

## **FARMER INPUT SUPPORT PROGRAMME AND THE IMPACT OF HIV AND AIDS ON MAIZE PRODUCTION IN KAPUTA DISTRICT, ZAMBIA.**



A Research project Submitted to Larenstein University of Applied Sciences in Partial Fulfilment of the Requirements for the Degree of Master of Management of Development specialization Rural Development and HIV/AIDS

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## Dedication

This research is dedicated to my father Endie Ng'ambi and my mother Francesca Kabwe Ng'ambi.

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## List of Acronyms

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AIDS	Acquired Immuno Deficiency Syndrome
ARV	Anti-Retroviral drugs
CIA	Central Intelligence Agency
CSO	Central Statistics Office
DATF	District AIDS Task Force
HH	Household
DFID	Department for International Development
DTMA	Drought Tolerant Maize for Africa
FHH	Female Headed Household
FAO	Food and Agriculture Organisation
FISP	Farmer Input Support Programme
FSAZ	Farming Systems Association of Zambia
FSP	Food Security Pack
FSRP	Food Security Research Project
HIV	Human Immunodeficiency Virus
JAICAF	Japan Association for International Collaboration of Agriculture and Forestry
MHH	Male Headed Household
MAL	Ministry of Agriculture and Livestock
PAM	Programme Against Malnutrition
PaViDIA	Participatory Village Development in Isolated Areas
SLF	Sustainable Livelihood Framework
ZDHS	Zambia Demographic and Health Survey

## **Abstract**

The research problem that formed the basis of this study was the Ministry of Agriculture and Livestock's lack of information on how the Farmer Input Support Programme is assisting HIV and AIDS affected households in maize production. This is important to the ministry as the majority of small scale farmers cultivate maize which is the staple crop and a high priority for ensuring food availability among economically vulnerable households. The aim of the study was to understand how the programme is assisting HIV and AIDS affected households and to identify key factors hindering these households from accessing maize inputs through the programme. The Farmer Input Support Programme was initiated in 2002 to enable economically vulnerable households to access subsidised maize inputs and ensure food availability in these households.

Data collection involved a desk research of existing literature pertaining to the study and interviews of 20 households in two categories. Ten of the HIV and AIDS affected were households that had a chronically ill person and the other ten had experienced an HIV and AIDS related death. Female and male headed households were considered in both categories.

The sustainable livelihood framework was adapted for analysis of data to show the impact of HIV and AIDS on maize production through the livelihood assets so as to assess how they hinder HIV and AIDS affected households from accessing maize inputs through the Farmer Input Support Programme and to see the effects of the programme on the affected households. The results of the study showed that the Farmer Input Support Programme has no effect on the HIV and AIDS affected households. It is reaching the communities but the HIV and AIDS affected households are not considered and most of them are not able to access the inputs due to a number of reasons. It was found that because they suffered from increased expenditure for medical reasons they could not afford to purchase the subsidised maize inputs, while other households were stigmatised and had to resign from the farmer cooperatives. Labour loss also resulted in a reduction of area under cultivation especially under female headed households caring for chronically ill. The study revealed that the HIV and AIDS affected households had a six month food gap between exhaustion of the maize grain stock and the next harvest meaning they are food insecure most of the time.

The recommendations included local seed systems which support low-cost maize seed out-grower schemes, the targeting of affected households with alternative low-cost soil fertility enhancing technologies to substitute fertilisers, formation of input packs that consist of more nutritious and less labour intensive crops and the breeding of earlier maturing varieties.



# Chapter 1 INTRODUCTION

## 1.1 Background

Zambia is a landlocked country situated in Southern Africa. It shares borders with Tanzania and the Democratic Republic of Congo in the north; Mozambique and Malawi to the east; Zimbabwe and Botswana to the south; Namibia in the south-west and Angola in the west. Zambia has a population of about 13.8million with an annual growth rate of 3% (CIA, 2012).

In Zambia, there are about 1,300,000 agricultural households. These households account for 61% (more than 6 million people) of the country's population, living in rural areas, and are dependent on agriculture as their main source of livelihood. Zambia's agricultural sector contributes 18% to the GDP and is a source of employment for a population of about 2,200,000 (more than 22.2% of the country's population) people who are engaged in agricultural or associated industries (Central Statistics Office, 2004).

The AIDS pandemic has not spared Zambia which has an HIV prevalence rate of 13.5% (UNAIDS global report, 2010). The country continues to experience a mature HIV epidemic with adult prevalence remaining high at 16%. Furthermore, the country is deeply affected and continues to face serious challenges in addressing the epidemic, including gender inequality and other drivers that enhance vulnerability. In particular, women are more vulnerable to HIV infection than men. An estimated 16.1% of females are HIV positive, compared to 12.3% of males, and prevalence in women aged 15–24 years (8.8%) is double that of men (4.4%) (Central Statistical Office, 2009).

Maize is the major staple food crop in Zambia and represents the largest single source of calories (JAICAF, 2008). It is predominant in terms of both production and consumption. Maize accounts for 60% of the national calorie consumption and serves as a staple food crop in both urban and most rural areas of the country (Dorosh et al, 2009). Most of this maize is grown by small scale farmers. The Ministry of Agriculture and Livestock (MAL) works with small scale farmers and provides technical advice on maize production in addition to other crops. Maize production is also crucial for small scale farmers to secure subsistence food and obtain cash income by selling it (Beaver et al, 2007).

In order to ensure food security among the economically vulnerable households, the Zambian Government launched a Fertiliser Support Program (FSP) in 2002; now called Farmer Input Support Program (FISP) which was aimed at supporting resource constrained agricultural households to access subsidised maize inputs, seed and fertiliser in particular. The program was also meant to increase the amount of maize being produced in the country.

## 1.2 Problem statement

HIV and AIDS is fundamentally different from other diseases. Its victims are young, socially and economically active and the main motor for economic development (Hammar skjöld, 2003). Maize serves as a staple crop in Zambia (Dorosh et al, 2010). However, there have been substantial reductions in maize production among the economically vulnerable households associated with the AIDS pandemic. In this context, a study by the Farming Systems Association of Zambia (2003) reported that agriculture is performing far below expectations and is largely unable to keep pace with population growth, in spite of its immense potential. By 2006,

Zambia required 1.2 million tonnes of maize per annum to satisfy domestic demand and was only producing 0.85 million tonnes of maize (JAICAF, 2008).

Kaputa district is one of the districts in the country that is experiencing the worst impacts of HIV and AIDS due to the high poverty incidence levels in the district. The impacts of HIV and AIDS on agriculture have been identified and MAL is aware of them. MAL is also aware that the maize yields are reducing as a result of financial constraints partly resulting from socio-economic shocks that include poverty, HIV and AIDS. In cognisance of the low maize yields attributable to financial poverty among the economically vulnerable small scale farmers, government through MAL introduced FISP to help boost maize production and ensure food availability especially for maize among the resource constrained households. However, there is no documentation on issues of FISP accessibility and how it is contributing to maize production and maize grain availability in these households. This information gap is critical for MAL to understand and address because maize is the staple food crop and its production is of high priority in terms of food availability among the economically vulnerable households. Furthermore, one of the aims of MAL is to attain household food security through crop production among resource constrained small scale farmers. This research study was designed to help ascertain how FISP is reaching the intended households, ensuring food availability especially for maize the main staple food crop and also understand factors hindering HIV and AIDS affected households from accessing FISP. The study has also made recommendations pertaining to the design of its input support extension services. In particular, the findings and recommendations from this study would help ensure that issues of targeting and needs of the HIV and AIDS afflicted households are taken into account by MAL as it delivers its services in rural areas such as FISP based on the Kaputa case study.

### 1.3 Objective

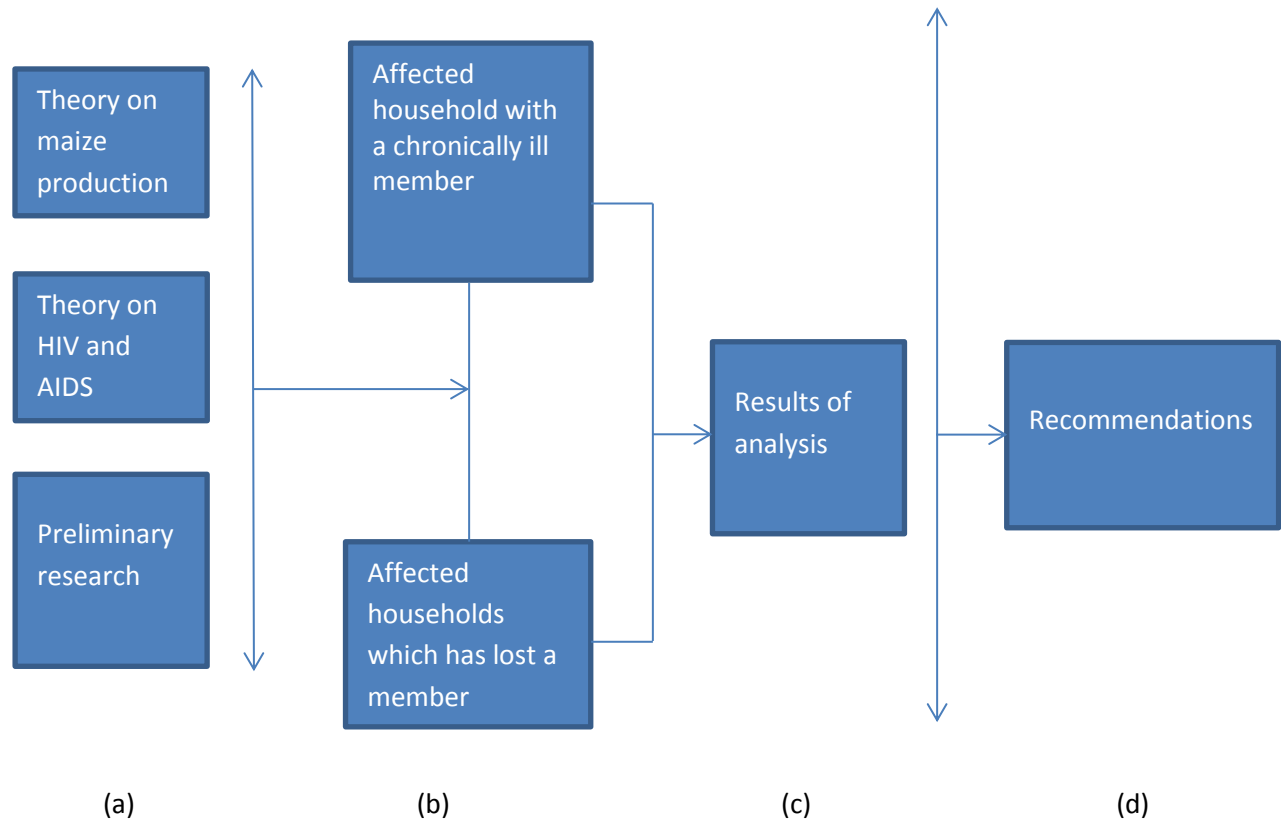
To understand how FISP is assisting HIV and AIDS affected households in maize production and identify key factors hindering these households from accessing FISP so as to make recommendations to the Ministry of Agriculture and Livestock pertaining to key factors that need to be taken into account as it designs input support programmes for the HIV and AIDS affected households aimed at increasing maize production.

### 1.4 Research questions

1. What has been the effect of FISP on maize production among HIV and AIDS affected households?
  - Are the HIV and AIDS affected households accessing maize inputs through FISP?
  - What factors are hindering HIV and AIDS affected households from accessing maize inputs through FISP?
  - What coping mechanisms are being employed by the affected households to produce maize?
2. What has been the effect of HIV and AIDS on the livelihood assets?
  - What is the effect of HIV and AIDS on the household finances of small scale maize farmers?
  - What is the effect of HIV and AIDS on labour availability of maize production?
  - How have the roles played by children, women and men been affected in the HIV and AIDS affected households?

## 1.5 Research framework

Figure 1: Research framework



This framework can be described as follows:

(a) A study of the impact of HIV and AIDS on maize production, based on talks with farmers (preliminary research) and after consulting relevant literature (theory on maize production and HIV and AIDS), yields assessment criteria (conceptual model) (b) by means of which the HIV and AIDS affected households (research objects) can be evaluated. (c) A comparison of the results of these two evaluations yields (d) recommendations. (Verschuren and Doorewaard, 2005)

## **Chapter 2 LITERATURE REVIEW**

### **2.1 HIV and AIDS and agriculture**

Agriculture is one of the most important sectors in many developing countries, providing a living or survival mechanism for up to 80% of a country's population. However, while agriculture is extremely important to many African countries, not least of all for household survival, there are marked differences among countries in terms of current economic conditions and agricultural and economic potential (Walker, 2002). Changes in agriculture and rural livelihoods in Africa are often attributed to the AIDS pandemic. The pandemic has been seen to devastate many families and communities because of excess morbidity and mortality (Taylor et al, 2011). The major impact of HIV and AIDS on agriculture includes serious depletion of human resources, diversions of capital from agriculture, loss of farm and non-farm income and other psycho-social impacts that affect productivity (Mutangadura, 2005). The impacts of HIV and AIDS on agriculture are however, usually invisible or not noticed because they are difficult to differentiate from other factors such as drought, war and other crises.

