CASH AND FOOD CROP PRODUCTION IN SEMUTO SUB- COUNTY, LUWERO DISTRICT 1980 – 2002: A COMPARATIVE STUDY

BY

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DECLARATION

I, **GAKWANDI GAETAN** do declare that this dissertation is original and to the best of my knowledge has never been presented any where for the award of any academic certificate.

Signature…………………………………………..

Date …………………………………………….

Geatan Gakwandi.

APPROVAL TO SUBMIT

This dissertation has been submitted with the approval of my supervisor.

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DEDICATION

This work is dedicated to my Aunt, the Late Hellen Kabibi, who worked hard to sustain me in this long journey of my education and the hard working farmers who strive to feed the nation.

ACKNOWLEDGEMENTS

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LIST OF ACRONYMS

B O U:	Bank of Uganda
B B W:	Banana Bacterial Wilt
D A O:	District Agricultural Officer
District H/Q:	District Headquarters
EPRC:	Economic Policy Research Centre
F A O:	Food Agriculture Organization
GDP:	Gross Domestic Product
I G A D D:	Inter-Governmental Authority on Drought and Development
LCs:	Local Councils
M A A I F:	Ministry of Agriculture, Animal Industry and Fisheries.
MFPED	Ministry of Finance, Planning and Economic Development
N A A Ds:	National Agricultural Advisory Services
P M A :	Plan for Modernization of Agriculture
P E A P:	Poverty Eradication Action Plan
P R A:	Participatory Rural Appraisal
PTA :	Preferential Trade Area
SPSS:	Statistical Package for Social Scientists
UCDA:	Uganda Coffee Development Authority
UNPAN:	Uganda National Plan Action for Nutrition

ABSTRACT

Crop production in Semuto Sub County has experienced changes from traditional crops such bananas and robusta coffee to crops like vanilla and upland rice. In this dissertation, a comparative study of cash and food crop production from 1980 to 2002 in Semuto Sub County, Luwero District was conducted. The study specifically sought to identify the main traditional food and cash crops, area covered by them in the past and at present, factors responsible for the changing patterns in crop production, implications of increased cash crop growing on food security and on livelihoods of people. The primary data were collected using participatory rural appraisal and structured questionnaires. Field observations, in depth interviews, focus group discussions and secondary data supplemented the questionnaires. Secondary data were obtained from reports and other documents from various offices. A total sample of 162 respondents including the Luwero District Agricultural officer, Extension officer, Sub county and parish chiefs, local people and local leaders were consulted. Data collected was analyzed using the Statistical Package for the Social Scientists (SPSS). Descriptive statistics were used in the analysis.

The results showed that crops like coffee, maize, beans, millet and bananas were the traditional crops grown by people in the 1980's. Currently, cassava, bananas, beans, sweet potatoes, maize, groundnuts, yams and irish potatoes are the major food crops while rice, vanilla, coffee, maize and bananas are the significant cash crops grown in Semuto sub county. Although the data show that the majority of the people grow cash crops rather than food crops, the difference is not significant within Semuto Sub County. This is a generalized picture of the sub county that is bound to change with analysis of individual

parishes. In addition, research findings indicate that, there has been an increase in area (hectarage) covered by these crops from 1980 to the present. The reasons for the change in types of crops included introduction of other cash crops, acquisition of more land to grow crops and availability of markets for cash crops. Research findings also indicate that cash crop production has contributed to food insecurity, food shortage in households and less attention given to food crops. Lastly, the study found out that there are both positive and negative implications of increased cash crop growing on the welfare of people.

CHAPTER ONE

1.0 INTRODUCTION

The agricultural sector of Uganda accounts for 43% of the Gross Domestic product, 85% of export earnings, 80% of employment and provides most of the raw materials to the mainly agro-based industrial sector (Ministry of Agriculture, Animal industry and Fisheries and Ministry of Finance Planning and Economic Development, 2000). Consequently, this comparative study of cash and food crop production in Semuto Sub County, Luwero district is aimed at examining the changing pattern of cash crop and food crop production in Semuto Sub County. In this chapter, the background to the study, statement of the problem, definition of key terms, scope of the study, objectives of the study; research hypotheses and justification of the study are given.

1.1 Background to the study

This study focuses on the comparative analysis of cash crop production in relation to food crop production in Semuto sub county, Luwero district. Luwero district came into existence in 1980 and before then it was known as Bulemezi District. This study focuses on Agriculture because it is the most important activity upon which rural and urban population depends for food. There has been in recent years an outcry against the current state of affairs where farmers are changing from food crop production to cash crop production, which threatens food security. Over the past two decades crop yields have declined in most developing countries (Omara-ojungu, 1992). Uganda has not been an exception at national and local level. There is also a considerable awareness among policy makers and scholars that the available data on acreage of food

crop production relative to cash crop production is not collected or are not made available to agricultural planners and policy makers. UBOS (2000) noted that Luwero district is still an incapacitated district more so when it comes to raw data collection. Uganda's civil strife in early 1980s also complicated the matter.

Over the past two decades, food crop output has declined hence creating food insecurity problem (New Vision, March 29, 2004). It is further indicated that as Uganda moves forward in economic growth, registering higher social economic development indicators on its population, one key setback remains, the persistent food shortage and critical nutritional deficiencies, so wide spread among the country

Food crop production is unpredictable in keeping pace with income generation hence the apparent changes towards cash crop growing. Agricultural sector grew by 4.8 percent in 2000/2001. In particular cash crop production recovered from a decline of 3.4 percent to 4.7 percent growth in 2000/2001(Bank of Uganda Annual Report, 2001/2002).

In 1990s, Government moved in to rectify the situation with introduction of Plan for Modernization of Agriculture (PMA). PMA which was adopted by government to guide transformation of the agriculture sector, is a multi-sectoral and multi-disciplinary strategic framework derived from Uganda's Poverty Eradication Action Plan (PEAP). One of the pillars of PMA is the provision of agricultural advisory services coordinated by the National Agricultural Advisory Services (NAADS) program. Under this programme, government extension workers have been deployed at sub-counties to advise and train farmers in

planning and management and demonstrate relevant technologies. It is against this background that the study examines changes that have taken place as regards crop farming, effects of changing crop patterns on socio-economic life of farmers between 1980-2002, factors responsible for changing patterns in crop production and impact of increased cash crop production on food security in Semuto Sub County.

1.2 Statement of the problem

The majority of people in Semuto are peasant farmers who have been cultivating traditional crops such as bananas and Robusta coffee as the main crops. However, there is a change in the types of crops produced which has affected the physical and socio-economic aspects of the area. Therefore, agricultural production in Semuto Sub County has been experiencing changes in relation to crop farming where production of certain crops has increased as indicated by increased acreage of such crops and production of other crops has decreased as indicated by decrease in acreage of such crops. It is therefore the purpose of this study to establish the acreage covered by traditional food crops to that covered by cash crops. While production of crops such as upland rice, vanilla, clonal coffee and others has increased, production of food crops such as beans, bananas, sorghum and others has declined since 1980. It was therefore, the purpose of this study to find out the effect of declining food crop production and increasing cash crop production on food security. It also sought to investigate the factors responsible for the changing patterns in crop production and how the growing of a new range of cash crops has benefited farmers in Semuto Sub County.

1.3 Objectives of the study

1.3.1 General Objective

To examine the changing pattern of cash crop and food crop production in Semuto Sub County.

1.3.2 Specific objectives

i) To identify the main traditional food crops and the area covered, compared to cash crops and the area covered by these cash crops in the past and at present.

ii) To identify the factors responsible for the changes in pattern of crop production in Semuto sub county.

iii) To assess the implications of increased cash crop growing on food security in Semuto sub county.

iv) To assess the implications of increased cash crop growing on livelihoods of people in Semuto sub county.

1.4 Hypotheses

1. Increased acreage of cash crops has led to a decrease in acreage of food crops among farmers.

2. There is a relationship between increased cash crop production and increased food insecurity.

3. There is a relationship between improved socio-economic welfare of the farmers and increased growing of cash crops.

1.5 Scope of the study

The study undertook a comparative study of cash crop and food crop production in Semuto sub county, Luwero District between 1980-2002 with the aim of analyzing changes that have taken place in relation to cash and food crop production. It covers the cash crops and food crops in Semuto sub county, factors responsible for the changing pattern and implications of these changes on food security, physical and socio-economic welfare of the people. The period of analysis is from 1980 to 2002 because Luwero district was granted a district status in 1980 and since then, no study to analyse the changing pattern of crop production in this district had ever been done. Having experienced a civil war after 1980, food and other crops production declined substantially, thus it was also necessary to document factors for the changing pattern in crop production in this area. Besides, traditional crops dominated the area in 1980s but this pattern was gradually changing by 1990s following the introduction of a new range of non traditional crops like vanilla and upland rice.

The study further covered three parishes out of the seven parishes found in Semuto Sub County. The three parishes covered are Semuto, Kikyusa and Migingye. This enabled the researcher to collect detailed data on acreage of both cash and food crops in each parish. The study also focused on the farmers attitudes towards cash crop growing in relation to food crop growing. It also covered the impact of increased cash crop growing on household's food security.

1.6 Justification of the study

Generally there is wide spread poverty among many people in Uganda today and according to the Household Survey data (1997), 44% of Ugandans are unable to meet their basic needs and are living below absolute poverty line. In rural areas, this has forced many people to change from food crop growing to cash crop production which is in line with Government policy of participating in income generating activities in order to fight poverty.

Since the end of civil war in Luwero triangle in general and Semuto sub-county in particular, there has been a change in agricultural pattern and types of crops grown. This may have come about due to many factors including declining soil fertility, wide spread poverty, attitude towards traditional crops and crop diseases such as bacterial banana wilt. However, very few studies if any have focused on these issues (Langlands, 1976; Cherimo, 1990; Matembu, 1995). This study will help government, District authorities and Agricultural Extension Workers to evaluate the relevance and effectiveness of their policy on food and cash crop production. In addition, such a comparative study is important because its outcome will contribute towards the formulation of strategies aimed at addressing socio- economic impact of changing crop patterns in Semuto Sub County.

More to that, Luwero District data profile on food and cash crops production is insufficient. Therefore the study will provide insights to the district and the country as a whole on what is on the ground and action that can be taken to rectify the situation. In conclusion therefore, a comparative study on cash and food crop production will provide the necessary data that is useful in propelling

rural economy from being predominantly subsistence to market oriented commercial farming.

1.7 Definition of key terms

1. **Poverty:** Wonna Cott (1982) defined poverty as inadequate income to buy necessities of life.

2. **Cash crops**: Omara-ojungu (1992) defined cash crops as those crops which are market oriented. These are crops, grown purposely for sale rather than for use by a person who grows them.

3. **Food crops**: This refers to crops grown for use by a person who grows them rather than for sale. They are grown purposely for home consumption.

4. **Food security**: MFPED and MAAIF (2000) defines food security as the ability to provide adequate food for the household throughout the year, whether through adequate food produced by the households or by the households earning enough incomes to be able to purchase food on the open market.

CHAPTER TWO

2.0 LITERATURE REVIEW AND CONCEPTUAL FRAMEWORK

2.1 LITERATURE REVIEW

2.1.1 Main traditional food and cash crops in the past and at present

According to Mukiibi (2001), cereal crops form one of the most common food and cash crops in Uganda. He noted that cereal crops grown in Uganda include maize, finger millet, sorghum, rice, pearl millet and wheat in that order of importance. That other than wheat, these crops provide staple food for well over 50% of the population. Besides their importance as food crops, they are playing an increasing role in the provision of incomes of rural households and the national economy. Maize, finger millet and rice have become important tradable food crops in domestic, regional and world markets. Maize in 1996/7 for example, earned 30.2 million.

According to Uganda Vision 2025, the agriculture sector of Uganda displays characteristics like poor crop husbandry and yields remaining low, family labour being predominant with women contributing 75% of the labour force and, the hand hoe technology being the norm. For all the crops grown in the country, farm level yields have remained substantially lower than the yield potentials derived from research station experiments. Estimated yield levels vary from about 33% for beans to a low of 13% for irish potato, mainly due to poor agronomic practices and low input levels. Recent estimates have even suggested lower yield levels because of the proliferation of many plant diseases and pests.

Rural poverty in Africa has increased since 1980 due to partly a fall in world prices of agricultural products and fall in food production (O'coner, 1991). He noted that world market prices are providing a better explanation for stagnant or falling cash crop production. He did not highlight the impact of the falling coffee prices on the welfare of people had a significant effect in Semuto Sub County.

Bank of Uganda annual Report 2001/2002 states that the agricultural sector grew by 4.8 percent in 2001/2002, about the same rate as 4.6 percent in 2000/2001. In particular cash crop production recovered from a decline of 3.4 percent to a growth of 4.7 percent. However, it further noted that there were fears that recovery in cash crop production could jeopardize food crop production hence resulting in food insecurity. Langlands (1974) noted that though there is a considerable volume of statistics collected each year by the Ministry of Agriculture, no where are crop acreage or production data at county level available in form which gives complete coverage within districts. In this study an attempt was made to provide estimates of cash and food crop production in Semuto sub county.

FAO (2001) reported that crop yields in the Horn of Africa are among the lowest in the world largely due to inadequate water control, as less than 1 percent of cultivable land is irrigated, compared with 37 percent in Asia. Yet, even farmers who have the benefit of a more reliable rainfall tend to lack access to knowledge, finance and markets. Moreover, they usually have very little land."

Rwabwoogo (2002) writes that cash crops grown in Luwero are cotton, coffee and cocoa only. That agriculture is back to normal. However, he ignored the

fact that there are a number of other cash crops grown in Luwero such as Vanilla and upland rice.

Mukwaya (1962) reveals that both sweet potatoes and cassava have not come to the status of the main economic crops in any one area of Uganda, though there has been some attempts by few individuals to produce them on large scale. Unless the producer has an assured market, such crops are perishable and the demand for them is extremely variable as well as prices uncertain.

NEMA (1997) writes that under intensive banana-coffee lakeshore systems of Luwero, the major crops are banana and coffee. Other crops include cassava, sweet potatoes, groundnuts and horticultural products. While these constituted the traditional crops grown in this area in 1980s, this study established the pattern of crop production had changed in favour of cash crops like vanilla, upland rice and clonal coffee.

Wingley (1959) has it that the early 1920's saw the eclipse of alien agricultural enterprises in Uganda and consolidation of the system of nature production. A system where production of crops for export as well as for subsistence was carried out within existing framework of African society leaving only marketing and processing to be conducted by external agencies.

Hamilton (1984) writes that the "cash" crops such as coffee and cotton have registered dramatic falls in production while cassava, potatoes (mainly sweet potatoes) beans, and maize have all increased greatly. Hamilton however, fails to mention or acknowledge the existence of other "cash" crops such as vanilla, and rice whose production has greatly increased.

UBOS (2000) observed that food production is a wide spread activity and it is primarily in the domain of the households unless it is controlled by non household entity such as state farm or a cooperative in Uganda. It accounts for 74 percent of agricultural GDP which is 60 percent of National output

Ssewanyana-Nakabo, (2003) noted that increases in agricultural production in the past and many of the greater horn of Africa countries resulted from expansions into new lands; notable exceptions include parts of Kenya, Rwanda and Uganda, where scarcity of land has led to intensified use of existing land. His study, however, did not explore the impact of agriculture expansion on food security and livelihoods of the people. In the current study, an attempt has been made to assess the implications of agriculture expansion on the livelihoods of the people.

2.1.2 Changing patterns of crop production in Uganda

The New Vision Newspaper of March 29, 2004, reports that before the inauguration of National Agricultural Advisory Services (NAADS), agriculture in Uganda was not economically viable and was simply a means of subsistence and survival. It further reports that NAADS is a semi-autonomous body formed under the NAADS Act of June 2001 with a mandate to develop a demand driven, farmer-led agricultural service delivery system targeting the poor subsistence farmers, with emphasis on women, youth and people with disabilities. NAADS is a program of the government of Uganda put in place to increase the efficiency and effectiveness of agricultural extension services. In Luwero district, the provision of agriculture extension services was still limited

to accessible areas due poor rural roads and inadequate extension officers in the sub counties.

Bank of Uganda (1986) while analysing the export potential of Uganda's agricultural products to the Preferential Trade Area (PTA) observed that for most of the food crops, there has been an increase of over 20% between 1980 and 1983. However, the land under cash crops has remained constant only registering an increase of 3% during the period.

Bruce (1967) writing on foodstuffs of Uganda has it that bananas in the 1950s and 1960s were cultivated as full time perennial crop and would continue for 30 years or even 50 years. This study investigated whether this holds truth despite the prevalence of banana wilt and declining soil fertility in some areas of Uganda. .

Hyde (1975) in his study of the analysis of crop distribution in Uganda noted that crop land use patterns like other spatial distributions are highly dynamic. However, he felt that the spatial interrelations between the major crops at the county level are likely to have changed less than the absolute magnitudes of the crop distributions. In this study, attempts were made to find out whether spatial distribution of food and cash crops are dynamic with shift in emphasis to production of a new range of cash crops with ready markets.

Langlands (1976) explained the agricultural systems, which existed in the country. He argued that climatic conditions emerge as the main control over successful crop cultivation. Langlands explained that population pressure, soil productivity and fertility, land tenure system and farmers attitudes towards the

Government policies also influence agricultural systems. However, he failed to bring out clear recommendations and solutions to the problems encountered in agriculture. In this study, strategies to improve crop production have been proposed.

Mayhew and Penny (1988) argued that the introduction of the monetary economy resulted in increased agricultural production more especially cash crops. However, the authors ignored other factors that contribute to increased agricultural production especially cash crops.

