THE EFFECTS OF LAND CONFLICTS ON CASSAVA PRODUCTION IN LOBULE SUB-COUNTY, KOBOKO DISTRICT, UGANDA

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THIS DISSERTATION IS SUBMITTED TO THE DIRECTORATE OF GRADUATE STUDIES, RESEARCH, AND INNOVATIONS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE MASTER OF SCIENCE IN CLIMATE CHANGE AND DISASTER MANAGEMENT DEGREE OF BUSITEMA UNIVERSITY.

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DECLARATION

I, Bakole Alex, declare that this research dissertation titled ***"the Effects of Land Conflicts on Cassava Production in Lobule Sub-County, Koboko District of Uganda"*** is my original work except where due acknowledgment has been made. I declare that this work has never been submitted to this university or any other institution for funding or fulfillment of any academic award.

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DEDICATION

I dedicate this research work to my wife, Ms. Betty Trimaru, and my children—Nathan, Lean, Bernice, Jean, Jonah, and Amos—for their patience and unwavering support throughout my studies.

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DRC – Democratic Republic of Congo

DRDIP – Development Response to Displaced Impacts Project

FAO – Food and Agriculture Organization

FGD – Focus Group Discussion

GOU – Government of Uganda

IFAD – International Fund for Agricultural Development

IITA – International Institute of Tropical Agriculture

KI – Key Informants

KTA – Koboko Transformation Agenda

MAAIF – Ministry of Agriculture, Animal Industry and Fisheries

NAADS – National Agricultural Advisory Services

NAP – National Agricultural Policy

NARO – National Agricultural Research Organization

NGO – Non-Governmental Organization

NUSAF – Northern Uganda Social Action Fund

OWC – Operation Wealth Creation

PMA – Plan for Modernization of Agriculture

SDG – Sustainable Development Goals

UBOS – Uganda Bureau of Statistics

UNEP – United Nations Educational Programme

UNHCR – United Nations High Commissioner for Refugees

UWEP – Uganda Women Entrepreneurship Project

WFP – World Food Programme

WHO – World Health Organization

ABSTRACT

This study aimed to investigate the effects of land conflicts on cassava production in Lobule Sub-County, Koboko District. A mixed-methods approach was employed, including a survey of 300 households, five focus group discussions (FGDs), and three key informant interviews (KIIs).

Findings revealed that boundary conflicts (63.3%) and land inheritance conflicts (23%) were the most common types of land conflicts, alongside ownership and user conflicts. Key causes included unclear boundaries, lack of land registration, absence of formal user agreements, and corruption by some clan elders. Most conflicts (92.4%) were resolved at household and community levels, primarily by clan elders.

Cassava production was predominantly small-scale, with land conflicts accounting for 69.9% of production challenges reported by respondents. Other challenges included climate change, pests, diseases, and poor cassava varieties. The conflicts extended beyond family to community, clan, and institutional levels, posing significant challenges to peaceful coexistence.

Limited land availability and resource constraints hindered large-scale cassava production. Land conflicts reduced land size for cassava cultivation, discouraged investment on contested land, and led to shifts toward shorter-term crops such as maize.

Recommendations include: Implement agricultural support programs targeting farmers in conflict-prone areas, securing land access and user rights for tenant farmers to encourage sustained cassava cultivation

policy should aim to secure land tenure, introduce land conflict mediation services at the local level, and provide legal support to vulnerable groups such as women and tenant farmers, formal land registration clear demarcation of land boundaries through boundary tree planting, implementing these measures could mitigate the adverse effects of land conflicts on cassava production in Lobule Sub-County, Koboko District.

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CHAPTER ONE
INTRODUCTION.

1.1 Background to the Study.

It is projected that by 2050, the global population will reach approximately 9.8 billion people (FAO, 2010; Michael van Dijk et al., 2021). This rapid growth poses significant challenges for countries in achieving the Sustainable Development Goals (SDGs)**,** particularly those aimed at reducing poverty and ending hunger. According to FAO (2022), an estimated 670 million people are likely to remain food insecure by 2030. To meet future food demand, global agricultural production will need to increase by about 60% by 2050**,** in line with the 2030 Sustainable Development Agenda (FAO, 2010; Hendricks et al., 2023).

However, global efforts to address hunger and poverty are increasingly being undermined by conflicts over land. Land conflict has been identified as one of the major causes of food insecurity worldwide, particularly in Sub-Saharan Africa**,** where it significantly affects agricultural productivity (FAO, 2017; Uyang et al., 2013; Azechum, 2017). In addition to land conflict, climate change has further complicated food production. Rising temperatures, erratic rainfall, and prolonged droughts have reduced crop yields and increased production risks (UNCCD, 2014; Hendrix & Salehyan, 2012; Adano et al., 2012).

In Sub-Saharan Africa, land conflicts are widespread and represent the most common form of conflict on the continent (Sekeris, 2010). These conflicts generally fall into several categories: ownership conflicts (disputes over rightful ownership), inheritance conflicts (disagreements over land transfer within families), boundary conflicts (unclear plot borders), and user conflicts (disagreements over access and user rights) (AgNRM, 2017).

Weak land tenure systems, limited land documentation, corruption, and inadequate dispute resolution mechanisms exacerbate these conflicts. Countries such as Nigeria, Zimbabwe, South Africa, Rwanda, Burundi, Ghana, and Tanzania have experienced high levels of land-related disputes (Moore, 1966). In Nigeria, between 1983 and 2017, 94.5% of recorded conflicts were land-related, with 89% involving farmers and pastoralists (Abugunde et al., 2020). In Zimbabwe, land conflict negatively affected agricultural productivity due to historical segregation policies and population pressures (Anderson, 1999).

In Uganda, land conflicts are widespread, affecting between 33% and 50% of landholders (Musumba, 2014). These conflicts often escalate into violence, with over 90% of domestic disputes in Uganda involving land and affecting approximately 310,000 households (Owaraga, 2012). Studies have shown that conflicted plots produce 20% less yield than non-conflicted ones, while eviction conflicts can reduce yields by up to 37% (Mwesigye, 2015). The Uganda National Policy for Disaster Management (OPM, 2010) recognizes land conflict as a widespread disaster that affects food production. According to the National Development Plan III (NPA, 2020), land conflict has contributed to an 11% decline in food production.

Uganda's dual land tenure system, comprising both customary and statutory land, contributes to overlapping claims and ownership confusion. Customary land accounts for over 70% of Uganda's land and is often inherited orally without formal documentation, leading to multiple claimants and frequent inheritance disputes. Weak enforcement of land laws, corruption in land administration, and slow land registration processes further worsen the situation (Wehrmann, 2005). Land tenure insecurity discourages farmers from investing in their land, limits access to credit, and increases the likelihood of disputes. Without secure land rights, households are often reluctant to expand production or invest in long-term improvements.

In Koboko District, land conflicts are significant and complex, arising from ownership, boundary, inheritance, and land use disputes. Boundary conflicts often occur between individuals, communities, or administrative units, such as conflicts between Lobule Sub-County and Lodonga Sub-County (Yumbe District), or between Lobule and Tara Sub-County (Maracha District), accounting for approximately 45.3% of total conflicts. Inheritance conflicts are common at the household level, often among siblings after the death of parents without a clear will. These disputes are intensified in polygamous families. User conflicts occur mainly between landlords and tenant farmers, including between refugees and host communities, due to the absence of written land-use agreements and standard fees for land rental, leading to arbitrary evictions. Ownership conflicts are common across the district, such as disputes between Nyangilia Clan and Uganda Prison Services in Koboko Municipality, or between Pajomo and Bogilo Clans in Kuluba Sub-County. These disputes have led to the displacement of 513 residents and the burning of 64 homes (NTV Report, January 2024).

Cassava is a major food security crop consumed by over 800 million people globally (Balagopalan, 2002; FAO, 2012). Global cassava production is estimated at 278 million

metric tons, with Africa contributing 56% (156 million MT)**,** and Nigeria being the largest producer. Cassava was introduced to Uganda in 1862 and became a staple crop after colonial laws required every household to cultivate 0.2 ha (Langland, 1972; OECD, 2014). Uganda is the 22nd largest cassava producer globally, producing about 2.9 million metric tons**,** with major production concentrated in the Northern and West Nile regions, which contribute 34% of the national output (Semakula et al., 2004). Although 74.8% of farming households grow cassava, yields have declined due to continuous cultivation, poor planting materials, unreliable rainfall, prolonged droughts, pest and disease outbreaks, and land conflicts (Annual Agricultural Survey Report, 2019).

In Koboko District, cassava is one of three strategic crops alongside cocoa and coffee promoted through the Koboko Transformation Agenda (KTA)**.** Although the program encouraged large-scale cassava production (five acres and above), these efforts were hampered by land conflicts (Koboko District Investment Profile, 2016).

Between 2018 and 2022, cassava acreage declined by 10,004 acres**,** and yield reduced by 267,717.5 metric tons (District Production Department Reports, 2018–2022). In addition to land conflicts, pest and disease pressure (Jarvis et al., 2012) and climate change impacts have worsened production conditions of cassava in lobule sib county and Koboko district.

1.2 Statement of the Problem

Cassava is a staple crop in Koboko District and plays a critical role in household food security and income generation. In line with Vision 2040**,** the Government of Uganda has promoted cassava production through several programs, including the Plan for Modernization of Agriculture (PMA)**,** National Agricultural Advisory Services (NAADS)**,** Operation Wealth Creation (OWC)**,** and the Parish Development Model (PDM)**.**

Despite these efforts, cassava production in Koboko District declined by 10,004 acres and 267,717.5 metric tons between 2018 and 2022 (Koboko District Production Department Reports, 2018–2022). This decline has contributed to a sharp rise in cassava flour prices, from UGX 500–800 per kg to approximately UGX 1,500 per kg.

While several factors affect cassava production, including pests, diseases, and climate variability among others, land conflict remains a major and underexplored factor**.** To date, no comprehensive study has examined how land conflicts affect cassava production in Lobule Sub-County, Koboko District.

This study therefore sought to assess the effects of land conflicts on cassava production**,** providing evidence-based recommendations to inform land conflict management and agricultural productivity strategies.

1.3 Purpose of the Study

The purpose of this study was to assess the effects of land conflicts on cassava production in Lobule Sub-County**,** Koboko District.

1.3.1 Specific Objectives

1. To assess the status of land conflicts in Lobule Sub-County.
2. To assess the level of cassava production in Lobule Sub-County.
3. To examine the effects of land conflicts on cassava production.

1.3.2 Research Questions

1. What is the status of land conflicts in Lobule Sub-County, Koboko District?
2. What is the level of cassava production in Lobule Sub-County, Koboko District?
3. What are the effects of land conflicts on cassava production in Lobule Sub-County?