### **2.2 Effect of HIV and AIDS on finances**

A study by Farrington and Saasa (2002) found that families in Zambia are known to have exhausted their entire savings long before their infected members' die, a phenomenon that has a serious adverse effect on poverty levels, in general, and on the nutritional welfare of the household, in particular. The illness and death of economically active adults have resulted not only in higher medical expenses and lower incomes for family members, but also in survivors, especially women and children, having to lose access to land, housing, livestock and other assets (due to the uncaring behaviour of the husband/father's relatives that grab property from the surviving family members). Therefore, this reduction in savings and economically active adults is having an adverse effect on agriculture which is dependent on labour and money.

A study in Zimbabwe showed that the death of a breadwinner due to AIDS lead to a reduction of 61% in maize production in the small-scale farming sector and communal areas (Bolinger and Stover, 1999). The death of a bread winner usually causes a reduction in maize production because they are usually in charge of planning and buying the inputs. When death occurs the family has to strategize on how to continue producing maize and to make ends meet.

Literature by Barnett and Whiteside (2006) showed that in those parts of sub-Saharan Africa where the epidemic has reached peaks, rural households are facing health care costs they cannot meet without selling assets or going into debt. As the cost of death and illnesses rise, there is reduction or liquidation of any savings they may have as well as a reduction in their asset base of equipment and animals. Furthermore, HIV and AIDS progressively affects the ability of households to invest in agriculture and purchase productive assets such as oxen, ploughs, seeds and fertilizers (Jayne et al., 2004).

### **2.3 Effect of HIV and AIDS on labour**

Zambia has a prevalence rate of 13.5% (UNAIDS global report, 2010). While HIV and AIDS is still most prevalent in urban populations, the Zambia Demographic and Health Survey (ZDHS) of 2007 found that one in ten rural Zambian adults was HIV-positive. There are growing concerns that labour shortages due to AIDS related illness and death is limiting the output of Zambia's farmers, impoverishing farming households, and suppressing growth in the agricultural

sector. To gauge the degree to which this concern was justified, the Centre for Global Health and Development (CGHD) in 2006 conducted a survey of smallholder cotton farming households in Central Province. Based on the results of the survey, the CGHD estimates that almost half of the working-age adult deaths in these households were caused by AIDS related illnesses. Households who had lost a member to premature death planted 11% less cotton and produced 16% less cotton. These crop losses at the household level deepened poverty and threatened the welfare of all family members.

Boutayeb (2009) under the title “The impact of HIV/AIDS on human development in African countries” indicated that HIV and AIDS is one of the major development challenges facing Zambia. According to this report, the epidemic has affected every fabric of human existence and has become the major cause of illness and death among the young and middle-aged Zambians, who are the most productive age group. A study in Zambia by Chapoto and Jayne (2005) revealed that effects of economically active adult death on farm production were sensitive to the gender and position in the household of the deceased. The death of a male and female resulted in a 13% and 5% decline in cultivated land respectively, while the death of male household heads resulted in a 21% reduction in land cultivated.

The United Nations (2004) from studies done in Rwanda, Tanzania, Zambia (Southern province) and Zimbabwe found that loss of labour due to HIV and AIDS has led to declines in crop production, variety and to changes in cropping systems, particularly a change from more labour-intensive systems to less intensive systems. A shift away from labour-intensive crops may result in a less varied and less nutritious diet. The reduction in labour supply through the loss of workers to HIV and AIDS at crucial periods of planting and harvesting could significantly reduce the size of the harvest, affecting food production. The impacts of HIV and AIDS present a unique and menacing threat on the agriculture labour force which is declining daily due to AIDS related deaths (FSAZ, 2003).

Slater and Wiggins (2005) reported that losses of labour are severe because of HIV/AIDS which affects prime-age, economically active adults far more than other groups, leaving only the elderly and children to replace the labour lost to agriculture. Several studies such as those already mentioned above have observed that HIV and AIDS are emerging as a major threat to agriculture-based livelihoods and food security. This is especially true in areas where the disease is particularly prevalent among the economically active population (Stokes, 2003). Therefore, these studies indicate that HIV and AIDS has a negative effect on agriculture through the loss of labour when people fall ill or have to care for sick family members. Since most households in sub-Saharan Africa rely on family labour especially that of women, the impact is greatly felt. Parker (2009) observed that HIV and AIDS not only affect the health of infected individuals, but the socioeconomic status of the individuals and their families as well. HIV and AIDS affected households also experience a loss of labour productivity from household members who are ill and from their caregivers

## **2.4 Effects of HIV and AIDS on gender roles**

A study by Mutangadura (2000) in the United Republic of Tanzania showed that a woman whose husband was sick was likely to spend 45% less time on agriculture than if the husband were healthy. In Kagera, adults in households that experienced a death spent five hours less on farming than those without a death. The Government of Swaziland also reported a 54% drop in agricultural production in households where at least one adult member died from AIDS (Wall Street Journal, 2003). A study in Thailand reached the conclusion that one third of the rural families affected by AIDS experienced a halving of their agriculture output (UNAIDS, 2000).

These studies show that HIV and AIDS related illnesses or deaths affect agriculture by reducing the time spent on farming and consequently reducing the amount of produce.

Looking at the gender aspect, the joint report by UNAIDS, UNFPA and UNIFEM (2004) stated that in about 33% of the cases among households experiencing male head of household mortality, the widow ended up cultivating substantially less land. This could be due to loss of land, capital and livestock assets to other relatives after the death of their husband. The report went on to say that relatively wealthy widow-headed households are particularly vulnerable, as they have more land and assets that can be claimed by relatives than afflicted households that are poor to begin with. Households that were relatively wealthy and lost their household head faced more severe declines in land cultivation and cattle assets. The implication of this finding is that the responses to mitigating the social and economic impacts of HIV and AIDS in Zambia may not be successful if the gender inequalities that exist in terms of land access and other productive assets important for rural livelihood are ignored. Furthermore, the report observed that caring for an AIDS patient can increase the workload of a family caretaker by one third. This is a burden in any family but particularly so for the poor, who already spend much of their day earning a subsistence living. A rural woman interviewed in Southern Africa estimated that it took 24 buckets of water a day, fetched by hand, to care for a family member who was dying of AIDS—water to wash the clothes, the sheets and the patient after regular bouts of diarrhoea. Women's role in the care economy intensifies their poverty and insecurity since a large proportion of an already meagre income is used to support their caregiving and purchasing of items such as water, gloves and medicines or paying for funerals. The increased workload, loss of family income and deepening poverty make women more dependent on others and exacerbate gender inequalities. Women contribute greatly to food production and are involved in most of the farming activities. So when the woman is infected by HIV or affected by HIV and AIDS the agriculture activities will suffer because she will divert her time to taking care of the sick

## **2.5 Coping mechanisms by HIV and AIDS affected households**

Chingondole, (2008) revealed that agriculture plays a critical role to food and livelihood security of most populations in sub-Saharan Africa and that agriculture related activities are both a key basis for food and income, and a cushion to cope with the impacts of HIV and AIDS. The author further noted that HIV and AIDS weakens livelihood strategies and entrenches poverty because it reinforces erosive coping strategies by weakening the ability of affected households to withstand livelihood insecurity shocks and stresses. As much as poverty makes people vulnerable to risky behaviours for HIV, the loss of the main income earner or earners in the economically active stage of their lives due to HIV and AIDS is pushing many families into poverty and creating a vicious cycle.

Semali, Edwin and Mboera (2011) reported that in Dar es Salaam, Tanzania households affected by the pandemic were using coping strategies which included borrowing money, taking less preferred foods, taking smaller food portions, skipping meals, selling household assets and sending children to work.

## **2.6 Maize production in Zambia**

Maize is the most important grain crop in Zambia, being both the major feed grain and the staple food for the majority of the population. Maize has a wide variety of uses that ranges from both human to industrial. Maize is a rich source of carbohydrates, Vitamin B1, Vitamin B5, and Vitamin C, dietary fibres, proteins, and minerals. In terms of industrial usage, the grains of the



maize are used in the transformation of plastics and fabrics. Ethanol, produced from maize, is used as an additive in gas to prevent pollution levels and reduce the use of petroleum (Food Security Research Project, 2011).

Maize production in Zambia is given high priority as it is the staple crop. However, production has been declining amongst small scale farmers. This can be seen from table 1.

**Table 1: Smallholder Farmers in maize production in Zambia**

Crop year	Area planted (Ha)	Area harvested (Ha)	Production (Mt)
2002/2003	90,004	88,017	412,381
2003/2004	42,043	46,683	219,670
2004/2005	93,630	85,873	267,776
2005/2006	52,624	42,858	317,688
2006/2007	48,565	45,141	262,479
2007/2008	48,534	44,948	218,728

Source: Crop Forecast Surveys, 2002/2003 – 2007/2008, MACO & CSO

Like other southern African countries, Zambia has in recent times been affected by droughts and floods. Between December 2006 and March 2007, Zambia was among other southern African countries that experienced massive flooding which washed away farmers' crops. (Mudenda, 2010).

Agriculture constitutes the main source of livelihood for the rural population in Kaputa district. Field crop production is extensively practiced. Traditional farming systems and practices are prevalent and monoculture is practiced the most in which annual crops especially maize being the main staple food crop is grown. Other crops grown are cassava, rice, sweet potatoes, sorghum and groundnuts. Chickens, sheep and goats are the main types of livestock reared among the economically vulnerable agricultural households in the district. According to CSO (2010), the number of agricultural households was estimated at 25,589. There are a total of approximately 17,284 farmers in the district of which 8,637 are males and 8,647 are females.

The district has experienced drought over the last decade that has undermined the ability of agriculture to sustain food security in the area especially in the context of maize production. However, in addition to this natural shock, HIV and AIDS has also become a compounding factor and worsened the food insecurity and poverty situation for the agricultural households in the district. The district currently has the sixth highest HIV prevalence rate of 4.3% in the province with Kasama having the highest at 10.4%.

## **2.7 Link between HIV and AIDS and maize production**

AIDS has and is still adversely affecting all aspects of human livelihoods. Agriculture specifically maize production has not been spared by the AIDS pandemic. As reported in the study by FAO/FASAZ (2003), a household affected by HIV and AIDS either by having a chronically ill person or an AIDS related death are experiencing low production in maize due to a number of factors. These factors are centred around the five sustainable livelihoods capital assets and include; loss and reduction of economically active adults who contribute most to labour, diversion of time, labour and resources from farming to caring for the AIDS related patients, reduction in area under cultivation, low access to farming inputs due to financial constraints and less time spent in fields during critical periods of farming season.

## 2.8 Interventions in Zambia

A number of interventions have been introduced over the last decade to ensure food availability to economically vulnerable households which include the HIV and AIDS affected. In the 2000/2001 agriculture season, the food security pack was initiated by the government with an NGO (Programme Against Malnutrition - PAM) as a leading agency. The input pack which comprises of 0.25 ha cereal seed, 0.25 ha pulses seed and 0.25 ha cassava/sweet potato tubers, as well as fertiliser and lime for areas with acidic soils was meant for vulnerable but viable households (FSP, 2007). This pack was given for free to the targeted households.

In 2002, the government through the Ministry of Agriculture introduced the Fertiliser Support Programme (FSP) which evolved to Farmer Input Support Programme (FISP). The input pack comprises of a 10 Kg bag of maize seed and 4 x 50 Kg bags of fertiliser. This pack is sold through farmer cooperatives at a subsidised price to economically vulnerable households. This programme was put in place to boost maize production, promote access of economically vulnerable households to maize inputs and ensure food availability in these vulnerable households (Xu et al, 2009).

Despite the efforts by Government through the FISP programme the small scale farmers continue to have a decline in maize production. This can be seen from the increasing amount of packs (A pack consists of a 10 Kg bag of maize and 8 x 50 Kg bags of fertiliser) distributed through the years in table 2 and the declining figures of maize production in table 1.

**Table 2: Number of beneficiaries in FISP for maize inputs**

Year	Beneficiaries
2002/2003	120,000
2003/2004	150,000
2004/2005	115,000
2005/2006	125,000
2006/2007	210,000
2007/2008	125,000
2008/2009	192,860
2009/2010	292,660

Source: World Bank 2010

The World Bank 2010 impact assessment report on the FISP stated that the 2007/08 input distribution was characterized by large differences in farmer expectations and actual receipts. When signing up for FSP assistance, 70% of interviewed beneficiaries said they expected the full 4x4 input pack advertised by the program; 17% said they expected less than 4x4, and 14% said they expected more. When the inputs arrived, however, only 44% of farmers actually received the 4x4 fertilizer allowance; 55% of farmers received less, and 2% received more. These widespread differences in expectations and receipts point to serious negative consequences for a farmer's ability to plan and make wise production decisions.