According to Mukiibi (2001), the yields of crops in Uganda can be improved more by farmers growing new high yielding varieties rather than increasing acreage. That improved processing and diversified utilization are required to improve the value of these crops.

Bibangambah (1990) elaborates that one of the greatest deficiencies in Uganda is lack of a system of agricultural/ rural data collection, analysis, storage and retrieval on a regular and continuous basis. The last census was 1963/64 and a limited base line survey by USAID in 1970. Annual reports from districts and regions are both incomplete or "cooked" and unreliable. This study has documented the all the food and cash crops grown in the past and at present in order to provide a reliable data base for future reference.

Nakanyuka (1974) argues that according to farmers and wholesalers interviewed, the need for cash in households and low prices for coffee as the main cash crop in Buganda stimulated enough interest in farmers to produce staple foods on commercial scale. New Vision May 25th 2003, writes that a few

farmers who managed to escape wilt disease looked on dejectedly as coffee prices fell on the world market making age-long crop less productive. Currently, new crops such as upland rice and vanilla have become a center of hope for many people though they threaten to destroy environment. However, the worry is that if the growing of cash crops becomes successful the future of food security remain uncertain.

Omara-ojungu (1992), in a review of twenty seven agricultural projects under taken by the World Bank in 1980 indicated the almost over riding importance of producer prices in affecting production outcomes and production levels often cutting across the quality of technical packages and extension services. But perhaps the worst draw back for agricultural productivity in developing countries is associated with poor terms of trade and inadequate incentives given to farmers, low producer prices and uncertain producer marketing systems.

The Plan for Modernisation of Agriculture (PMA) is one of the key government interventions designed to propel economy from predominantly subsistence to modern type (New Vision, August 31, 2003). It is further reported that PMA was designed to help and empower the rural poor through its 7 pillars, namely, research and technology development, agricultural advisory services, agricultural education, infrastructure development, savings and credit facilities, agro-processing and market information and, natural resource management. Despite the existence of this policy, farmers in Luwero district were not sensitized about it and thus have not benefited much from it.

Omara-ojungu (1992) further notes that the patterns and opportunities for agriculture in developing countries vary from place to place depending on

weather, soils, technology, crop and animal diseases as well as socio-economic factors such as pricing, marketing and development policies. As a result, it is difficult to paint accurately a general picture of agriculture in developing countries as a whole.

Simpson (1987) argues that what is grown and when, depends mainly on climate, culture and historical experience. However, the prevailing prices for agricultural products do play a significant role in influencing what is grown and when.

Ministry of Finance, Planning and Economic Development (MFPED, 1996) indicates that the experience of many countries in Asia has shown that rapid and sustainable improvement in yields are possible with increased use of high technology. This may be possible in Asia but not in Africa where most rural farmers are often ill equipped with knowledge on how to utilize this technology.

Ssewanyana-Nakabo (2003) indicates that given the present state of agriculture in Uganda, modernization of agriculture which would in essence involve changes and adoption in farming systems in response to economic, ecological, technological and social demands would benefit greatly from the revival and popularization. FAO (1998) noted in their discussion of the impact of the green Revolution that lack of practical and relevant information is an important barrier to rapid and wide spread innovations by farmers. This applies not only to variable inputs but also to cultivation practices and farming systems appropriate for new seeds of already improved crop, livestock and fisheries technologies.

Mulianti (1997) looked at why farmers may continue to allocate part of their maize area to their own varieties. Basing on macroeconomic theory the allocation of land to both modern and traditional seed varieties aims at improving agricultural production. With the safety first model farmers who are constrained by the prospect of failing to attain their subsistence needs choose crop allocation that diverge from those associated with profit maximization.

2.1.3 Implications of increased cash crop growing on food security

There is vast international concern yet scanty local literature on the evaluation of food security in Uganda and East African region in general. Most of the international literature on food security has concentrated on food production because of its significance. Africa is the only region in the developing world where average food production per person has been declining over the last forty (40) years (FAO, 2001). Due to rapid population growth, political and inter tribal conflicts, agricultural yields in Africa are declining. The rapid deforestation and the over cultivation of vulnerable areas have had deleterious effect on the environment. These factors combined mean that, the continent is increasingly failing to produce enough food to live a healthy and active life.

According to the Millennium Development Goals Report (2006), chronic hunger – measured by the proportion of people lacking the food needed to meet their daily needs – has declined in the developing world. The report further noted that progress overall is not fast enough to reduce the number of people going hungry, which increased between 1995-1997 and 2001-2003. An estimated 824 million people in the developing world were affected by chronic hunger in 2003.

The Millennium Development Goals Report (2006) further reveals that Sub-Saharan Africa is the epicenter of crisis, with continuing food insecurity, a rise of extreme poverty, stunningly high child and maternal mortality, and large numbers of people living in slums, and a widespread shortfall for most of the MDGs. Asia is the region with the fastest progress, but even there hundreds of millions of people remain in extreme poverty, and even fast-growing countries fail to achieve some of the non-income goals. Other regions have mixed records, notably Latin America, the transition economies, and the Middle East and North Africa, often with slow or no progress on some of the goals and persistent inequalities undermining progress on others.

PMA (2000) notes that currently, government has not yet developed a comprehensive policy on food security. The existing food and nutrition policy, the Food Law and Uganda National Plan Action for Nutrition (UNPAN) need to be revised.

UBOS (2000) in the socio-economic survey report of Luwero district noted that over 50 percent of the households in Luwero are food insecure and, therefore, there is a need to put in place proper strategies to facilitate food production and storage.

MCMaster (1962) writing on maize growing in Uganda noted that wartime food shortage reduced the limitations upon maize growing and since the war, acreage in Uganda has fluctuated in response to market.

IGADD (2000), on food security strategy study for Uganda, noted that estimates by Agricultural secretariat suggests that yields from food crops may have risen by 2.2 percent while areas cultivated actually fell.

Africa's agricultural productivity is very Low. The low yields are largely a result of poverty (FAO, 1996). African farmers lack adequate means to acquire the "green revolution" inputs needed for greater productivity, such as improved seeds, fertilizers, pesticides and irrigation facilities. Sub-Saharan application of fertilizers is the lowest in he world, at 11 kg/ha, compared with the world average of 62 kg/ha. The majority of Africans still use a machete to clear the land and a stick or hand hoe to loosen the soil before planting. Farms are small, soils eroded with low nutrient content and rainfall erratic.

Human population growth in Africa drives increasing demand for food production meaning that the latter must grow at a rate of 6% per year from now until 2030 to provide for not only the future increase in mouths to feed, but also to overcome current food shortages (FARA, 2003).

Achieving food security requires yield increases of 62%, higher cropping intensities of 13%, and expansion of cropland by 25% (FAO, 2003). Historically, most agricultural water development strategies to feed the future population ignored the important roles livestock play in contributing high quality food products to human diets and in providing animal power for crop production that enhances food security. Frequently, they also overlook the need to mitigate the negative impact of irrigation development on pastoralists' livelihoods caused by loss of vital dry season watering and grazing areas. Similarly, livestock development has given little attention to its use of and impact on water

resources. This section highlights key issues of human demography, increasing demand for livestock products, the impact of livestock-related degradation of land and water resources and the use of water by livestock in Africa.

In the New Vision 7th June 2005, it is indicated that biotechnology is a solution to food security in poor Africa. Issues of world and especially in sub Saharan Africa have dominated public debate but can only be solved when African countries can take on biotechnology. Biotechnology leads to production of commercial quantities of useful subsistence.

The New Vision 7th June 2005, it is indicated that banana ranks highest amongst the food crops, has a high industrial potential. Annual production is estimated at about 9 million tons/ year produced from 1.4 million hectares

Maxwell and Smith, (1992) writing on household food security noted that the concept of food security has evolved, developed, multiplied and diversified since the World Conference of 1974. The main focus has shifted from global and national to household and individual food security and from availability to food accessibility.

Other causes of food insecurity in the Horn of Africa are provided by Maxwell (1996). He writes that:

> *"…poor economic policies have inhibited the development of agriculture based on comparative advantage and intensification of agriculture, retarding economic growth; growing population pressures have combined with a lack of investment in human resource development, further stressing the natural resource base; civil strife and a scarcity of democratic institutions have undermined sustainable growth strategies; and the natural resource base of the region is highly uneven, and several countries have*

> *limited areas of high agricultural production potentials. Linked to weak national institutions are weak regional institutions precluding effective action on these underlying causes. These causes and their relative importance should be jointly analyzed with African organizations to help guide integrated efforts to overcome food insecurity"* (p. 17).

Further studies by Madanda, (1994) and Mulianti, (1997) seem to point to common elements that constrain food production, which in turn affect food security. Elements such as access to land, labour productivity, drought and soil tillage technology were noted as having a direct impact on household food security.

Further more, Mulianti, (1997) in a study on food security in Eastern Uganda, established that better acreage for cultivation is being devoted to cash crop production and in some places to dairy farms. Discussing the effect of this on food security, he points out that in rural areas, people have had to grow food on land far away from home and is exhausted from over cultivation. As a result, households have continued to experience food insecurity because harvests are very low.

Mudanda (1994) indicated that unreliable rainfall in the last 8-10 years is a key problem affecting food production. However, his analysis was done in Arua and Pallisa districts which experienced prolonged dry spells respectively in 1988 and 1993.

FAO (1986) noted that food security at an individual, national, regional and global level is achieved when all people at all times have physical and

economic access to sufficient safe and nutritious food preferences for an active and healthy life.

Muwanga and Sekibobo (1988) noted that over the years households have tended to sell more food than they used to do. He attributed this practice to the decline in traditional cash crops such as coffee and cotton. He adds that farmers now sell beans, bananas, millet, cow peas and ground nuts that were originally crops grown for house hold consumption.

Sekiboobo's (1995) assessment of women and food security in Masaka established that 87 percent of the respondents, interviewed were of the view that the Aids epidemic has affected food production and food security in the area. This is due to attending to the sick, burials, funeral ceremonies, cultural observance of mourning period, increased number of dependents, reduced labour supply and reduced house hold members.

Cohen (ed) (1998) noted in a study carried out in Eritrea that as the cost of food goes high, farmers consume less than three quarters of their produce and the rest is put up for the market. Furthermore, Bazaara (1995) reported that in rural areas, poor people tend to sell their best foodstuffs and eat inferior food.

FAO (1998) in discussing Zimbabwean experience, reported that Government strongly supported small farm holders to sell off their produce. He reported that although, there was an increase in farmers out put, the system did not favour rural population because they sold all the food they produced causing household food insecurity.

Nguyen (1996) in the studies undertaken recently in Uganda shows that despite its potential and vast resources the country is not safe from food insecurity. In fact, food insecurity that was felt in many countries in Eastern and central Africa in early 1990's also affected Uganda. The latest famine of 1992/1993 which affected districts in the northern and north- Eastern Uganda is believed to have caused starvation. This situation has been attributed to a number of factors such as poor rainfall and poor soils, poor transport network and markets. All these factors result in low productivity, low incomes and poverty, which is rampant in rural areas.

Harrigan, Loader and Thirtle (1992) in early 1980's noted that food security strategy concentrated on achieving self sufficiency in food using policies designed to maximize domestic out put of food crops. These policies included increasing prices of staple food crops in order to motivate producers, research and extension services, irrigation projects, donor funded integrated rural development programmes emphasizing food production, subsides on agricultural inputs used in food crop production, including subsistence production.

Maxwell (1996) noted that other causes of food insecurity in the horn of Africa are poor economic policies which have inhibited the development of agriculture based on comparative advantage and intensification of agriculture, retarding economic growth, growing population pressure combined with lack of investment in human resource development, further stressing natural resource base, civil strife and scarcity of democratic institutions.

Writing about food insecurity in the Horn of Africa, FAO (2001) noted that such unsustainable exploitation of the fragile ecosystem has resulted in reduced biomass, biodiversity and water infiltration, and increased runoff and soil erosion. FAO further reveals that this exacerbates environmental degradation and low agricultural productivity, thereby contributing further to poverty and food insecurity.

2.1.4 Implications of increased cash crop growing on livelihoods of people

In Africa one of the major causes of agriculture crisis is the general neglect of the agricultural sector by African governments (Rowland, 1993). The allocation of funds in many developing countries for development activities is urban biased and this has in the long term underdeveloped the agricultural sector. While Africa's failure to feed itself needs to be seen in an international context, domestic constraints have also played a role. These have included inappropriate agricultural policies such as a bias favouring export crops; inadequate public investment in farm research, extension and infrastructure and a failure to extend agricultural credit and extension services to women, who produce 50 to 80 percent of Africa's food (FAO, 1996). Civil wars and political instability have also taken a toll on food production (ibid). Added to these are unfavourable weather conditions, eroded soils and other environmental stress.

The World Bank (1993) indicates that over cultivation is by far the most important cause of desertification in Africa. Ploughing and sowing disturbs far more than stock rearing leading directly to rapid soil erosion. Timberlake

condemns wide spread planting of cash crops as the major cause of desertification in Uganda. This wide spread planting of cash crops is attributed to Uganda's desire to enter the world market and earn foreign exchange. This has led to decline in food crop production since growing of cash crops result in neglecting food crop production.

Cunny and Hill (1999) examined the relationship between population and cultivation period and argued that under pressure of growing population, land is not allowed enough time to regain its fertility.

Mungyereza (1998) indicates that UCDA in its quarterly report for September-October 1993 observed that the severely depressed coffee market during most of 1991/92 season had become unbearable to coffee producers whose coffee export earnings and indeed their incomes had been seriously eroded by the slump in the prices.

Several reasons have been advanced for the boom in horticultural export from Africa (Barrett et al. 1997and Dixie 1999). Trade agreements such as the Lome convention give preferential treatment to African exports in the European market. African governments have recently engaged in privatization of government enterprises, enacted less restrictive business laws, and provided incentives for export. International corporations have tied up with African counterparts and transferred technology, provided logistics, and created market identity and penetration for African products. Several African countries have formed regional economic groups combining business activities, technical

know-how, market information, and technical manpower to increase their competitiveness.

2.2 Conceptualized changing pattern of crop production

This study is conceptualized against the changing pattern of food and cash crop production in Luwero district. Since 1980s, there has been changing pattern in the production of various crops and a number of factors are responsible for this changing crop patterns, that is from food crops to cash crops. These include pests and diseases, high prices for cash crops and government policies such as Plan for Modernization of Agriculture (PMA) and Poverty Eradication Action Plan (PEAP) which may have led to growing of more cash crops and less of food crops with a mission to transform subsistence agriculture to commercial agriculture. The growing of more cash crops and less of food crops has resulted in positive outcomes such as increased incomes, improved welfare for the farmers, employment creation, better accommodation, improved health care and education. It has also resulted in negative outcomes such as lack of food security, environmental degradation such as deforestation and soil erosion as can be illustrated in fig. 2.1.

Figure 2.1: The Conceptual Model Showing the Changing Crop Patterns
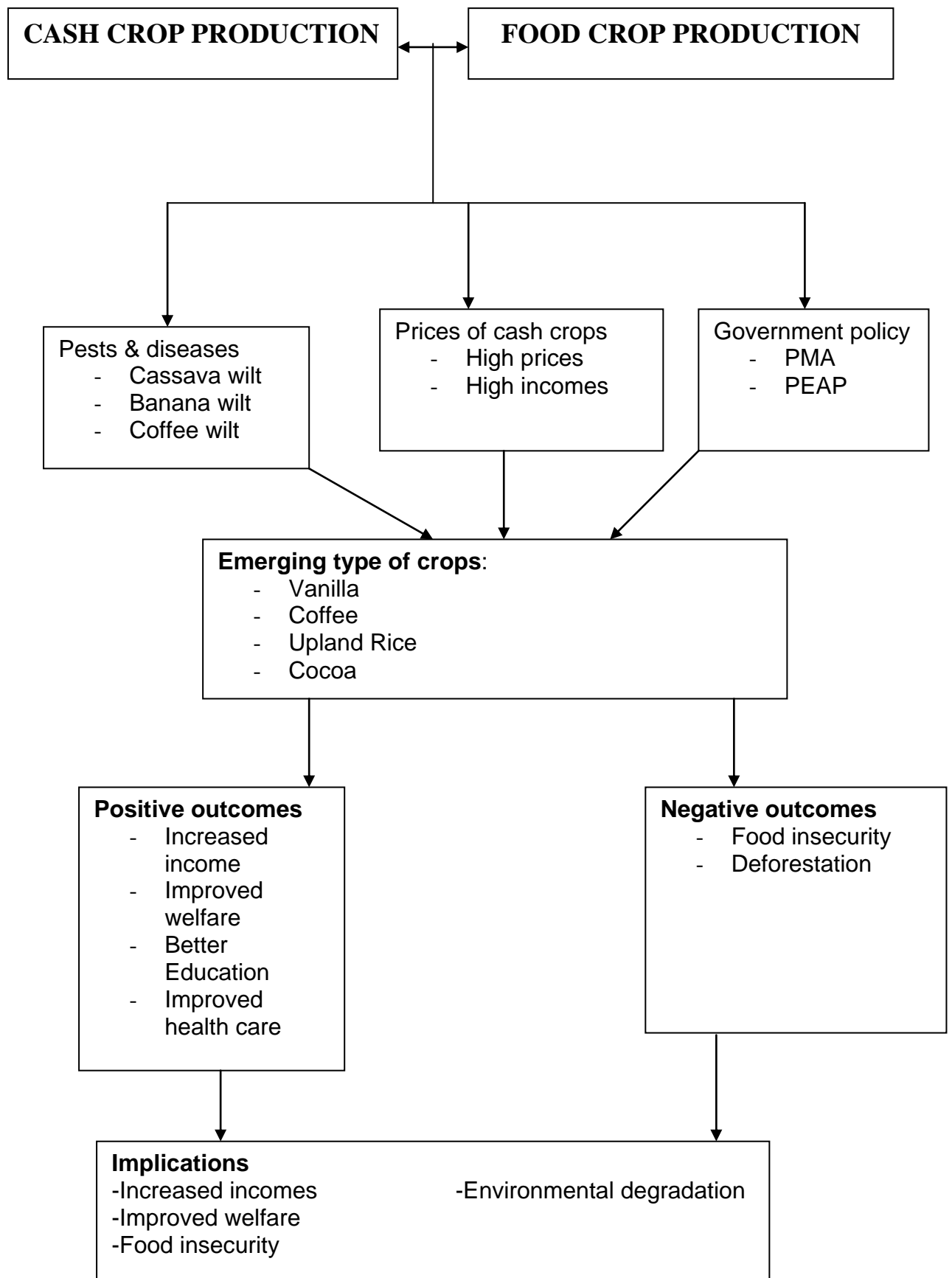
Source: Generated by the researcher

CHAPTER THREE

STUDY AREA, PHYSICAL CHARACTERISTICS AND RESEARCH METHODOLOGY

3.0 Introduction

The research on cash and food crop production in Semuto Sub County was carried out using social survey tools. This chapter describes the study area, physical characteristics and outlines the methodology used that includes study population, sample size and sample selection and data analysis. It also outlines primary data collection techniques like PRA, in depth interview, focus group discussion, observation, structured interview and measurement. Review of newspapers, census reports, text books, magazines, journals, reports and publications for secondary data is also presented. The analysis tool of SPSS (Statistical Package for Social Scientists) was used to compute descriptive statistics presented in tables. The chi-square test and regression analysis was used to test hypotheses from which the conclusion is made.

