THE SOCIO-ECONOMIC IMPACT OF HIV/AIDS ON COMMUNAL AGRICULTURE IN KANDEYA AND CHUNDU WARDS OF MT DARWIN AND HURUNGWE DISTRICTS

BY

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ABSTRACT

The Human Immunodeficiency Virus /Acquired Immuno-deficiency Syndrome (HIV/AIDS) epidemic is one of the greatest challenges currently facing Zimbabwe. With a national adult prevalence rate of 24.6%, no crisis in the history of Zimbabwe has ever presented such a threat to social and economic progress, as has done this epidemic. Little attention has however been paid to the impact of the disease on agriculture in the communal areas, where the majority of the Zimbabwean people live. The main objective of this study was thus to establish the socio-economic impact of the HIV/AIDS pandemic on communal agriculture.

To accomplish this objective, data were collected in Chundu and Kandeya to find out how the HIV/AIDS disease is impacting on household medical costs, transport costs, funeral costs and on crop production. Data were collected through household questionnaires, which were administered to 188 and 155 randomly selected household heads in Kandeya and Chundu wards respectively. Qualitative data were gathered through focus group discussions and interviewing key informants.

The study established that, in both wards, HIV/AIDS is causing significant increases in household medical and transport costs, as affected persons require constant medical attention. However, no significant increases in funeral expenses were established. The study also found that the premature death of a household member due to AIDS is resulting in statistically significant losses of household income due to foregone production of the deceased. With regard to crop production, HIV/AIDS is causing significant declines of over 40% in the size of the household cultivated area for labour intensive crops such as cotton and tobacco. HIV/AIDS is also causing significant declines in harvested quantities of maize, cotton, tobacco and paprika crops. These declines are resulting in HIV/AIDS-affected households facing critical household food shortages, with the situation being more critical in Kandeya ward. Significant declines in marketed crop quantities of cassava have also been recorded among HIV/AIDS-affected households. This is because affected households are consuming most of their cassava in the belief that the crop boosts the immunity system of an HIV/AIDS patient. No significant declines were however recorded in quantities of marketed cotton, groundnuts and paprika.

To counter the problems resulting from HIV/AIDS, households are employing strategies to mitigate the impacts of the pandemic. These strategies are aimed at alleviating household labour loss, raising household income and maintaining household food security. Most of these coping strategies however have short-term benefits to the household, but long-term disastrous impacts causing the abandonment of the growing of cash crops, a decline in harvested crop quantities and the worsening of household food security situation.

Based on the above findings, the study recommends education and awareness programmes on HIV/AIDS to protect young adult farmers who are the backbone of current and future communal farming. Government should introduce a low paying medical aid scheme tailor-made for communal farmers to defray huge medical costs that are crippling household farming operations. Government, N.G.Os and the donor community can help communal farmers by providing them with cheap seeds, fertilisers and herbicides, as well as loans to restock draught cattle. Communal labour pooling should also be revived to ease household labour shortages caused by AIDS.

PROLOGUE

"The face of AIDS in Zimbabwe will be seen not in towns, but in rural areas, and will be transformed from the face of the economy to the heart of the economy, which is agriculture".

Frazer-Mackenzie (1994, p14).

"No terrorist attack and no war has ever threatened the lives of African people as AIDS has done".

Bunmi Makinwa-Team Leader, UNAIDS Inter-Country Team for Southern and Eastern Africa, in Jackson (2002:iv).

"AIDS through agriculture affects food security and the fate of national economies. It strikes at productive adults by killing agricultural workers prematurely and undercuts the resilience which households and communities draw upon to cope during periods of difficulty and crisis".

UNAIDS (2004, p50)

"This disease (HIV/AIDS) is really taking us to the end of the world. Our children are dying like flies and we are burying them everyday. Very soon there will only be old people like us left. No one will grow crops. One of these years we will surely starve".

Chief Kandeya, Interview with the researcher, 18th December 2003, Chief Kandeya's homestead, Kandeya Ward, Mt Darwin.

DEDICATION

To the four pillars of my life: My wife Mazvita-Cecilia, my daughter Alma-NyashaVimbiso, my father Albert-Mutizwa Tawodzera and My late mother Alma Sewa Tawodzera (nee Lifa).

But above all, to God Almighty, for the life,
The strength, the wisdom,
And the guidance.

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Lastly, I would want to thank Chiefs Chundu and Kandeya, their ward councillors and headsmen, and all the household heads that participated in this research. Without their cooperation the research would not have been a success.

DECLARATION

"I hereby declare that this thesis submitted for the degree of Master of Philosophy at the University of Zimbabwe is my own original work and has not been previously submitted to any other institution of higher education. I further declare that all sources cited or quoted are indicated and acknowledged by means of a comprehensive list of references".

Godfrey Tawodzera

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AREX	Agricultural Research and Extension Services
ARV	Antiretroviral Drugs
CBO	Community Based Organization
CDC	Centre for Disease Control and Prevention
CHBC	Community Home Based Care
CSO	Central Statistical Office
FAO	Food and Agriculture Organization
GDP	Gross Domestic Product
GMB	Grain Marketing Board
FFW	Food for Work
HIV	Human Immunodeficiency Virus
IGA	Income-Generating Activity
MOHCW	Ministry of Health and Child Welfare, Zimbabwe
NAC	National AIDS Council, Zimbabwe
NACP	National AIDS Coordination (Control) Programme, Zimbabwe
NGO	Non-Governmental Organization
PLWHA	Person/People Living with HIV/AIDS
PRF	Poverty Reduction Forum
SAFAIDS	Southern Africa AIDS Information Dissemination Service
SPSS	Statistical Package for Social Sciences
STI	Sexually Transmitted Infection
TB	Tuberculosis
UNAIDS	Joint United Nations Programme on HIV/AIDS
UNDP	United Nations Development Programme
UNICEF	United Nations Children's Fund
VIDCO	Village Development Committee
WB	World Bank
WFP	World Food Program
WHO	World Health Organization
ZFU	Zimbabwe Farmers Union
ZINATHA	Zimbabwe National Traditional Healers Association

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DEFINITION OF TERMS

HIV/AIDS-affected household: A household that is (has been) affected by HIV/AIDS through the illness and/or death of at least a single household member. The HIV/AIDS status of the household member is defined in the study according to WHO (2002) guidelines as shown in appendix 9.