The assessment went on to show that late delivery of inputs was also a problem. Across the sample, less than 4% of beneficiaries said they received their maize inputs by the end of October and 69% said they did not get their inputs until after the start of the rains. Timeliness of planting is extremely important with maize and there is no doubt this record had a significant negative impact on yields. Overall, 63% of interviewed households said they received their FSP



inputs in November; 31% said they received the inputs in December; and 2% said they received the inputs in January. This shows that despite the number of beneficiaries increasing maize production is still affected by factors such as sharing the packs of maize inputs or late receipt. When the inputs arrive late they are not used at all but kept for the following season or the fertiliser is not added thus reducing the yield.

A study by FAO (2003) in Uganda shows that as a consequence of a government policy to increase the production of maize to boost cash and export crop production, unaffected households managed to substantially shift from subsistence food production such as banana, cassava and millet towards maize production. By contrast, households affected by AIDS reportedly reduced the amount of land cultivated of both cash and food crops. This shows that even when Government policies are in place to increase maize production, AIDS affected households still struggle to do so due to time and diversion and loss of labour.

## **2.9 Conceptual framework**

This research adopted the sustainable livelihoods framework (SLF). A livelihood is defined by Ellis (2000) as comprising of the assets (natural, physical, human, financial and social capital), the activities and the access to these (mediated by institutions and social relations) that together determines the living gained by the individual or household. The livelihoods framework approach is used to understand the livelihoods of people. It looks at the factors that affect people's livelihoods and the interrelations between them. The framework starts by exploring the people's assets and the livelihood strategies they employ to achieve their livelihood outcomes. The relationships between these and the structures and processes affect their livelihoods. The framework identifies five important types of capital assets: human, natural, financial, social and physical (DFID 2001). The extent of the people's access to these assets is strongly influenced by their vulnerability context. A livelihood is sustainable when it can cope with and recover from stresses and shocks, maintain or enhance its capabilities and assets while not undermining the natural resource base.

In this research, the framework looked at how HIV and AIDS impacted on household capital assets which are the key elements in the livelihoods of the farming households engaged in staple food crops such as maize production in this case study. The livelihood strategies employed to obtain maize were also looked at. Furthermore, the interrelations between the livelihood, assets, strategies, institutions and processes were explored and looked at in this case study. Figure 1 shows the conceptual framework that was used in this study.

Figure 2: Sustainable livelihood framework

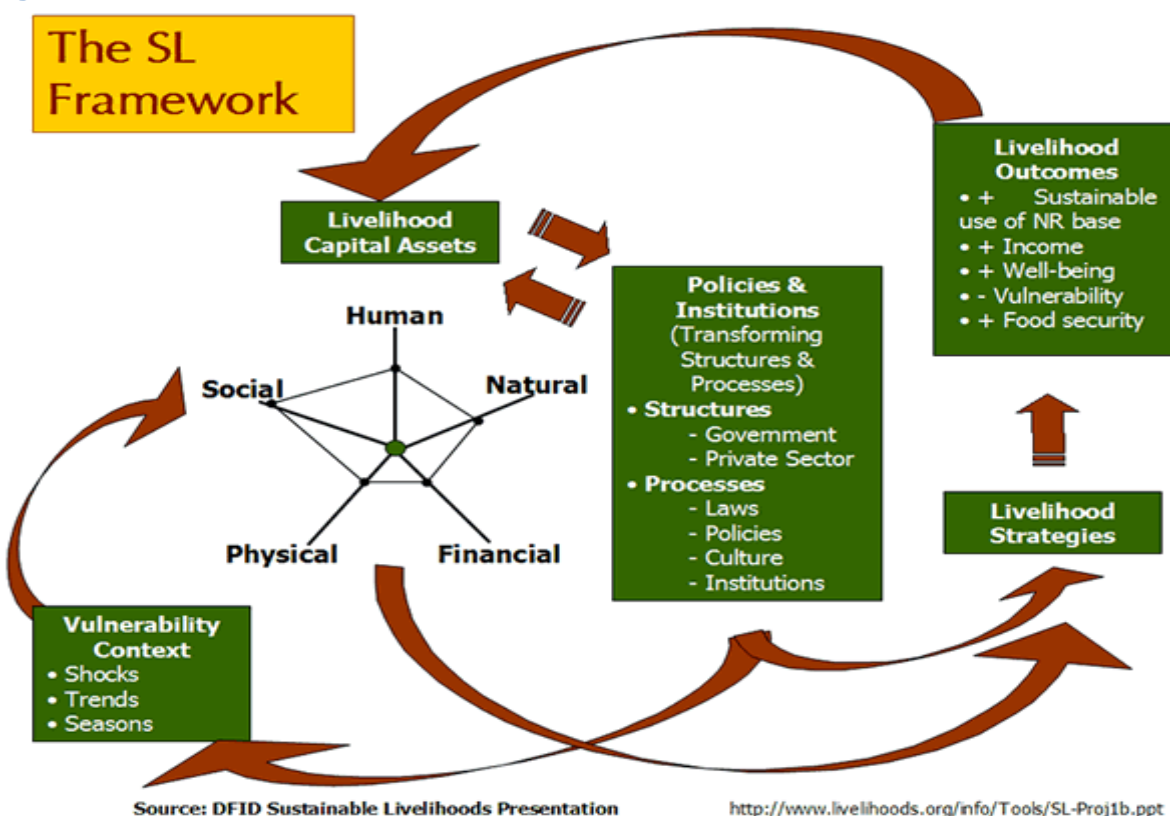


Figure 2: Sustainable livelihoods framework; DFID (2001)

## 2.10 Definitions of concepts

For the purposes of this study the following definitions of terms meant as indicated:-

### Impact of AIDS

This refers to the harm or effects associated to morbidity and mortality related to HIV and AIDS. This impact may be a severe shock or a slow hidden process with long term changes. Barnett and Whiteside (2006) refer to impact as a continuum between a sharp shock and slow profound changes.

### Resilience to the impact of AIDS

Resilience has various meanings but often refers to the responses that enable people to avoid the worst effects of AIDS at different levels or to recover faster to an acceptably normal level. The capability of an individual, a household or community to respond to avoid the impact of AIDS is highly dependent on their financial status and asset ownership.

### Vulnerability to the impact of AIDS

This refers to the likelihood of suffering harm from the effects of sickness and death due to AIDS (Holden, 2003). It is the likelihood of significant impact of AIDS occurring at individual, household and national level

### **AIDS affected households**

This refers to family members who live together, share meals and have a member or members who are living with HIV and AIDS, or have lost a member due to HIV and AIDS.

### **2.11 Operationalization of concepts**

The in-depth case studies in Kaputa district and also as supported by other research findings such as the 2009 Baseline Study of Smallholder Farmers in Eastern Uganda and the 2011 DTMA project report of Tanzania, affirm that maize production is dependent in so many ways on the status of a household in terms of the SLF capital assets which are operationalized below as follows;

- (a) **Financial capital:** The forms of financial capital are cash at home or in pocket, cash at bank, formal and informal credit, and transfers in kind from relatives and friends (AATF, 2009). In this study the forms looked at are cash at home, formal and informal credit and transfers in kind from relatives and friends. These were analysed using the household financial status, availability of the household members to engage in wage labour and the farmers' access to credit, loans and agricultural inputs. The easiness to access assesses the ability of the household to acquire that source of capital while easiness to spend addresses the aspect of households' ability to liquidate it in case a financial obligation arises. Maize production depends on financial capital as it is required for the purchase of inputs and hiring of labour in the peak seasons of planting, weeding and harvesting.
- (b) **Social capital:** This is shown by the affiliation of household members to social associations like women groups and farmer cooperatives (DTMA, 2011). It also looks at gender roles and extended family networks. Social capital seeks to establish the households belonging to each type of association and how these influence their livelihood especially in the context of maize production as the case is for this research. It also seeks to know how the gender roles are affected in the context of maize production due to HIV and AIDS. In this study all these aspects were looked at.
- (c) **Human capital:** Human capital in this study was mainly focused at addressing issues of household composition, household size and availability of labour. In this case it also looks at the status of households in terms of caring for the chronically ill.
- (d) **Natural capital:** Natural capital includes all the biophysical components which include land quantity and quality. Land is a natural asset that man can only own for the sake of producing some vital goods and services needed to improve their livelihood (AATF, 2009). This study focussed on land ownership and land under cultivation. Land in this report was measured in number of hectares a household owns under various regimes of land tenure (private ownership, customary land tenure with use rights only, borrowed, and rented in or out).
- (e) **Physical capital:** Physical capital comprises productive assets, amenities and consumer durables. Productive assets are those used in the production process, which lead to the attainment of livelihood outcomes, while amenities and consumer durables indicate the living standard and wealth status (AATF, 2009). The productive assets considered in this case are agriculture related machinery, tools and equipment while the amenities are household furniture and clothes. Maize production depends on physical

capital because the productive assets are used by humans in production while the amenities and consumer durables can be exchanged or sold for labour.

## Chapter 3 METHODOLOGY

### 3.1 Research area

The research was conducted in five villages (Chipili, Chashele, Kafuma, Kamuchanga, and Nsenga) in Kaputa District of Northern Province, Zambia. Kaputa is about 1,250 km north of Lusaka. The district is one of the nine districts in the Northern Province of Zambia and lies 15° south of the equator and 28° east of the Greenwich meridian. The district covers a total land area of 37,357 Km<sup>2</sup> and is typically a rural district which is dependent on agriculture as the mainstay for the majority of the households. Kaputa falls in agro ecological zone 3 of Zambia. It receives 1,200 mm or more of rainfall annually and has soils that are highly leached with a low nutrient retention capacity (PaViDIA 2007).

The population in Kaputa is predominantly rural, with more people living in the rural areas than in the urban centre. According to the CSO (2010), the district population is estimated at 119,514 of which 59,312 (49.6%) are males and 60,202 (50.4%) are female. According to the HIV and AIDS epidemiological report of 2011, the district has a prevalence rate of 4.3% and approximately 2,092 people infected of which 895 are male and 1,197 are female. Projected HIV and AIDS cases are 227 per year and annual deaths are 233. The epidemic has left 7,682 orphans of which 3,945 are paternal AIDS orphans, 3,254 are maternal AIDS orphans and 484 are dual AIDS orphans.

### 3.2 Research design

The design of this study was based on primary and secondary (literature) data. Materials that were used in the literature review included books, journals, internet sites and reports from MAL. The literature was used to review what other researchers had found out about the impact of HIV and AIDS on maize production and how FISP operates and what the existing gaps are which this research would focus on. It was also used to guide the research and highlight the impacts of HIV and AIDS on maize production.

The design was also based on a case study of twenty households to be interviewed. These were ten households with an HIV and AIDS chronically ill person and ten households that had suffered an HIV and AIDS bereavement. These households needed to have a member who had been sick or had died at least 3-4 years ago so that the impacts were seen. The households were further divided into ten female headed households (five with chronically ill and five with an HIV and AIDS related death) and ten male headed households (five with chronically ill and five with an HIV and AIDS related death) so that the differences in gender would be brought out. However, for the households with chronically ill members only three female headed households were interviewed while the rest were male headed households. This was because two of the selected households wanted to be paid and had to be replaced on the spot. This design is shown in table 3 below.

**Table 3: Research design**

Household type	FHH	MHH
HIV and AIDS chronically ill	3	7
HIV and AIDS related death	5	5

### 3.3 Data collection

Primary data was collected through case studies of HIV and AIDS afflicted households. These were done through in depth interviews with the help of a check list (refer to appendix 1).

One research assistant was recruited by the researcher prior to data collection. The research assistant was there to navigate the researcher to the homes of the selected, introduce the researcher and occasionally translate what was being said. Identification and selection of the households to be interviewed was done with the help of the District AIDS Task Force (DATF). The households were picked from five villages in the north of Kaputa (four households from each village). The Northern part was picked as it has the highest levels of HIV and AIDS.

The interviews were conducted at their homes so that they would be in familiar surroundings. The interviews were conducted using a check list.

Four out of the twenty households were interviewed more thoroughly than the others to show the extremes of vulnerability and resilience (see appendices 3-6). Interviews were conducted in the local language and the responses were later translated into English. Data collection took place from mid-July to mid-August 2012. Data collection was carried out by the researcher and the research assistant with support from MAL and DATF.

