# MAKERERE UNIVERSITY

**PROFITABILITY OF COFFEE PRODUCTION AMONG THE YOUTH IN KIRUMBA SUB COUNTY, KYOTERA DISTRICT**


**BY**

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**A SPECIAL PROJECT REPORT SUBMITTED TO THE COLLEGE OF AGRICULTURAL AND ENVIRONMENTAL SCIENCES, SCHOOL OF AGRICULTURAL SCIENCES, DEPARTMENT OF AGRIBUSINESS AND NATURAL RESOURCE ECONOMICS IN PARTIAL FULFILLMENT FOR THE REQUIREMENT OF AN AWARD OF BACHELORS DEGREE IN AGRIBUSINESS MANAGEMENT**

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## DECLARATION

I **SSEKITOOLEKO JEROME TREVE** declare that the work presented in this special project report is entirely my own and has never been submitted to any University/Institution for any award of academic qualification

Signed..... Date 18/09/2019.

## APPROVAL

This special project report has been submitted to the Department of Agribusiness and Natural Resource Economics with my approval as the university supervisor.

Signature: ..... Date.....26/9/19.....

DR. GABRIEL ELEPU

## DEDICATION

I dedicate this special project report to my dear parents, Dr. Ssekitooleko Jimmy and Mrs. Bbosa Florence for their never seizing efforts to support my education. May the Almighty God bless them abundantly.

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## ABSTRACT

The study was carried out to investigate the profitability of coffee production among the youth in Kirumba Sub County, Kyotera district. It was to characterize the production and marketing systems used by the youth coffee farmers, compute the profitability of coffee production and also determine the factors that influence the profitability of coffee production. Primary data sources were used which included a questionnaires and interviews. The target population was 60 youth farmers that is 30 coffee, 16 bananas and 14 beans from Kirumba Sub County, Kyotera district. Random sampling technique was employed to compare the view of the youth farmers from four villages which were randomly selected. The data was analyzed using Ordinary Least Squares. A linear regression was run to analyze coffee profitability. Data presentation was inform of tables and figures to help interpret the findings and generate conclusions that aided solution to the identified challenges. The research established that sex, land size, time spent growing coffee, access to extension services, distance from the market and herbicide use greatly affected the profitability of coffee among the youth. The study recommended that there was need for more youth farmer groups, ICT integration so as to ease information access and also more farmer trainings should be done so that the youth can adjust to the ever changing coffee sector. This will help increase coffee profitability among the youth

# CHAPTER ONE

# INTRODUCTION

## 1.1 Background

Uganda is one of the largest producing and exporting countries of coffee products in the world (Nahanga, Dastan, & Samuel, 2015). Coffee production has heavily contributed to both domestic and foreign earnings in the country. Coffee exports play a major role in Uganda's economy contributing up to about 30 per cent of Uganda's foreign exchange earnings and employing, directly and indirectly, more than 3.5 million Ugandans (USDA Foreign Agricultural Service, 2012).

According to ICO (2019), Brazil is the highest exporter of coffee in the world exporting 224,899 in thousand 60kg bags of coffee in the last 4 years. Uganda is ranked 8$^{th}$ globally exporting 18,307 in thousand 60kg bags in the last four years. Uganda is the highest exporter among East African countries and the second highest exporter in Africa after Ethiopia which has exported 28,965 in thousand 60kg bags of coffee in the last four years.

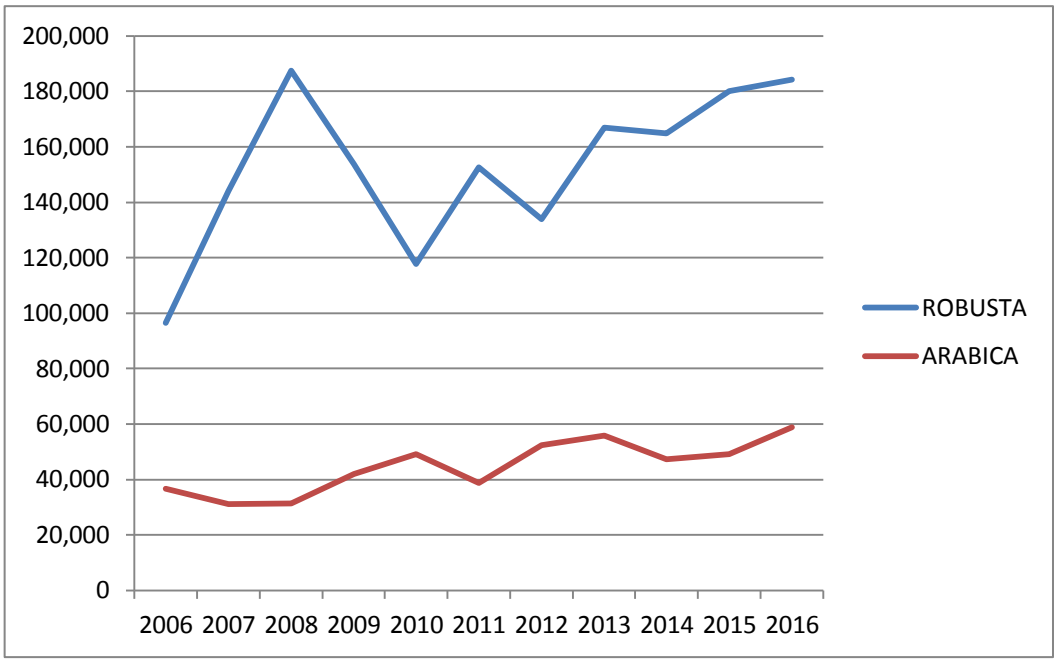
Coffee is among the traditional cash crops and is the leading cash crop in Uganda. Other cash crops include; tea, cotton, tobacco among others. Uganda produces two kinds of coffee, that is Robusta and Arabica. It is claimed that Robusta coffee originated from the Lake Victoria region and that the Arabica coffee was first introduced to Uganda from neighbouring Ethiopia. Robusta coffee is grown in the low altitude areas that are 1,200 meters above sea level. Arabica coffee, on the other hand, is grown in highland areas which are of high altitude that is 1500-2,300 meters above sea level. According to UCDA(2017), 1.7 million households are estimated to grow coffee in 112 districts. Of these, 88 districts grow only Robusta, 15 districts grow Arabica, and 9 districts grow both Robusta and Arabica. The highest percentage of coffee farmers practice subsistence farming and are smallholder farmers having an average coffee farm size of 0.18 hectares and produce 90% of the country's coffee. The plant population of Robusta is 450/acre while for Arabica is 660/acre. Over 330 million coffee trees are under production with Robusta consisting of 240,000,000 and Arabica consisting of 40,244,000.

The coffee production regions in Uganda include; the Central region, Western region and Eastern region, Northern region and southwestern region. According to UCDA (2015), in 2010, the Central region produced the highest amount of coffee in the country with 767,796 households and also 150, 370,000 trees under production. The region that produced the least was the north with 75,826 households and 21,067,878 trees under production.

Coffee is mostly grown in mixed farms where it is intercropped with food crops such as bananas and beans which ensure households' food security. It is also grown among shade trees that result into sustainable coffee production while ensuring a social, economic, and suitable environment that requires minimal use of agrochemicals such as fertilizers, pesticides, and fungicides. Coffee farmers in Uganda use mainly the low input system and households strongly rely on production. The minimum use of agrochemicals (fertilizers, pesticides and fungicides) and this practice has made Uganda a suitable country for organic coffee production.

Coffee is a perennial crop and there are two main harvest seasons for coffee in Uganda for both Arabica and Robusta coffee (March-June and September-November). The main production season for Robusta ranges from May-August for Masaka and Western regions and November to February for Central, Eastern regions. In the case of Arabica, the main seasons are April-June for Western Region and October-February for Eastern and West Nile Regions (UCDA). Over the years, Robusta coffee has been produced in much more quantities compared to Arabica (also known as mountain coffee). The annual production average is 85% Robusta and 15% Arabica.

**Figure 1: Showing the production volumes for coffee in tonnes from 2006-2016**




*Source: UBOS 2011, 2013 and 2018 report*

From the graph, the production volumes of Robusta coffee were higher than those of Arabica coffee in the period 2006-2016. From 2006-2008, the production volumes of both Robusta and Arabica were increasing. The overall production volumes definitely increased. From 2008 to 2010, the production volumes of Robusta coffee decreased while the production volumes of Arabica coffee increased. The overall production volumes decreased. From 2010 to 2011, the production volume for Robusta increased whereas those for Arabica decreased. There was an increase in the overall production volume. From 2011 to 2012, the production volumes for Robusta coffee decreased whereas those for Arabica coffee increased. The overall production volume decreased. From 2012 to 2013, the production volumes for Robusta coffee increased while those of Arabica coffee reduced. There was an overall increase in total production volume. From 2013 to 2014, there was a decrease in the production volumes of both Robusta and Arabica. The overall production volume definitely decreased. From 2014 to 2016, there was an increase in both the production volumes of Robusta and Arabica. The overall production definitely increased. 2016 recorded the highest production volume of coffee which was 243,061 tonnes.

Uganda's coffee exports by type since liberalization are shown below in the graph. Generally, Uganda's value for exports in US dollars increased since 1991/92. The country

faced a severe decrease in the value of coffee exports from 1994/95 up to 2001/02. The detailed value of the exports in US dollars is shown in the graph below.

