



## Sugarcane Growing and Effects on Farmer's Development in Kamuli District of Uganda

Grace Lubaale

Kyambogo University, Department of Development Studies, P.O. Box 1, Kyambogo, Kampala City, Uganda

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### **Abstract**

Sugarcane growing is one of the most lucrative crop in the world and contributes strongly to the GDPs of countries including Uganda. It is on this basis that many farmers invested heavily in sugarcane in Kamuli district with hope of greater returns which did not occur hence this paper. The study was qualitative in nature using an exploratory research design where face-to-face questionnaire interviews were administered given that reasons and effects of sugarcane growing is better understood through physical interaction with respondents. There are 921 sugarcane farmers (Informal Sugar Farmers Association, 2021) from whom 50 respondents were chosen using stratified simple random sampling method. The data collected was subjected to scientific rigor methods of data analysis hence this paper. The reasons for sugar cane growing were gaining better income, escape poverty, alternative income /employment and side income while the resultant effects were poverty, inadequate food, loss of property and ecological imbalance hence under development. In conclusion, sugar cane growing in the district is more of a curse than a blessing given the little returns in view of the costs arising majorly from failure to secure permits. The paper recommends contract farming, by-laws by the district, factory-farmers relationship and registering a farmers' association. These will enable farmers secure permits to supply sugarcanes and will trim the excessive exploitation from the factory that caused loses to farmers.

**Keywords:** *Sugarcane Growing; Reasons and Effects; Farmers; Kamuli District; Development; Uganda*

### **1. Introduction**

Eight of the more than 110 nations that manufacture sugar on a global scale do so from cane and beet, respectively. On average, over 80% of the world's sugar is produced using sugarcane. Sugarcane, which is grown in tropical and subtropical climates, produced 1.9 billion tonnes in 2020, making it the greatest crop in the world out of which Brazil produced 40% of the global total. Two important crops, sugar cane and sugar beet, are grown in a variety of temperatures all over the world and are the source of sugar. While sugarcane has long dominated the sugar industry, sugar beet grows best in warm, tropical climates where it is less humid and cold. Brazil is the largest producer of sugarcane in the world as ranked by Adeoti (2021) with 29MMT in 2019/2020 and others follow in that order like India 27.4MMT; European Union, China 10.4MMT; Thailand 8.27MMT; Russia; USA 7.3MMT; Mexico 5.34MMT; Pakistan 4.8MMT and Australia 4.18MMT. In 2022 the most top 10 sugar producing countries stand like this in this order with Brazil as number one with 37,300,000 tonnes, followed by India, 26,605,000;

China, 11,474,000; Thailand, 10,024,000; United States, 7,666,000; Pakistan, 6,103,000; Mexico, 6,021,292; Russia, 5,249,339; France 4,692,000; and Australia, 4,364,000. In Africa the order from the top in tonnes is South Africa, 2,192,000; Egypt, 2114,000; Sudan, 762,000; Eswatini, 707,000; Kenya, 592,000; Morocco, 522,000; Mozambique, 423,000; Mauritius, 400,179; Ethiopia, 397,000 and Uganda, 360,040, (Adeoti, 2021).

The central government of Uganda recently urged farmers to make investments in commercial agricultural activities in an effort to lessen poverty and generate wealth. In locations near sugar-processing companies in Uganda, sugarcane production has been significantly favoured to other more conventional crops such as coffee and cotton, as well as plantation forests such as Kakira Sugar Works Ltd in Jinja district, Kinyara Sugar Works Ltd in Masindi district, Mayuge Sugar Ltd in Mayuge district, Kaliro Sugar Ltd in Kaliro district. This is due to the perception that it is more commercially valuable and profitable. (Mwavu, 2010). The commercialization of sugarcane and other non-food crop cultivation is gaining greater attention in rural households as the value of fertile land and incentives to increase yields rise. Because of this, there is less room for the growth of food crops, and more natural vegetation is destroyed (Mwavu 2016) hence increasing famine and poverty in Kamuli district.

