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A thesis submitted in partial fulfillment of the requirements for the Master of Science degree in
Geography

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**Agricultural Interventions as a Means to Improving Food Security:
Experiences of HIV/AIDS-Affected Households in Northern Malawi.**

(Thesis format: Monograph)

by

Faith Nankasa Mambulu

Graduate Program in Geography

A thesis submitted in partial fulfillment
of the requirements for the degree of
Masters of Science

The School of Graduate and Postdoctoral Studies
The University of Western Ontario
London, Ontario, Canada

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Abstract

Many rural Malawians experience food insecurity, attributed to a number of factors including poverty, climate change, structural adjustment, poor governance and the impacts of HIV/AIDS. The prevalence of HIV/AIDS is currently estimated at 11% amongst adults. To address food insecurity in Northern Malawi, the Soils, Food and Health Communities (SFHC) agroecological project was implemented in 2000. In 2006, the project began to focus some of its program on farmers living with HIV/AIDS, but the impact of this shift has not been studied. There are few studies examining the potential for agricultural interventions to address the food security needs of AIDS-affected households. To fill this gap, this study examines how the SFHC agroecological intervention impacted HIV/AIDS-affected households. Using a feminist political ecology approach, I collected and analysed data from participant observation, visual diagramming with focus groups (n=6) and in-depth interviews (n=63). The findings suggest that SFHC agroecological methods contribute to increased crop yields, labour relief, income generation, networking and dietary diversity. Yet, household poverty, ongoing impacts of HIV/AIDS, gender inequalities and abuse, the high number of dependents per household, and other competing agricultural interventions undermine the intervention's potential to improve food production and food security. In conclusion, I recommend gender equality advocacy, collaboration of competing interventions, HIV/AIDS burden-sensitive, and holistic program modifications aimed at addressing the factors that are inhibiting HIV/AIDS-affected households' food security improvement.

Key Words: Food Insecurity, Northern Malawi, Feminist Political Ecology, Agroecological Interventions, Agriculture, HIV/AIDS, SFHC

Dedication

I dedicate this thesis to my parents James and Millys Mambulu, my brother Moses Tamani Mambulu, my sisters Ruth Nagausi Mambulu and Lerato Nanthini Mambulu.

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List of Abbreviations

AIDS: Acquired Immunodeficiency Syndrome

ARV: Antiretroviral

EHAP: Ekwindeni HIV/AIDS Project

FHH: Female Headed Households

FISP: Farm Input Subsidy Program

FPE: Feminist Political Ecology

FAO: Food and Agricultural Organization

HIV: Human Immunodeficiency Virus

SFHC: Soils Food and Healthy Communities

UN: United Nations

UNAIDS: United Nations Programme on HIV/AIDS

CHAPTER ONE

INTRODUCTION

1.1 Introduction

Food security prevails when people have both physical and economic access to sufficient food to meet their dietary needs for a productive and healthy life (Bonnard, 2003). Despite the availability of enough food to feed the people who occupy the Earth's surface, the FAO (2006) reported that 22 countries (16 of them in Africa) were chronically food insecure. In response to this challenge, hunger reduction projects have been implemented in these countries. Yet, 852 million people in Sub-Saharan Africa remain food insecure (FAO, 2012). The interaction of multiple factors such as poverty, climate change and the HIV pandemic contribute to food insecurity for many in Sub-Saharan Africa (Drimie & Casale, 2009). Poverty is manifest when people have insufficient physical and financial assets required to produce or purchase food (Parker and Kozel, 2005). Climate change scenarios, such as changes in rainfall triggers drought or floods and temperature changes, which alter the length of growing seasons and result in food insecurity (Gregory et al., 2005). Furthermore, the HIV/AIDS epidemic's negative impacts on agricultural labour through a reduction in "human power" and assets have also contributed to a reduction of food production in Sub-Saharan Africa (Drimie & Casale, 2009). My research focuses on food insecurity experiences in the context of HIV/AIDS in Malawi.

In Malawi, food insecurity is not only caused by the impacts of HIV/AIDS on agriculture but other factors such as unreliable rainfall, differential access to resources across social groupings (poverty) and economic problems (Hanrahan, 2002; Kalipeni, 2000). Economic stability and adequate rains may result in the

nation having the required food production level, but it does not guarantee to food security for all households since some may not be able to access the resources needed. In the 2010/2011 growing season, Malawi's maize production estimates were 1,200,461 metric tons above the nation's requirements; however, an estimated 201,854 people could not meet their annual maize requirement (MVAC, 2012). In this context, the nation's food production did not guarantee households' food security.

Among other factors, households' food security has been hindered by the high prevalence of HIV/AIDS in Sub-Saharan African countries. While there might be variations to this effect across different settings, impacts on agriculture are central in rural areas. Agriculture accounts for the livelihoods of 65% of the population in Africa (World Bank, 2013), and 70% of the rural households in Sub-Saharan Africa rely on agriculture for their food (de Waal and Tumushabe, 2003). In terms of disease burden, approximately 69% of people living with HIV globally reside in Sub-Saharan Africa (UNAIDS, 2012). Households that rely on subsistence farming and have people living with HIV/AIDS may have reduced food production and, hence, be vulnerable to food insecurity (Nankam, 2003). An HIV/AIDS-affected household may be one that is nursing someone with an AIDS-based chronic illness, has experienced the death of a household member due to AIDS or might support children orphaned by AIDS (O'Donnell, 2004). AIDS-related mortality and morbidity affects households' human capital, such that farming skills and labour times, both of which are necessary for agricultural food production are eroded (Dorward, Chirwa, Kelly, Jayne, Slater & Boughton, 2006). The erosion of agricultural production for AIDS-affected households may result in an inability to harvest sufficient food and increased food insecurity (Drimie,

2003; Kusiima, 2009). The HIV/AIDS-related food insecurity in Sub-Saharan Africa has resulted in the implementation of agricultural-based strategies aimed at improving the situation.

Rugalema (2007) argued that the agricultural strategies adopted to improve food security for HIV/AIDS-affected households in Southern Africa are ineffective, since they do not address the negative impacts HIV/AIDS poses on agriculture. In South Africa, HIV/AIDS-affected households rented out land they could not cultivate only to divert the money gained to hospital bills. Other households borrowed money to sustain their farms only to sell the harvest to repay the debts (Ganyaza-Twalo & Seager, 2005; Drimie, 2003). Beyond household level strategies, in Uganda World Vision International (WVI) provided farm inputs which replaced sold farm inputs for HIV/AIDS-affected households, but it did not address labour loss and diversion issues (Kusiima, 2009).

Studies are beginning to emerge on food security in the context of agricultural intervention programs to understand the methods by which HIV/AIDS-affected households are dealing with the physical and social environments that shape the process of food production. For example, a study in northern Malawi examined the root causes of food insecurity and found unequal power relations between men and women in decision making, food production, and labour (Bezner-kerr, 2005). Additionally, another study in Central Malawi discovered that women within HIV/AIDS-affected households were burdened with caring for the sick, which lead to insufficient food production as a result of diverted labour (Thangata et al., 2007). The findings from the above studies are insightful in relation to the critical role of gender within the context of food production among HIV/AIDS-affected households. Consequently, adopting a

feminist approach is imperative. This study uses a feminist political ecology (FPE) approach to explore food production in HIV/AIDS-affected households. A FPE approach focuses on gendered access and control of resources such as agricultural inputs (human and non-human) in the environment (Elmhirst, 2011). The use of FPE will enable an in-depth and gendered examination of the relationship between reported agroecological practices, as these are a means to addressing environmental problems such as climate change as well as power relations.

Household food security is commonly assessed through measuring an agricultural production index such as yield (as benchmarks of ideal production), children's weight and height, (reveal nutrition status which is an attribute of food security) and surveys of food intake (Coates et al., 2003; FAO, 2008). Household food security is also assessed using multiple questions used to form a scale, such as the household food insecurity access scale (HFIAS), which asks questions about the patterns of household food consumption in the last 30 days in order to depict food insecurity based on the modifications made to consumption (Coates et al., 2007; UN, 2007). Such quantitative measures, however, do not take into account the experiences and perceptions of beneficiaries, and so lack a deep reflection of the issues which underlie the numbers (Webb et al., 2006). In order to understand the true effects of agricultural strategies, there is a need to examine the complex social factors linked to HIV in relation to food security. The HIV/AIDS-related complex factors have the potential to entail how labour diversion, loss of farm labour, knowledge and assets are manifested in various cultural, economic and social environment settings.

This study explored HIV/AIDS-affected households' perceptions and experiences of one agricultural intervention that used agroecological approaches to address food security. The Soils, Food and Healthy Communities (SFHC) project, an interdisciplinary and participatory intervention, was implemented in northern Malawi in 2000 to test different organic matter technologies as a means to improve food security, soil fertility and child health (Bezner-kerr et al., 2010). Previous studies found that SFHC had positive impacts on child nutrition. Evidence from anthropometric measurements indicated that infants who had access to the intervention had higher scores compared to those who never accessed the intervention (Bezner-kerr et al., 2008). In 2006, SFHC extended its efforts and focused on the agricultural and nutritional needs of AIDS-affected families; however, the significance of the efforts awaits exploration (Bezner-kerr and Shumba, 2007). This study fills this gap by exploring the effect of an agroecological agricultural intervention on food security for AIDS-affected households.

Understanding the specific social circumstances that interact with the SFHC's agricultural intervention requires understanding people's experiences and subjective interpretations (Mack, 2010). To study HIV/AIDS-affected households' experiences and attitudes, this study employs qualitative methods because of their ability to capture in-depth aspects of people's thoughts from their own perspective (Kaler, 2004).

1.2 Research Objectives

This study aims to assess whether the SFHC agricultural intervention has had an impact on the food security situation of the HIV/AIDS-affected households in

northern Malawi. To understand food security circumstances surrounding agricultural practices, food access and consumption among HIV/AIDS-affected households in Northern Malawi, this study will:

1. Assess the challenges that HIV/AIDS-affected households encounter in their attempts at achieving food security;
2. Analyse households' experiences and perceptions of SFHC agricultural interventions;
3. Identify the gendered perceptions of food security issues among HIV/AIDS-affected households, and
4. Evaluate the HIV/AIDS-affected households' experiences of food availability and diversity.

1.3 Chapter Outline

This thesis consists of five chapters. **Chapter Two** consists of five sections: the first three sections review the impact that the high prevalence of HIV/AIDS has on food security in Africa. The fourth section discusses HIV/AIDS-related food insecurity coping strategies by focusing on the reported strengths and limitations of both the implementation and evaluation of the strategies' impacts. The last section analyses the shifting approaches to examining food security and further suggests feminist political ecology as a useful theoretical framework for a food security study which views access to resources through gendered lens.

Chapter Three is a description of the exploratory qualitative research approach used in the study. The chapter begins with a description of the physical and social features of the study area. The significance of using a qualitative inquiry in a research that is guided by FPE is then discussed. Thirdly, the

comparative study design and data collection methods are described: interviews, discussion, visual diagramming and 24-hour recall in relation to the relevance in a qualitative inquiry of food security experiences. Then I discuss how the data were analysed inductively into themes. Lastly I describe ethical considerations and how validity measures were employed through member-checking.

Chapter Four presents the findings of the study into five main themes. I begin by introducing the participants' challenges based on their vulnerability contexts. Then I present the nature of participants' agricultural practices by focusing on their decision making styles, labour dimension, access to institutional knowledge, and resources. I review the somewhat complex SFHC project, focusing on double legume intercrop interventions, mode of recruitment, benefits and barriers encountered during implementation. Fourthly, I showcase the gender inequalities that conflict with improvement of food security among female-headed households. Lastly I use food shortage and 24 hour recall reports to assess the food insecurity situation among households with and without the intervention.

In Chapter Five I discuss the five main themes in the study by highlighting aspects that are consistent or conflicting with previous studies and introducing emerging ideas. I also conclude the chapter with the summative take-away message which is followed by contribution of the research, recommendations and proposed further research.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL CONTEXT

2.1 Introduction

The examination of the impact of Soils Food and Healthy Communities (SFHC) agricultural intervention on HIV/AIDS-affected households' food security in northern Malawi lies in complex gendered geographies, environmental, social, economic and cultural dynamics. To this effect, this study is guided by a feminist political ecology (FPE) theoretical approach to help reveal structures that may be embedded in HIV/AIDS-affected households' food security dimensions. In this chapter, I will discuss the spatial geographies of HIV/AIDS prevalence and food insecurity in Sub-Saharan Africa. Secondly, I will review how HIV/AIDS has led to food insecurity in agrarian communities. Then, I will examine the social and program structure dimensions of HIV/AIDS based food insecurity coping strategies. Lastly, I analyse how the entitlement approach and feminist political ecology inform examination of geographies of HIV/AIDS-affected households' food security in the context of northern Malawi.

2.2 Spatial Geographies of HIV/AIDS prevalence and food insecurity in Sub-Saharan Africa: Regional to Country Impacts

UNAIDS (2012) reported in 2011 that approximately 23.5 million people were living with HIV in Sub-Saharan Africa, representing 69% of the global incidence. High prevalence of HIV/AIDS challenges the wellbeing of the population in Sub-Saharan Africa; HIV and AIDS are responsible for hindering economic and social development, including food security. In Sub-Saharan Africa, Southern Africa has the largest proportion of people living with HIV and AIDS; however, there are variations across countries: for example, the prevalence of

HIV among adults in the population is 11% in Malawi, 15% in Zimbabwe and 23% in Lesotho (USAID, 2012). In some of the highly-affected countries, HIV/AIDS prevalence is compounded by high levels of food insecurity. For instance, on a global scale of HIV/AIDS prevalence, Malawi, along with other countries, ranks second, since it falls between the serious adult prevalence rates of 5 to 15% (Burditt, 2013).

Concurrently, Malawi has persistently high levels of food insecurity despite having reduced its hunger by 50% on the global hunger index since 1990 (IFPRI, 2013). Recent data suggest that about 1/3 of the households in Malawi are food insecure (UN, 2013). In a similar situation around the 1970s, the Food and Agriculture organization (FAO) found that West African countries (Mali and Niger) had enough grain to feed the whole population if equal distribution was exercised, yet both experienced the worst year (1973) of famine (Baro & Deubel, 2006). This underscores the need to focus on household food security instead of reliance on national averages, which do not give a true account of micro-level (household) food security issues. While national statistics give general trends, there is a need to do qualitative research to understand specific factors that affect individuals' and households' vulnerability to food insecurity.

Seventy percent of the people in Sub-Saharan Africa reside in rural areas and farming is the primary source of income and food (Gillepsie & Kadiyala, 2005). Rural communities in Malawi and other parts of Sub-Saharan Africa have been greatly affected by the impacts of HIV/AIDS on food production. UNICEF (2009) reported that an estimated 910 000 people of all ages in Malawi were living with HIV, representing 11% of the country's population. At the same time, 80% of all Malawians live in rural areas and rely on agriculture, suggesting that

the food production in the country's rural setting is burdened by the negative impacts of the HIV/AIDS pandemic.

2.3 Impact of HIV/AIDS on Agriculture and Food Security

2.3.1 HIV, Agriculture and Labour

HIV/AIDS has contributed to food insecurity by negatively affecting agricultural labour, knowledge, and assets (de Waal and Whiteside, 2003). HIV/AIDS has depleted and diverted farm labour to the extent that sickness and death of adults have resulted in the inability of households to cultivate all the land at their disposal (Drimie and Casale, 2009; Dorward et al., 2006; du Guerny, 1999). The HIV/AIDS and Agriculture Systems (HAAS) project in Zambia, Malawi, and Mozambique reported that families affected by HIV/AIDS faced a reduction in farm yields since HIV-infected adults were usually too sick to work (Nankam, 2003). Further to losing labour, healthy individuals' labour time has been diverted to caring for the infected members and attending the funerals of those who have died from the pandemic (Haddad and Gillespie, 2001; Parker et al., 2009). Therefore, HIV-affected households have been growing crops that are less labour intensive in order to have time to care for the sick. For instance, one study in southern Malawi found that a higher proportion of HIV/AIDS-infected households grew tomatoes, chilies, and pigeon peas due to their reduced labour requirements (Alumira et al., 2005). Crops requiring less labour were grown more than maize, which represents a great proportion of Malawians' diet. Alumira et al. (2005) suggests that this practice is associated with household food insecurity before the next cultivation period. The study by Alumira and her colleagues did not address the fact that tomatoes, chilies, and pigeon peas are

often sold as cash crops and could generate income, which might resolve food insecurity problems. Therefore, there is a need for further exploration of the contributions of less labour-intensive crops. Currently people living with HIV/AIDS have found relief in labour constraints through use of antiretroviral (ARV) therapy.

The use of antiretroviral (ARV) therapy has been reported to have reduced the burden of HIV/AIDS health effects/illness and made agricultural production feasible for HIV/AIDS-affected households. WHO (2006) reported that 800 000 HIV infected people in Sub-Saharan Africa were accessing ARV treatment. In Malawi, ARV therapy has been scaled up from 4,000 clients in 2004 to 322,209 in 2011 (MOH, 2006; WHO, 2008). In a household survey in Kenya, Thirumurthy et al. (2008) found that ARV treatment enables people who were bedridden to get back to work within 6 months. However, the treatment response and local social and environmental context is not uniform across all HIV-infected households in Sub-Saharan Africa (Thirumurthy et al., 2008). The recovery time and variations in ARV treatment response require further exploration in the context of the household members' agricultural practices.

2.3.2 HIV/AIDS Related Death and Agricultural Knowledge

If individuals with extensive agricultural knowledge die, agricultural knowledge (especially indigenous) and skills may be lost. In the African setting, traditional knowledge and skills are passed on from one generation to another through word of mouth and observation. In Malawi, studies have found that agricultural extension employees, agro-input stores, older female relatives and neighbors are the major sources of information and knowledge on seed selection

and agricultural production (Alumira et al., 2005; Bezner-kerr, 2010). Extension services, which are provided by the government country-wide, provide alternative ways of farming, while inter-generational farming knowledge comes from parents and grandparents. When parents and extension workers die without passing on what they know, the body of knowledge might die with them, thus depriving new generations' (and communities who did not learn) access to learning under the guidance of an experienced person (Alumira, et al., 2005; Du Guerncy, 1999). A study in Thyolo district of Malawi by Alumira et al. (2005) found that families select from previous yields and store such seed for the next season. This seed preservation involved mixing seed with sand before storage in a container or with leaves from plants that are believed to have pesticide characteristics (Alumira, et al., 2005). This practice indicates that rural agriculture depends on diverse knowledge that has been passed on from previous generations. The loss of agricultural knowledge due to HIV/AIDS-related deaths may weaken farming systems in general and increase food insecurity (FAO, 2003a). In Northern Malawi, there is a need for detailed accounts on coping strategies households and community members employ to address HIV/AIDS related loss of knowledge.

The access to new agricultural knowledge flow, social exchange, and community resources has also been affected by HIV/AIDS epidemic. For instance, a study in Uganda found there was reduced knowledge and farming skills among HIV infected family members since they withdrew from participating in agricultural clubs (Parker et al., 2009). The withdrawal was due to HIV positive people perceiving disapproval by other members of the club for their continued participation due to their HIV status. The loss of participation resulted in

agricultural clubs being deprived of information on new agriculture technologies that might help improve food production (Parker et al., 2009). In Malawi there are initiatives that promote confrontation of stigma and discrimination in the context of HIV/AIDS; however, the conduct of farmers in agricultural intervention aimed at improving food security is unknown (Mgbako et al., 2007).

2.3.3 HIV/AIDS Related Costs and their Impact on Agriculture

There are also increased medical costs incurred by those affected by HIV/AIDS, who may also require livestock sales or sacrifice as payment of traditional medicine rituals (Bezner-kerr et al, 2011; Du Guerncy, 1999). Drimie (2003) highlighted that HIV/AIDS related expenses affect household food availability, such as the need for an increase in food consumption and more dietary diversity. Productive farm resources are also diverted to hospital bills and burial expenses which exacerbate household food insecurity. For instance, when a household member dies as a result of HIV/AIDS, farm produce intended for food is sold and in worse cases, households borrow money which as a return strategy takes away from food production or reserves (Haddad & Gillespie, 2001; Rugalema, 2007). The finances diverted to service funeral and sickness expenses result in reduced agricultural production since some inputs are cut from the farming operations (Haddad & Gillespie, 2001).

2.4 HIV/AIDS, Food and Nutrition

In rural areas where farming is the primary source of income and food, a decrease in household labour supply as a result of the HIV/AIDS pandemic directly leads to deterioration of nutritional status of all household members (Gillespie & Kadiyala, 2005). This compromised nutrition has been attributed to

reduced dietary diversity in the sense that a household might have produced less or produced food varieties that require less labour (which might be less nutritious). ARV treatment however, interrupts the multiplication of HIV and improves an individual's immunity only when the patient's diet contains sufficient energy, micronutrients, and proteins (Diniz et al., 2011). Evidence from south and eastern Africa revealed that there was a need for good health care and nutrition to ensure effectiveness of ARV treatment of infected persons. Households affected by HIV and AIDS tended to eat fewer meals, consume poorer foods and invest less in the health of surviving members, which affected both adult and child malnutrition (De Waal & Tumushabe, 2003; Nagoli, 2009). HIV/AIDS also accelerates a vicious cycle: the infected person requires increased nutrition to boost their decreased immune system, yet the sickness blunts appetites and increases difficulties in eating, leading to inadequate dietary intake and subsequent malnutrition (Piwoz & Pleble, 2000; FAO, 2003b).

2.5 HIV/AIDS based food security coping strategies and interventions

Rural households affected by HIV/AIDS have responded to its impacts by adopting a number of strategies to enhance their food security and ensure that assets such as land remain in their custody (Drimie, 2003). Ganyaza & Seager, (2005) reported that HIV/AIDS-affected households in South Africa resorted to temporary strategies, such as borrowing money from informal sectors or hiring labour, to offset immediate agricultural impacts. Those households that owed money, however, often ended up selling their harvest, which pushed them back into a situation of food insecurity earlier in the season (Ganyaza & Seager, 2005). In Uganda and Kwazulu-Natal of South Africa, HIV-affected households sold or

leased part of their land in order to counterbalance the lack of labour and resources (Drimie, 2003; Parker et al., 2009). Since the strategies adopted did not necessarily improve food security or mitigate the impacts of HIV/AIDS on agriculture for affected households in Southern Africa, they qualified as struggles and not as coping mechanisms (Rugalema, 2000).

There is a growing literature that describes the effects of HIV/AIDS on smallholder farming issues such as land under-consumption and its link to reduced food production, one attribute of food insecurity (du Guerny, 1999; Drimie, 2003). Such studies have recommended agricultural policies and interventions aimed at mitigating the impacts of HIV on agriculture to improve food security. However, there is not much on the effects of these responses in the peer-reviewed literature. For example, World Vision International (WVI) distributed farm inputs (e.g., improved animal breeds, root and tuber cuttings, beans, and maize) and trained HIV-affected household members on improved ways of farming as a means of improving their food security in Uganda. This intervention was aimed at reducing the burden of asset diversion and loss of knowledge brought about by the pandemic. Among the trained HIV-affected farmers, 21% acquired skills in organic farming practices, and 4% gained skills in use of improved seeds and other planting materials (Kusiima, 2009). The intervention was effective such that 25% of the HIV-affected households attributed their increase in farm produce to the training as well as the additional inputs (Calibre Consult, 2007). The success claimed by this intervention, however, had limited evidence since beneficiaries were not compared to non-beneficiaries (control) as a means of verifying the changes in agricultural production. The study also lacked success stories which could have depicted in-

depth evidence on food security in the context of the intervention; hence, it was limited in explaining whether the intervention addressed the complex impacts of HIV/AIDS.

In another intervention, integrated fish and vegetable farming was implemented among HIV/AIDS-affected households in Zomba district (Malawi) with funding from WVI, World Bank, and the World Fish Center. The intervention involved 1200 beneficiaries (60% women-headed) as a means of addressing land (lost through selling to pay hospital bills) and labour (farm time diverted to care for the sick) constraints through the provision of agricultural inputs (Nagoli et al., 2009). The intervention was implemented under the assumption that small-scale aquaculture has the ability to improve nutrition and food security in poor communities under the burden of the pandemic (FAO, 2003a). This intervention made provision for two of the six food groups that are recommended in a diet and the rest were to be purchased through money made from fish sales (Nagoli et al., 2009). Food produced through the project is intended to be consumed by the beneficiaries; however, it is not known if they used the money gained by selling the fish to buy the foods they are not producing. It is also not known if the intervention has been effective in improving food security since it has not been assessed. Haddad and Gillespie (2001) recommended that responses or interventions implemented in the context of the HIV/AIDS pandemic are rated effective if they mitigate the impact of HIV/AIDS on livelihoods and food production.