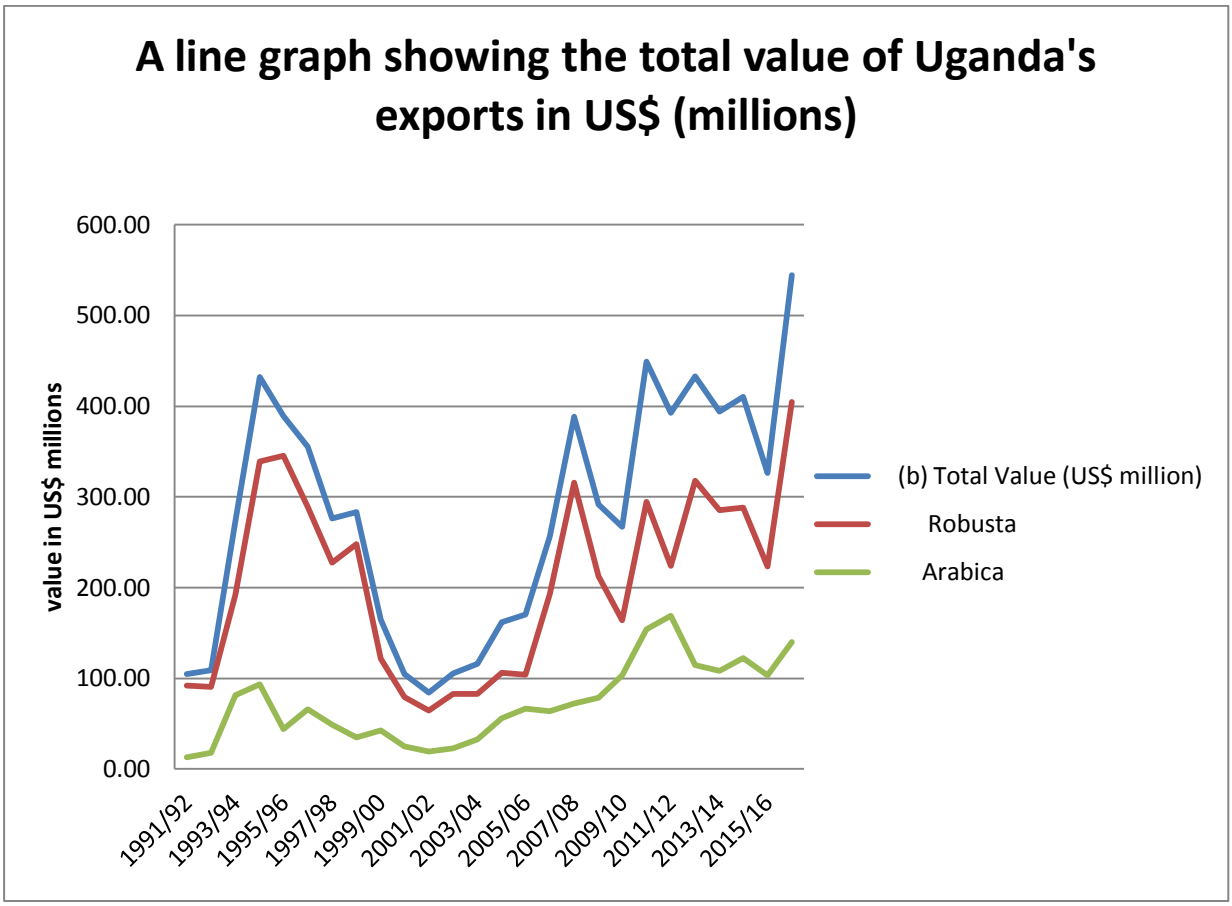



**Figure 2: Showing the total value of Uganda's coffee export**

Source: UCDA

The graph above shows the trend of the value of coffee exports in US dollars. From 1991/92 to 1994/95, the total value of exports increased and attained a first peak at US $432.49million. From 1994/95 to 2001/02, the total value of exports decreased up to US $83.94Million. From 2001/02 to 2007/08, the total value of exports increased up to US $388.40Million. From 2007/08 to 2009/10, the total value for export decreased up to US $267.13Million. From 2009/10 to 2010/11, the total value for exports increased to US $448.89Million. From 2010/11, the total value for the exports was very unstable that is from 2010/11 to 2015/16, the total value for exports decreased up to US $392.70 Million, from 2011/12 to 2012/13, the total value for exports increased to US $432.69Million, from 2012/13 to 2013/14, the total value for exports decreased to US $393.92Million, from 2013/14 to 2014/15, the total value for exports increased to US $410 Million, from 2014/15

to 2015/16, the total value for exports decreased to US $326.68Million and from 2015/16 to 2016/17, the total value of exports increased up to US $544.59Million. The highest total value of the exports was in 2016/17.

The European Union (EU) is the main destination for Uganda's coffee exports (Robusta and Arabica) importing 71.4% of the total coffee exports (UCDA, 2011). Sudan follows importing 10.8%, USA 3.05% and Ecuador 3.03%. This implies that the European Union is an important partner of Ugandan agricultural exports that should be taken serious for maximum sales and earnings.

**1.2 Profitability of coffee production among the youth.**

There is generally a rapid growth of youthful populations globally. The Ugandan population is to a large extent comprised of a high and increasing cohort of young people, close to 78% of the population below the age of thirty (Gemma, Swaibu, & Musa, 2013). According to UBOS(2017), a youth is a person who is aged 18-30 years and they constitute 22.9% of the country's population. While in most coffee producing countries, smallholder farmers are growing old, young people are less and less inclined to follow in their parents' footsteps and engage in coffee farming (ICO, 2016). However, the rural youths who are often better educated and more entrepreneurial than the parent generation is thus seen as the potential driver of change in the agricultural sector. For example, young people are more likely to adopt technological innovations and implement modern farming techniques which are crucial to increase productivity in the coffee sector.

Bray & Neilson (2017) study showed that the financial farm income contributes 70% to the total farmer household income and 65% from this financial farm income comes from profit on coffee production, 25% from profit on other goods and 10% from financial income from other farms (which might also be coffee producing farms). The other farm goods that contribute most to the net profit from other goods are milk (35%) and pepper (29%). Country specific information on the types of other goods produced can be found. Wage income from off-farm work contributes 12% to the total farmer household income, remittances 5% and in-kind farm income 11%. The Cost of goods sold of coffee consists of 41% ($389/year) of labour costs.

Jha et al. (2011) noted that the future of coffee depends on its ability to provide adequate income for farmers. A pilot study by Fair-trade International and True Price 2017 shows that despite sustainability pledges in the coffee sector, many coffee farmers struggle to make ends

meet. For many farmers, coffee is just one source of income and their dependence on it varies greatly. On average, about 50% of household income results from coffee production. However, results differed between countries: Farmers in Indonesia rely heavily on income from coffee for example, whereas Kenyan farmers mainly earn a living from sales of other farm goods or other employment away from the farm. On average, coffee farmers in India, Indonesia, and Vietnam earn a living household income. Only Indonesian farmers currently earn a living household income from coffee production alone, according to the study. Overall household income depends very much on the local context. This study shows that Indonesian and Vietnamese coffee farmers have the highest household incomes, mainly due to high income from coffee. While some Kenyan farmers are making a profit on their farms, on average Kenyan farmers produce coffee at a loss.

Johannessen&Wilhite (2010) study revealed that for many farmers, coffee is just one source of income and their dependence on it varies greatly. On average about 50 per cent of household income results from coffee production, the studied population included the youth of 18-35 years. However, results differed between countries: Farmers in Indonesia rely heavily on income from coffee for example, whereas Kenyan farmers mainly earn a living from sales of other farm goods or other employment away from the farm. Indonesian and Vietnamese farmers have the highest farmer household incomes, mainly due to high income from coffee in these countries. Furthermore, only Indonesian farmers currently earn a living household income from coffee production alone. Although overall household income depends very much on the local context and on factors such as productivity or farm size, a higher coffee price is one key enabler for households to earn a living income. It is important that, besides addressing factors such as productivity or efficiency, stakeholders in the coffee sector put the pricing question high on their agenda.

### 1.3 Problem Statement

Youth in Kyotera district have in the recent past adopted coffee faming as a means of increasing their incomes and improving their livelihoods (NPHS, 2014). Studies have shown positive relationship between youth participation in coffee production and income. Given that, youth unemployment in Uganda is high 64% (World Bank, 2018), youth involvement in coffee production, is regarded as an important step in, reducing youth unemployment rates, increasing households income and increasing the volume of coffee export, since coffee is regarded as Uganda's top-earning export crop, (UBOS, 2017). However, a survey by the National Union of Coffee Agribusiness and Farm Enterprises (NUCAFE) revealed that young

people in Kirumba involved in coffee production face several challenges which included; lack of access to land, to credit and drought and someyouths have shun coffee farming claiming it takes long to pay since the coffee trees begin fruition after two or three years.

The study, therefore, focused on investigating the profitability of coffee production among the youth in Kirumba Sub County, Kyotera district. This was intended to provide information that would aid in policy making and laying out strategies to enhance the returns that the youth attain from the participation in coffee production.

### 1.4 Main Objective

To investigate the profitability of coffee production among the youth in Kirumba sub-county, Kyotera district.

#### 1.4.1 Specific Objectives

**i.** To characterize the production and marketing systems used by youth coffee farmers in Kirumba sub-county, Kyotera district

ii. To compute the profitability of coffee production among the youths in Kirumba sub-county, Kyotera district.

iii. To determine the factors that influence the profitability of coffee production among the youths in Kirumba sub-county, Kyotera district.