Household: A group of persons who live together and share meals from a common kitchen.

Household head: A person recognized or acknowledged by other household members as the head of the household.

***Nhimbe/Hoka/Humwe*:** A traditional labour practice where community members work jointly to assist each other in various farming activities.

US$1=Z$824: Government Official Exchange rate at the time of the study, December 2003.

***Zunde Ramambo*:** A traditional concept of community fields that are farmed collectively by the communal farmers to help enhance food security in their areas. The chiefs oversee the fields and the food produced belongs to the community and is used at the chief's discretion to feed those in desperate need of food.

CHAPTER ONE

INTRODUCTION

1.1 The origin, nature and spread of HIV/AIDS

The Acquired Immunodeficiency Syndrome (AIDS), which is caused by the Human Immunodeficiency Virus (HIV) of the parasitic retrovirus family was first discovered among the gay population by the Centre for Disease Control and Prevention in the United States of America in 1981 (World Bank, 2002; Barnett and Rugalema, 2000; Hooper, 2000). During that time, the disease was referred to as the Gay-Related Immune Deficiency Syndrome (GRIDS) (Hooper, 2000). This was because the disease was first discovered and described as a disease complex in homosexual men (Murray and Johnson, 1996). Other researchers named the disease the Lymphadenopathy Associated Virus (LAV) (Hooper, 2002), the Human T-cell Lymphotrophic Virus type III (HTLV-III) (Feachem and Jamison, 1991) and the AID-Associated Retrovirus (ARV) (Sheth, 2003). AIDS has now become the most devastating disease humankind has ever faced (World Bank, 2002). It has emerged as the most terrifying epidemic of modern times, likened to the *black death* or *bubonic* plaque of the middle ages which killed millions of people in Europe (Jackson, 2002; Loewenson and Kerkhoven, 1996).

There are two types of the HIV virus namely the HIV-1 and the HIV-2 viruses. HIV-1 accounts for most of the infections in the world and has at least 10 sub-types. HIV-2 is found primarily in West Africa and appears to be less easily transmitted and progresses more slowly to AIDS than HIV-1 (Lamptey *et. al.*, 2002)

HIV is spread mostly through sexual contact, blood transfusion (where blood screening for HIV antibodies is either absent or defective), antenatal transmission (from mother to child during pregnancy or at birth), breast feeding, and through sharing needles, syringes and/or other sharp objects with infected people (Sheth, 2003; Centre for Disease Control, 2002; Lamptey *et. al,* 2002*;* Cohen and Trussel, 1996; Mhloyi, 1995;Beaglehole, Bonita and Kjellstrom, 1993).

HIV is transmitted primarily via bodily fluids like semen, blood, saliva, milk and uterovaginal secretions that harbour the Virus. Although the Human Immunodeficiency Viruses mutate faster than any other viruses known to humankind, most scientists believe it is unlikely that any new routes of transmission will be discovered (Hooper, 2000).

In Zimbabwe, as is the case in most Sub-Saharan African countries, the major route of HIV transmission is heterosexual intercourse, which is estimated to account for about 93% of all adult HIV/AIDS cases (Mutangadura, 2001). Once HIV enters the blood stream it invades blood cells (CD4 cells/T-lymphocytes), integrates itself with the generic material of the host cell and then uses the cytoplasm of the host cell to reproduce itself at the expense of antibodies (Jackson, 2002; Whiteside and Cross, 1993). This results in the destruction of T-cells and the inability of the body to resist diseases. Infected individuals may live for a period of as low as 1 year to as much as 10-15 years without showing signs of the disease (Table 1.1 below). As HIV gradually weakens the immune system, signs and symptoms of different infections become apparent. Once infected by HIV, most people develop full-blown AIDS within 15 years of being infected.

Table 1.1: The Progression of HIV Infection to AIDS

HIV Infection	Initial Infection with HIV, e.g. through sex, blood contact, antenatal transmission
Window Phase 2-6 weeks, occasionally several months	No signs or symptoms of disease, and no detectable antibodies to HIV. An HIV antibody test will be negative although the virus is present
Seroconversion Brief period that occurs after 2-6 weeks up to a few months	The development of antibodies. It may be accompanied by a period of flu-like illness, glandular fever-like illness or occasionally, encephalitis. Illness at Seroconversion may be called acute HIV syndrome. About 25% of people experience no illness at this stage, and many who become ill do not visit health services.
Asymptomatic HIV Lasts from less than 1 year to 10-15 years or more	Antibody tests are positive but there are no apparent signs or symptoms of illness. This is the incubation period. It may be accompanied by persistent generalized lymphadenopathy (PGL), that is glands staying swollen for a long time, without other disease symptoms.
HIV/AIDS-related illness Lasts months or years	Signs and symptoms of the disease increase because HIV is damaging the immune system. They are not usually life threatening initially but become more serious and long lasting.
AIDS Usually less than 1-2 years unless treatment is available	The terminal stage of HIV infection. Life threatening infections and cancers occur because the immune system is severely weakened and can not cope. The patient dies when an untreatable life-threatening condition develops. Life expectancy depends on the conditions that develop and the treatment available, including anti-retrovirals, drugs for opportunistic infections and holistic care including good nutrition.

Source: Jackson, 2002:43

Other rare cases have however been recorded where infected people have exceeded these limits (Lamptey *et. al*, 2002; Loewenson and Kerkhoven, 1996). AIDS is 100% fatal and neither a vaccine nor a cheap and effective drug for HIV/AIDS treatment currently exists (Barnett and Rugalema, 2000). The pandemic thus continues to increase unabated and to affect millions of people worldwide.