2.6 Understanding Agriculture and Food Security in the Context of HIV/AIDS using theoretical Lens: Entitlement Approach and Feminist Political Ecology

2.6.1 Entitlement Approach

Although the impacts of HIV/AIDS on labour, knowledge and assets are important in understanding household food insecurity, prior research indicates that there are other factors which are also important. Sen (1981) used the entitlement approach to show that famine is not the outcome of food availability, but rather, individuals' endowments and rights to access food resources. As explained by Sen (1981), endowments concentrate on individuals' ability to control resources, including labour power, while entitlements focuses on a set of commodity bundles which individuals have right and opportunities to command in their society (see also Kurniawan, 2014; Devereux, 2001). More broadly, entitlements encompass 1) trade, as ability to sell or buy something for food; 2) produce, as ability to grow and produce food or goods for buying food; 3) labour, as ability to sell a skill or labour power for the purchase or production of food; and 4) inheritance or transfer, as access to food transfer from the government, relatives or society (Kurniawan, 2014; Devereux, 2001; Baro & Deubel, 2006; Sen, 1981). Among other scholars, Maarif (2012), Watts & Bohle (1993), Baro and Deubel (2006) and Devereux (2001) have found the entitlement approach quite limited in the explanation of food insecurity since hunger was experienced despite availability of entitlements and endowments.

As emphasized by Watts and Bohle (1993, p. 48), "entitlement as commodity bundle provides a 'conjectural' analysis, highlighting the immediate, triggering mechanisms (price movements, speculation, drought) which precipitate a shift in entitlements. It has much less to say about the long-term

structural and historical processes by which specific patterns of entitlements and property rights come to be distributed - in other words, political economy.” Furthermore, Maarif (2012) explained that food insecurity also results from complex political economic processes, including inappropriate government policies and interventions. In some cases, households’ food insecurity results from vulnerability in addressing shocks from political conflicts, economic hardships, and environmental changes; hence, hunger is also linked to contemporary and historical socioeconomic processes (Baro & Deubel, 2006; Watts & Bohle, 1993). In the late 1980’s and early 1990’s, part of the food insecurity problem in Malawi was a result of International Monetary Fund-Structural Adjustment Policies to intensify production of commercial crops and allocate land to tobacco estates, thus creating an obstacle for the nation and smallholder farmers to secure food (Owushu et al., 2003; Ng’ong’ola, 1996).

In much of the studies assessing the impact of HIV/AIDS on agriculture, some scholars have stressed that households’ food insecurity has resulted from climate change, poverty, poor governance, and structural adjustment policies (e.g. de Waal and Tumushabe, 2003). It is therefore imperative that the examination of HIV/AIDS-affected households’ food security should not only focus on individuals’ entitlements and endowments, but should also consider their experiences with inappropriate government policies and interventions. Moreover, such analyses should take into account how broader-scale political economic processes interact with local-level gender relations and the dynamics of ecology.

The lens of feminist political ecology (FPE) is especially appropriate in explaining this complex web of relations, especially the dynamics of political

economy, gender, property rights, environmental change, and how these affect food insecurity of disadvantaged women and men (Rocheleau et al., 1996). I now turn to an explanation of the FPE approach and show how it is linked to the analysis in this thesis.

2.6.2 Feminist Political Ecology

Malawi is among the countries that face serious food insecurity. However, this situation varies across households such that the most affected families secure enough food for only four months after harvest and rely on casual labour to buy food for the rest of the months (IFPRI, 2012; Chinsinga, 2004). The Geography of food focuses on the examination of the complex patterns of food production and consumption thus, revealing inequalities that occur in the context of political economy (Atkins & Bowler, 2001). Food production in Malawi cannot be well understood by entirely focusing on the economics of the food system. The conditions under which food is produced and consumed in Malawi is also influenced by how subsistence agriculture interacts with climate change, poverty, bad governance, negative impacts of HIV, and the effects of Structural Adjustment Policies (Kalipeni, 2000; Devereux, 2002). For instance, climate change has resulted to inconsistent rainfall patterns which households can barely predict, and rainfall usually stops before crops are ready for harvest, resulting household food shortages (Gregory et al., 2005). Political ecology as a theoretical framework focuses on the relationships among social, political, and economic factors in regards to inequalities in agricultural food production (Robbins, 2004). Drawing on a political ecology framework, a study in Uganda revealed how spatial and social differences in agriculture and land use were

responsible for food production problems (Blaikie & Bennett, 1992 in Rocheleau, 2008). The complex analysis of HIV/AIDS and agriculture enabled recommendation of responses that not only addressed social relations of power in agriculture at national level but also community and household levels (Rocheleau, 2008).

De Waal and Whiteside (2003) attributed the negative impact of HIV as one of the critical factors contributing to food insecurity. A number of studies indicate that the impacts of HIV/AIDS on food access are shaped by the gender relations and social processes already operating in a given context of the food systems (Gibbs, 2008; Loevinshn & Gillespie, 2003). The findings by Gibbs (2008) suggested that there is a need to include gender in studying how HIV/AIDS affects food security. In the quest to further the understanding food security in the context of HIV/AIDS-affected household in Northern Malawi, I explore the gendered dynamics. Furthermore, Bezner-Kerr (2005) found that food security is gendered in Northern Malawi since food is mostly produced by women who are under the power of their husbands, but there was no examination of the specific impacts of HIV/AIDS or consideration of interventions that may empower women. In O'Reilly (2010), a water and sanitation project in India built latrines for households as a tool to re-shape gendered practices in rural areas by empowering women to network on the benefits of sanitation. Contrary to the project's goals, women were left living a more confined life than before. The complex cultural values about caste, gender, and mobility restricted women to only move about when seeking for latrines. The cultural values in that study might have rendered the re-shaping of gendered practices unsuccessful. In Kenya however, urban poultry farming, which used to

be dominated by men, was successfully used to empower women's negotiation and control of resources (Hovorka, 2006). In the latrine and poultry cases, gender empowerment depended on the local context; in an Indian rural setting with strong cultural ties, reshaping gender was hindered while in Kenya's urban setting, women's empowerment through agri-business was proving successful.

Feminist geography views space as an arena where social life unfolds since it is produced and reproduced, and thereby focuses on examining inequality by understanding the social roles and experiences women encounter in the human environment and geographical space (Chodorow, 1989; Rose, 1993). Hovorka (2006) utilizes the underpinnings of feminist theory and political ecology by analyzing how gendered responses to the environment and political change bring with it changing livelihoods and social relations under the Feminist Political Ecology framework (FPE). The gendered dimensions of struggle over knowledge, practices, and power are revealed to be a product of larger forces of the environment especially economy (Truelove, 2011; Elmhirst, 2011). It is under the guidance of that notion that understanding household relations needs to highlight not only the place of power in decision making, labour divisions, access to and control of resources across genders and in economy, but also other forces like social, cultural and HIV/AIDS related issues. Truelove (2011) utilized FPE as a tool for analyzing dimensions of daily inequalities in resources by focusing the ways everyday practices are produced in regards to gender, class and power. FPE, therefore, examines gender as a critical facet in understanding sustainable livelihoods and development since it determines the access to and control of resources (Elmhirst, 2011; Rocheleau et al., 1996). To study the role of an intervention aimed at improving household

food security in the context of HIV/AIDS, I used FPE which enabled the analysis of how gendered dimensions relate to the complex social, cultural, and economic aspects that interact with Ekwendeni HIV/AIDS-affected households' food systems.

2.8 Summary

This chapter has reviewed the empirical evidence on the prevalence of HIV/AIDS in Sub-Saharan Africa countries and its impact on agriculture and food security. The interactions of food insecurity, nutrition, and HIV/AIDS have also been examined as they relate to household food patterns. The majority of the previous studies have depicted the intentions and effectiveness of HIV/AIDS based food security coping strategies [interventions]. Previous studies have mostly used the entitlements approach which focuses on individualism rather than the complex factors that define household food security situations. Furthermore, political ecology was revealed as a means to look at all aspects that may be related to household food security. The chapter concluded with the placement of Feminist Political Ecology as an appropriate framework for exploring both individual (household) and complex experiences that may intertwine with HIV/AIDS-affected households' practice of agriculture under the SFHC and food security.

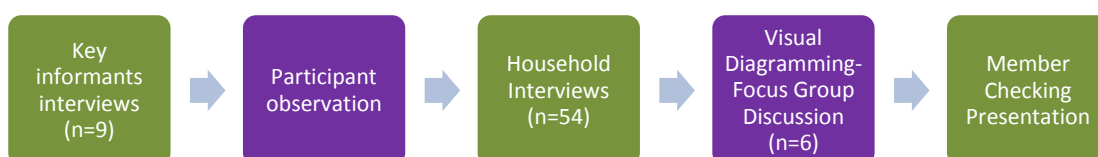
CHAPTER THREE

RESEARCH DESIGN AND METHODS

3.1 Introduction

Food security research is highly dependent on quantitative measures which disregard social, cultural, and economic dynamics that underlie situations of specific communities and households (Webb et al., 2006). To attain feedback from various perspectives, the food security impacts of the Soils Food and Health Communities (SFHC) have been explored both qualitatively and quantitatively (Bezner-Kerr et al., 2010; Bezner-Kerr et al., 2008). Nonetheless, there is no report of the food security experiences among HIV/AIDS-affected households. This chapter discusses the qualitative inquiry employed in the study. I first describe the environmental/spatial and social features of the research area. Secondly, I discuss how qualitative methods were ideal to explore the dynamics that underlie HIV/AIDS-affected households' food security. Thereafter, I discuss how an exploratory qualitative approach was employed, using a case control quasi-experimental design. Fourthly, I describe the data collection methods (Figure 3.1) by expressing how their underpinnings facilitated this qualitative exploration. The figure below portrays the field work phases which ranged from data collection to member checking.

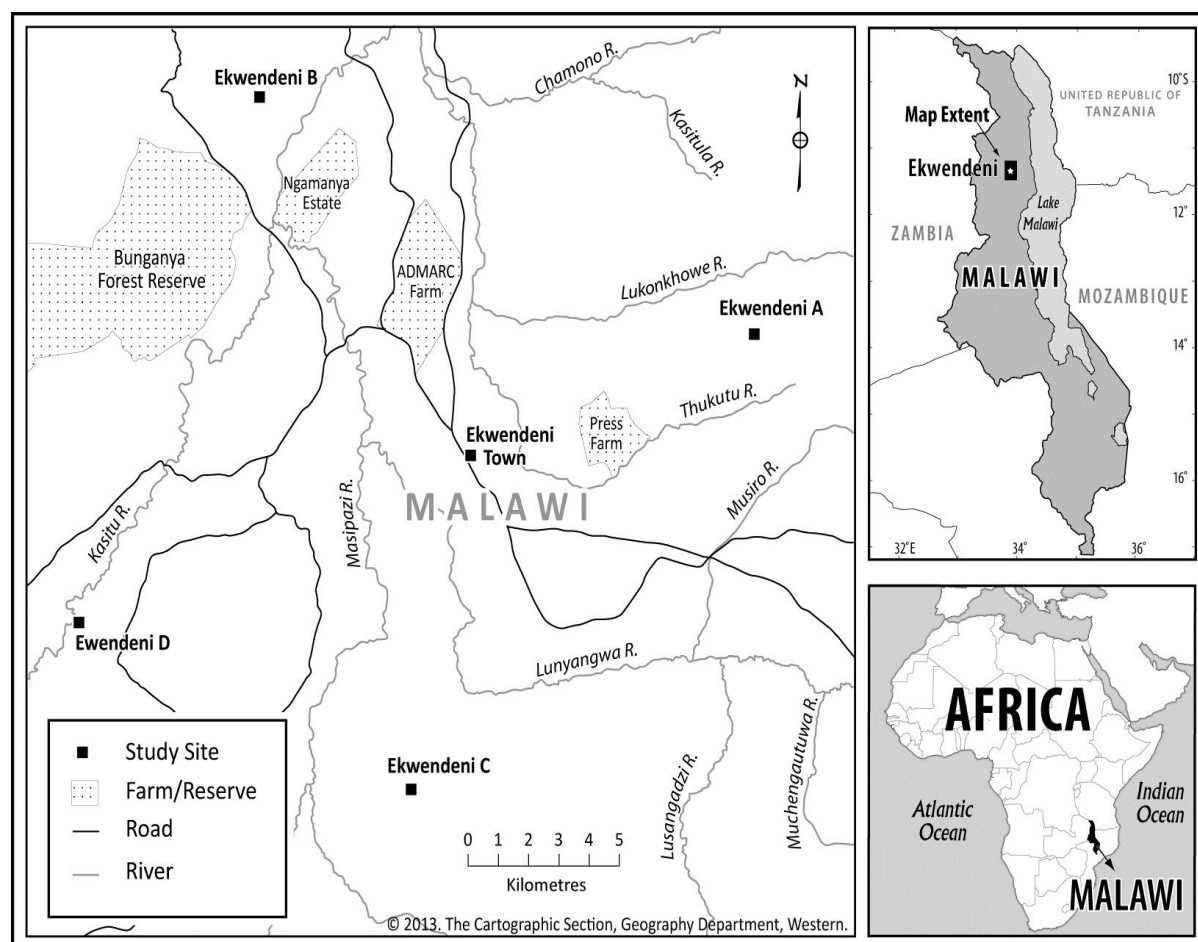
Figure 3.1 Phases of data collection and member checking (field work)



3.2 Study Context: Northern Malawi- Ekwendeni

This research took place in Ekwendeni, an area located in Mzimba district of northern Malawi. Eleven percent of the population in Malawi is living with HIV/AIDS, and 80% of the population live in rural areas and rely on subsistence agriculture (UNICEF, 2009). Rural Malawi HIV infection rates outnumber urban areas by about three to one (UNICEF, 2008; NSOM, 2005). The Ekwendeni area is a good location for this study since it is located in the rural part of Malawi where an agricultural intervention aimed at mitigating food insecurity related to high prevalence of HIV/AIDS among other factors has been implemented. Furthermore, the effectiveness of this intervention specifically on HIV/AIDS-affected households is yet to be examined.

Figure 3.2. Map of Study Area and Sites



The area is mostly comprised of rural agrarian communities where more than 300 HIV/AIDS-affected households are beneficiaries of the SFHC project. SFHC is a long-term participatory research project using agroecological methods to improve household food security (Bezner-Kerr & Shumba, 2007). The program is operated within a Primary Health Care (PHC) department that operates through the Ekwendeni Mission hospital. The hospital offers both curative and preventive services to a population of more than 100,000 residing in an area of 500 square kilometers (Bezner-Kerr, 2005). Most of the people in this area speak Chitumbuka, however, they belong to both the Ngoni and Tumbuka tribes. This research involved members from Ekwendeni town and four villages which I refer to by pseudonyms Ekwendeni A, B, C and D (Figure 3.2). Since this study took place in areas within a 500 square kilometer space of northern Malawi, I will refer to the study area as Ekwendeni region. The villages were more than 15 kilometers away from the Ekwendeni mission hospital. The sampled areas are part of Ekwendeni Mission hospital catchment area which is clustered into 489 villages composed of 7 to 288 households (Van Zyl, 2010). I observed that the people in the study villages were mostly farmers residing in traditional housing (86% of participants), struggling with poverty, unreliable livelihoods that were dependent on the environment, and inadequate access to transport (see chapter 4).

The SFHC project intervened in the food security situations of HIV/AIDS-affected households through village-based AIDS support groups¹ which were established by the AIDS program. The support group mainly promoted health

¹ AIDS support groups (in each village) were composed of people living with HIV/AIDS, they met on a weekly basis to discuss issues of positive living.

care and nutrition among people living with HIV/AIDS. In addition to the support group activities, the SFHC added lessons and resources for agroecological methods intended to improve food security. The participants received legume seeds for one planting season, along with some training on legume diversification methods for improving soil fertility. The legume seeds intended for intercropping in rotation with cereal crops included pigeon peas with soybeans or groundnuts. After intercropping and harvesting the legumes, the participants buried their residues in the ground to fix nitrogen for cereals (mostly maize) that will be grown the next growing season. Some participants were also involved in other educational activities such as discussion groups, recipe days or field days, and district-to-district farmer exchange visits.

3.3 Qualitative Methods

This study was guided by Feminist political ecology (FPE), which views inequalities in development and agrarian reconstruction as a social construction with gender as an integral player (Hovorka, 2006). FPE is built on interpretive and critical paradigms which hold ontological assumptions that realities are constructed based on individual interpretation and can therefore be defined by subjective narratives of people in the society (Mack, 2010). A qualitative approach was appropriate for this inquiry because it aimed at understanding behavior in relation to social structures, explaining human environment and experiences in the context of various frameworks (Hay, 2005; Sayer 1992). The need for households' account of food security called for qualitative techniques which enabled attainment of in-depth information. Human interaction with their social setup was accessed through observation of individuals' behavior in natural

settings and listening to their narratives. Observation enables a researcher to relate to the meaning individuals attribute to a phenomenon under study, while narratives allow participants' own voices to be represented in their own perceptions (Bryman, Bell & Teevan, 2012; Hay, 2005).

In addition to detailed information, human experiences are known to reveal the extent to which social, cultural, economic, and environmental elements benefit or hinder everyday life. Rychetnik et al. (2002) emphasized that the use of distinctive descriptive information in determining the contributions of an intervention to people's lives accommodate complex, contextual and programmatic structures that best express the effectiveness of an intervention. Since the SFHC interventions were implemented on a household level, human experiences were used to examine households' food production and security situations in the context of an intervention. The HIV/AIDS-affected households in Ekwendeni were explored based on contextual variations which included: household members' compositions, village environments, and access to social amenities and support. In realization of the variations across households with and without SFHC intervention, their food security dimensions were explored using the qualitative participatory, observational, and oral techniques.

3.4 Study Design

An exploratory approach was adopted due to its focus on descriptive and explanatory analysis of a group as a means of discovering phenomena such as food security (Baxter and Jack, 2008). In extension to this strategy, a comparison of HIV/AIDS-affected households with and without the intervention was used. A comparative technique involves comparing intervention recipients to non-

recipients and their differences as ascribed to the intervention (Shadish et al., 2002; Pal, 1990). The use of non-recipients of SFHC was meant to improve the validity of the link between the intervention and food security. Methodological triangulation, which involves the use of multiple qualitative methods to promote trustworthiness of the findings, was also adhered to in this study (Olsen, 2004; Guion et al., 2002). In a five-phase data collection and member checking exercise (Figure 3.1), key informant interviews, participant observation, in-depth interviews, visual diagramming-focus group discussions and presentation-member checking were used.

3.5 Data Collection

This study utilized information from stakeholders of the SFHC and AIDS programs. Guion (2002) recommended the inclusion of a comparable number of stakeholders and use of different sources of information in order to elicit deep insight on whether an intervention is operating towards intended objectives. I chose various levels of personnel from the SFHC and AIDS programs: implementers, community promoters, support group leaders, and members (intervention beneficiaries) in order to capture the complex aspects surrounding food security. This technique was also consistent with SFHC project's collaborative setup of involving stakeholders ranging from community members, program implementers, and researchers in all programmatic operations (Bezner-Kerr et al., 2010). Using various qualitative and participatory methods, I collected my data from May to August 2013. All data collection was conducted in Chitumbuka, which is the native language of people in the study community.

3.5.1 Key Informant interviews

Prior to the household participants' in-depth interviews, key informant interviews were conducted in order to frame the in-depth interviews based on the study community's context and identify relevant issues that may not be obvious to the researcher. Bryman and Teevan (2005) defined key informants as people who offer information on community members and social setting. To deduce the general insight of SFHC interventions from different perspectives, the researcher carried out nine interviews with informants from different levels. Table 3.1 portrays the informants' levels ranging from project management staff, community promoters, and AIDS support group leaders who were close to SFHC beneficiaries. The interviews with the promoters and support groups leaders were conducted in an unstructured, ongoing style during households' familiarization and visitations.

Table 3.1. Informant interviews participants

Projects	Key Informant	Total
SFHC	Staff (in-depth)	1
	Community promoter	1
AIDS	Staff (in-depth)	1
	Community promoter	1
SFHC-AIDS	Support group leaders	5
Grand total		9

The key informants described the nature and operations of the SFHC agricultural intervention ranging from their perception on recruitment to households participation. They even went further to explain how the benefits

and challenges of intervention are associated with both the beneficiaries' contexts and management situations.

3.5.2 Participant observation

Participant observation involves going into the field, participating and taking detailed notes of what is happening (Bryman and Teevan, 2005). To observe the participants, the researcher participated in SFHC-AIDS collaborated activities such as support group soybean harvesting day and a peer-sharing session on nutrition-health care. Observation was employed to gain the participants' perspective and understanding of what the activities mean to beneficiaries (Gibson and Brown, 2009). The SFHC-AIDS program activities in which the researcher participated were the compost manure-making demonstrations facilitated by SFHC program implementers, and a Home Based Care (HBC) empowerment session on health care, which was facilitated by the AIDS program community promoters. As recommended by Gibson and Brown (2009), the observations were unstructured; therefore, the researcher did not employ a schedule, but rather, interacted within the research setting to capture information in context. Data on what actually happens in the projects' activities and observed actions were recorded in the form of field notes.

3.5.3 HIV/AIDS-affected Households In-depth Interviews: case control quasi experimental design

In-depth interviews were ideal for this study because they have the potential to elicit a vivid picture of the study participants' experiences and perspectives (Mack et al., 2005). The study participants were asked open-ended questions as a means of eliciting in-depth information from their own words unlike in a survey where answers could have been directed (Guion, 2011). Using

an interview guide, participants' narratives lasted between 40 to 80 minutes, which further enabled accessing new themes that expanded on the interview guide themes. To represent the geographical and socio-economic setup of the interviewed households, I recorded the nature of houses, the environment, and any observations on general appearance of participants' health status.

Food security experiences of HIV/AIDS-affected households with access to SFHC interventions were compared to HIV/AIDS-affected households which had no access to SFHC interventions to evaluate if the intervention has consequences for the lives of participants. In view of the various structures that crosscut the SFHC intervention, a control group's detailed information provided clarity to the food security attributes associated with SFHC.

Sampling Technique

Fifty-four HIV/AIDS-affected households' heads of over 18 years of age with (n=27) and without (n=27) the SFHC intervention were interviewed for the study. Previous research on HIV/AIDS community responses categorize affected households based on their composition such as headed by women, youth and elders or housing an AIDS-related illness, since they are more exposed to food insecurity (ICAD, 2006; Parker et al., 2009). Participants for this study were identified using a purposive quota sampling, which is a technique that helps to generate a sample that represents different categories in the population under study (Bryman and Teevan, 2005). This sampling technique allowed the inclusion of a variety of HIV/AIDS-affected households such as couples, female heads, elderly heads, and polygamous households' wives (Table 3.2). The

sampled households had previously experienced an illness; however, the frequency of such illness was not uniform across households.

Table 3.2. Characteristics of participants: household in-depth interviews

Attributes	Households/Members Category	Total
Household structure (n=54 households)	Monogamous	26
	Polygamous	4
	Elderly-headed	6
	Female-headed	18
SFHC Affiliation (n=54 households)	Members	27
	Non-Members	27
Number of HIV-infected members per household (n=75 out of 304 household members)	1 person (per household)	21
	2 persons	28
	3+ persons	26
Household size(n=54 households)	1-3	13
	4-6	24
	7+	17

The couples and female-headed households (FHH) represented a higher number of participants in this research because they were dominant in the support groups. As suggested by Patton (1978) the polygamous and elderly-headed households were purposefully recruited because they were unusual cases. The numbers of participants from FHH and couples were determined based on saturation; that is, a researcher stops recruiting participants when no new information is gathered (Mason, 2010). The number of unusual cases depended on participants who contacted the researcher. To achieve comparability, each participant category was divided into households with and without the SFHC intervention. The inclusion of different categories assisted in exploring feasibility of SFHC-related agriculture practices to specific households' attributes which also included household size and number of members living with HIV/AIDS.

Food Security Assessment: Reported Food Shortage and 24-Hour Recall

In each interview, participants were asked to list the month they ran out of food that they grew the previous year, a recall of food they mainly ate in the growing season, and what they had consumed in the previous day (after harvest season). The self-reported annual food shortage was used to identify the period households ran out of food between two harvests (from April to March). The food shortage analysis was not enough to determine dietary quality thus it was followed by dietary recalls. A 24-hour dietary recall method involves requesting individuals to give a retrospective account of all the beverages and food consumed in a 24-hour period (Boyle & Holben, 2006). The dietary recalls from the previous day and the rainy season were meant to depict the households' access to balanced diets; however, the interviews only captured the types and not proportion of specific nutrients. A balanced diet contains adequate types and proportion of all necessary nutrients required for healthy growth (Sizer & Whitney, 2006). The reported food shortage and dietary recall were used to assess food security, which focuses on access to both enough and quality food at all times.

3.5.4 Visual Diagramming: case control quasi experimental design

To accommodate participants in generating and interpreting their knowledge, this study adopted a visual diagramming participatory technique. Qualitative researchers are accused of claiming local knowledge since they control how data are collected and analysed; however, collaborating with the subjects under study can allow for the possession of knowledge by rightful

owners (Kesby, 2000; Pena and Gallegos, 1997). Kesby (2000) suggests visual diagramming techniques as appropriate for community-based studies since they promote exploration of participants' experiences from their perspective. The community members were therefore involved in problem definition and data collection through visual diagramming in six group discussions: SFHC groups were, female headed households (n=7), support group in trading centre (n=15) and couples (n=3). Non-SFHC groups were, female headed households (n=8), elderly headed households (n=3) and couples (n=4), eighteen diagrams were drawn in all the six groups. The three visual diagrams (in each group) that were constructed include: a force field diagram on farming as means to food security, and two flow charts; one on sources of farming information and the other on inputs.

