these women.

5.1.6 Marital status and household headship

From the findings, the largest portion (75.9%) of the women were married and 24.1% were unmarried. Despite majority of the women under study being married, the study revealed that more than 50% of them were household heads. These findings reveal the high burden of taking care of families that women in the study area are exposed to. Since most farmers attained low education levels, it means that most of them left school early and so got married early. In a typical Ugandan rural setting, the proportion of married people is always high, of five people and above (UBOS, 2021).

However, the condition of having women heading families in which there are men is worrying. To contextualise this, the study considered household headship as overseeing the welfare and decision making of the household. In this facet, it was found out that majority of the women were heads of the households to which they belonged. This can be partly attributed to the fact that women involved in soybean production are economically empowered and can take care of the welfare needs of their families. Interactions with the women during data collection revealed a dire situation of most men being taken up by alcoholism and not minding about the welfare of their households' turning women into household heads. Indicatively, the results point to the great role that women are involved in regarding heading their households and being actively involved in the livelihood management of their households.

5.1.7 Occupation

Regarding occupation, majority (97.9%) of the women are employed in farming as their primary source of income. Only a very small proportion of them are engaged in business and civil service as a main occupation. Further, a high proportion of the women do not have secondary income sources (occupations) which points to a high dependability on farming for their livelihoods and that of their households. These results are in line with findings by UBOS which estimates that about 70% of Uganda's working population is employed in agriculture (International Trade Administration, 2022).

The availability of land and lack of alternative employable skills due to low education levels makes these women to only look at farming for employment. The implication of most people living in rural areas being employed in agriculture can have several effects on various aspects welfare. When the highest population of the population is engaged in agriculture, the largest aspects of welfare may heavily rely on the agricultural sector. However, the success or failure of sector can greatly influence the welfare and overall economic growth and stability of farming communities.

5.2 The mode of women's participation in commercial soybean production

5.2.1 Nature of involvement in soybean production and farm ownership

The results also revealed that women participate in soybean production as farm owners and as labourers on other soybean farms. However, majority (93.1%) of the farmers are owners the farms and a small proportion of them both own the farms and work on other bigger farms. The highest proportion of those who own farms were married indicating that being married was an enabler to land access/0wnership. This is supported by the fact that most of the women co-own their soybean farms with their husbands and/or other family members followed by individual ownership with very few farmers cultivating in a farming group. These results show that most

commercial soybean production activities are family-based and so largely determined and/or affected by family decisions and structures. This also points to the fact that horizontal value chain upgrades, that is linking with other players on the same level of the soybean value chain is still lacking among the commercial soybean farmers. Working as labourers on other people's soybean farms was just an additional source of income that women engage in when they have exhausted the work in their own farms.

5.2.2 Soybean varieties cultivated

The study also revealed that farmers cultivate both local and improved varieties if soybean. However, majority of them grow local varieties which shows the low uptake of improved soybean varieties in the study area. The implications of this are multi-faceted in different ways, for example, research has shown that in some cases, local soybean varieties can outperform introduced or improved varieties in specific Agro-ecological conditions. Local varieties, often adapted to the local environment, can result in higher crop yields for farmers, leading to increased income generation. A study by Farré *et al.*, (2014) found that in certain regions of Mozambique, local soybean varieties provided higher yields compared to improved varieties, positively impacting farmers' incomes.

Local soybean varieties are typically saved and exchanged by farmers from one season to the next. This reduces the dependency on purchasing commercial seeds each planting season, which can be costly for resource-constrained farmers. A study by Adebayo and Menkir (2018) in Nigeria revealed that farmers using local soybean varieties saved significantly on seed costs, thereby contributing to their overall income. Further, local soybean varieties often exhibit greater resilience to local climatic conditions and pests. This resilience can safeguard farmers against yield losses during adverse weather events or pest outbreaks, contributing to the stability of their livelihoods. Research conducted by Assefa *et al.*, (2012) in Ethiopia

demonstrated that local soybean varieties showed better adaptability to varying environmental conditions, providing a buffer against the risks.

Growing local soybean varieties can help preserve traditional agricultural knowledge and practices. Farmers' knowledge of local varieties, including planting times, pest management, and seed selection, is passed down through generations. This knowledge contributes to sustainable farming practices and enhances farmers' self-reliance. A study by Etwire *et al.,* (2019) in Ghana emphasized the importance of preserving traditional knowledge related to local soybean varieties. While the cultivation of local soybean varieties can offer advantages, it's important to note that the effectiveness of using local varieties can vary depending on factors like specific local conditions, management practices, and the context of the local agricultural market.

5.2.3 Use of machines and purpose of soybean production

Further, the use of machines in commercial soybean production was found to be moderate, standing at 54.8%. Because agricultural commercialization cannot be complete without adequate adoption of mechanization of farm activities, these results reveal that the commercialization of soybean production activities in the study area is still at infant stages and not yet fully developed. However, ana analysis of the purpose for which the women produce soybeans revealed that a high percentage (94.3%) grow soybean for sale, which is a good indicator of “commercial mindedness” among the women. Only a small proportion of them produce soybean for home consumption and sale with no one producing for home consumption alone. This indicates that these women have set their minds away from subsistence production to producing for money.

5.3 The contribution of commercial soybean production to improvement in women's livelihoods

5.3.1 Assets acquisition

Among the key assets acquired from soybean farming included locomotives such as bicycles and motorcycles especially those for transport business (locally known as Bajaj), physical assets such as land and buildings (including permanent commercial and residential houses. One of the respondents, in aggrandization of the usefulness of soybean production in building permanent houses, a respondent said,

> *"I would not be able to own a house built from bricks and mortar if I was not a soybean farmer. With this house, my family's sleeping conditions have improved a lot because I have been able to acquire new mattresses and descent beds for my children".*

This narrative presents soybean farming as a source of improved/decent shelter for farmers. Soybean farming can enhance farmers' incomes and livelihoods. Increased income may enable households to allocate more resources towards improving their living conditions, including investing in better housing.

Soybean production can contribute to assets acquisition in multiple ways, both direct and indirect. For example, through income generation, given the fact that Soybeans are a valuable cash crop, and their production can generate income for households. According to the interviews, women sell their soybean harvest in local markets or to processing companies, earning income that can be used to acquire assets. This finding conforms to a study by Jing et al., (2019) who observed that soybean production in China contributed to increased household income which was used by farmers to acquire capital assets and improved livelihoods of rural farming communities. Additionally, a study by Guedes *et al.,* (2020) in Brazil found that soybean cultivation allowed farmers to diversify their income, contributing to increased household assets.