1.2 Background to the study

The Human Immunodeficiency Virus /Acquired Immuno-deficiency Syndrome (HIV/AIDS) epidemic is one of the greatest challenges facing humanity in the 21st Century (Sheth, 2003; Hooper, 2002; Kruger 2002; Nduati and Kiai, 1997). Throughout human history, few crises have presented such a threat to human health and economic progress, as has the HIV/AIDS epidemic. During the past two decades the HIV/AIDS epidemic has infected over 60 million people globally, caused grief and pain in many families, and is now posing severe problems for sustainable human development, especially in the developing world (Lamptey *et. al.*, 2002; UNAIDS, 1999; Mhloyi, 1995; Reid, 1995). HIV/AIDS is one of the destabilising factors in society because growing morbidity and mortality increases medical costs and weakens the capacity of infected persons to earn decent incomes (Mushala, 2002).

By the end of the year 2004, an estimated 39-42 million people were living with HIV/AIDS throughout the world and about 24.8 million related deaths had been recorded (UNAIDS, 2004: UNAIDS/WHO, 2004). During the year 2004 alone, over 3 million deaths occurred due to HIV/AIDS and an estimated 5.3 million new infections were recorded worldwide (UNAIDS/WHO, 2004a). It is further estimated that 68 million people will die of HIV/AIDS by 2020. This is 3 times higher than the number of HIV/AIDS deaths recorded in the first 20 years of the epidemic (UNAIDS, 2002).

HIV/AIDS has become a serious epidemic in sub-Saharan Africa as recent statistics show: Out of the 39-42 million people living with HIV/AIDS globally in the year 2004, 70% were found in sub-Saharan (UNAIDS/WHO, 2004a). In addition, while 10% of the

world's population lives in Africa, the continent accounts for nine out of every ten new cases of HIV infection (UNAIDS, 2003).

The Food and Agricultural Organization (FAO), which monitors food supplies around the world, estimates that in Africa's 25 worst HIV/AIDS affected countries (which include Zimbabwe, Botswana, Lesotho, Namibia, South Africa), seven million agricultural workers have died of AIDS since 1985. It is feared that 16 million more agricultural workers may die of HIV/AIDS by 2020 (FAO, 1994). Therefore HIV/AIDS is a serious developmental problem in sub-Saharan Africa because the countries in this region are heavily dependant on human labour and their economies are already strained, making them the least able to confront the long term economic and social impact of the disease. Poverty that is endemic within these countries also exacerbates the transmission of the virus and diverts resources from productive sectors (e.g agriculture) to the health sector (Cohen, 2002). Thus the high levels of the HIV/AIDS virus in this region weaken national economies and compound poverty problems at both the country and household levels. In Zimbabwe there is concern that increased poverty levels in communal areas will make individuals and households vulnerable to the pandemic (NAC, 2003; Sibanda, 2000). For this reason, the study focuses on Chundu and Kandeya wards, where agriculture is less mechanised and crop production relies heavily on human household labour. Moreover Kandeya ward has high a HIV/AIDS prevalence rate (36.6%), which will allow comparisons to be made with Chundu ward, whose prevalence rate (18.5%) is lower than that of Kandeya ward.

1.3 Statement of the problem

The HIV/AIDS pandemic has reached crisis proportions in Zimbabwe. The disease is putting severe stress on individuals, households and communities due to an increase in human morbidity and mortality (Poverty Reduction Forum, 2003). This is a cause for great concern because not only is HIV/AIDS a fatal illness, but it is also infecting mainly young adults in their economically productive years. In farming areas, particularly in communal areas like Chundu and Kandeya wards, where levels of agricultural mechanization are low and farming depends heavily on human labour, it is estimated that increases in human morbidity and mortality caused by HIV/AIDS are impacting negatively on crop production and household food security (SADC/FANR, 2003). It is also estimated that farmers are dying prematurely with their agricultural knowledge, expertise, experience and labour, while cash resources are also being diverted from agricultural production to care-giving activities (Ray and Kureya, 2003; Sibanda, 2000). Although research has been done on the impact of HIV/AIDS on agriculture, most of this research work has been centered on the commercial farming sector (NAC, 2003; Laver, 1999; Lowenson and Whiteside, 1998). As a result little research has been done on how agriculture in communal areas of Zimbabwe is being affected by or how farmers are coping with the impact of the HIV/AIDS pandemic. Against the above background, this study examines impact of HIV/AIDS on communal agriculture and assesses how affected households are coping with the pandemic. It is hoped that this information will enable government policy makers, NGOs, local leadership and the farmers themselves to respond to the epidemic in an effective way.

1.4 Justification for the study

The HIV/AIDS disease has transformed from being primarily a medical and health issue in the late eighties, to a human development challenge in the 21st Century (UNAIDS, 2004; Hooper, 2003; SADC/FANR, 2003; Sibanda, 2000). Many studies have been carried out on HIV/AIDS at the global scale (Hooper, 2002; Caron, 1999; Mindel and Miller, 1996; Van de Perre, 1995; Geisler, 1994; Beaglehole, 1993; Cross and Whiteside, 1993; Barnett and Blaikie, 1992). Most of these studies focussed on the disease's origin after its discovery at the US Centre for Disease Control and Prevention in 1981, the nature of the disease, its transmission, as well as its geographical distribution. Further research has concentrated on behavioural and demographic issues surrounding HIV/AIDS as emphasis shifted to the formulation of intervention strategies to arrest the spread of the disease (United Nations; 1999; Nduati and Kiai, 1997; Jackson, 1992; Swai, 1992; Mhloyi and Basset, 1991;Green, 1988).

In East and Central Africa, governments were quick to acknowledge the devastating effect of HIV/AIDS on agricultural communities and focussed their attention on understanding the link between HIV/AIDS and agriculture much earlier than in Southern Africa (Hunter, Bulirwa and Kisseka, 1999; Muchunguzi, 1999; Rugalema, 1999; Baier, 1996; Barnett, 1994; Food and Agricultural Organization, 1994). It is only recently, inspite of the fact that their economies depend heavily on agriculture, that governments in Southern Africa have shifted research emphasis to focus on the impacts of HIV/AIDS on agriculture (Kruger, 2002; Muwanga, 2002; Shapouri and Rosen, 2002; Mushala, 2002; Laver, 1996).

