ASSESSING THE INFLUENCE OF SUGARCANE GROWING ON SOCIO-ECONOMIC CONDITION OF SMALL-SCALE FARMERS IN BUSEDE SUB-COUNTY, JINJA DISTRICT, EASTERN UGANDA

BY

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A DISSERTATION SUBMITTED TO THE DIRECTORATE OF RESEARCH AND GRADUATE TRAINING IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF ARTS IN GEOGRAPHY OF KYAMBOGO UNIVERSITY

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DECLARATION

I certify that my dissertation, **"Assessing the Influence of Sugarcane Growing on Socio-economic Conditions of Small-Scale Farmers in Busede Sub-county, Jinja District, Eastern Uganda,"** is entirely original with no submissions to universities or other higher education institutions for consideration for any kind of academic honor.

Signature……..… Date……

APPROVAL

We hereby certify that this dissertation titled**, "Assessing the Influence of Sugarcane Growing on Socio-economic Conditions of Small-Scale Farmers in Busede Sub County in Jinja District, Eastern Uganda**" has been arranged under our supervision and is right away qualified for submission amidst our consent.

Signature……. Date…….

ASSOC PROF. NABALEGWA MUHAMUD WAMBEDE.

Signature…… Date…….

ASSOC PROF. BARASA BERNARD

DEDICATION

This work is dedicated to my parents Mr. Isabirye Stephen (RIP) and Mrs. Tanirwa Dezilanta.

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ACRONYMS

CSR	Corporate Social Responsibility
FAO	Food Agriculture organisation
IISD	International Institution for Sustainable Development
JDLG	Jinja District Local Government
KSW	Kakira Sugar Works
L.C	Local Council
MAHFP	Monthly Adequate Household Food Provision
NEMA	National Environment Management Authority
NGDP	National Gross Domestic Product
NLHC	National Low-Income Housing Coalition
RAIS	The Regulatory Authority Information System
SACU	Southern African Customs Union
SAQS	Self-Administered Questionnaires
SASA	South African Sugar Association
SPSS	Statistical Packages for Social Scientists
UBOS	Uganda Bureau of Statistics
UFA	Uganda Forestry Authority
UGS	Uganda Shillings
UN	Uganda Nations
USDA	United States Department of Agriculture
WWCI	World Weather and Climate Information

ABSTRACT

The study focused on establishing the relationship between sugar cane growing and socio-economic conditions of small-scale farmers. It was guided by three objectives that is; to examine the effects of sugarcane growing on the social condition of small-scale farmer, to examine the effects of sugarcane growing on the food security of the small-scale farmers and to assess the effects of sugarcane growing on the economic conditions of small-scale farmers in Busede Sub County. A cross-sectional research design was adopted. The study based majorly on primary data that was gathered using interview guide, questionnaires and focus group discussion guide. Objects 1 and 3 were analyzed by use of descriptive and inferential statistics such as frequencies, percentages and chi-square, p-values respectively while objective 2 was analyzed using a monthly adequate household food provision (MAHFP). The data collection methods were Interview, questionnaire, focus group discussion, observation. The results indicated that the males owned more sugarcane gardens than the females, more sugarcane growers were members of the social groups, went to private hospitals than the non-sugarcane growers and these were statistically significant at ($P<0.O27$) and($P<0.000$) respectively. The majority of the households went up to primary level, growers had more ability to educate their children than non-sugarcane growers ($P<0.010$). Sugarcane growers were relatively food secure than the non-sugarcane growers ($P<0.003$). Sugarcane growers acquired more property, earned and saved more money, had bigger land size and accessed credit facilities than the non-sugarcane growers ($P<0.016$), ($P<0.042$), ($p<0.002$), ($P<0.029$) respectively. In conclusion, sugar cane growers had relatively better socio-economic conditions than the non-sugarcane growers. It is recommended that government should emphasize gender equality in land ownership, Food insecure households should spare more land for food crop growing. These will help to increase on their earnings and improve their standards of living as well as growing food crops hence socio-economic progress in the study area.

CHAPTER ONE: INTRODUCTION

1.1 Background of the study

Sugarcane is a piece of tall perennial grass that is used for sugar production **(**Basava et al, 2021)**.** In the early 2000s, the Ugandan government launched initiatives to promote sugarcane production as a cash crop and this is how sugarcane growing started in Busede sub-county (Kigozi, 2005). The Uganda government's Agricultural Development strategy and Investment Plan (DSIP) aims to increase agricultural productivity, including sugarcane production. Initiatives like the National Sugarcane Development program promote small-scale sugarcane farming in districts such as Jinja, Mukono, Mbale and Busia (Mahabil et al, 2017)**.**

The tropical and sub-tropical climates produce 80% of sugar grown from cane in the world and the 20% of sugar is got from sugar beets and these are grown in the northern hemisphere of the temperate zones (Oyugi, 2016). In the 2022/2023 crop year, production of sugar was anticipated to be 182 million metric tons, up 1.7 million tons from the past years. Globally 1,889,268,880 tons of sugar cane are produced per year (FAO, 2017). United States, China, Brazil, India, and Thailand are the largest sugar cane producing countries in the world. Brazil and India together produce 59% of the world's total sugar cane. There are around 100 million people in the world who derive their livelihood from sugar cane growing (Steffany, 2020). Sugar cane production is an important activity and the major employer of African agriculture with an estimated six million people deriving their livelihood from sugar cane industry. South African is the leading producer of sugar cane in Africa, it produced around 18 million metric tonnes of sugar cane in 2021/2022 (Saifaddin , 2022)

Sugar beets, which are cultivated in the northern hemisphere of the temperate zones, provide 20% of the sugar (Oyugi, 2016). It was projected that 182 million metric tons of sugar would be produced in the 2022–2023 crop year, an increase of 1.7 million tons over previous years.

"Sugar: World Markets and Trade," Department of Agriculture, Foreign Agricultural Service, pages 2-4. The annual production of sugar cane worldwide is 1,889,268,880 tons (FAO, 2017). The world's top producers of sugar cane are the United States, China, Brazil, India, and Thailand. Together, Brazil and India produce 59% of the world's sugar cane. Approximately 100 million people worldwide make their living from the cultivation of sugar cane (Steffany, 2020). With an estimated six million people depending on the sugar cane business for their survival, sugar cane cultivation is a significant activity and the largest employer in African agriculture. About 18 million metric tonnes of sugar cane were produced in 2021–2022, making South Africa the continent's top producer (Saifaddin, 2022).

Sugarcane is a marketable crop in Agro ecological regions where it thrives best. Nevertheless, the scale of the farming is differing from big land owners to small land owners, and these often prefer near large estates. Although large estates always produce the most sugarcane, small-land owners are essential to the sugarcane growing industries in various nations. According to Oyugi (2016), small landowners in Mauritius, South Africa, and Kenya provided the sugar millers with 30%, 12%, and 92% of the sugarcane, respectively.

Uganda produced 514 thousand metric tons of sugar in 2019, making it the leading producer in East Africa. Kenya produced around 441 thousand metric tons of sugar, placing it in second place (Saifaddin , 2021).

Sugarcane cultivation in Uganda and the trade in sugar and related goods are becoming more and more important as a cash crop that provides smallholder farmers with financial gain in an effort to reduce poverty and food insecurity at the household level. A Small-scale farmer is a farmer who operates on a relatively small land area usually less than ten hectares. In Uganda, sugarcane is grown on around 54,911 hectares of land. This amounts to 36,000 metric tons of sugar that the nation can still export (FAO, 2016). Twenty thousand (20,000) direct and fifty

thousand (50,0000) indirect jobs are supported by the sugarcane processing industry, which accounts for 6.5% of the nation's growing manufacturing sector (FAO, 2017).

With the exception of Kinyara in the country's Midwest, Uganda's sugarcane production was concentrated on the most fertile soils on the northern banks of Lake Victoria in both the Busoga and Buganda zones. In Busoga, there were 13,000 smallholder farmers, producing about 300,000 tons of sugarcane annually. Those who are unable to cultivate sugarcane do rent their land to those who can. resulting in a lack of land for the production of food crops, which limits the availability and accessibility of food for the local population and threatens the system of food stability (UBOS, 2017).

Kakira Sugar Works (KSW), which produced half of Uganda's total sugar production and generated 15% of the country's GDP, demonstrated the size of the sugar cane sector (Matsiko et al., 2017). According to the Sugar Act of 2020, around 29,000 farming households in Uganda produce sugar cane, and these farmers employ an estimated 640,000 workers. Between 2012 and 2021, more households engaged in cane growing, and between 2005 and 2012, an estimated 40,000 families engaged in sugar cane cultivation. In Eastern Uganda, more than 80% of households that grow sugarcane do not receive enough nutrient-dense food to meet their nutritional needs (FAO, 2017). According to estimates, 39.4% of Jinja district's population has experienced food insecurity in recent years. This proportion is higher than the national average. According to the World Hunger Index, Uganda is ranked 103rd in the world, with 32% of its population experiencing a severe food crisis (UBOS, 2020). Food security, refers to a situation in which everyone has access to food that is acceptable in their culture and that is nutritionally sufficient in terms of quantity, quality, and diversity (UBOS, 2022). The expanding body of research shows a correlation between rising cash crop production and falling food production, particularly in Sub-Saharan regions where cash crops like sugarcane are cultivated. Compared

to food crops, the majority of farmers devote a larger portion of their land to cash crops. Food insecurity results from this impact on women's access to land (Justin, 2022).

Food availability, which refers to the availability of sufficient quantities of food of appropriate quality, supplied through domestic production or imports, food stability, which refers to the ability of the household to have an adequate and constant amount of food at all times, food utilization, which refers to nutrition security as measured by anthropometric parameters, and food access, which refers to the household's capacity and entitlements to acquire food. (including food aid) (FAO, 2017). This study used a monthly adequate household food provision as an indicator of food availability (Coates et al, 2017).

Sugar cane farming and related activities is a way of life to many people worldwide (World Agro-forestry Center, 2017). The International Institute for Sustainable Development (IISD,2020) revealed that there are six million people in Africa generating income from sugarcane growing and related activities. Sugar cane in Uganda contributes 15% of the National GDP, 70% of foreign exchange earnings and employs an estimated 669,000 laborers in Uganda (UBOS, 2020).

Despite the above-mentioned benefits and contributions of sugar cane growing in the world, in Uganda specifically in Busede sub-county, social economic progress is still very low with sugar cane growing intensity and as a result, livelihood conditions of some sugar cane farmers are worsening. There are cases of hunger, malnutrition, high illiteracy levels and crimes among others (Sugar Act, 2019).

In a society, social conditions are the circumstances and elements that influence people's or groups' possibilities, well-being, and quality of life. The social conditions in this research study included a number of elements, including access to education, health care, and social group participation. Economic condition, on the other hand, is the current state of affairs in a nation's

or a region's economy as a whole, taking into account a number of variables that affect the production, distribution, and consumption of goods and services as well as the general well-being of people and societies. Aspects like annual income, property ownership, credit facility accessibility, and land area in hectares were all considered in the current study's economic conditions. Thus, the relationship between a group of people's social and economic behaviors is referred to as their socio-economic state. The terms low, medium, and high are typically used to characterize socioeconomic level or condition. Compared to people with greater socioeconomic status, those with lower socioeconomic status typically have fewer access to financial, educational, social, and health resources (UBOS, 2O14)

The socio-economic challenges in Busede sub-county include; poverty, limited access to education, healthcare shortages, environmental degradation and food security. In this area, most of the people have not invested in any income generating projects neither have they supported the education of their children nor joined saving schemes. This has resulted in high illiteracy levels, poverty, hunger, malnutrition and its burden. Sugar cane farmers and all those involved in related activities have some reasonable amount of income. However, socio-economic progress is still very low (Semuwemba, 2015). Therefore, this research intended to find out the effects of sugar cane growing on the socio-economic conditions of the people of Busede sub-county in Jinja district, with a view to discover how best this apparently lucrative economic activity could be transformed for the benefit of the local people and the overall development of the sub-county, Busoga sub-region and Uganda at large.