1.4 **Conceptual Framework**

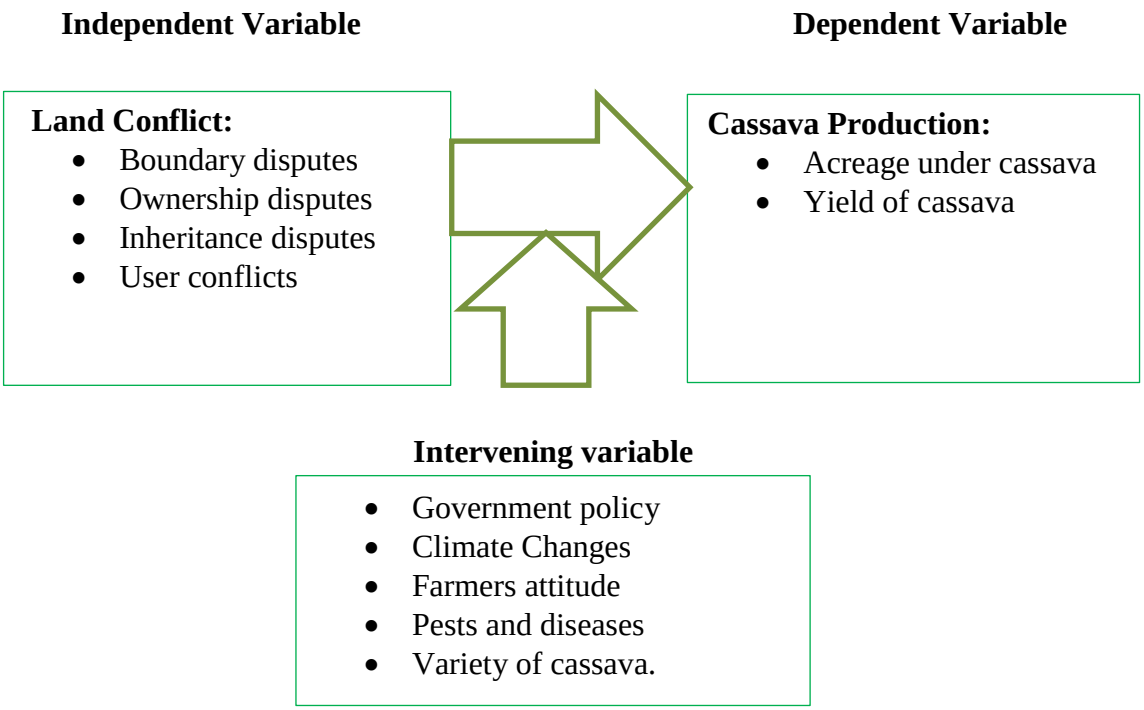


Figure 1: Conceptual Framework

Source: Adopted from Sabugo & Osumanu (2018)

The independent variable in this study is land conflict, which is operationalized through four main dimensions: Boundary conflicts, Inheritance conflicts, Ownership conflictsand User conflicts. The dependent variable is cassava production, measured through: Acreage under cassava cultivation and Cassava yield

The framework postulates that land conflicts, whether arising from boundary disputes, land use, ownership or inheritance issues, negatively influence cassava production by limiting the size of land cultivated and reducing yield.

The relationship between land conflict and cassava production may be moderated by intervening variables, which include: Government policies, Climate change, Farmers' attitudes, Pests and diseases. Cassava variety. These factors can either exacerbate or mitigate the effects of land conflicts on cassava production.

1.5 Justification of the Study.

This study investigated and documented the effects of land conflicts on cassava production in Lobule sub-county, Koboko District. The study will help generate and add new data to the existing body of Literature.

The information generated from the study will inform policymakers and other stakeholders to develop mechanisms for land conflict resolution and reduce land-related conflicts in Lobule Sun County, Koboko district.

With the revelation that land conflicts affected cassava production, the information generated will \help to identify new areas of research in relation to land conflicts and cassava production.

CHAPTER TWO
LITERATURE REVIEW.

2.0 Introduction

This chapter consists of review of related literature in the subject matter of land conflicts and cassava production in line with the study objectives

2.1 Theoretical Review

This study was guided by two conflict theories: The Deprivation Theory and the Need-Based Theory. The Deprivation Theory belongs to the sociological school of thought and is credited to Karl Marx. The theory states that society functions in a way that individuals and groups within it struggle to maximize their benefits, which inevitably yields conflicts Yakkaldevi, (2014).

Karl Marx holds the view that in every stratified society, there exist the ruling and the subject class. The ruling class draws its power from control of the resources, and in so doing, they exploit and oppress the subject class Yakkaldevi, (2014; Folarin, (2013). According to Smith and Pettigrew (2015), the theory implies that any human relationship characterized by exploitation tends to generate violent confrontation, resulting in conflicts.

This theory is directly linked to land conflicts, as land is a critical resource often controlled by the powerful elite. When the poor or marginalized feel exploited or deprived of access to land, it creates tension and may lead to violent conflicts. Furthermore, since land is a major factor in food production, deprivation of access to land means that individuals or communities are denied opportunities to grow food, leading to food insecurity and potentially worsening conflict situations.

The second theory is the Need-Based Theory. This theory suggests that human beings have certain fundamental needs, and the denial of such needs tends to spark conflicts Danesh, (2011). These needs are often universal, ontological, and non-negotiable Burton, (1990) and are necessary for the harmonious functioning of societies. Food is an ontological need, and any threat to its availability or access could invariably result in confrontation—as the saying goes, "a hungry man is an angry man." This theory is highly relevant to land conflicts, especially in agrarian societies where land is the most important resource for food production. When people are denied land, they are effectively denied the ability to meet their basic food

needs, which increases the risk of conflict. In this way, access to land is both a livelihood issue and a human security concern.

2.1 Status of Land Conflicts

According to sociologists, conflict is defined as a social difference between two or more parties relating to interests or social positions in society Imbusch, (1999). Conflicts emerge due to competing needs, values, or access to scarce resources. Land conflict, therefore, can be understood as a dispute between two or more parties over land. The right to use, manage, generate **i**ncome from, inherit, transfer, sell, or rent land Wehrmann, (2005). These conflicts may become aggravated when the social status, economic power, or political influence of the parties involved varies greatly.

Although land conflicts are often perceived to have destructive effects on society**,** social conflict theorists stress their role in initiating social change Bonacker, (1996). According to Coser (1956) and Zartman (1991), conflicts are inevitable in any society and can serve as catalysts for change if handled constructively. Zartman further argues that conflict resolution is often a long process, and even after resolution, it leaves behind social scars that influence future relationships.

For many decades, Africa was thought to have abundant land, creating a misleading perception that there is no landlessness in Africa; however, evidence indicates an increasing trend of land conflicts across the continent Andre & Plateau, (1998). Today, many people derive their livelihoods from small plots of land and are increasingly caught in a state of landlessness Raikes, (2000) and Peters, (2004). As early as 1988, the restricted state of land ownership in Africa had already been observed Downs & Reyna, (1988).

According to the World Bank, (2009), UNDP (2013), and Fumiko (2013), landlessness is significantly driven by rising incidences of land-related conflicts. Both need and greed have been identified as central causes of land conflicts in Africa. Need arises when people depend on land for basic needs such as food, shelter, and clothing. Greed**,** on the other hand, involves individuals using their power and influence to grab more land, even when they already have enough, thereby expanding their asset base Derman & Edgard, (2007).

Additionally**,** underlying factors such as population pressure, agricultural commercialization, and urbanization are contributing to the frequency and intensity of these conflicts Cotula,

(1999). In addition, Edgard, (2003), observed that increasing land conflicts in Africa are also linked to high birth rates, civil wars, forced migrations, and the expansion of conservation areas. Similarly, **(**Peters, 2004**)** noted that land conflicts intensify in rural communities where there is demand for more land to increase agricultural production and improve food security and household incomes.

The weakness in the implementation of land laws and the inefficiency of land conflict resolution systems in many African countries also exacerbate the problem UNLP, (2013). As Meier, Bond & Bond (2007) point out, that such conflicts often result in violent confrontations, displacement**,** loss of lives, and destruction of property. Moreover, inadequate attention to women's land rights continues to fuel conflicts.

According to Deininger & Castagnini (2004), cultural norms that exclude women from land inheritance increase the likelihood of land-related disputes between men and women, reducing women's ability to engage in productive agriculture. In Ghana, Kuusaana & Bakari (2015) observed that increasing land values and scarcity create fertile ground for conflict.

In Uganda, Kiyimba (2021), writing in the *Daily Monitor* (Sunday, July 4), noted that land remains the most important asset and factor of production, which explains why it is often the subject of conflict. He attributed these conflicts to high population growth, political interference, corruption, weak investigative capacity of the police, and delays in judicial processes, all of which escalate land disputes. In conclusion, land conflicts, when combined with climate change and weak governance structures, pose a serious threat to food production, particularly cassava cultivation.

2.2 Types of land conflicts

Various forms of land conflict have been identified in the literature, each exerting distinct pressures on crop production, including cassava. One of the most common types is boundary conflict, which arises due to unclear or contested demarcations between neighbouring plots. These often result in underutilization of land or destruction of crops, as farmers avoid cultivating near disputed areas Ubink & Amanor, (2008). Ownership conflicts, these are disagreements over legal or customary rights to land and can lead to evictions or court disputes, disrupting farming cycles and deterring investment in long-term crops like cassava. Inheritance conflicts also frequently occur within extended families, especially in societies

with overlapping customary and statutory land tenure systems. Such conflicts delay land access or result in land lying fallow while disputes remain unresolved Boone, (2014).

Among the different types of land conflicts, user conflicts which is defined as disputes arising from competing or overlapping uses of the same land by different parties have become common, raising increasing attention in both academic and policy circles. These conflicts do not necessarily concern land ownership but rather over use of land. Benjaminsen & Ba, (2009). In regions with competing land uses, land user conflicts, such as those between farmers and pastoralists, often escalate during planting or harvesting seasons, sometimes resulting in the destruction of cassava fields. Additionally, large-scale land acquisitions or land grabbing by private investors or state actors often displace smallholder cassava farmers, forcing them onto marginal lands with lower productivity Cotula et al., (2009). Even where violence is absent, tenure insecurity the perceived or real threat of eviction has been shown to reduce farmers' willingness to invest in land preparation or inputs, ultimately lowering cassava yields Deininger & Jin, (2006).

Collectively, these various forms of land conflict reduce the effective use of agricultural land, increase production risks, and undermine food security in cassava-dependent regions. Land conflicts present a critical constraint to agricultural productivity across many developing regions, particularly in the context of smallholder farming systems. Addressing these challenges requires strengthened, adequate, and prompt conflict resolution mechanisms inclusive policies that protect the rights of marginalized groups such as women and youth.

user conflicts significantly disrupt Cassava production especially due to its relatively long growing cycle (8–12 months), This makes cassava fields highly susceptible to damage in the event of land use disputes, particularly from roaming livestock from other land users. For instance, farmer–herder conflicts are among the most well-documented forms of user conflicts in West and Central Africa. Tonah, (2006). Such incidents not only result in direct yield losses but can also trigger violent confrontations, displacement of farming communities, and abandonment of cassava plots altogether Okumu, (2014). User conflicts also emerge in the context of changing land use patterns, in such cases, land previously allocated for cassava farming may be diverted for other uses.

User conflicts also intersect with issues of land tenure security, especially for tenant farmers and sharecroppers. Where land users do not have secure, long-term user rights to the land

they cultivate, they may avoid planting cassava due to its delayed harvest period. This dynamic is particularly relevant in land rental arrangements with un clear terms of land use where landlords may reclaim land before cassava is ready for harvest, leading to economic loss for the tenant farmer Holden & Ghebru, (2016).