However, another school of thought could attribute this to the high profitability of the crop which improves the farmers' access to credit. Successful soybean production can improve farmers' creditworthiness and access to financial resources. As households generate income and establish a track record of farming success, they become more eligible for loans and financial support to invest in assets such as machinery, land, or livestock. This is supported by research conducted by Lundy and Gottret (2019), which highlights the positive correlation between soybean production and farmers' access to credit.

5.3.2 Obtaining Food

In the facet of obtaining food, this study reveals two major streams through which soybeans contribute household food needs. First, soybeans are in themselves food. As a crop, soybeans are highly nutritious and rich in protein, making them valuable for enhancing food security and addressing malnutrition. Women's households benefit from soybean production by having access to a nutrient-dense food source and diversifying their diets. According to the women, soybean can be eaten in different forms, namely, porridge, roasted and others. The second stream of soybean contribution to food needs is through income. Information obtained from women revealed that incomes obtained from soybeans can be used to buy food stuffs like maize flour, meat etc. An elderly respondent asserted,

> *"Soybean is a blessing here. It comes with double benefits. We eat it, we sell it to get what to eat. You sell soybeans to buy what you don't farm. U can often eat meat, buy bread for the children, and other ingredients such as cooking oil. Having a soybean garden is like having a cow, it gives you a lot of things".*

This narrative gives credence to the relevance of soybean farming towards meeting a major basic need, food. This finding conforms to a report by FAO (2017) which emphasizes that growing soybeans can have a positive effect on food access for farmers and their households. Another study conducted in Nigeria by Akinyele et al. (2021) revealed that women's

households who produced and consumed soybeans experienced improved nutritional status and reduced food insecurity.

5.3.3 Income generation

Soybean production was also found to play a significant role in household income generation. Soybeans have a high market demand for a wide range of applications, including animal feed, vegetable oil, biofuel, and food products. The demand for soybeans has been steadily increasing, driven by population growth, rising incomes, and changing dietary preferences. As a result, farmers can earn substantial income by selling their soybeans. According to the United States Department of Agriculture (USDA), soybean production has been one of the leading agricultural sectors in terms of cash receipts for farmers (USDA Economic Research Service, 2021). The situation is not different from Kole district. According to the women interviewed, soybean is the major income source. For instance, in Aboke sub county, one of the women stated that soybean can easily be sold in different measurements, both in bulk and small amounts like in basins, sacks among others and at home or at the buyers stores within the locality. What is important however is that selling the soybeans brings income for women. For example, a basin fetches between UGX 40,000 to 60,000 in a good season. Emphasizing the importance of soybean, one of the women argues that:

> *"In comparison to army officers who earn from fighting external wars outside Uganda, one of the women referred to soybean farming as Somalia, she said, "to me soybean farming is equivalent to going to Somalia. Our brothers the soldiers go to Somalia for peace keeping missions and come back with money which helps them to make miracles such as building houses, buying livestock, investing in business. But for us (women) here, our Somalia is soybean farming. The Somalia for women here is Soybean farms. We are doing great; soybean has the potential to economically empower women".*

This narrative further aggrandises the importance of the soybean sub-sector in income generation.

Soybean is lucrative because its prices are good compared to other crops and have shown relatively stable trends. For example, information obtained from some farmers revealed that a kilogram of soybean at farm gate price always ranges between UGX 2500 to UGX 3500 while other locally grown crops like maize may cost as low as UGX 500 per kg. This stability can provide a consistent income stream for farmers, allowing them to plan and invest more effectively. The Food and Agriculture Organization (FAO) highlights that the relative stability of soybean prices is due to the strong demand and the tight linkages between global markets (FAO, 2018). This makes it a reliable source of income for many farming communities hence majorly contributing to livelihoods. Indirectly, soybean production contributes to income generation through creating employment opportunities. Soybean production requires labour at various stages, including land preparation, planting, weeding, harvesting, and processing. These activities create employment opportunities for rural communities and contribute to local economic development (Schneider et al., 2017).

Only a small proportion of the women pointed out the contribution of commercial soybean production to the other indicators. These results reveal that commercial soybean production is as significant as mainstream farming – whose major relevance is in relationship to generation of employment, food and income (Smith, 2020; FAO, 2019). And further, soybean farming relevance conforms to the justifications for commercial farming, namely being a source of income (Agnes et al., 2018), which helps household to obtain major life-sustaining needs (USDA Economic Research Service, 2021; Schnepf and Cowan, 2018).

5.4 Constraints faced by Women in Commercial Soybean Production

5.4.1 Individual Constraints

Regarding individual constraints, the largest proportion of the farmers pointed out being majorly constrained with capital to invest in their soybean production activities. Second to limited capital was the problem of lack of adequate skills for soybean production followed by shortage of land then unfavourable weather conditions majorly characterised with prolonged drought and unreliable rainfall. Other individual constraints faced by the farmers include low bargaining power, illiteracy, pests and diseases, gender-based violence, inability to afford good quality inputs, labour shortage and physical disability in descending order of prevalence.

The problem of limited capital among commercial soybean farmers poses a significant problem that can affect their operations and overall profitability. For example, commercial soybean farming requires substantial investments in inputs such as seeds, fertilizers, pesticides and machinery. The high cost of these inputs can strain the financial resources of farmers, particularly small and medium-sized operations (Gibson et al., 2017; Koirala et al., 2019). Limited capital can restrict farmers' ability to invest in these inputs, leading to lower yields and reduced profitability.

Inadequate skills and knowledge of best farming practices can hinder commercial soybean farmers' ability to optimize their production processes. This can lead to suboptimal planting techniques, improper use of inputs, ineffective pest and disease management, and inefficient post-harvest handling practices (Jin *et al.,* 2020; Owuor *et al.,* 2019). Without proper skills, farmers may struggle to achieve optimal yields and may face higher production costs. Additionally, Successful soybean farming requires not only agricultural skills but also strong management skills. Commercial soybean farmers need to effectively manage their resources, including labor, finances, and machinery, to ensure efficient and profitable operations.

Inadequate management skills can lead to poor decision-making, ineffective resource allocation, and limited ability to adapt to market changes (Piesse et al., 2020; Cacho et al., 2017). This can negatively impact farm profitability and long-term sustainability. Further, soybean production is constantly evolving, with advancements in technology playing a crucial role in improving productivity and profitability. However, inadequate skills among commercial soybean farmers can hinder their ability to adopt and effectively utilize new technologies and innovations (Jin et al., 2020).