1.2 Problem statement

Sugarcane growing is known to be a viable economic activity which has brought economic progress in many parts of the world (Oyugi, 2016). In Uganda, Sugarcane growing is increasingly gaining importance as a cash crop in order to curb poverty and food insecurity at

household level with monetary gain to the smallholder farmers (FAO, 2016). However, despite full time engagement in sugar cane growing, the people of Jinja district specifically of Busede sub-county are not progressing socially and economically. The majority is still living in absolute poverty, unable to provide their basic needs, not taking their children to school and insecurity in the area is on the rise hence worsening socio- economic stagnation in the area (UBOS, 2020). If this problem is not addressed, it was to worsen socio- economic stagnation in the area. This is why the researcher conducted the current study, in order to find out the effects of sugar cane growing on the socio – economic conditions of small-scale farmers in Busede Sub- County, Jinja district.

1.3 Objectives

1.3.1 General objective

To establish the influence of sugar cane growing on the socio-economic conditions of small-scale farmers in Busede Sub- County in Jinja District.

1.3.2 Specific objectives

The specific objectives of the study were**:**

1) To examine the effect of sugar cane growing on the social conditions (membership to social groups, access to health, education of the household heads) of small-scale farmers in Busede Sub-County, Jinja District

2) To examine the effects of sugar cane growing on household food security (food access) of the small-scale farmers in Busede sub county in Jinja District.

3) To assess the effects of sugar cane growing on the economic condition (money saved, money earned, access to credit facilities from banks and land size) of small-scale farmers in Busede sub-county in Jinja district.

1.4 Research Questions

i. What are the effects of sugar cane growing on the social condition (membership to social groups, access to health, education of the household heads,) of small-scale farmers in Busede Sub County?

ii. What are the effects of sugar cane growing on the Household food security (food access) among the small-scale farmers in Busede sub-county in Jinja District?

iii. What are the effects of sugar cane growing on the economic conditions (money saved, money earned, access to credit facilities from banks and land size) of the small-scale farmers in Busede Sub-County in Jinja District?

1.5 Scope of the study

1.5.1 Geographical scope

Because Busede Sub-County in Jinja district is one of the top sugarcane-growing Sub-Counties in the district and the entire Busoga region, this research study was conducted there. According to UBOS (2016), sugarcane is grown in the rural Busede sub-county despite the high level of socioeconomic stagnation.

1.5.2 Time scope

This research study was carried out in 2023. This was the period when the status of sugarcane growing was promising, with the crop being a significant contributor to food security and economic growth in Busede sub-county.

1.5.3 Content scope

The subject matter of the study was basically hinged on the study topic of "Assessing the effect of Sugarcane growing on socio-economic conditions of small-scale farmers in Busede sub-County". The study specifically focused on examining the effects of sugar cane growing on social conditions of small-scale farmers in Busede Sub-County, examining the effects of sugar

cane growing on household food access, and assessing the effects of sugar cane growing on the economic condition of small-scale farmers in Busede Sub County, Jinja District

1.6 Significance of the study

Sugarcane growing is important in soil conservation in that the sugarcane's extensive root system helps to prevent soil erosion, it has also been helpful in absorbing carbon dioxide during growth, sugarcane growing has also influenced the rural livelihoods through providing employment and income for rural communities in the study area (Tumuhairwe et al, 2023).

The study aligns with Uganda's Vision of 2040, the second Sustainable Development Goal of eradicating hunger, the country's National Development Plan, and the 2030 target for all forms of malnutrition.

Policymakers, including those in the Ministry of Agriculture and the livestock sector, will benefit from the study's findings as they formulate suitable regulations pertaining to the cultivation of sugarcane and the socioeconomic development of homesteads.

Future researchers will refer to the study results when doing their own research.

1.7 The Conceptual Framework

A network of connections between topics in a situation being studied is called a conceptual framework (Amin, 2005). The conceptual framework illustrated how the study's independent, intervening, and dependent variables were related to one another. According to the conceptual frame work, sugar cane growing is the independent variable. The majority of people in Busede sub-county were pre-occupied by sugar cane growing in order to improve on their Socio-economic conditions. These activities included; planting, transportation, loading and off-loading, weeding, harvesting, among others.

The resultant socio-economic conditions were the dependent variables in form of membership to social groups, access to health, ability to educate children, access to clean water, food security, employment, access to income among others were evidences of socio-economic progress. However, in the study area sugar cane growing was not impacting positively on socio-economic conditions.

There was therefore need for interventions through policy, research and other support mechanism. These could be in form of sensitization of farmers about savings and investments, government fixing minimum prices for sugarcane, extending loan facilities to farmers to reduce dependence on loan shacks, introduction of modern farming methods such as irrigations, strengthening associations of sugar cane farmers, extending access to cheap fertilizers among others.

It's hypothesised that if these interventions are made, sugar cane growing and related activities could become a viable economic activity and have positive impacts on socio- economic conditions of farmers in the study area.

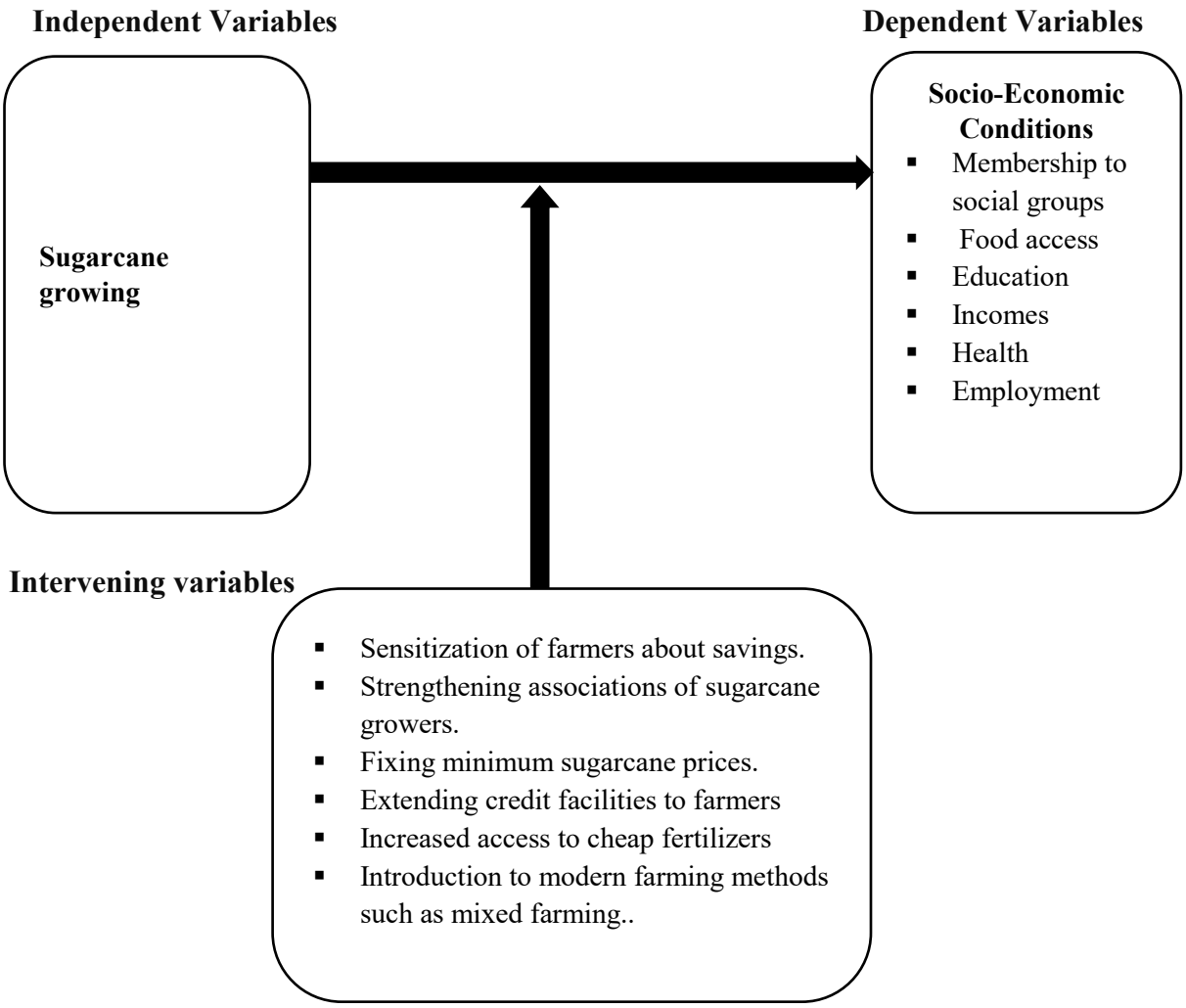

Figure 1.1: Conceptual framework

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

The results of numerous researchers on sugarcane cultivation and its impact on people's socioeconomic circumstances are presented in this chapter. It involves examining a number of documents that present research findings from studies carried out in Uganda and other countries. The review is conducted in accordance with the study's goals.

2.1 Sugar cane growing

The global demand for sugar, which supplies 80% of the world's sugar supply, is the primary driver of sugar cane growth worldwide. This is said to be the main factor for the global growth of sugar cane. Sugar beets cultivated in temperate regions provide the remaining 20% of the sugar (Oyugi, 2016). Brazil was the nation with the largest area dedicated to sugar cane cultivation.(Philomena, 2017) found that Uganda is the greatest producer of sugar granules in the East African Community, accounting for one-third of the world's harvested area and production (FAO, 2016). This amounted to roughly 500,000 metric tons annually. According to data from the Ministry of Trade, Industry, and Cooperatives (2022), the country's yearly production of sugar cane had grown to over 600,000 metric tons of commercial sugar by 2021. Daily monitor (2021) indicated a drop in sugar prices. It stated that there was a need to make the sugar prices more sustainable, with the farmers taking home a fair chunk of a total amount. The livelihoods and household incomes of the farmers who grow sugar cane for a living have not changed significantly, even though the government has designated it as one of the strategic cash crops ibid.

2.2 Sugar cane growing and social conditions of the farmers.

The literature on the connection between small-scale farmers' socioeconomic circumstances and sugarcane production is reviewed in this section. With 60% of Brazil's crops grown there,

the state of São Paulo emerged as the primary producer of sugarcane in the 20th century (Oyugi, 2016). Mata Atlantica, a significant Brazilian ecosystem, was just 8% of its former size due to deforestation brought on by the growth of sugarcane (Summer, 2015). This seriously affected the environment of the area negatively Brazil's Marketing Year (MY,2021). The phrase "corporate social responsibility" (CSR) is a relatively new concept that emerged as a result of the economic environment's developments (Ibid). The idea is not new because cooperative societies have always adopted this strategy as their future. has been a prominent issue in business groups, supporting moral and ethical evaluations of company operations. The relationship between businesses and their various stakeholders has been impacted by the growing emphasis on social responsibility. Scholars disagree about the causes and consequences of socially conscious programs, as well as the potential societal effects of corporate social responsibility.

It is challenging for agriculture and society at large to develop sustainable practices that preserve nonrenewable resources and are in harmony with the natural processes that support life on Earth. The health of global ecosystems, which are notoriously difficult to alter, is under jeopardy due to the rapid acceleration of technological development in industrial and post-industrial countries. Growers of sugarcane understand that soil contributes to production. According to Meyer (2000), soil quality is the state of the soil that reflects the climate.

Fifteen mills in KwaZulu, Natal, and Eastern Cape manufacture sugar and molasses for the domestic and international markets. According to the South African Care Growers Association, there are 531,000 or more registered sugar cane growers, with roughly 2000 farmers cultivating on freehold territory and roughly 53000 farmers cultivating on ground under tribal authority (Maloba, 2001).According to the South African Sugar Association (2011), since the business plays a significant role in rural development, its emphasis on sustainable development enables

the sugar industry to produce high-quality, lucrative, and reasonably priced products. This strategy will encourage social investment, economic transformation, and sustainable environmental practices in impoverished areas.