In Zimbabwe, although much has been written about the medical and clinical aspects of HIV/AIDS, few serious attempts have been made to understand the impact of the pandemic on agriculture (Munyombwe *et. al.,* 1999; Ncube, 1999; Loewenson and Whiteside, 1998; Kwaramba, 1997). Most studies done in the country (Mutangadura, 2001; MOCHW, 2000; Sibanda, 2000; Laver, 1999; Jackson, 1992; Mhloyi and Bassett, 1991) have centred on demographic impacts of the disease at the expense of its economic implications. This is because since the identification of the first HIV/AIDS cases in Zimbabwe in 1985, the response to the disease has been very much driven by the health sector as the disease initially presented itself as a health problem concentrated in urban areas (Poverty Reduction Forum, 2003; Frazer-Mckenzie, 1994). Researchers thus tended to ignore rural areas. However infection levels are now almost at par with those recorded in the urban areas because of the mobility between the two areas (Poverty Reduction Forum, 2003; NACP, 1998; Frazer-Mackenzie, 1994).

Up to now, the view that HIV/AIDS is primarily a health problem had not yet changed significantly. Evidence shows that most of the responses to the disease on the ground are purposely or otherwise still being largely driven by this health perception, forgetting that the HIV/AIDS challenge is much more complex and rooted much deeper in the development and underdevelopment context in which agriculture is a crucial component (Poverty Reduction Forum, 2003). As such the impact of the disease on agricultural production, and how farmers are coping with the impact of the disease, especially in communal areas like Chundu and Kandeya, continue to receive less attention. Yet it is within rural areas that the majority of the Zimbabwean people live, under conditions of

poverty that are conducive to the spread of HIV/AIDS. This lack of adequate information on the impact of HIV/AIDS on communal agriculture has thus weakened the ability of policy makers especially in the agricultural sector to formulate sound intervention strategies for the affected households, hence this study.

1.5 Research questions

From the above discussion, the following are the research questions to be investigated in Chundu and Kandeya wards:

1. What are the medical, transport and funeral costs associated with the occurrence of HIV/AIDS within the household?
2. What is the impact of HIV/AIDS on the size of household crop cultivated area?
3. What is the impact of HIV/AIDS on the quantity of crops harvested by households?
4. How is the quantity of household marketed crop produce being affected by HIV/AIDS?
5. What is the impact of HIV/AIDS on household food security?
6. What strategies are being employed by households to cope with and mitigate the impact of HIV/AIDS?
7. What are the necessary intervention strategies that can be implemented to reduce the impact of HIV/AIDS on communal agriculture?

1.6 Objectives of the study

1.6.1 Overall objective

The study aims to examine the socio-economic impact of HIV/AIDS on crop production systems in Chundu and Kandeya wards and assess the coping and mitigating strategies being employed by households affected by the disease.

1.6.2 Specific objectives

The specific objectives of the study are to:

- establish the medical, transport and funeral costs of HIV/AIDS morbidity and mortality on households;
- measure the impact of HIV/AIDS on the size of the crop area cultivated by households;
- analyse the impact of HIV/AIDS on the quantity of crops harvested by the household;
- measure the impact of HIV/AIDS on the quantity of household marketed crops;
- assess the impact of HIV/AIDS on household food security;
- assess strategies being employed by households to cope with and mitigate the impact of HIV/AIDS;
- propose measures for minimising the impact of HIV/AIDS on communal crop production systems.

1.7 Research Hypotheses

To achieve the above set objectives, the following research hypotheses were set in relation to Chundu and Kandeya wards:

1. HIV/AIDS is causing significant increases in the medical, transport and funeral costs incurred by households.
2. The presence of HIV/AIDS within the household is significantly decreasing the cultivated area for household crop production.
3. HIV/AIDS is causing significant declines in total quantities of crop harvested by households.
4. HIV/AIDS is significantly decreasing the quantities of household marketed crops.
5. HIV/AIDS is significantly decreasing household food security.
6. HIV/AIDS is having a more significant impact in Kandeya than in Chundu ward.

1.8 Theoretical perspective

The study of HIV/AIDS, particularly its interface with agriculture, is a recent field in academic enquiry. As such no theory has yet been specifically developed to deal with the subject of HIV/AIDS and how it affects agriculture (Halswimmer, 2003; FAO, 2000). Inspite of this limitation, data collection and analysis on the impact of HIV/AIDS on agriculture was done within the context of the *Rational Decision Theory*. As Harris (1998) points out, the *rational decision theory* concerns itself with the identification of problems and choosing of alternatives that are based on the values, preferences and experiences of the decision-maker. The theory suggests that when people (decision-makers) are faced with a problem or crisis, they follow a specific process where problems are identified, goals are decided upon, alternatives are developed in accordance with such goals, and then the most efficient alternative is implemented to solve the problem or crisis (Baker, et al. 2002; Rainey, 2003).

In the context of agriculture, the HIV/AIDS pandemic represents a problem or a crisis. The decision-makers (communal farmers) identify the problems that household agriculture is facing because of HIV/AIDS. Decisions are then made on how to react to the problems posed by the pandemic and various alternatives are formulated. In the end the most efficient and cost-effective strategies are implemented so that the household is able to sustain itself through the crisis. According to Keeney, R.L. and Raiffa, H. (1996) *rational decisions* on alternatives are made on the basis of maximum utility. This means therefore, that in choosing alternatives to maintain and sustain the household through the crisis period, communal farmers choose those alternatives (coping strategies) where they minimize their cost and maximize their benefits. Data in this study was therefore collected and analysed within the confines of the *Rational Decision Theory*.

1.9 Conceptual framework

The conceptual framework (Figure 1.1) illustrates how HIV/AIDS affects communal agriculture. The figure reveals that illness of a household member contributes to direct loss of productive labour on the farm. As a member of the household becomes sick his/her participation in agricultural activities is curtailed or reduced until the time of his/her death when it stops. During the members' period of sickness, some of the household's labour and cash resources are diverted from agricultural activities towards seeking medical treatment. This may lead to increased labour demand, which may not be met by the household, and consequently a reduction in crop production may be experienced.