The shortage of land among soybean farmers was found to be a significant issue in the study area. Culturally, women are not entitled to inheriting land in the study area yet most of the land is under family/customary ownership. This hinders women's ability to access and secure suitable land for soybean cultivation, exacerbating the land shortage problem. In addition, soybean farming often involves practices such as monoculture and use of agrochemicals, which can lead to soil degradation, erosion, and decreased fertility over time (Marenco and Rattalino Edreira, 2020). As a result, farmers may need to find additional land to compensate for the declining productivity of their existing fields. Furthermore, since soybeans are primarily produced for sale and households still need to cultivate food crops, there is competition between soybean and food crops that require similar land resources. Farmers may need to make choices between different crops based on market conditions, profitability, and land availability, which can contribute to the shortage of land for soybean farming (Gasparri *et al.,* 2020).

Unfavorable weather conditions were also found to be significantly challenging the women involved in commercial soybean production in Kole district. Drought is one of the major weather-related constraints faced by soybean farmers. Lack of rainfall or prolonged dry spells can lead to reduced soil moisture, affecting germination, plant growth, and pod development. Drought stress can also increase the susceptibility of soybean plants to diseases and pests. A

study by Sinclair and Vadez (2012) found that soybean yield losses due to drought stress ranged from 9% to 72%.

Physical observations of soybean fields during data collection revealed that prolonged drought was badly affecting the crops most of which were flowering - a stage that requires constant water supply. Global Climate change has impacted weather patterns, leading to increased variability in temperature and precipitation. This unpredictability can make it challenging for soybean farmers to plan their planting and harvesting schedules. Additionally, climate change may introduce new pest and disease pressures, altering the overall agroecosystem dynamics.

Another individual constraint found was low bargaining power among women involved commercial soybean production. This is a significant problem that can have adverse effects on women's livelihoods. This constraint arises due to several factors, including market concentration, lack of information, and limited access to alternative buyers. One key factor contributing to the low bargaining power of soybean farmers was the high level of market concentration among buyers. A few dominant buyers control a significant portion of the market, which limits competition and gives them more leverage in negotiations. For example, according to a report by the National Farmers Union (NFU), the top four grain processing companies controlled approximately 80% of soybean processing capacity in the United States in 2020 (NFU, 2021). In Uganda, the major soybean buyers are majorly food processing companies like Maganjo grain millers, Mukwano and a few others who literally control the soybean market.

This concentration allows buyers to dictate prices and contract terms, leaving farmers with limited options and little room to negotiate. In addition, Limited access to market information puts soybean farmers at a disadvantage when negotiating with buyers. Farmers often lack comprehensive data on market prices, demand forecasts, and supply chain dynamics. This

information asymmetry makes it difficult for farmers to assess fair prices and effectively negotiate contracts. Worse still, the complexity of commodity markets and the lack of transparency in pricing mechanisms further exacerbate the problem. Research by Zulauf and Orden (2014) emphasizes the importance of market information and transparency for farmers' ability to negotiate better contracts. During data collection, a cooperative leader who was interviewed as a key informant said, *"the buyers just come with a fixed price, and we always have very little or no say about the price of our product".*

5.4.2 Institutional Constraints

On the side of institutional constraints, the study revealed that most farmers are faced with the constraint of low prices for their soybeans. While soybeans attract relatively better prices compared to other crops, the farmers feel that the current offer is not only less satisfactory but also unstable, majorly in attribution to exploitation by middlemen. Low prices pose a significant constraint for soybean farmers, impacting their profitability and economic sustainability. For farmers who sell to buyers that export soybeans, the soybean market is influenced by global factors such as production levels, weather conditions, and changing consumption patterns. In conformity to women's views about soybean prices in Kole, Over the past few years, there has been a surge in soybean production worldwide, leading to increased supply and downward pressure on prices. For example, the United States, Brazil, and Argentina are the largest soybean-producing countries and have experienced record harvests, resulting in a surplus supply and lower prices (USDA, 2021).

Soybean prices are subject to significant volatility, which further complicates the constraints faced by farmers. Market speculation, influenced by factors like weather forecasts, demand and supply forecasts can cause sudden price fluctuations that are difficult for farmers to anticipate or mitigate (Ferreira et al., 2020). These price swings can erode profit margins or result in

financial losses for farmers who have limited control over market forces. Farmers face expenses related to inputs such as seeds, fertilizers, machinery, and labour. Fluctuating fuel prices, for example, impact transportation costs. As soybean prices decline, farmers find it increasingly difficult to cover their production expenses, which can lead to financial stress and reduced investment in sustainable farming practices (Babcock and Goldsmith, 2018).

During data collection, farmers revealed a lot of fluctuations in prices within and across seasons. The worsening point in this matter is the absence of any subsidies from government to protect the farmers, most of whom do not produce on contract basis, and so vulnerable to low and fluctuating prices. In some countries, soybean farmers rely on government subsidies and support programs to offset the impact of low prices. These programs aim to stabilize farm incomes and protect farmers during periods of market downturns. However, the effectiveness of such measures may vary, and the reliance on government support can create dependency rather than addressing the root causes of low prices (Fuglie et al., 2019). In view of the picture in Kole and the evidence from existing research, it can be argued that the constraint of prices is a manifestation of the fundamental constraints of price volatility which is a thorn in the flesh of primary production especially farming.

Related to the price constraints is the problem of exploitation by middlemen. Middlemen play a crucial role in connecting farmers with buyers, facilitating transactions, and providing various services. However, their dominant position in the supply chain often leads to exploitative practices, resulting in lower profits for farmers. Middlemen often have significant control over the prices paid to farmers majorly through exploitation of information asymmetry and manipulate prices to their advantage (Lema et al., 2019). They may engage in collusion and create artificial price fluctuations, reducing the income earned by farmers. A study by Idris et al., (2019) in Nigeria found that intermediaries manipulated soybean prices, leading to lower returns for farmers. Middlemen control access to markets, making it challenging for farmers to

reach buyers directly. This dependence limits farmers' bargaining power and reduces their ability to negotiate fair prices. A study by Rani and Singh (2018) in India highlighted how middlemen exploit their control over market access, resulting in low profitability for soybean farmers.

These problems of low prices and exploitation by middlemen, coupled with shortage of market point to the lack of organised market systems which benefit soybean farmers in the area. Because of the few buyers who are seasonal, farmers in the study area reported shortage of markets at some time of the year. This majorly affects the farmers who prefer storing their produce awaiting good prices. The buyers prefer bulk purchasing during peak harvest periods in which they often pay low prices.