Qualitative data was collected on the differences in maize production between HIV and AIDS affected households due to the impact of the AIDS pandemic, labour changes due to HIV and AIDS, roles of household members in both HIV and AIDS affected households, accessibility to FISP, hindering factors to FISP and coping mechanisms being employed by HIV and AIDS affected households to produce maize. Quantitative data was collected on household characteristics, maize yields and consumption of maize.

### 3.4 Analysis of results

The sustainable livelihood framework was used as a tool for analysing the data collected. The data from interviews was analysed by reviewing the impacts of HIV and AIDS on maize production in the HIV and AIDS affected households which have chronically ill persons and those that have lost members to the pandemic. The accessibility of these households to FISP and hindering factors were also looked at. The data was also used to compare the impacts in female headed households and male headed households.

The table below shows the aspects that were considered for data analysis as sections of the sustainable livelihood framework.

**Table 4: Sustainable Livelihood Framework: tool for data analysis**

Component of the SLF	Aspects considered in data analysis
Vulnerability context	HIV and AIDS
Livelihood assets	Financial- cash at home, loans, savings, income sources, expenditure patterns and transfers in kind from friends and relatives.  Social – gender, affiliation to cooperatives or farmer groups, caring for orphans and extended family networks.

	Human – household composition, household size, illness or death of household member and availability of labour.  Natural – land (area under cultivation)  Physical- agriculture and non-agriculture assets such as farming implements, furniture and clothes.
Transforming structures and processes	MAL FISP
Livelihood strategies	Agriculture (Maize production)
Livelihood outcomes	Food security and income

### 3.5 Ethical considerations

HIV and AIDS is a sensitive subject at both individual and household level. To ensure that the study did not breach any research ethics when collecting information related to HIV and AIDS at household level, some important ethical factors when dealing with HIV and AIDS affected households were taken into consideration. These included seeking informed consent from target respondents, explaining to the target respondents about the benefits and risks pertaining to their participation in this study. These ethical considerations are explained in more detail below.

#### Informed Consent

This research sought information from households with HIV and AIDS related chronically ill people and households that had experienced AIDS related deaths. Due to the sensitive nature of this study, consent was sought from the respondents before the interview. Therefore, an informed consent form (refer to appendix 2) was included as part of the data collection at household level. The consent form was written in English but was translated into the local language by the interviewer and the purpose, benefits and possible risks for the research study were explained to the respondent. This allowed the respondent to make an informed decision on whether to participate in the study or not.

#### Risks

The study had no risks to the respondents. All the data used in the study came from respondents' own experience. The information collected was kept confidential and not shared with other households.

### 3.6 Expected outputs

With the view to contribute to HIV and AIDS impact mitigation in the context of maize production and food security in general, this research would;

- Help to understand assistance of FISP to HIV and AIDS affected households in maize production.
- Help to understand the factors hindering access to FISP by small scale farmers engaged in maize production and impacted by HIV and AIDS
- Provide recommendations to MAL on improving and effectively implementing their training on crop production to small scale farmers who are infected or affected by HIV and AIDS.

- Broaden the knowledge base necessary for the formulation of user friendly strategies and technologies for infected and affected small scale farmers.
- Contribute to generation of information that is important for efficient and effective allocation of financial and material resources in the responses to HIV and AIDS, particularly FISP for maize production.

### 3.7 Constraints and limitations

- Some households had to be replaced as they wanted to be paid for being interviewed and this delayed the data collection process.
- The study was conducted when the maize had already been harvested but most of it was in fields far from the home waiting to be de husked and the grain taken off the cob, hence the researcher was not able to see much maize crop.



## Chapter 4 RESEARCH FINDINGS

### 4.1 Impacts of HIV and AIDS on household capital assets in relation to maize production

Production of maize the major staple food crop in Kaputa district has to a great extent been affected either directly or indirectly by the impacts of HIV and AIDS on the household capital assets. These assets comprise; financial, human, social, physical and natural capital assets. In view of the fact that maize production is dependent on the household status in terms of the sustainable livelihood capital assets in so many ways, the impacts of AIDS were analysed by looking at the capital assets separately.

#### 4.1.1 The impacts of HIV and AIDS on HH financial capital assets

Most of the households interviewed were financially constrained due to HIV and AIDS. This finding is mainly attributed to depletion of financial savings on medical bills, food stuffs and reduced household capacity to generate income. Among the sampled households, two of the households had gone to an extent of borrowing money from a loan shark (offers loans at 100% interest rate) to hire labour and make ends meet as their financial resources were depleted due to AIDS related health expenditure. This was done because they did not have access to credit or loans as they did not have collateral. One critical finding that came out of the interviews with these households indicated that, households already food insecure with inadequate land and labour and lacking draft power had greater difficulties pooling resources to cope with the emotional and material demands. HIV and AIDS afflicted households use their finances on transport costs, medicines, food, and funerals such that agriculture inputs (seed and fertilisers) are a second priority in terms of expenditure. Inputs such as hybrid maize, fertilisers and pesticides are therefore, hardly purchased. The households use recycled maize seed and inadequate fertilizer which reduces production. Some of the households have had children withdrawn from school so that they can engage in wage labour to make ends meet. These children were either assisting to work in the fields, to do households chores or to take care of the chronically ill. It was observed that the older children were withdrawn first from school. Due to the financial constraints caused by HIV and AIDS some of the interviewees resorted to using loan sharks and this has put them in debt creating a vicious cycle of poverty.

#### Box 1: A case of a household whose head is chronically ill

The wife in this male headed household of Chashele village narrated how after discovering in 2008 that the head of the house was HIV positive, they moved around looking for treatment at various hospitals. They spent their savings on the transport and medical costs. They also had to close their grocery shop because they had used up all their profits. They went on to borrow money from a loan shark to make ends meet. During this time the maize fields suffered because there was no one to attend to them. Two years down the line, they are still struggling to recover financially.

*The wife said “The food situation is bad such that we only eat one meal in a day. I spend most of the time at home taking care of my husband. When I do go to the field I do not take long. We do not have the luxury of buying inputs for farming; we recycle maize seed and grow it without fertilisers. The little money that is available is used for buying food.”*

Other households that were affiliated to co-operatives had to withdraw because they could not continue meeting the financial requirements. Being a member of a cooperative requires a lot of payments and these are disadvantaging HIV and AIDS afflicted households as they are financially constrained.

**Table 5: Number of households with savings**

Household type	FHH	MHH	Total
<b>HIV and AIDS chronically ill</b>	0 (out of 3)	2 (out of 7)	2 (out of 10)
<b>HIV and AIDS related death</b>	2 (out of 5)	3 (out of 5)	5 (out of 10)
<b>Total</b>	2 (out of 8)	5 (out of 12)	<b>7 (out of 20)</b>

The findings indicated that the HIV and AIDS affected households had difficulties saving money due to the high expenditure on medical and transport costs. The households with chronically ill members suffered most and had trouble recovering from the impact. The households with HIV and AIDS related deaths were reported to be recovering slowly. This disadvantaged the affected households from accessing maize inputs as they were expensive and not a priority. The MHH were seen to have some savings as they usually have a source of income unlike the FHH who do not.

#### **4.1.2 The impacts of HIV and AIDS on HH social capital assets**

Study findings through interviews with the selected households indicated that community social capital assets such as farmer cooperatives and clubs played a major role in facilitation of farmer access to agricultural inputs for maize production especially seed and fertilizer. However, for any household to access FISP, it is generally conditional that they have to be affiliated to a farmer grouping such as a cooperative or club. The conditions that came with being a member of a cooperative and access subsidised maize inputs were posing as a constraint for most of the AIDS affected households because of the costs involved. For one to be a member they had to pay a membership fee of K 20,000 annually and buy a maximum of ten shares at the cost of K 50,000 per share. In addition, the pack (1 x 10 Kg bag of maize seed, 2 x 50 Kg bags of 'D' compound and 2 x 50 Kg bags of Urea) of inputs costs K 280,000. However, with regard to the social ties in the communities the biggest impact has been stigma. Despite all the awareness campaigns, publicity and talk about HIV and AIDS, stigma remains a major challenge. One interviewee reported that she is no longer part of a co-operative because of stigma while others said they could not find the time to participate in cooperative activities.

**Box 2: A case of a female headed household of Kawama village**

The female head aged 38 of Kawama village suffered a blow in 2007 when her husband died due to AIDS. She is HIV positive and so are her two children aged 7 and 1 year 4 months. After the death of her husband she was inherited by his nephew who ran away when he learnt of her status. When the husband was alive they used to be members of a cooperative and were able to access inputs for their maize farming. When the community learnt of her illness and what killed her husband they became unfriendly and hostile towards her and her children. Members of the community who used to bring them food and assist with household chores have since stopped. The members of the cooperative were no better so she quit. The sister came with her child as well so they help around the house and with the farming.

*“I had to ask my sister to come and stay with us and assist us in terms of household chores and farming as there are days when I cannot even get out of bed. When I force myself to go to the field or do some strenuous work I get bedridden for a couple of days. It is difficult to understand how people who were so nice to me in the community can become so mean and unfriendly. I finally quit from the cooperative because I could not stand their attitude towards me.”*

One interviewee from a household with a chronically ill lady commented, *“We were part of a cooperative but had to withdraw because we could not meet the financial requirements. Being members of the cooperative helped us access inputs such as maize and rice seed and fertilisers but we can no longer afford to pay the membership fees, shares (a member needs to have 10 shares but should pay for at least 5 shares to be able to access inputs and one share is worth K 50,000) and subsidised amount for the inputs. The little money that we have is used for purchasing of food and taking care of the sick.”*

It was observed that the extended family also played a role. They were ready to help relatives who had chronically ill patients or had experienced an AIDS related death by taking in the orphans or moving in with them to help with laborious activities. For example, female head whose sister moved in with her when she became very sick or the mother who moved her son and his family to stay with her when he was ailing until he died and she is now taking care of his children and his wife. The households that received assistance from extended family are as shown in table 6 below.

**Table 6: Number of households being assisted by their extended family**

Household type	FHH	MHH	Total
HIV and AIDS chronically ill	2 (out of 3)	5 (out of 7)	7 (out of 10)
HIV and AIDS related death	3 (out of 5)	4 (out of 5)	7 (out of 10)
<b>Total</b>	<b>5 (out of 8)</b>	<b>9 (out of 12)</b>	<b>14 (out of 20)</b>

**Box 3: A case of extended family assistance in Kafuma village**

The head of this male headed household buried his brother 3 years ago. He narrated how he moved his family from Chiponga village to Kafuma village so that he could be near his ailing brother. He was compelled to do this as there were no other close relatives nearby to help take care of him.

He has nine children of his own while his brother had seven. The time the brother was very sick their families were cultivating and working together in the maize and rice fields. When his brother died, he took over the wife and children. His brother's wife unfortunately died 3 months later. He is still looking after the children and struggling to send them to school.

In addition the households mentioned that DATF and the home based care volunteers from the hospital visited them regularly. These offered encouragement and psychological support. The only government institution that offered access to inputs in their area was MAL through FISP.

The gender roles in maize production had also changed. Instead of men preparing the land and harvesting while the women plant and weed the maize. They were doing all the activities together as a result of loss of labour. The children were also involved in the planting and harvesting of maize. The women in most cases were looking after the sick, doing the household chores and taking care of the children and fields. In households where they had been bereaved, women took over the role of being the breadwinner and decision maker. From the study undertaken it was seen that the men on the other hand had also become care givers in instances where their wives were sick and there was no one to help them. The men were said to be in charge of things like generation of an income for school fees and maize inputs so when their wives became sick they were also responsible for the day to day household expenses and making sure that things were in order at home.

#### **4.1.3 The impacts of HIV and AIDS on HH human capital assets**

The findings from this research showed that the average household size was 8 and that the households interviewed ranged from 4 to 17 in size. These households had 1 to 3 adults while the rest were children most of whom were orphans or dependents. The average number of children per household was 6 and 13 (65%) among the 20 households were keeping orphans or dependents. The number of orphans and dependents had also increased due to deaths of parents. The households with HIV and AIDS related deaths had more children in their care as they were looking after orphans. It was observed that these orphans were being taken care of by relatives in most cases. HIV and AIDS therefore, is changing household compositions by being responsible for the death of parents and guardians, leaving young children to be taken in as orphans or dependents by relatives. The role of household head is also changing as the pandemic is leaving female headed and child headed households in its wake.

**Table 7: Average household size and average number of children per household**

Household type	FHH (N=8)			MHH (N=12)		
	HH size	adults	Children	HH size	adults	children
<b>HIV and AIDS chronically ill (N=10)</b>	7.3	2.0	5.3	7.7	2.1	5.6
<b>HIV and AIDS related death (N=10)</b>	7.8	1.4	6.4	10.2	1.8	8.4
<b>Total</b>	7.6	1.7	5.9	9.0	2.0	7

The findings indicated that those who suffered HIV and AIDS related deaths had more household members because they had to take care of the orphans of the deceased. Male headed households had more members and dependents as they usually had a source of income and it was easier for them to take care of extra people other than female headed households.