The cumulative effect of user conflicts is the uncertainty and insecurity that undermines the motivation of farmers to invest in cassava production when the risk of land use disruption is high Peters, (2004). In summary, user conflicts represent a significant yet underexplored dimension of land conflicts affecting cassava production. As such, any effort to enhance cassava pproduction must address not only land tenure reform but also the complex and often overlapping claims on land use that give rise to user conflicts

2.3 Drivers of land conflicts

Land conflict has increasingly been identified as a significant barrier to agricultural productivity, particularly in rural areas where land serves as the main asset for economic activity. In cassava-producing communities, several underlying drivers of land conflicts have been recognized in literature, each of which contributes in distinct ways to reduced cassava production.

One of the most prevalent drivers is population pressure and land scarcity**,** particularly in densely populated rural areas. As population grows, so does the demand for land, resulting in fragmentation of existing farmland and encroachment onto neighbouring plots Deininger & Castagnini, (2006). This often leads to disputes over boundaries and ownership, discouraging farmers from planting cassava, which requires a longer maturation period compared to short-cycle crops. Fear of dispute escalation or crop destruction forces some farmers to reduce acreage or abandon cassava cultivation altogether.

Another significant driver is the existence of ambiguous or overlapping land tenure systems. In many African contexts, customary and statutory land laws coexist, often without clear integration. This duality results in competing land claims and confusion over ownership rights Ubink & Amanor, (2008). Farmers operating under insecure tenure are less likely to invest in long-term crops like cassava due to fear of eviction or disputes, ultimately leading to underutilization of productive land and low cassava output.

Inheritance-related disputes also play a major role, especially in communities where land is passed down through families without formal documentation. As multiple heirs lay claim to a single parcel, land can remain idle or contested for extended periods, interrupting farming cycles and reducing total production Boone, (2014). Such conflicts are particularly detrimental to cassava farming because its cultivation requires clear land access for a continuous 8–12-month period.

Competing land uses further intensify land conflicts, particularly where crop farming, grazing, infrastructure development, and urban expansion intersect. For instance, farmer–herder conflicts have become more frequent in parts of Sub-Saharan Africa, where livestock intrusions into cassava fields result in direct crop destruction Tonah, (2006). Similarly, rapid urbanization and government land acquisitions displace cassava farmers, pushing them onto marginal lands with poor soil quality and reduced access to inputs and markets Cotula et al., (2009). The situation is compounded by weak governance and corruption in land conflict resolution process

2.4 Level of Cassava Production

It is projected that global cassava production has declined. In Philippines for example, cassava production levels reduced in terms of hectarage between the years 2016 and 2022, and in India cassava production in terms of hectarage reduced from 173 in 2018 to 164 in 2022 (Zinga et al, 2023**).** In addition, Edson et al (2006) noted that the production area of cassava in India reduced from 85.7% to 45.5 % in the past 4 decades.

Studies have shown that, by 2025, 62% of global cassava production will come from Sub-Saharan Africa FOASTAT, (2020). However, on the contrary, FAO, (2021) noted that changes in weather patterns in Sub-Saharan Africa have reduced cassava yields by as much as 30% in conflict-prone and drought-affected areas. Asiedu et al. (2020)

In Ethiopia, for example, studies conducted on production efficiency indicated that land size and fertilizer use have a significant effect on cassava production Alula Tafesse1, Bekele Mena et al, (2021). This further suggests that adequate land size is an important factor in improving cassava production. In adequate land size limits practices like crop rotation and bush fallowing. contributing to the low production of cassava. However, the use of low-yielding varieties that succumb easily to diseases and pests of cassava is still being planted.

Although consumers and processors still prefer low yielding cassava varieties for specific uses. Low fertility of soils due to degradation affects cassava production, because the fallow periods are shorter as the pressure on arable land near homesteads is increasing, and the direct use of soil fertility enhancements in cassava cultivation are low, the yield potentials of the cassava are also often low, use of organic manure could improve soil properties, but this technical fact seems not to be applicable under influence of conflicts over the land.

Despite several efforts to enhance cassava production in terms of breeding of resistant varieties, distribution of improved varieties and pest and disease management among others, cassava production and productivity amongst the stallholder farmers in Africa remains below the optimal level (Rusike et al 2010), In Nigeria, industrial demand for cassava is relatively low, less than 5% of the total production of the country. This is probably because cassava contributes less to protein supplies than other cereals, partly because cassava leaves are not considered a source of protein. In addition, cassava is considered a major source of dietary energy for low-income earners in many African countries (Dahniya *et al.*, 1991).

2.5 Effects of land conflicts on cassava production.

Land is an indispensable input in agricultural production, conflicts over it leads to reduction in land holding size through fragmentation B.E Akinyemi et al (2017). this affects application of modern agricultural practices which affects output. Studies done in Kenya by CEEPA reveals that farmers who are faced with conflicts over land feel reluctant to apply long term improvement on their land and they shy away from planting long term profitable crops like cassava.

In east Africa for example Kenya, like in other countries in the world, land is important factor in agricultural production, it is subject to conflicts which affects rural farmers. studies show that rural households experience small-scale land conflicts with relatives, neighbors, landlords, and that such small-scale conflicts may have significant impacts on their agricultural productivity as a consequence. In Uganda, over 90% of domestic disputes involve land, affecting more than 310,000 households (Owaraga, 2012). Mwesigye (2015) reported that plots affected by conflicts yield 20% less, while eviction conflicts reduce yields by 37%.

Cassava is a long-term crop, requiring a stable environment. In conflict-prone areas, farmers are hesitant to invest in its cultivation, forcing farmers to reduce cultivation or abandon land altogether**,** limiting cassava expansion**.** Akinyemi et al (2017) reported that land fragmentation due to conflicts hinders the application of modern farming methods, reducing output. Similarly**,** Ofuoku & Anis (2018) confirmed that land conflicts reduce access to land, discourage investment, and divert resources, directly reducing cassava output. Likewise. Etuk et al. (2013) observed that land conflicts force farmers to abandon cassava farming or switch to short-term crops due to insecurity.

Mwesigye **(**2015), found that conflicted plots have 20–37% lower yields, especially where evictions are involved, and Rugadya (2009) showed that land conflicts result in reduced cultivation and loss of farm assets.

In cassava-growing regions, land conflicts have negatively affected cassava production by reducing access to farming land, displacing farmers, and disrupting planting cycles. For example, Kasirye (2013) noted that in Uganda, land disputes in areas like Luwero and Masindi led to a significant reduction in cassava output due to fear of eviction and uncertainty over land ownership. Muhereza & Otim (2015). In many cases, powerful individuals or elites manipulate legal frameworks to appropriate land, creating resentment and tensions at the community level Peters, (2004). This undermines trust in institutions, discourages investment on the land.

CHAPTER THREE

METHODOLOGY

3.1 Geographical scope of the study.

The study was conducted in lobule sub-county. Lobule sub-county is found in Koboko District. Koboko District is located in the north western part of Uganda. It is bordered by the Republic of South Sudan from the north, the Democratic Republic of Congo from the west, and Yumbe district from the east and Maracha district from the south, with its district headquarters about 574 km from the Ugandan capital city Kampala. The district has six rural sub-counties of Midia, Lobule, Kuluba, Dranya, Abuku, Ludara, and two Town Councils of Oraba and Keri. Lobule sub-county, among other sub-counties, was selected as a sample to represent other sub-counties for this study mainly because of common cases of land conflicts in the sub-county. (Koboko district hazard, risk, and vulnerability profile, (2016*).* In addition, Lobule sub county is a refugee hosting sub county, the influx of refugees in Lobule sub county exerts pressure on available resources, land inclusive, this has led to increased cases of land conflicts between refugees and host communities, this presents good data source for the reseash and the findings can offer appropriate solutions to address land conflicts in the community. it is therefore deemed appropriate study area for this study because of its convenience for the researcher to carry out the study. Lobule Sub-county has nine parishes with a total population of over 33,679 persons *(*National Population and Housing Census, 2014). With a population growth rate of 4.6%, the population of Lobule sub-county is projected to be 39,696, with 14,900 males and 16,800 females (Census, 2014. Fig 1

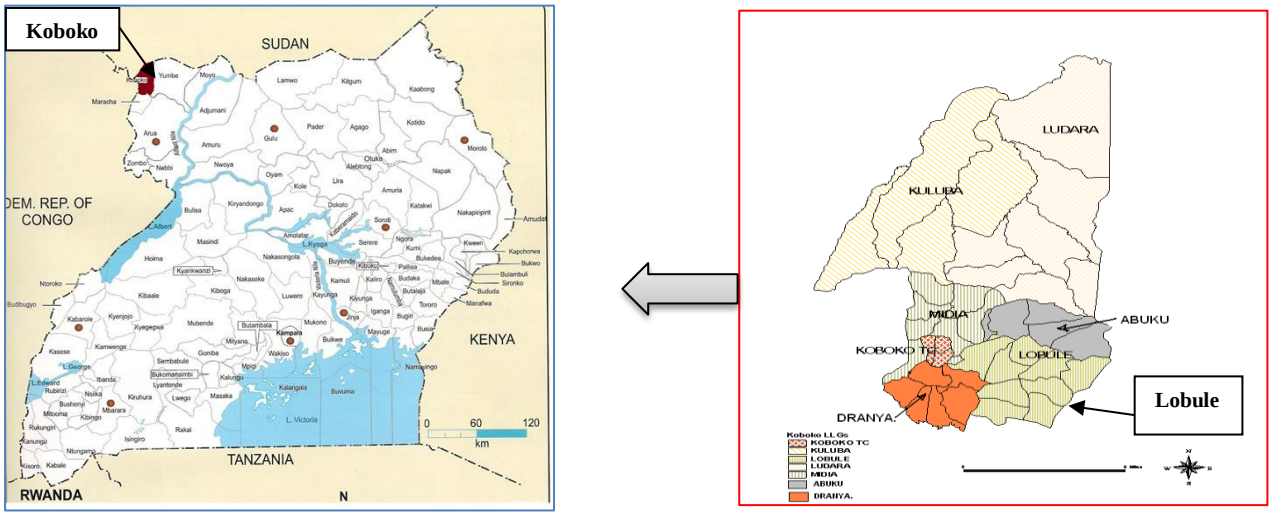


Figure 2; Map of Uganda and Koboko showing the study area (Koboko district investment plan2016).

3.2 Content scope

The study was limited to cover the perception of farmers on the effects of land conflicts on cassava production in Lobule Sub-County, Koboko district. It particularly focused on the status of land conflicts in Lobule Sub-County, the level of cassava production in Lobule Sub-County and the effects of land conflicts on cassava production. It further explored the types of land conflicts, causes and effects of land conflicts on cassava production and explored on the strategies for land conflict resolution in lobule sub county.

3.3 Time scope

The study was conducted within the period from 2018 to 2022, because it was the period when the Cassava Production levels dropped significantly (Source: Koboko District Production Department quarterly reports,2018-2022.