Visual diagramming was used to facilitate participants' communication on their lived experiences since it involved them in defining and ranking the role of SFHC intervention in their farming systems, rather than an external researcher's framework being used (Kesby, 2000). The researcher helped participants to create flow charts on sources of farming information and inputs based on their discussion. The flow charts ranked farming experiences to represent their nature, benefits, constraints and continuation. The discussions also led to the construction of force field diagrams, which SkyMark (2013) appraises for their ability to portray forces that drive or resist a desired change. In that light, the force field diagrams depicted factors that necessitate and hinder farming aimed at achieving food security.

3.6 Data Management and Analysis

Data were analysed through induction which involved examination and evaluation of field notes and transcripts to find key themes that relate to study objectives (Bryman and Teevan, 2005). Audio-recorded and written data from interviews, visual diagramming discussion and participant observation were transcribed and translated from Chitumbuka to English by the researcher and research assistants.

3.6.1 Informant and Household interviews

Interview data were analysed based on leading themes in the interview guide (Appendix 4) and the emergent themes. As suggested by Gibson and Brown (2009) the data from each interview were scrutinized based on commonalities, links and contradictions. The themes in the interview guide were coded under “vulnerability of HIV/AIDS households”, “farming practices and benefits (SFHC and other intervention)”, “Food access and consumption” and “Gender-based violence and abuse”. On the basis of the stated themes, a number of codes and sub-codes depicting both similarities and contradictions were generated and synthesized into narratives, which were accompanied by cases in selected interviews. In addition to the stated themes, others themes, such as “selling over eating food crops”, “food institutional support”, “costly but free HIV/AIDS treatment”, “intensity of patriarchal culture” and “child labour” arose.

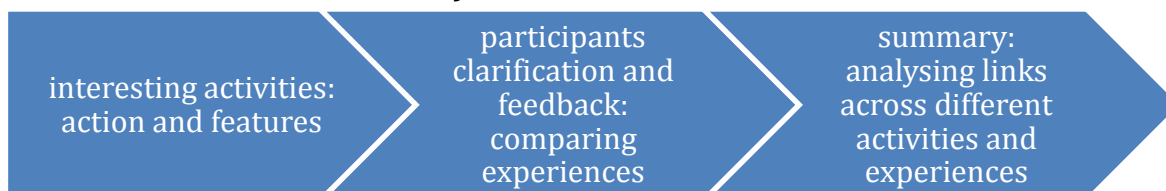
I further consolidated the transcripts with interview notes, which included observation details such as state of the activities” environment (during visual diagramming and participant observation), state of the house, and presence of livestock in households. The observation notes further illustrated socio-

economic factors associated with food insecurity thereby enriching the data collected.

3.6.2 Participant Observation

Participant observation data were analysed based on an interrogation process (Figure 3.3), which ensured production of information that reflected detailed characteristics of the SFHC and AIDS project activities in relation to the other data sources (Gibson and Brown, 2009). Observation notes were grouped into themes that related to farming practices of HIV affected households. Further clarification was sought from participants and implementers to authenticate the findings. Participant observation was conducted in the following manner (see also Appendix E):

Figure 3.3. Participant Observation and Interrogation Process (adapted from Gibson & Brown, 2009)



3.6.3 Visual diagrams

In the visual diagrams, themes were generated in conjunction with the participants by creating diagrams in the field. After discussions, the researcher collaborated with the participants to organize their farming practices into diagrams, which were based on farm inputs and knowledge sources, services, application, benefits, constraints, and coping strategies. To make the visual diagrams presentable, the researcher synthesized them based on themes into three categories (1. agriculture information, 2. agriculture inputs and 3. sustaining and constraining aspects in agriculture practice) and refined their

order without distorting the meaning. One diagram was created from synthesizing six diagrams of a particular theme from each group. For instance, if one diagram from one group did not mention one institution that provided them with farming inputs and the other groups mentioned the institution, it was included in the final diagram.

3.6.4 Summary of data analysis and management

The essence of triangulation is that different data collection methods contribute to investigating the same concept from different viewpoints thereby crosschecking findings (Bryman, Bell & Teevan, 2012; Gibson & Brown, 2009). The findings from the participant observations, interviews, and visual diagramming analysis were linked to explain whether an agricultural intervention is a means to household food security.

3.7 Ethical Considerations

This study was conducted with ethics approval from Western University (Appendix 1). Participants were recruited voluntarily; confidentiality and data security were ensured. The researcher, study, and data collection methods were introduced to prospective participants through support groups. At this initial meeting, it was emphasized that participating in the study was voluntary and that no one should feel persuaded to participate. It was also made clear that people can refuse to participate at any time if they did not want to continue. Interested participants were invited to contact their support group chairperson to be included in the study at no cost. Only those who contacted the support group chairman² and agreed to participate in the research were included.

² Leaders of support group for people living with HIV/AIDS

The subjects who contacted the support group chairman signed a consent form (Appendix 2) before participating in an interview. Legitimate qualitative research is a moral and ethical assignment. It therefore values the interests of participants by seeking their consent to ensure they are not forced to participate along with ensuring the confidentiality of their information (Halai, 2006). The consent forms also sought permission to audio-record the interviews. In cases where participants preferred not to be audio-recorded, the researcher took notes on the interview session. Physical and emotional safety was also ensured and in cases where a participant experienced emotional breakdown, they were referred to the AIDS project counsellors at Ekwendeni Hospital.

Research assistants, who helped with data collection and translations, were trained on the need for privacy and confidentiality of the study participants' information. All research assistants were made to sign a confidentiality agreement (Appendix 3). All audio and hard copy data of the participants were secured in a locked cabinet. The data were accessible to the primary researcher, supervisors, and research assistants, who signed the confidentiality form.

3.8 Member Checking: Feedback from the Interviews

The results from an ongoing preliminary analysis of this study were presented to the research participants (n=54) and intervention implementers (n=10) in the Ekwendeni Hospital conference room. This presentation was a member checking exercise since it involved returning preliminary research findings to participants for appraisal as assurance that the findings represented what was collected (Baxter & Eyles, 1997; Tarner & Coen, 2008). Tarner and

Coen (2008) emphasized that the credibility of qualitative data analysis through member checking should be established to control for conflicting opinions of research interpretations. The participants in this study endorsed the results to represent their experiences; however, some themes such as gender-based violence raised a debate. Several male participants of the study disagreed with the description of gender based violence while women confirmed it prevailed. In the debate, the existence of gender-based violence was later confirmed by both men and women, who gave suggestions about how it can be resolved. This exercise was consistent with the claim that qualitative data are based on narratives and observation, and that cooperation between the researcher and participants is essential to contextual and mutual results (Graneheim & Lundman, 2003). The participants' feedback on the preliminary results was a step towards internal authentication.

3.9 Merits and Limitations of the Study design

3.9.1 Merits

The exploration of social dimensions that entangle household food security in relation to the SFHC agricultural intervention was guided by an interpretive paradigm of phenomenology, which advocates the use of human beings' subjective interpretations and perceptions of the world to understand social phenomena (Ernest, 1994). This qualitative inquiry accommodated the essential element of the perceptions attached to food security since the researched households' experiences shaped the findings rather than objective measures such as children's weight or crop yield measures (FAO, 2002; Gatrell and Elliot, 2009). Qualitative research methods used to collect and analyse the

data in this study emphasized the exploration of lived experiences rather than quantification of human interactions (Bryman & Teevan, 2005). The practice was consistent with FAO guidelines (2002; 2008) which advocate the use of sensitive research designs to food security inquiry since they go beyond the clinical measures of malnutrition thereby suggesting strategies to devise and restructure effective interventions.

The use of participant observation, group visual diagramming, and interviews brought about diverse perspectives to exploring the place of SFHC intervention in achieving food security of households burdened by HIV/AIDS. Triangulation within qualitative research has been credited for crosschecking findings from one method to another (Decrop, 1999; Bryman, Bell and Teevan, 2012). When data collection methods are combined, there is potential to consolidate strengths, providing a complete and improved picture of the problem (Bryman, Becker & Sempik, 2008). For instance, the support group members who participated in visual diagramming were able to refute interview findings (that people never received all types of legume seeds) by giving evidence on deliberations of all SFHC and other agricultural interventions that each group member accessed. Other households reported not accessing other interventions during in-depth interviews while in the visual diagramming groups evidence was given that all support group members accessed a certain intervention. In that regard, triangulation served as a data checking tool.

The comparative design accounted for not aligning all food security and farming attributes to the SFHC intervention. The comparison of experiences of households with SFHC against those without SFHC strengthened the study findings. The comparison was done based on the assumption that the only

difference between the two groups is the intervention and therefore differences in their food security experiences could be attributed to the SFHC intervention.

The social world can be interpreted differently by different people; therefore, to achieve credibility, a researcher has an obligation to ensure findings from a study are true to the context of the people studied (Bryman, Bell & Teevan, 2012). To ensure authentic representation of the study community, preliminary findings were presented to the interviewed HIV/AIDS-affected household members, SFHC and AIDS project implementers. The participants endorsed the finding as representative of their situation and even clarified on some themes, thereby contributing to the authentication of findings.

3.9.2 Limitations

This research does not present a detailed pre-post analysis of the farming practices and food security situation of the households that accessed the SFHC intervention. A pre-post analysis allows for detection of changes that have occurred over time due to the introduction of a defined variable (Shadish et al., 2002). There was no detailed data on HIV/AIDS-affected SFHC beneficiaries; their farming experiences throughout the project were not recorded. Since there are no data available to deduce whether the SFHC intervention has been of any change to farming and food security experiences, contrasting the households who accessed the interventions to the ones who did have access to intervention was used as a proxy. Thus, differences in farming and food security situation between the groups were attributed to the SFHC intervention. Comparing subjects who have a distinguishing aspect allows for deduction on whether the distinguishing aspect has any influence (Shadish et al., 2002).

This study does not encompass transferability or generalizability since it accessed in-depth information from a small number of people, thus, it is not generally applicable to other people and contexts (Bryman, Bell & Teevan, 2012). A number of social dynamics, such as the cultural perceptions of patriarchal marriage which are specific to the Ngoni and Tumbuka communities of Ekwendeni, were a big part of the food production process.

The researcher spent ample time with various households and also participated in some of the HIV/AIDS households-SFHC/AIDS activities and is thereby susceptible to being biased. Qualitative field work is personal and leaves room for irregularities such as biases, since subjectivity (favouring one party) may cloud a researcher's judgment (Maanen, 2004). The researcher was in-between what implementers have achieved based on their perceptions and the households' actual experiences and perception; thus, a researcher depends upon interpreting the situation. To control this subjectivity throughout the data collection and preliminary analysis processes, the researcher member checked with the implementers, households, and other people such as project coordinators and support group chairpersons. At the end of the field work, an intensive member checking was done with all stakeholders in a preliminary results presentation in attempts to mitigate researcher subjectivity.

3.10 Conclusion

This chapter reviewed and discussed the research area, the underpinnings of the designs and the methods that were used in the study. An exploratory approach dominated by case control quasi-experimental design enabled the comparison of households revealing the place of SFHC agricultural intervention

as a means to HIV/AIDS-affected households' food security. In-depth information of participating households' experiences in farming and food security, a component that is lacking in some quantitative food security research, was also articulated. Triangulation among interviews, participant observation, and visual diagramming was undertaken in order to attain validity of the study tools. In order to further increase the rigor of this research, member checking, which involved participants endorsing the preliminary findings, was employed.

CHAPTER FOUR

FINDINGS OF THE STUDY

4.1 Introduction

This chapter presents the findings gathered during in-depth interviews, participant observation and visual diagramming-focus group discussions. Firstly, I give a brief description of challenges households encounter, and how they emanate from the household's physical environment profile, composition, HIV status, and livelihoods of the dwellers. Then, I will illustrate the households' farming practices, decision making process, labour dynamics, access to inputs and agricultural knowledge. Thirdly, I will examine these agricultural practices in the context of the Soils Food and Health Communities (SFHC). I will then analyse the social and cultural dynamics that are part of the household food security issues in female headed-households. Lastly, I will describe households' food security situations based on food access and dietary experiences. Throughout this chapter, direct quotations from participants are used to provide deeper insight into participants' experiences. To protect confidentiality, pseudonyms are used with quotations that indicate a household's category (female-headed = widowed, divorced/separated; couple = married, monogamous; elderly-headed = elderly; and polygamous= polygamous married couple), sex (male = M and female = F), data collection method (in-depth interview = IDI and focus group discussion = FGD), and age.

4.2 Challenges Encountered by HIV/AIDS affected Households

This section examines households' challenges by focusing on the larger community physical environment, the overall impact of HIV/AIDS, and forms of

livelihood. The challenges in attainment of enough food were rooted in broader structural, social and environmental factors that translated into individual household's vulnerability.

4.2.1 Community Contexts

The study villages had pastoral features while Ekwendeni town, the main trading and urban center, was extremely different. The contrasting features in the study areas determined the level of households' vulnerability in access to livelihoods or essential services.

Ekwendeni Town

Ekwendeni town is located 19.7 kilometers (km) away from Mzuzu, which is the third largest city by population (209,100 residents) in Malawi. Ekwendeni town is the only location that has modern facilities, including electricity, running water, and several institutions such as the Hospital, Presbyterian Mission, a secondary school, a nursing school, numerous shops, bars, several lodges, and a central market while the rest of the study areas are rural villages. There is an active trading centre where vendors sell vegetables and other goods, and once a week there is a bigger market day, which includes clothing as well as other imported goods. People live in concrete and brick homes, most often with iron sheets for roof materials. Buses and taxis travel between Ekwendeni, Rumphi, and Mzuzu.

Study Villages

Forty-eight participants in this research were from villages namely Ekwendeni A, B, C and D which were 15 km or more from the Ekwendeni town. The villages were separated by dirt roads, fields, streams, rivers, hills, and

mountains. Many houses were built with local materials, such as mud bricks for the wall and grass for roofing. In Ekwendeni A, residents were far apart and villagers had to cross two rivers (or 1 stream and a hill) to visit the trading centre. There was a private-owned estate, providing a source of temporary but poorly-paid income to local residents, and a primary school in their vicinity. Ekwendeni B was close to a big river that runs across a number of clan settlements, and had a primary school and a commercial estate, which provided waged and temporary labour opportunities. To visit Ekwendeni town, villagers had to cross the river, which had no bridge, and then catch a bus or taxi, or use another route which required walking for almost two hours. Ekwendeni C was surrounded by three hills and to visit Ekwendeni town they crossed two rivers. In their vicinity were a police unit, an active weekly market place, a primary and a secondary school. In Ekwendeni D, there were numerous streams and hills and two primary schools. There were a few non-agricultural-dependent income-generating opportunities in this village; thus, most people sold agricultural produce within the village and sometimes in Ekwendeni town.

4.2.2 The Complex Nature of HIV/AIDS-affected Households

In addition to location disadvantages in various villages, the nature of households' also had an impact on livelihoods especially farming. Among other broad factors, the households' structural challenges were closely linked to the composition and HIV/AIDS status of the members.

Household Composition

In all but one of the participating households, the occupants comprised of parent(s), children, and elderly family members. The number of all household members ranged from 1 to 9. As expected, there were more children than adults

(defined as 15 years or older) in most of participating households; in the worst case, a grandmother was responsible for five orphaned children under the age of fifteen. Globally, an adult is mostly someone who is 18 years old, for this study I considered 15 years and older an adult household member, since it was the age participants' referred to as capable of doing farming and household chores or livelihood activities. The high number of dependents, combined with having someone with HIV in the family, put a lot of pressure on the healthy adult members. A husband who was living with HIV/AIDS, looked weak, sick, and coughed repeatedly during the interview, expressed the pressure of supporting his children as follows:

In this house there is my wife, I [husband] and the five children [ages: 13, 10, 7, 4 and 2]. Since I am not well my wife is the one we rely on, of course we get the children to help with farm work but that cannot beat an adult's contribution. (Zondiwe, IDI 42, Married, M, aged 51, Non-SFHC, 10 July 2013)

In the case of Zondiwe, availability of reliable labour was a burden in his household, since his wife was the only healthy adult capable of working on their farm. Sometimes the lack of labour had more to do with unequal gender responsibilities and polygamous marriage. A woman in a polygamous marriage and living with HIV/AIDS explained that the pressure of responsibility on her was due to her husbands' dedication to his second wife who only had one child:

Nowadays I farm alone most of the time, since my husband is busy with his other wife who only has one child yet I have 5 children with him, for instance this year all my husband's farming was at the second wife's farm plot. (Nyabanda, IDI 49, married-polygamy, F, aged 36, Non-SFHC, 12 July 2013)

The women in polygamous households emphasized their husband's focus on the younger wives created unfair situations and worsened the older wives' food

security, since the younger wives had fewer children when compared to the older wives.

In the elderly- and female-headed households, the dependency levels were higher than the married families since in such cases only one adult was mostly present and responsible for the basic needs of all household members. Furthermore, the elderly household heads were experiencing additional struggles, such as caring for orphans. A 79-year old grandmother with poor eye sight, who lived in a dilapidated grass-thatched home with mud walls, was burdened with a responsibility beyond her ability as she described:

I live with all my three grandchildren [aged 11, 6 and 5]. Their father was the only child who cared for me, he got very sick [with HIV/AIDS] and died in 2009 leaving me to be the parent. I struggle to provide for them but I am the only person who can do that since he never had a stable wife. (Nyagondwe, IDI 26, F, aged 79, SFHC, 2 July 2013).

The presence of an older child was helpful in terms of farm work and other livelihoods activities; however, it was not always a guarantee that older children would lessen the burden for the parent(s). An HIV positive widow was struggling with supporting her family (children aged 26, 12, 8) despite having a 26 year old son:

I cannot do much to explore various means of livelihoods the son who could help is in boarding school. At least when my husband was alive he worked as a driver and provided our needs... I just grow maize which I also sell so that I can buy all that is needed; it is hard I rarely afford to feed my family [with a sad face almost crying]. (Sulitha, IDI 47, Widow, F, aged 46, SFHC, 11 July 2013)

The high level of death as a result of the HIV/AIDS epidemic resulted in high dependency for elderly- and female-headed households (Oleke et al., 2005). The dependency challenges were further complicated by the fact that most of those

with dependency were female heads living with HIV/AIDS related ailment and the elderly who were feeble.

Household Members' HIV/AIDS Status and Antiretroviral (ARV) Treatment

Apart from five households that had already lost family members to HIV/AIDS, in all the participating households, there was one or more members (75 out of 304) living with HIV/AIDS. The people living with HIV/AIDS (PLWHAs) were mostly parents (n=69). In polygamous households, the HIV incidence was higher as indicated in the following comment "I and my husband have been HIV positive since 2004, the new wife is also infected ... I don't know when she tested positive since we were already HIV positive when she joined us" (Zitha, IDI 50, polygamy, F, aged 34, Non-SFHC, 15 July 2013). The high incidence within polygamous households was likely due to one person passing the infection to the rest of the polygamous sexual network.

The HIV/AIDS infections varied among married people. For many couples, both partners were HIV-positive. Only 19% (5 of 26) of the couples had one spouse reporting to be HIV-positive. One husband, whose wife was not HIV positive, reported, "I am the only one HIV positive [since 2007]; my wife has been going for testing for several times now but she is always found HIV negative" (Ziba, IDI 17, married, M, aged 40, SFHC, 17 January 2013). The couples where only one partner was infected avoided the double HIV/AIDS related labour burden and health care costs.

Six children were reported to have contracted the HIV virus from their parents despite the free access to the prevention of mother to child HIV

transmission (PMTCT) program.³ The grandparents (n=3) who were living with HIV positive orphans were struggling with giving care to the HIV positive children compared to younger parents. The grandparents were struggling because they were not attending HIV/AIDS support groups that offered lessons on HIV/AIDS care. These groups were mostly attended by younger parents living with HIV. A grandmother described her 6-year old grandchild's experiences as follows:

The youngest orphan got HIV from her mother who died in my hands. Before, when she was just crawling she used to get sick and vomit a lot, but when she started taking drugs [the antiretroviral or ARVs] then she just stopped and she's just living very well. (Nyamoyo, IDI 35, elderly, F, aged 68, Non-SFHC, 5 July 2013)

All but one of the mothers in the female-headed households were living with HIV/AIDS and had either lost a husband or were separated or divorced. The people living with HIV/AIDS talked about numerous illnesses they were experiencing, the need to reduce workloads, and the need to care for sick family members, all of which took them away from farming.

Antiretroviral (ARV) Treatment

In Malawi, every person living with HIV/AIDS is entitled to free antiretroviral treatment, which is offered through government and non-governmental institutions and hospitals. Ekwendeni Hospital provided free ARV drugs and palliative care services to all the participants (n=73) under prescription for ARV treatment.

³ The PMTCT involves intensive hospital-based treatment and monitoring to all HIV positive mothers throughout the pregnancy and postpartum until they wean their babies at 6 months in order to eliminate all possibilities of infecting the child.

I receive the ARV drugs at the hospital free of charge even if it is malaria we receive medicine for free at palliative care on Tuesdays and Wednesdays, as for my child [also HIV positive] she receives her medicine on Thursdays. (Nyachiza, IDI 3, widow, F, aged 42, Non-SFHC, 11 June 2013)

The people living with HIV were also affiliated with the Ekwendeni Hospital AIDS Program's (EHAP) Community Home Based Care (CHBC) teams which offered health care support and education on overcoming stigma. The free ARV treatment was convenient due to the reported high levels of poverty that households experienced.

Most of the HIV positive respondents were delighted with the results of their treatment since they reported to have been very sick before the treatment; however, they could still not work as much as they used to before they had HIV/AIDS. In their support group sessions, they were provided with education on how to maintain their health and strength to balance the efficiency of the ARVs.

We [referring to fellow support group members] are advised to avoid overworking. We realize that the medication [ARVs] is not effective when one's body is weak so we minimize our farming periods so that our bodies are fit for the treatment. If one farmed 5 hours straight before, they are advised to take a break after 2 hours and continue later; moreover some of us are not that strong anymore. (Nandau, IDI 5, widow, F, aged 58, SFHC, 12 June 2013)

Some of the participants reported serious side effects from the ARV drugs, with numbness and swelling of legs being the most common. The hospital staff reported that they knew the cases where ARV side effects resulted in numbness, but indicated that "although we are aware of the leg problems for now, we are only offering medication for that to pregnant women. We are yet to reach out to

the rest of the HIV positive clients.” (AIDS Program Promoter, IDI 58, F, 5 August 2013).⁴

While some of the participants reported minimal side effects from ARVs, they talked at length about other challenges, such as transport cost when they have to go for ARV once or more in a month. They argued that the ARV program was indirectly not free. Although the hospital operated mobile clinics, ARV treatment was only offered at the hospital.⁵ Many households in villages that were far from the hospital (15 km or more) reported using a lot of the money intended for basic needs or farming expenses for transport to the hospital.

I go for my ARV treatment once every month. There are two ways to get to Ekwendeni Hospital, you either walk to the village which is near the tarmac road where you get a minibus for MK500 (\$1.25) or you hire a bicycle for MK1000. (Grace, IDI 29, Separated, F, aged 31, Non-SFHC, 4 July 2013).

This amount could be used to buy food or farm inputs. While people had positive experiences from the free ARV treatment, the cost of transport laid a considerable burden on the households, and took resources away from other family needs, including farming costs.

4.2.3 Sustainable Daily Livelihood

While all the households carried out subsistence and some commercial agriculture, the location of the participants determined the other forms of livelihoods strategies they exploited. In this context livelihood strategies

⁴ The legs side effect is called peripheral neuropathy, a result of nerve damage, which often causes weakness, numbness and pain, usually in hands and feet, but it may also occur in other areas of the body (Mayo clinic, 2013). It is caused by both the drugs (for example Stavudine) and the HIV itself (personal communication, Medical doctor, F).

⁵ The treatment visitations were monthly for beginners, between 6 to 8 times per year for others.

included: *ganyu*⁶, small businesses, quarry stone sub-contracts, estate employment, tobacco farming, locally gathered and produced materials.

A) Casual Labour (Ganyu)

Ganyu is a type of casual on-farm labour common throughout Malawi. The use of *ganyu* as the only form of livelihood was rare for the households in this study, most (n=47) households did *ganyu* when they had immediate needs, for instance as a coping strategy during food shortage periods. The six households that entirely relied on *ganyu* did not find it beneficial; however, they had no other means to address their poverty.

The practice of *ganyu* as a food shortage coping strategy will be discussed further under the theme food insecurity (section 4.6).