The paper is guided by the Cobweb theory advanced by Nicholas Kaldor in 1934, coining the term "cobweb theorem" which largely explains that price fluctuations can lead to fluctuations in supply which cause a cycle of rising and falling prices. The theory assumes an existence of a known market as it is in the case of Kamuli Sugar factory where farmers will supply they agricultural produce like in this case sugarcane. A very successful crop will result in a higher supply than anticipated, which will lower prices. But this price decline might force some farmers out of business. Farmers might decide to produce something else the following year as a result of the poor pricing. The price will increase if the supply is decreased and farmers are more likely to boost supply the following year if they perceive high pricing (large profits) since that product is more lucrative. The market might theoretically swing between high and low prices as suppliers react to prevailing conditions. This is the same case with farmers of sugarcane in which earlier farmers benefited from low supply and high prices. As more farmers joined the industry, more supply increased hence low prices and failure even for some farmers to secure permits to supply at all. This theory will help in the analysis of the study in view of sugarcane failure and use its remedies to assist farmers in Kamuli district so as to gain from the sugarcane growing.

Sugar cane production refers to the cultivation of the plant either on a small scale or large scale largely for commercial reasons. Development is transformation of society in all spheres of life that is political, economic and social (Lubaale, 2018) and under development is the opposite. Therefore, the growth of sugar cane is expected to lead to development once productive and the reverse is true.

Kamuli district is one of the 146 districts in Uganda located in Busoga sub region. According to the National Housing Census 2014, Kamuli district local government has a total population of 486,319, of which 236,389 are men and 249,930 are women (UBOS, 2016). The district is structured into One (1) municipality with two divisions that is the Northern Division and Southern Division, six (6) Town Councils, including Kisozi, Kasambira, Mbulamuti, Namwendwa, Balawooli, and Nawanyago, and fourteen (14) sub counties of Balawooli, Namasagali, Nabwigulu, Butansi, Bulopa, Kitayunjwa, Namwendwa, Nawanyago, Kisozi, Wankole, Bugulumbya, Mbulamuti, Magogo and Kagumba. The Pramukh Group of Companies which includes Pramukh Steel Limited, created in 2007, and Ajay Cotton Limited, founded in 2009, also established Kamuli Sugar Limited in 2010. (Kamuli Sugar Limited, 2016). There are other small machines or millers on the local level. The establishment of the factory gave people the opportunity to grow sugar cane and supply with hope of escaping poverty and thus move into development in all spheres of life. However, the results from Kamuli are contrary from the assumption given its continuous stay among the poor districts of Uganda 55 out of 112 in terms of GDP 105.3 Million USD\$ and GDP per Capita of 194USD\$ (Mickey et al., 2017) hence this study to establish the reasons of sugar cane growing and resultant effects on farmer's development process in Kamuli district.

## **2. Literature Review**

Sugarcane provides production alternatives to food, including animal feed, fiber, and energy, especially biofuels (ethanol made from sugar) and co-generation of electricity (cane bagasse). One of the most significant and effective sources of biomass for the creation of biofuels is sugarcane. Sugarcane growers, processors, as well as energy and food firms, are looking for methods to address difficulties related to sugar production, biofuels, and sustainability. Sugarcane is connected to a wide range of environmental and social issues (Adeoti, 2021).

Dealing with the effects of climate change while still producing more food for a growing population in the next decades is the biggest challenge facing African agriculture. This decrease in the area used for food crops is really concerning. In rural areas, where there is a high rate of population increase and poverty alleviation, this may also have significant ramifications for food security and nutrition. Food insecurity among low-income households is still a significant issue in Uganda, as it is in many other African nations, contributing to ill health, difficulties with academic performance, and a lack of socio-economic progress (Kungu, 2015).