3.1 Study Area and Physical Characteristics

The study was carried out in Semuto Sub County which is situated in the South-west of Luwero district in Nakaseke County, 60 km North- west of Kampala. Semuto Sub County is divided into seven administrative parishes namely Semuto, Kikyusa, Migingye, Kikandwa, Kirema, Segagye and Kisega (see Map 3). Semuto Sub County is bordered in the North by Kapeka Sub County, Mubende district in the west, Wakiso district in the South, sub-countries of Makulubita and Nakaseke in the East (see maps 1 and 2).

Map 3.1

Map 3.2

Map 3.3

3.1.1 Climate

The climate of Semuto sub county is characterised by rainfall, which is high and well distributed throughout the year with average annual rainfall being 1300mm (Table 3.1). However, the climate of Semuto has changed over a period of time and it is believed rainfall pattern has changed and temperatures are relatively higher than they were before. The mean annual maximum temperature ranges between 27.5^0 and 30^0c whereas the mean annual minimum temperature is between 15^0c and 17.5^0c (Figure 1). Semuto Sub County experiences high relative humidity and large amount of sunlight. There are two rainy and two dry seasons with rainy seasons occurring from March – May and October to November. The dry season occurs from June-August and December to February. However, there is no marked dry season because they are broken by occasional showers (NEMA, 1997). This implies that Luwero district has favourable climate for agriculture production especially for such crops like coffee, vanilla and bananas which require rainfall for the most part of the year. Also the gradual change in climate of this area as noted above may have influenced the changing pattern of cash and food crop production.

Table 3.1: Rainfall and Temperature Data for 1996

MONTH	RAINFALL (MM)	MEAN MONTHLY TEMP (^{O}C)
January	44	30.8
February	63	31.9
March	126	30.8
April	174	28.3
May	129	26.7
June	78	26.7
July	77	26.9
August	28	26.2
September	18	27.2
October	148	27.6
November	116	28.9
December	26	30.5

Source: Meteorological Department, Ministry of Water, Lands and Environment.

Figure I: RAINFALL AND TEMPERATURE GRAPH OF SEMUTO SUB-COUNTY, 1996
Temperature range = 5.7 degrees centigrade
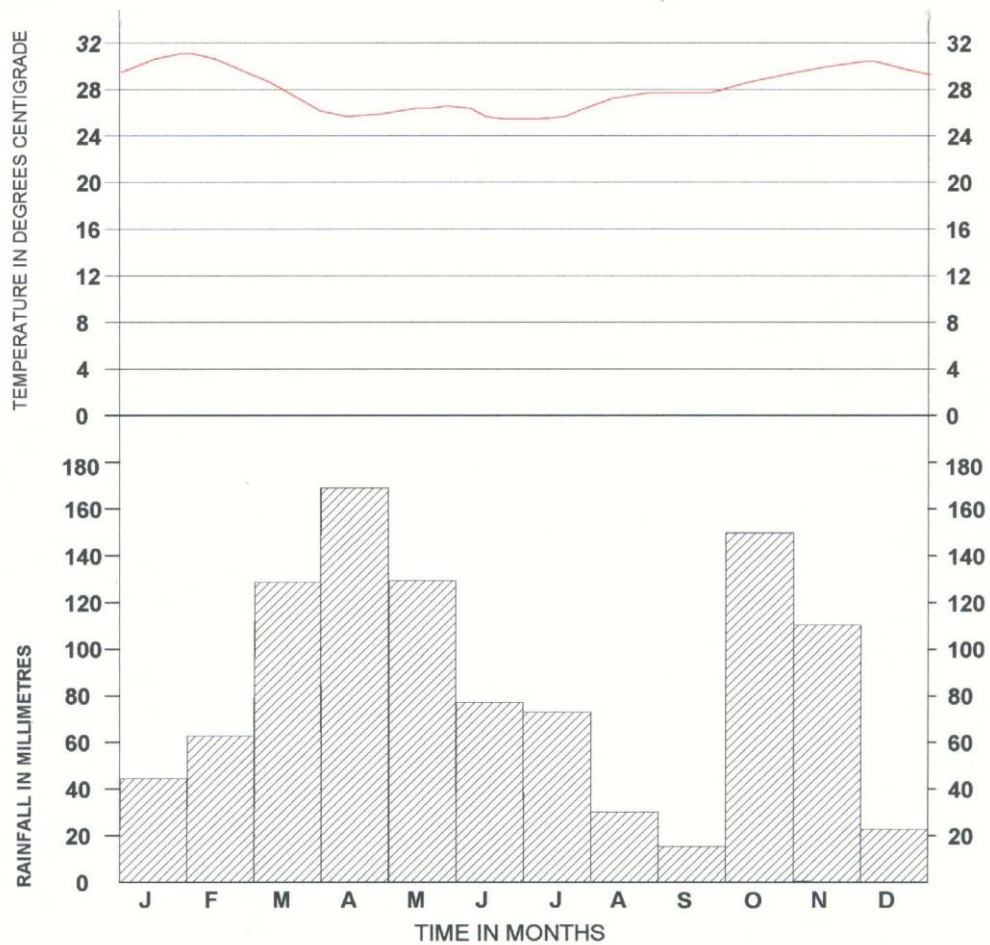
SOURCE: METEOROLOGICAL DEPARTMENT - MINISTRY OF WATER, LANDS AND ENVIRONMENT

3.1.2 Soils

The soils of Semuto Sub County have been mapped in terms of catena and individual soil types. Semuto Sub County is represented under Buganda catena. Brown topsoil to a very deep red soil of moderate high production are found on hillsides. A belt of grey sandy soils with red and yellow mottling are found in swamp fringe. There are also swampy soils consisting of black topsoil over grey bluish grey water logged clay of low production. Hill brown soils, which are grey to black soil when wet are present. The dominant colour of soils in Semuto sub county is red. The soils are mainly sandy loams. Sandy clay

loams also occur. The southern parts of Semuto Sub County have relatively fertile soils which support all kinds of crops while the northern parts of the area have sandy loam soils with low fertility (The Atlas of Uganda, 1967). The presence of fertile soils in the southern parts of Semuto has encouraged the production of crops like coffee, maize, beans, bananas and of recent, upland rice which are dominant in the parishes of Semuto and Kikyusa.

3.1.3 Relief

The relief of Semuto Sub County can be described in terms of hills and valleys. The present relief of Semuto Sub County is a result of a number of ancient denudation processes which have left a series of old erosion levels. As a result of these changes an elevated and dissected plateau consisting of a series of flat-topped hills and intervening valleys were formed. The altitude of the hilltops is in order of 1500m and there is a considerable swamp at an altitude of 1140m (NEMA, 1997) . A hilly upland dominate in the South of Semuto Sub County and wide interlocking valleys break up the low hills and are seasonally flooded. Such a hilly landscape has favoured the growth of upland rice while the intervening valleys also favour pineapple, sugar cane, bananas and coffee production.

3.1.4 Geology

The geology of Semuto Sub County consists mainly of basement complex. The largest part of the sub county is underlain by metamorphic rocks of the Precambrian age. The major geological formations are characterised by the presence of young intrusive rocks mostly acidic and less commonly basic. The youngest formation of Pleistocene are represented by the sand quartz and

clays of alluvial or lacustrine origin. Semuto Sub County also has Tooro system consisting of quartzites, slates, phyllites, schists, amphibolites and gneisses (NEMA, 1997). Metamorphic rocks through soil forming processes such as weathering lead to formation of fertile soils like those in the southern parts which are favourable for crop production. Whereas sand and clay soils are a product of sedimentary rocks that are less fertile like those in the north and donot favour production of most crops.

3.1.5 Vegetation

Three quarters of the sub county is covered with Savannah vegetation while other areas are covered with forest vegetation. There are also isolated patches of papyrus vegetation especially in low-lying swampy areas.

Semuto Sub County can be divided into the following vegetation types

i) Elephant grass with forest remnants

ii) Some medium altitude, moist evergreen forest. Medium altitude forest (600m-1500m) moist evergreen forest form closed stands 30-45m high with abundant lianas. Grasses are generally absent, or are broad leaved and fire sensitive.

iii) Grass savannah and permanently flooded grass swamp

iv) Dry combretum -This is wooded savannah which is more open and with continuous grass layer (Omoding, 1994).

Thick vegetation influences rainfall formation through the evapo-transipiration process. Consequently, high rainfall favours the growth of perennial crops such as coffee, bananas and vanilla. Forest vegetation may also harbour crop pests and diseases which are a menace to crops. On the other hand, savannah vegetation is easy to clear in preparation of land for

the growth of crops especially annual crops like beans, maize, millet and sorghum.

3.1.6 Drainage

The main element of drainage system in Semuto Sub County is extremely old. The drainage is mainly controlled by underlying rock structure subsequently modified by earth movements. The major sources of surface water are streams, which originate from hilly areas and to a certain extent swamps. These streams include Kayiwaburo, Nvuye stream, river Mayanja and Wasswa which have a potential of supplying water for irrigating crops especially during the dry season. In the South of Semuto, there are seasonal wetlands, which are grazing lands during dry season. There are also permanent swamps in lowland areas for example Munuuye swamp in Semuto parish. Swampland especially in Semuto and Migingye parishes is being reclaimed for cultivation of food and cash crops (pineapples, sugar cane and yams) and there is a steadily increasing demand for more land to be made available. In addition, well drained areas on gentle slopes have been used for growing of crops like upland rice and vanilla.

3.2 Research Methodology

3.2.1 Study population

The inhabitants of Semuto Sub County are largely Baganda who account for 50 percent of the population. There are also other inhabitants who include Baruli, Banyarwanda, Banyankore, Bakiga and Bahima. The 2002

population and housing census results showed that Semuto Sub County had a population of 25,086 persons.

Table 3.2: Population of Semuto sub county 2002

Males	Females	Total
12,519	12,598	25,117

Source: Population and Housing Census (2002)

The study population included local people who are direct participants in crop production. The study also included the community leaders such as (LCs, sub county chief, and parish chiefs) who are responsible for mobilizing people. The study population also included District Agricultural Officer and sub county Agricultural Extension Officer, because they are knowledgeable and have experience in agriculture. The parishes selected were representative enough to include those growing crops on subsistence and commercial basis, those with the highest and lowest population and those accessible. This enabled the researcher to make effective comparison of these parishes.

Table 3.3: Population of Semuto Sub County by parishes- 2002

PARISH	MALE	FEMALE	TOTAL
Kikandwa	832	865	1,697
Kikyusa	1,934	1,811	3,745
Kirema	1,536	1,547	3,083
Kisega	1,118	1,109	2,227
Segalya	1,979	2,011	3,990
Semuto	3,207	3,373	6,580
Migingye	1,907	1,888	3,795

Source: 2002 Population and Housing Census.

3.2.2 Sample size and selection

The study was carried out in Semuto Sub County. Three parishes were selected from a total of seven parishes that currently make up Semuto Sub County. Using multi-cluster sampling technique from each parish, two villages were selected. With the help of local council officials and parish chiefs, a sampling frame consisting of households and graduated taxpayers in the villages was constructed. A total of 1260 households were found in the three parishes of Semuto Sub County resulting in an average of 420 households per parish. Using systematic random sampling, 42 males and females (10% of this accessible population) were selected from each of the three parishes to make 126 local community respondents.

Three homogeneous focus groups of 8 people each were selected using stratified sampling to make 24 discussion participants. Participants were selected according to age, social responsibility, gender and marital status. The key informants were selected using purposive sampling. These included 1 sub county chief, 6 local council officials, 3 parish chiefs, 1 District Agricultural Officer, and 1 sub county Agricultural Extension worker to add up to 12 key informants. The sample composition is summarized in Table 3.4 below.

Table 3.4: Types of Sample and Methods

Structured interview		Key informants		Focus group
Parishes	Number		Number	
Semuto Parish	42	LCs Parish chiefs Sub county chief	6 3 1	1 Elder 2 LCs
Migingye parish	42			3 H/H heads 2 women/ youth
Kikyusa parish	42	Sub county Agricultural Extension Officer	1	
		District Agricultural Officer (DAO).	1	
Total	126		12	3FGD=24

Source: Researcher's sampling scheme

3.2.3 Methods of Data collection

In this study, the material presented is a product of both primary and secondary data collected. The data was collected using quantitative and qualitative methods. The research team consisted of one principle researcher, a coordinator and three research assistants with each research assistant assigned to a particular parish to assist in collecting the quantitative data. The research team was trained on how to select respondents without any bias, administration of questionnaires editing and proper recording of primary data. The data collection methods employed in this study included participatory rural appraisal (PRA), in depth interview, structured interview, focus group discussion, observation, measurement and secondary data review.

3.2.4 Participatory rural appraisal

Participatory rural appraisal was conducted using transect walks historical profiles and time trends as the main tools (refer to interview guide for

participatory rural appraisal in Appendix v). Transact walks as a tool of PRA was used to collect data pertaining to land management, food crops grown, cash crops grown, area covered by cash and food crops and importance of both food and cash crop growing. This was useful in acquiring data on visible aspects since this is personal observation.

The local community members participated effectively, which enabled the researcher to quickly and systematically collect the required data. During PRA, the researcher was able to obtain information on events in relation to food and cash crop production. The time trends of happenings in the sub county in terms of period, event, causes of the event and the effects of such event on the livelihood of the people were captured. This provided information regarding introduction of non traditional crops, reasons for introduction of these crops and effects of the introduction of such crops on the livelihoods of people. This played an important role in acquiring of invisible aspects of the research.

3.2.5 In - depth interviews

In depth interview was used to collect qualitative data using an interview guide (see appendix III). An interview guide was specifically used to collect information from key informants such as local council officials; sub county chiefs, parish chiefs District Agricultural Officer and sub county agriculture extension officer and District Agricultural Officer (DAO) a copy of 21 questions was given to each key informant to assess the changes in crop production, factors responsible for these changes and impact of these changes on food security and socio-economic welfare of the people.

3.2.6 Structured interview

Structured interviews were used to collect data using a questionnaire (Appendix II). A copy of 18 questions was given to each local community member to assess change in crop production factors responsible for these changes on food security as well as on socio-economic welfare of the people.

The questionnaire was divided into sub sections in order to cover different aspects and population under study. The questions were both open ended as well as questions with options. It covered a local community of 42 males and females from each of the three parishes adding up to 126 respondents that provided a bulk of useful information because these people are direct participants in production process. They also had useful information pertaining to what is happening in their community.

3.2.7 Focus group discussions

Focus group discussions were conducted using an interview guide. The group discussions were facilitated by the principal researcher with the help of an assistant in their respective parishes in the recording of information. This method was used to collect data from the homogeneous rural groups basing on age, marital status, social class and experience regarding their role in growing and maintaining food and cash crops. The focus group constituted groups of 6-12 people each. During the focus group discussions, a tape recorder was used to record the information, which was later transcribed for further analysis. Focus group discussions helped the researcher to supplement on the information obtained using a questionnaire as the main research instrument. It also helped to gain insight into attitudes, opinions, and motivation concerns and

the problems related to the research question. Three focus group discussions were held in three parishes of Semuto, Migingye and Kikyusa.

3.2.8 Observation

Another method used in this research was observation using a checklist to facilitate collection of additional data concerning the utilization of land (refer to Appendix iv). Was used to collect information on the current situation regarding crop distribution and coverage. Transect walks were used through villages hence enabling the researcher to collect considerable data on visible aspects of the research such as crop distribution, coverage, clearance of wetlands to prepare land for growing of crops, upland Rice and vanilla gardens.

The observed information was captured by recording and camera photography. Photographs helped to show the situation as it is on the ground in terms of crops, markets, degradation of wetlands and several others. Photographs helped to analyze the data.

3.2.9 Measurement

Measurement involved measuring the current acreage of both food and cash crop using meter rule and tape measures. Using transect walks measurement of area covered with cash and food crops was undertaken.