Further, farmers also revealed the constraint of poor transportation infrastructure. Efficient transportation networks are crucial for timely delivery of soybeans to buyers, processors, and export markets. Insufficient infrastructure, such as poor road conditions can delay the movement of soybeans from farms to markets, leading to supply-demand imbalances. While specific references on this aspect are limited, interactions with farmers and observations during data collection revealed poor roads in the study area.

The institutional constraints with the lowest prevalence were low wages for the women who work on other people’s soybean farms and exploitation by farm owners. Overall, the results from the institutional constraints reveal the institutional constraints especially in terms of markets and the extension system in the study area. The key message here, under discussion, is that soybean farmers face the traditional, fundamental constraints of farming. But different from traditional farming constraints, the key issues here include information asymmetry which is a major bottleneck in the current marketing system where information is key. Climate change

and exploitation by middlemen also stand out prominently pointing to a constrained environment in which the women perform commercial soybean production.

5.5 Curbing Constraints faced by Women in Commercial Soybean Production

For the individual constraints, most of the respondents pointed out provision of inputs as a suitable solution. Farmers pointed out that one important solution to address these constraints is the provision of inputs, which include essential resources such as seeds, fertilizers, pesticides, and technology. By providing farmers with appropriate input and supporting them with technical knowledge, they can overcome the obstacles they face and improve their soybean production. A study by Gouse et al., (2005) which examined the impact of improved agricultural inputs on crop yields, including soybeans, in Sub-Saharan Africa highlighted a positive correlation between access to quality inputs and increased crop productivity.

Similarly, in their study, DeBarro and Raman (2015) about the constraints faced by soybean farmers in managing pests and the potential solutions through integrated pest management (IPM) strategies emphasized the importance of providing farmers with appropriate pesticides and IPM techniques to control pests effectively. Earlier interventions in the study area by World Vision in the facet of input provision were reported to have created so much impact through improving the efficiency of farming. Input provision solves constraints of high production costs, limited access to inputs, shortage of capital and others which directly improves the profit margins and consequently, the livelihoods of the farmers.

Secondly, farmers revealed the need for training as a potential solution to the constraints being faced. A study by Khairul (2011) about the impact of training on Farmers' Perception and Performance revealed that training can ably improve farmers’ performance by providing knowledge, information and skills required in production, marketing and management of their farming activities. Training has a significant positive effect on farmers' performance by

enhancing their knowledge, skills, and adoption of improved agricultural practices. In a study conducted in India by Birhanu *et al.,* (2018) examined the impact of training on smallholder farmers' performance, the results showed that farmers who received training had higher levels of knowledge on improved agricultural practices and demonstrated better adoption of these practices, leading to increased crop yields and productivity. Training programs can help farmers diversify their income sources and improve their livelihoods. A study by Ofori et al., (2018) in Ghana assessed the impact of farmer training on income diversification. The findings revealed that trained farmers were more likely to engage in non-farm activities and had higher incomes compared to non-trained farmers, indicating the positive effect of training on income diversification and overall livelihood improvement.

Further, training plays a crucial role in promoting the adoption of sustainable agricultural practices. A study conducted in Rwanda by Uwamahoro et al., (2020) investigated the impact of farmer training on the adoption of soil conservation practices. The study found that trained farmers had a higher likelihood of adopting sustainable soil conservation measures, such as contour plowing and terracing, compared to non-trained farmers. According to the women in Kole, appropriate/necessary training in agronomy, financial management, value addition, post-harvest handling and farmer group dynamics is a sure way of helping them to adopt farming practices that enable sustainability of production even in the adverse effects of climate change. Regarding risk management, training programs can equip farmers with skills to manage risks and enhance their resilience to various constraints. A study by Mishra et al., (2021) in India assessed the impact of farmer training on risk management strategies. The findings indicated that trained farmers were more likely to adopt risk-reducing practices, such as crop diversification and insurance, leading to improved resilience against production and market risks.

The women also pointed out that connecting them to better markets can have a significant positive impact on their performance and overall economic and livelihood outcomes. Access to better markets enables soybean farmers to sell their produce at higher prices, resulting in increased profitability and income (Liu *et al.,* 2019). Farmers stated that if assisted, they can benefit from improved market information, price transparency, and direct links to buyers or value chain actors. This allows them to negotiate better prices, reduce post-harvest losses, and capture additional value through improved market channels. Additionally, access to better markets streamlines the marketing process for soybean farmers, reducing transaction costs and improving market efficiency.

Farmers can save time and resources by directly connecting with buyers or participating in organized markets. This can include establishing contractual relationships or joining farmer cooperatives. Further, when farmers are connected to better markets, they can explore diverse market opportunities and value addition activities. They can access niche markets, cater to specific customer preferences and participate in value chains beyond commodity trading. This can involve processing soybeans into higher-value products thereby increasing their profitability and resilience. This would directly lead to improvement in livelihoods. These results are in line with findings by Kizito (2018) who found out that linking farmers to markets is important in improving their performance, the profitability of their operations and the general welfare of farmers.

On the side of capital shortage, farmers pointed out the provision of loans as a solution. Provision of loans can have a significant effect on the performance of soybean farmers by enabling them to invest in inputs, equipment, and technologies that enhance productivity and profitability. Loans provide soybean farmers with the necessary capital to make investments in their farming operations. This includes purchasing high-quality seeds, fertilizers, pesticides, farm machinery and others. Luka et al., (2022) pointed out that with access to loans, farmers

can adopt improved production practices and technologies, leading to increased yields and overall performance. Loans enable farmers to expand their soybean acreage and increase the scale of their operations. With additional capital, farmers can lease or purchase more land, hire additional labor, and invest in infrastructure development. This expansion can result in economies of scale, higher production volumes, and improved profitability. Loans can empower soybean farmers to engage in value chain activities and access higher-value markets. Farmers can use loans to establish processing facilities, storage infrastructure, or participate in cooperatives. This enables them to capture more value from their produce, reduce post-harvest losses, and establish direct market linkages.

A small proportion of farmers also pointed out empowering women's rights, improving land access and provision of processing facilities as potential solutions to ameliorate some individual constraints being faced. These results reveal that providing access to high quality inputs, training farmers and helping them to have access to capital and good markets can solve most of the constraints that women face in commercial soybean production.

On the side of institutional constraints, most of the women tend to government and authorities as the vehicles to the solutions to constraints of price regulation, extension service provision, gender sensitization and improving information access through channels like government extension officers and others. Government price regulation can have both positive and negative effects on soybean farmers' performance. One of the respondents asserted, *"the government should help us on the issue of prices because middlemen exploit us with fixing prices at very low levels and always changing them every time"*.