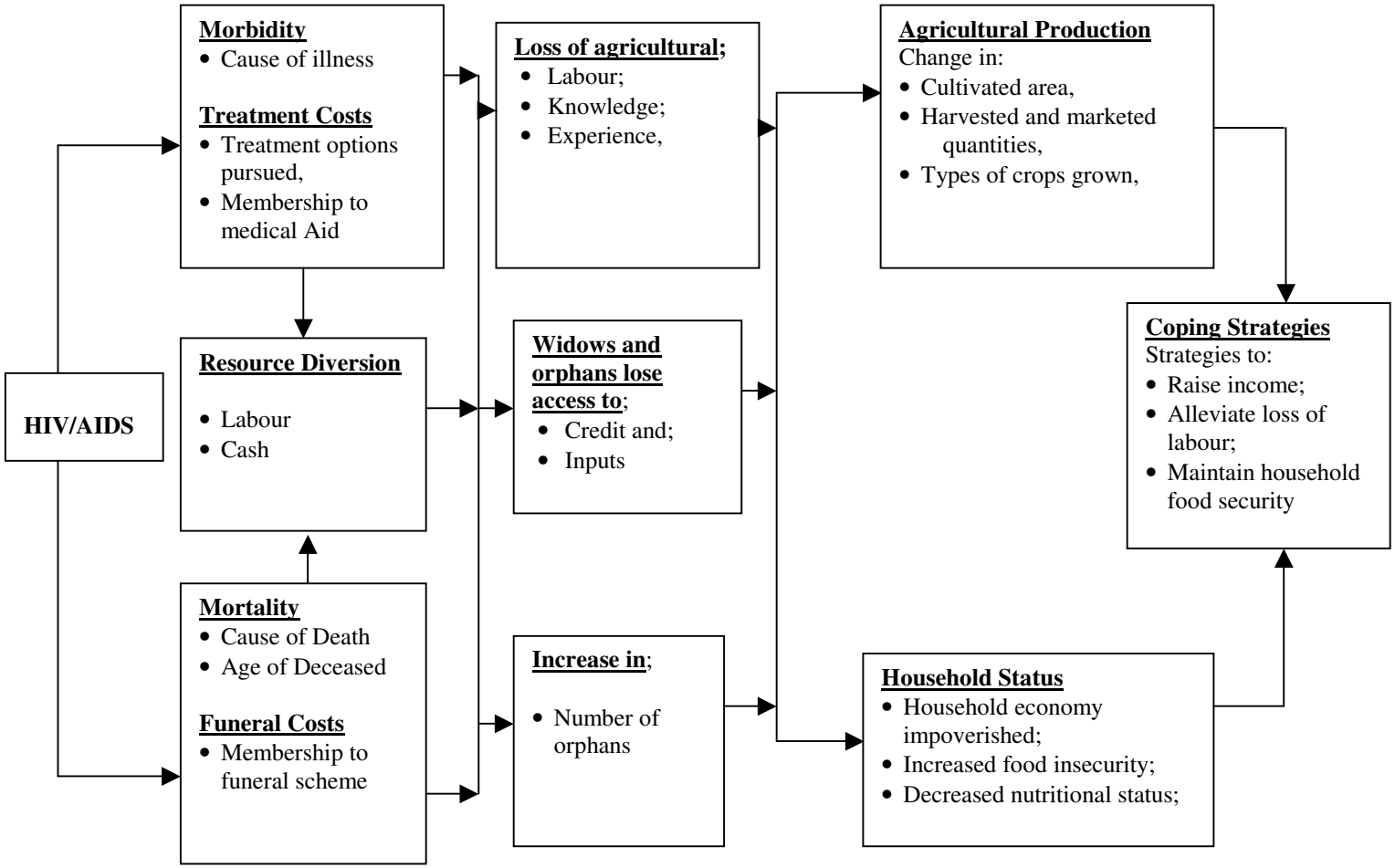

Figure 1.1: A Conceptual framework of the linkages between HIV/AIDS and communal agriculture (Source: Adapted from Panos Institute, 1992)

Figure 1.1 also indicates that the death of the household member deprives the household of agricultural labour, knowledge and experience of the deceased, who in some cases would have been the decision-maker on agricultural matters. At this stage more cash resources are diverted to cater for funeral expenses, further impoverishing the household and making it difficult to maintain agricultural production.

The occurrence of HIV/AIDS within households is also causing an increase in the number of households that are headed by orphans. This is because HIV/AIDS, as a sexually transmitted infection, usually infects in pairs, thereby killing both parents. In most cases the surviving orphans lose credit facilities, inputs and extension services because they usually have no knowledge of how to access them. Hence agricultural production within such households declines. Such declines in household crop production result in the household being impoverished as the food security situation declines. Consequently, there is also a decrease in the household health and nutritional status.

After the death of a household member (or members), the surviving household does not immediately disintegrate. Rather it adopts a variety of strategies to mitigate the impact of the pandemic. These strategies are aimed at alleviating household labour loss and raising income to maintain household food security. Some of these strategies may entail reducing household crop cultivated area, which may result in the decline of harvested and marketed crop quantities as well as in changes in the type of crops being grown. The adoption and use of some of these strategies may however impact negatively on the continuation of normal household crop production. This is because reducing crop

cultivated area may result in decreased production, which increases household food insecurity. Changes in types of crops grown may also result in the household concentrating on a few less labour-intensive crops, which may not be nutritious, thereby decreasing household nutritional status.

1.10 Organisation of the study

The study is organized into seven chapters. The first is an introductory chapter containing the statement of the problem, the justification of the study, the study objectives and the conceptual framework of the study. Chapter Two reviews literature that focuses on the link between HIV/AIDS and agriculture, and in particular, the impact of HIV/AIDS on smallholder agriculture in sub-Saharan Africa and Zimbabwe.