3.2.10 Secondary data Review

Secondary research methods were used and helped to strengthen primary research methods through critical documentary analysis of the available published and unpublished sources. The published and unpublished material covering various aspects of the research were used. This involved analysis of

existing textbooks, reports, newspapers, document registers and diaries that contained useful information.

3.2.11 Data analysis

This included the use of Chi- Square and Pearson correlation. Using the SPSS (1999) computer programme, a chi-square test was conducted to investigate the relationship between acreage of cash crop and acreage of food crops among farmers. Pearson correlation was conducted to test whether there is a relationship between increased cash crop production and increased food insecurity where correlation reveals that an increase in cash crop production has a negative implication on food security.

The final report of the study was compiled using data from both qualitative and quantitative methods.

3.1.12 Problems encountered

- Limited financial resources affected the research process to commence in time. The study required a lot of finance for transport, lunch and for necessary instruments like questionnaires and required stationery. The researcher worked hard within his means to overcome this constraint and produced quality work.

- It was hard to contact some targeted respondents because they had other commitments. It necessitated the researcher to make several visits to their particular places, hence, costing time and money resources. However, the

researcher made sure that appointments were made and thereafter, the necessary information was obtained.

- Some respondents asked for payment before releasing information claiming that a lot of researchers had been to the area and had promised them change about their living conditions which has not been done. However, the researcher convinced them about the value of the research and thereafter, the information was given with ease.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Introduction

In this chapter, the results and discussion of the study are presented. The main objective of the study was "*to examine the changing pattern of cash and food crop production in Semuto Sub County, Luwero district".* Data related to the main traditional cash and food crops grown and the area covered by them in the past and at present in Semuto sub county; factors responsible for the changing crop pattern; implications of increased cash crop production on food security; and implications of increased cash crop production on welfare of people of Semuto Sub County were collected and are presented and analyzed in this chapter.

4.2 Socio-economic characteristics of respondents

Data on socio-economic characteristics of the respondents in Semuto Sub County are presented here in order to give a clear picture of the study respondents. These characteristics include; structure of respondents, gender, marital status, age, education level and occupation. In Table 4.1 percentage distribution of respondents by relationship with the household head are presented.

Table 4.1: Socio economic characteristics of respondents

Relationship	Frequency	Percent
Household head (Self)	87	84.9
Spouse	12	6.3
Son/Daughter	26	7.1
Grand daughter	1	0.8
Total	126	100.0

Source: Field Research Findings

From the table, 84.9% of the respondents interviewed were household heads, 6.3% were spouses and 7.1% were sons/daughters of house household heads. Of the 87 household heads, 87.4% were male-headed households and 12.6% were female-headed households. The majority of respondents were household heads because they were considered to be knowledgeable about cash and food crop production pattern in the households while spouses were considered because of their impact on food security through food crop production. Others were interviewed on the basis of being above 18 years and their general knowledge about crop production in their households.

Table 4. 2: Gender distribution of respondents

Sex	Frequency	Percent
Male	96	76.2
Female	30	23.8
Total	**126**	**100.0**

Source: Field Research Findings

Regarding gender, Table 4.2 reveals that, 76.2% of the respondents interviewed were males and 23.8% females. More men than women were interviewed because the majority of the women could refer the interviewers to their husbands because they felt shy to answer some questions in front of their husbands.

Table 4.3: Age distribution of respondents

Age Group	Frequency	Percent
Below 20 Years	14	11.2
20-30 Years	24	19.2
30-40 Years	26	20.8
41-50 Years	36	28.8
51-60 Years	17	13.6
Above 60 Years	8	6.4
Total	**125**	**100**
Non response	**1**	**0.8**

Source: Field research findings

According to Table 4.3, 11.2% of the respondents were below 20 years, 19.2% were in the age range 20-30 years, 20.8% were between 30-40years, 28.8% were between 41-50, 13.6% were between 51-60 years and 6.4% were above 60 years. This indicates that the majority of the participants were household heads since they constituted more than a half of the total respondents (69.6%) in the age bracket of 30 to above 60 years of age.

Table 4.4: Education Level of respondents

Education level	Frequency	Percent
No formal education	9	7.2
Primary level	60	48.0
Secondary (ordinary)	37	29.6
Advanced level	11	8.8
Tertiary/University level	8	6.4
Total	**125**	**100**
Missing	**1**	**0.8**

Source: Field Research Findings

The majority of the respondents (48%) attained primary level as the highest level of education (Table 4.4), followed by secondary (29.6%), advanced level (8.8%), no formal education (7.2%) and tertiary institution (6.4%). This implies that there are low levels of education and inadequate skills which have a negative implication on the adoption of modern farming methods necessary for increased crop production.

Table 4.5: Occupation of respondents

Occupation	Frequency	Percent
Farmer	107	84.9
Trader	8	6.3
Teacher	9	7.1
Extension worker	1	0.8
Driver	1	0.8
Total	126	100.0

Source: Field Research Findings

Table 4.5 above indicates that the majority of the respondents were peasant farmers (84.9%) followed by teachers (7.1%), traders (6.3%) and others. This reflects that the majority of respondents depend on agriculture as the main economic activity since the majority have primary level education as shown above, then agriculture becomes their immediate employer with that level of education.

4.3 Main cash and food crops grown in Semuto sub county and the area covered by them in the past and present

One of the specific objectives of the study was to " *identify the main traditional food crops and the area covered by them compared to cash crops and the area covered by these cash crops in the past and at present".* Through group discussions, it was revealed that crops like coffee, maize, beans, millet and bananas were the traditional crops grown by people in Semuto sub county in the 1980's. Due to a fall in coffee prices in 1990's, high prevalence of crop diseases like coffee wilt disease and the reluctance of the government to improve agriculture; many farmers were discouraged from further expansion of farms while others adopted growing of other crops. Consequently, vanilla was introduced in the area in 1993 in Migingye Parish followed by upland rice in 1997. During a focus group discussion held in Migingye parish one elderly female member had this to say about the introduction of vanilla in the area:

> *"….for us, we had heard of vanilla on the radio that it was like small banana fingers but it was Mzee Kamya who was the first to start growing it in Semuto Sub county"*[1]

In order to find out the types of food and cash crops grown in the area, a questionnaire was administered to the local community and their responses analyzed into percentages.

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1. Mrs Lilian Kayanja - member, Focus Group Discussion in Migingye.

However, it was possible for a respondent to tick more than one crop depending on the number of crops his household was growing. Consequently, research findings indicate that the main traditional food crops grown in Semuto sub county include cassava (reported by 92.9% of the respondents), bananas (85.7%), beans (84.1%), sweet potatoes (75.4%), maize (47.6%), ground nuts (43.7%), yams (42.1%) and Irish potatoes (30.2%). The detailed research findings are illustrated in the Table 4.6 below:

Table 4.6 Main traditional food crops grown in Semuto Sub County

Food Crops grown	Frequency	Percentage
Cassava	117	92.9
Bananas	108	85.7
Beans	106	84.1
Sweet Potatoes	95	75.4
Maize	60	47.6
Ground nuts	55	43.7
Yams	53	42.1
Irish	38	30.2
Soya beans	31	24.6
Cabbages	19	15.1
Peas	17	13.5
Onions	15	11.9
Pumpkins	13	10.3
Tomatoes	12	9.5
Greens (Green pepper, Egg plant)	9	7.1
Rice	7	5.6
Millet	6	4.8
Sugarcane	3	2.4
Wheat	2	1.6
Simsim	1	.8
Total responses	**767**	**608.7**
Valid Cases	**126**	**100.0**

Source: Field research findings
Note: Respondents were giving more than one response

When the Luwero District Agricultural Officer was asked to identify the different types of food crops grown in Semuto Sub County, he agreed with the above research findings that:

"…the various types of food crops grown in Semuto Sub county can be categorised into root crops, cereals, legumes, fruits, horticultural crops and others like bananas".[2]

This implies that Semuto Sub County grows a diversity of food crops, which are an important source of food as well as household income.

Table 4.7: Cash crops grown in Semuto Sub County

Cash Crops grown	Frequency	Percentage
Rice	88	71.5
Coffee	84	68.3
Vanilla	77	62.6
Maize	75	61.0
Desert Banana	37	30.1
Sorghum	37	30.1
Beans	31	25.2
Tomatoes	27	22.0
Wheat	26	21.1
Tobacco	24	19.5
Soya beans	17	13.8
Sun flower	15	12.2
Sugarcane	12	9.8
Millet	9	7.3
Cassava	9	7.3
Cabbages	9	7.3
Irish	8	6.5
Greens	3	2.4
Passion fruits	2	1.6
Pineapples	1	.8
Water melon	1	.8
Cotton	1	.8
Yams	1	.8
Peas	1	.8
Ground nuts	1	.8
Total responses	**596**	**484.6**
Valid values	**123**	**96.6.**
Missing Values	**3**	**2.3**

Source: Field research findings
Note: Respondents were giving more than one response

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2. Mr. Ssebale : Luwero District Agriculture officer

According to Table 4.7, it was revealed that the main cash crops grown include; rice (reported by 71.5% of respondents), coffee (68.3%), vanilla (62.6%), maize (61.0%)and desert banana (30.1%). Other cash crops which were identified by the local community but whose responses were not significant include sorghum (30.1%), beans (25.2%), tomatoes (22.2%), wheat (21.1%) and tobacco (19.5%).

Further analysis of the various food and cash crops identified during the study revealed that crops like maize, rice, bananas, tomatoes and beans serve both as food and cash crops in the area. This is supported by Mukiibi (2001) that besides their importance as food crops, they are playing an increasing role in the provision of incomes of rural households and the national economy. Field observation during a transect walk of Kikondo village, Transformer and Katale Zones in Semuto parish revealed that most people were engaged in the growing of upland rice (Plate 4.1) and vanilla (see Plate 4.2).

Plate 4.1: *An upland rice garden in Kikondo Village, Semuto Parish. Trees growing in the rice gardens are meant to preserve water so that even after harvest, the soil remains moist. The left foreground (a heap of cut vegetation) is an evidence of forest destruction as a result of clearing land for rice growing.*

Source: Field research findings (photograph taken in May 2004)

Plate 4.2: *A vanilla garden in Katale Zone, Semuto parish. Vanilla plants are staked with trees locally known as "bilowa" because they contain a lot of water that is absorbed by vanilla through its climbing roots.*

Source: Field research findings (photograph taken in May 2004).

To compare which type of crops are grown most, an investigation was made into what type of crops they grow most in the household? Respondents were to select either cash or food crops. The results are illustrated in table 4.8 below:

Table 4.8 Type of crops mostly grown by a household

Crops grown most	Frequency	Percent
Cash crops	64	50.8
Food crops	62	49.2
Total	126	100.0

Source: Field Research Findings
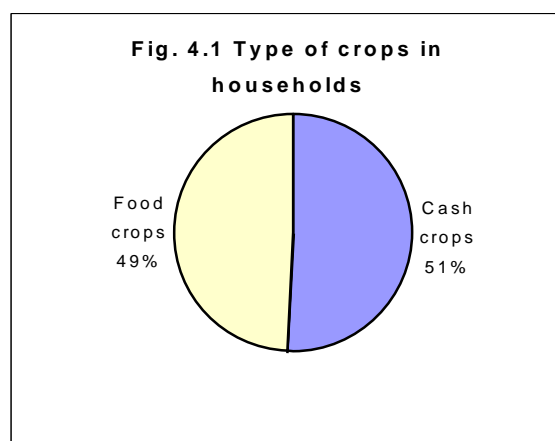
Source: Graph derived from Table 4.8

From the table and the Pie chart above it is shown that both food crops and cash crops are grown in almost similar proportions. This was evidenced by the fact that 50.8% of the respondents were growing more cash crops and 49.2% of the respondents were into food crop production. The above is a generalised picture of Semuto Sub County, however, if one looks at particular parishes this generalized picture is bound to change as reflected in Table 4.9.

According to study, it was revealed that among parishes, there is a significant difference in terms of type of crops grown (Table 4.9). In Semuto parish for example, 73.8% grow cash crops compared to 38.1% in Kikyusa and 40.5% in Migingye. Meanwhile, 26.2% in Semuto parish grow mostly food crops compared to 61.9% in Kikyusa parish and 59.5% in Migingye parish. The variation from the generalised picture may be partly explained by the location of the parishes in relation to markets or trading centres. This was revealed during a focus group discussion held in Semuto parish where one participant revealed that:

> *"…since I live near Semuto trading centre, most of the crops I grow are meant for sale and the surplus is for consumption. Therefore, I grow more of cash crops than food crops"*

The research findings are also explained by Omara-ojungu (1992) that the patterns and opportunities for agriculture in developing countries vary from place to place depending on weather, soils, technology, crop and animal diseases as well as socio-economic factors such as pricing, marketing and development policies.

This explains why there was dominance of cash crops in Semuto parish which is largely a trading centre compared to Kikyusa and Migingye which are far from the trading centres as well as markets for agricultural produce. These findings are further illustrated Figure 4.2:

Table 4.9: Types of crops grown by parish according to respondents for structured interviews

| Parish | Type of crops grown | | Total |
	Cash crops	Food crops	
Semuto	31 73.8%	11 26.2%	42 100.0%
Kikyusa	16 38.1%	26 61.9%	42 100.0%
Migingye	17 40.5%	25 59.5%	42 100.0%
Total	**64** **50.8%**	**62** **49.2%**	**126** **100.0%**

Source: Field research findings
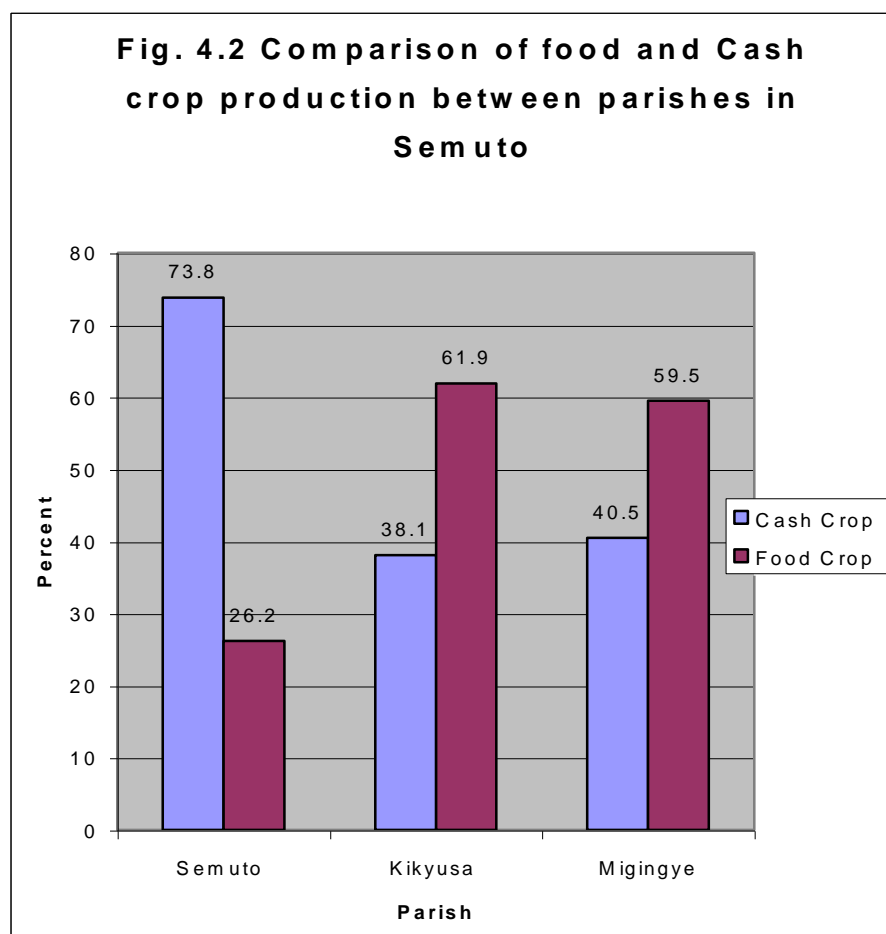
Source: Graph derived from Table 4.9

4.3.1 Cropland coverage

Field information and observation related to past land acreage (since 1980) under crop production in Luwero District was generally scanty. The available

reliable figures are provided by Hamilton A.C (1984) who had found out that cash crops (coffee and cotton) had registered a dramatic fall while cassava, sweet potatoes, beans and maize had increased greatly. His study was based on the most widely grown crops in Uganda in 1966 and 1981. The changes in the rank order of crops is illustrated in table4.10 below:

Table 4.10: Changes in the rank order of crops

Crop	Increase in rank position	Same rank position	Decrease in rank position
Cassava	11	2	2
Sweet potatoes	11	1	2
Beans	09	2	2
Maize	08	20	3
Bananas	05	3	6
Millet	3	3	6
Ground nuts	3	2	7
Cotton	1	2	8
Coffee	2	1	10

Source: Adapted from Deforestation in Uganda by Hamilton A.C (1984) Page 22.

At Luwero district level, information available about food crop statistics for the years 1993, 1998, 1999 and 2000 are provided by the Uganda Bureau of Statistics. The average crop acreage and yield for the different crops has been compared in the three years. An extract of the statistics is presented below in Table 4.11.