B) Small Businesses

There were primary and secondary schools where home-produced foods were sold in the vicinity of these institutions. Ekwendeni town households had access to more customers compared to the villages, due to the higher number of schools. The participants reported using the money they make from these food sales for their basic needs:

I make traditional cakes (zigumu) which I [mother] or my daughter [19 years old] sell at the primary school, we also sell bananas from our garden That is the money we use when we run out of maize and my husband has nothing to give us. (Nasibeko, IDI 53, Polygamy, F, aged 61, SFHC, SFHC, 19 July 2013).

Apart from selling food in schools, Ekwendeni C residents did small-scale food business on a once-a-week market day basis. On market days, traders from Ekwendeni and Mzuzu come to sell their goods. This event draws in people from

⁶ *Ganyu* is a form of casual labour mostly utilized by households living in poverty as a coping strategy, *ganyu* on other people's farms is a common coping strategy during food insecurity.

all the four villages that are nearby Ekwendeni C. People who sold various goods at market days reported getting between MK 600 and MK 1000 (\$US1.5 and \$US2.5) per day, contributing a substantial amount to household income.

Participants from villages B, C and D reported other informal businesses such as mini grocery stores in the homes where other home-produced items were sold. These small businesses were determined by the household's social situation and their surrounding environment.

I and my husband sell usipa (saldin) in the fish section of Ekwendeni market where we have a permanent bench. To find capital, we borrow money from friends or I gather firewood and sell. Depending on our arrangements either one of us goes to Mzuzu to buy usipa for a cheaper price then we resell in Ekwendeni for a higher price. (Khumbize, IDI 9, Married, F, aged 36, SFHC, 16 July 2013).

In most cases, the capital for the small businesses was accessed through various means, including from relatives, selling farm produce, and micro finance loan initiatives.

Access to Capital: The Dynamics of Micro Finance Loans

Seven households reported that they accessed the capital for their businesses from village loan initiatives and the Ekwendeni Hospital AIDS Program. Apart from supporting livelihoods, the Ekwendeni Hospital AIDS Program has activities aimed to fight against the spread of HIV, address stigma, challenges of orphanhood, and improve health care for individuals living with HIV. At the time of this study, the AIDS Program was supporting the financial needs of households with an adult living with HIV in all their catchment villages by offering them a MK 20,000 (\$50) revolving loan. In the first wave, 10 households were selected from each village.

I sell pots and zitenje [cotton linen] ordered from Mzuzu, the money is good since it is used to buy food. The money I borrowed from the AIDS

program was used to start this business. I have returned the money and my business is still strong, it supports my family when the tobacco and tomato sales are not good. (Grace, IDI 29, Divorced, F, aged 31, Non-SFHC, 4 July 2013).

Some of the business capital loans were diverted to household needs that led to discontinuation of businesses, as Limbika described:

The loan [from AIDS program] was used for a business, which gave me enough money to buy materials and hire labour to build this house [build with bricks but thatched]. The money was not enough, however we managed to pay back the loan despite our business not continuing. (Limbika, IDI 25, Widowed, F, aged 55, SFHC, 2 July 2013).

The Village Banks (*Mudzi*) initiatives had benefits similar to the AIDS loan program, in that they involved poor, widowed, and abused women contributing an agreed-upon amount on a weekly basis so that they could borrow for business and other developments. The *Mudzi* Bank initiative supported businesses for a number of households; however, changes to weekly contributions made continuation difficult. For instance, if the contributions changed to a higher amount of MK500 (\$1.15) from MK200 (\$US0.50), the women who could not afford it dropped out. The restrictions from the village initiatives, limited funding, and mismanagement of revolving funds barred other households from accessing capital for small scale businesses. An HIV/AIDS Program promoter explained the reason behind other households not accessing loans:

The AIDS program loans are for only 10 people each wave per village and each household can access once. The returns by the people who accessed determine how soon others will access the loan. However, some people have not returned on time and some may never even return thereby depriving others from the benefit. (AIDS Program, IDI 58, Promoter, F, 24 July 2013)

For households that had not fulfilled the payback loan agreements, access to loans has not guaranteed successful businesses since some of them were no longer doing businesses. Some households had used their business money to

build houses or buy food during shortage periods, and had not really changed their overall livelihood circumstances. Most households that accessed loans did not have strategies that enabled them to sustain their businesses. In such cases, the loans did not relieve their households' ongoing poverty and food insecurity. The EHAP staff acknowledged the discrepancies in revolving loans project; however, they commended Ekwendeni B households for good performance and more returns.

C) Quarry Stone Subcontracts

A stone quarry beside Chinungu hill close to the main road from Ekwendeni to Mzuzu provided economic opportunity to local households. The households in the vicinity of the quarry relied on small scale stone quarry subcontracts for income. Nonetheless, respondents agreed that this was not an enjoyable job:

Our source of income is not appealing. I [the husband] break stones at the hill and sell at wholesale price of MK150 [\$0.38] per wheelbarrow. So you can see that it is a lot of work for less, as you know maize is now sold at MK3000 [\$7.59] per bag... (Khomba, IDI 4, Married, M, aged 45, Non-SFHC, 11 June 2013)

The quarry stone work did not always support food purchases, but was often used for buying basic needs (e.g., soap, sugar, and salt). Labour provisions for the quarry livelihoods were highly dependent on the health of household members. The quarry stone work was mainly done by HIV-infected parents, so whenever their health was compromised, their children took over their duties.

D) Estate Employment: Casual and Wage Labour

The households of Villages A and B did not have access to central market businesses or quarry subcontracts; however, in their vicinity were agricultural

estates, which provided three or more weeks *ganyu* (casual labour) opportunities. Some household members were formally employed as tenants; however, food production was not easy in the estate grounds. Tenant households mostly relied on their employers to provide food, as part of their wages. As one woman explained:

I [wife] used to grow maize, groundnuts and soya but now I can no longer do that since the tenant job keeps us busy from working on our own food production. Furthermore the land our employer used to give us for our own farming is no longer available since the boss instructed we grow tobacco. (Zinene, IDI 27, Married, F, aged 35, Non-SFHC, 2 July 2013)

According to United Nations (2014), Malawi has one of the lowest labour wages. Thus, deducting tenants, food from their wages leaves the households with less to spend on other basic needs.

E) Tobacco Farming

Five households grew tobacco for income. Unlike households that relied on other forms of livelihood, the tobacco farmers could afford to buy fertilizer and hire farm labour. A divorced woman, who was given starter fertilizer by her relatives, grows and sells a variety of crops, reported the benefits of tobacco as follows:

This year I have sold 2 bales of tobacco [MK70,000 (\$US 175) each] and with the money from selling livestock and soy beans I was able to buy 3 bags of fertilizer in preparation for the next growing season as well as pay school fees for my children [nephews: aged 22 and 18]. The fertilizer is used in both my tobacco and maize and some of the money is used to hire people that help on the tobacco work since it is too involving. (Chinsinsi, IDI 38, Divorced, F, aged 57, Non-SFHC, 5 July 2013)

Two tobacco farmers managed to operate their farm activities without the support of others. A divorced woman narrated how she achieved tobacco farming:

I started with collecting firewood and selling to people who needed it in addition to subsistence farming. The firewood business generated enough money to buy fish from Ekwendeni and sell in this village [Ekwendeni B] and the profits from the two businesses were used as capital for my now 8 years long tobacco farming. (Leniya, IDI 7, Divorced, F, aged 42, SFHC, 14 June 2013)

While female-headed households seemed to benefit significantly from tobacco production, married couples had fewer benefits. The wives who assisted in tobacco production complained that they did not know how much money they made from tobacco since the trading was controlled by their husbands. I observed that the wives did much of the work in the tobacco production process but their husbands did not involve them when the tobacco was sold thus not fully benefitting from the commercial farming. On the other hand, female headed households that produced tobacco found it rewarding since they were in control of the money gained and were able to use the money for basic need and inputs for the next growing season.

Among the tobacco farmers, two households had financial and material support from commercial institutions.

Our family depends on tobacco farming which is done under Alliance One [commercial insitution], they provide fertilizer and the money we make from it buys fertilizer for our maize, we hire labour, we have even put iron sheets on our house and we will insert this solar panel [on the corner of the living room] soon. Honestly we cannot complain much. (Gama, IDI 16, Married, M, aged 50, SFHC, 25 June 2013).

In as much as tobacco farming under commercial institutions was beneficial, it was not accessible to everybody. The entry into the commercial tobacco clubs

required a fee of MK1000 (US\$2.25), which farmers going through financial hardships could not afford.

F) Gathered Material and Local Products Trading

Lastly, households from Ekwendeni C and D were not only far from the Ekwendeni town, but they did not have similar economic opportunities like the other villages. The households in Ekwendeni C relied primarily on gathering firewood or burning charcoal, which they sold at Ekwendeni town or Mzuzu. A married couple reported:

I [husband] burn charcoal at the mountains [visible from their house] and sell in Ekwendeni or Mzuzu. The money from this business is used to buy fertilizer or hire farm labour since among other crops we grow tobacco and maize. I have managed to buy fertilizer but the money will not be enough to hire labour which is not a good thing since I burn charcoal in the weeding period thereby my wife suffers alone. (Gondwe, IDI 40, Married, M, aged 47, 10 June 2013).

The children in most of the interviewed households were not old enough to help with the various livelihood options. The livelihoods described above, including charcoal production, tobacco farming, and small groceries provided some income but had limited impact on their overall situation of poverty.

4.3 Agricultural Practices

A household's food production system encompasses all processes involved in feeding the family. In an agrarian community this may range from growing, harvesting, processing, consumption, and disposal of food and other related activities (Maxwell and Slater, 2003). In the HIV/AIDS-affected households in Ekwendeni, the subsistence agricultural system varied depending upon households' socio-economic status, decision making style, impacts of HIV/AIDS, agricultural knowledge, availability of farm inputs, and labour. Most households

grew maize along with an average of 15 other crops, including a legume such as groundnuts or beans, and various roots and curcubits such as pumpkins or squash. About one-fifth of the households grew tobacco. Table 4.1 provides a summary of the households' crop diversity.

Table 4.1. Participant Households' Crop Diversity (n=54)

Crop	Total	Frequency
Maize	54	100%
Green Leafy Vegetables	39	72%
Soya	28	52%
Groundnuts	26	48%
Tobacco	13	24%
Pigeon peas	6 (5 with SFHC)	11%
Beans	6	11%

Note: I did not probe for other crops

The diversity of crops was encouraged by institutions that gave lessons on farming, for instance, pigeon peas were mostly grown by households practicing the agroecological method of double legume intercrop which was taught by SFHC. In this section I will describe household decision-making styles, labour dynamics, sources of farm inputs, agricultural knowledge discourses, and agricultural practices.

4.3.1 Decision Making: Product of Patriarchal Culture

The practice of agriculture begins with making decisions on the logistics that will be involved. If not carefully done, farming can be unsuccessful. Among the participants of this study, the decision making style was shaped by the patriarchal culture; thus, the head of the house played a prominent role.

Household Headship Perceptions: A Patriarchal Culture Construct

The Ngoni and Tumbuka ethnic groups in the study villages practiced the patriarchal and patrilocal system of inheritance which gives men greater power in terms of control over land, labour, and capital. Their marriage arrangements included the payment of *lobola* (bride price), which enables the man to take a woman to his village upon marriage. In the patriarchal culture, land is inherited by men who are considered 'owners'. In this study's areas, the patriarchal culture determined who headed a household. For instance, most monogamous and polygamous household participants reported that the husband was the head of the house. The responsibilities of the husbands as head of the house were explained as making sure the family had basic needs. One husband viewed a man as a sole head in a household and for that reason he expressed his responsibilities as follows:

I take care of everything in the house and I have to make sure that there is enough food in the house. My wife and children have clothes and even concerning school; like right now at school they wanted money for water so I had to pay for that and even if someone is sick, I am the one who takes care of everyone [paying bills]." (Khomba, IDI 4, Married, M, aged 45, Non-SFHC, 11 June 2013).

Khomba's wife mentioned her husband as the head of their household; however, in her case and several others, the wives did most of the household work but were not involved in making decisions. Participants from polygamous households had different views about household heads. Some of the women reported their husbands participated less in each wife's affairs; however, some of the wives in the polygamous households were satisfied with the way their husbands handled the wives:

"Our husband is the head of all the households [3 wives], he makes decisions on where and what each wife is planting. He does a

commendable job, despite not handling all households' activities he makes sure to spare some time to even make decisions on the education of each wife's children." (Nasibeko, IDI 53, Polygamy, F, aged 61, SFHC, 19 July 2013).

In some female-headed households, the husband's family members, especially brothers were regarded as head of the house; however, they were not actively involved in sourcing basic needs for the household (also see section 4.6 for detail). The perceptions of head of the house and their responsibilities also directed who made decisions, participated and controlled income from agricultural and other forms of livelihoods in the married participants' households.

Household Headship Perceptions and Decision making Related to Agricultural Practices

In most monogamous and polygamous households the patriarchal culture dominated decision making; hence, husbands made most or all of the decisions. The patriarchal decision styles generated conflict especially in cases where a husband and wife favored different crops. The food crop production processes were mostly performed by women, while men took intensive control of the cash crops. The food versus cash crop responsibility styles generated competition over farm inputs. A woman who farmed with her husband complained:

We grow tobacco, maize, groundnuts, ground beans, cassava, sweet potatoes and vegetables... It was hard to make it through with the other crops [food] this year since my husband only hired labour and directed much of the fertilizer for the tobacco fields [husband uses tobacco money alone] yet the food crops he ignored also feeds our grandchildren. (Nasimbwi, IDI 16, Married, aged 43, SFHC, 25 June 2013).

While patriarchal practices were not a determinant of decision making for female household heads, they were unsatisfied with lack of collaboration when

children were too young to contribute. The households that had a chance to do team decision making were grateful:

...With the limited piece of land we have my children help me decide where to plant the seeds; they will say “Mum the groundnuts will be on this plot while the ground beans will be there” it is helpful because it promotes unity and sometimes they give suggestions that are useful. (Sulitha, IDI 47, Widow, F, aged 46, SFHC, 11 July 2013)

4.3.2 Household Dynamics of Division of Labour

The participants relied primarily on human labour with limited use of animals. Among the activities that required labour were making ridges (mound where seed will be planted), planting, weeding, banding (rehabilitating the mounds which might have deteriorated due to rainfall), and harvesting. In an ideal situation, farming was done by all household members, as Bengo describes: “my three sons, I [husband] and my wife participate in all the farming activities, we all make ridges, weed, band and harvest” (Bengo, IDI 21, Married, M, aged 51, Non-SFHC, 27 June 2013). Older children (above 15 years) were helpful in farm work; however, their parents did more.

My oldest children [aged 20, 18 and 16] make ridges or weed before and after school or during weekends. The other farming activities are for us [parents], my wife takes a big role in clearing the land she sometimes does it alone or with the children (Khomba, IDI 4, Married, M, aged 42, Non-SFHC, 11 July 2013).

In many cases, the children were exempted from working on the farm by their parent as a result from demands from their education since farm time collided with school hours. As one man stated, “My children do not take part in farm work since they are in school. I cannot ask a child to go to the field at four o’clock in the morning while he is supposed to be going to school the same day.” (Mambo, IDI 14, Married, M, aged 40, SFHC, 17 June 2013). Some single parents were not able to exempt their children from work because of the amount of work to be done

and the situation was even worse children whose parent was often sick (see case below).

Box 1: Orphaned Child Burden Case study

Chimango (not real name) is the 17 year old only son of a woman who was widowed by HIV/AIDS in 2004. His mother (aged 42) and young sister (aged 8) are living with HIV/AIDS and on ARV treatment. The death of his father led to their family property being grabbed by his father's relatives and movement from the city to his mother's village in 2010. His mother is battling cancer in addition to the side effects of the ARV drugs. The family relies on agriculture and a small scale food production business which is now his responsibility since his mother is ill. The mother has problems with her legs, which limits her to be seated often times. Chimango sells his mother's produce during the weekends and sometimes in a secondary school he attends, he has no school fees from AIDS project. In addition to that, he is the only person responsible for clearing, ridging planting and weeding the 2 acre farm where they grow maize and groundnuts. (Narrated by Nyachiza, IDI 3, Widowed, F, aged 42, Non-SFHC, 11 June 2013)

In female headed households' focus group discussions, single parents perceived their children's hard work on the farm as expected, as one woman practically noted:

“Our children know that they are different from other children; they have one parent who is also on ARV treatment. We advise them to know that they have no choice but to be dedicated to farm work since they cannot do otherwise. Nobody will do it for them...” (Ekwendeni D, FDG 2, Female Headed Households, 13 July 2013).

On the other hand, households that had a reliable source of income hired labour for farm activities they perceived hectic. The households that hired labour were mainly the ones that grew tobacco or had a reliable source of income. “The tobacco process is a lot of work so when I sell, I keep the money for labour which

is MK2000 (\$5) per person.” (Nyangulu, IDI 54, Polygamy, F, aged 49, SFHC, 19 July 2013).

There were only five households that owned and utilized draft animal labour, in the form of oxen to pull disc ridgers or carts. The use of animals was combined with human labour, as one woman described. “The ridges are made by the oxen bulls, we [mostly woman and sometimes with husband] do the weeding and banding.” (Nyabanda, IDI 49, Polygamy, F, aged 41, Non-SFHC, 12 July 2013). The households that had cattle were perceived to be rich, since they easily made ridges and transported farm produce while other households had to pay or use human labour. As noted under perception of head of the house, most husbands did less work compared to their wives and this situation was mostly experienced in polygamous households.

I and my husband work together on our farm; however, he is so occupied because he has two more wives thereby he has to work on their farms as well. He may make ridges on my farm for a day or two and on the other days of the week he helps the other wives while I find my own means [children or hired labour] to finish the work (Nyangulu, IDI 54, Polygamy, F, aged 49, SFHC, 19 July 2013).

In summary, farming labour was a burden for single parents, households with an HIV related sick member, wives whose husbands were not helpful, and households that could not hire labour or secure other means of tilling the land.

4.3.3 Sources of Farm Inputs

In the visual diagramming and discussion sessions, the HIV affected households described factors that influenced the crop and fertility rehabilitation choices. The basic strategy for accessing farm inputs was through buying, and support from both governmental and non-governmental institutions, but such

support was erratic at best. The table below outlines a summary of households' sources of farm inputs:

Table 4.2. Sources of Household Farm Inputs

	Sources	Inputs
1	Purchase	1. Hoes 2. Fertilizer 3. Seeds
2	Own Means	1. Seeds (recycled) 2. Compost manure.
3	Friends	1. Seed (recycled).
	SFHC Project	1. Groundnuts seeds 2.Soybean seeds 3.Pigeon peas seeds.
4	PLAN International	1. Seeds: groundnuts, cassava and sweet potato.
5	Malawi Government Subsidy Program	1. Seeds. 2. Fertilizer.
6	AIDS Program	1. Fertilizer.

Purchase, Friends and Own Means

The HIV/AIDS-affected households reported that farming was less stressful when there was enough land, fertilizer, seed, and labour. All the resources they listed were vital to farming, yet the availability of money to buy fertilizer and good seed was their major concern. The households that had reliable livelihoods and multiple sources of income could purchase all inputs that made farming easier and successful.

Shasha ndi ndalama (money is the man); I had a chance to be part of a farmer exchange program in Zambia, the program allowance became capital for my baked products business [which is successful]. In addition to that my children [working in the city] also send me money for farm inputs. I buy fertilizer and hire labour each year so I harvest enough and even more groundnuts, soya and maize (Nandau, IDI 5, Widow, F, aged 58, SFHC, 12 June 2013).

The majority of the households in this study did not have such entitlements; hence, they struggled to produce enough food.

The farmers who could not afford to buy fertilizer or seeds employed strategies that did not require money. “We cannot afford to buy farm inputs so we keep seed from the previous harvest[recycling] or ask from friends, and for fertilizer we make manure; however, it cannot match up to fertilizer.” (Ekwendeni B Female headed Households, FGD 5, Female, 13 July 2013). The seeds from friends did not guarantee planting during the first rains nor provide only one variety of seeds, since some friends only shared leftover or mixed seeds. On the other hand, farmers who recycled hybrid maize complained of easy damage by weevils compared to local breeds. Furthermore the germination strength of recycled hybrid seeds was unreliable “the only maize seed that survives three growing seasons and remain strong is Demeter [hybrid]; thus, you have to buy every three years” (Ekwendeni D Female household Heads, FGD 2, Female, 12 July 2013). The other challenge for participants was accessing fertilizer and sustainable fertility rehabilitation methods.

Government Fertilizer subsidy and NGOs Interventions

The Malawi Government Farm Input Subsidy Program (FISP) distributed coupons for subsidized fertilizer, maize, and legume seed to vulnerable households. In addition to FISP, other households in Ekwendeni also accessed free fertilizer from the Ekwendeni Hospital AIDS Program and seeds from other NGOs. Households that had benefitted from EHAP, FISP, or both fertilizer initiatives were grateful for the improved food production:

I normally receive coupons for two bags of fertilizer which I use for maize and tobacco. The use of the fertilizer on two crops leads to less maize harvest but it is better than nothing. In 2008 the AIDS project also gave us fertilizer and with the coupon fertilizer I could not complain (Chrissy, IDI 10, Widow, F, aged 36, SFHC, 17 June 2013).

The participants who benefited from FISP complained about the changes to program since its onset in 2006. The scaling down of the FISP package was a major complaint for beneficiaries. As one man stated, “We are really suffering, sometimes the coupons we receive are not enough or we do not receive [any]. To find money for unsubsidized fertilizer is hard when that happens.” (Ekwendeni B Couples, FGD 6, Male, 12 July 2013). In other cases, fertilizer intended for a single household was shared among two households thus not addressing the intended food production improvement.

On the other hand, participants who relied on the AIDS Program were also struggling for fertilizer since the distribution was inconsistent. For instance, one resident of Ekwendeni town had last accessed EHAP fertilizer in 2008. During a member checking session where personnel from AIDS Program, SFHC project, and the interviewed people were present, a promoter from AIDS Program addressed the complaints by describing the initiative strategy:

The fertilizer distribution is not a yearly benefit to the households; for one year it goes to a certain group in need and for the other years it goes to the other. In 2008 we gave out to a number of families, last year [2012] we distributed to single mothers and grandparents (AIDS Program Promoter, FGD 7, M, 7 August 2013).

Households that depended on institutional support of fertilizer had no guarantee of continuation and were mostly less prepared in terms of soil fertility maintenance compared to the ones who knew they had no access to fertilizer and prepared compost manure all the time. I observed that the residents of Ekwendeni D made more manure than the other areas since they rarely accessed institutional support.

The households mostly relied on their own means for seed, but occasionally, they accessed institutional support. A non-governmental

organization (NGO), Plan International, distributed legumes and tubers to Ekwendeni D households as a complement to implementation of their education on food diversity. Similarly, some of the households in all the study villages (excluding Ekwendeni D) had accessed legume seeds, namely soy beans, pigeon peas and groundnuts as an alternative to improving soil fertility and legume dietary intake from the SFHC project. The households that benefitted from the NGO's seed distribution reported satisfaction with legume seeds (and tubers in Ekwendeni D). "Groundnut, soya and cassava have been the good crops so far. They do not need fertilizer, all they need is our labour and land but not money for fertilizer." (Ekwendeni D Couples, FGD 3, Female, 12 July 2013).

In summary, the fertilizer programs were unsustainable due to inconsistencies that compromised soil fertility and food production. While seeds that were accessed from NGOs were celebrated, access to good maize seed was problematic and other crops were no longer grown as a result of being destroyed by pests, eaten or sold without reserve (see section 4.4).

4.3.4 Competing Knowledge Discourses on Farming practices

This section reveals how households' seed and fertility rehabilitation methods were determined by the institutional knowledge that was available. Government policies since colonial times have led to a shift from growing local varieties, especially maize and groundnuts, to hybrid seeds, which are being marketed to withstand the unreliable rainfall (Chinsinga et al., 2011). In addition to government policy-facilitated knowledge, non-governmental facilitated and generational knowledge is utilized. In this section I describe information sources (Table 4.3) based on their methods, benefits, and complementary and competing roles.

Table 4.3. Approaches to Improving Soil Fertility and Source of Knowledge

Number	Method	Source of Knowledge
1	Double legume intercrop	SFHC
2	Pit manure	Government, PLAN International
3	Fertilizer manure mix	Government, MICAH, PLAN International
4	Liquid manure	Government
5	Burying harvest residues	Government, Local knowledge
6	Sasakawa	Government, PLAN International
7	Mound manure (<i>Chimato</i>)	MAFFA, Government, Land resource

Local knowledge

Farming households passed down local knowledge on seed selection, making ridges, and basic soil fertility management techniques across generations. This knowledge was often practiced in conjunction with knowledge learned from various institutions. The elderly headed households reported their intensive use of local knowledge as a result of not being well informed on alternative knowledge, as discussed in one focus group discussion:

[Male participant]: Nobody tells us how to do our farming. We do what our forefathers did, we grow maize, groundnuts and beans. [Female participant]: After harvest we take maize stalks and put them between ridges and put soil on top and the coming year they have decomposed and are ready for the next maize. (Ekwendeni D Elderly Households, FGD 1, 12 July 2013)

While other elderly farmers knew alternative methods of farming, they perceived them to be too involving and complicated. The alternative knowledge was mostly taught by workers from the government's Ministry of Agriculture and some non-governmental organizations (NGOs).