Chapter Three gives a background of the study areas, discusses the sampling methods used in this study and outlines the data collection and analysis procedures. Chapter Four analyses the findings of the research, which relate to the medical and funeral costs of HIV/AIDS on the households. The chapter also examines the income lost by the household due to non-productivity of a household member due to illness and premature death caused by the pandemic.

Chapter Five analyses and presents research findings on the impact of HIV/AIDS on crop production. It focuses on the impact of the pandemic on the size of crop cultivated area, harvested crop quantities and marketed crop quantities in Chundu and Kandeya wards.

Chapter Six identifies and discusses various coping strategies employed by HIV/AIDS affected households to mitigate the impact of the pandemic in the wards.

Chapter Seven forms the conclusion of the study where major research findings are summarized. Conclusions drawn from the study are also presented. The chapter ends with recommendations on what needs to be done to reduce the impact of the HIV/AIDS pandemic in communal agriculture.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

The history of the world has never witnessed a widespread and fundamental threat to human development as that caused by HIV/AIDS, especially in developing countries like Zimbabwe. The disease is a multi-faceted problem that has transcended national and regional boundaries as it continues to affect millions of people worldwide. However, despite being a global epidemic, the HIV/AIDS disease is most prevalent in sub-Saharan Africa. This is because 29.4 million (70%) of the global 42 million people currently living with HIV/AIDS live in the sub-Saharan Africa region, which has only 10% of the world population (UNAIDS, 2004 Shapouri and Rosen, 2002; FAO, 2000).

The disease has spread across all social and economic boundaries in this region and is also affecting all economic sectors such as mining, transport, industry and agriculture. However, nowhere within these economic sectors is the impact becoming more pronounced and serious than in the agricultural sector, particularly in the smallholder agricultural system. Unlike in other regions of Europe, Asia, Australia and America where the impact of the disease in agriculture is not yet serious, either because the prevalence rates are still low or agriculture is highly mechanized, smallholder agriculture in sub-Saharan Africa is most vulnerable as it is labour intensive and lowly mechanized.

2.2 The nexus between HIV/AIDS and Agriculture in sub-Saharan Africa

Agriculture is the largest economic sector in most African economies (Cohen, 2002; Bollinger and Stover, 1999). In these countries, agriculture accounts for a large proportion of these countries' economic production and employment. According to van Liere (2002), over 70 % of the population in sub-Saharan Africa consist of farmers and other rural populations linked to agriculture. The agricultural economic sector is so important in the region considering that it contributes more than a third of the Gross National Product (GNP) of most of these countries (Shapouri and Rosen, 2002). Products from agriculture are also major export earners and the foreign currency earned is used to pay for essential imports and raw materials necessary for industrial development (World Bank, 1999).

As the economic backbone of most rural communities in sub-Saharan Africa, agriculture faces a serious threat from HIV/AIDS given that the epidemic mostly affects the people aged 15 to 45 years who are the most economically productive. HIV/AIDS threatens agriculture by escalating morbidity and mortality predominantly on the most productive segment of the society that is responsible for agricultural production. By killing mostly adults, HIV/AIDS is weakening the very foundation of agriculture, particularly smallholder agriculture, which is the capital investment embodied in human labour. Smallholder agriculture is directly affected by HIV/AIDS through the loss of household labour due to illness and death, shifting of labour from agricultural production to caring for the sick and the shifting of financial resources earmarked for agriculture to medical and funeral expenses (Barnett, 2004; FAO, 2000).

2.3 The loss of household agricultural labour

A key feature of the HIV/AIDS disease, which makes its impact on agriculture critical, is that it results in the decline in both the quality and quantity of labour available to the household farm. Agricultural labour is lost when a household member is infected with HIV, falls sick, develops AIDS and dies.

2.3.1 Loss of agricultural labour due to HIV/AIDS illness

When individuals fall sick due to HIV/AIDS, their ability to work is reduced (Baier, 1995). This is because the HIV/AIDS disease is debilitating and erodes their physical power such that they tire more easily. In addition, infected individuals are usually unable to complete assigned tasks like ploughing, planting, weeding or harvesting as can be done by the uninfected.

The major difference between HIV/AIDS and other diseases like malaria and diarrhoea is that HIV/AIDS is characterized by recurrent cycles of opportunistic infections during which the patient is bedridden and unable to perform any work, and remission cycles where the patient is able to partake in agricultural activities (Rugalema, 1999). These recurrent- remission cycles impact negatively on the time that sick individuals devote to agricultural activities. Some of the opportunistic infections like pneumonia occur frequently during the rainy season when agricultural labour is most wanted. This means that household members who fall sick during the rainy season cause severe labour shortages on the household farm, as it is at this time of the year that crops are grown.

During the last six to twelve months of AIDS sickness, the remission periods during which a sick person is able to perform some agricultural work are few, spaced and in some cases even non-existent (Karugendo, 1994). The individual member's contribution to agricultural activities is therefore minimal or non-existent, as s/he is mostly bedridden. The tasks left by the bedridden member thus entail extra work for the physically fit household members. In most cases fields remain unweeded and crops may not be harvested in time because the remaining household members are unable to complete the increased work (Rugalema, 1998). Delays in crop weeding and harvesting eventually result in the decline in the quality and quantity of crops harvested. As Haslwimmer (1994) point out, when HIV/AIDS patients are in the terminal stage of illness, most tasks on the household farm such as land clearing, ploughing, weeding, mulching and pruning are either inadequately carried out or are totally neglected.

2.3.2 The loss of agricultural labour due to an AIDS death

A household member with AIDS inevitably dies prematurely and the household is finally deprived of all that member's labour. Thus even the little labour that the member was contributing during the remission phases is eventually lost. According to Drinkwater (1993), the eventual loss of a household member due to death results in the remaining members reorganizing their priorities in agricultural production. This reorganization may entail reducing the area under crop production, shifting from labour intensive crops such as cotton and tobacco to less labour intensive food crops like maize and cassava.