Semuwemba (2015), explained the way people of Busoga have failed to grow food since there is almost sugar cane growing everywhere and that was why food prices had gone so high. Farmers cut down their food crops and opted for sugarcane growing because they had got to pay school fees for their children, so food looks to be an option. Another effect originating from sugarcane cultivation is poor hygiene and water quality in most of the Busoga region, sugar cane is in most case near water bodies on dirt or sand as it requires directly adjacent water to grow. Mwavu (2018), found out that a big number (72.6%) of sugar cane small scale farmers were men, and this was not a surprise because in Mayuge where he conducted his study from, there are more men than women. This has got an impact on owning productive assets in the cultivation sector among other monitory activities .This impacted negatively on the household food availability ,accessibility and stability because the men get interested in growing cash crops .Mwavu also saw that more of the local people (92%) were under 60 years of age and more of them (59.3%)were members to sugar cane out growers group .Above 78% of the interviewed people were small scale growers deriving income from growing sugar cane .A small number of the house members get money from earnings (6.7%) and business(9.1%).More of the house members (73.5%) disclosed that their yearly income was always less than USD275 ,and this on average was less than USD1 every day. Though (54.8%) of the house members disclosed to keep domestic animals, the most had one or two cows or goats and it was for business (66.4%), breeding (17%) consumption (13.3%) and many other reasons

Nabalegwa (2022), found out that most of the sugar cane growers (86%) in the area of Jinja are men. The land tenure system in the area is customary where boys inherit the land. It’s the men

that own the productive resources and this has led the male children to have authority on land allocation to various productive activities. This has got a big implication for masculinity fairness and equity. This also affects food availability, accessibility and stability at household levels. The characteristics of the sugar cane growers and their gardens were according to garden size, education level, gender, age of the growers, incomes from farms and land allocated to sugar cane production. The most of sugar cane growers belonged to the age brackets of 50-59, 40-49 and 30-39, and these age bracket constituted 81% of the total population of the growers. Most of the growers were majorly primary graduates. The most of the respondents (95%) belonged to the sugar cane growers' group, and this helped the farmers to negotiate prices and also made the estate growers to listen to their voices and worked on their concerns of buying their sugar cane. Most of the farmers allocated more land to sugar cane growing than food crops on average. Small scale growers with reasonable pieces of land about 10 acres, allotment up to three quarters of their land to sugar cane farming, involving hiring land out to the sugar estates.

In a study on social conflict and environmental degradation in the Transmara district of the South Rift Valley of Kenya, Kipsisei (2011) noted that the cultivation of sugarcane has significantly improved relations between the Masai and Luo communities in Transmara Sub County, a political hotspot where ethnic conflict between the two groups has existed for ages. However, in a study on the socioeconomic effects of sugarcane farming on livelihoods and the biophysical environment in Kenya's Transmara Sub County, Oyugi (2016) pointed out that the conflict between the Masai and Luo that started in September 2014 in the Shankoe area lasted longer because it involved the burning of sugarcane farms that covered more than 13,000 hectares and the theft of sugarcane from the plantations.

The conflict between the two warring tribes generated a backlog at Transmara Sugar Company Limited, which resulted in the death of plantation farm workers and the burning of sugarcane plantations and cane trucks. During the 1996 and 2007 general elections, ethnic conflicts between the two groups lasted for nearly a month, resulting in the destruction of numerous houses and the deaths of several persons. Kilgoris was a ghost town at the end of the disaster, with opposing communities forced out and homes and farms burned down with no food produce because the area was determined to be impenetrable, making the situation with regard to food security even worse. Because all of this research were conducted in Kenyan nomadic pastoralist communities, there was a geographical scope gap that this study aimed to fill.

2.3 Sugar cane growing and household food access of the farmers.

This section reviews the literature on the relationship between household food access and sugarcane production; it depends on a number of factors, including market availability, household food production, income-based access to food, current food prices, and the stability of the food supply. According to Chebii (2018), there are numerous definitions of food security, but they all concur that having constant, safe access to enough food is one of the main features of household food security. Food security is the state in which all people always have physical, social, and financial access to enough safe, nourishing food that satisfies their dietary needs and food choices for an active and healthy life, according to FAO (2017). Food security at the household level is the ability of the members of the household to have enough food, either through their own production or by purchasing, to meet everyone's nutritional needs. According to Barret (2010), a household is considered food secure if its members have yearly access to a sufficient amount of safe foods and are active and healthy. According to FAO (2017), four aspects of food security may be identified from all of these definitions. When there is enough food available, people can obtain it, it is used efficiently, and it is available, households will be considered food secure.It is hardly surprising that the four elements of food security—

availability, access, usage, and stability—are now widely recognized (FAO, 2017). The following subsections provide descriptions of them. Food availability, according to Olaniyi (2018), is the physical presentation of food in big quantities. Gregory et al. (2017) go on to say that food availability is primarily related to the supply of food through production, exchange, and distribution. According to USDA (2016), food availability occurs when there is consistently enough food available for everyone. The ability of households to have enough food of a suitable quality, whether through domestic production or food aid, was defined as food availability in the current study. The availability of sufficient amounts of food of suitable quality and sufficient stock levels among families were used as metrics. meals availability is defined by Olaniyi (2011) as having enough money to buy good meals whenever you want. According to Gregory et al. (2005), food accessibility encompasses individual and household preferences in addition to the cost and distribution of food. When a household and all of its members have the money to buy the right foods for a healthy diet, food availability is guaranteed. The household's income, how that income is distributed within the household, and the cost of food all affect access (USDA, 2016)., Food access is dependent on the household's purchasing power, including whether it has enough money to buy food at current prices or enough land and other resources to cultivate its own food (Garret, 1999).

There has been a long-standing discussion and written work for more than thirty (30) years debating on the question of whether small scale involvement in contract framing provide out comes in a negative or positive changes in the household's welfare in practice. A large written information by Takahasi (2016) stated that mostly, contract farming increases the growers' income through the introduction of more – return crops and output increasing production technologies. Never the less, the recent research finds no connection between contract farming and households' income or negative one (Ragasa et-al, 2018). Yet recent information on contract farming studies contradicted that what shows remains not conclusive due to few

available studies which used techniques which were accurate for making casual claims (Bellenare, 2018). Research on the relationship between sugarcane and home welfare has shown that certain research link sugarcane production to improved household and social solutions for wellbeing, while other studies suggest the opposite. In Sao-Paul, Brazil, for instance, Martiniello et al, (2011) demonstrated how human development indicators closely matched municipalities with varying sugarcane production levels and discovered a statistically significant correlation between higher levels of economic and social development and the existence of a robust sugar and ethanol sector. Over the last ten years, municipalities with sugar mills have generally outperformed those without.

In most cases, sugarcanes are always grown next to factor leading to a need for infrastructural development like housing, medical services, schools and roads for people in the production of sugarcane. In addition to providing the growers with more money and job opportunities, sugarcane should also improve general well-being by promoting food security and health (Elchami et al., 2020). However, the methods used in sugarcane cultivation may result in health problems, including respiratory illnesses, for Brazilian children under five (Paraiso, 2015). According to Azambuja (2019), sugarcane contract growing initiatives are linked to a rise in food insecurity among Eastern African rural households. The authors attribute this, in part, to the conversion of land from food crops to sugarcane. In addition, growers typically devote a large portion of their land to sugar cane cultivation in an attempt to increase profits, often at the expense of more regional food crops. The effects of sugar cane cultivation on the four aspects of food security—access, usage, availability, and food stabilities—among households that cultivate sugarcane were determined by Intarapoom et al (2018) in Thailand. Results showed that, aside from those that did not convert their land to sugar cane cultivation, those with the lowest levels of food security were those with a greater allocation of land to sugarcane production.

In the Busoga subregion (Jinja and Mayuge districts), a significant area for sugar production in eastern Uganda, Mwavu et al, (2018) investigated the impact of commercial sugarcane production on food security at the household level among smallholder farmers. They discovered that, in the 12 months preceding the research, 87% of the households and seven in each homestead of commercial sugar cane growers did not have enough food in their houses. The majority of households cultivate a small number of food crops and earn too little to purchase food to supplement their crops or meet their requirements.

Despite the belief that sugarcane cultivation reduces poverty and improves human and social welfare at the family and societal levels, they came to the conclusion that it may be a major contributing element to Uganda's food shortages ibid. Only 12% of the homes in Nabitambala parish, Eastern Uganda, had enough food, while 47% did not, according to a cross-sectional survey done by Lwanga et al, (2015). On the other hand, despite the lack of stable markets, Ghanaian sugarcane smallholders have greater incomes and lower levels of multidimensional poverty than non-growers, and their income from growing sugarcane is significantly higher than that from producing food crops, according to Ahamed et al, (2019).

Higher levels of subjective wellbeing, such as contentment with life and happiness, do not, however, follow from higher levels of objective welfare. However, it is important to remember that the two Ugandan studies discussed above only spoke with sugarcane farmers, excluding those who did not grow sugarcane. The answer to this question was crucial because food insecurity among some sugarcane growers does not necessarily result from growing sugarcane; rather, the primary cause of food insecurity in a household may be factors that affect other households in the community or that are unique to the households in the study.

There have been talks about how the increasing competition between food crops for land use is endangering global food production and, in turn, food security. Additional environmental

and social impacts include detrimental impacts on biodiversity and adverse environmental externalities, such as contamination of the air and water, which all have an impact on food stability, another measure of food security.

In a nutshell, the biodiversity loss threatens food security and agricultural production and practices that conserve, sustainable use of natural resources and enhancement biodiversity are needed at all levels in all agricultural systems as they are important for health, livelihood, food production and the maintenance of ecosystems (Thrupp, 2000). Never the less, those studies were carried out in Sierra Leon, Mozambique, Brazil, Thailand and Kenya, creating a geographical scope gap that the current research planned to address.

2.4 Sugar cane growing and economic conditions of the farmers.

The most benefaction of sugar cane growing to the local households is by job and income avenues. Worldwide, the growing of sugarcane supports about 100 million households through informal and formal, full time and seasonal work and income opportunities (International labour organizations, 2017). Confirmation from Ethiopia, Mozambique, Malawi, Zambia, Kenya, South Africa and India suggested that sugar growing contributes to workers and growers' propensity through households' incomes got from the growing of sugarcane (Henningsen, 2016). Sugarcane growers get income from selling sugarcane yet workers get money through various jobs in the chain of sugarcane production. Apart from sugar cane growing being a source of jobs and incomes, so many questions about the nature of sugar cane jobs, working conditions and incomes. Out growers farming is so important in adding benefits from commercial farming in particular. This is because it is easy to accept farming and get the benefits such as cash and jobs (Bahaman et al, 2010). This is due to the fact that process comes about with the merits of commercialized farming like quality, production, and marketing that enhances benefits and so attracts many people regardless of the location. Out-growers present

huge benefits in terms of higher incomes, financial services, while growers get money from selling sugar cane, employers get it through carrying out various duties in the sugar cane management value chain. There are questions relating to the nature of sugar cane growers and their working conditions. Although it provides work and revenue, our growing is mainly employed to boost the benefits of agribusiness specifically because households may readily permit growing and profit from its employment and income (Bahaman et al, 2010). This is because the method optimizes benefits and draws a large number of individuals from all over the world because it incorporates the advantages of institutionalized farming, such as marketing, production, and quality. In essence, one of the main limitations in farming is revenue, but contract farming offers tremendous advantages in terms of marketing, capital investment, credit, and financial services (Bauman, 2000). However, the drawbacks include the potential for exclusionary behavior by our growers.