### 1.5 Hypotheses

i. The social economic characteristics of youth coffee farmers have got an impact on profitability.

ii. The profitability of coffee among the youth is influenced by several factors.

### 1.6 Significance of the Study

The government provided incentives and it is expected that the youth will respond positively and so there will be increased profitability. It is, therefore, important to understand the profitability of coffee production in order to target activities to improve those areas. Research about profitability of coffee production among the youth is crucial to the development of the agricultural sector and also the economy at large. This gives a platform for the various identified gaps to be addressed and also worked on by the responsible and concerned bodies. Coffee as a cash crop contributes largely to the GDP of our nation, and therefore, youth profiting from the enterprise will help reduce the level of unemployment, foster growth and also contribute more to our GDP. Government parastatals such as Ministry of Agriculture,

Animal Industry and Fisheries (MAAIF), UCDA, among others and also non-government organizations such as Agricultural Business Initiative trust(abi trust), United States Agency for International Development(USAID) among others can benefit largely from the research by getting to know to how youth are profiting from coffee. Through this, more youth will be encouraged to engage in coffee production thereby reaping big, reducing on the prevalent rural-urban migration, and also improving their standards of living.

# CHAPTER TWO

# LITERATURE REVIEW

This chapter reviews literature chronologically following the specific objectives of the study which include; characterizing the production and marketing systems used by youth coffee farmers, computing the profitability of coffee production among the youths, and determining the factors that influence the profitability of coffee production among the youths.

## 2.1 The Concept of Youth

The youth are defined in several ways. The United Nations defines youth as those between the ages of 15 and 24 years old (UNESCO, 2015). However, this definition presents several limitations such as on specific ages and inherently marginalizing those under 15 and over 24 years old. The World Bank has expanded this definition to include all people between 12 and 24 years old; however, policy discussions generally use the flexible definition of youth as those transitioning between childhood and adulthood (Chinsinga & Chasukwa, 2012). In Uganda today, they are regarded as those who are in between 18-30 years. According to UBOS(2017), a youth is a person who is aged 18-30 years.

Depending on locality, region, access to resources and gender, youth have different awareness, desires, needs, perceptions, drives, and aspirations, particularly towards coffee farming (Bennell, 2010). Youth living in rural areas, resource-dependent communities or those further away from metropolitan areas have shown to have a greater baseline understanding of coffee farming and the agricultural sector (Thornton, 2008). Those living in rural areas are more likely to have lower levels of educational attainment than those living in urban areas (Crockett, Shanahan, & Jackson-Newsom, 2000). They are also more likely to work or be interested in working in coffee farming or agricultural-related occupation than those living in urban areas (Crockett, Shanahan, & Jackson-Newsom, 2000). Youth from wealthier families often are able to remain unemployed and rely on familial support, whereas youth from poorer families are forced into finding work, causing them to either accept low-waged labour or migrate to cities in search of higher-wages (MIJARC, FAO & IFAD, 2014).

**2.2 Characterizing the production and marketing systems used by youth coffee farmers**

According to Aderolu et al. (2014), the demographic characteristics of the sampled coffee producers showed that all the coffee producers between the ages of 18 to 35 years were male (100%) and married. About 40% attended secondary school, 30% tertiary, 20% primary while only 10% did not have formal education. Farming was the primary occupation of 70% of the coffee youth farmers while the remaining 30% were civil servants. Concerning the mode of land acquisition, 90% of the youth farmers got their land through inheritance, while only 10% bought the land. The main species of coffee planted by all the farmers (100%) in the study area were C. Robusta. The size of 70% of the coffee farms was between one and five hectares, followed by between six and ten hectares (30.0%). None of the producers interviewed had more than eleven hectares. Majority of the land was obtained through family inheritance, thereby leading to fragmentation of the farmland.

Mujawamariya (2007) in his study observed that there were more male than female youth coffee farmers: out of a total number of 171 respondents, 58 were females, constituting only about one third in the proportion. The average age of the respondents was overall 45 years old with variations within membership categories and provinces. The biggest proportion of farmers belonged to the age range of 30 to 60 years. These bounds can be explained by lower life expectancy (44 years for males and 47 for females) and as a consequence of war and genocide. The lower bound is also explained by the fact that the younger people are pursuing their studies and/or other occupations than farming. Those that were engaged in farming did so because they have no formal education or have discontinued their education at a younger age due to various reasons. Education of farmers revealed that only 14 per cent of interviewed farmers had an education level higher than the primary school. The latter comprised the biggest proportion.

Aderolu et al. (2014) also noted that farmers used organic and chemical fertilizers for coffee. The use of each type of fertilizer depends on local soil conditions and its availability. Differences were therefore expected between the provinces. The Western Province was more fertile due to its volcanic soils. Therefore, apart from the mulch, not much of other types of fertilizer were used. The Southern Province, on the other hand, required much fertilizer as the soil is mostly infertile due to erosion.

All the coffee farmers (100%) informed that they employed the dry method in the processing of the coffee beans. Most of the respondents (58.8%) indicated that they chose the dry

method in the processing of coffee beans because the method gives processed coffee that is easy to store and mill; also, dry they informed that dry berries can stay up to four years in storage as long as the shell has not been removed. Other reasons for adopting dry processing was that it is the only method known to the producers (23.6%), and the method is not tedious but easy to carry out (17.7%) All the respondents informed that the selling price of coffee is mainly determined by the buyer (middlemen) and that they sell their products to the local middlemen (known as agents). Only 15% of the respondents have information on improved coffee processing technologies.

Aderolu et al. (2014) also noted that when it came to on-farm management and cultural practices, farmers were asked to provide the major on-farm management and cultural practices carried out on their farms. About 70 per cent of the farmers carried out pruning on the old coffee farms as a major cultural practice. About 30.0% considered weeding as their major cultural practice; they do this mainly by spraying herbicides like Gramoxone or Atrazine under the coffee plant to control the weed. The two common pest/diseases that the farmers observed on their coffee plots included leaf curling (50.0%) and berry disease (50.0%); however, none of the farmers informed that they did not employ any control measure on the pest/diseases due to lack of money to purchase the required pesticides. None of the farmers informed that they used shade as a cultural practice. They informed that they had been planting the Robusta without shade, and this did not affect the yield. The farmers also indicated that they had suspended soil improvement practices on the coffee plots.

On-farm labour employed by coffee farmers, Aderolu et al. (2014) noted that 71.4% of the coffee producers employed paid labourers to work on their coffee farms, while the remaining 28.6% engaged family and relatives. About 60.0% of the farmers paid between N1001 – N1500 (USD6.3 –USD9.4) per day to paid labour for working on their coffee farms. The stage of coffee production with the highest labour was during harvesting of the coffee berry (57.1%), followed by processing of the berry (28.6%) and weeding of the coffee farm (14.3%). 40% of the coffee farmers informed that they had completely abandoned their coffee farms, while 60.0% had partially abandoned theirs. Some of the crops that coffee was abandoned for included maize, cassava and vegetables. The reasons why the alternative crops were opted for instead of coffee was market availability (41.7%), this was followed by the ease and/or a shorter period of production (33.4%).

Mujawamariya (2007) noted that at the beginning of the harvest season, Operational Continuity in Resolution (OCIR) fixes a minimum price per kg of berries and dry coffee that farmers are to receive for the sale of their coffee. For the 2005 season, the berries price was 100 Rwfs and 500 Rwfs for dry coffee. For the 2006 season, the minimum price was fixed at 120 Rwfs and 600 Rwfs per kg of berries and dry coffee respectively. In different locations, the berries and dry coffee prices went higher to 140 Rwfs and 620 Rwfs respectively. However, in other locations, the dry coffee was sold at much lower prices even to 250 Rwfs depending on the trader. Taking into account all the costs involved such as described in the previous sections, farmers felt that the minimum prices were lower than the costs they incur on coffee production. Therefore, they suggested a breakeven price that proxy all the costs per kg of berries or parchment/dry coffee. For the berries, such breakeven price would include the cost of coffee maintenance, fertilizer, the added labour in harvest, etc. For dry coffee, the breakeven price also includes the burden of depulping, washing/cleaning the coffee and drying it. It was found to be on average 180 Rwfs and 860 Rwfs per kg of berries and dry coffee respectively.

### 2.3 Computing the profitability of coffee production among the youth

According to Gutierrez (2013) while looking at the "profitability analysis of smallholder coffee producers inLuweero districts noted that the monetary returns to the land that is allocated to coffee production in USD 1,433 per acre, which makes coffee the second most profitable crop in relation to the land that is allocated to it after banana. The average market value of the production of coffee was 85 dollars, which was quite low in relation to the land that was allocated to the production of maize, which was 13 % of the productive plot area. This constitutes an inefficient allocation of land, as the land could yield more economic benefits if it is allocated to other crops like coffee or banana. The production of coffee per hectare was 773 kg/ha of FAQ (Fair average quality), which was slightly above the average production of Robusta for Uganda 648 kg/ ha (USAID, 2010) but is still very far away from the production levels of Vietnam, which produce 2.2 tons of coffee/ha, (USAID, 2010).