This indicated the need for government intervention in the issue. Government price regulation aims to stabilize prices and protect farmers from market volatility. By setting price floors or ceilings, governments can stabilize the prices of soybeans, ensuring farmers receive a fair

income and reducing the risk of price fluctuations. This stability can provide farmers with a more predictable income, which can positively impact their financial planning and investment decisions are consequently affect their livelihoods. Further, price regulations can potentially provide income support to soybean farmers, especially during periods of low market prices.

A study by Leta (2021) about the impact of government purchase price policy on grain emphasized that by guaranteeing minimum prices or implementing price support programs, governments can help farmers maintain a certain level of income, which can enhance their financial stability and incentivize continued soybean production. However, price regulations can also lead to market distortions. Setting prices above or below market equilibrium can create imbalances in supply and demand. If prices are set too high, it may encourage overproduction and result in excess supply, potentially leading to price crashes and surplus storage issues. Conversely, if prices are set too low, farmers may experience reduced profitability and may be discouraged from producing soybeans (Ramin, 2018). Therefore, interventions in this regard should be properly designed to minismise the potential disadvantages.

Further, the women argued for providing extension services to all the soybean farmers. This was said to have a significant positive effect on addressing various constraints such as lack of information, technical knowledge and others which they face. Extension services involve the provision of information, training, and technical assistance to farmers, aiming to enhance their knowledge, skills, and productivity. The study by Fedders and Maredia (2010) assessed the impact of extension services on farm productivity, asset accumulation, and poverty in Uganda. In Kole, some farmers indicate that they received training from some organisations like NGOs and pointed out that this was very important in improving their activities.

This means that the provision of information on improved production techniques, pest and disease management, and post-harvest handling positively influenced soybean farmers'

productivity and ultimately their income levels. Specifically, the women pointed out the need for these services both individually and in their farmers' groups. Another study by Takeshima and Adhikari (2013) examined the impact of agricultural extension services, specifically the Food-for-Work program, on smallholder farmers' agricultural practices and income in Ethiopia. The study found that farmers who participated in the program had higher soybean yields compared to non-participants. The extension services provided information on improved seed varieties, fertilizer application, and agronomic practices, leading to increased soybean production and improved farmers' income.

These studies and several others are in consonance with the findings of this study in which farmers argued that provision of extension services to soybean farmers has been shown to have a positive effect on their productivity and income levels. These services provide valuable information on improved production techniques, pest and disease management and post-harvest handling, empowering farmers with the knowledge and skills needed to enhance their soybean farming practices. By disseminating relevant information, extension services contribute to the overall development and sustainability of soybean farming systems, thereby addressing farmers' constraints and improving their livelihoods.

Regarding the gender-inclined constraints, the farmers pointed out that gender sensitization is should be carried out. Gender sensitization refers to the process of raising awareness and understanding about gender roles, inequalities, and the importance of gender equality. Implementing gender sensitization programs in the context of soybean farming can have several positive effects on farmers' constraints. A handbook by Huyer and Twyman (2016) provides guidance on integrating gender considerations into agricultural research and development. It emphasizes the importance of gender-sensitive approaches and provides practical tools for gender-responsive research. By incorporating gender sensitization, farmers' constraints, including those faced by women, can be better understood and addressed.

A study by Quisumbing *et al.,* (2015) explored the gender gap in agriculture and highlighted the importance of addressing gender inequalities. It emphasized that gender sensitization programs can contribute to empowering women farmers, enhancing their decision-making abilities, and increasing their access to resources and services. Such empowerment can lead to improved livelihoods and overall agricultural productivity. A study by Doss *et al.,* (2018) constraints common myths and misconceptions about women's role in agriculture. It highlights the need for gender-sensitive approaches to address gender inequalities in the sector.

Gender sensitization programs can help debunk myths and stereotypes, raise awareness about the contributions of women in agriculture, and promote gender equality to overcome constraints faced by farmers. From the findings of this study and other studies, raising awareness, challenging gender norms, and promoting gender equality, such programs can contribute to addressing farmers' constraints and empowering both women and men in soybean farming.

Further, women involved in commercial soybean production suggested that improving their access to information can have a significant positive impact on their performance and overall agricultural outcomes. By providing farmers with timely and accurate information, they can make informed decisions, adopt best practices, and respond effectively to market dynamics. A study by Krishna and Qaim (2018) highlights the importance of information access in diversifying farm production and improving dietary quality. Access to information on market demands, crop management practices, and emerging technologies enables soybean farmers to make informed decisions about diversifying their production systems and growing high-value crops.

Another study by Ragasa *et al.,* (2018) which investigated the information sources utilized by farmers in Ghana and their demand for agricultural extension services emphasized the

importance of access to information for making informed decisions about crop management, pest control, and market opportunities. Farmers with better access to information are more likely to adopt improved agricultural practices and achieve higher yields. Access to information, including internet-based sources, positively influences farmers' decisions to adopt innovative technologies. Improved access to information enables farmers to enhance their productivity, optimize resource use, and improve profitability. Very few women pointed out the desire to be given free seed-capital and instead opted for loans which is an indicator of a well-established “business mind”.

CHAPTER SIX: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

This chapter presents the summary, conclusion, recommendations and areas for further research. The conditions and recommendations are presented in line with the study objectives which were to assess the mode of women's participation in commercial soybean production, to examine the contribution of commercial soybean production to improvement in women's livelihoods, to assess the constraints faced by women in commercial soybean production and finally, to establish the intervention measures to curb the constraints faced by women involved in commercial soybean production in Kole District.

6.1. Summary of the findings

The summary of findings of the study is as follows:

6.1.1 Characterisation of Women involved in Commercial Soybean Production

Regarding the characteristics of women involved in commercial soybean production in Northern Uganda, the average age of these women is nearly 42 years, with an average of six dependents, indicating mature farmers with significant family responsibilities. They manage an average of 7.5 acres of land, dedicating 4.1 acres to soybean cultivation, but with a relatively low yield of 264.1 kg. A significant majority (91.3%) own their land, and 70.8% have completed primary education, suggesting a basic level of literacy that could aid in adopting modern agricultural practices. About 61.7% are household heads, indicating a strong role in decision-making and resource allocation. Most of these women (75.9%) are married, which can influence farming decisions and land ownership dynamics. Farming is the primary occupation for 97.9% of the women, highlighting its central role in their livelihoods.

6.1.2 Mode of women's participation in commercial soybean production

Regarding the mode of women's participation in commercial soybean production, the results pointed out that majority of the women cultivate soybean on their own land. The women cultivate their own farms majority of which are individually owned or co-owned with family members. Further, majority of the farmers grow local soybean varieties for sale with entirely no farmers growing soybean for solely consumption purposes.