This is less important to poor small holder growers as large farmers are majorly preferred due to the fact that there is easy organization and costs of management (Bauman, 2000). Wherefore, small scale farmers are found of being left out and such elimination may result into economic gaps that reinforce economic blames. Although the natural problems do exist, there are studies that show sugarcane growing contributing to the fairness of the people. In south Africa, around the Kwa-Zulu Natal zone, the growing of sugar cane provides sufficient incomes used for providing households requirements such as education for children, food staffs (Cockburn et al, 2014). The intensity of the challenge is higher amongst workers than farmers. For example, in Rwanda, Kwa Zulu Natal and Castel (2012), workers get incomes that are insufficient to meet the family needs such as for paying children's education and food (Lang horst and Bra, Veltman, 2011). But things are different; some farmers make little money. According to Wendimu, Henningsen, and Gibbon (2016), farmers in Ethiopia who gave irrigated land to sugarcane out-grower systems saw a decline in their asset portfolios and revenues. The low

prices paid by sugar firms were blamed for the meager income returns, which reduced the profitability of sugarcane growing. Similar to this, the exploitative practices of sugar mills in Kenya's Mumias, Bungoma, Kakamega, Migori, and Homabay sugarcane-producing districts are characterized by consistently low income returns (Shalita, 2014). The modest impact on incomes is ascribed to sugar companies' appropriation of benefits across farmer contracts, which give them disproportionately high interest rates on agricultural input support. Finally, in a study of households that grow cash crops, Govereh & Jayne (2003) found that cash crops can improve farmers' access to resources like fertilizers and agricultural loans, among other benefits that can flow over into the production of food crops. More research is need to fully explore this possible advantage of sugarcane revenue. This study aimed to fill the geographical scope gap caused by the fact that it was conducted in South Africa.

CHAPTER THREE: METHODOLOGY

3.1 Introduction.

The procedures used to carry out this investigation are described in this chapter. The demographic, sample size, sampling strategies, data gathering methods, data collection tools, and data analysis are all covered in this chapter.

3.2 Location of the study area.

The study was conducted in Busede sub-County in Jinja district, Busoga sub-region, Eastern Uganda (Figure.1). Busede sub county is located between **0.5926^0N and 33.3050^0E** The elevation of the area is 1141 meters above sea level. Busede is one of the eleven sub counties that make up Jinja district and lies to the East. It's bordered by Mafubira sub county in the North, Kagoma county in the East, Mpumudde Sub County in the South and Buwenge sub-;county in the west. According to UBOS (2020), Busede sub-county covers a land area of 106.0 square Kilometer.This study concentrated on Busede Sub County comprising of five parishes namely; Bugobya, Nabitambala, Itakaibolu, Nalinaibi and Kisasi.

Figure 3.1. A MAP SHOWING LOCATION OF BUSEDDE SUBCOUNTY IN JINJA DISTRICT

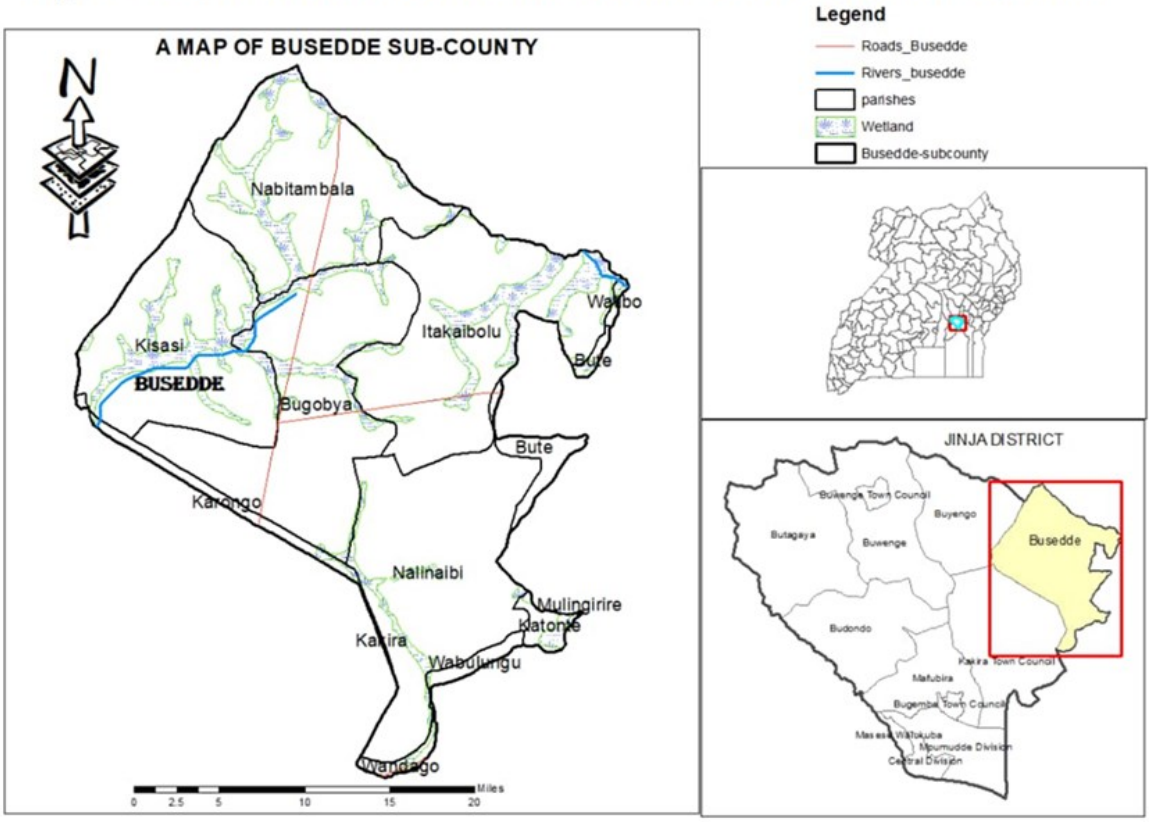

Figure 3.1: Location of Busede sub-county.

The sampled households in the study came from all the parishes in Busede Sub County that is Bugobya, Nabitambala, Itakaibolu, Nalinaibi and Kisasi

3.3 Topography

Busede sub-county in particular is characterised by rolling hills and valleys such as Lukonko and Kaanama hills in Kisasi and Nalinaibi parishes respectively, lowlands such as Namazingiri-Katalakabi stream in Kisasi parish and gentle slopes. The average elevation of the study area ranges from 1,000 and 1500 meters above sea level, located in Kaitandovu in Nabitambala parish. The terrain and elevation of the study area create a scenic landscape, with opportunities for agriculture, livestock grazing, and tourism. The area is known for its natural beauty, with views of the surrounding hills and valleys (Nabatte et al, 2024).

3.1 Soils

Busede Sub County in particular has several soil types including: Clay loam, sandy loam, clay, and lateritic soils which are common in the area with a mix of clay, silt, and sand. They are fertile and well-draining, making them suitable for a variety of crops. Sandy loam soils are particularly found in the Northern parts of Busede. They are well draining and suitable for crops like sugarcane, maize, beans, and soya beans. Clay soils, these soils are found in the southern parts of Busede and are characterised by high clay content. They are fertile but may experience water logging, making them suitable for crops like rice and sugarcane. Lateritic soils, these are found in the Eastern parts of Busede and have got high iron and aluminium content. They are well draining but may be acidic, making them suitable for crops like coffee, tea, and bananas (Mpiima et al, 2019).

3.3.2 Vegetation

The vegetation of Busede Sub County was covered by tropical rain forests, but after introduction of sugarcane growing most of them has been cleared to create room to establish farmlands. A significant portion of the land is used for agriculture, with crops like sugarcane, coffee, bananas, and maize being commonly grown. The area has a stream called Namazingiri including swamps and marshes, which support a variety of aquatic vegetation like papyrus and water lilies. There are also areas of woodlands with a mix of trees such as pine, “musizi”, mango trees and grass species, often used for fuel wood and charcoal production. However, the vegetation of Busede Sub County is diverse, with a mix of natural and human modified landscape. Never the less, the area is facing environmental challenges like deforestation, soil degradation, and wetland encroachment, which need to be addressed to ensure sustainable development (Sentongo et al, 2018).

3.3.3 Climate

Busede the overall tropical climate of the Sub County is influenced by vegetation, relief, and its proximity to sources of water like Lake Victoria and the Nile River. There are two seasons and a bimodal rainfall pattern. March through June marks the beginning of the first rainy season, which peaks in April. The region experiences dry spells from January to March and July to August, with the second rainy season occurring from September to December. Between 1250 and 1500 mm of rain falls on the region each year. The minimum annual temperature is not less than 12.5 degrees Celsius, and the average annual maximum temperature does not exceed 30 degrees Celsius.

March is the hottest month and July is the coolest. With an average yearly evaporation of 1450–1600 mm, Jinja district experiences about equal day and night lengths throughout the year (Sengendo, 2016).

3.3.4 Population

With a population density of 270 people per square kilometer and a recent national population census in 2014 estimating the total population at 43,911 with a 2.5% annual population growth rate, Busede Sub County's population has been steadily and dramatically growing. There are 22,470 (51%) females and 21,4441 (48%) males in the population. The estimated numbers for the rural and urban areas are 321,400 and 186,300, respectively (UBOS, 2020).

3.3.5 Land utilization and economic activities

In the Busede sub county in Jinja district, the main economic activities are agriculture and farming. The area is known for its sugarcane and maize production, tailed with keeping of livestock with most farmers practicing small-scale farming. The majority of the people are involved in chrop growing. Other types of crops grown in the area are cassava, beans, ground nuts in most of the parishes in the sub county of Busede. Some of the animals kept are goats,

cattle, pigs, rabbits and birds. In most cases, the animals are kept on zero grazing in the most parts of the sub county. Majority of the households in the area are involved in sugarcane related activities such as garden preparation, planting, weeding, cutting, loading and offloading of the sugarcane though some members operate small businesses such retail shops as riding boda-boda, and quarrying around the hills of the area such as Kaitandovu (UBOS, 2020).

3.4 Research Design and Approaches.

Pauline (2007) defines a research design as a plan of data collection and what data to gather, from whom, how and when to collect data, and how to analyze the data obtained. A cross-sectional research design was adopted that generated data basing on the happenings at that very time, and the conclusion was at that very moment (Kumar, 2011. p.416).This study used a cross-sectional research design, which produced data according to the circumstances at the time and led to the conclusion at that specific moment. The qualitative approach was chosen because the study also gathered respondents' opinions, views, and comments, whose presentation and interpretation work best with narratives. The quantitative approach was justified because some effects of sugarcane growth on socioeconomic conditions are measurable and statistically presented. While quantitative data involved the use of descriptive and inferential statistical techniques to collect, analyze, and communicate study findings in the form of frequencies, percentages, chi-square, and p-values, qualitative data involved the analysis of data in the form of statements obtained from key informants.This made it possible to triangulate the results, which improved the study's validity and dependability.

3.5 Study Population

The whole membership of a specific class of locations, events, people, or items selected for the study is known as the study population (Amin, 2005). Household heads of small-scale sugarcane and non-sugarcane growers, district officials, and local councils in Busede Sub

County made up the study's respondents. Since the growth of sugarcane in the area has a favorable or negative impact on their socioeconomic circumstances, the primary target group was all households from the five parishes of Nalinaibi, Bugobya, Itakaibolu, Kisasi, and Nabitambala in Busede Sub County. Five district authorities, 15 local leaders, and 6854 households typically yield to a study target population of 6874 participants.

3.6 Sample Size

The process of sampling in this study covered Busede Sub County from Jinja district. This. is because it is one of the accessible sub counties in Busoga sub region carrying out sugar cane growing. All the parishes in Busede Sub County were sampled in order to overcome biasness. The parishes sampled included Bugobya, Nabitambala, Itakaibolu, Nalinaibi and Kisasi. A t2020) was sampled. The fast and the main category of respondents were the households in the area. Since the study targeted the socio-economic conditions of the local people, 240 respondents were picked to make up a sample size following Morgan and Krejci (1970)'s table of sample size determination at a confidential level of 90%. The sugarcane farmers sampled were 130 and the non-sugarcane growers 110 following a stratified formula; n= (z^2*p*(1-p))/E^2. Purposive simple random sampling technique was used to reach all the selected sugarcane and non-sugarcane growers with the help of the village registers provided by the village leaders in the study area. The second category of respondents included key Informants that is to say 5 district officers and 15 local leaders from the villages of Busede sub county hence summing up to a total target sample of 260

3.8 Data sources.

Data was gathered from both primary and secondary source.

3.8.1 Primary sources.

Households in the Busede sub-county, Jinja district officials, and local leaders (local council or opinion leaders) provided the primary data. Interviews were done and questionnaires were given to these. Additionally, the research area's social, economic, and sugarcane-related activities were directly observed and photographed.