Acharya&Dhakal (2014) in their study conducted in Palpa district of Nepal in 2013 to assess the profitability and major problems associated with coffee production. Barangdi, Boughapokharathok, Madanpokhara, and Khaseauli Village development committees (VDCs) who also included the youths of 18 to 35 years were selected for the survey. It was found that coffee contributed about 10 per cent to the annual household income. The GM was

found to be NRs. 6637.52 and net profit of NRs. 4783.52 per ropani and the profitability index of 1.47 shows the coffee production as a profitable venture. The major problems in coffee production were the high insect pest attack such as red and white borer. About 63 per cent of respondents had said that the insect pest (white borer) was the major problem followed by the low market price of the fresh cherry. It shows that coffee production may be a suitable and financially feasible business in the mid-hills of Nepal and need to address the major problems associated in production.

According to Murekezi (2013), using the interest rate of 16% as the discount rate, the financial analysis showed a positive net present value of FRWA is 13,743,833 and an internal rate of return of 70%. The result indicates that investing in coffee production will, therefore, be profitable. Assuming for instance that the risk premium of investing in coffee production is 15%, the results show that the internal rate of return is double the sum of the interest rate (16%) and the assumed risk premium (15%). It was, therefore, most likely that taking into account the risk premium will not change the decision of accepting the investment.

Budidarsono, Kuncoro&Tomich (2013) while looking at the return to labour, all coffee systems under study provide a higher return to labour than the average agricultural wage rate in Sumatra. Return to labour valued at private prices as an indicator of smallholders' production incentives, give a sign that the system is attractive for farmers to engage, even for the pioneer type of coffee cultivation. Making a comparison among the coffee systems under study, exclude the rejuvenation type of coffee system, the complex-multi strata coffee system with 24 medium management intensity on a privately owned land (secure title) has the highest return. This system provides yields not only coffee bean, but also other commodities harvested from the same plot such as banana (Musa paradisa), mango (Mangieveraindica), guava (Psidiumguajava, jack fruit (Arthocarpusheterophyllous) etc. On the contrary, the pioneer type of coffee system has the least both in return to the land and return to labour. Profitability assessment of coffee farming systems as a mean to understand the attractiveness of such system practiced by farmers in Sumberjaya gives a hint that coffee systems under study provide high return to land and higher return to labour than the average agricultural wage rate in Sumatra. The return of coffee system enjoyed by coffee growers in Sumberjaya constituted pull factor to other farmers and Trans migrants living in the neighbouring area, particularly within peneplain zone in North Lampung and another similar area that relied on dry-land food crop farming.

Christopher (2017) found that coffee yields increased with higher costs per hectare and, therefore, production yield was not necessarily correlated with farm profitability. Increasing yield typically increases the cost per hectare to produce coffee, especially in the short term, and hence may decrease a farm's profitability. Lowering the input costs into the farming system can often be a better strategy for profitability than increasing yields in coffee production because low-input farming systems have low production costs.

**2.4 Factors that influence the profitability of coffee among the youths**

Karanja and Nyoro (2012) reported that increased cost of production reduced the profitability of coffee in Kenya. They cited low profit of Kshs 14,000 per ton resulted in farmers uprooting the crop and farming other better-paying crops and converting coffee farms to prime residential houses where such farms are around big towns like Kiambu, Nyeri town and Nyanza regions. This is also in agreement with Kegonde (2015) that coffee production is on the decline. They attributed low production to the high cost of coffee production. They say it is attributed to inadequate credit facilities, high cost of credit, and other inputs like fertilizers and irrigation, and strict laws by Coffee Board of Kenya of restricting production to gazetted area and laws prohibiting uprooting crop which discourage farmers going in coffee farming. UNCTAD (1995) cited massive overproduction, collapsing of international prices, deteriorating quality, diseases, and climate change as the main causes of low coffee production.

Ayoola, Ayoola&Ladele (2012) assessed the factors constraining coffee production and marketing in Nigeria. Results showed that the gross margin profits from coffee were generally low and on a decreasing trend; indicated by an average gross margin of N 1930.54 for 2008 season and a cumulative average of N3936.3 for the period 2004-2008. More than 75 per cent of farmers indicated that fire outbreak, poor policy, farmers' belief, and occurrence of drought were the most pressing problems affecting coffee production and marketing. It was therefore concluded that if government policies focused on rehabilitation of coffee farms, improved access of farmers to capital incentives, skill development for farmers on improved management practices, and improved access to market information; production of coffee in Nigeria might increase on a sustained basis. However, Staver et al (2014) agree that adoption in technology like cultural practices will minimize the cost of production but productivity will be low and adoption of more expensive technologies will improve profitability and advocates for higher payment for organic produced coffee.

Gicuru (2011) notes that some coffee farmers adopt shade-grown coffee by growing trees, shrubs, or food crops in or around the field. However, these different coffee management systems have cost and productivity implications and may be significant factors affecting the profitability and survival of the coffee farming operation. Apart from using shade trees in controlling weeds and pests, some coffee farmers adopt alternative low-cost technologies such as cover crops and mulching for weed control, cultural pest control, as well as inter-planting food crops to hedge against risks. Other farmers continue to depend on high-cost systems that rely on external inputs. Overall, the productivity of coffee is generally low but there is big farm-to-farm variability implying that some farms are more productive than other farms. The combination of different technologies and management techniques are likely to lead to differences in productivity and profitability (Gicuru, 2011).

The problems of smallholder coffee farmers are compounded by the strict coffee management regulations that prohibited intercropping and emphasized on regular application of expensive inorganic fertilizers and pesticide sprays which increases the likelihood of failure given the high-cost system is unsustainable or unprofitable due to falling output prices (Ithinji, 2011). Smallholder coffee production varies widely by the degree to which conventional technologies such as inorganic fertilizers and pesticides are adopted, as well as the extent to which technologies like Ruiru II and Batian new coffee cultivars, and agro forestry technologies are adopted. This variation means differentials in the productivity, profitability, and competitiveness of coffee farming. Purely business-oriented farms are likely to adopt open-grown coffee and the other extreme will involve the integration of coffee with food crops and/ or trees (Ithinji, 2011).

# CHAPTER THREE

# RESEARCH METHODOLOGY

## .3.1 Study Area

The study was conducted in Kirumba Sub county, Kyotera district. Kirumba Sub County is located in the newly-created Kyotera district. It lies approximately 44 kilometers (27 miles), by road, southwest of Masaka, the largest city in the sub-region. During the national census and household survey of august 2014, the population was enumerated at 162,528 people (NPHC, 2014). In Kyotera district, agriculture has remained a dominant sector. More than two thirds (69 percent) of households derived their livelihoods from subsistence farming as the main source of earning. In terms of employment, the majority of the working population (65 percent) also participates in subsistence farmers. Over 75 percent of Kyotera district soils are ferralitic, representing an almost final stage of weathering with little or no mineral reserve left. Some heavy clay varieties have some fertility but sandy varieties are particularly poor. Often types include lithosols, alluvial and lacustrine sands, and alluvial clays. Kooki catena soils cover covers most of Kirumba Sub County.

Kyotera district was created in 2015, by the Acts of Parliament and became functional on 1st July 2017. Before that, it was part of Rakai district. The new district comprises of 9 sub counties which include; Kirumba, Kalisizo Town Council, Kabira, Kalisizo A, Kalisizo B, Nabigasa, Lwankoni, Kyotera Town Council and Kasaali. The sub county to be studies that is Kirumba consists of 6 parishes and 35 villages. The parishes include; Buyiisa, Byerima, Lwamba, Kizibira, Kyengeza and Kabuwoko. The villages include; Bbotera, Lutunga, Kabuwoko Trading Centre, Buyiisa, Lwemikoma, Kawule, Kabuwoko, Kakondo, Bukira, Busowe, Dwaniro, Kindulwe, Segero, Bweruga, Kamutuza, Kijumbula, Kyenvubu, Lwamba, Butembe, Kajaguzo, Kito, Kyengeza A, Nkokko, Kabasumba, Kirumba, Kyakaleera, Kyengeza B, Bugaajo, Buubwe, Lunyinya, Kyannasanja, Bukobogo, Byerima East, Byerima West and Kampungu.

The study population was coffee youth farmers from Kirumba sub-county, Kyotera district who are between 18–30 years. The Uganda's youth policy defines Youth as persons between the ages of 18-30 (Youth Policy, 2015). Income generated from coffee production among the youths farmers were compared with incomes generated from beans and bananas. Beans and bananas are important income-generating crops amongst the youth in the district (NPHC, 2014).

### 3.2 Research design

The research design involved the use of a descriptive cross-sectional survey. All measurements of the predictors, confounders, and outcomes occur at one point in time, from a representative sample from the overall population of interest. Cross-sectional designs are useful for testing associations between predictor and outcome variables and collecting large amounts of data.

### 3.3. Sample size and sampling technique

Of the six parishes in Kirumba sub-county, two parishes were selected, which included Buyiisa parish and Lwamba parish because they are the areas with a greater percentage of youth coffee farmers in the sub-county. Two major producing villages were selected from each parish and a list of coffee, beans, and banana youth farmers were obtained from the LC1 out of which 30 coffee youth farmers, 14 beans and 16 banana youth farmers were selected randomly. The total sample size constituted 60 youth farmers and random sampling technique was used.

### 3.4 Data sources and types

The researcher used primary secondary data. Primary data is also known as raw data. Raw data is data that has not been processed for use. Data was collected from the original source in an uncontrolled environment. Example of an uncontrolled environment is questionnaire and observation. The study used raw data to get first-hand information from the respondents and find out their views about the topic of study. Data on socio-demographic characteristics of the coffee farmers, costs incurred during production and revenue was collected using a questionnaire. The questionnaire was the data collection instrument. It entailed both open and closed ended questions.