People in all the areas talked about the different information and advice that they received from the government about farming. Figure 4.1 below is a synthesis of the diagrams that people living with HIV drew in focus group discussions on types and use of agricultural knowledge they received from the government:

Figure 4.1. Government (Extension workers) Knowledge Content and Promotion



The government disseminated information through extension workers, employees of the government whose responsibility was to visit farmers to advise and support the villages' residents. In addition to extension workers were 'lead farmers' who were members of the villages who volunteered to adopt every farming technique taught so that other farmers could emulate them.

Ideally the government of Malawi is responsible for providing extension service to all agrarian communities; however, the households indicated that the extension service was very limited. While most families had only one or no visit from extension workers, others had more than one visit thus learning more farming methods compared to their friends. As one man described;

The extension worker has visited this area [Ekwendeni C] on several occasions. The recent visit was before growing season of 2012. So far he has taught us to bury our maize residues, make liquid and compost manure. The methods I have learnt so far have reduced fertilizer costs

and are even better than fertilizer since they retain moisture. (Kamanga, IDI 45, Married, F, aged 61, 11 July 2013).

On the other hand, for those with HIV/AIDS-related illness, the knowledge accessed from the extension workers could not be fully implemented. For instance, pit manure involves digging 170 centimetre deep pits, in which organic material such as crop residues, ash, livestock wastes, and other sources of organic material were applied and left to decompose. The decomposed organic materials increased the availability of soil nutrients and improved soil structure which promoted crop growth, but to carry it out for the whole farm required considerable labour and resources. Most of the participants living with HIV/AIDS found the making of the pit manure hard due to their compromised health. Additionally, some of the raw materials such as livestock waste were hard to source for households without livestock. The labour and raw material demands attached to pit manure hindered full utilization by other households. The households that could access and implement multiple forms of knowledge noted reported improvements in their food production.

Almost half of the participants (n=20) indicated that the extension services were redundant since they already knew most of the techniques the extension workers taught. For instance, a woman participant reported “the extension worker taught us burying residues in May [2013]... It did not make a difference because I already bury residues as learnt from SFHC.” (Chrissy, IDI 10, Widow, F, aged 36, SFHC, 17 June 2013). The extension workers also circulated information about using a fertilizer-manure mix in all the research areas except Ekwendeni C. The Micronutrients and Health (MICAH) initiative from Ekwendeni Hospital promoted the same fertilizer-manure mix information to the same villages. The

fertilizer-manure mix was widely praised by the farmers that implemented it, since it was an alternative that allowed the use of less fertilizer for similar results:

We mix livestock wastes, maize bran, 5 liters of ash, 5 liters of fertilizer and a little bit of water. The mixture is packed in a 50 kg sack bag with a plastic paper inside. The mixture stays in the 50kg bag for 6 days and on the 7th day the manure is ready to apply in the field; it's just like fertilizer. (TASO Support Group, FDG 3, Female, 17 July 2013).

The fertilizer-manure mixtures were slightly different across different villages but the common aspect was adding fertilizer to organic material and reducing the total amount of fertilizer, which reduced household costs. The households that reported practicing the fertilizer-manure mix complained of the difficulties surrounding sourcing the organic material necessary for the mix. The locally-available resources were not easy to find. People used livestock waste, maize bran and ash to add to the fertilizer, but of the four participants who complained about raw materials, one woman noted: "It is difficult to collect maize bran because it is also used to feed livestock ... our family bran is not enough for the mix so we need to buy the bran so that we can have enough." (Ekwendeni B Female headed Households, FGD 5, Female, 13 July 2013).

The Plan International interventions were not new to residents of Ekwendeni D since lessons on the *Sasakawa* planting method (planting of one seed grain per planting station), burying residues and pit composite had already been promoted by the government extension workers and lead farmers. AIDS-affected household highlighted cassava and sweet potatoes intensification as one important aspect from the PLAN lessons since cassava survived dry spells and they were both produced with less labour and no fertilizer.

The burying of farm produce residues was not only replicated across institutions but also perceived as local knowledge by participants; however, such perceptions were misleading. Burying maize residue is fine but it does not have any immediate effect on soil fertility and in some cases it locks up the organic material due to higher carbon to nitrogen ratios (PerkinElmer, 2010). It is burying the legume residue which is novel and the SFHC double legume intercrop technique was the only distinct agroecological method that provides sophisticated fertility rehabilitation (section 4.4). In other cases, some forms of composite manure were replicated across institutions. The repetition of the same lessons, to the same farming households by different institutions (reported in nineteen households from all areas) seems to be tiring for participants. Considering all residue burying does not serve the same purpose and other agroecological methods are replicated, there is a need for specific-comparative benefit based and collaborative strategies dissemination among institutions with similar goals such as improving food security and efficiency.

4.4 Agriculture with SFHC Intervention

This section reports on the 27 households that accessed the SFHC intervention. The SFHC imparted knowledge on agroecological methods and also followed up on the farmers who had implemented the methods. The households of Ekwendeni town, A, B and C had access to the agroecological interventions. They had not yet covered Ekwendeni D; however, two households accessed SFHC seeds from a neighboring village. A major agroecological method promoted by SFHC was 'doubled-up legumes' which involved growing two legumes, such as

pigeon peas and groundnuts or pigeon peas and soya bean, and burying the legume residue, which added nitrogen the following year (Figure 4.2).

Figure 4.2. Double Legume Intercrop (pigeon peas and groundnuts)



The choice of the legumes was made by the participants, for instance the use of pigeon pea for nitrogen supply. The farmers who had implemented the agroecological strategies since 2001 had given input into which legumes were suitable for their conditions. “In the past one of the legume options was mucuna but farmers did not like it because it was not edible [unless cooked for 5-6 hours] instead they opted for pigeon peas which they can use as relish” (SFHC officer, IDI 56, M, 6 June 2013). The farmers who accessed seeds from SFHC had to repay the seed to SFHC, and the seed was distributed to other farmers. As a SFHC staff person explained:

...the farmers are required to return the seed to the SFHC; when they get 4 kg they return 8kg which is given to others who never accessed the seeds. The return strategy helps in project expansion and it also

ensures that farmers grow the legumes and when they operate as a group they encourage each other to return. (SFHC Promoter, IDI 60, M, 6 June 2013).

The structures to ensure sustainability of the project empowered the farmers to feel a sense of ownership and responsibility for the intervention's management.

4.4.1 Recruitment and Training

The SFHC project disseminated knowledge on agroecological strategies (mainly double legume intercrop) through special community sensitization lessons and demonstrations, and lessons at HIV/AIDS support groups at the Ekwendeni Hospital. The HIV/AIDS-affected households were recruited into the SFHC training and legume seed distribution list at two points, namely, their villages or support groups. A support group leader reported his introduction to SFHC and training as follows:

In 2010 I was called to Ekwendeni Hospital where they trained me to intercrop legumes, bury residues and then plant maize on that land. The Kalongonda [Chitumbuka for Mucuna which was used in the first 4 years of the project and has become the informal name for the project in the villages] project gave me pigeon peas and groundnuts to intercrop. In addition, I was instructed to identify 5 people from our support group to receive the seed and practice intercropping. (Benga, IDI 19, Married, M, aged 47, SFHC, 26 June 2013).

The recruitment process was on special appointment, as in the case of Bengo who later extended an invitation to support group members. Additionally, participants who had learned from the seminars passed the knowledge to their fellow support group members. The seminars' benefits, which included transport money, was also appreciated, as Mwiza, a 36-year-old married woman noted: "the money we get from the seminar assist us indeed, since the seminar lasts for three days and on each day we receive k1,500 ..." (Mwiza, IDI 2, Married, F, aged 36, Non-SFHC, 10 June 2013). This benefit was a source of envy for households

that never attended. A widow who had not attended any seminar expressed her concern as follows: “they choose the same people for trainings at the hospital; they never give some of us a chance” (Zione, Widow, F, 46). Some of the households that attended seminars managed to purchase farm inputs “...when I attended the seminar with my wife we made close to MK14, 000 (\$35); it was very helpful we bought fertilizer” (Khomba, IDI 4, Married, M, aged 45, Non-SFHC, 11 June 2013).

The recruiting of households to access the seed at village level was done with guidance from the chiefs, as the assumption was that the village headmen knew the village residents. At support group level, recruiting SFHC beneficiaries depended on the individuals’ access to farming land.

To become a participant in Kalongonda, a support group member has to have farming land. For the members who only have space for their house it is hard to include them. However, some members who do not have farming land but rented for some growing seasons have benefited. (Nandau, IDI 5, Widow, F, aged 58, SFHC, 12 June 2013)

The support groups were the main recruiting point for farmers living with HIV; however, in some cases there was miscommunication between the groups and the village headmen, who were the normal contact point for joining SFHC, such that some households accessed the interventions twice while others had not yet joined:

In 2007 I was recruited into Kalongonda through our support group... I accessed pigeon peas and groundnuts. In 2011, the program came through the chief to all villagers that wanted to register and choose a legume [if they have land]. That time I chose soya and now I grow three legumes from SFHC (Chrissy, IDI 10, Widow, F, aged 36, 17 June 2013).

Training Style

In addition to seminars by appointment, SFHC emphasized training farmers in groups (Figure 4.3) as a means to promote networking which ensured the implementation of agroecological methods:

The demonstrations on intercropping and manure making are done as a group, then farmers go to practice on their farms ... when one farmer is too sick to work or has forgotten other steps on their farm, other members help. (SFHC Promoter, IDI 60, M, 6 June 2013)

The village-based group trainings were favorable to households that were not part of representative seminars or support groups. The support group members who never attended sessions on intercropping also utilized village level training. The elderly caring for children living with HIV rarely or never attended support group sessions thus they also benefitted from village level training.

Figure 4.3. A Demonstration Lesson on Compost Manure



The households that have not accessed seed or attended any form of SFHC training still accessed the knowledge on double intercropping from their friends; however, due to lack of legume seeds they did not adopt the methods.

4.4.2 Benefits of the SFHC Experience

Behind the complex recruitment and training strategies which not only include more than 300 HIV/AIDS-affected, but also other households not affected by HIV/AIDS, SFHC has been rewarding to some of this study's participants in the following ways:

A) Fertility Rehabilitation

There were households that viewed the agroecological methods as a cushion to maintain food security, given their inability to purchase fertilizer. A widow who had been farming without fertilizer for a while referred to burying residues from a double legume intercrop as a relief and contribution to better yields:

I received groundnuts and pigeon peas in 2010 and intercropped right away. The following growing season (2011) was the year of reaping from burying the residues; I managed to harvest 15 tins of maize instead of the usual 7 tins and the maize reached the 2012 growing season (Chapali, IDI 31, Widow, F, aged 36, SFHC, 4 July 2013).

Compared to the years when there was no fertilizer or alternatives to addressing the depleted soil fertility, 16 households (60% of the participants with the SFHC intervention) reported improvement in their soil and yields during the year in which they used land they buried wastes of the intercropped legumes.

B) Source of Income

The crops soya and groundnut crops were the main part of the harvest that was sold. Household members who were gaining good income from the SFHC crops spoke highly of the intervention's contribution to livelihoods. A 27-year old widow "Chikondi", who lived in her home village, had enough farm land and was

in good health, reported how she was experiencing poverty until the legume crops changed her situation:

With SFHC double legume intercrop I harvested a lot of groundnuts and soybeans, which I sold for MK 20,000 (\$50.63). I used MK12500 (\$31.25) of the money to buy fish, beans, rice and wheat flour, which I sell in my village. At the moment my business is worth more than MK30,000 (\$75.95). I can buy basic needs, fertilizer and hire labour. (Chikondi, IDI 59, Widowed, F, aged 27, 19 July 2013).

Like Chikondi, three other households that had secured a sustainable means of livelihood through selling the legumes they accessed from SFHC were scaling up in both farming and their businesses.

C) Labour Relief

Legumes were easy to produce compared to maize since they required less work. While growing maize required banding, legumes could survive without it. Concurring with the SFHC promoters, many participants reported that one of the benefits of legume crops was that they addressed their labour and fertilizer constraints.

Farming is a labour intensive activity despite whatever crop I grow, however the emphasis on groundnuts and soya beans has given us a crop that needs less labour and needs no fertilizer. The soybean seed can survive without banding but you cannot do the same with maize you will be sorry (Nyamilandu, IDI 11, Married, F, aged 37, SFHC, 17 July 2013).

A widow who returned to her home village in 2001 (after the death of her husband) acknowledged the importance of all her crops but reported “All crops require a good amount of labour, however groundnuts are easier, maize is number one when it comes to extensive labour requirement... the number one crop is nsima [made out of maize flour] every time a human being has energy is because of nsima” (Nyamsiska, IDI 44, Widow, F, aged 39, SFHC, 11 July 2013). In this case legumes were a crop that could be produced with reasonable labour

and no fertilizer and still contributed to households' food availability. Despite the ease in producing the legumes, the households' concern was on the availability of maize, which made up three-quarters of their diet.

D) Promotion of Networking

The SFHC project also promoted knowledge and seed sharing networks among farmers. The networks promoted both legume consumption as well as implementation of double legume intercropping. Limbika, a 55-year old widow, talked about learning from others and then implementing it on her fields:

I learnt about SFHC through my friend; they gave me a plate of soya to plant on my field and the following growing season I joined the project and got 5 kilograms of groundnuts seed. My friends have been checking [and advising] on the progress of my groundnuts so that I harvest enough to return the 10 kilograms of seed in time (Limbika, IDI 25, Widow, F, aged 55, SFHC, 2 July 2013).

The networks formed in the context of the SFHC project not only encouraged sharing of seed, but also ensured implementation of methods. The experiences of Limbika and others revealed that beneficiaries were empowered to encourage and monitor each other on the implementation of legume planting.

4.4.3 Constraints of SFHC Intervention

The SFHC benefits were not uniform to participants of this study because of the following challenges:

A) Intervention Inconsistencies

The practice of agroecological methods varied across farmers because of the crops and knowledge they had received. Some farmers only received one legume and were not aware of the double intercrop. Others knew about the double intercrop but never accessed pigeon peas, while others reported intercropping groundnuts and soybeans instead of pigeon peas.

In 2007, Mr. Kupe came and taught us about double legume intercropping and the burying of residues but it was only soya I received so I never practiced. I have had fertilizer problems so I just used the pit manure the government extension worker taught us and it worked really well, however it is a hectic job (Tadala, IDI 18, Married, F, aged 41, SFHC, 26 July 2013).

SFHC participants had inconsistent results due to these disparities in both knowledge and seeds distributed.

B) Switch to Alternative Methods

In the villages where farmers had various sources of knowledge on increasing fertility, barriers to legume intercropping such as insect problems led to opting for other fertility rehabilitation methods (see 4.3.4). In addition to pests, households also complained about livestock grazing, both of which led to low harvest of the pigeon peas:

We received pigeon peas and groundnuts in 2006. We intercropped and buried the residues. It was a good solution to the fertilizer, which we could not afford but other people's goats and pests [Zibenene a type of beetle] destroyed the pigeon peas so we could not proceed. We now use maize bran and ash to prepare manure since they are resistant to pests and people's livestock (Mughogho, IDI 11, Married, M, aged 42, SFHC, 17 July 2013).

To deal with other people's livestock eating crops and residues, other villages passed a rule through the chief that restricted livestock from roaming in fields prior to the residue being harvested. In these cases, people were able to maintain the legume intercrops due to community cooperation. On the other hand, the pest problem was persistent, and the SFHC officers knew about it. "We have taught the farmers to control the pests by physical killing since we did not want to provide a chemical alternative which they may not afford or raise problems to the environment" (SFHC office, F). The farmers who had tried physical killing were yet to be satisfied:

I have tried to intercrop but now I have given up on pigeon peas. There are some insects which stick to the pigeon peas flowers soon after they start blooming and that restrict the peas from bearing, I reported this to the SFHC officers and they told me that I should hand pick the insects early in the morning and burn them by roasting but they keep on coming each morning... (TASO Support Group, FDG 3, Female, 17 July 2013).

The households that found physical killing unsuccessful were awaiting the SFHC officers and promoters to devise another solution that might be more effective.

There were other households that had ceased intercropping and implemented other strategies they perceived better, as one woman indicated in a focus group discussion: "The practice of burying residues is easy to do and straight forward but it is less effective compared to pit manure which result in yields [better] that are close to when you apply fertilizer." (Ekwendeni B Female headed Households, FGD 5, Female, 13 July 2013). Apart from diverting to other methods, the households that could not afford fertilizer reported that they would appreciate their farming if they had fertilizer.

C) Poor Health Barriers

Some households had access to all the necessary seeds and lessons on double legume intercropping but poor health of adult household members related to HIV/AIDS or environmental barriers prevented satisfactory implementation. The Mughogho couple was living with HIV and on ARV. During the year (2006) they received seed for intercropping, his wife was hospitalized for three months since her immune status⁷ was very low:

I [wife] was recruited into SFHC in 2006, I received groundnuts [only] which I planted very early, however, I harvested less since I was sick to work on farm and I am afraid to request for other seeds from the project since returning the seed will be impossible if I get sick again. In

⁷ Low immune status: The T-helper lymphocytes per cubic millimeter of blood help to predict immunity health status of people living with HIV, a count of less than 200 leads to AIDS diagnosis (Hogan, 1995).

2007 they did not ask me to return their seed but this time around they may ask... (Mughogho, IDI 11, Married, M, aged 42, SFHC, 17 July 2013).

The couple is doing fine but the husband usually gets sick when he does heavy work, and this uncertain circumstance that arises from the husband's sickness prevents them from rejoining the SFHC intervention. Access to the double legume intercrop knowledge and seeds was, therefore, not an end in itself since the health of household members who did farming activities impeded the sustainable implementation.

D) Land Control Barriers

In some households, land ownership situations mitigated benefits from intercropping and burying residues. Two households (one who rented and one who farmed her late husband's farming land) lost the land on which they had been practicing double legume intercropping, which led to other people reaping the benefits of the buried residues. One couple moved from Nkhata Bay to Ekwendeni in 2001. They wanted to be close to the hospital and relatives, since the husband was often sick; unfortunately, they did not secure their own land for 12 years, instead they relied on rented land.

I have been burying residues and rotating with maize from 2008 until last year when the owners of the land we rented gave us a notice that their son will be using the land. They had to wait for me to fix [rehabilitate fertility] the land in order to take it back [with disappointment]. (Khumbize, IDI 9, Married, F, aged 36, SFHC, 16 July 2013).

The land ownership criterion adopted by the support groups (see above the case of Nandau in section 4.5.2), which ensured that members who accessed the intervention actually owned land, served a better purpose. In the other case a widow (her husband had died seven years ago), whose land was controlled by her late husband's family, was also a victim to land seizure after fertility

rehabilitation. “My late husband’s people have rented out the land where I intercropped. I just found somebody clearing the land, they did not even give me a notice” (Khumbo, IDI 24, Widow, aged 37, SFHC, 2 July 2013). These findings demonstrate that the legume intercrop initiative did not address social inequalities such as landlessness or gender inequalities over land control.

4.5 Gendered Perceptions and Experiences: Part of the Agriculture and Food Insecurity Problems in Female Headed Households

The women in monogamous and polygamous households reported rarely contributing in farm operation decision making; however, they reported doing more work than their husbands. The women’s burden in trying to produce or access enough food was even harder for female-headed households since their vulnerability was extended by the aspects of *Lobola* (bride price) practices. The female household heads in this study were either widowed (n=12) or separated (n=6) from their husbands.

4.5.1 Consequences of Dependency on Husbands

The women who had lost their husbands to HIV/AIDS-related sicknesses were victims of lost resources during sickness, decisions on property and living arrangements by husband’s relatives, as well as demands of their own HIV status. The widows who lived in town had returned to the villages after their husbands’ death since they could not support themselves. Similarly, women who had divorced returned to their villages since they could no longer support themselves:

I came back to my home from Mzuzu in 2005 because when my husband died we could not manage. My husband was a building contractor [involved in concrete bridges] so he could afford all we

needed and organized and paid for all the farming activities. (Nyachiza, IDI 3, widow, F, aged 42, Non-SFHC, 11 June 2013)

In other cases women sold some of their property to seek treatment for their husband's illness. One participant described how her late husband's relatives grabbed some of the widows' property: "after my husband's burial his relatives took everything [property] from me and they only left my children" (Sulitha, IDI 47, Widow, F, aged 46, SFHC, 11 July 2013). Since women who used to live in the city reported high dependence on their late or ex-husbands' income, they were more vulnerable. In cases where women reported selling their property to support late husband's sickness, such widows returned to their home villages without assets or skills to establish a reliable source of livelihood.

4.5.2 Challenges of Widowhood

The women whose husbands never paid *Lobola* were sent back to their home villages since culturally their household (including children) belonged to the mothers' side (village). Most of the widows who were living in their late husbands' villages, as part of the *lobola* cultural norms had access to entitlements such as the use of land and livestock; however, some experienced verbal abuse from their husband's relatives. Lindiwe, who lived in her late husband's village, had access to the family entitlements; however, she was abused. "My brother in-law says my husband is already dead so why I am here I have to go to my home village" (Lindiwe, IDI 34, Widow, aged 40, Non-SFHC, 5 July 2013). The residence at the husband's family was helpful in the sense that children could still access help from their late father's relatives; however, verbal abuse and being denied control over their late husband's resources made the widows' lives difficult.

The women's reasons for returning to their home village were due to abuse from the late husband's relatives or forced evacuation resulting from ill-treatment. A widow of seven years who had lived in her husband's village for 24 years was about to return to her home village despite managing a reliable source of livelihood:

I grow enough food for me and my four children, our means of income is the vegetable business. If I was not selling vegetables, finding money could have been hard... My in-laws tell me to leave; they say what are you doing here when your husband is dead... they are proposing that I should leave. Sooner or later I would have to leave and I will take my children with me. (Chifundo, IDI 20, Widow, aged 40, 27 June 2013)

During the period of this study, it was not known whether she would have the same opportunities when she returns to her home village. I observed that women who left their husband's village left the life and privileges they depended on for their income and food. The situations and responsibilities of this nature increased the female headed households' vulnerability to poverty and food insecurity.

4.5.3 HIV/AIDS, Gender, and Land

Access to land was another major problem for some HIV/AIDS-affected female household heads since land was either taken away from them or controlled by the late husband's relatives. Limbika, a 55-year old widow who lost the land her husband owned, narrated her experience as follows:

... my husband worked as a plumber for the white people at St. John of God mission hospital in Mzuzu, they gave him farm land... after his death and the white people's departure the land was taken away from us. I was so troubled about how I will take care of my 4 children in town without land and any means to make money so I came to this village and asked the chief for land. (Limbika, IDI 25, Widow, F, aged 55, SFHC, 2 July 2013).

Other women who came back to their villages could not access suitable land for farming. Keziya, a 37-year old woman, decided to divorce her husband because of his frequent extra-marital affairs. She returned with her two children to where her mother who migrated from another village lived, but struggled to find access to land. She farmed a small acreage, as she described:

I have been finding problems with farm land. We are not from this village, my mother just came here to ask for land in 1998 [to ask for land] and since I came back I have not been able to access land for some of my crops. If we try to use land that seems idle, someone comes to claim the land as theirs, we don't have anywhere else to go. (Keziya, IDI 33, Divorced, aged 37, Non-SFHC, 4 July 2013)

There were other women who were still living in their husband's village and they reported having limited control over the land that their husbands had controlled. Khumbo, a 37-year old widow of 5 years, who was practicing soil fertility rehabilitation, expressed her grief as follows:

A few weeks ago I just found somebody clearing my land and when I asked them they said the land has been rented to them by my brother in-law. I cannot do a thing, it is their family land and I am just here because it is where I married. If my husband was alive I do not think they could have done this, now the people who have rented the land will enjoy the fertilizer [buried residues] I made... (Khumbo, IDI 24, Widow, aged 37, SFHC, 2 July 2013).

The land issues that the widowed and divorced women were undergoing directly affected their household food production which promoted food insecurity.

4.5.4 Gender-Based Violence and Abuse: Divorce Cases

All the separated or divorced women in this study had returned to their home village with their children. They reported experiencing domestic violence and abuse prior to their single headship.

My husband married a second wife and rented a house at Chibavi [a suburb of Mzuzu] where he was partially living for two years and leaving us behind at Msongwe [a different suburb of Mzuzu]. In those two years he usually left us without anything; that is, no food, never

came to attend to us for a long time so I had no choice but to come back home in 2005... (Keziya, IDI 33, Divorced, aged 37, Non-SFHC, 4 July 2013)

Other women were divorced by their husbands after discovering that they have contracted HIV as Grace described:

The reason why I came back my home village was because my husband ordered me and my children to leave since I was HIV positive; he remarried. In 2001 when I was 6 months pregnant the nurses told me that I was HIV positive.⁸ My husband blamed me since I was the first one to be revealed to be positive. He is also HIV positive but he let me go because I looked sickly compared to him. (Grace, IDI 29, Divorced, F, aged 31, Non-SFHC, 4 July 2013).