Table 4.11: Comparison of crop acreage and yields for 1993, 1998, 1999 and 2000 in Luwero district

CROP	1993		1998		1999		2000	
	Area (Acreage)	Yield (tons/ Acreage)	Area (acreage)	Yield (tons/ Acreage)	Area (acreage)	Yield (tons/ Acreage)	Area (acreage)	Yield (tons/ Acreage
Bananas	10.995	4.7	12669	4.7	14750	4.7	16250	4.7
Finger millet	340	2.1	2016	2.0	3116	2.0	3166	2.0
Maize	4056	2.1	16238	2.1	17049	2.1	17901	2.1
Sorghum	864	1.8	3140	1.8	3440	1.8	3540	1.8
Rice	-	-	-	-	-	-	-	-
S. Potatoes	6593	8.5	27534	8.5	30534	8.5	32650	8.5
I. Potatoes	382	7.6	3246	7.6	3550	7.6	3650	7.6
Cassava	3201	19.7	10025	11.25	13030	11.25	15050	11.25
Beans	9428	1.6	13569	1.6	14658	1.6	15150	1.6
G. Nuts	5509	1.1	1128	1.1	1280	1.1	1310	1.1
Soya beans	71	0.7	2026	1.1	2150	1.1	2250	1.1
Simsim	47	0.7	232	0.7	330	0.7	340	0.7
Coffee	-	-	18682	4.75	19182	4.75	19685	4.75
Tomatoes	-	-	800	2.5	900	2.5	950	2.5
Cabbages	-	-	570	2.7	670	2.7	770	2.7
Pineapples	-	-	3500	14.3	3700	14.3	4200	14.3

Source: Department of Agriculture, Luwero District

According to Table 4.11 sweet potatoes, maize, beans, bananas and cassava occupied the biggest acreage of land in Luwero district in the years 1993, 1998, 1999 and 2000. This was due to availability of market for these crops as well as the need to ensure food security in each household. Regarding the yield in tonnes per acre, the statistics indicate that pineapples (14.3 tonnes/ha) had the highest yield, followed by sweet potatoes (8.5 tonnes/ha.) then cassava (11.25 tonnes/ha.). Crop areas for maize and cassava increased more than that of any other crop. Research revealed that the area covered by groundnuts declined. It is also observed that the pattern of crop production in Luwero district has been changing over these years. Specifically, there has been an increase in area (acreage) covered by these crops since 1993 to present. In the final analysis, comparison of both tables (4.11 and 4.12) clearly indicates that the acreage covered by sweet potatoes, maize, beans, bananas and cassava in Luwero

district has increased greatly. This may have been due to the need for an alternative income from the sale of these crops following the fall in coffee prices on the world market and the spread of coffee wilt disease in the area.

The area covered by these cash and food crops at present was also investigated by calculating the mean, standard deviation and variance. The findings of the study are presented in table 4.12:

Table 4.12: Area covered by food and cash crops

Statistic	Food crop acreage	Cash crop acreage	Acreage on both cash crops and Food crop
Mean	3.1310	3.5556	6.7341
Standard Error	0.1498	0.2454	.3329
Standard Deviation	1.6819	2.7548	3.7372
Variance	2.829	7.589	13.967

Source: Field research findings

According to the above table, households in Semuto Sub County own 3.1 acres of land under food crop production compared to 3.6 acres under cash crop production. However, most farms under cash crop production are of varying sizes (S.D = 2.7548) compared to food crops, which are relatively of the same size between households (S.D = 1.6519).

Regarding food crop production, respondents revealed that there was a changing pattern in food crop production in Semuto Sub County. This was evidenced by the fact that 63.2% of the respondents reported that there was an increase in land acreage under food crop production. The changing pattern therefore is one of increase in food crop production both in quantity and variety

of crops grown. However, 36.5% of the respondents indicated no increase in land acreage for food crop production. This is partly explained by information got from an interview with Semuto sub county Chief, where it was revealed that the youth and town dwellers constitute such people who may not have realised an increase in land acreage for food crops (see Figure 4.3):

Fig. 4.3: Any in increase in land acreage under food crop growing?
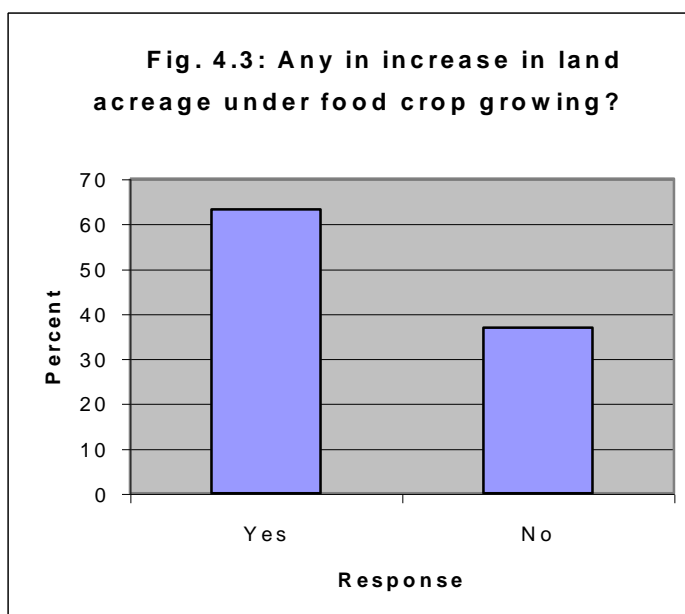
When the Semuto Sub County Agriculture Extension Officer was asked about what had brought about the increase in land acreage under cash crops, he had this to say:

> *"….it is a combination of factors that has made farmers get more involved in cash crop production. The need for farmers to get more income, the Government's policy of PEAP, diversification of production as well as the fact that new crops (rice, wheat and vanilla) were by nature land intensive are some of the factors"[7].*

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7. Mr. Kirinya: Semuto Sub County Agriculture Extension Officer

Whether the increase in acreage of land under cash crop production had been matched by increase in yields per acre was not empirically verified, as it was outside the scope of this study. What is certain however, are the findings of FAO (2001) in its study of food insecurity in the Horn of Africa where it is noted that:

> *"Crop yields in the Horn of Africa are among the lowest in the world largely due to inadequate water control, as less than 1 percent of cultivable land is irrigated, compared with 37 percent in Asia. Yet, even farmers who have the benefit of a more reliable rainfall tend to lack access to knowledge, finance and markets. Moreover, they usually have very little land."*

Related to this, is the fact that there is land fragmentation echoed by one member of the focus group discussion from Kikondo village in Semuto parish that:

> *"…the problem of land shortage has been aggravated by land fragmentation and also the youth who have now realised that crop growing is one of the profitable activities"*[8]

Further investigation into the main traditional food crops and the area covered by them compared to cash crops and the area covered by these cash crops in the past and at present was undertaken by testing the hypothesis that; `*increased acreage of cash crops has led to a decrease in acreage of food crops among farmers.* To test this hypothesis, increased acreage of cash crops was assumed the dependent variable while a change in acreage of food crops among farmers the independent variable.

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8. Mr. Nsubuga Paul: FGD member; Kikondo village in Semuto parish.

Using the SPSS computer programme, a chi-square (χ^2) test was computed to determine whether there was an association between acreage of cash crops and a decrease in acreage of food crops among farmers. A Pearson Correlation coefficient (r) and corresponding probability values (P-Value) for Semuto, Kikyusa and Migingye Parishes as well as Semuto Sub County were computed using;

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

and
O_i represents the observed frequency in category *i*
E_i represents the corresponding expected frequency.

r represents the correlation coefficient Correlation analysis measuring the strength of the relationship between variables that is increased cash crop production and change in acreage of food crops among the farmers.

P-Value represents a decreasing index of the reliability of a result. That is the probability that the observed relationship between the variables occurred by pure chance and that in the population which the sample was drawn, no such relationship or differences exist. (The higher the p- value, the less we can believe that the observed relation between variables in the sample is a reliable indicator of the relation between the respective variables in the population).

Table 4.13: The effect of increased acreage of cash crops on acreage of food crops among farmers

Parish	Increase in food crop production.			Increase in cash crop production.			Chi square Value	p-value	r (correlation coefficient)
	Yes	No	Total	Yes	No	Total			
Semuto Parish	11 57.9%	8 42.0%	19 100%	14 60.9%	9 39.1%	23 100%	0.038	0.845	- 0.030 (0.850)
Kikyusa Parish	29 90.6%	3 9.4%	32 100%	1 11.1%	8 88.9%	9 100%	22.623	0.000	0.743 (0.0000)
Migingye Parish	10 35.7%	18 64.3%	28 100%	9 64.3%	5 35.7%	14 100%	3.076	0.079	- 0.271 (0.083)
Semuto sub county. (All parishes combined)	50 63.3%	29 39.7%	79 100%	24 52.2%	22 47.8%	46 100%	1.488	0.233	0.109 (0.226)

Source: Field research findings

Table 4.13 above shows that there is no relationship between increase in land acreage under cash crop production and a decrease in land under food crop production (p= 0.233). The P-value implies a decreasing index of the reliability of a result is 0.233, which is higher than 0.05 (5%) level of significance hence showing no significant relationship between the variables.

Although there is no relationship, correlation reveals that increase in land under cash crop production is related to increase in acreage of food crop production (r=0.109) though not significant (P> 0.05). The correlation coefficient (r) reveals that a unit change in acreage of cash crop production leads to a corresponding increase in acreage under food production by 0.109. This implies that the hypothesis: *increased acreage of cash crops has led to a decrease in acreage of food crops among farmers* is rejected at 5% level of significance.

However, within parishes of Kikyusa and Migingye, it reveals that there is a relationship between increased cash crop production and a decrease in acreage of food crops among farmers shown by p=0.000 and p=0.079 respectively. From the above results it shows that decreasing index of the reliability of result for the above parishes is less than 5% level of significance implying a significant relationship between the variables. Although there is a relationship within parishes; in Kikyusa parish the study reveals that a unit increase in land acreage under cash crop production leads to a corresponding increase in land acreage under food crop production by 0.743 units while in Migingye parish it leads to a decrease in land acreage by 0.271. But there seems to be no significant relationship between the variables for Semuto Parish as shown by high decreasing index of the reliability of results (p=0.845).

In conclusion, therefore, bananas, beans, sweet potatoes, maize, ground nuts, yams and irish potatoes are the major food crops while rice, coffee, vanilla, maize and desert banana, sorghum, beans, tomatoes, wheat, and tobacco are the major cash crops. This is contrary to FAO (2001) where it is noted that most people in the Horn of Africa's rural areas rely almost entirely on growing a small range of crops, or on pastoralism.

4.4 Factors responsible for the changing pattern in crop production in Semuto Sub County

Another objective of the study was to *"identify the factors responsible for the changing pattern in crop production in Semuto Sub County"*. The investigation found out that there was a changing pattern in both cash crop and food crop production which was attributed to seasonality, soils and occurrence of civil

wars hence affecting the farmers' calendar. When rainy seasons change, for instance from February to March, farmers also adjust planting accordingly. The climate of Semuto Sub County having changed over a period of time, has forced farmers to change from crops such as coffee and bananas which need high rainfall to crops like cassava and sweet potatoes (The New Vision newspaper, April 7th, 2007). Due to soil exhaustion, the fertility of the soil declined thus leading farmers to concentrate on production of crops like potatoes and cassava which can grow on impoverished soils. The civil war of the 1980s also influenced the pattern of crops grown for example, from perennial crops like coffee to annual crops like beans and maize with short maturity period and able to ensure a steady food supply to the population during the period of uncertainty. After the civil war, the young farmers who returned resorted to growing of cash crops in order to earn income unlike their predecessors who were mainly subsistence farmers. The war also led to change of planting schedules thus affecting the farmers' calendar.

Therefore, the study established that there was a change from production of traditional cash crops such as coffee and cotton that used to dominate agriculture before 1980s to production of a new range of cash crops with a ready market namely, upland rice and vanilla. This was revealed by the majority of the respondents (59.2%) that since 1980, there was a changing pattern in cash crop production. Similarly, a changing pattern was also observed in the production of food crops from production of traditional food crops such as bananas and sweet potatoes to production of cassava, beans and maize.

Specific factors responsible for this changing pattern include availability of market for a new range of non traditional crops; prevalence of banana and coffee wilt diseases; need for alternative sources of income; government's appeal to increase production; high prices; declining soil fertility, changing climate; fall in coffee prices on the world market; high demand for export crops especially maize and; problems in vanilla production in Madagascar. The study also revealed that there was increased food crop production as well as increased cash crop production. The nature of the increases is explained in the subsequent sub-sections.

4.4.1 Factors responsible for increased food crop production in Semuto Sub County

Through interviews, it was found out that the need to ensure food security, catering for family members, high demand for food due to increase in population, acquisition of more land as well as the search for more income were among the factors responsible for changing pattern. Responses of the local community on this issue are tabulated below:

Table 4.14: Factors responsible for increased food crop production in Semuto Sub County

Reason for increase in land acreage for food crop production	Frequency	Percentage
Food security	28	35.9
To cater for family size in the household	19	24.4
High demand due to increased population	17	21.8
Acquisition of more land	15	19.2
Alternative income from sale of surplus produce	11	14.1
Requires less inputs	4	5.1
Introduction of more food crops	1	1.3
Total responses	**95**	**121.8**
Valid cases	**78**	**100.0**

Source: Field research findings

In Table 4.14, respondents identified the factors responsible for increased food crop production. The main reasons for this increase include the need to guard against famine/ensure food security (35.9%); to cater for family size in the household (24.4%); high demand for food due to increased population (21.8%), acquisition of more land (21.8%); food crops as alternative source of income (14.1%) and that food crops require less inputs (5.1%).

Further investigation during an in-depth interview with the Semuto Sub County Agricultural Extension Officer revealed that:

> *"… indeed, increased demand for food due to population increase, attempting to curb poverty by commercialising production and, as a way of finding an alternative to coffee that had been infested with diseases; were some of the reasons for the increase in food crop production. The government's programme of Poverty Eradication Action Programme (PEAP) had also helped by sensitising people about the importance of growing different types of crops"*

The study also revealed that the food crops grown in Semuto sub county vary from parish to parish. The major food crops grown are cassava, bananas, maize, beans, sweet potatoes, vegetables, ground nuts, Sorghum, Irish and yams.

4.4.1.1 Cassava

Research findings indicate that cassava is the leading food crop grown and has steadily grown hence exceeding banana production as the leading food crop in the sub county. This was reported by 92.9% of the respondents (Table 4.6). Cassava is widely grown in the sub county making it difficult to find any household without a cassava garden. Cassava production has steadily

increased from acreage of 3201 in 1993 to 15050 in 2000 (Table 4.11). The increase in cassava production is due to a number of factors. It can be stored for long and used to guard against famine in households. Further more, cassava is a dual purpose crop because it serves as both food and cash crop. The production of cassava has also increased because of its reliability since it can grow well in poor soils as well as in drier areas. It is also not very much affected by crop diseases except cassava mosaic disease.

4.4.1.2 Bananas

Bananas rank second to cassava as food crops for the people of Semuto sub county as revealed by 85.7% of the respondents. It is grown as a staple crop though the surplus is sold to urban markets in Kampala, Wobulenzi and Luwero. There are mainly three types of bananas grown by farmers in Semuto sub county namely; the main green bananas which serve as the traditional food crops, the sweet bananas which are locally known as "Ndiizi" and eaten when ripe and then bananas for beer brewing namely "waragi" and banana wine known locally as "mwenge bigere". The type of banana for beer brewing include those known locally as "mbidde", "kisubi" and "musa". Banana production has increased from 10995 acres in 1990's to 16250 in 2000 despite the prevalence of banana wilt disease. The increased banana production is due to a number of factors namely high demand because of many uses such as beer brewing, sweet bananas for making pancakes, increasing population hence increased demand for green bananas as staple food both for rural and urban population. The increased production of bananas as food crop is due to its ability to serve as both food and cash crop as sources of house holds income. It is also a

perennial crop and given good climate, fertile soils and proper care, it can exist for more than 40 years.

4.4.1.3 Beans

Beans are the most important legumes in Uganda providing 25% of the total calorie and up to 45% of the protein intake. It is also a very important source of income (The New Vision, 7th June 2005). Beans are among the five main traditional food crops grown in Semuto sub county. For a very long period of time beans were grown for home consumption. However, beans have increasingly become cash crops. Beans are widely spread to all the parishes of Semuto sub county and it is not possible to find a household in Semuto without a garden of beans. Research findings indicate that 84.1% of farmers in Semuto grow beans. The production of beans in Luwero district has increased steadily from 9.428 acres in 1993 to 15150 acres in 2000. The increased production of beans is due to the fact that beans can be stored for long without getting spoilt hence ensuring food security (Mukiibi, 2001). They are also relatively cheap and have high protein contents. The increased production is also attributed to the fact that beans serve as both food and cash crops hence increased demand.

4.4.1.4 Sweet potatoes

Sweet potatoes rank fourth to cassava, bananas and beans in importance in Semuto Sub County. They are widely grown in most homes especially among the non-Baganda. Sweet potatoes are mainly grown for home consumption though there is a growing demand in urban markets. Sweet potatoes are grown by 75.4% of people in Semuto sub county. The production of sweet potatoes in

Semuto Sub County has greatly increased from 382 acres in 1990s to 3650 acres in 2000. The increased production of sweet potatoes is due to increased number of non Baganda in the sub county which increased demand for sweet potatoes, high demand in urban centers, the fact that sweet potatoes are less liable to attack by diseases and the ability of sweet potatoes to grow well on impoverished soils.

4.4.1.5 Maize

Maize is increasingly becoming a high income earner and food crop for millions of Ugandans (The New Vision, 7th June 2005). Maize remains a major source of income to farmers in Semuto Sub County. Research findings indicate that maize ranks 5th in importance. It is both a food crop and cash crop because the surplus is bought by traders and taken to Kampala. There is a growing demand for maize. According to field research findings, 47.6% of farmers in Semuto Sub County grow maize, which is eaten when flesh or stored for future use hence ensuring food security. Maize growing has steadily increased from 4056 acres in 1993 to 17901 acres in 2000. The increased maize production is as a result of increased demand for maize for export, intercropping of maize with other crops such as beans and cassava. Its increased productivity is also due to the fact that it can be stored and used to ensure food security.