6.1.3 The contribution of commercial soybean production to improvement in women's livelihoods

Regardless of the mode of engagement, the findings also revealed that commercial soybean production had tremendous contributions on both the livelihoods of the households to which the women belong and on the livelihoods of the individual women themselves. At the households' level, soybean production was found to have tremendous contributions on asset acquisition, income generation and obtaining food. This situation is less different at individual level where commercial soybean production was found to have contributions in terms of personal support, economic empowerment, decision making, networking in groups and obtaining capital for business.

6.1.4 The constraints to women's participation in commercial soybean production

The study revealed that women involved in commercial soybean production face several constraints which are both institutional and individual. Among the individual constraints, the findings revealed that majority of the women involved in commercial soybean constraints are constrained with limited capital, lack of skills, shortage of land and unfavourable weather conditions - mainly prolonged drought. Among the institutional constraints faced, the most prevalent ones were low prices for the output, exploitation by middlemen, shortage of market

for the produce, lack of information about markets and other services plus poor transport infrastructure majorly characterised by poor roads in the study area.

Finally, the women engaged in the study suggested several solutions that should be undertaken to solve the constraints being faced. On one hand, majority of the farmers pointed out provision of inputs, training, connection to better markets and provision of loans among others as solutions to the individual constraints being faced in commercial soybean production. On the other hand, women involved in commercial soybean production pointed out that price regulation, provision of extension services, improving access to information and gender sensitisation are suitable solutions to solve the institutional constraints.

6.2 Conclusions

From the study, the following major conclusions can be drawn.

The women involved in commercial soybean production in Northern Uganda are predominantly mature, experienced farmers with substantial family responsibilities, managing an average of 7.5 acres of land. Their significant involvement in farming, land ownership, and basic education level suggests that they are a crucial demographic in the agricultural sector, balancing extensive agricultural duties with household responsibilities.

Most women cultivate soybeans on their own or family-owned land, focusing on local soybean varieties for sale rather than consumption. This indicates a strong engagement in market-oriented farming practices, which plays a significant role in their economic activities and livelihoods.

Commercial soybean production has substantially contributed to the improvement of livelihoods of women and their households by contributing to asset acquisition, income generation, and food security. On a personal level, it provides economic empowerment,

enhances decision-making capabilities, and offers opportunities for networking and capital accumulation for investment in business ventures.

Conclusion: Women face numerous individual and institutional constraints in commercial soybean production, including limited capital, lack of skills, land shortages, unfavourable weather conditions, low output prices, exploitation by middlemen, market shortages, lack of market information, and poor transport infrastructure. These challenges significantly hinder their ability to maximize the benefits of their agricultural activities.

6.3 Recommendations

6.3.1 Policy recommendations

From the characteristics of women involved in commercial soybean production, it is hereby recommended that the government and other support institutions should develop and implement targeted agricultural training programs that focus on modern farming techniques and resource management to enhance the productivity and efficiency of mature women farmers who are balancing significant family responsibilities.

Further, in attribution to the mode of women's participation in commercial soybean production, the government and other support institutions should establish support mechanisms, such as providing access to high-quality seeds and facilitating cooperative farming groups, to improve market-oriented farming practices and ensure women farmers can benefit more from their commercial soybean production.

Further, to bolster the effect of commercial soybean production to the livelihoods of women involved in commercial soybean production, the government and other support institutions should implement financial support and microcredit programs specifically designed for women farmers. This shall bolster the women's economic empowerment, enabling them to invest in

their farms, acquire assets, and enhance their decision-making capacities within their households and communities.

Finally, regarding the constraints faced by women in commercial soybean production, the government should improve rural infrastructure and market access by investing in better transportation networks and developing reliable market information systems, which would alleviate the institutional constraints faced by women farmers and reduce exploitation by intermediaries.

6.3.2 Recommendations for further research

This study focused on commercial soybean production as the only contributor to women's livelihoods in the study area. Though the study revealed tremendous contributions of commercial soybean production on the livelihoods of the women, it is necessary for further investigations to be conducted to probe the contributions of other agricultural sub-sectors like livestock production, sunflower cultivation and other major enterprises in the area.

Further, the study did not give an in-depth analysis of the soybean value chain in the area. Therefore, further studies should be conducted to analyse and map the soybean value chain in the study area, focusing on identification of potential opportunities for upgrading the value chain. This will provide a detailed understanding of soybean production in Northern Uganda and magnify the most appropriate areas of intervention to develop the value to properly utilise the value chain to boost people's livelihoods in the region.

Finally, there are other interventions by government in northern Uganda which are geared towards improving the livelihoods of women. It is therefore hereby recommended that further investigations be carried out regarding the contribution of such interventions on women's livelihood.

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APPENDICES

Appendix A: Informed consent form

Title of the study: Commercial farming and women's livelihoods in northern Uganda: A case of soybean production in Kole district.

Investigator: ACIRO LUCY EJURA

Institution: Gulu university, Faculty of Business and Development Studies.

Introduction

The investigator is a student of Gulu University pursuing Masters' degree in Development studies. This research is being conducted for academic purposes in order for the above-said investigator to fulfil one of the prerequisites for the award of the previously indicated degree. This form describes the study in detail and requests your permission to participate as a respondent in the study. Throughout the procedure, you can ask any questions about the exercise for clarification or education. If you opt to participate in this study, you will be required to sign this consent form. The researcher will keep one copy, and you must keep one as well.

The purpose of the study

This study is aimed at investigating the relationship between commercial soybean production and Women's livelihoods in Kole District.

Procedure to be followed

The researcher/research assistant will ask you questions and you will respond with responses that will be recorded by the researcher/research assistant. If you do not understand the questions, please ask the researcher/research assistant to repeat them for you.

Who will participate in the study?

The people who are expected to take part in this study are women farmers engaged in commercial soybean production. The interview will last for about 30 minutes

Risks/discomforts:

There is no known risk of damage or discomfort as a result of your participation in this study. The only risk or discomfort will be the loss of time spent during the interview.

Benefits:

This study provides no practical incentives to the responders, such as cash or allowances. As a result, engagement as a respondent demonstrates our desire to assist. However, participants in this study will receive feedback on the study's findings and progress, and any new information affecting the study participants (including incidental findings) will be made available to the research participants.

Confidentiality:

We will not divulge your identity to anyone because we will only use codes to identify participants. Only the research team will have access to the information gathered. Soft copies of the data will be password-protected, and hard copies will be stored under lock and key. Only the lead investigator will have access to confidential material.