The average age of the chronically ill or dead due to HIV and AIDS was found to be 36 and the range was from 22 to 47 years. In this study, field findings showed that there were fewer economically adults per household (i.e.1-3) and overburdened with more AIDS related orphans averaging 4 per household. In addition, some households were now elderly headed and others were nursing AIDS related patients. HIV and AIDS had made some families become closer through helping each other in times of need.

**Table 8: Average age of people affected by HIV and AIDS at time of illness or death**

Household type	FHH	MHH	Total
<b>HIV and AIDS chronically ill</b>	41 (range 37-47)	38 (range 33-42)	39
<b>HIV and AIDS related death</b>	31 (range 25-38)	33 (range 22-39)	32
<b>Total</b>	36	36	<b>36</b>

*“We used to grow 3 hectares of maize before my husband got sick but now we are only growing 1 hectare and I am struggling to maintain even that field. The children are young and cannot help me. My husband used to fish and take the fish to town for sale. The money from the fish was used to hire labour and buy relish, groceries and clothes. Now we do not have that income and our way of life has changed drastically.”*

HIV and AIDS infected people require nutritious foods to keep them healthy and help fight off opportunistic diseases. Most of the interviewed households said that it was difficult to provide the sick with nutritious foods due to financial constraints and low agriculture production. Household interviews with the AIDS afflicted household revealed that the loss of human capital in the community had led to reallocation of duties among the remaining members especially in terms of labour. Households reported that time, household labour and other resources were diverted from maize production to care giving for the chronically ill members and other non-agriculture household chores. Care giving meant working time was diverted to caring and health-seeking activities which also decreased overall economic activities as productive activities were reduced. Labour diversion refers to diverting labour from maize production specifically the planting, weeding and harvesting stages which affect yield to caring for HIV and AIDS infected.

*“Instead of spending 8-10 hours in the field we only spend an hour or two whether its peak season or not because I have to take care of my husband and the kids have to go to school. We used to harvest 50 x 50 Kg bags of maize per hectare but now only harvesting 15-20 x 50 Kg bags.”*

Another interviewee said, *“I used to go to the field around 6 am and come back around 4 pm but now that I am sick, I can only go for about 2 hours. After which I am not able to get up for 2-3 days. My son has withdrawn from school and is doing odd jobs to help out with the finances at home”*

Yield was affected by significant reductions in the size of harvest which in turn affected food production and food security further leading to poverty. Some of the interviewed households had to withdraw their children from school or ask for help from relatives just to look after the ill and do household chores. The loss of life also led to loss of knowledge and skills in maize production as these were not passed down to the younger generation before the demise of the elders.

*“We used to grow rice, maize and cassava before the impact but now we have stopped rice, reduced on cassava and increased on maize because of its multiple uses, the grains can be eaten as a snack or it can be ground and eaten as porridge or nshima. On top of that we can sell to Food Reserve Agency (FRA) and earn an income.”*

#### **4.1.4 The impacts of HIV and AIDS on HH natural capital assets**

Most households own farming land which is either allocated to them by the headman or handed down to them by their parents or family. All interviewees except one had suffered a reduction in land under cultivation due to a decline in available labour or diversion of time to caring for the sick. Two of the interviewed had had the land taken from them after their husbands' death. Despite maize being labour intensive most of the households continued growing it as it is the staple food and provides a source of income when sold to FRA. Before the impact of HIV and AIDS most of the households were able to hire labour to help them with land preparation and weeding of maize but due to financial problems most of them could no longer do that, thus the area cultivated reduced.

*“We used to grow 2 hectares of maize but after my husband died his relatives took the land saying it was their fathers land. Customary land is owned by the household head through the village headman who has the final authority. Husbands are registered as owners of the land so when he dies we as women are at risk of losing it. At the moment the headman has given me 2 lima on which to do my farming but I do not utilise the whole of it because I am also sick and lack power.”*

Another woman commented that after the death of her husband and son the land was lying idle and not being used at all. For this household they were relying on the cassava growing near the house. Otherwise most of the households had just reduced the hectares being cultivated due to loss of labour or reduced time towards farming

#### 4.1.5 The impacts of HIV and AIDS on HH physical Capital Assets

The AIDS pandemic has been the cause of asset depletion for many of the households interviewed in this study. Most of the households had to sell their agricultural and non-agricultural related physical assets in order to raise money to meet HIV and AIDS related expenditure. The findings showed that most of the households who had experienced HIV and AIDS related deaths were recovering and replacing assets which they had sold off. The households with chronically ill were still encountering medical costs so could not replace the assets as yet.

**Table 9: Number of households who sold physical assets**

Household type	FHH	MHH	Total
HIV and AIDS chronically ill	3 (out of 3)	7 (out of 7)	10 (out of 10)
HIV and AIDS related death	5 (out of 5)	4 (out of 5)	9 (out of 10)
<b>Total</b>	<b>8 (out of 8)</b>	<b>11 (out of 12)</b>	<b>19 (out of 20)</b>

One of the interviewees narrated, *“When our son was sick we spent our savings on transport, medical and food costs. When our savings ran out we sold our goats, chickens, hoe, sickle, chairs, table, and mattress and finally bicycle to meet costs. Our son is dead now but we have not been able to recover any of the things we sold.”*

This is one of the many cases which showed that when things became difficult households sold their physical assets and most of them were not able to recover afterwards. When husbands die, many women and children find themselves without a home and land since the rights to certain assets are often vested in men. This can be seen from two of the interviewees who lost their husbands and had their furniture and farming land grabbed by the husband’s relatives.



**Table 10: Summary of HH responses in relation to the capital assets after impact**

HH types	Capital asset	Responses of households
With HIV/AIDS chronically ill and those with an HIV/AIDS related death.	Financial	<ul style="list-style-type: none"> <li>- Status generally bad</li> <li>- Money major constraint</li> <li>- Most of the income and savings used on transport, medicine and food</li> <li>- No access to loans from government institutions due to lack of collateral</li> <li>- Access to local loan sharks</li> <li>- Not enough money to access inputs as priorities changed</li> <li>- Some have HH members engaging in wage labour to make ends meet</li> </ul>
	Social	<ul style="list-style-type: none"> <li>- A few get assistance from extended family network</li> <li>- For some no help from relatives or community</li> <li>- Some receiving help from church members or DATF</li> <li>- Affiliated to co-operative but no money to pay for requirements or receiving less than a pack of inputs.</li> <li>- Some stigmatised by community</li> </ul>
	Human	<ul style="list-style-type: none"> <li>- Labour affected by epidemic through loss and reduction of human capital thus affecting production of maize as labour</li> <li>- labour is diverted from farming to caring for the sick and HH chores</li> <li>- Number of orphans increasing due to loss of parents</li> <li>- Some of the children are also HIV positive</li> <li>- Loss of human capital leading to loss of skills and knowledge in maize production</li> </ul>
	Natural	<ul style="list-style-type: none"> <li>- Most land handed down by family and other given by headmen</li> <li>- Some renting out land to other farmers due to inability to utilise it because of inadequate labour</li> <li>- Area cultivated reduced due to inadequate labour or lack of access to inputs</li> <li>- Some FHH have had land taken away by relatives of the husband after his death</li> </ul>
	Physical	<ul style="list-style-type: none"> <li>- Have had to sell assets after impact to cover medical bills or buy food</li> <li>- Assets taken by relatives of husband after his death</li> <li>- Difficult to recover assets sold during illness of HH member</li> </ul>



## 4.2 Accessibility to maize inputs through FISP

The findings of this study showed that despite being members of cooperatives the HIV and AIDS affected households could not access maize inputs. Not because they did not want but because of the conditions attached to obtaining them.

**Table 11: Number of households accessing maize inputs through FISP**

Household type	FHH	MHH	Total
HIV and AIDS chronically ill	0 (out of 3)	2 (out of 7)	2 (out of 10)
HIV and AIDS related death	1 (out of 5)	3 (out of 5)	4 (out of 10)
<b>Total</b>	1 (out of 8)	5 (out of 12)	<b>6 (out of 20)</b>

As can be seen from the findings in table 6, only six of the interviewed households were accessing maize inputs through FISP. Two of the interviewed reported that though they were able to access the maize inputs they usually came late and this affected the maize yields as the maize required timely planting. Three others reported that they were only able to access half a pack because there were too many farmers in the cooperatives so they had to share.

The other HIV and AIDS affected households were not able to access the maize inputs through FISP because they were not affiliated to cooperatives due to financial constraints. The results showed that HIV and AIDS had an impact on household finances which had a bearing on access to maize inputs. The maize inputs though subsidised, were reported to be expensive for the HIV and AIDS affected households. In order to access inputs through FISP, a household had to affiliate to a cooperative and the key conditions for accessing FISP inputs included the following, affiliation to an existing cooperative, annual subscriptions to cooperatives of K 20,000, K 50,000 cost per share annually, and also cost of fertiliser and seed pack of K 280,000. In addition it was seen how stigma played a role in the affiliation to a cooperative.

Therefore, these factors of finances and stigma were hindering HIV and AIDS affected households from accessing maize inputs through FISP. In addition the affected households who had access to the maize inputs either received them late so they were not efficiently used or they received less than they were entitled to because of having too many farmers trying to access the inputs.

## 4.3 Coping mechanisms employed

HIV and AIDS are having significant adverse effects on household composition, labour, and income. These in turn are having effects on the ability to produce food, schooling of children, cropping patterns, labour allocation, access to productive assets and services essential for household maintenance. Most of the households interviewed mentioned loss of labour and income due to the loss of the economically active adults. As a result the affected households were obtaining low yields of maize and becoming food insecure before the next farming season. These households were struggling to make ends meet through reallocation of labour, sale of physical assets, shifting from maize farming to non-farm activities and withdrawal of children from school to assist in looking after the sick. The table below shows a summary of the coping mechanisms compiled from the interviewees.

**Table 12: Summary of household coping mechanisms**

<b>Effect of HIV and AIDS</b>	<b>Coping mechanism</b>
Loss of labour	Decrease in hectares cultivated
	Reallocation of labour (boys help with the household chores, both males and females do the work in the fields)
	Withdrawal of children from school to assist with caring for the sick
Loss of income	Decrease in purchase of household essentials
	Decrease in purchase of maize farming inputs
	Withdrawal of children from school to engage in wage labour or because they cannot be paid for
	Remittances from relatives and neighbours
	Borrowing of money from loan sharks
	Sale of physical assets
Shortage of food	Decrease in number of meals in a day
	Eat low quality and less nutritious food
	Collect and eat wild vegetables
Reduction in maize yields	Shift from maize to non-farm activities

One of the households had opted to stop maize growing all together and do non-farm activities due to loss of human capital.

The woman narrated saying, *“After my husband started getting sick farming became difficult. He used to do some fishing which used to supplement on food and we would sell some of the fish and have some money to hire labour to help us in the fields. However, all this changed when he became ill. So we decided to stop maize farming and opened a grocery store with the money from the last maize harvest.”*

Another interviewee told how her husband’s death had led to the family taking dire measures. *“I have five children and the eldest is a boy aged 18. I have only one daughter aged 12. After the death of my husband we tried to continue as before but it was not easy. My health became bad and there are days when I cannot get up. The field work is too much but we need to eat. My eldest son has had to stop school so that he can do odd jobs to support the family. During the cultivation periods his brothers help him before going to school and when they knock off. My daughter is in charge of cleaning the house, drawing water and cooking. Sometimes the work overwhelms her and her brothers help her with drawing of the water.”*

Another household told of how they were forced to eat only one meal a day because of an HIV and AIDS related death. They relied on the good will of the community and for meals they collected wild vegetables which they boiled and ate with cassava meal as the maize they grew only lasted up to 3 months.

Not all households are impacted the same by the epidemic. Some households have been impacted by HIV and AIDS and are resilient while others are still vulnerable and not coping very well especially after the death of the household head. Refer to appendices 3-6.

## **Chapter 5 DISCUSSION**

### **The small scale farmers' vulnerability context**

The study findings showed that HIV and AIDS had a major impact on the labour and income of households. The small scale farmers in Kaputa district rely on manual labour for their agricultural activities, specifically maize production in this study. The activities which require a lot of labour are land preparation, planting and weeding. These should be timely done because the rainy period is short. Morbidity and mortality related to HIV and AIDS reduced the labour quality and quantity as household members failed to do agricultural activities because of sickness or caring for the sick. The study indicated that for most of the affected households maize production had reduced substantially due to labour shortages caused by the impacts of the pandemic. This concurred with the ZDHS report (2007) which stated that 'labour shortages due to AIDS related illness and death is limiting the output of Zambian farmers'. The fact that HIV and AIDS reduced the economically active population made these households more vulnerable through loss of labour and income which led to food insecurity. Stokes (2002) observed that HIV and AIDS are emerging as a major threat to agriculture based livelihoods and food security especially in areas where it is prevalent among the economically active. As seen from the study the AIDS pandemic was more amongst the economically active adults which left the households vulnerable and food insecure.