3.4 The research design

This study adopted a cross-sectional survey design that refers to a descriptive study, which is used to investigate a population by selecting a sample of the population to study and analyze the occurrences of cases in the population. This method was adopted because it describes data numerically of the whole population and also it is quick in data collection and this method was convenient in this study because a large sample size of different categories of people were used at the same time and it gave clear view of the population about the parameters that were studied that is land conflicts and cassava production. The study adopted both qualitative and quantitative approaches because of the advantage of the two methods complementing each other in mixed methodology. Both Quantitative and qualitative methods were used to explore measurable data and to examine the relationship between the variables of land conflicts and cassava production. Primary Data was collected using questionnaires and focus group discussions (FGD), while secondary data was collected from the sub-county community development office, office of the chairman of the local council three LC111, and sub-county agricultural officer, as well as from the district land office of Koboko using KII guide which was analyzed by using Stata. Statistical package.

3.5 The target population and sample size

The study targeted 1,200 respondents this included household heads, Local Area Land Committees, Local Government officials, Clan leaders, Local council one chairpersons,

Youth, and Elders. A sample size of 300 respondents was used, which was determined by Slovene's formula of sample size determination.

3.6 The sample size determination.

The sample size for this study was determined by using Taro Yamen formula (1967)

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

where; N= target population, n= sample size

α=0.05 level of significance

Therefore;

n= 1200/1+1200(0.05)2

n= 1200/ 1+1200 (0.05*0.05)

n=1200/1+1200(0.0025)

n=1200/1+3

n=1200/4

n (Sample Size) =300

3.7 Sampling techniques

A combination of methods was used to select respondents for the survey and for the Focus Group Discussions (FGD). Simple random sampling was used in this study alongside purposeful sampling. Simple random sampling is a sampling method where every individual in a population has an equal chance of being selected for the study. Simple random sampling was used to select the parishes, villages, and the respondents (household heads) from the villages. 6 parishes were randomly selected out of 9 parishes, two villages were selected per parish, and 25 households were selected from each village randomly for the survey interviews.

3.8.0 Data Collection Methods and Tools

3.8.1 Quantitative data

For house hold data, cross sectional survey (questionnaire) was used. Cross-sectional survey refers to descriptive study which is used to investigate a population by selecting a sample of population to study and analyze the occurrences of cases in the population. this method is selected because it describes data numerically of the whole population and also it is quick in data collection and this method is convenient in this study.

In addition, FGD.and KII were also conducted. Focus group discussion (FGD) is a qualitative method where a small, diverse group of people participate in a guided discussion to share their views, and experiences on specific topic. While

Key informant interviews (KII) is a research method where in depth information is gathered from individuals with knowledge in the specific subject matter. this method was adopted to get a wide range of information from different stakeholders Purposive sampling was used to select the key informants, the sub-county staff, the Area land committee members, land lords, and the district land officer because of their experience in subject matters under study. which has guided the researcher to obtain deep insights into the phenomenon of land conflicts and cassava production.

The category of people who were considered as the key informants from whom information was collected included the sub-county staff, Area land committee members, Elders, sub-county staff, and the district land officer. These were interviewed to provide information regarding the status of land conflicts, the level of cassava production, and the effects of land conflicts on cassava production.

3.8.2 Qualitative data

Qualitative data were collected using unstructured, open-ended questions from Focus Group Discussion (FGD) and Key informants (KI) using interviews because the respondents were few, and it was intended to get the views and opinions from the respondents in line with the study objectives. The lead investigator was assisted by two research assistants (one male and a female) to aid in the recording of the information from participants. The research assistants had a diploma in agriculture.

This qualitative study was underpinned by content analysis, where the information was grouped into main themes and subthemes. The themes were boundary conflicts, inheritance conflicts, and user conflicts for land conflicts and low, moderate and high for level of cassava production the study was conducted in a community setting at least 1 km away from the nearest trading Centre to avoid interference from non-participants. The participants for the FGD were mobilized from the selected villages. Key informants included the district Land officer, chairman LC111, Area land committee chairperson, and the sub-county agriculture officer and sub-county community development officer. The number of participants for FGD

ranges from 10-12 (Allison Tong et al,2017), while the total number of FGDs was determined by saturation of information as assessed by the lead investigator (Allison Tong et al, 2017).

During the FGD sessions, the responses from participants were gathered by taking notes, coupled with an audio recording of the session, where permission for audio recording was granted. FGD was conducted in both English and local language (Kakwa and Lugbara) where Each FGD took between 1-2 hours with the lead investigator playing the role of moderator to guide the session in context and content. Separate FGD sessions were organized for male and female participants. Key informant interview sessions took about one hour and were undertaken in a face-to-face interaction which involves organizing the information into themes or sub-themes as mentioned above, and responses were indicated in a logical flow.

3.8.3 Validity of Research Instruments

The Instruments (questionnaire and FGD Guide) were tested for validity by the team of supervisors and research assistants in the field of the proposed study. A questionnaire is data collection tool used to get information through structured and un structured questions while

FGD guide is a tool used to facilitate productive discussion among participants to share their views and thoughts and opinions on the topic of study. The tool was pre-tested by the researcher and research assistants before the actual data collection was done, and they were found to be good for data collection with gaps, which were corrected before the research instruments were used for data collection. The views of the research assistants and the researcher were used to revise the questionnaires above 0.6, as documented by (Kombo & Tromp, 2006, and Erima, 2015).

3.8.4 Reliability of Research Instruments

To ensure whether there was consistency or not, a pre-test was done, data were collected from different locations of Lobule Sub-County, and the scores obtained from the pre-test were used to establish the Cronbach's Alpha Coefficient using SPSS, which was interpreted accordingly. A minimum reliability coefficient of 0.7 was accepted to make reliable conclusions that the instruments were reliable (George and Mallery,2003).

3.8.5 Data Processing and Analysis

For objective 1 and 2, data collected from the field was first sorted and checked for completeness and accuracy. After this, it was manually coded and later entered into the Stata statistical software for analysis. Descriptive statistics such as frequencies, proportions and percentages were used to summarize and describe the status of land conflicts and levels of cassava production in Lobule Sub-County.

For objective 3, which was to examine the relationship between land conflicts and cassava production in Lobule Sub-County, a cross tabulation table was drawn and a chi-square test was run.

This statistical technique was employed to determine whether land conflicts significantly influenced cassava production levels and to what extent this was to determine if there was significant relationship between the presence of land conflicts and levels of cassava production. status of land conflicts was categorized into three levels (Low, Medium, High), and level of cassava production was categorized as low and high based on the farmers responses. The test assessed whether variations in cassava production levels were associated with the status of land conflicts.

3.8.6 Limitation of the study

Language barrier as some of the enumerators did not know how to speak Kakwa and Arabic language very well, it required translation, as such there was double payment for the translator and the enumerator.

There was delays from the side of the sponsor to release finances timely this affected the completion of the study timely. Due to financial constraints, few enumerators were deployed. Another limitation was on information provision which affected the timing of the study. Some respondents were reluctant to share information with the interviewer because they thought the researcher would give compensation for their time. Contrary to that, some were not able to share information freely with the enumerators. However, this was addressed by sensitization and clearly stating the purpose of the research and assurance for the confidentiality of the information.

In addition, there were technical challenges related to tools for example the phones, running out of battery in the field as the tool was digitized .data collected could not synchronize in the

saver, and yet enumerators were paid for data collected this led to extra costs encountered for additional data collection.

3.8.7 Ethical Considerations

An ethical code of conduct was observed during this study. The principles of consent, justice, and privacy were followed during the process of conducting this study. As such, clearance was obtained from relevant authorities such as local council one at the village levels, the office of L.C. 3, and the office of the sub-county chief. Abuse, respect, privacy, safety, social and psychological well-being of respondents were observed during this study Creswell, 2012)

3.8.8 Environmental considerations

Environmental concerns were also considered in this study, especially the reduction of damage to the system, and considering environmentally friendly approaches.

3.8.9 Gender Consideration:

The study took gender consideration as a priority. This was done by ensuring that both female and male respondents were considered during the survey and focus group discussion FGD), and male and female respondents were treated equally. And they were grouped separately to get different views from the respondents. Where the population was heterogeneous, more focus was given to female households to bring about gender equality issues in the study.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Objective 1. Status of land conflicts in Lobule Sub-County

The study inquired into the status of land conflicts in Lobule Sub-County. The responses were presented in form of frequency counts, proportions and percentages starting with the socio-demographic characteristics of the respondents as in the tables 1 and 2 bellow.

Table 1: Demographic Characteristics of Respondents

Gender of respondents	**Frequency**	**Percentage (%)**
Males	189	63
Females	111	37
Age of respondents		
18-30	69	23
31-50	165	55
51-60	46	15.3
Above 60	20	6.7
Level of Education		
Non-formal	82	27.4
Primary	189	63
Secondary	28	9.3
Certificate	01	0.3
Nationality		
Non-Ugandan	04	1.3
Ugandan	296	98.7

Table 2: Responses on Status of Land Conflict in Lobule Sub-County (n=300)

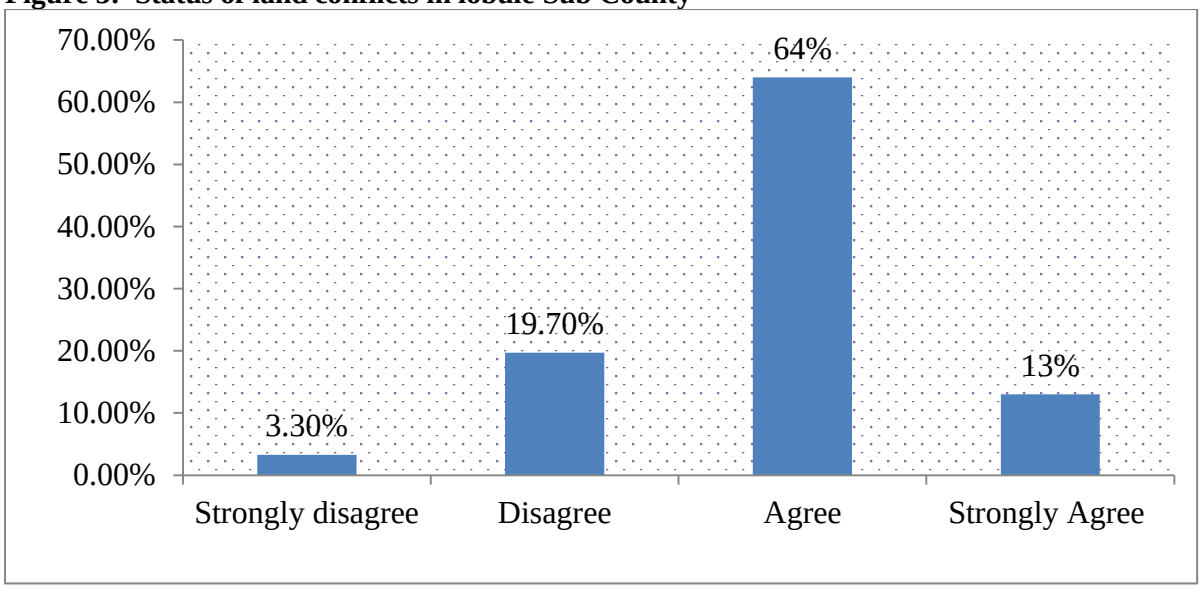
Variable	**Frequency**	**Percentage (%) n=**
Ever experienced cases of land conflicts in the last ten years?		
Yes	233	77.7
No	67	22.3
Number of times of land conflict cases for last 10 years		
Once	61	20.3
Twice	69	21.7
Thrice	46	15.3
More than thrice	59	19.7
None	65	21.7
Land conflicts are increasing in your area		
Strongly Disagree	10	3.3
Disagree	59	19.7
Agree	192	64
Strongly Agree	39	13
Land conflict resolution mechanisms		
Household	98	13.8
Household and community	159	53
Household, community and police	02	07
Household and police	02	07
Household and court	02	07
Community alone	19	6.3
Community and police	07	2.3
Police alone	05	1.6
Police and court	06	02

The majority of the respondents agreed that land conflicts exists in Lobule sub county and it's a common phenomenon on increase (64%), most of the respondents have experienced land conflicts more than once in the last ten years (69%) and the cases of land conflicts were mainly resolved at household and community levels accounting for (53%)

This is consistent with the findings in literature. Africa was thought to have abundant land; however, evidence indicates an increasing trend of land conflicts across the continent Andre & Plateau, (1998). Primarily, the most common forms of land conflicts are boundary, ownership, user, and inheritance conflicts, which occur not only at the family level but also extend to the community, clan, and institutional levels. This study is in line with Uganda's national policy for disaster management OPM, (2010) which pointed out that land conflict is a form of disaster across the country including Koboko district lobule inclusive as in this quote bellow.