### 3.5. Data analysis

Here, the researcher presents how data was analysed systematically and finally presented in the next chapter. A gross marginal analysis was used initially to establish the profit levels of the enterprise and ordinary least square was also used to determine the different factors that influence the profits received by farmers.

To characterize the production and marketing systems used by youth coffee farmers in Kirumba sub-county, Kyotera district, descriptive statistics which included means, frequencies, percentages and the standard deviation were used.

To compute the profitability of coffee production among the youth, gross marginal analysis was used.

GM = TR – VC where GM is Gross Margin. TR is Total Revenue = Price (P) per kilogram produced Uganda shillings * Quantity of coffee produced in kilograms. (Q) that is TR = P*Q. VC = the total variable costs that the farmers incurred during production such as cost of seeds, cost of pesticides, labour etc.

Ordinary least squares were used to determine the relationship between the various independent variables and the gross margin as the dependent variable.

The model was estimated as: $Y = B_0+B_IX_1+B_2X_{2+} \ldots + \mu$.

Y = the gross margin per kilogram

$B_0$, $B_1$, $B_{2\ldots}$ are the coefficients to be determined by the econometric regression, $X_1$, $X_2\ldots$ are the variables that was estimated and are explained below.

$X_1$ is sex of the person involved in coffee production. It was measured as a categorical variable (male =1, female =0).

$X_2$ is age of the person involved in coffee production. This varied from a minimum of 18 years to a maximum of 30 years which were classified into three groups of 18-22 years, 23-26 years, and 27-30 years (18-22years=0, others=1).

$X_3$ is marital status of the person involved in coffee production that is married, single or divorced (single=0, others=1).

$X_4$ is level of education. This entailed those who with formal and non formal education (non formal education=0, formal education=1).

$X_5$ is land size under coffee production in acres (<2.5 acres=0, >2.5 acres=1).

$X_6$ is experience. The number of years spent while growing coffee (<5 years=0, >5years=1).

$X_7$ is fungicide use. Times the farmers used fungicides in a season (Yes=1 and no=0).

$X_8$ is herbicide use. Times the farmers used herbicides in a season (Yes=1 and No=0).

$X_9$ is distance to the nearest weekly market in kilometers (<2km=0, >2km=1).

$X_{10}$is access to extension services (Yes=1, No=0).

Presentation: data collected from the questionnaires and presented using descriptive statistics such as frequency distribution tables to explain the phenomenon behind the data.

Interpretation: data was interpreted in response to my objectives of the study.

### 3.9. Ethical considerations

The researcher got permission and recommendation from the university authorities to conduct the study. The student kept respondents information confidential and for quality control purposes, the student proofread raw data to eliminate misinterpretation and duplication.

# CHAPTER FOUR

# PRESENTATION, ANALYSIS AND DISCUSSION OF FINDINGS

## 4.1 Socio-Demographic Characteristics of the Respondents

This section presents the percentage distribution of respondents according to their background characteristics. These characteristics include; age, sex, level of education, marital status, farm size, type of land system which were reported by the respondents.

### 4.1.1 Sex of the Respondents

The study sought to profile the respondents to ascertain the sex of the youth who participate in coffee, beans and banana production in Kirumba Sub County, Kyoteradistrictand the following are the findings in the table below.

**Table1: Showing the sex of the youth coffee farmers in Kirumba sub county, Kyotera district**

| Sex | Frequency | Percentage |
|---|---|---|
| Male | 29 | 96.7% |
| Female | 01 | 3.3% |

| | | |
|---|---|---|
| Total | 30 | 100 |

From table above, the study shows that male constituted a majority (96.7%) of the respondents and the female only constituted a small proportion (3.3%) of the respondents. This is an indication that the majority of youths growing coffee in Kirumba sub county, Kyotera district are male as revealed by the study. These findings are in line with a study by Balgah, (2019) while looking at the socio-economic description of sampled coffee farmers noted that coffee farming is dominated by male farmers (65%). This trend is also consistent with previous findings in developing countries, reporting a consistently high male dominance in economic farm enterprises (e.g. coffee farming) as women tend to be more engaged in reproductive and non-economic activities than men (Balgah, 2016).

### 4.1.2 Age of the Respondents

The study sought to establish the age of the respondents to ascertain the age group of the youths who grow coffee in KirumbaSub County, Kyotera district and the following are the findings in the table below.

**Table 2: Showing the age groups of the youth coffee farmers in Kirumba sub county, Kyotera district**

| Age group(years) | Frequency | Percentage |
|---|---|---|
| 18-22 | 02 | 6.7% |
| 23-26 | 20 | 66.7% |
| 27-30 | 08 | 26.7% |
| Total | 30 | 100 |

From table above, the age distributions of the respondents varied from a minimum of 18 years to a maximum of 30 years which were classified into three groups of 18-22 years, 23-26 years, and 27-30 years. The above analysis implies that the majority of the youths who grew coffee for income in Kirumba sub county, Kyotera district were between the age groups of 23-26 years as revealed by the study. Coffee production remains one of the most lucrative agribusinesses for young people to invest in because of its high demand. Given the current youth unemployment rates, it's clear that eliminating the barriers for young people to engage in coffee production is an urgent priority. Ahaibwe, Mbowa&Lwanga (2013) noted that in Uganda, relatively lower percentage of youth use improved inputs (such as improved seeds, fertilizers, agricultural chemicals, and veterinary drugs).

**Level of Education of the Respondents**

Education plays an important role in proper coffee management practices and thusthe study sought to determine the number of years the youth farmers had spent in school in Kirumba Sub County, Kyotera district, the following are the findings in the table below.

**Table 3: Showing the education level of the youth coffee farmers in Kirumba sub county, Kyotera district**

| Education level | Frequency | Percentage |
|---|---|---|
| None | 09 | 30.0% |
| Primary | 12 | 40.0% |
| Secondary | 07 | 23.3% |
| Tertiary | 02 | 6.7% |
| Total | 30 | 100 |

From table above, the study revealed that 30% of the respondents had not attained formal education.40% of the respondents had attained primary level of education; this was followed by 23.3% youths who had attained secondary level of education and 6.7% respondents who had attained tertiary level of education. This implies that most youth who produce coffee in Kirumba sub county, Kyotera districthave attained basic formal education. These results are in line with Aderolu et al (2014), who looked at demographic information of the coffee farmers in Kogi State, Nigeria. In their study, they reported that about 40% of them attended secondary school, 30% tertiary, 20% primary while only 10% did not have formal education. Education plays an important role in proper coffee management practices accoding to Aderolu et al.(2014).

### 4.1.3 Marital Status of the Respondents

The study sought to establish the marital status of the youth who participate in coffee production in Kirumba Sub County, Kyotera district and the following are the findings in the table below.

**Table 4: Showing the marital status ofthe youth coffee farmers in Kirumba sub county, Kyotera district**

| Marital status | Frequency | Percentage |
|---|---|---|
| Single | 12 | 40.0% |
| Married | 14 | 46.7% |

| | | |
|---|---|---|
| Divorced | 04 | 13.3% |
| Total | 30 | 100 |

The findings show that the majority (46.7%) of the respondents were married while (40%) were single and (13.3%) were divorced. This implies that coffee production is more attractive to married couples who are engaged in various social and economic commitments. Such commitments include ensuring food availability for family members, better housing, education for children, clothing, and acquisition of better health services. These findings are supported by the study by Aderolu et al (2014) while looking at the demographic information of the coffee farmers in Kogi State, Nigeria, in their study; they reported that coffee farmers were mainly male and married.

### 4.1.4 Type of Land System among the respondents

The land is considered the most important aspect of production, especially agricultural production, the study sought to determine the type of land system among the youth coffee farmers and the following are the findings in the table below.

**Table 5: Showing the type of land system among the youth coffee farmers in Kirumba sub county, Kyotera district**

| Type of land system | Frequency | Percentage |
|---|---|---|
| Freehold | 08 | 26.7% |
| Mailo land | 22 | 73.3% |
| Total | 30 | 100 |

From the table above most (73.3%) of the respondents were growing coffee on mailo land system while 26.7% were growing on freehold system. It was observed that the basic unit of the mailo system is a square mile, hence the derivation of mailo, which is also equivalent to 640 acres. The Mailo system is predominantly in Buganda region and abundantly present in Kyotera district. This could explain why many youths in Kyotera district grow coffee on mailo land system. The term is used in Uganda to describe a land tenure system that came into effect when the Buganda Kingdom signed the 1900 agreement. The land is considered the most important aspect of production, especially agricultural production, (Akıncı, Özalp&Turgut, 2013).

## 4.2 The Production and Marketing Systems of Coffee

The first objective of the study was to characterize the production and marketing systems used by youth coffee farmers in Kirumba sub-county, Kyotera district. In terms of production, the study looked how long farmers had been growing coffee, the acreage and output of coffee produced last season, fertilizers use, the kind of fertilizers used, the use of fungicides, herbicides, labour for managing coffee and the factors that affect your choice of coffee management strategies.

### 4.2.1 The Production Systems of Coffee

The study sought to determine how long respondents had been growing coffee and the following are the findings in the table below.