Furthermore, increased production of maize is because it serves dual purpose as both food crop as well as cash crop hence enabling farmers to earn incomes. The increased use of improved seeds has also resulted in increased production of maize. There are a variety of other crops grown in Semuto sub county which have experienced increased production namely sorghum, finger millet, groundnuts, cabbages, soya and beans.

4.4.2 Factors responsible for increased cash crop production

A table showing quantified responses regarding factors for increased cash crop production in Semuto Sub County is presented in Table 4.15.

Table 4.15: Factors responsible for increased cash crop production in Semuto Sub County

Reason for increase in land acreage under cash crop production	Frequency	Percentage
Availability of markets	22	30.6
Acquisition of more land	21	29.2
Clearing of more land to grow crops	20	27.8
Prevalence of crop diseases	17	23.3
Availability of capital to develop land	4	5.6
Government policy towards cash crop production	3	4.2
Introduction of better breeds	2	2.8
Stability in the area after 1985 war	1	1.4
Total responses	**90**	**125.0**
Valid cases	72	
Missing cases	54	

Source: Field research findings

According to the above table, the main factors responsible for increased cash crop production include availability of markets (indicated by 30.6% of respondents), acquisition of more land to grow crops (29.2%); prevalence of crop diseases (23.3.%), clearing of more land to grow crops (27.8%) and availability of capital to develop the land (5.6%). Field observation during a transect walk in the village of Kikondo in Semuto parish revealed that some of the newly introduced cash crops like vanilla and upland rice were being grown by many farmers in the area (Figure 4.4).

Fig. 4.4: A transect showing land use of Kikondo Village in Semuto Parish

KEY
A: Munvuye Swamp with some Crops namely sugar cane, pineapples, yams and maize
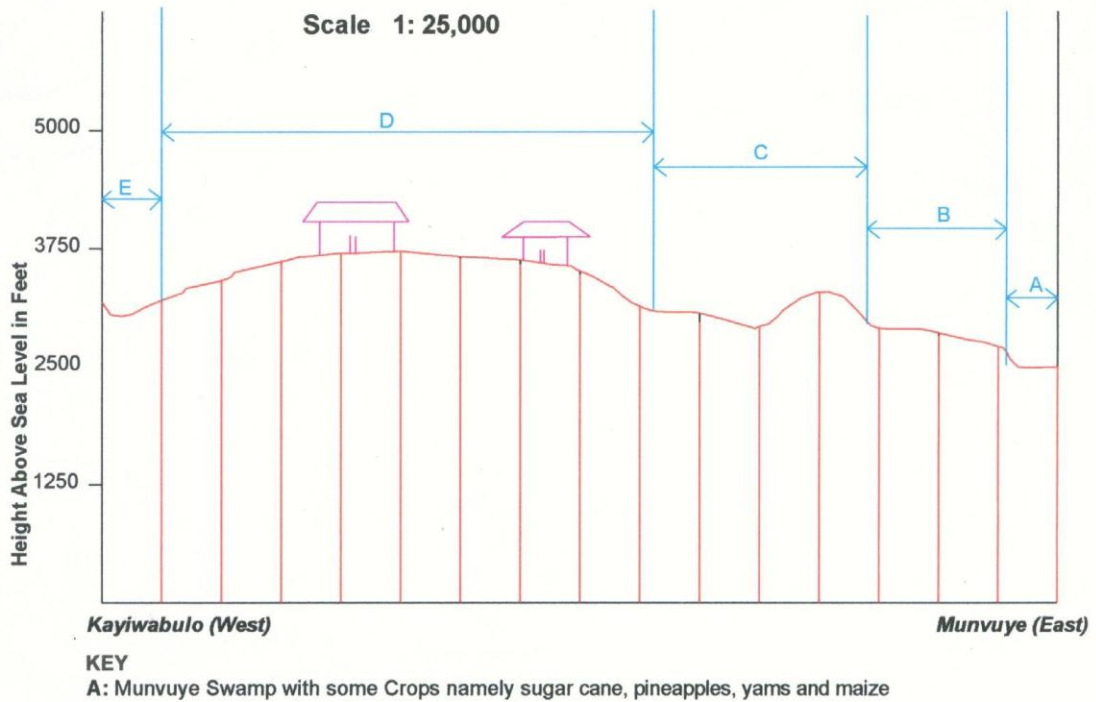
B: Areas with natural forest

C: Kikondo with short grass and Eucalyptus trees.

D: Areas with banana plantations upland rice, beans, maize and some wheat.
    There are also houses for the locals.

E: Kayiwabulo stream

There are several land use practices in Kikondo village of which the major ones are growing of crops and residential. Growing of crops is divided into food crop growing and cash crop growing. Growing of food crops is intended for home consumption while growing of cash crops is intended for sale.

There are a variety of cash crops grown in Semuto sub county ranging from traditional cash crops such as coffee, cotton and tobacco to non traditional cash crops such as rice, vanilla, sunflower, wheat and maize.

4.4.2.1 Rice

Field observation through villages of Semuto Sub County revealed that most people are engaged in the growing of upland rice. Upland rice rank first in importance as a cash crop for the people of Semuto sub county and accordingly 71.5% of the respondents interviewed revealed that it is number one cash crop having replaced coffee. Rice is an important source of food as well as household incomes.

Upland Rice was first introduced in Semuto Sub County in 1997 and its production has greatly increased making it the leading cash crop followed by coffee. This is due to government policy of encouraging local people to grow rice as an income generating activity in order to fight poverty. In addition, the increased production of rice was due to high demand especially in urban centres which has resulted in high prices.

4.4.2.2 Coffee

Coffee is the main traditional cash crop grown by the people of Semuto sub county and ranks second to upland rice in importance (Table 4.7). According to field research findings, 68.3 percent of farmers in Semuto grow coffee mainly on small scale family farms. For many years farmers in Semuto sub county have grown and benefited from coffee in terms of increased incomes hence high living standards. Coffee is widely spread throughout the sub county though the intensity of its production varies from parish to parish. Coffee production in Luwero has steadily increased despite the prevalence of coffee wilt disease

and fluctuation in coffee prices on the world market from 18682 acres in 1993 to 19685 acres in 2000.

4.4.2.3 Vanilla

Vanilla is a new cash crop to farmers in Semuto Sub County. According to information obtained from respondents, Vanilla was introduced in 1993 in Migingye parish before spreading to other parishes. Vanilla is the 3rd high ranked crop as reported by 62.6% of respondents (Table 4.7). The increased production of Vanilla is due to high prices offered for it which has encouraged more farmers to participate in growing of vanilla. The high prices are attributed to shortages in supply of Vanilla from Madagascar due vagaries of nature. Madagascar is the world's largest producer of vanilla. However, the prices for vanilla have drastically fallen. Furthermore, the increased production of vanilla as a cash crop is due to the prevalence of crop diseases such as coffee wilt and banana bacterial wilt which forced farmers to resort to Vanilla growing as an alternative source of income. However, Vanilla demands for more attention from farmers because the farmer is required to do the right thing at the right time.

4.4.2.4 Maize

Maize is both a food crop and a cash crop. Maize is 4th ranked cash crop. According to field research findings, 61.0% of respondents grow maize as a cash crop. Maize production in Luwero district has increased from 4056 acres in 1993 to 17901 acres in 2000. This is due to a number of factors such as improved seeds, the resistance of maize to pests and diseases than several other cereals, intercropping of maize with other crops such as beans, and

vegetables. The increased growing of maize is also due to the growing population and increased demand for maize in internally displaced people's camps in north and eastern Uganda. There are numerous other cash crops grown both traditional and non traditional in Semuto sub county and information available from the Department of Agriculture in Luwero District indicate a steady increase in production of these cash crops.

4.4.3 Changing Pattern of Crop Production

Further investigation revealed that there was a changing pattern in both cash crop and food crop production. The changes were observed in the pattern of crop production and crop acreage. There has been a decrease in the production of traditional crops such as coffee, cotton and bananas while there has been an increase in the production of non traditional crops such as cassava, vanilla, upland rice, maize and beans. This is because of the emphasis put on production of these crops particularly crops that serve as cash crops and food crops. This has led to a reduction in acreage under the traditional crops and an increase in acreage under the non-traditional crops.

In early 1980s banana was the leading traditional food crop while coffee was the leading traditional cash crop in Semuto Sub County. It was difficult to find a household without coffee or banana gardens. These two crops were widely grown. This was on account of benefits associated with the growing of these crops namely riches. This left small land available for growing of other crops such as beans, maize, cassava and groundnuts. However, 1990s witnessed much emphasis being put on non traditional crops such as rice, Vanilla, beans, maize, cassava hence resulting in reduction in total land under coffee and

bananas. In extreme cases coffee trees were cut down and replaced with other crops such as maize, rice, vanilla and others. Banana plantations have also been replaced by those crops which were considered more profitable namely maize, rice, cassava and others. As the result, the land under traditional crops has reduced while that under non-traditional crops has increased. This changing pattern in cash crop and food crop production was previously illustrated in Tables 4.6 and table 4.7.

As a result of change in area covered by traditional and non-traditional crops, the output has also changed. For instance decrease in acreage of traditional crops has also resulted in reduction in output of such crops while increase in area covered by non-traditional crops has also resulted in increase in out put of these crops.

Many farmers have diversified the farming system resulting in a variety of crops being grown. In the beginning coffee was the only leading cash crop and its output was over 80% percent of the total agricultural out put in Semuto sub county. This situation has significantly changed following the introduction of non traditional cash crops because 71.5% of respondents interviewed said that upland rice which was introduced in 1997 is now the leading cash crop followed by coffee in the second position. This also applies to bananas because in the olden days it ranked number one food crop grown by every household and was eaten throughout the whole year without experiencing any shortages. Banana production has nowadays declined and what is produced is not enough to feed the available population of Semuto Sub-county. Cassava has replaced bananas as the leading food crop as revealed by 92.9% of the respondents. Bananas

are now ranked in the 2nd position according to 85.7% of respondents interviewed. The output of non-traditional crops has greatly increased and crops such as rice, cassava, Vanilla and sweet potatoes are being grown by many farmers while less of coffee and bananas are being grown.

This changing pattern in crop production was due to both external and internal factors such as declining coffee prices on the world market, making it unprofitable to grow. Further more, the prevalence of coffee wilt disease and banana bacterial wilt disease has forced many farmers in Semuto sub county to supplement on declining banana and coffee production by growing more of non traditional crops which are less affected by crop diseases namely rice, maize, cassava and beans.

Further more, government appeal for increase in production of non traditional crops in order to fight rural poverty and increased commercialisation of Agriculture has resulted in changing pattern of crop production in favour of non traditional crops. Changing climatic conditions and declining soil fertility are also responsible for changing pattern of crop production in Semuto Sub County.

Cropping practices

The people of Semuto Sub County are mainly dependent on growing of crops both food and cash crops. Farmers strictly follow farming calendar except in instances where climatic conditions change. Being an area of bimodal rainfall there are mainly two growing seasons. The farmers' calendar involves a series of activities namely: land preparation, planting, weeding and harvesting.

Land preparation

This is the first agricultural task performed by farmers and it involves clearing of the bush burning of the cleared materials and digging. This task is mainly performed during dry months of December, January and February in preparation or the first growing season and in August in preparation from second growing season.

Planting

This second agricultural task is done immediately rains come. During the first season, planting is carried out in February, March and April. Planting in the second season takes place in late August, September and October.

Weeding

Weeds are a serious menace to the farmers in Semuto Sub County because weeds are parasites which compete with crops for food. Weeding is mainly done during the first growing season in March, April and May while in the second growing season weeding is carried out in late September, October and November.

Harvesting

This is the last major agricultural task and it varies greatly according to the gestation periods of different crops. Harvesting is done mainly by women and children at different times. Harvesting during the first harvesting season is done in June, July and August while for the Second season it is done in November, December and January. The farmer's calendar in figure 4.5 provides detailed information about farming practices in Semuto Sub County.

Fig. 4.5: The Farmers' Calendar For Semuto Sub-County
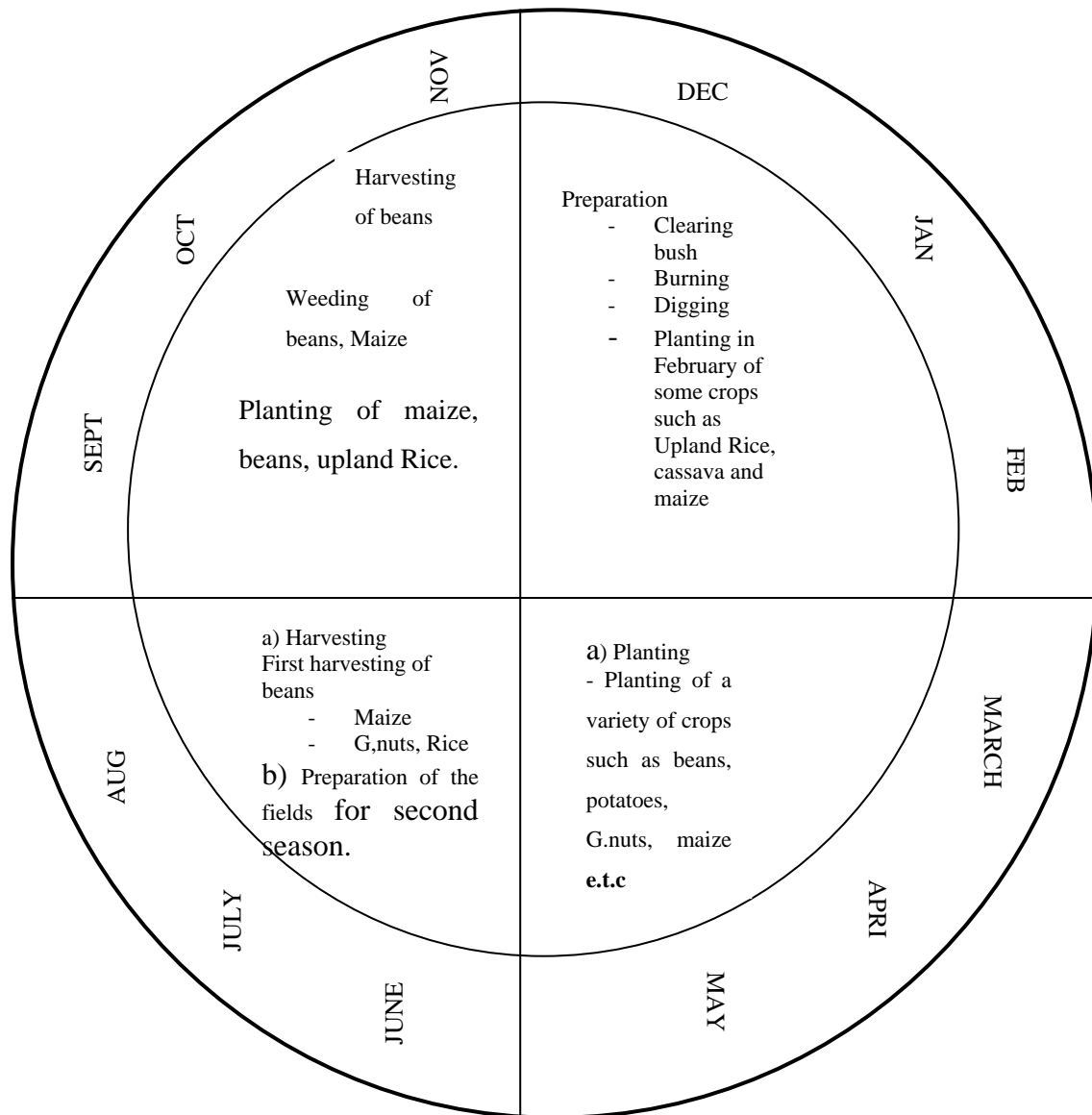
Source: *Field interviews by the researcher.*

In conclusion, research findings indicate that there has been a change in cash crop production from traditional cash crops to non-traditional ones. The reasons for the changing pattern include introduction of other cash crops, prevalence of crop diseases such as coffee wilt disease, availability of markets for cash crops, clearing of more land to grow crops and availability of capital to develop the land. The changing pattern of food crop growing however, was due to the need to guard against famine/ensure food security; to cater for family size in the household; high demand for food due to increased population, acquisition of more land; food crops as alternative source of income and that food crops require less inputs.

4.5 Implications for increased cash crop growing on food security in Semuto Sub County

Another study objective aimed at "*assessing the implications for increased cash crop growing on food security in Semuto sub county*". The Western literature reveals that the concept of food security has evolved, developed, multiplied and diversified since the World Food Conference of 1974 (Maxwell and Smith, 1992; Maxwell, 1996). The main focus has shifted from global and national to household and individual food security and from food availability to food accessibility (Nakabo-Ssewanyana, 2003). In this research, the term food security means that a household has consistent access to enough food for its members to live an active and healthy life. Thus household food security implies availability of food and access to food through home production, purchase in market or private and public food transfers.

In order to fulfil the above objective, the study investigated if indeed cash crop production has had an effect on food security. The views of the respondents are presented in the Table 4.16.

Table 4.16: Is there any effect that cash crop production has had on food security in Semuto Sub County?