"These conflicts are stagnant in the district, Last year, we lost a staff member of the Koboko municipal council; this year, we lost an LC1 chairperson from Lobule sub-county. Key informant (Land officer, Koboko district local government)"

Figure 3: Status of land conflicts in lobule Sub County



The results of the study showed that most respondents192 (64%) agreed that there is an increase in cases of land conflicts in Lobule Sub-County (Fig. 2). The survey results revealed that the common form of land conflict is boundary conflict, followed by ownership and inheritance conflict accounting for 48.7 %,18.3 % and 14.7 %respectively.

4.2 Frequency of land conflicts

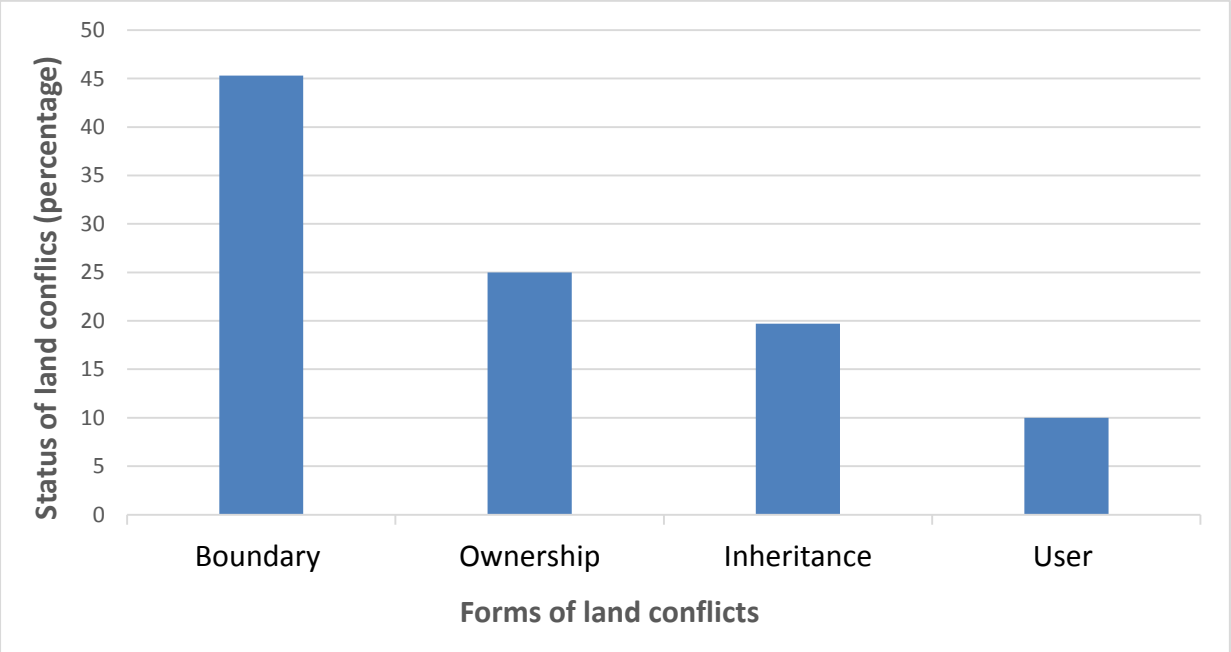
The Survey results showed that the majority, 234 of the respondents, representing 78% had experienced land conflicts, while 66 of the respondents, representing 22%, had never experienced cases of land conflicts during the past ten years. These results agree with FGDs and KII that showed that there is a high increase in conflicts over land in Lobule sub-county. The quotation below supports the results that land conflicts are on the increase.

"Cases of conflicts over land are very rampant and they are on the increase," (Chairperson, local council 3, Lobule Sub-County).

4.3 Forms of land conflicts

The results of the Survey, focus group discussions (FGD) and key informant interviews (KII) agreed that, Boundary conflicts are the major forms of land conflicts in Koboko district, followed by ownership conflicts. Inheritance and user-related conflicts equally exist but to a lesser extent.

Figure 4: Forms of land conflicts in Lobule Sub County.



It was revealed that land inheritance conflicts occur within the same families, family to family, within a particular clan, as supported by the quotation ;*"Conflicts have two sides, one is at the family level and the other is at the community level, clan and clan also exist over land" (Respondent, FGD clan elders).* From the key informant interview results, it was

further revealed that institutional land conflicts also exist, where institutions conflict with the community over land, as evidenced by the quotation. *"There are also institutional conflicts between institutions and the community, which we are always addressing, and they are on the increase in the sub-county. This has caused the killing of people, and so far, about 3 people have been killed and buried" (Area land committee chairperson, Lobule sub-county).*

4.4 Causes of land conflicts

The survey results indicate reduced land size due to population increase, human greediness for property including land, unclear land boundaries, inadequate land registration, lack of clear written down will at the family level on inheritance of property, lack of documentation over user rights, favoritism, and corruption amongst the clan elders were mentioned to be the causes of conflicts over land. as categorized in table 3.

Table 3: causes of land conflicts

S/No.	Causes of conflicts	Frequency	Percentage
1	Population increase	78	26 %
2	Lack of land registration	75	25%
3	Lack of user agreement	41	13.6%
4	Lack of written down will	38	12.7%
5	Un clear land boundaries	68	22.7%
	Total	**300**	**100%**

In agreement with survey results, FGD and KII results indicate that population increase, unclear land boundary, lack of land registration, lack of user agreement, and "written will" about family property including land, are the causes of land conflicts. However, in addition, FGD and KII results revealed that polygamy is underlying factor in promoting population increase as factor of conflicts over land in Lobule sub-county, Koboko District, as confirmed by the below quotation; *"Even the issues of polygamy with different wives are the ones causing conflicts over land. The children of the first wife will grow up first and due to greed, they can grab all the land and leave little land for the children of the second wife and the last wives, which gives rise to conflicts over land at family levels" (Respondent, women FGD).*

With the fact that land size is not increasing, yet the human population is growing every day, a time comes when the available land cannot support the human population. In line with Darwin's theory of existence, Darwin. C. (1859), initially as the population was small, the

available land resources were sufficient enough to allow organisms to co-exist but as the population grew, the resources could not sufficiently sustain all the organism population, "struggle for existence" "survival for the fittest" applies, all individuals will compete for the limited land resources to exist.

As the population grows higher, only the strong and able-bodied with capacity will be able to survive and compete for the limited resources, thus conflicts arise through the "survival of the fittest" principle. This is in line with the deprivation theory. The ruling class oppress the subject class, sparking conflicts as stipulated the deprivation theory

Declining soil fertility was mentioned to be among the causes of land conflicts. This means that for sustainable living, one has to cultivate crops and rear animals on a relatively productive and larger piece of land, which ultimately could lead to conflicts over land. This is in line with the need-based theory related to kalmax in the theoretical review Burton, (1990). This theory relevant to land conflicts, especially in agrarian societies where land is the most important resource for food production. When people are denied land, they are effectively denied the ability to meet their basic food needs, which increases the risk of conflict. In this way, access to land is basically a livelihood issue. This leads to over-reliance on land and People perceive it as "black gold," which calls for protection. In this regard, parents will deliberately refuse to give land to their children with the idea that the children can sell off the land due to poverty. This gives rise to land conflicts between children and their parents.

The majority of the respondents mentioned that they had experienced land conflicts during the past ten years. Because the majority of the respondents are between the age bracket of 35-50 years, who have witnessed or been involved in cases of land conflicts in the last 10 years, it is possible that the increase in land conflicts could be attributed to the rapid population growth rate. This is in line with the census survey that the annual population growth is high at 3.2% (UBOS, 2021).

4.5 Land Size owned by respondents

The study results revealed that the majority (173) of the respondents, representing 57.7%, owned 1-2 acres of land. While 68 of the respondents representing (22.7%) owned less than one acre of land, 48 of the respondents representing (16%) owned between 2-5 acres of land, and 11 of the respondents representing (3.6%) owned above 5 acres of land.

4.6 Land conflict resolution levels

The survey results distinctly illustrated that the majority of respondents, 159, representing 53%, found resolution at the household and community levels. Overall, the findings from focus group discussions (FGDs) and key informant interviews (KIIs) indicated that land disputes are commonly settled within households and communities, particularly with the involvement of clan elders. The majority of respondents expressed trust in the knowledge of clan elders regarding land history and boundaries, acknowledging their ability to make informed decisions in resolving land conflicts, as evidenced by the following quotation.;

"We have elders within the sub-county who handle these conflicts over land, because they know the origin and boundaries of the land with conflicts." (Assistant Agricultural Officer, Lobule sub-county). probably because the local community leaders, including LC1 chairpersons, clan leaders, area land committees, and opinion leaders, among others, live within the local communities and could be knowledgeable about the land ownership and boundaries than any other person. Additionally, this implies that the local community respects the elders and therefore believes in the resolutions made by them. The other reason could be that conflict resolutions at higher levels, like police and court, could be expensive, too bureaucratic, and could be based on corruption instead of following the truth for justice. This probably hinders the local community from reporting land conflicts to the police and courts of law.

In line with the first objective, which was to assess the status of land conflicts in lobule sub county, the status of land conflict was categorized as low, moderate and high. The findings indicated that the majority of farmers experienced either moderate or high levels of land conflicts, suggesting that land conflicts are a common and increasing issues in lobule cassava-producing communities.

Common forms of land conflict identified included inheritance, boundary and user conflicts These patterns affirm the conceptual framework's premise that the prevalence and level of land conflict are central variables influencing cassava production and productivity. These results underscore the need for stronger land governance, including accessible land dispute resolution systems and formalization of land boundaries through community mapping and registration.

4.7 Objective 2. Level of Cassava Production in Lobule Sub-County.

The second objective was to assess the level of cassava production in Lobule sub-county, Koboko district. The results are presented in Table.4 and interpreted by using a 5-point rating scale.

Table 4: Responses on Cassava Production in Lobule Sub-County.