The loss of household labour may also result in the remaining household members reducing the time spent on maintaining agricultural infrastructure such as terraces and contour ridges. This is because such long-term conservation measures, which are labour intensive, do not yield an immediate income in an environment in which the farming system is already short of human resources (Haslwimmer, 1994). Among households where livestock manure was previously being used, for example, the death of a household member may result in the shortage of manpower to dig, transport and spread the manure in crop fields. This causes a decline in soil fertility and an eventual loss of soil structure leading to reduced crop yields (Haslwimmer, 1994).

The loss of agricultural labour due to HIV/AIDS illness and death is critical in sub-Saharan Africa. FAO (2000) estimates that in the twenty-five most HIV/AIDS affected countries, 7 million agricultural workers have died of the disease since 1985, and 16 million more will die of the disease within the next 20 years in the sub-continent. It is also estimated that nine HIV/AIDS hardest hit countries in the region will loose over 20 % of their agricultural labour force by 2020 (Table 2.1).

Table 2.1: Projected loss in agricultural labour force through AIDS in nine of the hardest hit countries in sub-Saharan Africa

Country	Projected labour loss (%)
Namibia	26
Botswana	23
Zimbabwe	23
Mozambique	20
South Africa	20
Kenya	17
Malawi	14
Uganda	14
Tanzania	13

Source: FAO (2000a:p8)

The shortage of agricultural labour causes the reduction in the size of the cultivated land and the abandonment of more remote fields (Barnett, 2004). A study carried out by Hunter *et. al.* (1993) in Uganda showed that HIV/AIDS affected households had reduced cultivated area by 40% over a three year period. Likewise, Bollinger and Stover (1999) found that most of the reductions in cultivated area in Ivory Coast could be attributed to labour shortages caused by HIV/AIDS. Thus the death of agricultural workers in large numbers will have a negative impact on agricultural production within the smallholder agricultural sector in sub-Saharan Africa.

The loss of labour due to HIV/AIDS is also reducing the time and care required to culturally weed crops. In the coffee-banana system in West Africa for example, banana weevils used to be controlled by labour-intensive traditional methods. The decimation of agricultural labour by HIV/AIDS is however hindering traditional pest control. Although the smallholder farmers are continuing coffee and banana farming, they are getting reduced yields as pests and diseases continuously attack the crops.

The loss of agricultural labour due to illness or premature death that is caused by HIV/AIDS has also been shown to be causing a decline in the variety of crops grown by a household (Van Liere, 2002). This shift to a narrower range of crops is a result of shortage of labour and inputs to grow a wider range of crops on the household farm. Cash crops are the first 'casualty' as they are abandoned owing to the inability of the household to maintain enough labour for both cash and food crops. In East Africa, for example, farmers have now been observed to be concentrating on a narrower range of crops, with

greater emphasis on cassava, sweet potatoes and maize which are staple crops as well as being less labour-intensive (Du Guerny, 2000; Haslwimmer, 1994).

2.4 The diversion of labour from agricultural production into care provision

When a household member is sick, a household member is allocated the task of looking after him/her. This forces the caregiver to transfer his/her labour from productive agricultural activities into care provision (Lastarria-Cornhie, 1988). Since HIV/AIDS is a chronic disease, the amount of time that is diverted from agricultural activities into care provision is enormous. In some cases the time is almost 50% more than it would take to care for a non-HIV/AIDS patient (Woelk, 1996). This is because HIV/AIDS is so debilitating that during the stage of terminal illness the patient is emaciated and is unable to perform even simple tasks such as bathing. A non-AIDS patient, in contrast, is usually able to bathe himself and fetch water. Hence a caregiver looking after an AIDS patient has little time left to engage in agricultural activities.

In most sub-Saharan African countries, crop production is being negatively affected by this labour diversion as the majority of the caregivers are women, who are primarily responsible for the bulk of agricultural production (Bollinger and Stover, 1999). When the household head falls sick, the wife takes the burden of taking care of her husband and more often than not, ends up without time to engage in crop production. According to Rugalema (1999), women caregivers can sometimes spend 75% of their time caring for an infected household member, leaving only 25% of the time to pursue agricultural activities. Hence land preparation, ploughing, sowing, weeding and harvesting are not

done properly or in time, resulting in reduced production levels on the household farm. Diversion of household labour from agricultural production occupations to caregiving activities is thus one of the key ways in which HIV/AIDS is affecting the viability of smallholder agriculture in sub-Saharan Africa.

2.5 The diversion of cash resources from agricultural investments

HIV/AIDS is affecting smallholder agriculture in sub-Saharan Africa by diverting cash resources from agricultural investments to meet medical expenses for a sick household member or for funeral expenses when the member dies.

2.5.1 Diversion of cash resources to cover costs for HIV/AIDS treatment

In sub-Saharan African countries, most smallholder farmers are usually not covered by medical care systems (FAO, 1994). This means that when a household member gets sick, the medical expenses are paid out of the family savings. However when the sick member is bedridden, the costs of medical care are so enormous that even the household savings get exhausted. According to Bolinger and Stover (1999) the occurrence of an HIV/AIDS related illness within the household sometimes result in medical expenses that are five times higher than those expenses for a non-HIV/AIDS illness. Cash, which in the absence of HIV/AIDS illness, could have been used to purchase agricultural inputs such as fertilisers, seeds, pesticides and herbicides, is diverted to pay for medical costs of consultation and drugs. Ultimately the diversion of cash resources from agricultural investments results in crop production being undertaken with minimum input requirements.

Shortage of purchased seeds, for example, causes households to use poorly preserved seeds from the previous season's crop and this usually yields poor harvests (Muchunguzi, 1999). Weeding, which is labour intensive, is also delayed or ignored resulting in high competition for nutrients and water between the weeds and planted crops. This leads to reduced crop yields through stunted growth. During harvesting and when household labour falls below optimum levels due to HIV/AIDS illness, cash resources are usually used to hire extra labour. However, without adequate cash resources, crops may not be harvested in time and some remain in the fields to be destroyed by weevils, ants and animals or rain.