The compulsory HIV test for pregnant women was a source of tension in some of the participants' marriages, since it exposed women's status before their husband, as one Ekwendeni Hospital AIDS Program staff person discussed. "Other women opt to keep their status from their husbands after discovery from antenatal care, it is always better when a couple gets tested at the same time." (AIDS Program Promoter, IDI 58, F, 5 August 2013). The financial struggles separated women were facing were not different from the widowed women since they had no income support from their husbands and they had also lost entitlement to their husbands' assets.

4.6 Household Food Insecurity

There were high rates of reported household food insecurity across the HIV/AIDS-affected households in this study. For the purposes of this study, food insecurity will be examined based on experienced food shortage over the past year and dietary quality (based on 24-hour recall analysis). Ninety-six percent (52 of 54) of the participant households reported using one or more fertility

⁸ In Malawi, it is compulsory that all pregnant women who undergo antenatal care at registered facilities should undergo HIV testing in order to prevent mother to child transmission of HIV.

rehabilitation strategies to improve food yields; however, 78% (38 of 52) reported experiencing both serious and severe food insecurity. Overall, 78% (42 of 54) of the interviewed HIV/AIDS-affected households were experiencing some level of food insecurity on an annual basis.

4.6.1 Reported Food Shortage

Forty-two households ran out of food before next harvest, there was a slight period difference in food shortage experience across households with and without the SFHC interventions. The SFHC members' food shortage period was from September to January while the non-members' shortage periods ranged from July to February. The reported measure of food insecurity was mostly based on maize since it was the most commonly eaten food of all the crops households produced.

The households that practiced double legume intercrop also ran out of food; however, when they grew their maize on the "buried residues" farm plots, maize yields improved. The households that grew a variety of crops also reported the months they finished the other crops they had grown; however, maize, as their staple crop, was their greater concern compared to groundnuts and soybeans. Ziba, a married 55-year-old man who had accessed both soybean and groundnuts from SFHC reported the following:

Last year we run out of food in November... We finished our maize in November while groundnuts lasted until October... For soybean we still have it because we do not use it at once but we mix it with maize for porridge so it lasts long... (Ziba, IDI 49b, Married, M, aged 55, 12 July 2013)

The soybean crop lasted longer than other crops, and despite being the most marketable food crop, households still reserved enough to last until the next

harvest. The soybean crop lasted longer because households used it for porridge which was mostly eaten in the morning, unlike groundnuts which went into porridge, relish, and was eaten as a snack. Only one household reported using frequent use of soybeans to make soy meat.

Food insecurity was not always a result of low yields, as some households reported producing enough food; however, income constraints, such as the need to visit the hospital, forced them to sell their produce. Mambo, a 40-year-old married man who was the only HIV positive person in his household, reported the following on their current (2013) harvest: “we are not sure how long our groundnuts will last since I had to sell one bucket to get money for transport [MK800/\$2] to the hospital.” (Mambo, IDI 14, Married, M, aged 40, SFHC, 17 June 2013). Mambo was diagnosed HIV positive after a long illness in 2008. He has been on ARV treatment for 5 years but still suffers from frequent under nutrition. At the time of this research, his health was deteriorating so he was on a nutrition boost program (using fortified peanut butter sachets) and had to visit the hospital each month. The selling of farm produce was also common among households whose sources of income were unreliable. Food sales to solve problems revealed that households were very poor with limited or no contingency funds thus depicting another reason behind food insecurity.

Coping Strategies

The households that experienced food shortages coped with their situation by providing casual labour (*ganyu*), changing the foods they ate, or cutting back on food they ate. Nyabanda, a 36-year old wife in a polygamous

marriage, would go hungry to reserve the available food for her children or feed her family cassava as she reported:

I and sometimes with my husband do ganyu when we have run out of food, when the two of us work together we get a tin of maize which we can eat for 3 days after that we go back... (Nyabanda, IDI 49, married-polygamy, F, aged 36, Non-SFHC, 12 July 2013)

While households had a number of coping strategies, *ganyu* was the most common; however, its benefits were reliable for only a short period. In addition, *ganyu* diverted household members away from their farm work. Nathyokani described *ganyu* as a coping strategy as follows:

We [Mother and 17 year old son] do ganyu for money or maize. Sometimes he works on our farm while I go for ganyu or vice versa, it slows down our farm work but it is the only way we ensure there is food for our family, we never sleep with an empty stomach. (Nathyokani, IDI 23, Widow, F, aged 42, 28 June 2013).

The reliance on *ganyu* during the farming season was therefore one of the reasons for reduced yields for the household that diverted labour.

A few households received food from the AIDS program, thus coping with food shortage was easier for them, as Sigele, a married woman of 34 years indicated: "Ekwendeni Hospital gives us food during the hunger period sometimes even the Home Based Care gives us food. The last hunger period, I received 50 kilograms of maize from Ekwendeni Hospital" (Sigele, IDI 14, Married, F, aged 34, SFHC, 17 June 2013). The food provisions from the AIDS program were mostly reported in two research areas (Ekwendeni town and Ekwendeni B) while the rest of the areas had less access to this support. I also observed that a few individuals who were close or often visited the hospital were frequent beneficiaries of the AIDS program food entitlement.

4.6.2 Dietary Patterns: 24-Hour Recall Analysis Report

People living with HIV/AIDS are advised by medical and HIV program personnel to eat balanced diets, which are essential to the sufficient functioning of the antiretroviral treatment. The ARV treatment interrupts the multiplication of the HIV virus and improves an individual's immunity only when his/her diet contains sufficient energy, micronutrients and proteins, all of which foster nutritional recovery, and is essential for effective treatment (Diniz et al., 2011). The households that were in support groups were well aware of the need for a balanced diet to aid ARV treatment, and to boost their diets some of them accessed fortified peanut butter from Ekwendeni Hospital. Almost all the households ate three times in a day after harvest and shifted to two times or less during food shortages.

The 24-hour recall revealed seasonal dietary disparities; as households reported an increase in consumption of readily available food: “during rainy season there is a lot of relish like mushroom and vegetables (mainly blackjack and sweet potato leaves); in the morning we do not eat but for lunch and supper we eat *nsima*” (Nyalundu, IDI 45, Married, F, aged 58, 11 July 2013). In the periods after harvest, households ate a variety of foods. However, a few ate all the recommended food groups (namely staples, fats/oils, animal, legumes, vegetables and fruits). Twenty four percent (72 out of 304) of the household members required balanced diets for their ARV treatment. In a simple 24-hour recall⁹ exercise, 28% (15 of 54) of households reported consuming 4 or more food groups in the day before the interview. Table 4.4 depicts household food

⁹ Participants reported all the foods household members ate in the previous 24 hour period (breakfast, lunch and supper/ snack).

consumption per food groups, and suggests that SFHC participants had higher levels of dietary diversity than non-participants. Ten SFHC households had 5 or more food types the previous day, while only 5 non-participating households had 5 or more food groups the previous day. Since this was a qualitative study with a sample of only 27 households per group, a study with a higher sample size would be needed to verify these results.

Table 4.4. Household Dietary Diversity (24hour report)

Food Groups Combination	SFHC Members	Non-SFHC	Total
Staples (maize meal) and Vegetables (mostly leafy)	6	9	15
Staples, Vegetables and Legumes	11(7 beans)	13(8 beans)	24
Staples, Vegetables, Legumes, Oils and Animals	8	5	13
Staples, Vegetables, Legumes, Fruits, Oils and Animals	2	0	2
Total	27	27	54

Only two households reported eating fruits even though at the time of the research there were oranges accessible to the households in most villages. In the rainy season the households relied on mangoes, which were in almost every homestead, not only for their food supply, but also to cope with food shortage “we are lucky in the rainy season, when we do not have *nsima* we find relief in mangoes as you can see we have a lot of trees” (Ekwendeni B Support Group Leader, IDI 62, M, 19 July 2013). The following table portrays various meal combination combinations:

Table 4.5. Households' food Groups and Meal Combination

Food groups	Category	Meal Combination
2 groups	Staples and Vegetables	Breakfast: tea and rice; Lunch and supper: nsima and vegetables (boiled).
3 groups	Staples, Vegetables and Legumes	Breakfast: sweet potatoes; Lunch: nsima and vegetables (with groundnuts) and Supper: nsima and beans.
5 groups	Staples, Vegetables, Legumes, oils and Animals	Breakfast: soya porridge, Lunch: nsima and vegetables and Supper: nsima and saldin (fish with oil)
6 groups	Staples, Vegetables, Legumes, Fruits, Oils and Animals	Breakfast: soya porridge; Snack: oranges; Lunch: nsima and meat (with cooking oil) and Supper: nsima and mustard (with groundnuts).

The households' groundnut and soybean consumption was low in the 24 hour recall analysis, even though 28 had harvested soya and 26 had harvested groundnuts (Table 4.1). The low intake in the 24 hour recall analysis revealed that availability of legumes did not guarantee daily consumption to fulfill their dietary requirements. There were several households that ran out of legume harvest in part due to selling some of their harvest. For instance, 17 out of 28 households that grew soybeans ran out of the crop yet they sold it to buy basic needs or to pay for transport to the hospital. Although households sold most of their legumes, the interviews and observation revealed that their diets were dominated by the food they produced except for saldin fish, which was the most widely eaten animal source of protein since it was cheap. Fish that were priced at MK100 (\$0.25) provided enough food for 4 people.

In this study, I characterize households' food insecurity based on food shortage and dietary diversity in three categories namely: **Not Produced-Not**

Eaten, Produced-Not Eaten and Produced-Eaten. The categorizations of food insecurity are based on the households' food access and consumption experiences. While food insecurity is widely recognized as mild or severe, this analysis focuses on experiential aspect; hence, it showcases food crops harvested against food crops eaten during planting and after the harvest period. Since all households produced maize the analysis will focus on the absence of legume crops. The table below summarizes the categorizations:

Table 4.6. Characteristics of Food insecurity categorizations

Food Security Characteristic	Food Produced (Shortage)	Food Eaten (24 Hour Recall)
Not Produced-Not Eaten (not accessed thus not utilized)	less maize and no legumes	Consumption determined by food produced (limited)
Produced-Not Eaten (accessed but not utilized)	enough maize and legumes	Harvested enough food crops (especially legumes); however, sold some thus not consumed.
Produced-Eaten (accessed and utilized)	Harvested enough food crops: maize and legumes	Consumption of all harvested food crops

Not Produced-Not Eaten: households that had insufficient labour or a major illness during the growing season did not produce enough maize and mostly no legumes. It was therefore due to inability to produce food that they would run out of food few months after harvest. Such families experience food shortage early. Although households were aware of the dietary requirement of the HIV/AIDS patient, the lack of food in such circumstances was beyond their control. This category had not yet achieved access to enough food thus their dietary quality not discussed.

Produced-Not Eaten: households in this category harvested a variety of food crops, but the foods were not featured in their diets. While depending on a 24

hour recall may seem over emphasizing on one day's coincidence, reports on the months these households run out of harvested food confirms that income needs trumped dietary diversification. The SFHC project intervention has improved legume diversification in as much as crops grown is involved. However, where households had insufficient livelihoods and backup plans in time of uncertainties like sickness, dietary diversity was secondary. In the case of this group, access to food was not a huge problem compared to the previous group; however, (not produced-not eaten) lack of financial mean disturbed food consumption.

Produced-Eaten: households in this category had most of the necessary entitlements to support food production and other uncertainties. Most of these households not only harvested enough, staple crops, but they also harvested diversified food crops which were featured in their meals. The households with reliable incomes could even purchase food groups (meat, dairy products, fats-oils) they were not producing. Households with businesses, supportive relatives, or more than two adults were likely to belong to this category; unfortunately, households of this caliber represented only thirty percent (based on 24 hour recall reports) of the study participants.

4.6.3 SFHC Dietary Contribution

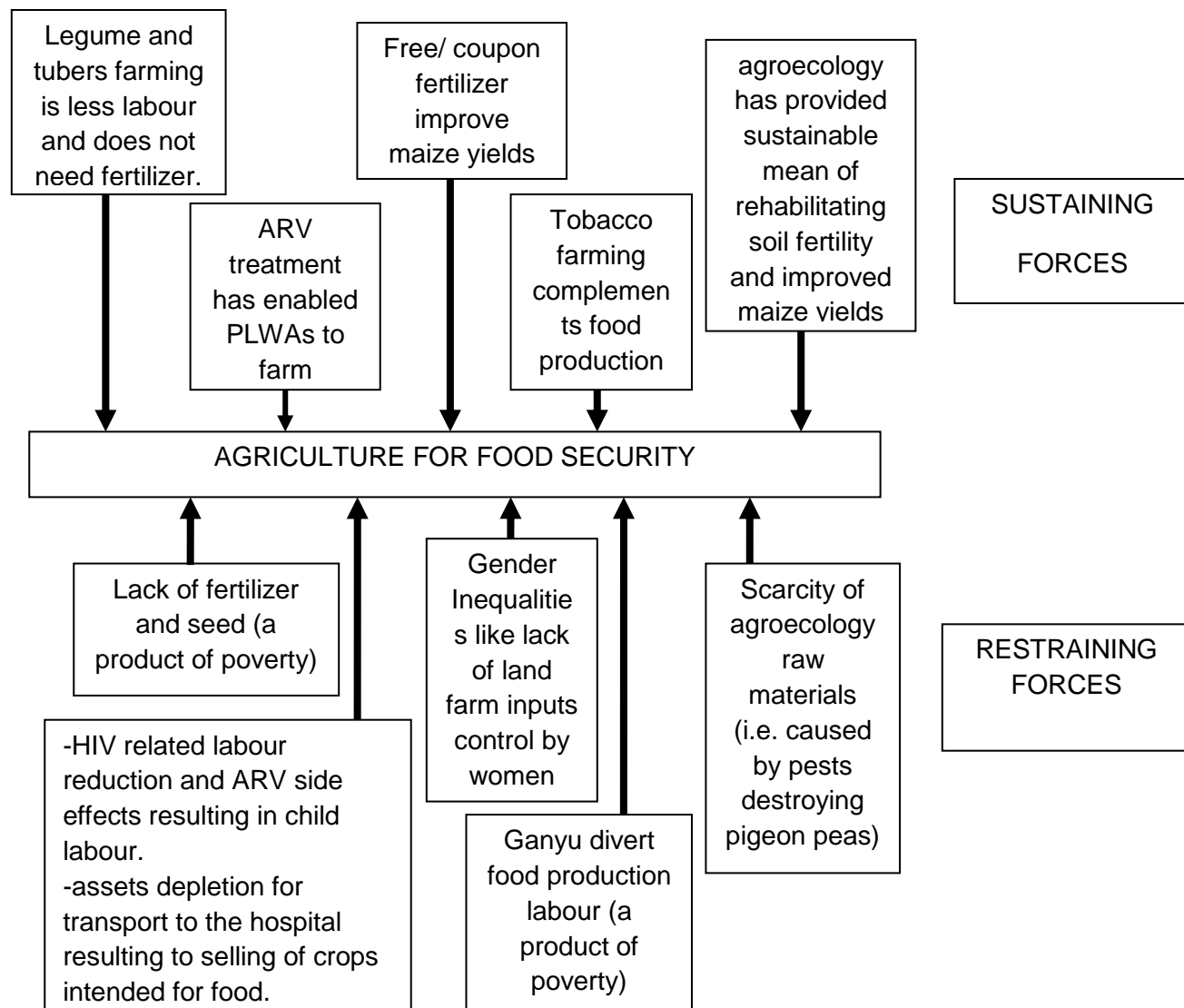
There were slight differences in crop diversity among households that had accessed the SFHC intervention and the ones that did not. The crop that stood out as an SFHC initiative was the pigeon peas (used for relish) since five of the six households that produced pigeon pea were SFHC participants. There were only 29% (5 of 17) of the SFHC households that continued producing pigeon peas while the rest of them discontinued mostly because they could not control the

pests that destroyed the crop. The legumes distributed by SFHC program fit into the ARV treatment nutrition therapy, which encouraged patients to consume macronutrients. A number of households could not afford meat or cooking oil; thus, soybean and groundnuts complemented some of their nutritional needs “we [HIV positive people] need all food groups so soy beans are used for porridge and soya meat [homemade] and groundnuts go into relish like cooking oil ” (Besita, IDI 41, Married, F, aged 35, Non-SFHC, 10 July 2013). Soy bean and groundnuts were a source of protein, oils, vitamins, fiber, and minerals in the diets of the households.

4.7 Summary

In summary, the SFHC agricultural interventions contributed to improving food security, but did not fully address food security due to underlying factors, such as poverty, gender inequality, and the cost of ARV treatment. The households’ soil fertility problems have been addressed through agroecological methods and interventions from other institutions; however, only twelve (seven of them beneficiaries of SFHC) of the fifty four households reported accessing food all year round. To some participants the SFHC agroecological intervention has improved fertility, legume availability, labour requirements, and networking. Several gaps in the SFHC project, including: intervention inconsistencies, competing knowledge discourses, environmental factors (such as pest problems), impacts of HIV/AIDS, nature of livelihoods, and gender inequalities have impeded improvement of food security. Figure 4 below is a summary put together by AIDS-affected households of the factors sustaining and restraining agriculture.

Figure 4.4. Factors Sustaining and Preventing Agricultural Production for AIDS-Affected Families (Support Group Members: Ekwendeni Town, B and D, 6 Visual Diagramming Sessions, July 2013).



The diagram depicts that while some forces promoted agriculture which contributed to household food security, other forces were working against the efforts. This antagonistic relationship explains why most households could not attain dietary diversity, which was essential for their ARV treatment and general health wellbeing.

CHAPTER FIVE

DISCUSSION AND CONCLUSION

5.1 Introduction

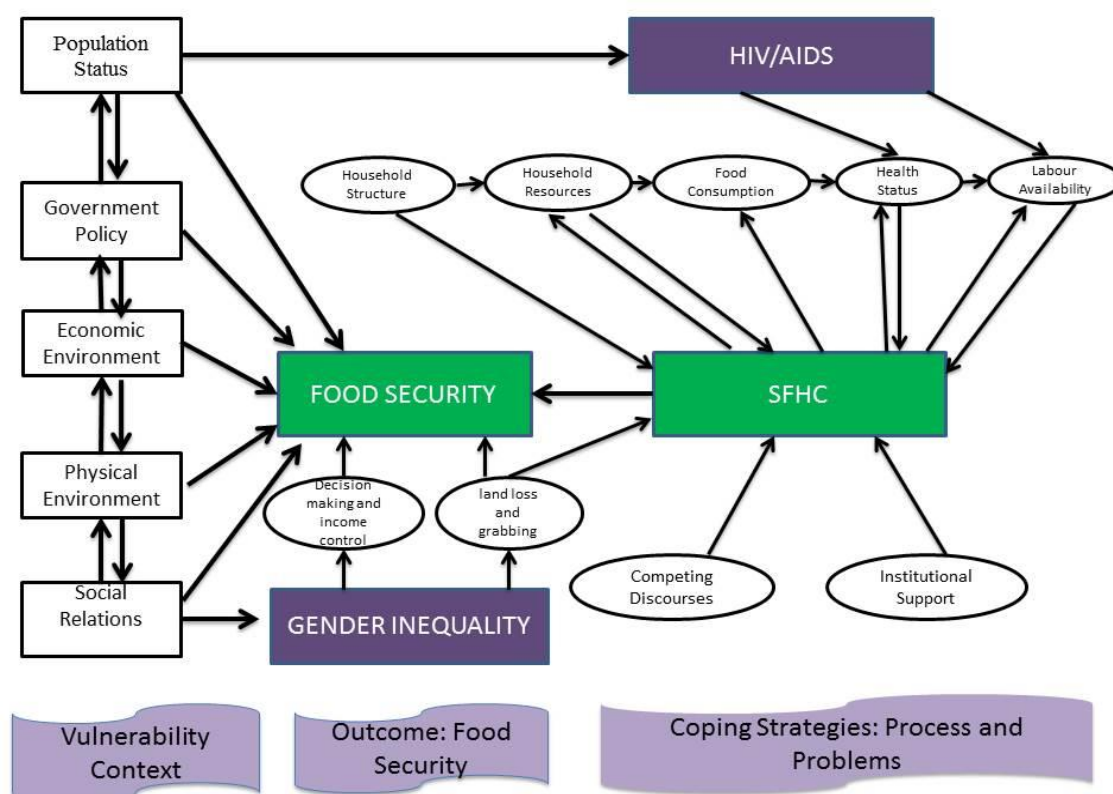
To analyse experiences of food production and consumption among HIV/AIDS-affected families in the context of the Soils Food and Healthy Communities (SFHC) Intervention, this chapter focuses on complex social, physical, economic, and cultural dynamics surrounding food security issues. I begin by presenting the conceptual framework of the relationship between HIV/AIDS, SFHC and food security. Second, I discuss how vulnerability embedded in the way a household is composed, HIV/AIDS status, and livelihoods have an impact on food security. Third, I use entitlements approach and feminist political ecology to discuss situations surrounding food production and attempts to attain food security. Fourth, I analyse the importance and dynamics surrounding the implementation of the SFHC and other agricultural interventions in the Ekwendeni region, followed by a discussion on experiences of food and nutrition insecurity based on reported food shortage and consumption. I conclude with recommendations for programmatic modifications, policy alternatives, and further research on agricultural interventions aimed at improving food security as they relate to household complex socioeconomic and political factors.

5.2 Conceptual Framework

The attempt to attain food security with or without an agricultural intervention is a complex activity for HIV/AIDS-affected households in Ekwendeni. The conceptual diagram below depicts how dimensions embedded

in vulnerable contexts (especially HIV/AIDS status) and general agricultural practices interact with SFHC efforts:

Figure 5.1. Conceptual Inter-relationships between HIV/AIDS, SFHC agricultural intervention and Household food security (Adapted from: Parker et al., 2009 and FAO, 1997).



The conceptual framework has three main components: vulnerability context, food security outcome and coping strategies, which include the SFHC project. The SFHC intervention has partially achieved its aim to improve household food security by promoting crop diversity and soil fertility rehabilitation. In addition, the intervention has promoted income generation and addressed a negative impact of HIV/AIDS by enabling labour relief. Alongside the SFHC intervention benefits, there remain hindrances emanating from demands and ailments related to HIV/AIDS, other soil fertility rehabilitation discourses, fertilizer support from government and other institutions, and the general

households' vulnerability contexts. The vulnerability context comprises five inter-linked components, namely, physical environment, economic environment, social relations, government policy, and population status. Each of these is linked directly to food security. Features contributing to household vulnerability in the context of food security in Ekwendeni include, but are not limited to, soil infertility and pest problems (physical environment), insufficient livelihoods and poverty (economic environment), problematic control and access to resources in a patriarchal and patrilocal inheritance system (social relations), and unfair government policies and programs such as devaluation and farm inputs subsidies. In support of my findings, Bezner-kerr and Patel (Forthcoming) summarized the 30-year long food insecurity situation in Malawi as a product of historical (unequal agrarian systems in colonial times and structural adjustment policies), political-economic (poverty, corruption and currency devaluation), environmental (soil degradation and variable climate) and social (gender inequalities and HIV/AIDS) factors. Beyond these aforementioned vulnerabilities in attainment of food security, the HIV/AIDS status of the population is a barrier to both food production and implementation of SFHC interventions in the Ekwendeni region.

5.3 Challenges Faced by HIV/AIDS-affected Households: Vulnerability Contexts

The first research objective aimed to explore HIV/AIDS-affected households' challenges in attaining food security, which is primarily through agriculture for the Ekwendeni region. The results indicate that agricultural production was impeded by vulnerabilities such as high number of dependents, ongoing impacts of HIV/AIDS, and unreliable livelihoods.

5.3.1 Impact of High Number of Dependents on Food Production

The low numbers of adults compared to children in female and elderly headed households has made securing adequate food and other basic needs difficult. This challenge has occurred due to the inability of the adult member to keep up with sourcing the basic needs of more than three household members. Research on HIV/AIDS reveals that widows and orphans increasingly struggle with HIV-related labour loss, illness and drained resources (Parker 2009; Mazhangara, 2001; Kusiima, 2009, Kalipeni et al., 2004). In addition, this research reveals that HIV-related forces work alongside a high number of dependents. Even in cases where vulnerable households have access to land and an intervention aimed at improving food security, household composition can still hinder successful food production. While interventions like soil fertility rehabilitation through double legume intercropping or pit manure were accessible to high-dependency-ratio households, the lack of labour in such households meant participants were unable to maximize food production through such interventions. A longitudinal study in Zomba-Malawi acknowledged the presence of aid which highly concentrated on children orphaned by HIV/AIDS; however, the aid was found limited since it disregarded supporting families that cared for the orphans (Peters, Kambewa and Walker, 2008). Findings from this study confirm this critique by portraying that family structures (i.e., high number of dependents) beyond orphans themselves are equally relevant to addressing HIV/AIDS related problems within a household.