Statement	Very Poor	Poor	Fair	Good	Very good	Mean	S. D
Level of cassava production in lobule Sub-county (yield)	(00) 00%	(221) 73.7%	(10) 3.3 %	(02) 0.7%	(67) 22.3%	2.72	1.248
Land size under cassava production.	(00) 00%	(179) 59.7%	(94) 31.3 %	(03) 01%	(24) 8%	2.57	0.863
Level of availability of cassava products?	(00) 00%	(194) 64.7%	(42) 14%	(03) 1%	(61) 20.3%	2.77	1.190
Conditions for large-scale cassava production in lobule sub county?	(00) 0.0%	(214) 71.3%	(49) 16.3 %	(02) 0.7%	(35) 11.7%	2.53	0.981

Scale: 5-point rating scale 1 = Very Poor; 2 = Poor; 3 = Fair ;4 = Good; 5 = Very Good

The findings in Table. 4 indicate that cassava production in Lobule Sub-County is generally perceived to be low, with 73.7% of respondents rating it as poor.

This perception is reflected by a low mean score of 2.72, suggesting that the majority of respondents believed that the level of cassava production is inadequate. According to the majority of the respondents, this was attributed to increasing conflicts over land.

The standard deviation of 1.248 indicates moderate variation in opinions of the respondents, implying that, while most respondents rated it poorly, a small group still viewed it as good. Furthermore, the size of land under cassava production was perceived as inadequate due to land conflicts, with 59.7% of respondents rating it as poor. This is consistent with the mean value of 2.57, which implies a generally negative perception, though the lower standard deviation of 0.863 shows that responses were more clustered around the mean, indicating less variation in opinion.

In terms of availability of cassava products, 64.7% rated it as poor, supported by a mean of 2.77. This suggests that respondents feel cassava products are not sufficiently available within the sub-county, possibly due to low production levels. The standard deviation of 1.190 indicates a fairly wide variation in perception, which could be due to differences in market access, location, or income levels among respondents.

Additionally, 71.3% of respondents rated the conditions for large-scale cassava production as poor, which is echoed by the mean score of 2.53. The standard deviation of 0.981 points to some diversity in views, but overall agreement that land conflicts hinder the possibility of expanding cassava production at scale. In conclusion, the majority of respondents rated cassava production levels both in terms of acreage under cassava and yield of cassava as poor.

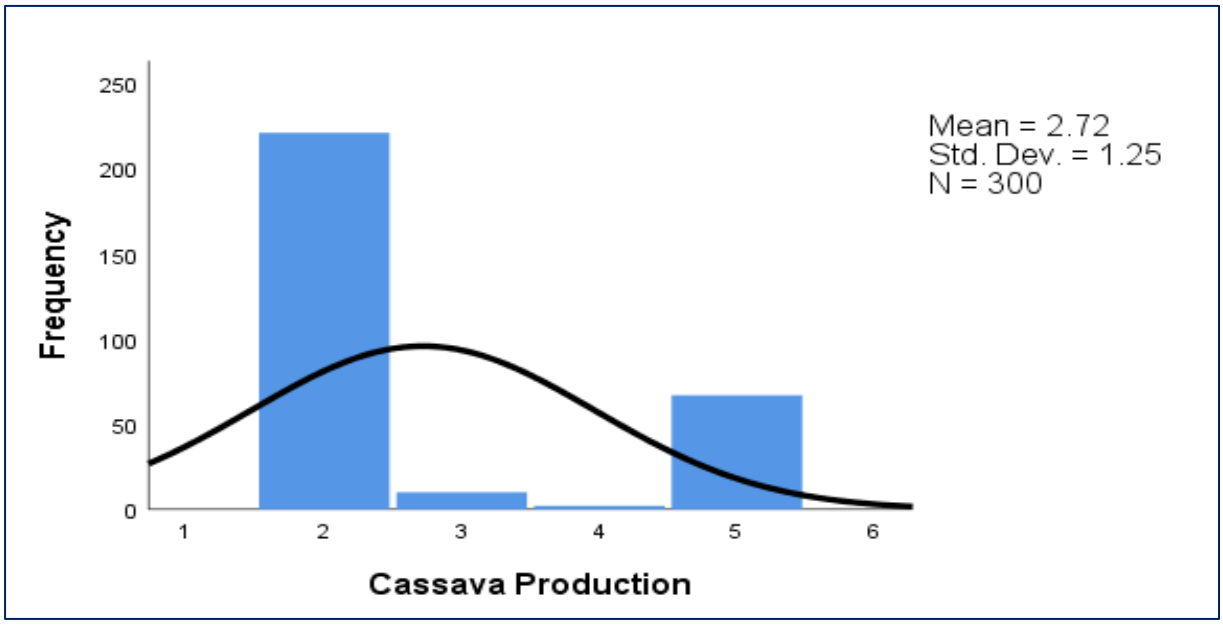


Figure 5: Bar graph showing level of cassava production (acres) in lobule Sub- county
5-point rating scale 1 = Very Poor; 2 = Poor; 3 = Fair ;4 = Good; 5 = Very Good

Fig. 4: above illustrates a positively skewed curve; more farmers are concentrated on the left side of the curve. Most farmers have low to moderate level of cassava production. The highest frequency is at level 2, which suggests that a large proportion of farmers fell into the low production category. The mean value is low (2.72), which supports the positively skewed pattern. The secondary data on cassava production obtained from Koboko district production office indicates a declining trend in cassava production levels in the district, this agrees with the information displayed in figure: 4. above.

Table 5: Level of cassava production in Koboko district.

Year	2018	2019	2020	2021	2022
Acreage	18,497	19,933	9,849	6,985	6,493
Yield (tons)	12745.5	29,899.5	14,7773.5	10,477.5	9,739.5

From table 5. above, Cassava production in Koboko District declined significantly by 10,004 acres, and the corresponding yield declined by 267,717.5 metric tons between 2018 and 2022. *(Source: Koboko district production department quarterly reports (2018-2022)*

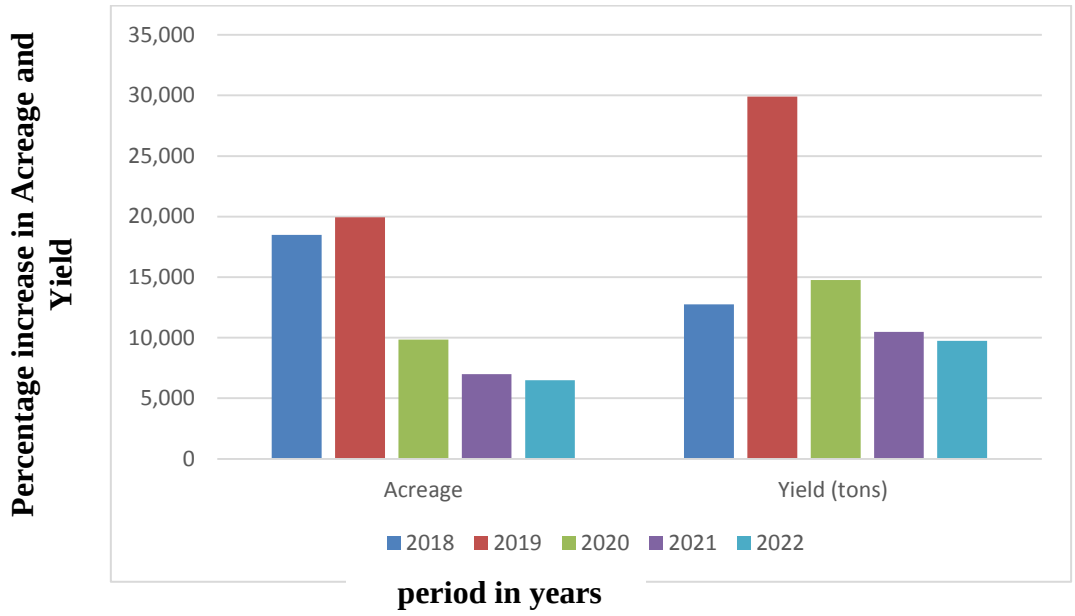


Figure 6: Showing the level of cassava production in Koboko

The second objective of this study was to establish the level of cassava production in Lobule sub-county. The study found that the level of cassava production was low in Lobule sub-county. 73.7% of respondents in Lobule rated cassava production as poor (table. 4) Similarly**,** Rusike et al. (2010) noted that cassava production among smallholder farmers in Africa remains below optimal levels. Ekop et al. (2019) also reported low yields under farmer-managed conditions.

The probable reason for the similarity could be that both lobule and many areas in Sub-Saharan Africa share similar farming conditions. Land conflicts, poor cassava varieties, climate change in terms of increased temperatures and unreliable rainfall patterns, pests and diseases, and stray animals were cited as reasons to explain the consistently low levels of cassava production in the sub-county.

Although improved varieties have been developed, smallholder farmers including those in Lobule, still use low-yielding cassava varieties that have been affected by diseases. Affecting cassava production in terms of yield, as noted in the literature. Farmers often stick to traditional varieties due to taste preferences, cultural practices, or distrust of new seeds. Lack of awareness, affordability, and extension support may also prevent the adoption of improved varieties. The study also found that 59.7% of respondents perceived the land under cassava production as inadequate due to land conflicts.

This is in line with Bekele et al. (2021), who emphasized that land scarcity in Sub-Saharan Africa will hamper cassava production. This is probably because population increase, unclear land ownership structures, and unresolved conflicts over land are widespread issues in rural Africa, including Lobule sub-county. The findings revealed that 71.3% of the respondents rated conditions for large-scale cassava production as poor. A similar finding is revealed by Alula and Bekele (2021), who found that larger land sizes were essential for improved cassava yields. The similarity in the findings could be attributed to the fact that across many African communities, land fragmentation and disputes make it hard to scale up cassava farming, a condition reflected in both the study and literature.

The findings reflect poor production trends. Likewise, Zinga et al. (2023) observed that cassava hectarage dropped in the Philippines and India between 2016 and 2022. Lobule's local production is perceived as declining.

The explanation could be because local areas like Lobule may suffer from localized issues such as unresolved land conflicts. Despite cassava being a staple and cheap energy source, In Lobule, it was found that cassava products are limited. This may be due to low production and supply. Berry (1993) and Nweke (1994) found that consumers in some African countries were moving away from cassava toward more convenient foods.

Yet in Lobule, the concern was more about cassava product availability and affordability. This could probably be so because Urban areas may exhibit such preference shifts, but in rural Lobule, cassava still serves as a major food source. The local concern isn't changing tastes, but lack of access and low yields

The study revealed a clear disparity in cassava production levels between moderate to high conflict-affected and low conflict-affected farmers. Farmers who experienced low effect of

land conflicts reported high level of cassava production while those experiencing moderate to high conflicts reported significantly low levels of cassava production.

This confirms the second assumption in the conceptual framework: that cassava production levels are sensitive to status of land conflicts. The findings suggest a need for agricultural support programs that specifically target farmers in conflict-prone areas, providing them with secure land access and incentives to continue cassava cultivation.

4.8 Objective 3. Effects of land conflicts on cassava production.

The third object of the study determined the effects of land conflicts and cassava production in lobule Sub-County, Koboko District. Majority of the respondents 221(87%) accepted that Land conflicts have effects on cassava production in terms of land availability for cassava production.