3.8.2 Secondary sources.

Secondary data was collected from reading recent publications, official documents, Newspapers, text books and journals in line with the objectives of the study. Data was also collected from the reports from Uganda Sugarcane Technologists Association, Uganda Bureau of Statistics, Food and Agricultural Organisations and World Food Organisation.

3.9 Data collection instruments

In this study, data collection involved the use of questionnaire, interview guides, focus group discussion and observation check list.

3.9.1 Questionnaire

The questionnaire is a written document with a set of questions specifically designed for statistical research (Gay, 1996). In Busede Sub County, it was utilized to collect quantitative data from household heads regarding the impact of sugarcane cultivation on social, economic, and food access circumstances. Due to their ease of coding, the questionnaire was primarily closed-ended, making statistical analysis simple. Household heads in the research area were the specific target of these. But there were also open-ended questions, which allowed the responders to write additional notes in response. The researcher and assistants personally delivered the questionnaire copies, waited for the respondents to complete them, and then handed them back.

3.9.2 Interview method.

A conversation between two or more persons in which the interviewer asks questions to extract information or assertions from the interviewee is called an interview (Seirdman, 1998). This approach was chosen because it allowed the researcher to go deeper into the interview. Using the interview guides, district authorities, growers of both sugarcane and non-sugarcane, and village chairpersons were interviewed during the study. Information on how sugarcane cultivation affects social, economic, and food security circumstances in the research area was gathered through interviews. The study employed the interview method because it allowed for interaction with respondents who might not have had the time to complete the questionnaire but who could contribute important information for the investigative study. By providing information not available through questionnaires, this interviewing technique assisted in connecting the data collected from the surveys. Aside from social gatherings with the respondents, the data collection method's anonymity—which was provided through spoken responses rather than written ones—created compliance to provide accurate information. Answers to the interview guide questions were entered into the field note book, and the information gathered was then utilized to support household questionnaire responses.

3.9.3 Observation checklist

This is a list of things, that is to say infrastructures and income activities that research looked at while collecting data in the felid. This collected information took place in the area of interest, the response and their interactions with others. Generally, observation was done according to the research objectives with emphasis to sugarcane duties and their effects on socio economic conditions of the small-scale farmers in Busede sub-county. This method utilized the collection of information for reinforcement and interviews, this was due to data got from observation emerging from the actual happenings other than from preconceived notions. This method enabled the gathering of first- hand information regarding the study investigations.

3.9.4 Focus group discussion guide

This approach was taken into consideration since it enables the researcher to gather crucial data that a questionnaire cannot (Gay, 1996). Household heads of both sugarcane and non-sugarcane growers who were part of a group of ten or more people in a chosen hamlet per parish were the primary users of this. In order to discuss the several key study subjects with the heads of households in Busede Sub County, the researcher created a focus group guide. In regard to the subject of the study, it sought to obtain a broader perspective and opinions from both sugarcane and non-sugarcane growers.

3.10 Data Analysis

Applying methods to address the specified research questions is known as data analysis (Gay, 1996). Because both quantitative and qualitative data were collected for the study, various analytic strategies were needed.

3 .10.1Quantitative data

Demographic (gender, household size, education of the households), social, economic condition and food security data were organized in statistical packages for Social Scientists (SPSS) version 23.0. This data was analyzed using descriptive and inferential statistics such as frequencies, percentages and chi-square, p-values respectively to find out if there were any differences between the sugarcane growing households' verses those that do not grow sugarcane in terms of their socio-economic conditions in the study area. In the case of food security status, a monthly adequate household food provision (MAHFP) was used. This was used to determine the number of households who had adequate food (that is; households with adequate food between 10-12 months), moderately with adequate food (that is; households with adequate food between 4-9 months) and those who had less food (that is; households with less than 3 months of adequate food in a year). Responses such as having access to adequate food,

moderate access to adequate food and less access to adequate food to a question were code as 1, 2, and 3, respectively. Thereafter, the results were presented in form of tables.

3.10.2 Qualitative analysis

The non-numerical data gathered from the key informants was majorly qualitative in nature hence analyzed respectively. The replies were interpreted, organized, and categorized under the theme objectives of the study. Qualitative information analysis involved the use of explanations as either direct narratives or quotations of the replies from the interviews. The emerging findings were used to reinforce and explain the results got from quantitative data analysis.

Table 3.1: Summary of the Methodological framework

OBJECTIVE	DATA COLLECTION TOOLS	TYPES OF DATACOLLECTED AND DATA ANALYSIS
OBJECTIVE I To examine the effects of sugar cane growing on social conditions (membership to social groups, access to health, education of the household heads) of the small-scale farmers in Busede Sub County in Jinja District.	• Questionnaire • Interview • Observation • Focus group discussion guide	Quantitative and qualitative data; Descriptive and inferential statistics such as frequencies, percentages and chi-square, p-values respectively including narratives.
OBJECTIVE II To examine the effect of sugar cane growing on food security (food access) of the small-scale farmers in Busede Sub County Jinja District.	• Questionnaire • Interview • Observation • Focus group discussion guide	Quantitative and qualitative data; Descriptive and inferential statistics such as frequencies, percentages and chi-square, p-values respectively, using a Monthly adequate household food provision ((Coates, Swindale, 2017) and Narratives.
OBJECTIVE III To assess the effect of sugarcane growing on the economic conditions (money saved, money earned, access to credit facilities from banks and land size) of the small-scale farmers of Busede sub county in Jinja district.	• Questionnaire • Interview • Observation • Focus group discussion guide	Quantitative and qualitative data; Descriptive and inferential statistics such as frequencies, percentages and chi-square, p-values respectively including narratives.

3.11 Ethical consideration

The ethical guidelines governing social research studies were followed in the conduct of this investigation. The researcher introduced herself to the respondents as someone looking for help

with the study in an introductory letter that was acquired from Kyambogo University. Before distributing questionnaires to respondents and conducting interviews, their consent was obtained. An introduction line in the questionnaire asked for the respondent's participation in supplying the study's necessary data. The respondents were also given the assurance that the information they submitted would be kept private and that the study's conclusions would only be used for scholarly research. By properly citing secondary information sources, plagiarism was prevented.

3.12 Limitation of the study

While conducting the field survey, the researcher ran into a few obstacles that had a detrimental impact on the study's conclusions. Due to their hectic work schedules, the majority of the key informants postponed the process of gathering their thoughts and opinions on the topic under research. On numerous occasions, local authorities, district officials, and the majority of household heads—both sugarcane and non-sugarcane growers—were unavailable to meet and conduct interviews. This made it difficult for the researcher to complete her data collection task within the allotted time. This was resolved, though, by asking their homes and office staff for contacts and scheduling interviews over the phone.

Before filling out questionnaires or going to interviews, a few respondents insisted on receiving payment. Their opinions altered because the researcher found it difficult to meet these requests. While some chose to conceal certain information, others did not devote much attention to the interviews. Reiterating to the respondents that the research was being conducted for academic grounds and to help the researcher finish a study program rather than to obtain commercial gains that required payment was the solution to this problem.

CHAPTER FOUR: PRESENTATION OF RESULTS

4.1 Introduction.

The research findings were provided in this chapter. The purpose of the study was to collect the perspectives and viewpoints of government employees, local leaders, and households in Busede Sub County in Jinja District that were both sugarcane and non-sugarcane farmers. Observations, interviews, questionnaire administration, and profiling of field-observable occurrences were all part of the study. The majority of the replies on the questionnaire were closed-ended. While descriptive responses were collected as dichotomies for computation for descriptive statistics and interpretation of the outcomes, numerical responses were noted. In accordance with the study objectives listed in section 1.3 of chapter one, the data are given, examined, interpreted, and discussed in that order.

4.2 Demographic Characteristics of the small-scale sugarcane farmers

To get relevant responses, the researcher asked questions relating to gender, level of education, and age of the household heads and size of the households to the respondents.

The table 4.2 presents the findings of the study on the demographic characteristics of the small-scale sugarcane and non-sugarcane growers in Busede Sub-County, Jinja District.

Out of the sample of 200 respondents (both groups), by gender 90(75%) of the males were sugar cane growers while the 30(25%) were non-sugarcane growers. 40(50%) females were both sugar cane and non-sugarcane growers (Table 4.1). However, there was need to establish whether there was a significant difference in gender between sugarcane and non-sugarcane growers. The computed ($P<0.000$), which falls below the predetermined alpha value of 0.05, consequently, the conclusion is that there is a highly statistically significant difference in gender between sugarcane growers and non-sugarcane growers.

The study findings suggest that sugar cane growing shows that Primary level is the leading with 67(67.35%) and 32(32.67%) sugarcane and non-sugarcane growers respectively, followed by those with No formal education with sugarcane growers 29(76.32%) and 9(23.68%) Non sugarcane growers, 14(42.42%) and 19(57.58%) sugarcane and non-sugarcane growers attained ordinary level, 3(60%) and 2(40%) sugarcane and non-sugarcane growers went up to diploma level, 3(50%) both sugarcane and non-sugarcane growers went to university. However, the (P>0.108) indicates that there was no evidence to show any significant difference in the level of education between sugarcane and non-sugarcane growers.

About the age of the respondents, majority of sugarcane growers 85 (64.9%) and 46(35.11%). On-sugarcane growers were between the ages brackets of 29-38 years. 26(52%) sugarcane growers and 24(48%) non-sugarcane growers were in the age brackets of 18-28 years. 19(100%) of the sugarcane growers were in the age bracket between 39-58 years. This was statistically insignificant at (P>0.071).

About household size, the results suggest that, the sugarcane growers with 8 members and above were 76(72.38%) compared to 39(72.38%) non-sugarcane growers followed with that of 4 members 33(80.49%) sugarcane growers and 8(19.51%) non-sugarcane growers respectively. 18(48.69%) of the sugarcane growers and 19(51.35%) non-sugarcane growers had 6 members respectively and finally 3(42.86%) and 4(57.14%) both sugarcane and non-sugarcane growers had only 2 members in their households. This was statically significant at (P<0.018).

Table 4.1: Demographic Characteristics of the small-scale sugarcane farmers.

Categorical variables

		Non-sugarcane growers	**Sugarcane growers**		
Indicators Variable		No (%)	No (%)	Chi-square(x^2)	P-value
Gender of HH	Male	30 (25)	90(75)		
	Female	40(50)	40(50)	13.19	0.0000
	Total	70(35)	130(65)		
/	No formal education	9(23.68)	29(76.32)		
	Primary	32(32.65)	67(67.35)		
	Ordinary level	19 (57.58)	14(42.42)		
Level of education	Advanced level	1(14.29)	7(87.50)	14.42	0.108
	Diploma	2(40)	3(60)		
	University degree	3(50)	3(50)		
	Others	4(36.36)	7(63.63)		
	Total	70(35)	130(65)		
	18-28 years	24(48)	26(52)		
	29-38 years	46(35.11)	85(64.89)		
Age (years)	39-48 years	0(0)	12(100)	13.37	0.071
	49-58 years	0(0)	7(100)		
	Total	70(35.18)	130(65)		
	2 members	4(57.14)	3(42.86)		
	4 members	8(19.51)	33(80.49)		
Household size	6 members	19(51.35)	18(48.65)	10.0873	0.018
	8 and above members	39(27.62)	76(72.38)		
	Total	70(35)	130(65)		

4.2: Sugar cane growing and Social Conditions of Small-scale farmers.

The first study objective meant to examine the effects of sugarcane growing on the social conditions of small-scale farmers in Busede sub-county. The researcher achieved this objective by asking respondents questions relating to membership to social groups, access to health, ability to education children and environmental degradation.

4.2.1: Sugarcane growing and membership to social groups in Busede Sub County.

The results in Table 4.2 shows that majority 116(94.3%) of the sugarcane growers were members of social groups compared to 7(5.7%) of the non-sugarcane growers. while majority

63(81.18%) of the non-sugarcane growers and a few 14(18%) of the sugarcane growers were not. This was statistically significant at (P<0.027).

Table 4.2: Sugarcane growing and social groups in Busede Sub County.