### **Impact of HIV and AIDS on maize production**

Maize production is dependent on the household status in terms of the SLF capital assets and as such the impacts were felt through these assets. Maize production requires money for the purchase of inputs and the findings of the study showed that the affected households were financially constrained due to HIV and AIDS related morbidity and mortality. Farrington and Saasa (2002) observed that most families exhausted their savings long before HIV infected members died thus having an effect on the poverty levels. They went on to note that illness and death of household members resulted in high medical costs and lower incomes which had an adverse effect on maize production.

Maize production is labour intensive and in Kaputa district it is done manually. Labour availability for maize production activities was reduced through the illness or death of a household member due to HIV and AIDS or through the reallocation of labour to care for the sick. A report by Bolinger and Stover (1999) following a study in Zimbabwe stated that the death of a bread winner led to a 61% reduction in maize production. In 2000, Mutangadura reported that in Tanzania, women whose husbands were sick spent 45% less time on agriculture. This was affirmed in this study. The loss in labour availability and reallocation of labour led to reductions in area cultivated for maize production and neglect of fields which further led to reduced yields. The worst part is that the most affected were the able bodied economically active adults. The findings from this study showed that the average age for those dying or who were chronically ill due to the AIDS pandemic was 35 and ranged from 22 to 47 years of age. This concurred with Stokes (2003) and Boutayeb (2009) who both confirmed that HIV and AIDS are particularly prevalent among the economically active population. Farrington (2002) also stated that economically active adults were those between 15 and 45 years and seemed to be the most affected by HIV and AIDS. HIV and AIDS reduced the availability of economically active adults thus creating labour shortages which resulted in less area being cultivated and decreased levels of nutrition as less food was produced.

The natural capital which had been affected the most was land. Due to labour constraints land area for maize cultivation had been reduced. Most of the households owned agricultural land but were not able to utilise it fully. In the case of women, most had lost property and land after the death of a husband. This was because the land was owned by the male head of household. A joint report by UNAIDS, UNFPA and UNIFEM (2004) also observed that households which experienced male head of household mortality lost land, capital and other assets to the husbands' relatives. This left them even more vulnerable than other households because they usually had no source of income and no land of their own.

### **Impact of HIV and AIDS on livelihood assets**

The impacts of HIV and AIDS were usually felt first through the financial capital by increased expenditure on medical bills, food for the ill and reduction in household capacity to generate income. The households indicated that they did not have savings and for access to loans they had no collateral so most of them were forced to go to loan sharks.

On human capital the impact of HIV and AIDS was felt through loss of labour. The loss of human capital to the AIDS pandemic had also increased the number of orphans and dependents in households. Women were over whelmed by work as they had to attend to the maize fields, the children and the sick if any and on top of that found ways of generating an income. Women's' roles were seen to change to decision makers and bread winners after losing a husband or he becoming sick. Men had also become care givers in instances where their wives were sick and children were withdrawn from schools to fill the labour gaps, engage in wage labour or due to inability to pay for their school fees. Haddad and Gillespie (2001) confirmed the findings through their report which stated that the initial response to loss of human capital is what they called the "importation" of labour. This involved bringing in relatives or other members of the household previously living elsewhere. They went on to say that the second option was reallocation of the remaining household labour. This meant that the remaining members of the household undertook extra activities and if they were women this meant an addition to their working hours. Children were also withdrawn from school to help in the household, girls being the first to be withdrawn. This research found that for withdrawal of children from school it was not girls first but usually the older ones regardless of sex.

Contrary to the 2004 UN studies that loss of labour due to HIV and AIDS had led to a change from more labour intensive crops to less labour intensive ones. The findings of this study indicated that households' preferred to continue with maize production despite all the difficulties faced because it was traditionally the major staple food crop and could be consumed in various ways, had a ready market and could be sold for more money than other crops. Other crops such as sweet potatoes and cassava are less labour intensive and require less inputs (Manyumwa et al, 2012) but were not really taken on because they did not attract as much money as maize. When the households had enough maize to eat from one season to the next, they were considered food secure and their resilience was increased. A study by Chingondole (2008), confirmed that promotion of agricultural related interventions such as field crop production was crucial in increasing household resilience to HIV and AIDS induced food insecurity. In addition, the author observed that provision of agricultural and entrepreneurial skills helped to improve rural livelihoods which in turn assisted households to effectively bounce back from shocks and stresses such as illness, death and food and nutrition insecurity resulting from HIV and AIDS.

A report by Chapoto and Jayne (2005) revealed that the effects of the death of an economically active adult were gender and position sensitive. The findings agreed with this as it was

observed that in households where the male head of house had died or was ailing, the area being cultivated was less than in a male headed household.

In the last 10 years, the Government of the Republic of Zambia has been supporting economically vulnerable households including the AIDS afflicted households with maize inputs (seeds and fertilizer) through a programme called Farmer Input Support Programme (FISP). This has been done through farmer cooperatives and clubs. The major impact on social capital has been stigma. The findings from this study indicated that despite all the awareness campaigns and publicity on HIV and AIDS, there was still stigma in the communities. This has been the cause of some households to leave cooperatives. The findings indicated that for those in cooperatives they usually could not find the time for cooperative activities. Extended family ties also played a major role as when in need they were ready to assist each other. The families assisted each other in various ways such as moving and living with the ill, having the ill move in with them, assisting the affected household with food or labour for farming and also through taking care of children who were left as dependents or orphans due to HIV and AIDS.

Physical asset depletion was common amongst the HIV and AIDS affected households. The findings showed that most of the interviewed households ended up selling their physical agricultural and non-agricultural assets to pay for medical costs, buy food and pay for school fees or for basic needs. These assets ranged from livestock, farming implements to household furniture. The assets once sold were difficult to recover as the households fell deeper into the debt trap. Barnett and Whiteside (2006) also noted that HIV and AIDS indirectly added to household vulnerability through the sale and disposal of assets to meet medical costs.

### **Farmer Input Support Programme (FISP)**

FISP was introduced by government as a measure to increase maize yields and to allow vulnerable households to access maize inputs. HIV and AIDS affected households had problems accessing maize inputs due to financial constraints and stigma. Despite government introducing subsidised inputs through FISP, the households still could not afford them. A study in Uganda by FAO (2003) also showed how government made a policy of increasing maize production to boost cash and export crop production but affected households were reported to reduce the amount of land cultivated. The policy to increase maize production therefore, worked well for unaffected households, but households affected by HIV and AIDS only reduced the amount of land cultivated of both cash and food crops. So despite government policies, HIV and AIDS affected households still struggled due to loss of labour, income and time.

The findings of this study concurred with the World Bank (2010) impact assessment report that showed that beneficiaries of FISP did not receive their inputs on time and in most instances had to share them so the farmer expectations and the actual receipt were different. So even when the FISP inputs reached the farmers, they were not for the economically vulnerable households but for those who could afford to pay the financial requirements. Furthermore, HIV and AIDS affected households were not considered when sharing the maize inputs among the cooperatives

### **Coping mechanisms**

The interviewed households were coping through reallocation of labour, sale of physical assets, skipping meals, shifting from maize farming to non-farm activities and withdrawal of children from school to assist in looking after the sick. This is backed by a report by Semali, Edwin and Mboera (2011) on coping mechanisms by HIV and AIDS affected households in Dar es Salaam,

Tanzania. Although several literatures indicated that households were coping when they responded to the impact of HIV/AIDS, Loevinsohn and Gillespie (2003) argued that the responses of households reflected that they were simply not coping. They added that distress sale of assets, long term impacts of withdrawing children from school and permanent impoverishment of households showed their response to the shock but they were not self-sufficient to recover from the shock. For this reason households were termed 'responding' and not 'coping'.

## Chapter 6 CONCLUSION AND RECOMMENDATIONS

### 6.1 Conclusion

The AIDS pandemic is no longer only a health concern but it is a developmental concern. It has been proven to be a major threat to agricultural production and has suppressed development at household level especially when one considers the fact that, the vast majority of Zambia's poor live in rural areas and draw its livelihoods mainly from small scale farming. The households impacted by HIV and AIDS were experiencing low maize production due to a reduction in labour force, diversion of labour from the maize fields to caring for the sick, reduced area of cultivation, reduced income due to high expenditure of medical costs and inability to generate an income.

The government through MAL introduced FISP to boost maize production, ensure access of maize inputs and increase food availability in economically vulnerable households. This was meant to lead to reducing household vulnerability. However, FISP had hardly been felt by HIV and AIDS affected households as they were not considered for the programme. FISP provided subsidised maize inputs to small scale farmers who could afford to pay the required amount which was K 280,000 for a pack. The HIV and AIDS affected households did not have this amount of money to spend when they had medical costs to think of.

Labour had been affected by HIV and AIDS through loss and diversion of human capital. Human capital had been lost through death or chronic illness due to HIV and AIDS. The most affected were the economically active adults. Labour was lost through diversion of adult labour from the fields to taking care of the sick such that the amount of time left to attend to the maize fields was reduced leading to a reduction in maize yield. Households with chronically ill persons had children helping or taking over the household chores meant for adults. In order to meet the household labour demands, in relation to taking care of the sick, household chores or wage labour related income generation, some children were withdrawn from school to help take up such responsibilities. Maize production is a labour intensive agricultural activity that is heavily dependent on manual labour for land preparation, planting, weeding and harvesting. Therefore, labour loss due to HIV and AIDS related chronic morbidity and mortality decreased maize production related income and food security. Most of the households interviewed reported that they depleted their maize grain stocks within a period of 3-4 months after harvest leaving them food insecure until the next harvest. This led to the affected households resorting to skipping meals as there was not enough food to have three meals in a day.

Land cultivated under maize production was also reduced because of loss of labour as well as land ownership in some cases. The affected households owned land but did not have adequate labour and time to cultivate most of it. Since maize production is labour intensive, caring for the chronically ill household member robbed most of the AIDS affected households of the valuable time meant for agricultural operations and caring for the sick also took up a lot of time, making it difficult to do both a 100%. As a result of gender inequality in the context of land ownership which had disadvantaged most widows, households which had lost male household heads to the pandemic, had reduced area cultivated because the land had been taken away from them. This was seen in the female headed households. The issue of land grabbing by the husbands relatives was still a serious problem as land was usually registered in the husband's name. While women were the main food producers, they lacked access to and control over the means of production such as secure land tenure, information, credit and control of labour. Women were especially worse affected by the impacts of the AIDS pandemic as they were the main care



givers for children, other family members and the chronically ill members. This gender inequality has undermined women's role in agriculture and maize production in particular.

The AIDS pandemic has also left orphans in its wake. These orphans were being taken in by the extended family, thus increasing household sizes which required more food and money. The members of the extended family were also seen to assist households where members were sick due to HIV and AIDS. Some families even had to move.

Due to high HIV and AIDS related medical costs, be it traditional or modern, the households were facing increased expenditure which was seen to lead to financial constraints. Maize production was dependent on finances to purchase maize inputs (seed and fertiliser) but this became a second priority when there were lives at stake. Unfortunately the inability to purchase maize inputs led to low yields leading to food insecurity and making the affected households even more vulnerable. Most of the households had to get loans from loan sharks as they had no access to credit facilities. This put them in serious debt traps accentuating their poverty.

Access to maize inputs was also not easy for the HIV and AIDS affected households. This was mainly because of financial constraints. They could not afford the inputs sold in the shops causing them to recycle local seed which gave them low yields. Some had access to subsidised maize inputs through cooperatives but they either received them late or had to share the maize input packs. The findings also showed that some were forced to quit from cooperatives due to stigma and others because of the many financial requirements.

Where roles were concerned it was seen that men were responsible for big money items such as school books, fees and uniforms and fertilisers, whilst women were financially responsible for the day to day expenses of the household. The women had to adjust to being in charge when they lost their husbands' and finding a source of income to take care of their new responsibilities. The men also had to adjust to taking care of the household daily expenses. Other impacts were the depletion of agricultural and non-agricultural physical assets to pay for medical costs, pay for debts, pay for school fees or buy food.

Households affected by HIV and AIDS were not considered when it came to maize inputs through FISP. These households were so financially constrained due to HIV and AIDS related expenditures such that they could not afford the subsidised maize inputs through FISP. So in as much as they would have liked to access the maize inputs and ensure food availability they could not due to financial constraints and stigma.