Alternatives:

Participation in this study is completely voluntary. If you are not interested in the study, please notify the researcher/research assistant so that he/she can move on to another participant. You will not lose any benefits if you do not participate.

Cost:

There will not be any additional cost incurred as a result of participating in this study.

Questions:

If you have any other questions regarding this study as a participant, you can ask the interviewer. In case the need to ask the question(s) arise(s) later, you can contact the researcher on telephone number O782300867 or via e-mail on lucyejura2020@gmail.com

Statement of voluntariness:

Participation in the research study is voluntary and you may join on your own free will. You have a right to withdraw from the study at any time without penalty.
If you have any issues pertaining to your rights and participation in the study, please contact the Chairperson, Gulu University Research Ethics Committee, Dr. Gerald Obai Tel: No., 0772305621; email: lekobai@yahoo.com/lekobai@gmail.com; or the Uganda National Council for Science and Technology, on plot 6 Kimera Road, Ntinda, Kampala on Tel 0414705500.

Statement of consent

..... has described to me what is going to be done, the risks, the benefits involved and my rights as a participant in this study. I understand that my decision to participate in this study will not affect me in any way. In the use of this information, my identity will be concealed. I am aware that I may withdraw at any time. I understand that by signing this form, I do not waive any of my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate. A copy of this form will be provided to me.
Name of participant……..……Signature/Thumbprint…….……Date…….……...

Name of witness……Signature……Date……..…

Name of interviewer……..Signature…….Date…….……

Appendix B: Data collection tool (Questionnaire)

GULU UNIVERSITY

FACULTY OF BUSINESS AND DEVELOPMENT STUDIES

DEPARTMENT OF DEVELOPMENT STUDIES

Date:…….. *Questionnaire number:……*

Topic: **Commercial farming and women's livelihoods in northern Uganda: A case of soybean production in Kole district.**

GENERAL INFORMATION

Farmer's signature/thumbprint:_____

Farmer's address: Sub-county……... Parish…….
Village…….……

A. SOCIO-DEMOGRAPHIC INFORMATION

1) Sex: ☐ male ☐ female
2) Age of the farmer (years) _____
3) Marital status of respondent: ☐ married ☐ not married
4) Number of dependants _____
5) Education level of the farmer. No formal education
   ☐ Primary ☐ Secondary ☐ Tertiary ☐ University

6) Are you the household head? ☐ Yes ☐ No
7) What is your main occupation? ☐ Farming ☐ Civil servant ☐ Business
   ☐ Pensioner ☐ Another self-employment (Specify)……

8) Do you have another source of income except farming? ☐ Yes ☐ No
If YES, please specify…….

9) Do you own land? ☐ Yes ☐ No
10) If you don't own, do you access land for soybean production?
   ☐ Yes ☐ No

11) If you access, what are the conditions of access to land
   ☐ Rented ☐ Given ☐ Other (specify)_____

12) Total land accessed for the overall agricultural production_____acres

B. NATURE OF WOMEN'S INVOLVEMENT IN SOYBEAN PRODUCTION

13) How are you involved in soybean production?
☐ Farmer/owner ☐ Employee/Labourer ☐ Both farmer and labourer/employee

14) If employee, what soybean jobs do you do/work in?
Land preparation ☐ Weeding ☐ Planting ☐ Post-harvest activities ☐ Marketing

15) Where are you employed?
☐ On-farm ☐ Off-farm

16) What is the nature employment? ☐
☐ Daily (lejaleja) ☐ Weekly ☐ Monthly

17) For farmers/owners, what is the Size of land cultivated for soybean last season (acres): _____

18) What is the nature of your farm?
☐ Co-owned with husband/family ☐ Individually owned ☐ Group

19) How much soybean did you harvest? _____ kg.

20) Which variety of soybean did you plant?
☐ Local ☐ Improved

21) Do you use machines in soybean production?
☐ Yes ☐ No

22) How do you produce soybean?
☐ Group ☐ Individual

23) For what purpose do you produce soybean?
☐ Sale ☐ Consumption ☐ Both sale and consumption

C. CONTRIBUTION OF COMMERCIAL SOYBEAN PRODUCTION TO LIVELIHOODS

24) What is your opinion about soybean production?
☐ Very good ☐ Good ☐ Not good ☐ Not sure

25) Why are you engaged in soybean farming?
☐ To get income ☐ Job ☐ For food ☐ Choice by husband/family
☐ Advised by local leaders ☐ Influenced by peers ☐ Others (specify)……

26) Has your involvement in soybean been useful?
☐ YES ☐ NO

27) If Yes, how useful has soybean production been to your household?

Asset acquisition	Source of food	Jobs	Income	Social capital	Others (specify)……

28) How has soybean production helped you as a woman?

Economic empowerment	Decision making	Personal support	Networking in groups	Capital for business	Others (specify)……

SECTION D: CONSTRAINTS AND INTERVENTIONS

29) Do you face any constraints in soybean farming?

☐ Yes ☐ No

30) If yes, what is the nature of the constraints?

☐ Individual ☐ Institutional

31) What are the individual constraints faced in soybean farming??

Lack of resources	Illiteracy	Land shortage	Lack of skills	Low bargaining power	Others (specify)…… ……

32) Tell me about the institutional constraints you face in soybean production.

Low prices	Exploitation by middlemen	Exploitation by farm owners	Low wages	Poor transport	Lack of information	Shortage of market	Others (specify)

33) Do you think the different constraints to soybean farming can be solved?

☐ YES ☐ NO

34) If YES, how do you think the individual constraints can be mitigated?

☐ Providing farm inputs ☐ Training ☐ Offering loans ☐ Improving land access
☐ Empowering women's rights ☐ Connection to better markets
☐ Provision of processing facilities ☐ Others (specify)_____
☐

35) What do you think should be done to solve these institutional constraints?

☐ Regulating Providing extension services Government regulation of prices
☐ Regulating labour relations ☐ Increasing access to information ☐ Gender sensitization
Others (specify)_____

THANK YOU!