**Table6: Showing the time youth have spent growing coffee in Kirumba sub county, Kyotera district**

| Time spent growing coffee (years) | Frequency | Percentage |
|---|---|---|
| 0-2 | 04 | 13.3% |
| 3-4 | 10 | 33.3% |
| 5-6 | 11 | 36.7% |
| 7-8 | 05 | 16.7% |
| Total | 30 | 100 |

From the table above, majority of the farmers (36.7%) had spent 5-6 years in growing coffee followed by those who had spent 3-4 years and were 33.3%. 16.7%of the farmers had spent 7-8 years. The least were those who had spent from 0-2 years growing coffee and they constituted 13.3% of the farmers. Uganda, with over 78% of its population below the age of 30 and the rising youth unemployment threats the development of Uganda, given the fact that coffee is Uganda's most valuable crop, the youth farmers should be encouraged to participate in coffee production at an early age and not look at agriculture generally as only a venture for older people. Ainembabazi&Mugisha (2014) found an inverted-U relationship between adoption of and experience with agricultural technologies in banana, coffee, and maize. Their findings suggested that farming experience is useful in agriculture production and profitability.

#### 4.2.1.2 Acreage of Land under Coffee Production

The study sought to determine the acreage of land under coffee production and the following are the findings in the table below.

**Table 7: Showing the Acreage of Land under Coffee Production**

| Area (acres) | Frequency | Percentage |
|---|---|---|
| 2.00 | 13 | 43.3% |
| 3.00 | 10 | 33.3% |
| 4.00 | 5 | 16.7% |
| 5.00 | 2 | 6.7% |
| Total | 30 | 100.0 |

From table 7 above, most respondents (43.3%) had 2 acres of land under coffee production; followed by 33.3% of the respondents who had 3 acres of land under coffee production. 16.7% had 4 acres under coffee production while 6.7% had 5 acres under coffee production.Most of the youth coffee farmers were using family land to cultivate coffee. However, it's important to note that with limited access to land, labour, finance, commercial services, and information about coffee production, young people and women find it particularly difficult to enter the commercial coffee sector and turn a profit. The mean acreage of land under coffee production was 2.88 acres. Most of the gardens that the respondents owned had coffee intercropped with other crops such as bananas. The gardens were producing an average 851.67 kg of coffee per season as shown in the table below.

**Table 8: Showing the average coffee production per seasonby youth coffee farmers in Kirumba sub county, Kyotera district**

| | N | Minimum | Maximum | Mean | Std. Deviation |
|---|---|---|---|---|---|
| Coffee produced by youth coffee farmers | 30 | 200.00 | 2000.00 | 851.67 | 404.39042 |

#### 4.2.1.3: The Use of Fertilizer among youth farmers

After establishing that all the respondents (100%) use some form of fertilizers on their coffee plantation, the study further sought to determine the kind of fertilizers farmers use and the following are the findings in the table below.

**Table 9: Showing the use of fertilizer by the youth coffee farmers in Kirumba sub county, Kyotera district**

| **Use of Fertilizer** | Frequency | Percentage |
|---|---|---|
| Chemical fertilizers | 10 | 33.3 |
| Compost | 2 | 6.7 |
| Manure | 11 | 36.7 |
| Mulch | 5 | 16.7 |
| None | 2 | 6.7 |
| Total | 30 | 100.0 |

From table 9 above most (36.7%) of the respondents used manure on their plantations and 33.3% used chemical fertilizers. Manure is an excellent fertilizer containing nitrogen, phosphorus, potassium and other nutrients. It also adds organic matter to the soil which may improve soil structure, aeration, soil moisture-holding capacity, and water infiltration. Manure releases nutrients to the soil slowly and helps soils to build organic matter with long-term benefits (Waithaka*et al*., 2007).

#### 4.2.1.4 Use of Fungicides

The study sought to determine whether farmers use fungicide on their coffee and the following are the findings in the table below.

**Table 10: Showing the use of fungicides by the youth coffee farmers in Kirumba sub county, Kyotera district**

| Fungicide use | Frequency | Percentage |
|---|---|---|
| Yes | 17 | 56.7% |
| No | 13 | 43.3% |
| Total | 30 | 100.0 |

From the table 10 above, most respondents (56.7%) used fungicide on their coffee and 43.3% of the respondents didn't use fungicide on their coffee. Of the 56.7%, only 73.7% used it once a season. Farmers noted that the fungicides kill and prevent the growth of fungi and their spores. They are used to control fungi that damage plants, including rusts, mildews, and blights. They are also used to control mould and mildew in other settings. Fungicides work in a variety of ways, but most of them damage fungal cell membranes or interfere with energy production within fungal cells. Aktar, Sengupta&Chowdhury (2009), observed that pesticides were grouped into insecticides, herbicides, and fungicides. However, herbicides were mostly used by the coffee farmers as compared to the fungicides.

#### 4.4.2.5: Use of Herbicide to Control Weeds

The study sought to determine whether farmers use herbicides to control weeds on their coffee plantations and the following are the findings in the table below.

**Table 11: Showing herbicide use to control weeds by the youth coffee farmers in Kirumba Sub County, Kyotera district**

| Herbicide use | Frequency | Percentage |
|---|---|---|
| Yes | 10 | 33.3% |
| No | 20 | 66.7% |
| Total | 30 | 100 |

From the table above most respondents (66.7%) didn’t use herbicides on their coffee and 33.3% of the respondents used herbicides to control weeds on their coffee plantations. Of the respondents who used herbicides to control weeds on their coffee plantations, 50% used it once in a season and 40% used it twice a season and it was observed that all the respondents (100%) used both hired and family labour for managing coffee. Abouziena&Haggag (2016) noted that poor weed management is perhaps the single most important factor leading to

greatly reduced yields from the fields of the small-scale farmer. There is no reliable study on worldwide coffee damage due to weeds. However, it is widely known that losses caused by weeds have exceeded the losses from any category of agricultural pests, such as insects, nematodes, diseases, rodents, etc.

#### 4.2.1.1: Factors Affecting Farmers Choice of Coffee Management Strategies

The study sought to determine the factors affect Farmer's Choice of Coffee Management Strategies and the following are the findings in the table below.

**Table 12: Showing the factors affect the youth coffee farmer's choice of coffee management strategies in Kirumba sub county, Kyotera district**

| Factors that affect farmer's choice of coffee strategies | Frequency | Percentage |
|---|---|---|
| Changing Weather | 12 | 40.0% |
| Cooperative/Factory | 10 | 33.3% |
| Pests/Diseases | 2 | 6.7% |
| Financial | 6 | 20.0% |
| Total | 30 | 100.0 |

From the table above most respondents (40%) regarded changing weather as the most important factor affecting farmer's choice of coffee management strategies, 33% they were driven by the cooperative/factory factors. 20% were affected by financial reasons while 6.7% were driven by pests/diseases. Climate change affects agriculture in a number of ways, such as through changes in average temperatures, rainfall, and climate extremes (e.g., heat waves); changes in pests and diseases; changes in atmospheric carbon dioxide and ground-level ozone concentrations; changes in the nutritional quality of some foods; and changes in sea level. Harvey et al. (2018) noted that smallholder coffee farmers are one of the most vulnerable groups to climate change, yet efforts to support farmer adaptation are hindered by the lack of information on how they are experiencing and responding to climate change. More information is needed on how different types of smallholder coffee farmers vary in their perceptions and responses to climate change, and how to tailor adaptation programs to different smallholder farmer contexts.

### 4.2.2 The Marketing Systems of Coffee

The study sought to determine where youth farmers sold their coffee and the following are the findings in the table below.

**Table 13: Showing where youth farmers sell their coffee, distance to the market and price in Kirumba sub county, Kyotera district**

| Where farmers sell their coffee | Frequency | Percentage |
|---|---|---|
| Cooperatives | 6 | 20.0 |
| Market | 10 | 33.3 |
| Middlemen | 14 | 46.7 |
| Total | 30 | 100.0 |

From the table above most respondents (46.7%) sold their coffee through middlemen who came to their homes, and 33.3% sold their coffee to the available and market. Only 20% sold to cooperatives. The farmers also reported an average of 1.7 kilometers distance to the market with an average price of UGX 2,300 per kilogram of coffee produced. The farmers sold directly to the purchasers (73.3%) and in cash. Middlemen play a very vital role in the business activities and to maintain the regular chain of supply of goods from the producers to the ultimate consumers, the existence of the middlemen is very essential. Middlemen are inevitable in any economy, most especially in developing countries such as Uganda where technologies for facilitating buying and selling of goods/services are still low. The existence of middlemen in the distribution channels creates and actualizes choices of consumers. Even though they are sometimes criticized as creating artificial scarcity, convenience and time saving created for consumers are issues to be reckoned with (Christopher, 2016).

#### 4.2.2.4: The Source of Price Information

The study sought to determine where farmers got information on the sale prices and the following are the findings in the figure below.

**Table 16: Showing the source of market Information of the youth coffee farmers in Kirumba sub county, Kyotera district**

| Information source | Frequency | Percentage |
|---|---|---|
| Traders | 7 | 23.3% |
| Radio | 6 | 20.0% |
| Extension agent | 6 | 20.0% |

| | | |
|---|---|---|
| Surrounding farmers' | 5 | 16.7% |
| Personal observation | 3 | 10.0% |
| Cooperatives | 3 | 10.0% |
| Total | 30 | 100.0 |

From the table above most respondents (23.3%) got information on the sale prices from traders, 20% got from radio and extension agents (20%) as well, and 16.7% got from surrounding farmers. Kleih, Okoboi, &Janowski (2014) noted that traders/family/neighbours/friends, radio, and traders are the main sources of market information for farmers. Radio has been identified as an important source of information in terms of both general information and marketing related matters. Nevertheless, despite the relatively high listenership of farmer households and traders alike, there are a number of areas where improvements can be made.