Rist (2010) makes the strong case that commercial agriculture, particularly the production of sugarcane and oil palm, raises household income and so indirectly addresses food security. However, according to other studies, cash crops, particularly for smallholder farmers, threaten food and livelihood security Koczberski (2013). The effects of expanded commercial sugarcane farming on rural household food security are unclear, despite claims that it has boosted household incomes and road infrastructure in several regions of Uganda. But in order to achieve food security, it is crucial to have a thorough grasp of the region-specific factors that have an impact on household food security and nutrition in rural commercial agricultural landscapes. Such knowledge could help plans and policies for guaranteeing household food security as they engage in commercial agriculture to fight poverty. In rural regions where the majority of the poor and hungry people reside, the battle to eradicate household hunger and accomplish the other 16 Sustainable Development Goals (SDGs) targets by 2030 in sub-Saharan Africa hangs in balance.

Desertification, an ecosystem disturbance that is a major concern in many regions of the world owing to a naturally occurring or human-induced process that adversely impacts ecosystem function, is a result of ecological injustice. The ecosystem's capacity to absorb, store, and recycle water, nutrients, and energy is hampered as a result. The most noticeable aspects of desertification include soil erosion, decreased biodiversity, and the loss of productive potential, such as the change from forests to shrub lands or grasslands to shrubs. The land's typical hydrologic function, biological productivity, and other ecosystem services are additional potential losses brought on by human activities like sugarcane growing and climate change (Neary et al., 2021). The above impacts over one and half billion people and one-third of the earth's area (UN, 2007) Uganda inclusive.

## **3. Materials and Methods**

The study was qualitative in nature in which it employed an exploratory research design where face-to-face questionnaire interviews were administered to respondents given that effects are better understood through physical interaction with respondents. There are 921 sugar cane farmers (Informal Sugar Farmers Association, 2021) from whom 50 respondents using stratified simple random sampling method taking care of the gender, age, location and size of the estate were chosen and interviewed. This enabled the research reach data saturation (Mugenda-Mugenda, 2019). Data was collected from the respondents and subjected to scientific methods of analyzing qualitative data hence this report. Validity and reliability of instruments was ensured as well assuring the participants of utmost confidence.

#### 4. Results and Discussions

##### 4.1: Reasons for Sugarcane Growing

Generally, in economics, investment means the production of goods that will be used to produce other goods. In other words, investment means postponement of present consumption for the future (Tadoro, 2020). Therefore, farmers of Kamuli to have availed their land for sugar cane production instead of other crops and to have injected in capital on the same with hope of greater returns can be viewed as an investment. The study therefore picked interests to ask these farmers their motivation, justification and rational for investing in sugar cane.

**Table1 Shows Reasons of Sugar Cane Growing in Kamuli Districts**

S/n	Reason	Actual response	Percentage
1.	Better income in comparison to other crops	28	56
2.	Root to escape poverty	09	18
3.	An alternative income and employment	07	14
4.	Side Income	06	12
5.	Total	50	100

Source: Primary data, 2021

The above table indicates reasons why farmers in Kamuli district invested in sugarcane. The highest number being more for better income in comparison to other crops and least being side income.

**Better Income in Comparison to other Crops:** Sugarcane takes 18months to mature for sale. In one acre a farmer would get an estimated 50 tonnes x120,000=6,000,000 million consistently for six years before low productivity of the crop ensures and need to be replaced. That would give you 36 million in six years. In comparison to other crops common in Kamuli like maize, an care would give 10 sacks of 100kilograms giving the farmer 1Million times two seasons 2M times 6 years giving a farmer 12M. That was the interpretation of those who begun cultivating sugarcane with that plan.

Sugarcane plant is harvested every year for six years which gives you better income than other crops like maize. A1 female respondent at Kagumba in May, 2021.

The market was readily available at Kamuli sugar factory with high incomes. A2 male respondent at Nabwigulu in May, 2021.

I used to grow sorghum but when sugarcane factory was established I shifted to sugarcane because it had higher incomes in comparison. A3 female respondent at Balwooli in May, 2021.

I kept on growing both bananas and sweet potatoes for commercial purposes as well as maize but the retunes from sugarcane was high. A4 male respondents at Butansi in April, 2021

From the above testimonies, you can derive the fact that sugarcane growing in the beginning was lucrative in comparison to other crops. It is a normal economic direction and rule that the higher the price the more supply you get (Todaro, 2020) hence people responding to this phenomenon whether consciously or not.