Causes of High Dependency

A study on political and cultural contexts of orphan-hood in patriarchal societies of Northern Uganda revealed that orphan care has transitioned from

the rightful paternal kin responsibility to marginalized grandmothers and single women with less support from the kin of children's fathers (Oleke et al., 2005). Similarly, in Ekwendeni, where the patriarchal culture is principal and it is obligatory for paternal kin to care for their own (late or divorced man's children), single women are now carrying a majority of the responsibilities. Luginaah et al. (2005) found similar trends in Kenya where, instead of a husband's property serving the widow and orphans, paternal relatives forcefully took away family properties leaving widows in marginalised situations. As a result of orphan-hood from HIV/AIDS, care for children has been detached from the paternal kin, and this care burden is experienced most acutely among women who have divorced or left their late husband's villages. The paternal kin detachment is a result of bad divorce, sour relations with the late husband's family, and non-payment of the bride price, which forces a woman to vacate a late husband's village. While most western countries have well-defined laws for child support payments that ensure a biological father compensates for the economic disadvantages that his children may encounter, most HIV/AIDS-affected divorced women in Ekwendeni region received little or no support from their husbands (Seltzer et al., 1989). This study found that child support was difficult due to high poverty levels among village dwellers since they did not have access to reliable livelihoods. While support of children under a widow's custody may be complicated as a result of a husband's death, an ex-wife's inability to support children was intensified by the husband's obligation to cater for the needs of a new wife since all the men who were divorced by the female heads were remarried during this study. In the case of widowed women, who lost contact with paternal kin as a result of migrating back to their maternal

village to avoid stigma, abuse or as a result of non-payment of *Lobola* (if bride price was not paid the widow was sent back to her village), they were forced to independently care for their children. Such circumstances reinforced the vulnerability of Female-headed households (FHH). As expected, female heads, who had good paternal kinsmen and supportive relatives who remit basic needs to women did not report facing similar struggles. Kennedy and Peters (1992) urged FHH households' poverty alleviation projects (for this study agricultural interventions) to refrain from treating FHH as similar. However, such projects should strive to accommodate the heterogeneities among FHH. Accordingly, it should be noted that in Ekwendeni region, the struggles FHHs encounter vary across divorced, widowed, paternal or maternal spaces, whereby differential burdens are transferred to the children most of whom may be orphans especially when the household head (mother or grandmother) is taken ill.

Burden of single and elderly Parenthood on Children

The SFHC project stands as a sustainable means to both food security and income generation for these households, however, it is yet to specifically address high dependency ratio households' farming problems (labour, land, and patriarchal issues). Furthermore, households with a sick adult(s) tend to transfer the burden to children and orphans. An observed trend among paternal/maternal/double orphaned and single parent children is that older children were obligated to work harder than children who have constant support from both parents. The farm labour and livelihoods responsibilities held by orphans and children from single parent households have impacted the children's dedication to education (Munthali, 2014). Female household heads are compelled to fill the absence of husband's labour and inputs, consequently placing women in

precarious situations. While children with both parents are concentrating on school work, children with single parents (especially with illness) take on many responsibilities. Recognition that children are food producers is not widely acknowledged. Agricultural interventions offered by the SFHC and other institutions are parent-centred; yet, in sick-single parent households, farming is done by children. There is a need for further research on the place of children in the training and implementation of agroecological methods. The extension of the SFHC intervention to children with adult responsibilities will be more rewarding for households where children assume such roles.

5.3.2 HIV/AIDS Related Vulnerabilities: The Pros and Cons of ARV Treatment

ARV Treatment and Nutrition

In concert with previous studies by Gillepsie et al. (2001) and Ganyaza Twalo & Seager (2005), I found that HIV/AIDS causes loss or diversion of labour and assets, affecting farming in Ekwendeni. The absence of labour due to ill health has been addressed through antiretroviral treatment (ARV); however, the solution is partial. Findings in this study are contrary to Thirumurthy et al. (2008) who insinuated that ARV treatment enables people who were bedridden to get back to work within six months based on a household survey in Kenya. In Ekwendeni, household members on ARV treatment were back on their farms; however, they no longer worked as much. Concurrently, during the hunger season which coincides with the farming period, their labour provisions were reduced, since ARVs do not function well on an empty stomach. Studies in both Africa and North America have indicated that ARV treatment is affected by malnutrition, which leads to a patient's inability to suppress viral loads; thus,

developing ill health (Mamlin et al., 2009; Weiser et al., 2008). The people on ARV treatment reported not working as they used to because body weaknesses were heightened when they did not have enough food.

ARV Treatment and side Effects

Some of the people on ARV treatment who are suffering from peripheral neuropathy¹⁰ (side effects of ARVs), could not fully contribute to farm activities like making ridges, weeding, and banding when the pain and numbness of legs or arms was intense. Although the side effects of ARVs are being addressed through Ekwendeni Hospital, the low capacity in both funding and management has meant that only pregnant women are eligible to participate. Funding for relief community programs are unlikely to continue indefinitely. It is, therefore, vital for the expansion of programs aimed at the side effects of ARV treatment to enable affected households to be productive on their farms and improve their livelihoods. The SFHC project brings an alternative to less labour-intensive food production through legume consumption; hence, the HIV/AIDS-affected households in the program reported being pulled back by the side effects of ARVs.

ARV Treatment and Transport Costs

I term ARV and palliative treatments in Ekwendeni “expensive free ARV treatment” since transport costs to the hospital were exorbitant for those households living in poverty. The transport costs of ARV treatment for subsistence farmers in Ekwendeni had a negative impact on food insecurity. For instance, most households that sold agricultural produce to find transport to the hospital reported experiencing food shortages which could have been reduced

¹⁰ Numbness of legs and arms

by a week or two if a tin of maize or legumes was not sold. Additionally, the village residents (mostly subsistence farmers) used money intended for basic needs or farm inputs for transport. A study in Nigeria, in which the majority of people had other forms of livelihoods apart from subsistence farming, found that the four hour or less monthly ARV treatment sessions was a burden for poor people since transport drained personal savings or relatives' finances (Okoli and Cleary, 2011). NAC (2005) ARV policy on equity access to ARV treatment alluded that it will ensure geographical equity of HIV/AIDS care by scaling up ARV treatment in government and CHAM hospitals throughout Malawi. Ekwendeni Hospital has enough free ARV treatment for clients in the catchment area; however, local geographical barriers remain critical. A solution lies within the Ekwendeni Hospital Primary Health Care program, which offers mobile clinic services to pregnant women who reside in areas that are beyond 15 kilometers. The PHC mobile clinic model can be a solution if scaled up to include people living with HIV/AIDS.

5.3.3 Livelihood-Related Vulnerabilities

Chambers and Conway (1991) indicated that livelihoods can only be sustainable if they can withstand or recover from sudden changes. Agriculture-related forms of livelihood did not meet this criterion since they were unreliable and inadequate. Although growing tobacco seemed to be the most rewarding livelihood for HIV/AIDS-affected households in Ekwendeni, it was accessible to people who already had other entitlements. The households that were growing tobacco had other trading businesses such as mini-groceries. They could hire labour and some had capital assistance from relatives. Sustainable livelihoods were mostly experienced by households that were already better off. Even in the

tobacco-growing households with sustainable livelihoods, resources were unequally utilized, since married women rarely controlled the money made from the businesses, but instead their husbands managed the trading phase of the system.

Livelihood and Micro Financing: A Burdened Solution

In this study area, the access to AIDS programs and *Mudzi* bank loans has enabled households to own small businesses; however, some participants reported their business collapsed due to contextual shocks. In as much as AIDS treatment transport demands are central to diverting capital, purchase of households' basic needs and other contingencies inhibit sustainable businesses. As a poverty alleviation strategy, micro-financing programs have led to successful small businesses for some households in Bangladesh, Malawi, South Africa, and other countries; however, success is not guaranteed (Chirwa, 2002; Kim et al., 2007; Buckley, 1997). One study of microfinance projects in Malawi, Ghana, and Kenya, highlighted that poverty problems are beyond simple, small forms of capital injection and recommended instead structural changes to socioeconomic conditions embedded in informal entrepreneurship (Buckley, 1997). Devereux (2001) argued that livelihood insecurity is a contributory cause of forces beyond poverty, and that rural sustainable development can only be attained by both tracking vulnerabilities and attempts to reduce poverty through increasing asset control. In the case of Ekwendeni, it will be important to focus on interventions beyond direct consumption by broadly incorporating interventions that deal not only with microcredit, but also land reform, education subsidies and agricultural research such that a holistic program setup has long term consumption benefits (Devereux, 2001). A holistic program setup to instill

skills that may initiate creation of sustainable household development will be a necessary solution to addressing depleted business capital for other needs.

5.4 Theories in the Context of Agriculture in Ekwendeni Region

This study was guided by an interpretivist paradigm which enabled a critical analysis of food security and agriculture practices among rural populations as they are a construct of social-cultural-environmental interactions of community members, government, and non-governmental officials (Mack, 2010). In this section, I analyse the findings using the entitlement and feminist political ecology theoretical constructs since they offer the best understanding of these results.

5.4.1 Sen's Entitlement Approach

Sen's entitlement approach states that a household's food availability is a result of the ability to grow enough food, buy food, use own labour to work for food, and inherit/receive food from others (Sen, 1981; Devereux, 2001). HIV/AIDS-affected households often had fewer entitlements, which had a negative impact on their food security. These entitlements included good seeds, commercial fertilizer, labour, and the ability to buy food they did not produce. Households with two able parents and children older than 15 (who were present during the farming period) had fewer labour shortages. Furthermore, those with reliable forms of livelihoods could buy farm inputs and food while others were supported by relatives. Some of the families with access to farm land were able to produce enough to be food secure. For instance, the Kachale family of seven had both parents and three sons (aged 24, 21, 17) working on the farm, a cassava business that was booming thus providing money for food or farm inputs and

money or farm input from their son (aged 24) who grew and sold tobacco. The Kachale family had the entire necessary entitlement bundle to be food secure, through production (land, labour, and capital), a successful small business, and support from their sons. Such families were able to maintain food security throughout the year even without an intervention. Families with insufficient labour and inputs continue to be food insecure even with the agricultural intervention. For example, a widowed mother who did not have older children to help with farming, had an unreliable livelihoods, no support from her late husband's people, and not in control of farm land could not produce enough food even if legume seeds and training were provided. Given the importance of food insecurity interventions, the results here reveal the relevance of adequate household labour since it determines implementation. Households may have access to various interventions, but without adequate labour participants are likely to continue to struggle with food insecurity. The households with one or more interventions but fewer adults to work or unstable livelihoods had difficulties in achieving satisfactory food production. Furthermore when they harvested they often had to sell their produce for basic needs.

While the entitlements approach provides a useful basis for understanding household dynamics and food production, Devereux (2001) faults the entitlement approach for being individual and household focused, by highlighting that rules of resource ownership are governed by a community's customs which shape the decisions on land ownership and control. In relation to the current study, while SFHC attempts to address household labour burden and reduce the dependency on fertilizer for food production, the project nonetheless

does not address more structural dynamics related to gender inequality and land ownership laws, which impede full food security for female-headed households.

5.4.2 Feminist Political Ecology of Agriculture

Farming and Gender Dynamics

Although findings in this research are consistent with prior research that reveal that women play a passive role in deciding farm operations and controlling gains from commercial crops, male dominance as revealed in this study seems to fuel unstable food production in the participating households (see also Kayira, 2002; Bezner-kerr and Chirwa, 2004). Husbands tend to hire labour and buy fertilizer for tobacco production instead of food crop production. Yet the gains from commercial farming did not guarantee food security, since the husbands rarely revealed the money gained, which was mostly spent by the husband on non-household activities such as extra marital affairs. Several other studies in northern Malawi have also found that women lack bargaining power with regard to household finances, especially tobacco income, and thus only have control of income from domestic trades like locally brewed alcohol (Kayira, 2002; Bezner-kerr 2014). Kennedy and Peters (1992) found that food insecurity and child malnutrition in Kenya and Malawi were a result of interaction between income and gender in the sense that food security may be influenced by income but is more positive when women are in control. This result fits the case of Ekwendeni region since a households' low income was not in itself a guarantee of food insecurity, but was made worse [or interacted with] by an unequal control of income. This conceptualization further confirms the feminist political

ecologist notion that management of family resources are influenced by gender roles; hence, the absence of women's involvement in allocating income remains a barrier to household food availability (Hovorka 2006). A case study in Mozambique also noted that aggravated gender inequalities for women affected agriculture and food security in the context of HIV/AIDS, and hence the need for gender based reforms of devising realistic agricultural and trade policies that involve women's involvement in decision making to provide basic needs that keep women away from successful agricultural production (Mutangadura, 2005). The SFHC project seeks to address gender issues by using food and agriculture initiatives; however, equal access to control of resources such as land, income, and other farm inputs remains a challenge.

In addition to unequal access to resources, both households with and without agricultural interventions (SFHC) face further gender inequalities in farm labour and decision making. Although the SFHC intervention has a component of women empowerment aimed at promoting equal access and management of resources within the household, the gender inequalities persist. This persistent gender inequality calls for more strategizing on the part of SFHC staff to address gender inequality in a deeper way. It is imperative for agriculture intervention providers to revisit gender integration strategies as a step toward improving food security through shared labour and decision making. To improve service delivery, the SFHC and other projects need to conduct further research on skill acquisition between men and women since gender-based service delivery has the potential to improve food security in HIV/AIDS-affected households, and at community and national levels.

HIV/AIDS, Patriarchal Culture and Land

Access to land is challenging among HIV/AIDS-affected female household heads. While most divorced women have no choice but to return home, the widowed women are deprived full access to land and resources they were supposed to inherit after death of their husbands. Feminist examination of informal spaces and practices such as household relations reveals how female headed households' vulnerability is not only a product of HIV/AIDS but also culture (Truelove, 2011). In Kenya, difficulties to access land, and lack of capital, inputs, or credit result in women farming on less land compared to men (Walker, 2006). Additionally, HIV/AIDS deaths of husbands in patriarchal cultures lead to the ejection of widows and orphans from land that was owned by the late husband (Whitehead and Tsikata, 2003). In most parts of Central and Southern Malawi, land is held under a matrilineal system which allows women some level of independence, succession, and inheritance of land (Peters, 1997). In contrast, Northern Malawi has a patriarchal culture, which exposes women to the struggles noted in Kenya. While chiefs have intervened in some widows' access to the late husband's land by ensuring the land is not grabbed, those women forced to return to their paternal village remain deprived or without access to leftover land from their fathers or brothers. Land is one of the major determinants of sufficient food production; hence, by deliberating with paternal and maternal kin, agricultural interventions providers in collaboration with community leaders have a duty to protect women and orphans from losing their late husband's land and accessing good land upon returning to their villages respectively.

5.5 The Complexity of Farming with Interventions

5.5.1 Agroecological Interventions Benefits and Challenges: SFHC

The SFHC project has made some economic, networking, agricultural and nutrition improvement for households with access to two legume crops, education on intercrops, adequate available labour, and business skills (gain income from legumes without depleting food reserves). Apart from the 27 HIV/AIDS-affected farmers in this study, the project has an enrollment of over 10,000 farmers (including those not affected by HIV/AIDS) in the Ekwendeni region (Bezner-kerr et al., 2012). Consistent with previous evaluations of the SFHC project, the findings in this study suggest that agroecological methods such as burying legume residues are a good model for fertility rehabilitation and networking among farmers (see also Snapp et al., 2010; Bezner-kerr et al., 2012; 2010; 2007). The recruiting and training of farmers in groups have enforced peer invitation, sharing, and supervision that ensured the planting, nurturing and returning of legume seeds. Specific to farmers living with HIV/AIDS, the SFHC project is a platform to share how they can resolve HIV/AIDS impacts on food production. HIV/AIDS-affected farmers in support groups are involved in on-farm peer instruction on how to intercrop double legumes and the sharing of legume seeds before SFHC's official recruitment and seed provision.

As a requirement for ARV treatment, the project has made tremendous nutritional contribution to people living with HIV/AIDS (see section 5.6.1). On food production, there is evidence of increased maize yields among farmers practicing agroecology in comparison to farmers who are not involved with agroecology (Bezner-kerr et al., 2010). However, there is a need to find out if the success of agroecology in the context of SFHC is mediated by impacts of

HIV/AIDS on agriculture since success of agroecology may vary across households affected and not affected by HIV/AIDS.

5.5.2 Agroecological Interventions versus Fertilizer

Altieri (2002) recommended agroecological farming methods to sustain the environment and in part as an alternative for poor farmers who cannot afford modern agricultural technology, which may include use of machinery, hybrid seed, and fertilizer. Consistent with the affordability aspect, HIV/AIDS-affected households in Ekwendeni region use a number of agroecological strategies to cope with the unreliable rainfall and depleted soil fertility when buying fertilizer or if accessing institutional fertilizer is difficult. From an environmentalist perspective, agroecological methods are rewarding since they build soil quality by promoting nutrients to be used and recycled in diversified and complementary ways that ensure soil cover and prevent soil erosion (Snapp et al., 2010). Despite the environmental benefits of the agroecological methods, fertilizer seems to be the main desire among households who perceive fertilizer availability as an answer to food security. Like the seed struggles facing northern Malawi, which Bezner-kerr (2013) linked to the seed system liberalization, privatization and dominant input subsidy programs, fertility rehabilitation discourses seem to be conceptualized by the government's narrative of fertilizer subsidy as the best solution.

Underlying the government's overemphasis on fertilizer use (which is promoted through subsidies) is politicians' interest to win electoral votes (Chinsinga, 2011). The success of 2005/2006 fertilizer subsidy programme - 0.6 million metric tons more than the annual requirement of 2 million - encouraged

farmers and some international organisations in support of the initiative to commend the government for a good policy (Chinsinga, 2007). Based on this success, the fertilizer subsidy became a tool for political campaigns; however, the programme impact was confounded by the 2005/2006 growing season which also included favourable rains. Nonetheless, politicians celebrated and attributed this success to the fertilizer program (Chinsinga, 2007). With the politically confirmed superiority of fertilizer, farmers think that it is the only way to achieve food security. To make up for fertilizer unaffordability, fertilizer-manure mixes promoted by the government and other non-governmental organization are becoming popular among HIV/AIDS-affected farmers. These mixes allow for the combination of organic materials and commercial fertilizer. It is, therefore, vital for agroecological methods trainers to emphasize the sustainability and environmental benefits beyond economic convenience such that even when households have money to buy fertilizer they will still employ agroecology for its environmental benefits.

5.5.3 Competitive Agroecological Discourses

As noted by Bezner-kerr (2010), farmers in Ekwendeni region perceive their land to be changing and resulting in food insecurity, as competing ideologies of environmental, friendly-agroecology or no environmentally friendly-chemical based alternatives are being utilized. While this contrast is significant, competing discourses among agroecological methods is emerging. There are contrasting perceptions on which agroecological method is better than the other, while some households are using and benefiting from more than one method, others adopt one or none. The five agroecological methods (double-legume

intercrop, pit manure, liquid manure, mound manure and ordinary residue burying) in Ekwendeni region appear to be 'in competition' with one another. For instance, the harvest residues are required for both burying and other methods of agroecology. The choice of which method will be used was mostly dependent on the household judgment as to which method bring forth good yield; thus, pit manure was favored by some despite its practice being labour intensive and requiring more than four raw materials. On the other hand, double legume burying offered a less intense labour and raw materials requirement alternative but it remained at odds with other methods since some households perceive it to be less rewarding. In another interesting finding, HIV/AIDS-affected farmers perceive different forms of burying harvest residue as similar, yet only one is highly beneficial to soil fertility. While burying maize residues disorders soil fertility, legumes balances the carbon to nitrogen ratio which makes the soil appropriate for plant growth. Nonetheless, most HIV/AIDS-affected households in Ekwendeni region perceived the agroecological methods similar (PerkinElmer, 2010). Due to the compromised labour abilities accelerated by ARV drug dysfunction due to hunger during farming season and ARV treatment side effects, double legume intercrop's less labour requirements were appropriate for people living with HIV/AIDS. The presence of various agroecological method discourses in the Ekwendeni region has become confusing to farmers since they have to balance between which method is rewarding against availability of labour or raw materials. Greater cooperation between different institutions promoting agroecological methods might provide HIV/AIDS-affected families with a broader range of options that addressed their specific labour and soil fertility needs.

5.6 Food Insecurity

Recent studies on national levels of food insecurity suggest that about one-third of households experience food insecurity and a recent survey of the Ekwendeni area found that 60% of households experienced severe or moderate food insecurity (UN, 2013; NSO, 2011; Bezner-kerr et al., 2014, unpublished report). While this thesis does not use a random sample, and the sample size is not high enough to make generalizations, these findings suggest that AIDS-affected households have additional challenges that make food insecurity a more severe problem than non-AIDS-affected households. The same survey for the Ekwendeni area found that female-headed households are more likely to experience food insecurity (Bezner-kerr et al. 2014). These findings coincide with the high number of dependents and HIV/AIDS vulnerabilities discussed in section 5.3.

5.6.1 Nutrition Insecurity Aspects

Even in cases where food is accessible, there is no guarantee that the available food will meet the nutritional needs of household members; therefore, consumption is a vital pillar when exploring food security. Food consumption reflects dietary quality, which is satisfied by a diet that has all the six food groups containing both macro and micronutrients (Barret, 2010). Quisumbing et al. (1995) described nutrition security as acceptable nutrition status based on consumption of proteins, vitamins, energy, and minerals. Anthropometric measures, which reflect growth, are good tools for assessing childrens' nutritional status. Bezner-kerr et al. (2010) found significant dietary diversity and growth differences among infants who have benefitted from SFHC compared

those who never accessed the intervention; however, Classen et al. (2013) did not find the same dietary diversity success among youth beneficiaries. Consistent with Classen et al. (2013), findings from this research reveal only slight dietary diversity differences among households with and without the SFHC intervention.

The households' protein and mineral intake was supported by the legumes since buying meat products was expensive. The focus on legumes is not entirely an assurance to nutritional security since, according to the 24-hour recalls of rainy season and after harvest most households were legume deficient. The nutritional quality seemed inadequate during the rainy season since households mostly ate nsima (from maize) and vegetables while after harvest, legumes were accessible. Although most household members looked healthy (i.e., they appeared strong) and this study did not measure nutritional status; malnutrition was a problem among other participants who were on a nutritional rehabilitation program at the Ekwendeni hospital. It should therefore be noted that despite the presence of an intervention aimed at improving food security which has contributed some degree of food availability and access, households' nutritional security remains an area that has to be given much attention.

5.7 Recommendations, Research Contributions and Conclusion

I finalize this thesis by making policy and program recommendations, explaining the study's theoretical and methodological contributions and finally suggesting further research.

5.7.1 Policy and Program Recommendations

Despite the presence of more than five soil fertility rehabilitation methods and the adoption of more than one by some households, 78% of the study households reported experiencing food shortages before the next harvest. All households, including those with enough food, need improvements on nutrition security as this is critical for household members on ARV treatment. To tackle food and nutritional insecurity among HIV/AIDS-affected households in Ekwendeni region intervention, programs such as SFHC should be committed to short- and long-term objectives that include gender equality and are context-sensitive.

Short-Term Recommendations

First, the government and NGOs (except for PLAN international and SFHC) interventions in Ekwendeni region are entangled in the promotion of both fertilizer and agroecological methods. It is imperative that more attention is given to the economic status of the households living in poverty. SFHC provides a convenient strategy for households living in poverty, but farmers are skeptical of agroecological methods. While successful farmers in the region are typically people with money who use fertilizer, households living in poverty have few model farmers who entirely conform to agroecological methods. The SFHC has made good strides in ensuring that each catchment village has an agroecological methods promoter; however, to further enhance legume intercrop adoption, there is a need for more farmers who rely solely on agroecological methods in each village.

Second, SFHC needs to revisit the pigeon peas pest problem which is a complaint from both the households that have stopped growing and still grow

the crop. As an environmentally-friendly, and cheap strategy, all households have been trained to physically kill the pigeon peas insects; however, the inefficiency of the strategy calls for an alternative. The physical killing method is not only ineffective but also hectic and recurrent. Several households use a cheap, environmentally-friendly, and less-hectic method of ash (from tobacco residues or cattle wastes) application to prevent seeds spoilage during storage. A similar strategy may be ideal for pigeon pea insects. There are five homemade sprays that can be used to control insects in gardens, which are convenient to Ekwendeni region may be a bug spray (made from a mix of water and a crush of the insect one intends to control) and an alcohol mixture (Rose, 2010). Before attempting the homemade sprays there will be a need for an experiment to verify feasibility and safety in the context of the Ekwendeni region.

Third, the variations in access to lessons, pigeon peas, and burying residues indicates that there is a need to revisit the household level monitoring process of the interventions implementation. SFHC intervention providers need to crosscheck their records so that they ensure all participant households not only access a full package of the double legume intercrop, but also continue to intercrop and bury residues. In as much as the project is framed in a participatory manner that allow for beneficiaries to have full control the interventions' implementation, a beneficiary-friendly initiative that goes beyond the residue burying field days is needed to address intervention abandonment and inconsistencies. I therefore propose that SFHC project providers and promoters should ensure provision of two legumes (including pigeon peas) training and if possible ongoing implementation by all intervention households.