Appendix C: Interview guide for key informants

KEY INFORMANT INTERVIEW GUIDE

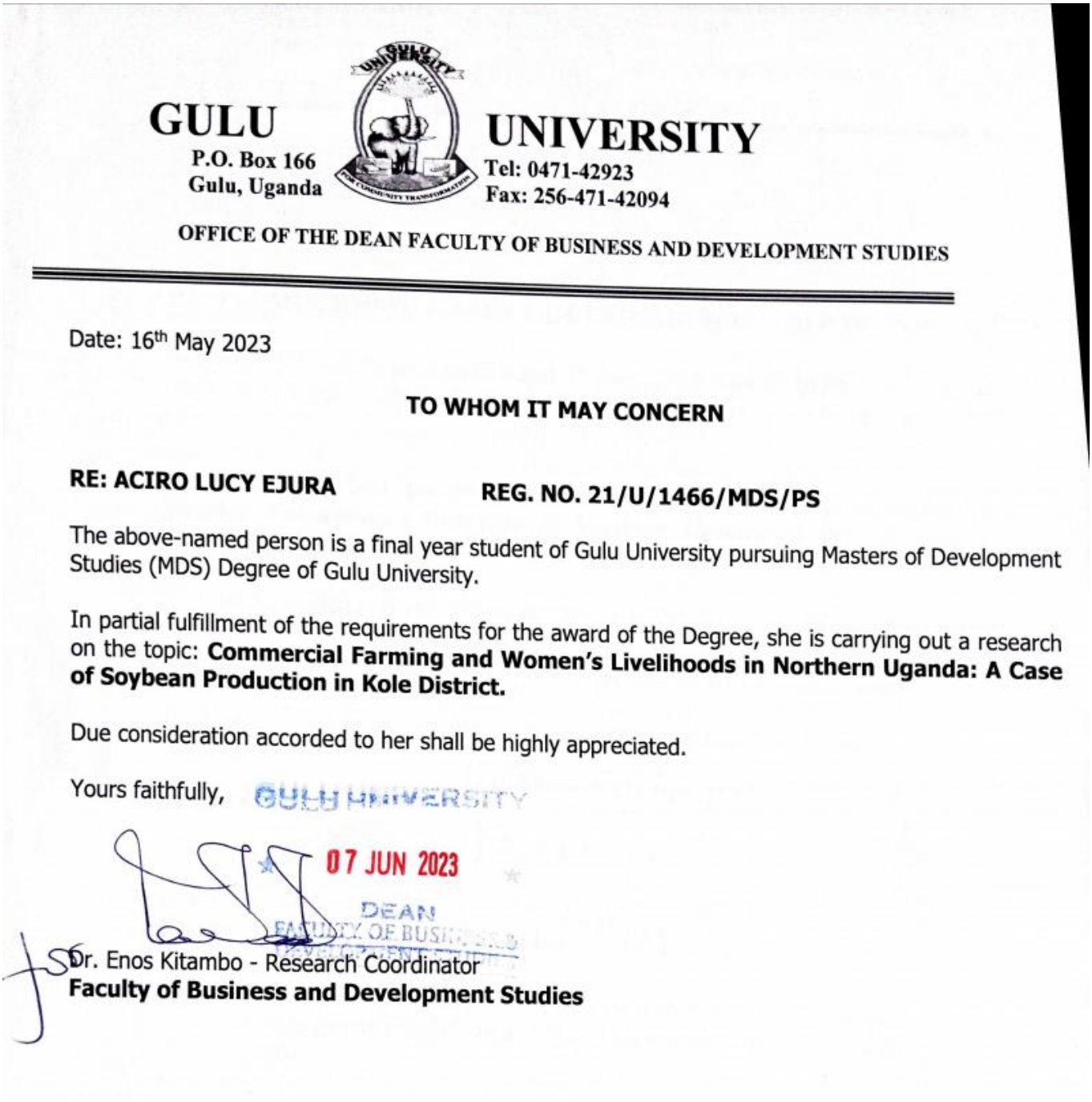
Topic: **Commercial farming and women's livelihoods in northern Uganda: A case of soybean production in Kole district.**

Questions:

1. Tell me about soybean farming in this place.
2. How are women are engaged in soybean production?
3. Has soybean production been helpful to women?
4. What constraints do women in soybean production face?
5. How can these constraints be overcome?
6. Is there any government programme or NGOs supporting women in soybean production? what kind of support do they offer?
7. What do you think is the future of soybean production and women's livelihoods?

END

Appendix D: Introductory letter from Gulu University



GULU UNIVERSITY
P.O. Box 166
Gulu, Uganda
Tel: 0471-42923
Fax: 256-471-42094

OFFICE OF THE DEAN FACULTY OF BUSINESS AND DEVELOPMENT STUDIES

Date: 16th May 2023

TO WHOM IT MAY CONCERN

RE: ACIRO LUCY EJURA REG. NO. 21/U/1466/MDS/PS

The above-named person is a final year student of Gulu University pursuing Masters of Development Studies (MDS) Degree of Gulu University.

In partial fulfillment of the requirements for the award of the Degree, she is carrying out a research on the topic: **Commercial Farming and Women's Livelihoods in Northern Uganda: A Case of Soybean Production in Kole District.**

Due consideration accorded to her shall be highly appreciated.

Yours faithfully,

GULU UNIVERSITY
07 JUN 2023
DEAN
FACULTY OF BUSINESS

Dr. Enos Kitambo - Research Coordinator
Faculty of Business and Development Studies

Appendix E: Permission from the CAO, Kole District

Telephone (CAO) 0772699004
(DCAO) 0772654177
(CFO) 0774859123
(LCV) 0774094545
(RDC) 0774565224

KOLE DISTRICT LOCAL GOVERNMENT
CHIEF ADMINISTRATIVE OFFICER'S OFFICE
P.O. BOX 419
LIRA
email: koledistrict2010@yahoo.com

Your Ref: .....
Our Ref: CR/220/1

THE REPUBLIC OF UGANDA

Date: 8th June, 2023

Ms. Aciro Lucy Ejura
Gulu University
P.O Box 166
GULU

RE: PERMISSION TO CARRY OUT RESEARCH IN KOLE DISTRICT

Reference is made to your letter dated 7th June, 2023 requesting for permission to carry out research in Kole North in the sub-county of Aboke, Alito and Okwerodot.

Your request has been granted to collect data on your research topic: ***Commercial farming and women's livelihood in Northern Uganda: A case of soybean production in Kole District w.e.f*** 12th June, 2023.

You are reminded that any official information that may come to your possession during the period of your research is confidential and is strictly for the study and should not divulge it to unauthorized persons without written permission.

By copy of this letter, all the staff are hereby requested to accord you all the necessary assistance.

CHIEF ADMINISTRATIVE OFFICER
08 JUN 2023
KOLE DISTRICT LOCAL GOVERNMENT

Dalili R.K. Moses
CHIEF ADMINISTRATIVE OFFICER-KOLE

Copy to : Research Coordinator-Faculty of Business and Dev't Studies
: Sub-county chiefs/Town clerks of Okwerodot, Alito and Aboke.
: File