Indicators	Variable	Non-growers	Growers	Chi-square	P-value
		No. (%)	No. (%)		
Membership of social groups	Yes	7(5.7)	116(94.3)	151.807 v2	0.027
	No	63(81.81)	14(18.19)		
	Total	70(35)	130(65)		

4.2.2: The effects of sugar cane growing on the health access of small-scale farmers in Busede Sub County.

On access to health as an indicator of the social conditions, it was looked at in terms of access to health services, Sources of medical services and access to health information as indicated in the Table 4.3.

The results show that 96(65.31%) sugarcane and 51 34(64.19%) non-sugarcane growers had access to medical services while 34(64.15%) sugar cane and 19(35.85%) non- sugarcane growers did not access medical services however, this implied that there was a significant difference of (P<0.021) in access to medical services between sugarcane and non-sugarcane farmers. On the sources of medical services, the majority 40(57.14%) of the non-sugarcane growers went to government health centres compared to 30(42.86%) of the sugarcane growers. Majority 66(855.71%) of the sugarcane farmers went to private hospitals compared to 11(14.29%) non-sugarcane growers. This was statistically significant at (P<0.000). On access to health information, majority 71(71.71%) of sugarcane growers agreed that they had access to health information compared to 28(28.29%) non-sugarcane growers (P<0.043).

Table 4.3: Effects of sugarcane growing on access to health services in Busede Subcounty

Indicators	Variable		Non-growers	Growers	Chi-square	P-value
			No (%)	No (%)		
	Access to medical services	Yes	51(34.69)	96(65.31)	0.02	0.021
		No	19(35.85)	34(64.15)		
		Total	70(35)	130(65)		
	Source of medical services	Health centres	40(57.14)	30(42.86)		
		Private hospitals	11(14.29)	66(85.71)	2.74	0.000
		Total	51(34.69)	96(65.31)		
Access to health information		Yes	28(28.29)	71(71.71)		
		No	42(41.6)	59(58.4)	0.54	0.043
		Total	70(35)	130(65)		

4.2.3 Effects of sugarcane growing on the education in Busede Sub County

Table 4.4 shows results on the ability to educate children among households in the study area. 98(86.7%) of the sugarcane growers agreed that they were able to educate their children compared to 15(13.4%) non-sugarcane growers while 32(36.8%) sugarcane growers and 55(63.2%) non-sugarcane growers respectively disagreed that they were not able to educate their children. This was significantly different at (P<0.010).

> *"As education department in Jinja district, we have realized that more sugarcane growers have educated their children up a certain level compared to those not growing. This is due to the income they get from selling their sugarcane"*

Table 4.4: Effects of sugarcane growing on the education in Busede Sub County

Indicators	Variable		Non-growers	Growers	Chi-square (x^2)	P-value
			Non (%)	No (%)		
	Ability to educate children	Yes	15(13.4)	98 (86.7)		
		No	55(63.2)	32(36.8)	21.42	0.010
		Total	70(35)	130(65)		

4.3: Effects of Sugar Cane Growing on Food access of Small-Scale Farmers in Busede Sub County.

The second object meant to examine the effects of sugarcane growing on the food access among the small-scale farmers in the area of study.

The food access in this study was established using the Monthly Adequate Household Food Provision (MAHFP) which measures food insecurity using the food access dimension. The MAHFP describes the number of months a household got adequate food in a year. Every month is given a score of 1 and therefore the total score is 12. A score closes to 12 indicates that food was available or adequate while a score far away from 12 indicates that food was inadequate or unavailable therefore, a household that scored between 10 to 12 months with adequate food

was food secure. A household that scored between 4-9 months, was moderately food secure and a household that had less than 3 months of adequate food was food insecure. MAHFP is an important indicator of food security because it captures the strategies of improved agricultural production, storage and interventions that increase the household's ability to buy products and services (Coates, Swindle, 2017).

4.3.1: Comparison of the monthly adequate household food provision for sugarcane growing household versus the non-sugarcane household.

The results in Table 4.8 show that 49(74.24%) of the sugarcane growers had between 10-12 months of adequate food hence they were food secure compared to 17(25.76%) of the non-sugarcane growers with the similar months of adequate food. This was statistically significant at ($P<0.003$). By implication, sugarcane farmers were most likely to be food secure compared to non-sugarcane growers. Majority 69(65.42%) of sugarcane growers had between 4-9 months of adequate food hence they were moderately food secure compared to 37(34.58%) of the non-sugarcane growers. This was statistically significant at ($p<0.000$). 16(59.26%) of non-sugarcane growers and 12(40.84%) of the sugarcane growers had less than 3 months of adequate food hence they had inadequate food in the year round thus food insecure and this was statistically significant at ($P<0.046$). This finding was in support by one of the respondents who had this to say;

> *"On my 4 hectares of land, am able to use one for growing cassava, beans, maize and the rest of it is under sugarcane".*

Another respondent had this to say;

> *"Farmers with big hectares of land had more access to food than those with small plots"*

Table 4.5: Comparison of Monthly adequate household food provision for the Sugarcane and non-sugarcane grower's households

Months of adequate food	Non-growers No (%)	Growers No (%)	Chi-square	P-value
10-12 months	17(25.76)	49(74.24)	15.17	0.003
4-9 months	35(34.5)	69(65.42)	21.32	0.000
Less than 3 months	16(59.26)	12(40.84)	11.29	0.046

Figure 4.1: is an example of a garden with sugar cane and food crops of a sugarcane grower in Bulakabya village.

Figure 4.2: Sugarcane and food crop plantations in Kinabirye village.

Figure 4.1 and 4.2: show hectares of land for a farmer used for both sugarcane and food crop growing as evidence to back up the respondents' view that some farmers with big land size do allocate it to both sugarcane and food crop growing. This shows that some farmers are food secure alongside growing sugarcane.

4.4 Effects of sugar cane growing on household's economic conditions of Small-Scale farmers in Busede sub-County.

The third study objective meant to assess the effects of sugarcane growing on the economic conditions of small-scale farmers in Busede sub-county. The researcher achieved this objective by asking respondents questions relating to Money saved and earned, Property acquired, Access to credit facilities and land size.

The results in Table 4.7 indicate that on saving, the majority 104(73.76%) of the sugarcane growers agreed that they saved part of their money in a year compared to 37(26.24%) of the non-sugarcane growers. While 33(55.93%) of the non-sugarcane and 26(44.07%) of the sugarcane growers did not save. This was statistically significant at ($P<0.000$). On the amount of money saved in a year, more sugarcane growers 37(100%) and 34(100%) saved between shillings 900,000-1,200,000 and 1300,000 and above respectively. This was statistically significant at ($p<0.042$). More 31(53.57%) of the non-sugarcane growers saved an amount of money between shillings 300,000 – 500,000 than the 26(46.43%) of the sugarcane growers. 7(53.85%) and 6(46.15%) of sugarcane and non-sugarcane growers respectively saved between shillings 600,000 and 800, 000.

On money earned, the results indicate that 56(100%) of the sugarcane growers earned shillings 10m and above,48(88.89%) of the sugarcane growers earned between shillings 7m-9m in a year than 6(11.11%) of the non-sugarcane growers. 42(65.63%) of the non-sugarcane growers earned between shillings 4m-6m than 22(34.38%) of the sugarcane growers and lastly,

20(83.33%) and 4(16.67%) of non-sugarcane and sugarcane growers respectively earned between shillings1m-3m though marginally non-significant at (P>0.057).

On the property acquired, 76(77.97%) of the sugarcane growers noted that they acquired more land compared to 13(22.03%) of the non-sugarcane growers. 35(57.38%) of the sugarcane growers noted that they built more permanent houses than 26(42.62%) of the non-sugarcane growers.30 (61.22%) of the non-sugarcane growers bought animals than 19(38.77%) of the sugarcane growers. This was statistically significant at (p<0.016).

On access to credit facilities, 103(91.2%) of the sugarcane growers noted that they accessed credit facilities compared to10(8.8%) of the non-growers. Majority 60(69%) of the non-sugarcane farmers did not access credit facilities compared to 27(31%) of the sugarcane growers. This was statistically significant at (p<0.029).

On the size of land, more of sugarcane growers 60(95.2%) had 4 hectares of land and above compared to 3(4.8%) of the non-sugarcane growers,49(87.5%) of the sugarcane growers had 3 hectares of land compared to 7(12.5%) of the non-sugarcane growers, 60(74.1%) of the non-sugarcane growers had less than 2 hectares compared to 21(25.9%) of the sugarcane farmers. This was statistically significant at (p<0.002).

Table 4.6: Effects of sugarcane growing on the economic conditions of small scale in Busede Sub-County

Indicators	Variable		Non-growers	Growers	Chi-square	P-value	
			No (%)	No (%)			
	Saving	Yes	37(26.24)	104(73.76)			
		No	33(55.93)	26(44.07)	16.11	0.000	
		Total	70(35)	130(65)			
	Money saved per year (Shs).	300000-500000	31(53.57)	26(46.43)			
		600000-800000	6(46.15)	7(53.85)			
		900000-1200000	0(0)	37(100)	50.17	0.042	
		1300000 and above	0(0)	34(100)			
		Total	37(26.24)	104(73.8)			
	Money earned per year (Shs.)	1m-3m	20(83.33)	4(16.67)			
		4m-6m	42(65.63)	22(34.38)			
		7m-9m	6(11.11)	48(88.89)	95.53	0.057	
		10m and above	0(0)	56(100)			
		Total	70(35)	130(65)			
	property acquired	Built my own house	26(42.62)	35(57.38)			
		Bought more hectares of land	13(22.03)	76(77.97)			
		Bought animals	30(61.22)	19(38.77)	12.23	0.016	
		Others	1(100)	0(0)			
		Total	70(35)	130(65)			
.	Access to credit facilitiesl	Yes		10(8.8)	103(91.2)		
		No		60(69)	27(31)	20.88	0.029
		Total		70(35)	130(65)		
	Land size	Less than 2 hectares		60(74.1)	21(25.9)		
		3 hectares		7(12.5)	49(87.5)	24.34	0.002
		4 hectares and above		3(4.8)	60(95.2)		
		Total		70(35)	130(65)		

Figure 4.3: An example of a house construction and solar Pannel installed in a home stead for a sugarcane grower in Kisasi village

Figure 4. 4: shows land under sugarcane for a sugarcane grower acquired from sugarcane sales in Bulakabya village.

The findings show that sugarcane growing has played a vital role in the development of the local area. The income got from selling sugarcane is used for development purposes such as buying land, livestock and constructing houses as well as getting better social services such as solar Panels. In addition, sugarcane growers are also able to access agricultural credit facilities which help them to enlarge their plantations farms.

CHAPTER FIVE: DISCUSSION

5.0 Introduction

This section presents the discussion of results for each objective. It shows links and variations of the results of the study to other related studies.

5.1 Demographic Characteristics of the small-scale sugarcane farmers.

The findings showed that men owned the majority of the sugarcane gardens compared to women. At P<0.000, this was statistically significant. The majority of the sugarcane gardens in the study area were owned by men, despite the fact that women provide the majority of the labor on sugarcane farms. Emmanuel and Helen (2020), Mwavu et al. (2018), Nabalegwa (2022), Rocca (2016), Sanghera and Sharma (2015), and Zaidi and Munir (2014). In sub-Saharan Africa, women's participation as out-farmers in the sugarcane industry is significantly lower than that of men. This is because of the current land tenure structure, particularly the traditional arrangement that gives male children the right to inherit the land and other valuable resources. Women's status in society is different in locations like Tanzania and Kilombero, where the Ujamaa initiative distributed land equally to men and women, than in places where the traditional system is in effect.The current study did not deviate with the previous studies since it was statistically significant that the male owned more sugarcane gardens than the female and this is due to an existing land tenure system in the study area that also permits rights to land inheritance to male children and this caused income inequality in the study area leading to low socio-economic conditions among the households.