Effect of cash crop production on food security	Parish			Semuto Sub county in general
	Semuto	Kikyusa	Migingye	
Yes	31 75.6%	17 40.5%	27 65.9%	75 60.5%
No	10 24.4%	25 59.5%	14 34.1%	49 39.5%
Total	41 100.0%	42 100.0%	41 100.0%	124 100.0%

Source: Field research findings

According to the above table, the majority of the respondents in Semuto (75.6%) and Migingye (65.9%) parishes indicated that cash crop production has affected food security compared to Kikyusa parish where the minority (40.5%) revealed that increase in cash crop production had not affected food security. However, this differs from Semuto sub county which revealed that cash crop production has affected food security in the Sub County in general, implying that increased cash crop production has contributed to food insecurity, as revealed by 60.5% of the respondents. UBOS report (2000) revealed that 53% of the households were experiencing food shortages although with varying magnitude. In the same study, UBOS found out that the most food secure households formed 35% of the households.

Meanwhile, this study established that increase in land acreage for cash crops has affected food security by causing famine (indicated by 44.4% of the respondents). A transect walk through Semuto parish revealed that most

households have put emphasis on crops like vanilla, upland rice, coffee while paying minimal attention to food crops like beans, potatoes, maize and millet which would ensure food security. Other effects of increased acreage for cash crops include food shortage in households (38.9%) and less attention given to food crops (52.8%) (Table 4.17).

Table 4.17: Implications of cash crop production on food security

How cash crop production has affected food security	Frequency	Percent	Percentage of cases
Famine	32	32.7	44.4
Food shortage in households	28	28.6	38.9
Less attention is given to food crops	38	38.8	52.8
Total responses	**98**	**100.0**	**136.1**
Valid cases	**72**		

Source: Field research findings

During an in depth interview with the Luwero District Agricultural Officer, more implications of increased cash crop production on food security were revealed. In his words, the Luwero District Agricultural officer (DAO) said that:

> *"The implications are both positive and negative. Positively, good nutrition, increase in income, creation of income generating projects and availability of a variety of foodstuffs have been realised."*

He further said:

> *"the negative implications include increase in land reclamation (sometimes degradation), more time is spent on attending to rice and most households are reported to be selling all the produce in search for money to booze"[9]*

According to UBOS (2000), the major cause of food shortage in Luwero District was identified as crop failure.

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9. Mr. Sebale, Luwero District Agricultural officer (DAO)

It was further reported that the households affected by food shortage cope up by reducing on the meals taken a day, and others take on casual employment in order to raise some money to be able to buy foodstuffs from the shops and markets.

Other causes of food insecurity in the Horn of Africa are provided by Maxwell (1996). In his book "Food security: A post-modern perspective", he writes that:

> *"…poor economic policies have inhibited the development of agriculture based on comparative advantage and intensification of agriculture, retarding economic growth; growing population pressures have combined with a lack of investment in human resource development, further stressing the natural resource base; civil strife and a scarcity of democratic institutions have undermined sustainable growth strategies; and the natural resource base of the region is highly uneven, and several countries have limited areas of high agricultural production potentials. Linked to weak national institutions are weak regional institutions precluding effective action on these underlying causes. These causes and their relative importance should be jointly analyzed with African organizations to help guide integrated efforts to overcome food insecurity".*

Further investigation into the implications of increased cash crop growing on food security in Semuto sub county was undertaken by testing the hypothesis that; "*there is a relationship between increased cash crop production and increased food insecurity".* To test this hypothesis, food security was assumed the independent variable while cash crop production was the dependent variable.

Using the SPSS computer programme, a chi-square test was conducted to determine whether there is relationship between increased cash crop

production and increased food insecurity. A probability value was attained and used to arrive at appropriate conclusions. The findings and testing of this hypothesis appear in Table 4.18 using the formulae

$$\chi^2 = \sum_{i=1}^{n} \frac{(O_i - E_i)^2}{E_i}$$

and

O_i represents the observed frequency in category i

E_i represents the corresponding expected frequency.

Table 4.18: The relationship between cash crop production and food Insecurity in Semuto Sub County

	Response	Increase in cash crop production			
		Yes	No	Total	P-Value
Effect of cash crop production on food security	Yes	39 54.2%	35 68.6%	74 60.2%	0.0107
	No	33 45.8%	16 31.4%	49 39.8%	
	Total	72 100.0%	51 100.0%	123 100.0%	

From Table 4.18, it is revealed that 54.2% of the respondents who have experienced increase in cash crop production indicated that cash crop production has affected food security while 45.8% of the were of the view that increase in cash crop production had not affected food security. On the other hand, 68.6% of the respondents who had not experienced increased cash crop production indicated that cash crop production has affected food security while 31.4% of those who had not experienced increase in cash crop production were of the view that increase in cash crop production had not affected food security.

The table further reveals that there is a significant relationship between cash crop production and food insecurity as shown by the a decreasing index of the reliability of a result of p=0.0107 which is less than 5% (0.05) level of

significance. In other wards, increase in cash crop production is associated with food insecurity in the area.

Table 4.19: Chi square statistic

Statistic	Value	Approx. Sig.
Pearson's Correlation coefficient	-0.146	0.108
No. of Valid Cases	123	

In Table 4.19, Pearson correlation was computed. It shows that there is a negative relationship (-0.146) between increase in cash crop production and increased food security. This implies that an increase in cash crop production has a negative implication on food security.

Therefore, the postulated hypothesis that; *there is a relationship between increased cash crop production and increased food insecurity" is* accepted. Generally, increased cash crop production has led to food insecurity through food shortage, diverting attention of farmers from food crop production as well as causing famine in the area.

In conclusion, it is worthy noting that although food insecurity is inevitably bound up with agricultural production, it should be considered within the broader context of poverty. The majority of the respondents revealed that cash crop production has affected food security in the Sub County in general, implying that increased cash crop production has contributed to food insecurity. To achieve greater food security, therefore, in addition to boosting their

agricultural output, they must create more diverse and stable means of livelihood to insulate themselves and their households from external shocks.

4.6 The implications of increased cash crop growing on livelihoods of people in Semuto Sub County

The last objective of the study was "*to assess the implications of increased cash crop growing on livelihoods of people in Semuto Sub County".* The investigation found out that there are both positive and negative implications of increased cash crop growing on the welfare of people. Firstly, the positive effects are illustrated in Table 4.20.

Table 4.20: Positive implications of increased cash crop production on welfare of people in Semuto Sub County

Effect of increased cash crop production on the welfare of people	Frequency	Percentage
Improvement in income	103	85.1
Improvement in standard of living	100	82.6
Acquisition of assets	33	27.3
Development of trading centres and retail shops	25	20.7
Sending children to school	22	18.2
Improvement in roads and communication	14	11.6
Development of agricultural processing factories	7	5.8
Expansion of animal rearing	6	5.0
Employment creation	5	4.1
Improvement in tax revenue collection	4	3.3
Introduction of more crops	3	2.5
Led to formation of groups and cooperatives	2	1.7
Total responses	324	267.8
Valid cases	121	
Missing cases	5	

Source: Field research findings

When the respondents were asked how increased cash crop production may have had positive effects on their welfare, 85.1% revealed that there has been an improvement in household income while 82.6% reported improvement in

standard of living.   Acquisition of assets such as bicycles and cars was indicated by 27.3% of the respondents, 20.7% development of trading centres and retail shops while 18.2% revealed that parents have been able to send their children to school. A further 11.6% indicated improvement in transport and communication system while 5.8% attributed the growth of some agricultural processing factories in the area to be a result of increased cash crop growing. Indeed, during field observation, it was found out that a rice-processing factory had been established in Semuto town to cater for the growing rice production in the area.

The above positive implications of increased cash crop production on welfare of people were further supported by views gathered from all focus group discussions held in the area. A member of a focus group discussion from Kijaguzo village in Semuto parish had this to say:

> *"……… many people have been able to construct permanent houses, buy boda boda motorcycles, bicycles as well as starting retail shops in the area. All these have been due to the effect of cash crop growing especially vanilla and upland rice".*

In addition, it was revealed that there has been an improvement in homestead environment like building good houses as well as having an operational daily market in Semuto Township (Plate 4.3).

Plate 4.3: A daily market of foodstuffs in Semuto Township.
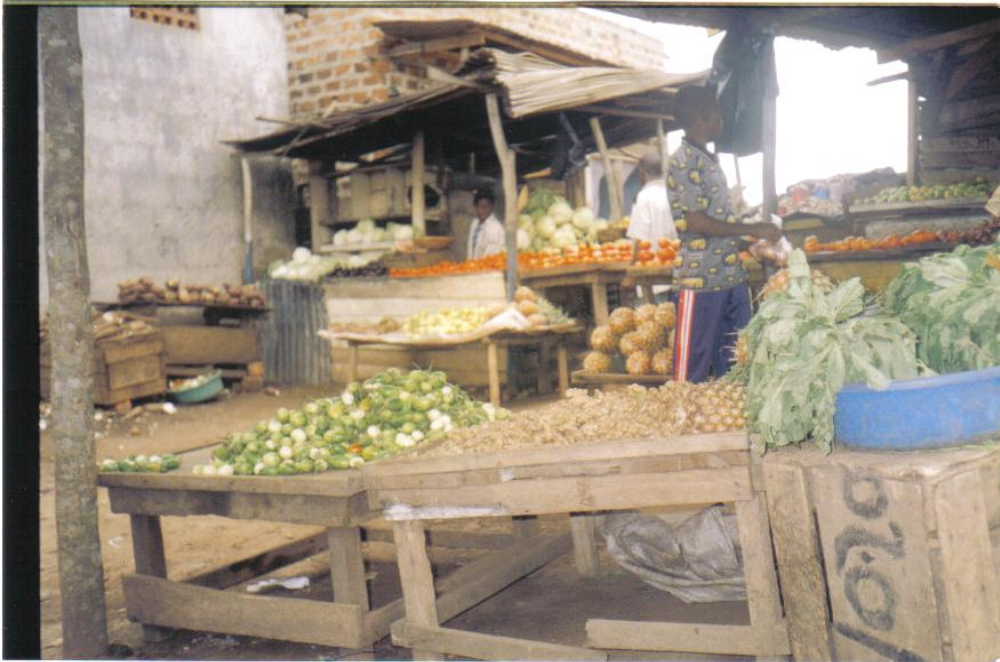
Source: Field research findings (photograph taken in May 2004).

Regarding the negative effects of increased cash crop production on the welfare of people in the area, research findings indicate that there has been a fall in prices of cash crops due to over production, environmental degradation due to deforestation/swamp reclamation, soil exhaustion due to monoculture, famine and high school drop outs as revealed in the table 4.21:

Table 4.21: The negative effects of increased cash crop production on Welfare of people

Negative effects of increased cash crop production on welfare of people	Frequency	Percentage
Fall in prices of cash crops due to over production.	31	24.6
Environmental degradation due to deforestation/swamp reclamation	26	20.6
Soil exhaustion due to monoculture	19	15.1
Famine	18	14.3
Led to school drop outs because business	11	8.7
Led to limited land	9	7.1
Increased population growth in the area	8	6.3
Rural -Urban Migration	7	5.6
Poor soil management	6	4.8
High criminal rate (theft)	4	3.2
Escalation of land fragmentation	4	3.2
Collapse of agricultural processing plants	3	2.4
Women stay single	1	.8
Valid cases	**126**	

Source: Field research findings

According to the above table, the majority of the respondents (24.6%), reported a fall in prices of cash crops due to over production as the major negative implication of increased cash crop production on the welfare of people. Environmental degradation due to deforestation/swamp reclamation was mentioned by 20.6% of the respondents. The effects of environmental destruction are analysed by FAO (2001) that such unsustainable exploitation of the fragile ecosystem has resulted in reduced biomass, biodiversity and water infiltration, and increased runoff and soil erosion. FAO further reveals that this exacerbates environmental degradation and low agricultural productivity, thereby contributing further to poverty and food insecurity. During the study it was observed that a big portion of a wetland in Migingye parish had been converted to coffee, pineapple and sugar cane growing (see Plate 4.4).

Plate 4.4: A Piece of wetland converted to coffee, pineapple and sugar cane growing in Migingye parish

Source: Field research findings (photograph taken in May 2004).

It should be noted that environmental degradation also affects the pastoralists, although the evidence for this is more ambiguous, since there have always been cycles of herd expansion and decline. Herds tend to expand at times of greater abundance, but subsequent overgrazing aggravated by drought reduces available feed and the animals starve or fail to reproduce. The consequent reduction in livestock numbers, combined with better rains, allows the rangelands to recover quickly (although a major drop in the number of animals means the people who depend on them for a livelihood suffer).

Other negative effects of increased cash crop production on the welfare of the people include soil exhaustion due to monoculture especially for crops like upland rice growing which does not encourage inter cropping (reported by 15.1% of the respondents), famine as a result of farmers concentrating more on growing of cash crops and less of food crops (indicated by 14.3% of the

respondents) and increase in the number school drop outs especially in primary and secondary levels because of the desire to participate in petty trade using capital earned from selling of cash crops (reported by 8.7% of respondents) among others.

More information regarding the implications of increased cash crop growing on the livelihood of people in Semuto Sub County were provided by the Sub County Agricultural Extension officer who had this to say:

> *"….being a rural environment, some people have resorted to over drinking, the quality of the produce has also deteriorated while school drop out rate has increased "*

Further assessments of the implications of increased cash crop growing on livelihood of people in Semuto sub county were undertaken using a hypothesis that*: "there is a relationship between improved socio economic welfare of the farmers and increased growing of cash crops".* In order to test this hypothesis that, increased growing of cash crops was assumed to be an independent variable while socio- economic indicators were dependent variables.

Using the SPSS computer programme, a chi-square test using the formulae mentioned above was conducted to determine whether there is relationship between improved socio economic welfare of the farmers and increased growing of cash crops. Probability values were attained and used to arrive at appropriate conclusions. The findings and testing of this hypothesis appear in Table 4.22.

Table 4.22: The relationship between improved socio economic welfare of the farmers and increased growing of cash crops

Socio-economic indicators	Increased cash crop production			Decreased/No change in cash crop production			P-Value
	Yes	No	Total	Yes	No	Total	
Improvement in income	61 82.4%	13 17.6%	74 (100%)	42 82.4%	9 17.6%	51 100.0%	0.991
Improvement in standard of living.	63 85.1%	11 14.9%	74 100.0%	37 72.5%	14 27.5%	51 100.0%	0.084*
Development of trading centres and retail shop.	13 17.6%	61 82.4%	74 100.0%	12 23.5%	39 76.5%	51 100.0%	0.041#
Increase in tax revenue	1 1.4%	73 98.6%	74 100.0%	3 5.9%	48 94.1%	51 100.0%	0.157
Sending children to school.	14 18.9%	60 81.1%	74 100.0%	8 15.7%	43 84.3%	51 100.0%	0.641
Improvement in roads and communication .	7 9.5%	67 90.5%	74 100.0%	7 13.7%	44 86.3%	51 100.0%	0.0457#
Expansion of animal rearing.	2 2.7%	72 97.3%	74 100.0%	4 7.8%	47 92.2%	51 100.0%	0.186
Employment creation.	4 5.4%	70 94.6%	74 100.0%	1 2.0%	50 98.0%	51 100.0%	0.334
Formation of cooperative savings schemes.	1 1.4%	73 98.6%	74 100.0%	1 2.0%	50 98.0%	51 100.0%	0.079*
Acquisition of asset.	24 32.4%	50 67.6%	74 100.0%	9 17.6%	42 82.4%	51 100.0%	0.065*
Development of processing factories.	4 5.4%	70 94.6%	74 100.0%	3 5.9%	48 94.1%	51 100.0%	0.909
Introduction of more cash crops.	2 2.7%	72 97.3%	74 100.0%	1 2.0%	50 98.0%	51 100.0%	0.790

\# Significant at 5%,
 *Significant at 10%**

In Table 4.22, a number of socio-economic indicators of welfare were identified to be related to increased cash crop production. The study revealed that development of trading centres and retail shops (p= 0.041) and improvement in roads and communication (p= 0.0457) were significant social-economic indicators of welfare that have been attained by farmers as a result increased cash crop growing at 5% level. The above P-values are less than 0.05 (5%)

which makes them statistically significant with in the acceptable level of significance.

However the study revealed that other factors are marginally significant within 10% level of significance. These include; formation of cooperative savings schemes (p= 0.079), improvement in standard of living (p= 0.084) and acquisition of assets (p=0.065). This implies that although these factors are not statistically significant at the acceptable level of 5%, they can as well explain the relationship between a variable within the error limit of 10% which explains improved socio-economic welfare has been attained as a result of increased cash crop production.

Other factors shown in the table do not show any evidence of any relationship with cash crop production in relation to improved welfare of farmers in Semuto Sub County. Improvement in income, for example is insignificant, implying that there are other factors that have contributed to improvement in income in the area other than increased cash crop production. This may be due to the fact that some people were found to be involved in trade activities in the Township, teaching, agriculture extension work as well as transport along the Kampala-Semuto road.

Therefore, the postulated alternative hypothesis that; *"there is a relationship between improved socio economic welfare of the farmers and increased growing of cash crops"* ïs partly accepted considering socio economic welfare indicators like improvement in standard of living, development of trading centres and retail shops, improvement in roads and communication, formation

of cooperative savings schemes and acquisition of assets. This is because all these factors are significant at 10%. On the other hand, the alternative hypothesis can be partly rejected when considering the insignificant socio-economic indicators of welfare like improvement in income, tax collection, sending children to school, expansion of animal rearing, employment creation, development of industries as well as introduction of more cash crops.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1   Introduction

This chapter presents the conclusion and recommendations, which are based on the findings of the study. Conclusions involve a summary of the most significant issues found out in the study while recommendations are proposed purposely for increasing agricultural production, food security as well household incomes.