**Root to Escape Poverty:** Kamuli district is one of poorest district in Uganda with a high population density. The economic activities before sugarcane were largely on small scale like growing maize, cassava, bananas, rice and fishing which yielded little.

Sugarcane plant brought in high and steady income and I saw it as a root to escape poverty hence investing in sugarcane. B1 female respondent at Kagumba in May, 2021.

The establishment of Kamuli Sugar Factory in 2010 provided us with ready market and selling sugar cane would make me escape poverty with its high incomes. B2 male respondent at Nabwigulu in May 2021.

I used to grow sweet potatoes, bananas, sorghum which fetched little income in comparison to sugar cane. With its advent, I highly invested with hope of escaping poverty. B3 male respondents at Balowooli in May 2021.

I kept on growing both bananas and sweet potatoes for commercial purposes as well as maize with low returns and stayed in poverty but with advent of sugarcane the returns became more. B4 male respondent at Butansi in April, 2021.

From the above testimonies, it is clear that poverty was evident in people's households with low incomes that were coming from crops like bananas, millet, maize and sweet potatoes. Any opportunity to escape poverty like growing sugarcane would be taken by any one by any means as a general principle of economic and human development (Tadoro, 2020).

**An Alternative Income and Employment:** Many farmers in Kamuli were engaged in other activities like fishing, hunting, services like boda-boda, taxi, working in the market and growing other crops like maize, sweet-potatoes, bananas, and cassava among others. With the advent of sugarcane, some saw it as an alternative income and source of employment as per their responses:

I was involved in growing bananas, sweet potatoes and rearing chicken which gave me money but with the advent of sugarcane with high income, I saw it as alternative income and employment change hence investing in sugar cane. C1 male respondents at Butansi in May, 2021

My incomes were low given the activities I was engaged in like selling in the market mangoes and oranges, with the advent of the sugarcane on commercial basis, I joined it as alternative income and employment. C2 male respondent at Namasagali in April, 2021.

I used to teach in a private school and grow crops for subsistence production which was well with me but when sugarcane was started in Kamuli with promising high incomes, I left the previous work and started sugarcane growing for better income. C3 male respondents at Balowooli in May, 2021.

The evidence of moving from one job to sugarcane growing and leaving other things is clear testimony that sugarcane gave people hope of greater income. It became an alternative source of income and employment with hope of greater returns. This is well supported by the cobweb theory in economics that explains time lag between supply and demand decisions in general and agricultural products in particular. In this instant case, when sugarcane prices were high in the initial stages, farmers gained and many joined the industry with hope of benefiting from the high prices. Unfortunately, by the time sugarcane was ready, there was too much supply hence getting low prices and even failing to supply at all, (Todor, 2020).

**Side Income:** There are people who joined sugarcane growing primarily not for major income or alternative income but the need to get side income. This became a driving factor as evidenced below;

I am already employed with a good job but when I saw and heard that people were getting good incomes, I joined the industry since I had 17 acres of land with hope of getting a good side income. D1 male respondents at Butansi in May, 2021.

I was engaged in activities of raising incomes like selling in the market sweet bananas, mangoes and oranges, with the advent of the sugarcane on commercial basis, I joined it to have a side income alongside my usual activities. D2 respondent at Namasagali in April, 2021.

I teach in a private school and grow crops for subsistence production which was well with me but when sugarcane was started, I joined the industry so that I can have big side incomes besides my routine jobs that pay me. D3 male respondents at Balowooli in May, 2021.

From the above testimonies, it is clear that some joined to have aside income given the lucrative nature and the available market. All people struggle to get side income with the desire to grow rich and be financially stable in order to pursue their economic agenda.

#### 4.2: Effects on Farmer's Development in Kamuli District

It is a known principle in economics, that any investment requires injecting in costs in order to get returns. From the above results and discussions of the reasons for farmers to have invested in sugarcane with the huge cost it requires, one naturally would like to establish the returns gained and whether they are commensurate to the costs (Todaro, 2020). Therefore farmers of Kamuli to have availed their land for sugar cane production instead of other crops and the huge capital invested on the same with hope of greater returns, constitutes the core of this study.