The study findings on education level of the respondents both sugarcane and non-sugarcane growers suggested that, Primary was the leading level of education though statistically insignificant at (P<0.108). This indicated no enough evidence to show any significant difference in the level of education between sugarcane and non-sugarcane growers. However, the primary level of education affected sugarcane growing negatively since it limits the

adaptation of modern scientific ways of sugarcane production and this highly contributes to low levels of socio-economic progress in the study area. This is in line with Nabalegwa (2022), revealed that most of the sugarcane growers in Busoga were majorly primary graduates. Khan et al, (2019), most sugarcane growers in Africa and Asia have low levels of education, limiting production under out-growers projects. The above statement is not any different from Busede Sub County in Jinja district. This low level of education limited the households 'chances of getting other jobs that require higher levels of education hence this kept them under small-scale sugarcane farming leading to low socio-economic progression.

About the age of the sugar cane growers, the results show that majority of the households both sugarcane and non-sugarcane growers were below 40 years of age. This was attributed to the fact that sugarcane growing is labour intensive and since the youths are more energetic, they were able to involve themselves more in the growing of sugarcane compared to aged households and this improved on the socio-economic progression among youths in the area of study. The current study was in agreement with Robert et al (2023), stated that more youths between the age of 21-40 years were involved in sugarcane related activities in Mid-western Uganda.

Also, about household size, the results suggest that households with 8 members and above grew more sugarcane compared to those with small household size. This implied that households with 8 members and above grew more sugarcane as compared to those with small household size and this was statistically significant at ($P<0.018$). This finding was in line with that of Madina et al (2022), who found out that, small-scale sugarcane growing is based on family labour in Busoga region. This did not differ with the current study in that; households which had more members grew more sugarcane compared to those small families.

5.2 Effects of Sugarcane growing on Social Conditions of Small-scale farmers

The study found out that more of the sugarcane growers were members of the social groups compared to the non-sugarcane growers and this was statistically significant at (P<0.027). Sugarcane growers were active members of the social groups because these groups for example the growers group created market for their sugarcane. This is confirmed by Nabalegwa et al (2022), who said that many of the growers (79%) belonged to grower groups that managed the marketing of the sugarcane.

.On the access to health, the findings suggested that majority of the sugarcane growers accessed health services compared to the non-sugarcane growers. This was statistically significant at (p<0.021). Therefore, the sugarcane growers easily accessed health services compared to non-sugarcane growers. On the sources of medical services, more sugarcane growers went to private hospitals than non-sugarcane growers. This was attributed to the fact that the growers generated more income from sugarcane which they used to pay medical bills while the majority of the non-sugarcane growers went to government hospitals. This is attributed to the limited income which is not enough to cover their medical bills leading to low socio-economic condition in the area. This is in line with WHO (2022), which asserts that it is a responsibility of the government to support the health and well-being, including to provide good-quality health services, which are accessible and affordable to all who need them.

The study findings also indicated that more sugarcane growers had the ability to educate their children than the non-sugarcane growers. This was due to the income they got from sugarcane sales, this income helped the sugarcane growers to pay school fees, buy school requirements which kept their children at school which improved their socio-economic conditions as compared to children for the non-growers and this was statistically significant at (P<0.000). This study is in line with Madhanapall (2012), Oyugi (2016), Waswa et al (2012) who

established that sugarcane farmers had been able to get income for the education of their children.

5.3 Effects of Sugar Cane Growing on Food Security of Small-Scale Farmers in Busede Sub-County.

The results indicated that sugarcane growers were more food secure compared to non-sugarcane growers. This was statistically significant at($P<0.003$). This was attributed to the fact that the growers had access to more income and land than the non-sugarcane growers. This helped them to grow and buy food for their households hence improved socio-economic condition among the sugarcane growers in the study area. This finding is in agreement with A. Sultana, A. Kiani (2011) who states that households with more income might be in position to afford a variety of food items for their households than those with less income.

The study also found out that more of the non-growers were food insecure than sugarcane growers. This is because majority had limited land and income to purchase enough food for their households and so they had less than 3 months of adequate food in a year. By implication, many of the non-growers lacked land for food crop growing since they rented it to the growers for sugarcane growing and their income was inadequate to purchase adequate food throughout the year. This is supported by Chebii's (2009) study on the effect of sugarcane cultivation on household food security in Kenya's Belgut division, which found that the distribution of land holdings among various crops indicates that since sugarcane was introduced, the amount of land planted to food crops has decreased while the amount planted to sugarcane has increased. This meant that food shortages had to come first and that they were posing a health danger. As a result, women's traditional responsibility for making sure that households have enough food has diminished.These results were also consistent with those of Jelsma et al (2010), who conducted a study on smallholder sugarcane production in Xinvane, Mozambique. They found

that, due to the high profits, sugarcane growers in Mozambique did not follow company guidelines to grow food crops and instead desired to convert all of their land to sugarcane. Additionally, Kitimbo (2023) discovered that a large amount of land is utilized for the production of sugarcane, while little to no land remains for food crops. Food production has decreased as a result, which has hampered the region's socioeconomic development.However, the researcher through an interview with a local leader found out that in the study area, some of the non-sugarcane growers did not use their land for sugarcane growing but rented almost all of it to growers leaving very little or nothing for crop growing hence fuelling the rate of food insecurity which led to low socio-economic conditions in the study area. This was also supported by one of the farmers in the study area who had this to say;

5.4 Effects of sugar cane growing and household's economic conditions of Small-Scale farmers.

The results indicated that sugarcane growers saved more money in a year than the non-sugarcane growers. This was statistically significant at ($P<0.00$). This is because the sugarcane growers had bigger size of land where they grew sugarcane which was sold to earn and save more income compared to non-sugarcane growers. These findings were in line with Hermann et al (2018) in Malawi which compares food security measures of out growers and non-growers and he found out that out growers earned and saved significantly higher incomes. By implication, sugar cane growing has helped to improve on the incomes of the sugarcane growers leading to improved socio-economic conditions in the study area. Sugarcane farmers earned more income of Shs.10million and above yearly. This enabled them to acquire more property for example they built descent houses, bought more land and animals than Non sugarcane growers. By intuition, sugar cane growing has enabled farmers acquire more wealth than the non-sugarcane farmers. The results are consistent with a study by Waswa et al. (2012) on contract sugarcane growing and farmers' earnings in Kenya's Lake Victoria area. In general,

he came to the conclusion that most farmers cultivate sugarcane in order to generate cash for their children's education, the purchase of more property, particularly land, and the building of respectable family homes since that thatching grass has been eradicated through land conversion to farming. The study found out that sugarcane grower accessed credit facilities more easily than the non-sugarcane growers. This was statistically significant at ($P<0.029$). This is because the sugarcane growers present their sugarcane gardens as collateral security to the credit institutions. This was in line with Govereh and Jayne (2003) who found out that sugarcane farmer would access agricultural loans, which enabled them to produce crops. Never the less, the long gestation period reduced the incomes, hence forcing them to borrow from credit institutions before harvest.

It was found out that sugarcane growers who had more hectares of land accessed credit facilities compared to the non-sugarcane growers (Table 4.9). This was statistically significant at ($P<0.002$). This was attributed to the fact that sugarcane growers obtained more land from the incomes got from sugarcane growing and they used it as security. This is in line with the international labour organization (2017) that stated that the major benefit of sugarcane growing to the households of the local area is to create income generating avenues. This was also supported by one of the key informants who said that majority of the sugarcane growers have expanded their farm sizes due to the increased incomes got from selling sugarcane.

CHAPTER SIX: CONCLUSIONS AND RECOMMENDATIONS

6.1 Conclusions

The study was concluded that sugarcane gardens in the area were majorly owned by the male though most of the work for example clearing of gardens, planting, and weeding are done by the female. The study area is majorly occupied by productive age where most of them are primary graduates, which has limited the use of improved methods of farming leading to low socio-economic conditions

The study was concluded that the sugarcane gardens were mostly owned by male compared to female. Though the labour supply on the sugarcane farms is by women, the male owned most of the sugarcane gardens in the study area.

It was concluded that more of the sugarcane growers were members of the social groups compared to the non-sugarcane growers. This is because these groups for example the sugarcane associations group created market for their sugarcane.

It was determined that sugarcane cultivation is crucial to the livelihoods of sugarcane farmers in the Busede sub-county because it provides money for food purchases, the acquisition of land for sugarcane cultivation and food production, the payment of children's tuition, access to healthcare, and the building of decent homes, all of which have improved socioeconomic conditions.

6.2 Recommendations

The following suggestions are offered in light of the study's findings in an attempt to enhance the socioeconomic circumstances of both sugarcane and non-sugarcane growers in the Busede sub-county.

It is recommended that agricultural experts, farmer leaders and the local farmer champion who have benefited from organization membership can inspire more sugarcane growers to join

associations of sugarcane growers and other association groups in order to improve market access and overall well-being leading to higher socio-economic status among the sugarcane growers.

Bylaws and policies pertaining to sugarcane cultivation should be established; each household head with less than four acres of land should engage in mixed farming to produce food crops and keep cows, pigs, and poultry to provide manures to boost crop yields for food security. To guarantee consistent family incomes, non-food cash crops such as sugarcane, cotton, coffee, and cocoa should be commercially grown on the extra land above four acres. In order to ensure their food security, farmers should simultaneously produce food crops while they wait for their cash crops to mature.

The cultivation of high-income crops including tomatoes, water melon, vegetables (cabbage, greens, and green pepper), passion fruits, onions, mushrooms, pumpkins, beet root, and carrots should be encouraged for both sugarcane and non-sugarcane growers. In addition to raising their incomes and improving their quality of life, this will also assist them cultivate food crops, which will advance socioeconomically.

To improve food sustainability, growers of both sugarcane and non-sugarcane should be encouraged to use scientific farming practices including crop rotation and intercropping, which are part of agroforestry.

By taking advantage of the free, high-yielding food crop seedlings that are given out, crossbreeding animals that produce more milk and meat, and fish farming in the areas around marshes or swamps, the government could urge both sugarcane and non-growers to embrace its Operation Wealthy Creation initiatives. Farmers will benefit from higher incomes and the ability to maintain socioeconomic advancement as a result.

It is recommended that the government should sensitize sugarcane and non-sugarcane growers about savings and investment. This can be through sharing success stories of farmers who have benefited from such strategies so as to improve financial stability leading to socio-economic progress in the study area and other sugarcane growing areas.

The government should fix a minimum price for sugarcane. This will intend to assist farmers by guaranteeing a minimum price of their sugarcane, thereby boosting and stabilizing their incomes. This will help to improve the socio-economic status of the sugarcane farmers in Busede Sub County.

The government should extend credit facilities to sugarcane growers through various mechanisms such as specialized agricultural banks that provide loans to farmers at a favorable interest rates and repayment terms hence saving growers from the risk of loan shacks. Such initiatives can help sugarcane growers access necessary funds, improve productivity, and enhance their overall financial stability leading to higher socio-economic status of the sugarcane growers.

Contribution to new knowledge

Social groups investigated the role of social capital in rural development and sustainability.

Economically, the study findings indicated that sugarcane growing provides human capital used for educating their children, buying food.

6.3 Suggestions for further study

Based on the findings of the study, the following areas were suggested for further studies

1. A study should be conducted on sugarcane growing and climate change since sugarcane growers destroy marginal lands.

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APPENDICES

Appendix A: Questionnaire

Dear Respondent,

My name is Mpatasalirwa Edinansi, from Kyambogo University. I am conducting a study on the impact of sugar cane growing on the socio-economic conditions of the small-scale farmers in Busede sub-county in Jinja district. Your participation is voluntary, but it is very important because you represent many other people in this village. There are no wrong or right answers to the questions. Your answers will be used strictly for academic purposes and will be treated as confidential.

Household Information

District					
Sub-county					
Parish					
Village					
Date of interview……	|__|__|	|__|__|	20|__|__|		
Time of interview Start:	|__|__|:|__|__|		Time of interview End:	|__|__| : |__|__|	
Enumerator name……					
Who is the head of this household? Is it a man or a woman				Man	
				Woman	

Instructions for the Research Assistant. *Please tick the appropriate box for the responses*.

Demographic Characteristics of the small-scale sugarcane farmers.