Households affected by HIV and AIDS turned to a number of different coping mechanisms. These ranged from reallocation of labour, sale of physical assets, shifting from maize farming to non-farm activities, skipping of meals, eating wild vegetables to survive and withdrawal of children from school to assist in looking after the sick. However, not all the households were vulnerable. Some showed resilience and were slowly moving on with their lives. All in all HIV and AIDS has proved to have a negative impact on maize production and has also been seen to leave households vulnerable

## 6.2 Recommendations for MAL

- Local seed systems especially supporting low-cost maize seed out-grower schemes should be strengthened to enable AIDS affected households access maize seed locally at a cheaper cost.

- MAL could deliberately target the economically vulnerable households that include the AIDS afflicted with alternative low-cost soil fertility enhancing technologies that could be a substitute to mineral fertilisers in maize production.
- Less labour demanding maize production innovations and technologies to be disseminated among the labour constrained AIDS affected households.
- MAL needs to consider non-collateral social welfare agricultural input support for maize production targeted at the economically vulnerable AIDS afflicted households
- The agricultural committees at district (District Agricultural Coordinating Committees) and community (Camp Agricultural Committees) level need to take into consideration having representation of the AIDS affected farmers to ensure that their concerns are heard and taken into account in the planning processes. This is important as households are affected differently.
- Collaboration of MAL with other organisations involved in maize input support need to be strengthened to ascertain that the affected households are reached and given the necessary inputs which can be paid for after harvest as they are financially constrained and cannot afford inputs.
- Formation of input packs that consist of more nutritious and less labour intensive crops seeing as the HIV and AIDS affected households are in need of nutritious foods and incur loss of labour.
- Breeding of earlier maturing varieties to help the HIV and AIDS affected households spend minimal time in the fields.

## References

AATF, 2009. Baseline Study of Smallholder Farmers in Striga Infested Maize Growing Areas of Eastern Uganda. African Agricultural Technology Foundation. Kenya

Barnett, T. and Whiteside, A., 2006. AIDS in the Twenty-First Century: Disease and Globalization. 2<sup>nd</sup> ed. Great Britain. Palgrave Macmillan.

Beaver, M., Jayne, T.S. and Zulu, B., 2007. Smallholder Household Maize Production and Marketing Behaviour in Zambia and its Implications for Policy. Working Paper No. 20, Food Security Research Project, Lusaka.

Available at: <http://www.aec.msu.edu/fs2/zambia/ps20.pdf>. Accessed on 10/06/12.

Bollinger, L. and Stover, J., 1999. The Economic Impact of AIDS. The Policy Project. Available at: [http://www.policyproject.com/pubs/SEImpact/SEImpact\\_Africa.PDF](http://www.policyproject.com/pubs/SEImpact/SEImpact_Africa.PDF). Accessed on 10/06/12.

Boutayeb, A., 2009. The impact of HIV/AIDS on human development in African countries. BioMed Central Public Health. Available at: <http://www.biomedcentral.com/1471-2458/9/S1/S3>. Accessed on 08/09/12.

Central Statistics Office, 2004. Available at: <http://www.zamstats.gov.zm/census.php>. Accessed on 20/05/12.

Central Statistical Office, 2009. Available at: [http://www.zamstats.gov.zm/media/zambia\\_sexual\\_behaviour\\_2009.pdf](http://www.zamstats.gov.zm/media/zambia_sexual_behaviour_2009.pdf). Accessed on 22/05/12.

Chapoto, A. and Jayne, T.S., 2005. Impact of HIV/AIDS-Related Deaths on Rural Farm Households' Welfare in Zambia: Implications for Poverty Reduction Strategies. Food Security Research Project, Lusaka, Zambia. Available at: <http://www.aec.msu.edu/fs2/zambia/index.htm>. Accessed on 10/06/12.

Chingondole, S., 2008. Analysis of Livelihoods and HIV/AIDS in agriculture: Exploring Effects and Linkages – A case of Maphephetheni Uplands, KZN-SA. PhD Thesis report. UKZN-SA.

CIA, 2012. World Fact book. Central Intelligence Agency. Available at: <https://www.cia.gov/library/publications/the-world-factbook/geos/za.html>. Accessed on 01/06/12.

CSO/MACO, 2008. Patterns of Maize Farming Behaviour and Performance Among Small and Medium Scale Smallholders in Zambia: A Review of Statistical Data from the CSO/MACO Crop Forecast Survey 2000/2001 to 2007/2008 Production Seasons. Central Statistics Office/Ministry of Agriculture and Cooperatives. Available at: [http://www.aec.msu.edu/fs2/zambia/MACO\\_CS0\\_FSRP\\_CFS\\_new\\_version\\_June20.pdf](http://www.aec.msu.edu/fs2/zambia/MACO_CS0_FSRP_CFS_new_version_June20.pdf). Accessed on 01/06/12.

DFID, 2001. Sustainable Livelihoods Guidance Sheets. Department for International Development. Available at: [http://www.efls.ca/webresources/DFID\\_Sustainable\\_livelihoods\\_guidance\\_sheet.pdf](http://www.efls.ca/webresources/DFID_Sustainable_livelihoods_guidance_sheet.pdf). Accessed on 05/06/12.

Dorosh, P. A., Dradri, S. and Haggblade, S., 2009. Regional Trade, Government Policy and Food Security. Recent Evidence from Zambia. Food Policy 34.

Ellis, F., 2000. Rural Livelihoods and Diversity in Developing Countries. Great Britain. Oxford University Press.

FAO, 2003. HIV/AIDS and Agriculture: Impacts and Responses. Case Studies from Namibia, Uganda and Zambia. Food Agriculture Organisation.

Available at: <http://www.fao.org/DOCREP/006/Y5145E/Y5145E00.HTM>. Accessed on 25/05/12.

Farrington, J. and Saasa, O., 2002. Drivers for Change in Zambian Agriculture: Defining what shapes the policy environment. DFID.

FSAZ, 2003. Baseline survey report: Interlinkages between HIV/AIDS, agricultural production and food security - Southern Province, Farming Systems Association of Zambia.

FSP, 2007. Social Transfer Case Studies No.10. Food Security Pack, Zambia. Available at: [http://www.uea.ac.uk/polopoly\\_fs/1.53434!reba-cs10-zm-fsp.pdf](http://www.uea.ac.uk/polopoly_fs/1.53434!reba-cs10-zm-fsp.pdf). Accessed on 07/09/12.

FSRP, 2011. Technical Compendium: Descriptive Agricultural Statistics and Analysis for Zambia in Support of the USAID Mission's Feed the Future Strategic Review, working paper no. 52, 2011. Food Security Research Project. Available at: <http://www.aec.msu.edu/fs2/zambia/wp52.pdf>. Accessed on 21/08/12.

Haddad, L. and Gillespie, S., (2001). Effective Food and Nutrition Policy Responses to HIV/AIDS: What We Know and What we Need to Know. Journal of International Development. 13(4):487-511.

Hammar-skjöld, M., 2003. The Environment, Natural Resources and HIV/AIDS. SIDA Environment Policy Division.

Available at: [http://postconflict.unep.ch/humanitarianaction/documents/03\\_04-04\\_03-01.pdf](http://postconflict.unep.ch/humanitarianaction/documents/03_04-04_03-01.pdf). Accessed on 09/06/12.

HIV and AIDS and Farm Labour Productivity: A Review of Recent Evidence in Africa, 2004.

United Nations. Available at:

<http://www.academicjournals.org/jdae/PDF/Pdf2010/Dec/Kwadwo%20et%20al.pdf>. Accessed on 01/06/12.

Holden, S., 2003. AIDS on the Agenda: Adapting Development and Humanitarian Programmes to meet the Challenge of HIV/AIDS. Oxford, Oxfam.

Impact of HIV/AIDS on Four Sectors in Zambia (Tourism, Agriculture, Health Care, and Judiciary), 2006. Centre for Global Health and Development. Available at:

<http://www.bu.edu/cghd/our-work/projects/impact-of-hiv-aids-on-four-sectors-in-zambia-tourism-agriculture-healthcare-and-judiciary/>. Accessed on 02/06/12.

JAICAF, 2008. The Maize in Zambia and Malawi. Japan Association for International Collaboration of Agriculture and Forestry. Available at:

<http://www.jaicaf.or.jp/publications/Zambia.pdf>. Accessed on 27/05/12.

Jayne, T., Villarreal, M., Pingali, P. and Hemrich, G., 2004. Interactions between the Agricultural Sector and the AIDS Pandemic: Implications for Agricultural Policy. ESA Working Paper No 4. Food and Agriculture Organization of the United Nations (FAO), Rome.

Loevinson, M.E. and Gillespie, S., 2003. HIV/AIDS, food security and rural livelihoods: Understanding and responding. RENEWAL Working Paper no. 2/IFPRI Discussion Paper no. 157. Washington, D.C.: IFPRI

Manyumwa, D., Baars, R. and Kingma, K., 2012. Cassava and sweet potato production for HIV/AIDS affected smallholder farmers: A case study of Zvishavane District, Zimbabwe.

Mudenda, M.M., 2010. Climate Change in Zambia: Ignore, Mitigate or Adapt? Presented to the FIG Congress in Sydney, Australia, 11-16 April 2010.

Mutangadura, G., 2000. Household Welfare Impacts of Mortality of Adult Females in Zimbabwe: Implications for Policy and Program Development. Paper presented at the AIDS and Economics Symposium, Durban 7-8<sup>th</sup> July, 2000.

Mutangadura, G.B., 2005. Gender, HIV/AIDS and rural livelihoods in Southern Africa: addressing the challenges. JENDA: A Journal of Culture and African Women Studies. Issue 7. Available at: <http://www.jendajournal.com/issue7/mutangadura.html>. Accessed 06/09/12.

Parker, D.C., Jacobsen, K.H. and Komwa, M.K., 2009. A Qualitative Study of the Impact of HIV/AIDS on Agricultural Households in Southeastern Uganda. International Journal of Environmental Research and Public Health. Available at: [www.mdpi.com/1660-4601/6/8/2113/pdf](http://www.mdpi.com/1660-4601/6/8/2113/pdf). Accessed on 08/09/12.

PaViDIA, 2007. Field manual Volume 3: Sustainable Agriculture Practices. Participatory Village Development In Isolated Areas. Ministry of Agriculture and Co-operatives / Japan International Cooperation Agency.

Semali, I.A., Edwin, T. and Mboera, L.E.G., 2011. Food Insecurity and Coping Strategies Among People Living With HIV in Dar es Salaam, Tanzania. Available at: <http://www.ajol.info/index.php/thrb/article/viewFile/69160/59921>. Accessed 09/09/12.

Slater, R. and Wiggins, S., 2005. Responding to HIV/AIDS in Agriculture and Related Activities. Natural Resources Perspective. Overseas Development Institute. Available at: <http://dspace.cigilibrary.org/jspui/bitstream/123456789/22834/1/Responding%20to%20HIVAIDS%20in%20Agriculture%20and%20Related%20Activities.pdf?1>. Accessed on 08/09/12.

Stokes, S., 2003. Measuring Impacts of HIV/AIDS on Rural Livelihoods and Food Security. Available at: [http://www.fao.org/sd/2003/PE0102a\\_en.htm](http://www.fao.org/sd/2003/PE0102a_en.htm). Accessed on 09/06/12.

Taylor, B., Bukenya, D., Van Asten, P., Agol, D., Pain, A. and Seely, J., 2011. The Impact of HIV on Agricultural Livelihoods in Southern Uganda and the Challenges of Attribution. Available at: <http://www.ncbi.nlm.nih.gov/pubmed/21129134>. Accessed on 08/09/12.

Temu, A., Manyama, A., Mgeni, C., Langyintuo, A. and Waized, B., 2011. Characterization of Maize Producing Households in Manyoni and Chamwino Districts in Tanzania. Drought Tolerant Maize for Africa (DTMA) Project. Tanzania.

UNAIDS, 2000. Report on the Global HIV/AIDS Epidemic Geneva. Available at: [http://www.unaids.org/en/media/unaids/contentassets/dataimport/pub/report/2000/2000\\_gr\\_en.pdf](http://www.unaids.org/en/media/unaids/contentassets/dataimport/pub/report/2000/2000_gr_en.pdf). Accessed on 20/05/12.

UNAIDS global report, 2010. A Global View of HIV infection. [online]. Available at: [http://www.unaids.org/documents/20101123\\_2010\\_HIV\\_Prevalence\\_Map\\_em.pdf](http://www.unaids.org/documents/20101123_2010_HIV_Prevalence_Map_em.pdf). Accessed on 20/05/12.

United Nations (2004). Impact of AIDS. Department of Economic and Social Affairs. Population Division. New York: 2008. Report on the global AIDS epidemic. Geneva, UNAIDS.

Verschuren, P. and Doorewaard, H., 2010. Designing a Research Project. 2<sup>nd</sup> ed. The Hague. Eleven International Publishing.