While 39 (13%) of the respondents did not agree that land conflicts affect cassava production in lobule sub-county. 86.3 % of the respondents agreed that there was reduced land for cassava production as a result of conflicts over land in lobule sub-county. In addition, the survey results indicated that, in the past ten years, 216 respondents agreed to having more than one acre of land under cassava production, while 84 of the respondents agreed to having less than one acre of land under cassava production in the past ten years.

Currently, the majority, 199 representing (66.3%), cultivate cassava on less than one acre of land. This indicates a reduction in the land area under cassava cultivation in lobule sub-county and Koboko District as a whole. About production yield data, survey results revealed that most respondents harvested between 1 and 5 tons of cassava in both the past and present periods.

In addition, the survey results further revealed that the majority, 286, representing 95.3%, rated cassava production as low. The primary reasons cited for the low cassava production were land conflicts, increase in cassava pests and diseases, and declining soil fertility. These findings align with those from focus group discussions (FGDs) and key informant interviews (KII), where all participants noted a current reduction in available land for cassava production. respondents mainly attributed this reduction to the increase in human population resulting to conflicts, land fragmentation, declining soil fertility, cassava pests and diseases,

poor cassava varieties, emergent weeds, and the impacts of climate change and climate variability.

Table 6: A cross-tabulation. Effects of land conflicts on cassava production.

Status of land conflicts	**Level of cassava production (Low)**	**Level of cassava production (High)**	**Total**
High	292 (97.3%)	08 (2.7%)	300(100%)
Moderate	213 (71%)	87(29%)	300(100%
Low	12 (4%)	288(96%)	300(100%)
Totals	**517**	**383**	**900**

A Chi-square test was run to determine the relationship between the status of land conflicts and the level of cassava production across 300 farming households in line with the 3 different variables of land conflicts status categorized as (High, Moderate, Low) and 2variables of cassava production level categorized as (Low and High) with 900 chances of observations.

Table 7: chi-square (χ^2) test table.

Chi-square Statistic $\chi 2 = \sum \frac{(O-E)2}{E}$

Group	**Observed (O)**	**Expected (E)**	**$(O-E)^2/E$**
High–Low	292	172.33	80.18
High–High	8	127.67	142.39
Moderate–Low	213	172.33	9.38
Moderate–High	87	127.67	13.07
Low–Low	12	172.33	149.47
Low–High	288	127.67	127.84
Total χ^2			**522.33**

The results revealed a statistically significant association between the two variables (land conflicts and cassava production)

χ^2 (2, N = 900) = 522.33, p < .001**.** df = 2,

The breakdown of the data revealed clear trends that; With high land conflict situation, 97.3% (n = 292) reported low cassava production, while only 2.7% (n = 8) reported high production. In moderate conflict areas, 71% (n = 213) experienced low production, and 29% (n = 87) experienced high production. In low conflict areas, just 4% (n = 12) had low production, whereas a significant 96% (n = 288) had high production. These results suggest that higher levels of land conflict are strongly associated with lower levels of cassava production. Conversely, lower land conflict levels correlate with higher levels of cassava productionon meaning as land conflicts increases from low to high, the level of cassava drops drastically This supports the hypothesis that land conflict negatively impacts cassava production.as sown in table 6 above.

The survey results reveal that before intensification of land conflicts, the majority of the respondents, 174 (58%), cultivated cassava on between 1 and 2 hectares of land, whereas with intensification of land conflicts, the majority of the respondents,216 (72%) cultivate cassava on less than one acre of land This agrees with the FGD and KII results, which highlighted that conflicts over land have greatly affected acreage under cassava production and cassava yield. Accordingly, information showed that land conflicts resulted into; land neglect giving rise to idle land due to long bureaucratic tendencies at police and courts of law, direct damage of cassava by conflicting parties, adoption of short season crops like maize instead of cassava by famers, premature harvesting of cassava on conflicted land, delayed planting of cassava due to long process of conflict resolution before the land is set free for use, relocation and in some instances deaths of cassava farmers as a result of fighting in severe cases. The quotation below confirms land neglect as a result of long bureaucratic tendencies by the police and the courts of law:

"For me, I am a victim of conflicts over land; our land, on which we used to grow cassava, has conflicts which has taken three years. We were stopped from using that land by the police and courts of law, and the case has not been resolved. Currently, that land is being used for grazing animals, and this has affected cassava growing in my family," (Women, FGD).

4.9 How land conflicts affect cassava production.

From the survey results, the majority of the respondents revealed that the level of cassava production is low, land area under cassava production has reduced due to conflicts over land, there is an increase in cassava prices due to low cassava production, and that land conflicts affect large-scale cassava production.

The study found that Land conflicts affected cassava in terms of acreage under cassava production and the yield of cassava. This affected large-scale cassava production, and this study is in line with Akinyemi et al, (2017), who acknowledged that land is an indispensable input in agricultural production, and conflicts over it led to a reduction in land holding size through fragmentation, and farmers shy away from employing modern agricultural practices to improve yields.

The findings of the study revealed that land conflict affected the amount of land available for cassava production in Lobule Sub-County, as shown by 87%, and supported by 86.3% of respondents who affirmed that there was reduced land for cassava production as a result of the land conflicts.

This could be explained by considering the results, which revealed that before the intensification of land conflicts, 58% of the respondents cultivated cassava on 1 to 2 acres of land, whereas when land conflict intensified, the land acreage under cassava cultivation reduced to less than one acre, as evidenced by 72% of the respondents.

The finding is in line with Akinyemi et al, (2017); there is evidence of increasing conflicts over land in Africa. In support of the above view, as well as the findings of this study, Uganda national policy for disaster management Oct, 2010, reported that, land conflict is a form of disaster, and it continues to be a common disaster across the country which is characterized by conflicts between individuals, families, communities, and institutions, resulting into landlessness Leading to low food production, food insecurity and famine. This was confirmed by the FGD and KII results of this study, which underscored the fact that conflicts over land in Lobule Sub-County and Koboko in general had greatly affected acreage under cassava production, and, subsequently, cassava yield was affected.

This was evidenced by the information which showed that land conflicts resulted into; land neglect giving rise to idle land due to long bureaucratic tendencies at police and courts of law, direct damage of cassava by conflicting parties, adoption of short season crops like maize instead of cassava by famers, premature harvesting of cassava on conflicted land, delayed planting of cassava, relocation and in some instances deaths of cassava farmers.

The results from the interview were supported by the outcome of the survey, which also showed that conflicts over land led to reduced land size for cassava production in terms of

acreage, led to the relocation of some cassava farmers, limited the availability of cassava planting materials, resulted in human deaths, and damaged cassava gardens in the area.

The majority of the respondents perceived that the level of cassava production was low, land area under cassava production had reduced due to conflicts over land, there was an increase in cassava prices due to low cassava production, and that land conflicts affected large-scale cassava production. The result of this study is in line with Owaraga, (2012), who reported that, in East Africa, for example, Kenya, as in other countries in the world, Land is an important factor in agricultural production, and it is subject to conflicts that affect rural farmers.

In addition, studies done in Kenya by the Centre for Environmental and Economic Policy (CEEPA) by Muyanga (2011) reveals that farmers who are faced with conflicts over land feel reluctant to apply long-term improvements on their land, and they shy away from planting long-term perennial crops like cassava on land with conflicts.

Presently, over 90% of domestic disputes in Uganda are related to land conflicts, and 5% of households are directly affected, and land often changes hands because of these conflicts, in contrast to the sale of property, as observed by Mwesigye (2015). Furthermore, Mwesigye (2015) noted that plots with conflicts yield 20 % less than plots without conflicts. He further noted that it is worse with eviction conflicts, where yields are 37% less than those of plots without eviction conflicts. In addition, a recent study showed that rural households experience small-scale land conflicts with relatives, neighbors, landlords, and that such small-scale conflicts may have significant impacts on their agricultural productivity as a consequence, in addition, it is revealed that the yields of crops in such areas are 22% lower in parcels with land conflicts than in parcels without land conflicts grown by the same household. The DINU Report (2019**)** revealed that land conflicts lead to the loss of crops, livestock, and livelihoods. The possible reasons for the similarity of the findings could be due to the violent effects of land conflicts across various regions in Uganda and Africa, including Lobule.

The third objective was to determine the effects of land conflicts on cassava production, A chi-square test showed a significant inverse relationship between land conflicts and cassava production. In areas of high land conflict, farmers are more likely to report low production levels, whereas in areas with minimal conflict, high cassava production level is the norm.

These findings validate the conceptual framework, which theorizes that land conflict affects cassava production. This may be due to a range of factors associated with land insecurity, including reduced access to farmland, disruptions in farming activities, and psychological stress among farmers. These results underscore the importance of addressing land disputes as a pathway to improving agricultural productivity and rural livelihoods. Based on these effects, policy should aim to secure land tenure, introduce land conflict mediation services at the local level, and provide legal support to vulnerable groups such as women and tenant farmers.

CHAPTER FIVE
CONCLUSIONS AND ECOMENDATION

5.1 Conclusions

The first objective of this study was to assess the status of land conflicts in Lobule sub-county. The study concluded that land conflicts exist in Lobule sub-county, and it is a rampant phenomenon on increase. The most common forms of land conflicts were found to be ownership, boundary inheritance, and user conflicts, which occurred not only at the family level, but also extend to the community, clan, and institutional levels. Unclear land boundaries, lack of land registration, lack of land user agreement between tenant farmers and land lords, mistrust, favoritism, and corruption by some clan leaders and elders in resolving land conflicts, and lack of clear written down will and proper documentation at family levels were mentioned as the causes of conflicts in lobule Sub-county.

The second objective of this study was to establish the level of cassava production in lobule sub-county. The study concluded that cassava production levels in lobule sub-county were very low. This was in terms of both acreage under cassava production and the yield of cassava in tons. Land conflicts, poor cassava varieties, climate change, pests and diseases, and stray animals were cited as the main reasons to explain the consistently low levels of cassava production in the Sub-county.

The third objective of this study was to determine the effects of land conflicts on cassava production in lobule sub county. It was concluded that there is a significant association between the status of land conflicts and the level of cassava production χ^2 (2, N = 900) = 522.33, p <. 001.This means that land conflicts have a strong effect on cassava production. as land conflict increases, cassava production tends to decrease drastically. Land conflicts affected cassava in terms of acreage under cassava production and yield. With the intensification of conflicts over land, acreage under cassava production reduced to less than an acre from the previous 1-2 acres of land under cassava production, when conflicts were low. A reduction in acreage directly affects the yield of cassava.

5.2 Recommendations

The following recommendations were made based on the findings and conclusions of this study

5.2.1 Status of Land Conflicts in Lobule Sub-County.

1, There is need for stronger land governance, including accessible land dispute resolution systems at local levels in the sub county like mediation services.

2, There should be a proper land user agreement between tenant farmers and landlords written by the local council one chairman, witnessed by an elder in the village, clearly stating the terms of land use to lessen the land user conflicts in the community.

3, Ensure formalization and clear land boundary demarcation at all levels with boundary tree planting and community mapping and land registration.

4, There should be land registration and surveying at the individual, family, and institutional levels to avoid future conflicts within the community and with the institutions.

5, Clan leaders, elders, and opinion leaders should be trained on conflict resolution skills in order to address issues related to land conflicts in the Sub-county in a timely and adequate manner by stakeholders of Lobule sub-county and Koboko District.