**Table 2 Shows Effects of Sugar Cane Growing on the Farmer's Development in Kamuli District**

S/n	Effects	Actual response	Percentage
1.	Poverty	42	84
2.	Inadequate Food	32	64
3.	Loss of property due to unpaid loans	15	30
4.	Ecological imbalance	14	28
5.	Total	50	100

Source: Primary Data, 2021

The above table indicates effects of on farmers after investing in sugarcane in Kamuli district. The largest effect being poverty with the highest response and smallest being ecological imbalance.

**Poverty:** After the huge investments in sugarcane with hope of high returns after selling, this unfortunately did not materialize as more than 70% of the farmers failed to secure permits to sale their sugarcane to the factory as evident in their narrative:

I planted 17 acres of sugarcane in 2019 and failed to secure a permit from 2020 up to now. I couldn't recover my investments costs nor gain any return from the investment hence the poverty I am experiencing today. D1 respondent at Butansi in May, 2021

Out of the 10 acres I planted, I was only able to sale 3 and the other seven. This was extremely frustrating from an investment point of view hence my current poverty. A5 respondent at Namasagali in April, 2021.

I left my jobs to start sugar cane. However, I lost both the job and money which I invested in the sugarcane and failed to recover costs or gain anything from the investment. B6 male respondents at Namwenda in May, 2021.

I expected to improve on my side income after investing in sugarcane but I lost greatly both time and cost invested in the cane. It really affected my income to the lowest. C8 male respondents at Nabwigulu in May, 2021.

From the above testimonies, clarity is established that investment made by farmers did not yield positive returns as expected hence poverty. Market failures is one the fundamental challenges to achieving economic growth in developing countries (Todaro, 2022). Such a scenario that hit Kamuli district sugarcane farmers when they could not sale their cane indeed caused poverty.

**Inadequate Food:** Farmers in Kamuli generally used to have food before the advent of sugarcane. When sugarcane became lucrative in the initial stages, many people joined the industry hence giving up on growing food crops as evident from their testimonies.

As we spent more time in sugarcane, we lost in food crops hence the current food inadequacy. D8 male respondent at Butansi in May, 2021.

I have total of 11 acres, we planted sugarcane nearly on 9 acres with hope of good returns and we can afford to buy food with good incomes. However, we lost on all fronts hence the current food insecurity. A5 male respondent at Namasagali in April, 2021.

I left my jobs to start sugar cane and even used all the 6 acres to plant sugarcane since I live in Kamuli town with hope that good income from sugarcane, we can buy food and pay off other costs and grow strong financially. We lost all hence the current poverty and insufficient food at home and within my neighbours. C9 male respondent at Balawoli in May, 2021.

We lost food crops like maize, sweet potatoes, and bananas because of substituting them with sugarcane which appeared to have greater returns. Unfortunately we lost both hence current food shortages at home and in their entire district. B8 male respondent at Nabwigulu in May, 2021.

From the above testimonies, clarity is established that inadequate food among households is largely brought about by huge investments in sugarcane whose returns were not commensurate to the investment. As commercialization of sugarcane grew stronger in Jinja and Mayuge, the amount of land accessible for growing food crops significantly decreased (Mwavu 2016) which is not any different from Kamuli hence food shortage. This scenario was even earlier noticed by a renowned economics Thomas Malthus claimed that although food production rises arithmetically, the human population rises geometrically (Todaro, 2020). This implies that human population often increases more than food which eventually leads to famine, hunger, death, insecurity, and low economic productivity (MAAIF, 2020) which is now noticed in Kamuli district.

**Loss of Property Due to Unpaid Loans:** Various farmers entered the sugarcane growing by acquiring loans from the bank, money lenders and mortgaging their properties for resources needed to start the sugarcane growing with hope of quick returns. Below are interview responds on the same;

I got a loan of 7Million from Stanbic bank of Kamuli to plant sugarcane on 10 acres with hope of getting 60Millions but it never materialized as I couldn't secure a permit to sale the cane. D9 male respondent at Butansi in May, 2021.