1	Do you have land?	Yes	
		No	
2	If yes, what is the size of your land?	…….	
3	If no, on whose land do you cultivate	1.Farmily land	
		2.Public land	
		3.Comunity land	
		4. Hired land	
		5.Others specify……	
	If hired, how much do you hire an acre a year?	……..	
4	Do you treat your drinking water?	Yes	
		No	
3	If yes, how do you treat it?	1. Adding water guard, aqua tab, etc.	
		2. By boiling	
		3. Other. Please specify:	
4	If no, give reasons why you don't treat your water.	1=Already treated by NWSC	
		2=Others specify	
5	How many 20 liters jerry cans of water do you use per day?	|__|__| .|__| Jerry cans	
6	Do you have a toilet or pit latrine?	Yes	
		No	
7	If yes, what kind of toilet do you use?	1. Pit latrine	
		2. Water born toilets	
		3. Other. Please specify:	
	What is the distance in meters from your house to the toilet	…….	
8	If no, what do you use?	1. Bush (Open air)	
		2. Neighbor's latrine	
		3. Others specify…….	
9	Please, give reasons for not having your own toilet.	1.It got full	
		2.No money to construct	
		3.Am renting and the house has no toilet	
		4. Others specify…….	
14	What is your position in this Household	1=Father.	
		2=Mother	
		3=Son	
		4=Daughter	
		5=Grandchild	
		6=Grandfather	
		7=Other (specify)……	

15	How old are you (Age in complete years)?	……..	
16	Respondents' gender	1=Male	
		2=Female	
17	What is your marital status?	1=Single	
		2=Legally Married	
		3=Cohabiting	
		4=Separated	
		5=Widowed	
18	What is your level of education attained?	1=No formal education	
		2=Primary level	
		3=Ordinary level	
		5=Advanced level	
		7=Diploma	
		8=University degree	
		9=post-graduate diploma 10=Masters	
		1=Vocational training	
		13=Other (Specify)…….	
19	Do you grow sugar cane?	Yes	
		No	
20	If yes, what made you start growing sugar cane?	1.To raise money for school fees, medical, food among others	
		2.To get money at once	
		3.Easy to grow	
		4.To get money for medical	
		5.To raise money for food	
		6.Others specify	
21	If no, how do you earn income to support your family?	1.Riding boda-boda	
		2. Growing of food crops	
		3.Digging for Others	
		4.Shop keeping	
		5.Others specify	
22	How many permanent members are in your household?	……	
23	Do you belong to any social group in this community?	Yes	
		No	
25	If yes, mention them?	1=Kakira sugar cane out growers 'association.	
		2=Others specify……	

26	If no, give reason why.	1.I don't have money to pay for membership	
		2. Am not interested	
		3.I do not want to save with them.	
		4. Others specify……..	
27	How many children do you have?	…….	
28	Do you pay for your health and medical services?	Yes	
		No	
29	If yes, what is your source of income?	1=Sugar cane growing	
		2=Retail selling	
		3=Brick making	
		4=Others specify……	
30	If no, who meets your medical bills?	1.I go to government health centers	
		2. I get herbal from the garden	
		3. Others specify……..	
31	Do you make financial contributions towards weddings, birthday and burials etc.	Yes	
		No	
32	If yes, rate your level of participation What is the level of participation in social functions like wedding, birthdays, parties.	1=High	
		2=Moderate	
		3=Least	

SECTION A: Sugar cane growing and Social Conditions of Small-scale farmers

a. What are the effects of sugar cane growing on the healthy conditions of small-scale farmers in Busedde Sub County

INDICATORS	QUESTIONS	RESPONSES	TICK
Access to Health care.	As a Sugarcane farmer, do you and your family members have access to medical services?	Yes	
		No	
		1.Health centers ii and iii	
		2.Clinics	
		3.Pharmacy	

	If yes, where do you often get medical services?	4.Drag shop	
		5.Others Specify…….	
	What is the distance in km to the nearest healthy centres?	……..	
	If no, what are the major causes of death in your homestead?	1.Many disease	
		2.Accidents	
		3.Exposure to toxic chemicals	
		4.Tractor rollovers	
		5. Others Specify……..	
		3.Died suddenly	
		4.Suffocated	
		5. Others Specify……	
		No	
What are the effects of sugar cane growing on Environmental degradation?			
Water scarcity	Do you grow sugarcane in swamps?	Yes	
		No	
Noise Quality	Do you use tractors during field preparation and transporting harvested canes?	Yes	
		No	
Bio-diversity	In the garden where you are growing sugarcane, where their other trees, grass, wild animals and aquatic animals?	Yes	
		No	
	If yes, do you have any place you have left on your land where such plants and animals still exist?	Yes	
		No	
		4. Others specify……..	
	How has this volunteering affected you?	1.We lose time we would spent on our sugarcane garden	

		2.We are not paid for what we do	
		3. Others specify……	
What are the effects of Sugarcane growing on the Education of Small-scale farmers.			
Student achievement	Ability to educate children	Yes	
		No	

SECTION B: Sugar cane Growing and Food Security of Small-Scale Farmers.

What are the effects of Sugarcane growing on Food insecurity among the small-scale farmers of Busedde sub-county

Hunger	Do you always feel you are strong enough to work in your sugar cane garden?	Yes	
		No	
	If no, what do you think is the cause?	1.Missing of meals	
		2.Not having enough food to eat	
		3.Others specify	
	About how many days in a week do you and your household members have inadequate food to eat?	……	
Economic Instability	As a sugarcane farmer, has the price of sugarcane been stable over the years you have been in it?	Yes	
		No	
	If no, what has been the trend?	1. Ever increasing	
		2.Eve falling	
		3. Ever increasing and falling.	
		5. Others specify……	
What are the effects of sugarcane growing on Food Availability?			
Months of adequate food in a year.	As a household head, how many months do you have adequate food in a year?	10-12 months	
		4-9 months	
		Less than 3 months	

SECTION C: Sugar cane Growing and Household's Economic Conditions of Small-Scale farmers.

What are the effects of Sugarcane growing on the Crop Yields of the Small- scale farmers.

Availability of Water.	From your own experience as a sugarcane farmer, do you always have adequate water to irrigate your sugarcane during dry season?	Yes	
		No	
	If no, how has the shortage of water affected you?	1.We leave to the mercy of nature	
		2. We lose everything to drought.	
		3.We get water from distant places	
		4. Others specify…….	
	In a circumstance where you get water from distant places, what is the distance in km from your home to the water source?	……Km	
Climate	As a sugarcane farmer, do you have any challenges caused by weather changes?	Yes	
		No	
	If yes, what are those challenges?	1.Prolonged drought	
		2.Strong winds	
		3.Heavy rains and storms	
		4. Others specify……..	
	How has these challenges affected you?	1.Led to low yields	
		2.Led to permanent displacement of sugar cane stems	
		3.Led to high temperatures	
		4. Others specify.	
	In about how many months in a year do you experience these extreme weather changes?	…….months.	
Soil Fertility	As a sugarcane farmer, have you ever had any challenge with the quality of soils where you grow your crops?	Yes	
		No	
	If yes, how have you addressed the problem?	1.Application of fertilizers	
		2.We bear with it	
		3.We change to other areas	
		4.Others specify…….	
	How has the challenges facing the soil quality affected you?	1.Leads to soil infertility	
		2.Leads to soil erosion	
		3.We incur a lot of money to buy fertilizers	

		4.We suffer reduced yields	
		5.We suffer losses due to low yields	
		6. Others specify…….	
Diseases	In your own experience as a sugarcane farmer, do you have disease and pests that normally destroy your sugarcane?	Yes	
		No	
	If yes, what are they?	1.Mozaic diseases	
		2.Red striped diseases	
		3.Leaf scald diseases	
		4.Others specify……	
	How has these pest and diseases affected you?	1.Increases expenses	
		2.Reduced quality of cane	
		3.Low yields	
		4.Reduced income from cane	
		5.Others specify……	
	How much do you spend to control these pests and diseases in a cycle?	Shs……	
What are the effects of sugarcane growing on the saving of the Small -scale farmers.			
Income Levels	From the income you get from selling sugarcane, do you save any part of it?	Yes	
		No	
	If yes, where do you save?	1.Safe in the house	
		2.Village SACCOs	
		3.Banks	
		4.Others specify……	
	About how much money do you save in every cycle?	Shs……	
	If no, what is your reason for not saving?	1.Less incomes	
		2.The saving institutions are far	
		3.Prefer buying property to saving	
		4.I do not trust saving institutions	
		5. Other specify……	
	Describe how you involve your members of the household on deciding how money got from selling sugarcane is spent.	1.I decide for all of them	
		2.We hold meeting and we decide	
		3.I distribute to each member and they make their own expenditures	
		4. Others specify……..	
	Do you network with other sugarcane farmers in selling sugarcane or buying inputs?	Yes	
		No	
	If yes, tell how you do it.	1.I sell directly to the factory	
		2.I sell to farmers with permits	
		3.We sell through our cooperatives	
		4.We sell to wholesalers	
		5.Others specify……	

Wealth Acquisitions	About how much have you earned from selling sugarcane?	…….	
	Since you started growing sugarcane, have you been able to acquire any property from the income got from sugarcanes and savings?	Yes	
		No	
	If yes, which property have you acquired?	1.Built my own house	
		2.Bought more land	
		3.Bought animals	
		4.Others specify……	
	If you bought land, what is the size in acres did you buy	……acres	
	If no, give reasons why you do not own property?	1.Money is not enough	
		2.Paying fees for the children	
		3.I have many children	
		4.Others specify……	
Confidence	Are you confident that the saving you have made with the saving institutions are safe?	Yes	
		No	
	If no, what are the reasons for lack of confidence?	1.The SACCOs collapse with our money	
		2.The officials steal our money	
		3.Our money lose value while in the institutions.	
		4.Others specify……	
	How much money may you have lost in the saving institution since you started growing sugarcane?	Sh…….	
Age Distribution	In your own experience, which age group are the majority in the financial institution you belong?	……..	
Inflation	In your own experience as a saver, do they pay you any interest on your savings?	Yes	
		No	
	If yes, is that interest rate increasing at the same rate with increase of prices of goods in the market?	Yes	
		No	
	If no, what is the interest rate	……%	
What are the effects of Sugarcane Growing on the Income of the Small- scale farmers			
Household income	As a sugarcane farmer, how much do you earn from selling sugarcane?	……..	

The Level of Expenditure	As a sugarcane farmer, what proportional of your income do you spend on buying basic needs and paying school fees for your children?	……..	
The Level of Standard of Living	Is your income from sugarcane able to afford you and your family all the essential goods and services you desire to live well?	Yes	
		No	
	If no, what are the challenges faced?	1.Falling prices of sugarcane	
		2.Rising prices of food and essential services	
		3.Others specify……	
	About how much is the deficit in your income to afford all the basic needs?	……	

Do you have any questions regarding what we have been talking about? If yes, please feel free to ask.

Thank you so much for sparing your time to answer my questions. I affirm to you that all the responses shall be used for only academic purposes and treated with anonymity and utmost confidentiality.

APPENDIX B: FOCUS GROUP DISCUSSION GUIDE TO SUGARCANE GROWERs

1. What is the trend of sugarcane growing in this area?
2. How much land do you have?
3. How much land do you allocate to sugarcane growing?
4. How is the land allocated to sugarcane growing impacting on food security?
5. What is the allocation of income from sugarcane growing to household food security in this area?
6. How much do you earn in one acre of sugarcane?
7. How do you spend your money from sugarcane sales?
8. What is the general food security situation in this area?
9. How has sugarcane growing affected food security situation in this area?
10. What are the challenges associated with sugarcane growing in relation to household food security in your area?

APPENDIX C: INTERVIEW GUIDE FOR THE KEY INFORMATS OF BUSEDE SUB-COUNTY

1. Which crops are mostly grown in this area?
2. Why do farmers engage in sugarcane growing?
3. How are farmers in your area able to secure food for their families while engaging in sugarcane growing?
4. What are the problems associated with the growing of sugarcane?
5. What is your comment on the extent to which the challenges facing sugarcane growing impacting on food security**?**