6, There should be a clear, well-written will at the family level to lessen conflicts related to the inheritance of property, including land.

5.2.2 Level of Cassava Production in Lobule Sub-County.

1, The findings suggest a need for agricultural support programs that specifically target farmers in conflict-prone areas, providing the tenant farmers with secure land access, land user rights and incentives to continue cassava cultivation as cassava is long term.

2, Research institutes are to regularly provide new pest and disease-tolerant cassava varieties to boost cassava production in the sub-county. There seems to be over circulation of the existing cassava varieties, which have now become susceptible to cassava pests and diseases.

3, Farmers should use climate information for early and timely action in their farming operations, such as weather forecasts and seasonal weather outlooks, to lessen the effects of climate change on cassava production.

4, Encourage the communities to embrace land consolidation as opposed to fragmentation, where mechanization can adequately be employed to foster large scale cassava production.

5, Sub-county should implement the ordinance on stray animal operations in the sub-county to lessen the cassava destruction by stray animals, especially during the dry season.

5.2.3 Effects of Land Conflicts on Cassava Production.

1, Based on the effects of land conflicts on cassava production, policy should aim to secure land tenure, introduce land conflict mediation services at the local level, and provide legal support to vulnerable groups such as women and tenant farmers.

2, Growing high-yielding and quick-maturing cassava varieties to address the availability of cassava products in the sub-county and the district

3, Inter-cropping crops like maize, beans and ground nuts with cassava instead of growing them on pure stand, this will increase the acreage under cassava production.

5.2.4 Areas for Further Research

1, While the information provided in this study gives a good overview of the situation of land conflicts and cassava production in Koboko, a comprehensive study can be done on other factors that affect cassava production in Koboko district.

2, A study can also be done on factors affecting commercial agriculture in Koboko district.

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APPENDICIES

Survey Questionnaire

I am Bakole Alex, a student of Busitema University pursuing Master of science in climate change and disaster management, I am conducting research on the topic **the effects of land conflicts on cassava production in lobule Sub County**. You have been identified as a key stake holder in providing information for this study. This research is purely for academic reasons and the information will be treated with the highest level of confidentiality.

Section A: Respondents' Bio- data

Read carefully and tick the appropriate option.

A1. Gender

a. Male ☐ b. Female ☐

A2. Age

a. 18 – 30 years ☐ 30 – 50 years ☐ c. 50-60 years ☐ above 60 ☐

A3. Education level

a. None ☐ b, primary ☐ c, secondary ☐ d, Certificate e ☐

e. diploma ☐ Bachelor's Degree ☐ e. Masters ☐

A4. Nationality

a. Refugee ☐ b, National ☐

A5. For how long have you lived in this area?

a, 3-5 years ☐ b, 5-10 years ☐ c,10-15 years ☐ d, above 15 years ☐

A6. Land size owned (acres)

a, less than 1-acre ☐ b, 1-2 acres ☐ c,2-5 acres ☐ d,5-acres and above n ☐

A7. Type of land ownership

a borrowed ☐ b, rented ☐ c, inherited ☐ purchased ☐

A8. **Level of farming**

a, subsistence ☐ b, commercial ☐

A9. Marital status

a Married ☐ b, Single ☐ c, Widow/widower ☐

A10. Cassava farming experience (Years)

a, less than 1-2 ☐ b, 3-4 ☐ c,5-10 ☐ d, above 10 ☐

A11. Main occupation

a, Farmer ☐ b, Civil servant ☐ c, Other formal employment d, Un employed

A12. Monthly household income (shillings)----------

A13. Household size (number of members) ----------

Objective 1: Assess the status of land conflicts in lobule sub county, Koboko District (Section B).

B1. Has your household ever experienced cases of land conflicts in the last ten years?

A, yes ☐ b, no ☐

B2. If yes, how many times did your household experience cases of land conflicts in the last ten years?

A, Once ☐ b, twice ☐ c, Thrice ☐ d, More than three times ☐

B3. To what extent do you agree with the perception that land conflicts are increasing in this area?

A, strongly disagree ☐ b, disagree ☐ c Agree ☐ d strongly agree ☐

B4. At what level did you resolve the land conflict you experienced?

A, Household ☐ b, community/LC ☐ Police ☐ Court ☐

B5. In your view, what are the common forms of land conflicts in this village?

a, boundary conflicts ☐ b, inheritance conflicts ☐ land user conflicts ☐

B6. In your view what are the main causes of land conflicts in this village

……..

…….

Section C; Cassava production status tick what is appropriate

C1. Is cassava among the common food security crops grown in this village? (Tick appropriately)

a. Yes b. No

C2. On what size of land did you cultivate cassava during the last ten years?

a. Less than 1-acre ☐ b. 1-2 acres ☐ c. 3-5 acres ☐ d Above 5 acres ☐

C3. On what size of land do you currently cultivate cassava?

a. Less than 1-acre ☐ b. 1-2 acres ☐ c. 5-5 acres ☐ d. Above 5 acres ☐

C4. What was your cassava yield per acre during the last ten years?

a. 1-5 tons ☐ b. 6-10 tons ☐ c. 11-15 tons ☐ d Above 15 tons ☐

C5. What is your current average cassava yield per acre?

a. 1-5 tons ☐ b. 6-10 tons ☐ c. 11-15 tons ☐ d Above 15 tons ☐

C6. How do you rate cassava production in the village?

A, High

B, low

C Moderate

C7. If the level of production is low, in your view, what are the reasons for the low production of cassava in this village?

a, Laziness

b, Land shortage

c, Land conflicts

d, Diseases

e, Lack of cassava stalks

f, Reduced soil fertility

Section D; Effects of land conflicts on cassava production

D1. In your opinion, have land conflicts affected the land available for cassava production?

A, yes

B, no

C Don't know

D2. If yes, how have land conflicts affected the land available for cassava production?

a. Reduced land for cassava production ☐ b. Increased land size for cassava production ☐

D3. On what size of land did you cultivate cassava before land conflicts?

b. Less than 1-acre ☐ b. 1-2 acres ☐ c. 3-5 acres ☐ d Above 5 acres ☐

D4. On what size of land do you currently cultivate cassava after the land conflicts?

a. Less than 1-acre ☐ b. 1-2 acres ☐ c. 3-5 acres ☐ d Above 5 acres ☐

D5. Please explain the other ways in which land conflicts have affected cassava production in this village

……

……

Indicate the level to which you agree/disagree with the following statements by ticking one option for each item: *Scale: 1 = Very Poor; 2 = Poor; 3 = Fair ;4 = Good; 5 = Very Good*

3.0	**Cassava production**	**5**	**4**	**3**	**2**	**1**
	How is he level of cassava production in Lobule Sub-county?					
	What is the size of land under cassava production.					
	How is the level of availability of cassava products?					
	How are the conditions for large-scale cassava production in Lobule sub county					

Focus group discussion (FGD) guide

To be discussed during focus group discussion sessions.

1, What is the situation of land conflicts in lobule sub county.

2, To what extent do you agree with the perception that land conflicts are increasing in lobule.

3, In your view what are the main forms and causes of land conflicts in lobule subcounty.

5, What is the /level of cassava production in lobule sub county, Koboko district.

6, how does land conflicts affect cassava production in lobule sub county, Koboko district.

7, what conflict resolution mechanisms are in place to manage land conflicts in Lobule.

CONSENT FORM FOR PARTICIPATION IN A RESEARCH STUDY

Study Title: *The Effects of Land Conflicts on Cassava Production in Lobule Sub-County, Koboko District*

Principal Investigator: Bakole Alex

Registration Number: BU/GS20/MCC/20

Faculty: Natural Resources and Environmental Science

Department: Environmental Planning and Management

Email: alexbakole@gmail.com

Phone: 0772 880 752

1. Introduction

You are being invited to participate in a research study conducted by **Bakole Alex** as part of academic research at Busitema University. Please read the information below carefully before deciding whether to participate. If there is anything you do not understand, feel free to ask questions.

2. Purpose of the Study

The purpose of this study is to examine the **effects of land conflicts on cassava production** in Lobule Sub-County, Koboko District. The information collected will be used to support academic research and to inform policies and strategies aimed at addressing land-related challenges affecting cassava production.

3. Procedures

If you agree to take part in this study, you will be asked to tparticipate in an interview session by responding to a series of questions. The interview will last approximately 30 to 40 minutes. Your responses will be recorded in writing for research purposes only.

4. Risks and Discomforts

There are no known risks or discomforts associated with participating in this study. If any question makes you uncomfortable, you may choose not to answer it.

5. Benefits

Although there may be no direct personal benefits, your participation will contribute to Generating data to help inform policies and decisions regarding land conflict resolution, enhancing cassava production strategies in Lobule Sub-County, and Supporting future community development initiatives.

6. Confidentiality

All information provided will be kept strictly confidential. Your name will not appear in any report or publication. Data will be stored securely and will be accessed only by the research team. Results will be presented in aggregate form to ensure anonymity.

7. Voluntary Participation

Participation in this study is completely voluntary You have the right to refuse to participate or withdraw at any time without penalty or loss of benefits. choosing not to participate will not affect your rights in any way.

8. Contact Information

If you have any questions about this research, you may contact:

Researcher: Bakole Alex (Principal Investigator) – 0772 880 752

Supervisor: Prof. Alice Nakiyemba – 0772 450 371

9. Consent Statement

By signing below, you confirm that:

You have read and understood the information provided above. all your questions have been answered to your satisfaction. You voluntarily agree to participate in this studyand You are 18 years of age or older.

Participant's Name: _____

Participant's Signature: _____

Date: _____

List of photos

Photo 1: Lories from other sub regions offloading cassava in Koboko for local consumption. Photo by Alex Bakole.

Photo 2: Field survey in Lurujo parish, Lobule sub county. photo:2 (*FGD)session at Lobule sub-county HQs Photo by Likambo Ahmed (2023).*

Photo 3: Conflict resolution session at Tukaliri village, Tukaliri parish, Lobule sub-county, photo by Alex

Clashes between Tara of Maracha and, lobule of Koboko over land, while Area MP. Hon. Acidri James .MP. Maracha (centre) talks to the angry youth of Maracha, 2021

Photo 5: Poor cassava varieties that have been affected by diseases, affecting yield were mentioned to be one of the major causes of low cassava production in Lobule sub-county, photo by Bakole Alex.

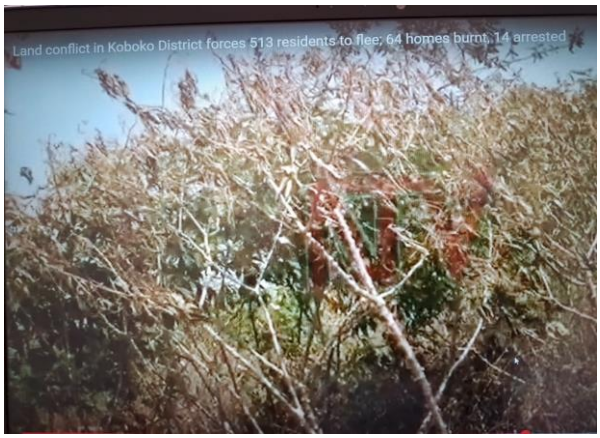

photo 6: Burnt cassava field as effects of land conflicts on cassava production (NTV Report January