### 4.3 The Profitability of Coffee Production among the Youth Coffee Farmers.

The second objective of the study was to compute the profitability of coffee production among the youths in Kirumba Sub County, Kyotera district.

**Table 17: Showing the ranges of costs incurred during the production of coffee by the youth in Kirumba sub county, Kyotera district**

| Costs incurred(shs) | Frequency | Percent |
|---|---|---|
| 100,000-500,000 | 8 | 26.7 |
| 500,001-1000,000 | 14 | 46.7 |
| 1,000,001-1500,000 | 4 | 13.3 |
| 1,500,001-2000,000 | 4 | 13.3 |
| Total | 30 | 100.0 |

From the table above, 26.7% of the youth farmers incurred costs between Ug Shs.100,000-500,000. Majority of the farmers incurred costs between Ug. Shs. 500,001- 1,000,000. The most costs incurred where from farmers who injected Ug. Shs. 1,000,001- 1,500,000 and 1,500,001 to 2,000,000 and they were 13.3% respectively.

**Table 18: Showing the profitability of coffee production among the youths last season in Kirumba Sub County, Kyotera district**

| | Costs incurred | Price sold | Profitability |
|---|---|---|---|
| **Mean** | 389,000 | 1,958,841.00 | 1,569,841.00 |
| **Std. Deviation** | 55541.60410 | 55994.80213 | 65992.80213 |
| **Minimum** | 100,000 | 1,703,340.00 | 1,603,340.00 |
| **Maximum** | 2,000,000 | 2,214,342.00 | 214,342.00 |

From the table above, the study noted that coffee production was a profitable venture among youth in Kirumba Sub County, Kyotera district. On average, they could make to up to Ug Shs.1,569,841 if they invest just a minimum of average of Ug. Shs. 389,000 from an average acreage of land of 2.88 under coffee production. However, it is important to note that farmers had access to free family land and they used mainly family labour, with local manure as fertilizers. This could explain why the cost incurred in the production of coffee was relatively low. The gardens were producing an average of 851.67 Kg of coffee per season. The results are in line with a study by Kiyingi&Gwali, (2012) who revealed that shaded coffee yielded substantial returns amounting to 53.3% and 42.5 % of the gross annual income in traditional land compost coffee options, respectively. The profitability of the coffee agro forestry system can be significantly improved by increasing coffee stocking density from the current average (340 coffee trees acre-1) to the recommended stocking density of 450 coffee trees acre-1 and by farmers providing own manure instead of buying.

**Table 19: Showing the comparison of coffee, beans, and bananas in Kirumba sub county, Kyotera district**

| | Coffee | Beans | Bananas |
|---|---|---|---|
| Mean | 1,569,841.00 | 170,714.29 | 2,250,000 |
| Std. Deviation | 55541.60410 | 24228.987 | 1631200.23 |
| Minimum | 100,000 | 10,000 | 120,000 |
| Maximum | 2,000,000 | 200,000 | 2,120,000 |
| Profitability % | 80.1% | 66.7% | 64.3% |

From the table above, the study noted that coffee production is a profitable venture among youth in Kirumba Sub County, Kyotera district compared to beans and bananas. However, it is important to note that farmers had access to free family land and they mainly used family labour, with local manure as fertilizers, this could explain why the costs incurred in the production of coffee were relatively low and farmers generated highreturns. Because coffee is a shade loving plant, it should be planted with certain trees to provide shades and protect it from sunshine. When a farmer intercrops certain types of trees and bananas with coffee, he or she benefits from the food as the coffee also benefits from the shade provided by the bananas and the trees. There is also good utilisation of labour as a farmer will work on all the crops simultaneously; they also earn a higher income. Growing coffee, beans, and banana together generates more income for smallholder farmers and can help them cope with the effects of climate change. This was observed in Kirumba Sub County, where farmers growing primarily coffee, with other crops like beans and bananas. Farmers get 50 per cent more income from intercropping than from growing either crop alone, according to a study by the International Institute of Tropical Agriculture (IITA). The study conducted in over 30 districts, showed that coffee yield remained the same. But when intercropped with bananas, the farmers gained additional income from the banana (Oerke et al., 2012).

### 4.4 Factors Influencing the Profitability of Coffee Production

The third objective was to determine the factors that influence the profitability of coffee production among the youths in Kirumba Sub County, Kyotera district. The study regressed the factors; (sex, gender, marital status, education level, land size, time spent growing coffee, use of fungicides, use of herbicides, distance to the market, and access to extension services) on the profitability of coffee production among the youths.

**Table 20: Showing the factors that influence the profitability of coffee production among the youth in Kirumba sub county, Kyotera district**

| Model | | Standardized Coefficients | t | Sig. |
|---|---|---|---|---|
| | Std. Error | Beta | | |
| | (Constant) | .291 | 1.168 | .257 |
| | Age of respondent [years] | .093 | .207 | 1.874 | .176 |
| | Education level [level attained] | .156 | .234 | 2.235 | .120 |
| | Sex (male=1) | .092 | .190 | 1.944 | .067 |
| | Marital status (married=1) | .056 | -.398 | -2.551 | .142 |
| | land size (acres) | .071 | .239 | 2.538 | .022 |
| | time spent growing coffee (years) | .471 | .095 | 1.294 | .009 |
| | Fungicide use (Mg/l) | .100 | -.009 | -.088 | .931 |
| | herbicide use (Mg/l) | .129 | .277 | 2.873 | .010 |
| | Distance from the market (kilometers) | .102 | .408 | 3.818 | .001 |
| | Extension services ( yes =1) | .116 | -.392 | -3.125 | .006 |

a. Dependent Variable: profitability

A linear regression was carried out to investigate how factors like age, sex, marital status, education level, land size, time spent growing coffee, use of fungicide, use of herbicides, distance from home to the market and access to the extension services affected the profitability of coffee production in Kirumba Sub County, Kyotera district. Holding other factors constant the profitability of coffee farmers is 0.291.

The model was estimated as: $Y = B_0+B_IX_1+B_2X_2 \ldots \mu$.

From the table above the regression coefficients that were used are standardized coefficients and the overall model can be written as;

Profitability (Y) = 0.291+.207age+.234education level+.190sex-.398marital status+.239land size+.095time spent growing coffee-.099fungicide +.277herbicide + .408distance from the market-.392Extension services

There are six independent variables which are significant in the study and these include; sex, land size, time spent growing coffee, herbicide use, distance from the market and extension services.

**Final equation; Profitability (Y) = 0. 291+.190sex +.239 land size+.095time spent growing coffee+.277 herbicide+ .408 distance from the market -.392 Extension services**

From the equation, the regression showed that there was a weak positive linear relationship between sex and profitability of coffee production, which was confirmed with the coefficient of 0.190. The linear regression showed a significant relationship (10%) between sex and coffee profitability. These results are in line with Aworemi et al. (2010) who found that the male gender had higher yields and profits.

The regression showed that there was a weak positive linear relationship between land size and the profitability of coffee production, which was confirmed with a coefficient of 0.239. The linear regression also showed a significant relationship of 5% between land size and the profitability of coffee production. These results contradict with the findings of Adesoji and Farinde (2006) who found out that increase in farm size decreases the yields of arable crops.

The regression showed a weak positive linear relationship between time spent growing coffee and the profitability of coffee production, which was confirmed by the coefficient of 0.095. The linear regression also showed a significant relationship of 1% between time spent growing coffee and the profitability of coffee production. These results are in line with Koskei (2013) who reported that the time spent in farming is an advantage for improving production, since it encourages rapid adoption of farm innovations.

The regression showed a weak positive linear relationship between herbicide use and the profitability of coffee production, which was confirmed by the coefficient of 0.277. The linear regression also showed a significant relationship of 10% between herbicide use and the profitability of coffee production. This indicates that herbicide use affects the profitability of coffee in a positive fashion, holding other factors constant.

The regression showed a weak positive linear relationship between the distance from the market and the profitability of coffee production, which was confirmed by the coefficient of 0.408. The linear regression also showed a significant relationship of 1% between the distance from the market and the profitability of coffee production.

Finally, the regression showed a weak positive linear relationship between the extension services and the profitability of coffee production, which was confirmed by the coefficient of -0.392. The linear regression also showed a significant relationship of 1% between the extension services and the profitability of coffee production.

**Table 21: Model Summary**

| **Model Summary** | | | | |
|---|---|---|---|---|
| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
| 1 | .888[a] | .789 | .721 | .25308 |

| **ANOVA[b]** | | | | | | |
|---|---|---|---|---|---|---|
| Model | | Sum of Squares | Df | Mean Square | F | Sig. |
| 1 | Regression | 5.258 | 7 | .751 | 11.726 | .000[a] |
| | Residual | 1.409 | 22 | .064 | | |
| | Total | 6.667 | 29 | | | |

In the model summary the adjusted R square is 0.721 and this indicates that the model is a good fit. The independent variables have been able to explain/ bring a variability of 72.1% in the dependent variable. Considering the ANOVA results, it can be concluded that all the factors cause a significant effect on the profitability of coffee evidenced by a lower p-value of 0.000<0.1

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CHAPTER FIVE

# CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Conclusions

Coffee production (80.1%) is a more profitable venture compared to beans (66.7%) and bananas (64.3%) among youth in Kirumba Sub County were youth farmer can make to up to Ug. Shs. 1,569,841 (80.1%) if they invest just a minimum of average of Ug. Shs. 389,000 from an average acreage of land of 2.88 under coffee production. However, it important to note that farmers had access to free family land and they mainly used family labour, with local manure as fertilizers, this could explain why the costs incurred in the production of coffee was relatively low. Most youth coffee farmers in Kirumba sub-county had spent 5-6 years growing coffee had 2 acres of land under coffee production, and use insecticide, fungicide on their plantations and manure was the common fertilizer used by the farmers. Most farmers regard changing weather as the most important factor affecting farmer's choice of coffee management strategies. Farmers sell their coffee through middlemen, who come to their homes. Many farmers keep some quantity of coffee and sell at a later time, the buyers set coffee prices, or the farmers negotiate the prices. The farmers get information on the sale prices from traders, radio and extension agents. The study noted factors like sex, time spent growing coffee, herbicide use, the land size, distance from the marketand extension services influence the profitability of coffee production among the youths in with a positive regression analysis. A coordinated response to increase youth's access to the agricultural sector is more important than ever, as a rising global population and decreasing agricultural productivity gains imply that young people must play a pivotal role in ensuring an increase in coffee profitability.