I have total of 11 acres, we planted sugarcane nearly 9 with hope of good returns after securing a loan from a money lender. However, I failed to sale the sugarcane, failed to pay the loan and I lost my house in Kamuli town to the money lenders. A5 respondent at Namasagali in April, 2021.

I mortgaged my car to the money lenders after securing a loan from them for me to invest in 27acres of sugarcane with hope of good returns. When I failed to sale the sugarcane on good price, I lost the car because I couldn't pay. C11 male respondents at Mbulamuti in May, 2021.

We lost on all fronts namely food crops, sugarcane returns and properties we put in the bank as collateral security for us to secure the loan. It was tragedy and remains so. B11 male respondents at Kagumba in May, 2021.

Clarity is established from the above responses that indeed sugarcane growing was interpreted as a lucrative venture in which various people invested their money with hope of better returns. Unfortunately, the lucrative investment in which many joined caused over supply in the market that led to the loss of properties in order to pay money lenders/bank back. This scenario was noted in the cobweb theory as postulated by Kaldor in 1934 (Todaro, 2020) that when a venture is more profitable, then many join hence flooding the market that leads to price fluctuations.

**Ecological Imbalance:** It is a known principle in ecological studies and climatology that ecological imbalance leads to desertification, because of disruption in the ecosystem due to a natural or human-induced process that impairs ecosystem performance. The ecosystem's capacity to absorb, store, and recycle water, nutrients, and energy is hampered as a result hence soil erosion, loss of trees, and diminished biodiversity, (Neary et al., 2021). This scenario is evident in Kamuli as per the interview responses:

The district's biodiversity is disappearing because of too much sugarcane growing that has led to over cutting of trees and swamps reclamation which is home for many plants and animals. C7 male respondent at Kagumba in May, 2021.

All the bushes and small forests or "idle land" has been reclaimed for sugarcane cultivation hence disappearing of animals like monkeys, birds and insects among others hence imbalance of animals and plants in the ecosystem. D9 female respondent at Balawoli in May, 2021.

The poor returns from sugarcane, associated poverty and inadequate food made others start over fishing in river Nile, lake Kyoga, swamps, and over hunting all animals and birds that are edible hence creating ecological imbalances of plants and animals in the ecosystem. C3 male respondent in Namasagali in May, 2021.

From the above testimonies, it becomes clear that Kamuli district is heading for desertification which will lead to poor crop yields hence poverty as evidenced today of the increasing poverty in the district and low GDP (Mickey et al..., 2017). Imbalance of plants and animals species in the ecosystem means loss of productivity, tourism, and values in the ecosystem that such animals add hence disaster in the district.

## **Conclusion**

It is now clear that sugarcane growing in Kamuli district is more of a curse than a blessing given the little returns in view of the costs. The farmers in Kamuli district invested in sugarcane growing with hope of gaining high incomes, escape poverty, alternative income /employment and receive side incomes. However, the returns have been low due to failure to secure permits to sale the sugarcane thus poverty, inadequate food, loss of property and ecological imbalance that have now retarded farmer's development in Kamuli district on all fronts namely political, economic, and social.

## **Recommendations**

**Contract Farming:** The government of Uganda through its industrialization Act and Policy, should task Kamuli Sugar Factory to register all farmers with more than five acres to become out growers on



contract farming basis so that they can supply sugarcane to the factory on agreed terms before cultivation.

**By-Law:** Kamuli district local government should pass by-laws that compel the Kamuli Sugar Factory to register all farmers of sugarcane with more than five acres so that they can be given permits.

**Factory-Farmers Relationship:** Kamuli Sugar Factory should develop a harmonious working relationship with farmers of a business nature in terms of supplying them with fertilizers, seeds, farm equipment's at subsidized prices and sugarcane loan facility at a manageable interest rates so that both the farmers and the factory benefit in this mutual relationship.

**Growers Association:** Sugar cane growers should form a very strong association and register it according to the laws of Uganda which will enable them negotiate with the company in a strong voice with clear terms and evidence as provided in the laws of Uganda. This will make them gain much better from the sugarcane.

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