Walker, C., 2002. Ensuring Women's Land Access. Regional Workshop on Land Issues in Africa and the Middle East, Kampala, Uganda, April 29 - May 2, 2002.

Wall Street Journal, 2003 cited in The Impact of AIDS, 2004, p. 63. United Nations Department of Economic and Social Affairs. Available at: [http://www.un.org/esa/population/publications/AIDSimpact/8\\_Chap\\_V.pdf](http://www.un.org/esa/population/publications/AIDSimpact/8_Chap_V.pdf). Accessed on 03/06/12.

Women and HIV/AIDS: Confronting the crisis. 2004. Joint report by UNAIDS/UNFPA/UNIFEM

World Bank 2010. Available at: <http://wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2010/07/16>. Accessed on 02/06/12.

Xu, Z., Burke, W.J., Jayne, T.S. and Govereh, J., 2009. Do input subsidy programs “crowd in” or “crowd out” commercial market development? Modelling fertilizer demand in a two-channel marketing system. International Association of Agricultural Economists.

Zambia Impact Assessment of the Fertiliser Support Program: Analysis of Effectiveness and Efficiency, 2010. Sustainable Development Department. Agriculture and Rural Development. Africa Region. Available at: <http://www.siteresources.worldbank.org/INTDEBTDEPT/Resources/468980-1218567884>. Accessed on 09/06/12.

#### Appendix 1 Checklist for households

- General maize production and land under cultivation
- Maize yields before and after impact
- Other crops grown
- Changes in crops grown after impact
- Changes in land under cultivation after impact
- Labour in maize production before and after impact (Hours spent on maize production and diversion of labour)
- Amount of maize used by household
- Access to maize inputs through FISP
- Affiliation to cooperatives
- Role of extended family
- Gender roles
- Income and expenditure patterns
- Savings
- Asset depletion
- Coping mechanisms used by household

## Appendix 2 Informed Consent Form

You are invited to participate in a study of the impact of HIV and AIDS on maize production. We hope to learn how maize production is affected by the epidemic. You were selected as a possible participant in this study because you have a chronically ill person / had an HIV/AIDS related bereavement and are in maize production.

If you decide to participate, we will interview you and your household for not longer than 2 hours. With your permission the interview will be recorded for easy transcription of notes. There are no risks involved and the benefits are that the government and other rural development organisations will have information on the impact and will be able to formulate strategies to assist HIV and AIDS affected households.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will be disclosed only with your permission. This information will only be used in the report to be submitted to Van Hall Larenstein University. Your decision whether or not to participate will not prejudice your future relation with Van Hall Larenstein or the Ministry of Agriculture and Livestock. If you decide to participate, you are free to discontinue participation at any time without prejudice.

If you have any questions, please do not hesitate to contact us. If you have any additional questions later, please contact Mr Simuwelu at Kaputa District Hospital who will be happy to answer them.

You will be offered a copy of this form to keep.

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You are making a decision whether or not to participate. Your signature indicates that you have read the information provided above and have decided to participate. You may withdraw at any time without penalty or loss of benefits to which you may be entitled after signing this form should you choose to discontinue participation in this study.

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Signature Date

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Signature of Parent/Legal Guardian (If necessary) Date

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Signature of Witness (If appropriate) Signature of Investigator



### Appendix 3 Vulnerable household 1

A woman of Kawama village and mother of 4 girls died four years ago at the age of 33. She left behind girls who are now aged 24, 17, 15 and 3. The 24 year old is married and living in another village and the other three are still living in their mother's house. When their mother was alive they used to grow rice, cassava and maize. They had a 3 lima field of maize where they usually harvested 30 - 35 x 50 Kg bags. The harvested maize was used for home consumption while some of it was sold to FRA. Their mother used to run a business whose income was used to pay for their school fees, buy groceries, relish and hire labour to help out during the weeding and harvesting times. The business was buying fish at the lake and drying and salting it, then reselling it in the bigger towns. On top of that she used to brew local beer which she sold within the village.

When their mother started ailing the business run down and money became a problem. The girls had to stop going to school because there was no money to pay for their fees. The one who is 17 years old had to stop school in grade eight while the 15 year old had to stop in grade six. They then started taking care of their mother. They received some assistance from church members who in the beginning brought them food but this dwindled to visits only.

Their mother became very sick and at times could not even get up. The girls quickly used up their money and savings. When things got to the worst they sold their rice, television, chairs and mattress to make ends meet. The crops in the fields suffered as they could not afford to buy fertiliser or hire labour to weed and harvest. They started harvesting only half the amount they used to harvest. Eventually their mother died.

*"The house became a sad place without mum. We were not ready to be parted and none of our relatives were ready to take us so we stayed and we are struggling every day to eat and buy other household needs. Sometimes we go a whole day without eating"* said the younger girl with tears in her eyes.

By the time of the interview their maize had run out and they were depending on cassava. The girls cut firewood and burn charcoal for sale. This was risky for them as they got firewood from a protected area and they could get penalised if caught. As for maize growing they had continued growing it but only cultivated 1 lima now.

*"We cultivate 5 x 50Kg bags of maize from the lima. This only lasts us a couple of months after which we rely on cassava. Sometimes we have surplus cassava which we grind and sell in the village. Working in the fields is not easy. We miss our mother a lot but we have to strive on if we want to eat."*

The household have not been able to recover the things they sold during their mother's illness. Therefore, due to HIV and AIDS the house is now female child headed, has a decreased maize yield and has girls living alone who are vulnerable and susceptible to HIV and AIDS.

## Appendix 4 Vulnerable household 2

The house looked deserted as we approached it. It is a female headed house and we wondered if there was anyone home. We were received by a young boy who took us in the house where his mother lay. This 39year old woman who is living in Kafuma village has AIDS. She was bedridden at the time of the interview. She was the head of house and was keeping 5 children and a grandchild. Her husband died in 2007 at the age of 39 from AIDS.

*“When my husband died his relatives got the land where we were farming and the furniture from the house. They said the land was his father’s so I had no right to it despite having given them 7 children. The children and I had to move back to my village.”*

She further narrated that before her husband’s death, they used to grow cassava and maize. They had 2½ lima for maize and 2 lima for cassava. The maize and cassava were solely for consumption. They used to be members of a cooperative and would buy the subsidised inputs for farming. They used to harvest 20-25 x 50 Kg bags of maize from the 2½ lima. This supplemented with cassava would last them the whole year.

After moving back to my village my daughter got married and my eldest son stopped school and started doing odd jobs. The headman gave them a 2 lima piece of land for their farming. They started utilising it and were harvesting as many as 15 x 50 Kg bags of maize. Then she started getting sick and things went downhill. Going to the field became a problem as she did not have the energy and her children were too young to be farming. For the last two years they have not been able to utilise the entire 2 lima. The last harvest they got was 2 buckets of maize (one bucket = 5Kg). When bedridden they depended on her daughter who is married to bring them food. They could not fully depend on the son as he did not have a steady job, but when he did make money he helped. At the time of the interview she had been bedridden for 2 weeks and their maize supply had finished a long time ago.

Only one of the children was being sponsored by the Government through Social Welfare to go to school. The other four did not go to school as there was no one to pay for their school fees. Eating was the major problem she lamented.

One of the younger children said, *“When mum is like this we have to help clean the house and draw water. We have even learnt how to dig cassava, dry it and grind it for eating. Our big sister sometimes brings food but when she can’t we look around for wild vegetables which we boil and add salt. Sometimes the people in the village bring us some fish or give mum some money to help around the house.”*

The family was struggling to make ends meet.

## Appendix 5 Resilient household 1

The male head of house aged 37 is HIV positive and has a wife who is aged 34 and has AIDS. They are residents of Kamuchanga village. His wife has been sick for the last four years. They have three children and are keeping three orphans. They are both on ARVs but the wife delayed in taking them as she did not believe she could contract such a disease. As a result they spent a lot of money moving from one traditional healer to another looking for medicine.

In terms of farming they used to grow cassava, maize and groundnuts before becoming sick. They had 1 hectare for maize, 2 hectare for cassava and 2 lima for groundnuts. They used to harvest 32 x 50 Kg bags of maize but the wife became sick and they had to move around looking for medicines. This led to the harvest plummeting to 4 x 50 Kg bags and the area cultivated reduced to 2 lima for the maize. Time spent in the field also reduced from 8 to 2 hours because they had to take turns looking after her. They had to sell their bicycle, chairs and table to cover travel and medical costs.

The husband narrated that, *"When my wife became very ill it was difficult for me. I would sit at home watching her and did not care about the fields or welfare of my children; I just wanted her to get well. My eldest daughter who is aged 18 took over the farming activities. When my wife became bedridden one of the counsellors from the clinic came and talked to us and we followed his advice. Now my wife is on medication and some days are worse than others but at least she gets around."*

It was like a turning point for the husband who started tending to the fields again. He also converted the groundnut field into a rice field. The groundnuts which he termed a woman's crop were being grown at home around the yard. The maize field had also gone back to the previous 1 hectare. On top of that he bought fishing nets and he started fishing. The fish is smoked and taken to other towns for sale.

The wife said, *"I am very proud of my husband. When I became very ill he went into a depression like state and would just sit at home watching me. If he went to the field he would only be gone for a short while and come back. He had to sell a number of things to cover my costs but we have since managed to replace them. His business is doing well and I do not have to go to the fields anymore. I tend to the groundnuts being grown around the yard."*

They joined a cooperative and were able to access inputs even though it was only half a pack (half a pack covers 2 limas). They commented that the FISP program was not very reliable as they had never been able to get a full pack and the inputs usually come late such that they could not be used for that season. They were also able to hire labour to help them in the fields since they were making enough money.

## Appendix 6 Resilient household 2

This woman is 30 years old and has a 38 year old husband who is sick. They live in Kafuma village and have 8 children. They are also keeping 3 orphans of the husband's dead brother. Before the illness they used to grow 1 hectare of maize and 3 hectares of cassava. The maize and cassava was for home consumption only. They would harvest 34 x 50Kg bags of maize from the hectare. They had a small grocery shop that used to help them out financially and helped keep the children in school. In addition they kept pigs which they slaughtered for sale and home consumption.

When the husband became sick in 2009, work at the fields came to a standstill since they used to work the two of them. Money for food and other necessities was not really a problem as the shop was generating money. When the money started running out due to the shop being closed; the family had to sell the pigs and some furniture. This money was for buying food and keeping the children in school.

The brother to the husband who moved to stay with them said, *"When my brother became very ill and did not have enough energy I assisted my sister in law at the fields but I could only cultivate 2 lima. We hired labour for the other 2 lima but it was too expensive as they charged us K 150,000 per lima, so we only did that for one season. The rest of the field remained with nothing in it."*

After the husband stabilised, his brother re-opened the shop and started running it. The family continued maize farming and had actually increased the maize hectares to 3 hectares. 1 hectare was for home consumption and the other 2 was for sale to FRA. Their harvest is 34-40 x 50 Kg bags per hectare. They had also managed to replace their furniture and were optimistic that they would buy pigs again. The husband did not have much energy but he helped to remove the maize grain from the cobs once harvested.

## Appendix 7 Household characteristics

HH type		HH head	HH size	# of adults	# of children/dependents	Age of ill or at death and relation to HH head
With a chronically ill	1	Male	6	2	4 grandchildren	Female 42 (Wife)
	2	Female	5	2	3 (2 HIV positive)	Female 38
	3	Male	6	2	4	Male 35
	4	Female	8	2	6 (3 children and 3 dependents)	Male 37 (Brother)
	5	Male	8	3	5 (3 children and 2 grandchildren)	Male 41
	6	Female	9	2	7 (4 children and 3 grandchildren)	Female 47
	7	Male	6	2	4	Female 33 (Wife)
	8	Male	13	2	11 (8 own children and 3 orphans)	Male 38
	9	Male	6	2	4	Female 36 (Wife)
	10	Male	9	2	7 (2 grandchildren and 5 orphans)	Male 42
HIV/AIDS related death	1	Female child (17yrs)	4	-	4	Female 33 (Mother)
	2	Female	9	2	7 grandchildren	Male 28 (Son)
	3	Female	6	1	5 (1 HIV positive) dependents	Female 31 (Sister)
	4	Female	12	3	9 (4 children and 5 grandchildren)	Male 25 (Son)
	5	Male	15	3	12 (5 children and 7 grandchildren)	Male 33 (Son)
	6	Male	17	2	15 (9 own children and 7 orphans)	Male 32 (Brother)
	7	Female	8	1	7 (6 children and 1 grandchild)	Male 38 (Husband)
	8	Male	6	2	4	Female 39 (Wife)
	9	Male	7	1	6 (5 children and 1 grandchild who is HIV positive)	Female 22 (Daughter)
	10	Male	6	1	5	Female 39 (Wife)
<b>Averages</b>			<b>8.3</b>		<b>6.5</b>	<b>36</b>