5.2 Conclusion

The agricultural sector presents a great opportunity for poverty eradication because it employs over 80% of the labour force. This is because over 84% of Uganda's population live in rural areas where agriculture is the major contributor to their livelihoods. In Semuto Sub County, Luwero district where this study was conducted, crops like coffee, maize, beans, millet and bananas were the traditional crops grown by people in the 1980's. However, due to a fall in coffee prices in 1990's, high prevalence of crop diseases like coffee wilt disease and the reluctance of the government to improve agriculture (as revealed through group discussion on page 44), many farmers were discouraged from further expansion of farms while others adopted growing of other crops like vanilla and rice. Currently, cassava, bananas, beans, sweet potatoes, maize, groundnuts, yams and Irish potatoes are the major food crops while rice, vanilla, coffee, maize and bananas are the significant cash crops grown in Semuto sub county. Although the data show that the majority of the respondents grow cash crops than the food crops, the difference is not significant within Semuto Sub County. However, in the Plan for Modernization

of Agriculture, MAAIF and MFPED (2000) indicates that food crop production predominates the agricultural sector, contributing 71% of agricultural GDP. This implies that most of the cash crops are at times used as food crops. In addition, research findings indicate that, there has been an increase in area (acreage) covered by these crops since 1980.

Regarding the factors responsible for the changing pattern in crop production in Semuto Sub County, it was revealed that there has been an increase in cash crop production. The reasons for the change in pattern included introduction of other cash crops, acquisition of more land to grow crops, availability of markets for cash crops, clearing of more land to grow crops and availability of capital to develop the land. The change in pattern of food crop growing however, was due to the need to guard against famine/ensure food security; to cater for family size in the household; high demand for food due to increased population, acquisition of more land; food crops as alternative source of income and that food crops require less inputs.

Assessing the implications of increased cash crop growing on food security in Semuto sub county, it was revealed that cash crop production has affected food insecurity in Semuto Sub County in general, implying that increased cash crop production has contributed to food insecurity, food shortage in households and less attention given to food crops.

Lastly, the study found out that there are both positive and negative implications of increased cash crop growing on the welfare of people. Positively, there has been an improvement in household income (improvement

in standard of living), acquisition of assets such as bicycles and cars, development of trading centres and retail shops and parents have been able to send their children to school. There has also been improvement in transport and communication system and growth of some industries in the area. On the negative side, however, a fall in prices of cash crops due to over production, environmental degradation, soil exhaustion due to monoculture, famine and high school drop out rates were experienced.

5.3 Recommendations

 The agricultural sector of Uganda accounts for 43% of the Gross Domestic product, 85% of export earnings, 80% of employment and provides most of the raw materials to the mainly agro-based industrial sector comprising coffee hulling, cotton ginning, tea processing, sugar production, textile mills, soap industries, edible oil industries, cigarette manufacturing, grain milling, meat processing, dairy and leather products manufacturing. Eighty five percent of Uganda's population live in rural areas and depend mainly on agriculture for their livelihood but earn less than half of the national income (MAAIF and MFPED, 2000). The agricultural sector is also the provider of food self-sufficiency and food security. Being the leading sector of the Ugandan economy, agriculture is the engine and major source of future growth that should be given much attention and resources.

In Semuto sub county, research findings revealed that cash and food crop production is constrained by low education levels that limit the adoption of scientific farming methods, unreliable weather, pests and diseases, limited farm

inputs, inadequate capital, poor feeder roads, inadequate extension services, expensive labour as well as unorganized marketing strategies.

Based on the findings of the study in the foregoing discussion, the following strategies were recommended to improve cash and food crop production in Semuto Sub County. These may also be key issues that form the agenda for modernization of the agricultural sector.

1. There is need for more sensitization and training of farmers on increased and commercialization of crop production. This will enable them adopt scientific methods of production hence improving crop yields in the area. Related to this is the need to increase the level of education of the farmers through adult literacy and involvement of all categories of people in the production campaign.

2. More agricultural research on high yielding crops, disease resistant crops and processing of produce should be undertaken in the area. This will lead to introduction of other types of crops suitable to natural conditions of the area. Already, high yielding crops like vanilla and upland rice have been introduced in the area; although few farmers grow them.

3. With the assistance of the government, there is need to develop infrastructure especially feeder roads, communication links and rural electrification to reduce transaction costs, develop marketing linkages, improve efficiency and provide power for agro-processing.

4. There is need for development of rural financial markets to provide easy access to finance for smallholder farmers to invest in agricultural

production. Even then moderate interest rates should be charged by the financial institutions.

5. There is need to enhance agriculture extension services through provision of transport as well as increasing agriculture extension staff. This will enable farmers to acquire efficient farming techniques for expansion of acreage under cultivation. Currently, there is one agriculture extension officer at the sub county level who is expected to serve all farmers in the sub county.

6. There is need to generate and adopt appropriate labor saving technology for expansion of acreage under cultivation. Consequently, there is need to equip farmers with knowledge to divert them from manual labour to use of other facilities like tractors and utilization of animal traction.

7. In order to minimize the effect of crop pests and diseases, it is recommended that if banana wilt disease appears, the diseased plant should be cut down so that it does not produce any new suckers and infect other plants. The tools used must be sterilized to avoid carrying infections to other plants.

8. In order to improve marketability of crops and consequently motivate the farmers to expand production, the local authorities in conjunction with the central government should avail them with facilities to market their produce. In order to ensure smooth and effective marketing of farmers produce, it is recommended that cooperatives should be formed in order to strengthen the bargaining power of the farmers' for better prices.

9. In order to improve food security at household level, storage facilities should be improved in order to reduce the risk of produce, thefty and

spoilage. Farmers should therefore be encouraged to store food reserves during periods of harvesting so that such food reserves can be used during periods of food scarcity.

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APPENDICES

APPENDIX I: INTERVIEW GUIDE FOR FOCUS GROUP DISCUSSIONS
Duration of the discussion: 60 to 120 minutes

1. What are the main traditional food crops and cash crops grown in this area? *(Probe for Identification of main traditional food crops in the area)*

2. Which of the following are grown in large quantities by the people in the area:
   a) Food crops
   b) Cash crops

(Probe in terms of percentage in the area covered)

3. Was the situation similar in the 1980's? *(Probe for evidence of changing crop Pattern in the area)*

4. If **NO,** what factors can explain the changing pattern in crop production in Semuto Sub County since 1980 to the present? *(Probe for factors responsible for the changing crop pattern).*

5. What do you think have been the positive and negative consequences of the changing crop pattern on food security in this area? *(Probe for implications of the changing pattern on food security).*

6. What do you think have been the positive and negative consequences of increased cash crop growing on the livelihood/welfare of people in the area *(Probe for the implication of cash crop growing on the livelihood of people in the area)*

7. How do you think food and cash crop growing can be improved in this area? *(Probe for recommendation for improvement of cash and food crop growing in the area).*

APPENDIX II: QUESTIONNAIRE FOR THE LOCAL COMMUNITY IN SEMUTO SUB COUNTY

This questionnaire is for the purpose of helping Mr. GAKWANDI GAETAN a postgraduate student of Master of Arts in Geography, Department of Geography, Makerere University, to obtain information that will assist him to write a dissertation that is a partial requirement for this course. It is <u>NOT</u> meant for any other purpose; and the information provided herein will be kept with confidentiality. You are therefore kindly requested to cooperate in answering the questions honestly to provide the required information. The topic of study is "**Cash and food crop production in Semuto sub county, Luwero district (1980 – 2002): A comparative study.**
Thank you.

A. BACKGROUND CHARACTERISTICS OF THE RESPONDENTS *(Please tick where applicable)*

1. Name of your Parish_____

2. Name of the respondent (optional)_____

3. What is your relationship with the head of the household

    1. Self

    2. Spouse

    3. Son/daughter

    4. Others specify _____

4. Occupation;

    1 [   ] Farmer

    2. [   ] Trader

    3. [   ] Teacher

    4. [   ] Others specify_____

5. Your age;

    1. [   ] Below 20 years

    2. [   ] 20 –30 years

    3. [   ] 31-40 years

    4. [   ] 41-50 years

    5. [   ] 51-60 years

    6. [   ] Above 60 years

6. Sex;

    1. [   ]   Male

    2. [   ]   Female

7. Your educational level;

    1. [   ]   No formal education

    2. [   ]   Primary level

    3. [   ]   Secondary

    4. [   ]   Advanced level

    5. [   ]   Tertiary/University level

    6. [   ]   Postgraduate /Masters /PH. D

8. Marital status

    1. [   ] Single

    2. [   ] Married

    3. [   ] Widow/widower

    4. [   ] Divorced/separated

    5. [   ] Others specify _____

B: FARMING PRACTICES IN THE AREA

(Please tick where applicable or fill in the spaces provided)

1. Please list in order of importance main traditional food crops and cash crops grown in this area

Main food crops	Main cash crops
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.
6.	6.
7.	7.
8.	8.
9.	9.
10.	10.
11.	11.

2. (i) What type of crops do you grow most in your household?

   a) [   ] Cash crops

   b) [   ] Food crops.

  (ii) Why?

   …………………………………………………………………………………

   …………………………………………………………………………………….

   …………………………………………………………………………………

3. What is the total area of your land coved by;

       (i)   Food crops only _____ (in acres)

       (ii)   Cash crops only _____ (in acres)

       (iii)   Both cash crops and food crops _____ (in acres)

4. (i) Has the land acreage used for <u>cash crop</u> growing increased since 1980 to present?

       1. [   ] Yes

       2. [   ] No

. (ii) If YES, give reasons

   ………………………………………………………………………

   …………………………………………………………………………………

   …………………………………………………………………………………

   ………………………………………………………………………………

  (ii) If NO, give reasons

   ………………………………………………………………………………….

   …………………………………………………………………………………

   …………………………………………………………………………………

   ………………………………………………………………………………..

5. (i) Has the land acreage used for <u>food crop</u> growing increased since 1980 to present?

       1. [   ] Yes

       2. [   ] No

  (ii) If YES, give reasons

   …………………………………………………………………………………..

   …………………………………………………………………………………

…………………………………………………………………………………………

……………………………………………………………………

(iii) If NO, give reasons

…………………………………………………………………………………………..

…………………………………………………………………………………………

…………………………………………………………………………………………

C IMPLICATIONS OF CASH CROP PRODUCTION IN SEMUTO AREA

6. What effect has increased cash crop production had on the welfare of
   people in your area?

a) Positive effects

…………………………………………………………………………………………..

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………..

…………………………………………………………………………………………

b) Negative effects.

…………………………………………………………………………………………..

…………………………………………………………………………………………

…………………………………………………………………………………………

…………………………………………………………………………………………..

…………………………………………………………………………………………

7. (i) Has cash crop production affected food security in semuto area?
   1. [   ] Yes
   2. [   ] No

   (ii) If yes how

…………………………………………………………………………………………..

…………………………………………………………………………………………

D: GENERAL QUESTIONS

1. List the problems encountered in promotion of cash and food crop production in the sub county

   …………………………………………………………………..

   ……………………………………………………………………………

   …………………………………………………………………………

   …………………………………………………………………………..

   …………………………………………………………………………

2. What do you recommend to be done in order to improve food and cash crop production in the area?

   …………………………………………………………………………..

   ……………………………………………………………………………

   ……………………………………………………………………………

3. What other information do you think is useful for this study?

   ……………………………………………………………………………

   …………………………………………………………………………..

Thanks for your cooperation

APPENDIX III: <u>INTERVIEW GUIDE FOR IN-DEPTH INTERVIEWS</u>

Dear Respondent,

I am carrying a study entitled '**Cash and food crop production in Semuto sub county, Luwero district (1980 – 2002), a comparative study**. This study is done in fulfillment of a partial requirement for my Masters degree in Geography of Makerere University, Kampala.

I have a conviction that your position in the district enables you to have the required information about cash and food crop production in the area. It is against this background that I have kindly selected you to participate in this study. All the information given will strictly be used for the study and will be treated with utmost confidentiality. Your co-operation in answering the questions honestly to provide the required information will be highly appreciated.

Yours sincerely,

…………………………………..

Gakwandi Gaetan

POSTGRADUATE STUDENT.

A. <u>GENERAL INFORMATION/SOCIO-ECONOMIC CHARACTERISTICS.</u>

1. Name of the respondent (optional)_____

2. Occupation _____

3. Parish/Village**……………………………………………………….**

4. Your age;

    1. [   ] Below 20 years

    2. [   ] 20 –30 years

    3. [   ] 31 –40 years

    4. [   ] 41-50 years

    5. [   ] 51-60 years

    6. [   ] Above 60 years

5. Sex;

    1. [   ] Male

    2. [   ] Female

6. Marital Status

    1. [   ] Single

2. [   ] Married

3. [   ] Others specify_____

B   IDENTIFICATION AND ACREAGE OF CROPS GROWN IN THE AREA

1. What are the main traditional types of food crops grown by people in this area?

       a)……………………………………………………..

       b)…………………………………………………...

       c)…………………………………………………..

       d)…………………………………………………...

       e)…………………………………………………..

       f)…………………………………………………...

       g)Others (Specify)…………………………………………………..

2. What type of cash crops do people grow in Semuto Sub County?

       a)…………………………………………………..

       b)…………………………………………………...

       c)…………………………………………………..

       d)…………………………………………………...

       e)…………………………………………………..

       f)…………………………………………………...

       g)Others (Specify)………………………………………………….

3. What type of crops do most people in Semuto Sub County grow?

   c) [   ] Cash crops

   d) [   ] Food crops.

4. Why?

   ………………………………………………………………………………..

   ………………………………………………………………………………

   ………………………………………………………………………………

5. Has the land acreage used for <u>food crop</u> growing increased since 1980 to present?

       1. [   ] YES

       2. [   ] NO

6. If YES, give reasons

  ………………………………………………………………………………………..

  …………………………………………………………………………………………

  …………………………………………………………………………………………

    ………………………………………………………………………………..

7. If NO, give reasons

  ………………………………………………………………………………………..

  …………………………………………………………………………………………

  ………………………………………………………………………………………

    ………………………………………………………………………………..

8. Has the land acreage used for <u>cash crop</u> growing increased since 1980 to

   present?

        1. [   ] YES

        2. [   ] NO

9. If YES, give reasons

  ………………………………………………………………………………………..

  ………………………………………………………………………………………

  …………………………………………………………………………………………

  ………………………………………………………………………………………..

   10. If NO, give reasons

  ………………………………………………………………………………………..

  ………………………………………………………………………………………

  …………………………………………………………………………………………

    ………………………………………………………………………………..

C   IMPLICATIONS

1. What impact has increased cash crop production had on the <u>welfare </u>of

   people in Semuto sub county?

a) Positive

  ………………………………………………………………………………………..

  ………………………………………………………………………………………

  ………………………………………………………………………………………

…………………………………………………………………………………………..

b) Negative

…………………………………………………………………………………………..

…………………………………………………………………………………………

…………………………………………………………………………………………

2. What do you think are the implications of the changing crop production
    pattern on <u>food security</u> in Semuto sub county?

    a) Positive

    …………………………………………………………………………………………..

    …………………………………………………………………………………………

    e) Negative

    …………………………………………………………………………………………..

    …………………………………………………………………………………………

3. What role do you play in promotion of cash and food crop production in the
   sub county?

    …………………………………………………………………………………………..

    …………………………………………………………………………………………

4. List the problems encountered in promotion of cash and food crop
   production in the sub county

    …………………………………………………………………………………………..

    …………………………………………………………………………………………

    …………………………………………………………………………………………

    …………………………………………………………………………………………..

5. What do you recommend to be done in order to improve food and cash crop
production in the area?

    …………………………………………………………………………………………..

    …………………………………………………………………………………………

   THANK YOU FOR YOUR COOPERATION

APPENDIX IV: <u>OBSERVATIONS GUIDE FOR THE CURRENT STATE OF FOOD AND CASH CROP PRODUCTION IN SEMUTO SUB COUNTY.</u>

Name of the parish…………………………

Name of the village………………………………………………………

Name of the interviewer…………………………………………………...

Variables to be observed	Observed results
1.Estimated land acreage covered by cash crops	……………………………………………… ……………………………………………… ……………………………………………… ………………………………………………
2.Estimated land acreage covered by food crops.	……………………………………………… ……………………………………………… ……………………………………………… ………………………………………………
3.Main traditional food crops grown in the area.	……………………………………………… ……………………………………………… ……………………………………………… ……………………………………………… ………………………………………………
4. Main Cash crops grown in the area	……………………………………………… ……………………………………………… ……………………………………………… ………………………………………………
5. Problems facing food and cash crop production in the area	……………………………………………… …………………………………………….. ……………………………………………… ……………………………………………..

APPENDIX V: <u>INTERVIEW GUIDE FOR PRA</u>

TOPIC: "Cash and food crop production in Semuto sub county, Luwero district (1980 – 2002): A comparative study.

Three tools of PRA will be used namely,

- ➢ **Transect walk**
- ➢ **Historical profiles**
- ➢ **Time trends**

Procedure

- ➢ Select a group of informants' mostly old people who are well versed with the history of the village.
- ➢ Introduce the topic and why you have the interest and administer each of the tools.

Selected village: _____

Facilitator _____

1. TRANSECT WALK

Factor (variable)	Type	Area covered	Importance
Land management			
Food crops			
Cash crops			
Problems faced with food crop production			
Problems faced with cash crop production			
Available opportunities in the village for development			

2. HISTORICAL PROFILES OF THE VILLAGE

Period	Events in relation to food and cash crop production
2002	
……….	
………..	
………….	
…………	
……….	
……….	
………….	
………….	
………….	
…………..	
1980	

3. TIME TRENDS OF THE HAPPENINGS IN THE VILLAGE

Period	Event	Causes of the event	Effects of such event on the livelihood of the people in the village
2002			
1980			

END