## 5.2 Recommendations

There is a need to form youth coffee farmers association, Bringing youth together creates numerous opportunities, as rural organizations can be instrumental in achieving: economies of scale when buying agricultural inputs and selling agricultural products; access to financial services, as the group can serve as guarantor for its members, giving youth a lower risk profile; access to land, as youth, can pool their resources to buy or lease land; and participation in policy-making. Youth-specific projects and programs, while not always ideal as the youth would rather be recognized as a specific target group within general projects, can provide the extra push to enter the agricultural sector. For example, scholarships can facilitate higher agricultural education or, when offering loans to young people, a parallel financial

management training programs can ensure that youth gain the necessary skills to pay back the installments in time. Projects and programmes can build on youth's comparative advantages, such as their special interest in the conservation and management of natural resources; their eagerness to work with ICTs; and their creativity in exploring niche markets.

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## APPENDICES

### Appendix: 1

**QUESTIONNAIRE**

**Hello respondent, I am Ssekitooleko Jerome Treve,** a third year student of Bachelor's Degree in Agribusiness Management in Makerere University. Am carrying out research on profitability of coffee production among the youth in Kirumba Sub County, Kyotera district. You are therefore kindly requested to assist in your own capacity and answer the questions given below. Your responses will be kept with utmost confidentiality and only for academic purposes.

Questionnaire number……..

**Date: ……**

**Name of the respondent (optional): …….**

**Parish: ……..**

**Village: ……**

**PLEASE TICK THE BOXES APPROPRIATELY AND FILL THE SPACES WITH THE RELEVANT INFORMATION**

**A. DEMOGRAPHIC DATA OF FARMERS**

1. What is your gender?

a) Male ☐ b) Female ☐

2. Age of the respondent (in years)……

3. What is your marital status?

a) Married ☐ b) Single ☐ c) Widowed ☐ d) Divorced ☐ e)Separated ☐

4. What is your Highest Education Level?

a)Non formal education ☐ b) Primary education ☐ c)Secondary education ☐

d)Tertiary education ☐

5. Total land size owned by the household (acres)…….

6. From the crops you cultivate, which one do you earn the most from?

a) Coffee ☐ b) beans ☐ c) bananas ☐

**If you grow beans or banana, please move to section C**

7. If, your grow coffee which type of coffee do you grow……

8. What type of land tenure do you hold and of what amount is it? (Tick appropriately)

a)Freehold ☐ b)Leasehold ☐ c) Customary ☐ d) Other (specify)…….

**B: COFFEE PRODUCTION**

1. How long have you been growing coffee? _____ years

| 2. Coffee grown and produced | Season | Acreage | kgs |
|---|---|---|---|
| | Last season | | |

3. Do you use fertilizers on your coffee plantation? a) Yes ☐ b) No ☐

4. If yes, what kind of fertilizers do you use on your coffee plantation?

a) Chemical fertilizers ☐ b) Compost ☐ c) Manure ☐ d)other organic fertilizers ☐

e) Mulch ☐ d) None ☐

5. If yes, how often? ……

6. Do you use fungicide on your coffee? a) Yes ☐ b) No ☐

7. If yes, how often? ……

8. Do you use herbicide to control weeds? a) Yes ☐ b) No ☐

9. If yes, which ones and how often? ……

10. Do you hire labor for managing coffee? a)Yes ☐ b) No ☐

11. What factors affect your choice of coffee management strategies?

a) Changing weather ☐ b) cooperative/factory ☐ c) pests/diseases ☐

d)tradition ☐ e) financial ☐ f) Others ……..

**C. COFFEE MARKETING**

1. Where do you sell your coffee? ……

2. Distance from your home to the market (km) ……

3.At what price did you sell coffee per (kg) …….

4.How do you sell your coffee?

a) Direct to the purchaser ☐ b) Through broker ☐ c)Through the commission agent ☐ d) Other (Specify) ----------

5.What are your terms of sale? ……..

6.is there any quantity of coffee that is kept and unsold? a) yes ☐ b) no ☐

7. If yes, what amount was unsold (kgs)? ……

8.Why have you decided to keep the coffee instead of selling it? …….

9. Did you face difficulty in finding buyers when you wanted to sale coffee?

a) Yes ☐ b) No ☐

10. If yes, what was the difficulty?

a) Inaccessibility of market ☐ b)Lack of information ☐ c) Low price offer ☐ d)Others (Specify) ----------

11.Who sets your coffee selling price?

a) My self ☐ b) Set by demand and supply conditions ☐ c) Buyers ☐ d)Negotiation ☐ e)Others (Specify) ----------

12. Did you know the market price before you sell your coffee? a) Yes ☐ b)No ☐

13. What was/were the source of sales price information?

a)Traders ☐ b)Radio ☐ c)Extension agent ☐ d) Surrounding farmers ☐ e) Personal observation ☐ f) Cooperatives ☐ g)Others (specify) ----------

14. Do all coffee traders in Kirumba Sub County receive the same price on the same market day? a)Yes ☐ b) No ☐

15.If no, was it due to:

a)Color differences ☐ b) High moisture content (quality difference) ☐

c)Traders negotiating capacity ☐ d)Quality difference ☐ e)Others (Specify) ---------

16.What was your cost in relation to coffee production and marketing in last season?

| No | Expenditure on | | Shillings | No | Expenditure on | Shillings |
|---|---|---|---|---|---|---|
| 1 | **Input** | | | **12** | **Activities** | |
| | Seeds/kg | | | | Ploughing | |
| | Pesticides/litres | | | | Spraying | |
| | Herbicides/litres | | | | Weeding | |
| | Fertilizers/kg | | | | Harvesting | |
| | Other inputs | | | | Others specify | |
| 2 | Storage | | | | | |
| 3 | Transportation | Head/back | | | | |
| | | Vehicle | | | | |
| | | Cart | | | | |
| | | Pack Animals | | | | |
| 4 | Estimated storage loss | | | | | |
| 5 | Packaging materials | | | | | |
| 6 | Loading & offloading | | | | | |
| 7 | To fill the bag & stitch | | | | | |
| 8 | Watching and ward | | | | | |
| 9 | Weighing | | | | | |
| 10 | Weighing | | | | | |
| 11 | Others (Specify) | | | | | |
| | | | | Grand Total | | |

17.Do you have access to credit? a) Yes ☐ b) No ☐

18.If yes, where did you get the credit? …….

19.If not, why? .....

20.Do you have access to extension services as regards to coffee production?

a) Yes ☐ b)No ☐

21.What are your Sources of extension services?

a)Government ☐ b) Private. ☐ c) NGO's ☐

22. How do you evaluate the relevance of extension services?

a)very poor ☐ b) poor ☐ c) fair ☐ d)good ☐ e) very good ☐

23. Do you have access the market to sell your coffee? Yes, 2. No

24. The Market centers accessible to you

| Distance to the nearest market (km) | Mode of transport to the nearest market | The time it takes to get to the nearest market (hrs) and minutes |
|---|---|---|
| | | |

25. Did you face problem in producing and marketing of coffee in last season?

a) Yes ☐ b) No ☐

If yes,

26. Mention the production challenges you face?

.....

27. Outline the marketing challenges you face?

……

28. How do you cope with these challenges?

……

**D. NON COFFEE GROWERS (BEANS AND BANANAS)**

**BEANS PRODUCTION AND INCOME GENERATED**

1. What area of land is under beans production? ……

2. What kind of labour do you use in beans plantations? …….

3. What Quantity of beans did you harvest last season…….kgs

4. What Quantity of beans did you sell last season……..kgs

5. How much did you sell per kilogram……shs

6. What was your cost in relation to beans production and marketing last season?

| No | Expenditure on **Activities** | Shillings |
|---|---|---|
| 1 | | |
| | | |
| | | |
| | | |
| | | |

**BANANA PRODUCTION AND INCOME GENERATED**

1. What area of land is under banana production? ……

2. What kind of labour do you use in banana plantations? …….

3. How much banana do you harvest in dry season……? What quantity of the harvest banana is consumed …… and quantity sold……...quantity lost …….?

4. How much do you harvest in wet season?..... What quantity of the harvest banana is consumed …… and quantity sold…….? Quantity lost …….?

5. What was your cost in relation to banana production and marketing in last season?

| No | Expenditure on **Activities** | Shillings |
|---|---|---|
| 1 | | |
| | | |
| | | |
| | | |
| | | |
| | | |

**Thank you.**