Long-Term Recommendations

In addition to the short-term plans there is a need for long-term plans that will address structural issues such as household poverty, gender inequality and collaboration between interventions.

Since the onset of SFHC in 2000, there have been efforts to promote gender equality. Currently there is a male-female balance in the promoters' population and all training and recruitment activities are shared equally among men and women. Contrary to this picture, gender equity issues are not visible at the household level, or at least in the 27 households observed for this study. Chilanga (2013) found that recipe day interventions changed gender relations at the household level, yet in food production they are yet to be achieved. In a participatory fashion there is need for ongoing gender equality emphasis programs that will collaborate external (promoters) and internal (communities or households) efforts at ensuring farm work, decision making, and bargain on use and control of income is equally shared among men and women. Deciding and working together on agricultural production has the potential to improve food production, while collaborative control of income will allow for prioritizing household needs (unlike husbands' unaccounted use).

The SFHC needs to be part of post-harvest crop management (beyond seed returns) in the same way they are part of food preparation through recipe days' interventions. In a broader context, poverty makes it impossible for them to hold on to the harvested crops and intra household struggles over resource use mean that crop sales do not necessary benefit the household. Since most households producing legumes sell or do not fully incorporate them into their diets, there is a need for a holistic approach which will not only address issues of

crop management, but also underlying poverty and intra household struggles over resources. In collaboration, the government and other organisation can advocate for the provisions necessary to cushion families from these shocks (for instance a transport provision to the hospital or mobile clinics).

Districts in Malawi have executive committees that facilitate collaboration of projects with similar goals in various areas. The district executive committee (DEC) in Lilongwe goes further to endorse areas a new project should cover based on deficiency. If a project is similar to one that already exist in a certain village, the project is directed to a village without such an initiative. Ekwendeni region is part of Mzimba DEC and thus potentially protected from replicated initiatives; however, most of the programs by different organizations are similar (interventions aimed at improving food security). Furthermore, there is competition rather than overlapping situation across interventions. For example because of the politically-motivated promotion of fertilizer by the government, households now regard fertilizer as superior to agroecology. In another competing yet nuanced situation, households regard agroecological methods as similar yet they serve different purposes and double legume intercrop strategy happens to be the only strategy that initiates quick and reliable soil fertility rehabilitation. As part of the SFHC long-term plans to address food insecurity, it would be better to build farmers' capacity to assess what methods work under their particular conditions. There is also a need for collaboration among food security interventions through DEC so that cases of replication are minimised.

5.7.2 Contribution of the Research

Theoretical

This study contributes to the discussion on HIV/AIDS, agriculture and food security by exposing some of the issues surrounding food production and consumption in the context of an agroecological intervention aside from the widely explored impacts of HIV/AIDS on agriculture. Gillespie et al. (2001) alleged that interventions in the context of HIV can be endorsed as successful if they address all impacts HIV/AIDS has had on agriculture. This study expands the focus by suggesting that conceptualizing food insecurity in the context of HIV/AIDS should consider other factors beyond the epidemic since they also have an impact on food security. This study contributes to theory by setting a pattern by which solutions (SFHC) to negative impacts on agriculture (which include climate and environmental factors) can be understood and improved by focusing on social-economic and ongoing environmental impacts. The conceptual framework (see Figure 5.1. on page 99) in this study clearly portrays how food security attainment for HIV/AIDS-affected households in the context of an agroecological intervention is affected by HIV/AIDS, vulnerability contexts and availability of other competing institutions. Research that adopts the political ecology framework is obligated to ensure that both change in the environment, practices, and processes where power is negotiated are collaboratively explored in order to improve lives; thus, gender happens to be the focal aspect of power relations (Elhimist, 2011; Walker, 2005; 2007). Using feminist political ecology (FPE) to initiate understanding of the social environment politics from a gendered perspective, this study exposes the socioeconomic status, culture, HIV/AIDS, and spatial differences that inhibit full attainment of food security.

To expand on the relevance of “feminist” in FPE, this study highlights gender as a key element in understanding how the SFHC intervention is experienced among HIV/AIDS-affected households in Ekwendeni region. Although most participants were experiencing hardships, issues surrounding vulnerabilities were found to be gendered. For instance, the female headed households are disadvantaged by high dependency, land control, and livelihood hardships. In the married families, women do more work yet have less control over livelihood gains.

Methodological

This study makes a methodological contribution by revealing how triangulating oral interviews and discussion with visual diagramming can add value to understanding the complexities of factors that sustain and restrain food production. The 54 interviews from various HIV/AIDS-affected households gave a detailed account of food production experiences, group discussions served as a checking exercise for individual, and visual diagramming gave a special aspect to the findings by offering a summarized yet complex account of experiences from various HIV/AIDS-affected households. Kesby (2000) used visual diagramming to derive richer and more nuanced data on sexual activity rather than simply relying on group discussions. In this research visual diagrams enabled participants to summarize factors involved in achieving food security hence guiding themes this research should not overlook. This triangulation can be used in future household food production research since it has potential to assist researchers to base summaries of participants’ experiences and perception to be based on participants’ perspective.

5.7.3 Direction for Further Research

This study brings out a number of aspects related to sustaining and constraining food security; however, it does not address their relative importance. For instance, it is not clear whether vulnerability contexts or the absence of an agroecological intervention has more impact than the other or how their impact was mediated. To address the stated limitation, future research should be guided by a quantitative framework which will enable mapping out of situations that highly determine HIV/AIDS-affected households' food security. To improve on the proposed quantitative inquiry, panel data which is collected over time from the same people can showcase whether agroecological interventions have resulted in changes in household food security. The proposed future research will not only contribute to relevant intervention but also policy on how agricultural intervention in Malawi should be framed.

While most HIV related studies focus on the impact of HIV on agriculture and affected household categories (orphan headed, elderly headed, widow headed, polygamous and monogamous), less focus is placed on the heterogeneity within the categories. To account for heterogeneity within HIV/AIDS-affected household categories, Mkandawire et al. (2014) focused on how orphan food insecurity determines sexual behavior among orphaned. A study in South Africa also focused on female headed households in the context of HIV/AIDS (Schatz et al., 2011). While both studies give in-depth phenomena on orphans and widows heterogeneity, the focus on heterogeneity of orphans and widows within the patriarchal culture has a potential to add more contextualized knowledge to conceptualizing HIV/AIDS related food insecurity. To promote household specific food security improvement strategies, there will be a need to understand

the dynamics of HIV/AIDS-affected household categories in the context of patriarchal culture.

There is research that contests organic against chemical methods of food production and vice versa. Fraser (2014) argued that food sovereignty and security should not be antagonistic because they are both vital to achieving household food and nutrition security. In the context of the Ekwendeni region, using organic methods is often done by households that cannot afford other means of improving food production. This study has given a thorough analysis of SFHC yet it did not give full emphasis on competing agroecological methods. Future research should therefore explore the history, knowledge dissemination, and adoption of all the agroecological food production alternatives in the Ekwendeni region. The knowledge on how climate change alternatives aimed at improving food security are perceived and experienced will inform policy on future food security improvement interventions. The proposed inquiry has a potential to explain the nuance surrounding competing knowledge discourses on organic soil fertility rehabilitation.

In the 24-hour recall analysis I noted that households who have undergone recipe days' session rarely practiced the alternative methods of consuming legumes. Despite legume consumption problems being part of the selling off of legumes or production of less, there is a need for SFHC intervention providers to do further research on factors suppressing and elevating the implementation of recipe day lessons. Part of the proposed research will be assessing the continuation of recipe days' lessons over a longer period, during farming seasons and across different household categories.

5.7.4 Conclusion

Findings from this study reveal that agroecology has the potential to improve food security, since among HIV/AIDS-affected households in Ekwendeni region, agroecological methods served as a sustainable means to improve yields as compared to fertilizer subsidy (FISP) and support (EHAP) initiatives. Specifically, the SFHC's double legume intercrop strategy can improve food security, income generation, and networking for AIDS-affected households. Recipe days and other types of training can help these households have more diverse diets. However, despite the intervention, participating households face persistent food insecurity. One challenge is related to pigeon peas pests; therefore, to ensure attainment of the potential benefits from double legume intercropping, the SFHC intervention needs to find a better way to control pest that destroy pigeon peas. Another key finding which needs to be considered if improving food security is going to be achieved is that food production was inhibited by gender inequalities manifested through land grabbing, absence of adult males in food production activities, as well as women's absence from decision making power and control over farm resources. The specific needs of living with HIV/AIDS and costs of HIV/AIDS treatment impacts on farming need to be taken into account as a factor that inhibits food security. Finally, SFHC needs to consider perceived competing discourses on fertility rehabilitation strategies.

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APPENDICES

Appendix 1: Western University Ethics Approval



Research Ethics

Use of Human Participants - Ethics Approval Notice

Principal Investigator: Dr. Isaac Luginaah
 File Number: 103609
 Review Level: Full Board
 Approved Local Adult Participants: 0
 Approved Local Minor Participants: 0
 Protocol Title: Agricultural Interventions as a Means to Food Security: Experiences of HIV/AIDS affected Household
 Department & Institution: Social Science/Geography, Western University
 Sponsor:
 Ethics Approval Date: April 30, 2013 Expiry Date: December 31, 2014

Documents Reviewed & Approved & Documents Received for Information:

Document Name	Comments	Version Date
Instruments	Indepth Interview Checklist	2013/03/02
Western University Protocol		2013/03/03
Response to Board Recommendations	Response to REB Recommendations	2013/04/28
Letter of Information & Consent	Letter of Information and Consent	2013/04/28

This is to notify you that The University of Western Ontario Research Ethics Board for Non-Medical Research Involving Human Subjects (NMREB) which is organized and operates according to the Tri-Council Policy Statement: Ethical Conduct of Research Involving Humans and the applicable laws and regulations of Ontario has granted approval to the above named research study on the approval date noted above.

This approval shall remain valid until the expiry date noted above assuming timely and acceptable responses to the NMREB's periodic requests for surveillance and monitoring information.

Members of the NMREB who are named as investigators in research studies, or declare a conflict of interest, do not participate in discussions related to, nor vote on, such studies when they are presented to the NMREB.

The Chair of the NMREB is Dr. Riley Hinson. The NMREB is registered with the U.S. Department of Health & Human Services under the IRB registration number IRB 00000941.

Ethics Officer to Contact for Further Information

Grace Kelly (grace.kelly@uwo.ca)	Shantel Walcott (swalcott@uwo.ca)
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This is an official document. Please retain the original in your files.

Appendix 2: Informed Consent for In-depth Interview

Invitation to Participate in In-depth Interview

I am Faith Mambulu, working under the supervision of Drs. Isaac Luginaah and Rachel Bezner-Kerr in the Department of Geography at the University of Western Ontario in Canada. I am currently doing a study on “Agriculture interventions as a means to food security: experiences of HIV/AIDS-affected households in northern Malawi” and would like to invite you to participate in this study. This study aims to explore experiences of HIV/AIDS-affected households involved in agriculture as a means to attain food security by comparing the households with to the households without the Soils, Food and Healthy Communities (SFHC) agricultural interventions. Specifically, the role of SFHC intervention in mitigating impacts of HIV/AIDS on agriculture in order to improve affected households’ food security outcomes will be examined. I would like to invite you to participate in an in-depth interview, as it would assist our understanding of experiences households go through in trying to improve food security with the SFHC project.

If you agree to participate in the in-depth Interview, you would be asked to answer a series of questions. The questions will cover information on issues about your farming experiences, if you are involved in with the SFHC project, constraints your family encounters at attempting to be food secure and your perception on whether the intervention has mitigated impacts HIV/AIDS has had on your agriculture practices (resulted to household food security). During the interview discussion, digital voice recording would be done if that will be fine

with you. If you do not want to be audio recorded, we write down your responses to the questions. No personal identifiers are required and will not be collected. Interview recordings would be transferred from the recorder into an external drive that is password protected. The information collected will be used for purposes of the study only. All collected information will be kept in a secured cabinet and password protected laptop, and will be destroyed five years after completion of the study. The findings will never reveal what individual people said and we will make all efforts to maintain anonymity (to keep your identity unknown).

The interview should take approximately 50 -60 minutes to finish and would be stopped on reaching this time limit. There are no physical risks with your participation in this interview, apart from possible emotional discomforts related to talking about your food security issues within your household and the relationships between men and women in this area.

Your participation is completely voluntary and you may refuse to participate, refuse to answer any questions or withdraw from the study at any time. There is no penalty for withdrawing or not answering any questions. Answering these questions means that you are 18 years or older and have agreed to participate in the study. You may keep a copy of this information sheet. There are no financial benefits for participating in this interview. However, findings from this study would be given to the SFHC project, the local government authorities and other interested stakeholders which may lead to the restructuring of current project, scaling up or implementing it elsewhere in Malawi.

If you have any questions about the conduct of this study or your rights as a research participant you may contact the Ms. Esther Lupafya or the Manager, Office and Research Ethics, The University of Western Ontario or the Principal Investigator or primary researcher of the study.

Appendix 3: Research Assistant Confidentiality Agreement form

This letter is to indicate an agreement between Dr Isaac Luginaah and Dr Bezner-kerr of the University of Western Ontario and _____, Research Assistant to ensure the confidentiality of information collected by the research assistant in interviews to collect information concerning HIV/AIDS-affected households' experiences in practicing agriculture to improve and maintain food security

All information collected by the research is confidential. No one aside from the research assistant, Dr. Luginaah, or research team will have access to the information. While in possession of this information, the research assistant will keep the information in a locked file or on a password protected computer accessible only to them. The research assistant understands that the information is considered the property of Dr Luginaah, and will not disseminate any information for any reason.

Participant's Signature: _____

Date: _____

Dr. I. Luginaah

Investigator Signature _____

Date: _____

Appendix 4: Households In-depth interview Guide

Basic information about the household

1. Who are the members of your household? Age?
 - a. Who is the head of the house? How?
2. Do all your household members reside here?
 - a. How is their residence pattern (part time or full time)?
 - b. Are they all currently around?
3. How long have you lived in this village?
 - a. What led your household to move to this village?

Households experiences in practicing agriculture.

4. Is your household involved in farming?
 - a. What do you *mostly* plant?
 - b. What did your household plant in the previous rainy season? If a mostly planted crop was missed, why?
 - c. Do you plant anything in the dry season? What? When?
 - d. Have you been able to sell any of your farm produce?
 - i. If yes, what did you use the money for?
 - ii. If not, why?
5. Who participates in farming activities among your household members?
 - a. How do they participate?
 - i. What do women do? How about men? (gendered responsibilities)?
 - ii. How is this arrangement useful to farming?
 1. If responsibilities are gendered: Are there any specific reasons for the different roles?
6. Does your household have any sources of income beyond farming?
 - a. What are they?
 - b. Which household members are responsible for sourcing the income beyond farming?
 - c. How do the other sources of income contribute to food access?

HIV/AIDS

7. Can you tell me a bit about your household's experience with HIV/AIDS?
 - a. Is anyone infected with it?
 - i. Do they often experience illness?
 - ii. How long have they known about the infection?
 - iii. Are they members of any support groups? Has it been of any help? How?
 - iv. Do they have any medical support? Has it been of any help?
 - b. Have you lost any family members due to HIV/AIDS?
 - i. Are there any orphans from the loss?

8. How has HIV/AIDS-affected your household farming practices?
 - a. Has the fact that [name person] has (or died of) HIV/AIDS-affected your farming resources in any way?
 - i. How has it affected your household knowledge and skills in farming? How?
 - ii. How has it affected the flow of money for farm inputs? How?
 - iii. How has it affected the farm labour?
9. How did your household cope with the HIV/AIDS effects?
 - a. Did extended family members help?
 - b. Did you sell your farm assets? What?

HIV/AIDS households' food access and consumption perceptions and experiences.

10. Does your farm produce meet your food needs?
 - i. How far do the crops last in a year?
 - ii. How far did your crops last in the previous year? Why? How far will your current harvest last? Why?
- 11.** How do you eat your meals per day (food groups):
 - i. In growing/rainy season? Harvest or post-harvest?
 - b.** What foods has your family eaten in the past 24hrs?
12. Does your household experience food shortage?
 - a. Tell me more of what happens in your household during this time?
 - i. experiences and coping strategies:
 1. Do you do ganyu? (Who and how does it work? How is it helpful?
 2. Do you cut back on meals? How?
 3. Do you change what you eat? How?
 4. Do you ask for help from family or friends? How does it work?
 - b.** How often does it occur?

Constraints HIV/AIDS-affected households encounter in practicing agriculture.

- 13.** Does your household have any difficulty with particular farming practices such as planting, weeding, banking and harvesting?
- 14.** Can you tell me more about these problems?
15. How do the difficulties affect your household food availability?
16. Has anything been done to improve the difficulties (coping strategies)? What?
17. In addition, do you have any other problems that affect your household food access? Can you tell me more about them?
 - a. How do your household members make decision on your farming operations such as what, when, how and where to plant? Are females included?
 - i. If women are not included, why?

ii. Does your household decision making style affect your food access? How?

- b. Does your household experience any form of violence? (How?)
- i. Why does the violence occur?
 - ii. How does it affect food access?

HIV/AIDS-affected households' SFHC facilitated agricultural practices.

18. How much do you know about the SFHC project?

- a. Which activities are you aware of?
- b. How do they recruit their participants?

19. Has your household been involved in the SFHC project? If yes:

- a. How was your household introduced to SFHC?
 - i. When did you join the project?
 - ii. How did you find out about SFHC?
 - iii. What was involved in becoming a participant?

20. Which activities do you participate in?

- a. Training
 - i. Do you ever get invited to participate in agricultural training?
 - ii. Can you tell me about the last training you attended?
 - iii. How does your household practice the methods learnt at these trainings?
 1. How does your household prepare composite manure?
 - iv. Do the farming methods you learn through SFHC trainings reduce the expenses of fertilizer? How?

21. *Impact/experience with of SFHC*

- a. How has SFHC been relevant in your household farming and general life? If yes can you tell me about this?
 - i. What has been your experience in labour relief?
- b. Networking
 - i. Does being involved in SFHC activities have any effect on the amount of help and support you have from fellow farmers in the area? If yes can you tell me about this?
 1. Do you ever chat with other SFHC members about agriculture? If yes, what kinds of things do you chat about?
 2. Do they ever provide seeds to you? If yes can you tell me more? Can you give me an example? How often would you say this sharing happens?
 3. Does anyone ever give advice about how to solve any agricultural problem? ***If yes***, Can you give me an example of when this happened?
 - ii. Do you have opportunities to talk to agricultural extension?
 1. Can you tell me about the last time you had a chat with an extension worker?

2. What did you talk about?
 - c. Legume crops provision
 - i. Which crops have your household received from SFHC?
 - ii. Has your household grown any crops received from SFHC?
 - iii. What has been your experience with these crops? So, can you tell me more?

OTHER CONCERNS

22. Do you feel that you are not usually included in development or agricultural training opportunities in your community? If so, how?
 - a. Why are you excluded?
23. How has your household attempted to address these concerns?
24. Is there anything you would like to add on your farming experiences and food access?

Appendix 5: Key Informants In-Depth interview guide

1. How is your program (SFHC or EHAP) linked to the families affected by HIV/AIDS-affected households?
 - a. Food production and consumption
2. How are clients recruited into your program?
3. Do SFHC and EHAP programs collaborate in intervening into HIV/AIDS-affected households? How?
4. Has SFHC contributed towards household labour, training and networking? If yes, how?
5. Are the contributions of SFHC (if any) the same across different HIV/AIDS households categories (couples, polygamous, female and elderly headed households)?
6. Do the SFHC or EHAP interventions ensure food security? How?
7. Do the HIV/AIDS-affected households encounter any constraint with the intervention, food production or security? How?
8. Are there any differences in agricultural practices, food access and consumption among the HIV/AIDS-affected households with and without the SFHC intervention?

Appendix 6: Participant Observation Checklist

Central idea	Sub-ideas
Interesting actions and features	<ul style="list-style-type: none"> • Activities and mode of participation • Relationship to farming and food security
Contradictions	<ul style="list-style-type: none"> • Clarification from insiders (observation's force field aspect to the SFHC intervention and food security)
Presentation for insider's feedback	<ul style="list-style-type: none"> • Additions to what I missed • Participants agreement to what they do not notice • Endorsement of presented observations, if not why?
Links between different observation	<ul style="list-style-type: none"> • Similarities and differences • Support to interventions goal of food security

Appendix 7: Curriculum Vitae-Faith Nankasa Mambulu

EDUCATION

Certificate	Institution	Department	Year
M.Sc. (Pending)	University of Western Ontario	Geography (Environment, Development and Health)	2014
B.Ed.Hum	University of Malawi-Chancellor College	Education Humanities- Home Economics	2010
MSCE	Namitete secondary school		2004
JCE	Namitete secondary school		2002

UNIVERSITY TEACHING EXPERIENCE

Name of University: Western University

- Qualification: Certificate of advanced Teaching (May 2014).

Geography 2030: Africa South of the Sahara

Guest Lectures:

- Alternatives to Food Insecurity among HIV/AIDS-affected Households in Malawi: The Applicability of Food Sovereignty. (Summer 2014)
- HIV/AIDS, Agriculture and Food Security in Malawi (fall 2013)
- Structural Adjustment Policy in Malawi (fall 2012)

WORK EXPERIENCE

Date	Position	Institution
2011-Present	Teacher	Malawi Government-Mponela Day Secondary School
2013-2014	Teaching Assistant (Africa South of Sahara)	Western University: Geography Department

2012-2013	Graduate Assistant	Research	Western University: Geography Department
2010	Child Rights Protection Training Facilitator	World Vision International: ADP	
2010	Programme nutrition	Officer -	Consol Homes Orphan Care (CHOC)

LANGUAGE

Chichewa: Mother Tongue

English: Fluent

COMPUTER SKILLS

- Microsoft Word
- Microsoft power point
- Internet
- Statistical Package for Social Scientists (SPSS)
- STATA

RESEARCH CONTRIBUTIONS

Publications

Mason, S. A.; Dixon, J; **Mambulu, F.**; Rishworth, A.; Mkandawire, P. and Luginaah, I. (2014). Management challenges of urban biosolids: Narratives around facility siting in rural Ontario. *Environmental Planning and Management*. doi:10.1080/09640568.2014.925853

- As third author on this manuscript, I conducted the systematic analysis of relevant textual sources and contributed to the final stages of review, collaborating with our team of authors.

Mambulu, F.; Mkandawire, P.; Dixon, J.; Mason, S. A.; Rishworth, A., and Luginaah, I. (2014). Silence of the Leaders: Alcohol Policy Making in Malawi. *African Geographical Review*. (Revised and Resubmitted).

- As the lead author on this paper, I conducted the content analysis of media sources and composed the majority of the manuscript. Additionally I lead the collaborative process coordinating comments and suggestions from collaborating authors.

Conference Presentations

Mambulu, F.; Bezner-kerr, R. and Luginaah, I. (June 2014). Improving Food Security among HIV/AIDS-affected Households in Northern Malawi: A Case of Soils, Food and Healthy Communities Project. 2014 Qualitative Analysis Conference. National Conference. London, Ontario, June 25– 27, 2014. (Oral presentation)

Mambulu, F.; Bezner-kerr, R. and Luginaah, I. (April 2014). Interventions as a Means to Food Security: Experiences of HIV/AIDS-affected Households in Northern Malawi. 2014 American Association of Geographers (AAG). International Conference. Tampa, Florida, April 7 – 12, 2014. (Oral presentation)

Mason, S. A., Dixon, J., **Mambulu, F.**, Rishworth, A., Mkandawire, P. and Luginaah, I. (2013). Management challenges of urban biosolids: Narratives around facility siting in rural Ontario. 2013 Joint Annual Meeting ELDAAG/CAGONT. International Conference. Toledo, Ohio, October 25 – 26, 2013. (Oral presentation)

Mason, S. A., Dixon, J., **Mambulu, F.**, Rishworth, A., Mkandawire, P., and Luginaah, I. (2013). Science-policy boundaries in the siting of biosolid facilities: A case study from Southgate Township, Ontario. International Symposium in Medical/Health Geography. International Conference. Lansing, Michigan, July 8 – 12, 2013. (Oral presentation)

Technical Report

Chapomba, A, and **Mambulu, F.** (2010). Stephen Lewis Foundation Annual Report [2009-2010]. Property of CHOC-Malawi and Stephen Lewis Foundation.

Chapomba, A.; Chikwapulo, S.; **Mambulu, F.** and Maulana, R. (2010). Success of Infant Feeding Programs: Cases of Grannies Caring for Orphaned Infants. Property of CHOC-Malawi.

Dissertations

Mambulu, F. (2009). Challenges Faced by HIV Positive Mothers in Practicing Feeding Options Adopted for their Babies: a Case of Lilongwe. Home Economics Department: University of Malawi-CHANCO. (Bachelors in Education Humanities)

OTHER RESPONSIBILITIES

VP Social-Events: Western Adventist Students' Association (2013-2014)

Sub-committee Member: Geography Department Sustainability Committee (2012-2013)