2.5.2 Diversion of cash resources due to AIDS death

When an HIV/AIDS infected person dies, the surviving household members are faced with the task of meeting expenses associated with the funeral. A household with an AIDS related death faces a great burden as in most cases resources would have been exhausted during the period of care provision. Hence funeral expenses take away the little cash that may have been left to sustain agricultural operations. Hunter *et. al.,* (1993) argue that the diversion of cash resources from agricultural production causes low investments in agricultural assets such as ploughs, scothcarts and cattle that are essential for productive agriculture. In another study in Muleba District of Tanzania, Muchunguzi (1999) found that agricultural investment declined in the district by between 40-60 % among HIV/AIDS households. In such households, agricultural activities are not prioritised as families battle to pay accumulated medical bills and funeral expenses. Thus HIV/AIDS-

related deaths in sub-Saharan Africa have the potential to incapacitate households from carrying out agricultural activities long after the HIV/AIDS patient (s) has died.

The diversion of cash resources means that HIV/AIDS-affected households concentrate on growing crops that do not require much fertilisers, pesticides and herbicides. Hence the household reduces or ceases growing crops such as cotton and tobacco, which are easily attacked by pests and diseases and require a heavy capital outlay. Should the HIV/AIDS pandemic continue unchecked, sub-Saharan Africa is likely to see an even more narrower range of crops being grown than is the case now (Donahue, 2002).

2.6 The loss of agricultural knowledge, expertise and management skills

Farming in smallholder agricultural farms does not only depend on physical labour, but also on the knowledge and agricultural skills acquired over time (Lastarria-Cornhie, 1998; Woelk *et. al.*1996; FAO, 1994). Thus when a household member dies of AIDS, it labour as well as the agricultural knowledge and management skills of the deceased are also lost.

2.6.1 Loss of agricultural knowledge and skills

During their agriculturally productive years, prime adults put their knowledge and skills into practice to produce crops in the fields. The younger members of the household are taught these skills as well as observing their parents producing. It is these children that take over farming operations when their parents retire due to old age. In this way both traditional and modern agricultural knowledge and skills are passed from one generation to the other. However the advent of HIV/AIDS has disrupted, distorted and in some cases

completely stopped this inter-generational transfer of knowledge and skills. This has, in many sub-Saharan African countries, led to the loss of indigenous farming knowledge, methods and specialised agricultural skills (Barnett, 2004).

When parents are seriously ill or die prematurely because of HIV/AIDS, their skills may not be transferred to their children or other relatives. The end result is that they die with their knowledge that would have been the cornerstone of crop production within the household. These essential farming practices that are lost include traditional methods of weeding, mulching and pruning, which will be completely stopped or at best inadequately practiced, by the surviving household members (Haslwimmer, 1994). As Barnett (2004) observes, the transfer of agricultural knowledge from parents to children is being severely undermined especially in areas of high HIV/AIDS prevalence and the ultimate results are a decrease in both crop quality and quantity.

2.6.2 Loss of management and decision-making skills

The HIV/AIDS disease, through illness and death, is depriving households of members who may have had a wealth of experience in agricultural management and decision-making. In some households, where the household head would have been the sole decision maker in agricultural matters, his/her premature death leaves the household with the burden of making agricultural decisions that they are not familiar with. These agricultural decisions include when to plough and what to plant. Such crucial decisions determine the viability of the agricultural enterprise. Incorrect or delayed agricultural decisions severely impede the household from carrying out successful farming operations. Female and orphan-headed households that result from AIDS deaths,

sometimes have little or no knowledge of what to do or when to do it. As Du Guerny (2000) observe, surviving members may not even know where to access agricultural advice, how to get it, where to get loans from or how to market their produce.

2.7 The loss of agricultural extension services

Farming knowledge, skills and expertise in smallholder agriculture are not always acquired through inter-generational transfers from parents to children. Rather, some of the knowledge and skills are acquired from agricultural extension services. Most governments in sub-Saharan African countries supply valuable agricultural expertise to smallholder agriculture through their Ministries of Agriculture (FAO, 1995). Through farmer schools, farmers' interest groups, or visiting individual farmers, agricultural extension workers equip farmers with valuable agricultural information. However the provision of these services is being threatened by HIV/AIDS through reducing the time available to the extension workers to do their job or the death of household heads.

2.7.1 The loss of time to deliver agricultural advice, knowledge and expertise

In areas of high HIV/AIDS prevalence, local extension workers have less time to carry out their assigned duties due to the increases in deaths within their area of operation. As Haslwimmer (1994) point out, local extension workers in areas of high HIV/AIDS incidence may spend 20-40 % of their working time attending funerals. This means that they have less time to carry out field demonstrations. In some cases the local extension workers are themselves infected by the HIV/AIDS disease and are unable to work. Du Guerny (2000) further clarifies this issue when he says that in many African countries, local extension workers frequently absent themselves from work to attend funerals, to

care for their own sick or even when they themselves are sick. Shortage of time thus result in the decrease in the efficiency of the transfer of knowledge and agricultural skills to the farmers, whose farming activities are therefore unlikely to improve.

2.7.2 Loss of household heads

Within the household, the HIV/AIDS disease is also curtailing access by household members to agricultural extension services in sub-Saharan Africa. This usually happens in cases where the household head, accesses extension services die. Surviving members usually have no knowledge of where and how to access agricultural extension services. Agricultural activities on the household farm are therefore inadequately carried out, resulting in drastic lowering of agricultural produce. The absence or inadequacy of agricultural extension services is thus, according to FAO (1998), one of the major challenges facing smallholder agricultural viability in many sub-Saharan African countries.

2.8 The loss of off-farm income

In sub-Saharan African smallholder agricultural systems, it is very rare to find all members of the household being directly engaged in farming activities alone. Some members may not directly partake in agricultural production, as they are either employed or self employed in non-agricultural economic activities outside the household farm. Such household members are important and constitute an integral part of the household farming system (Topouzis and du Guerny, 1999). This is because they contribute their off-farm income towards agricultural production. These remittances go a long way in helping the household pursue agricultural activities as some of the money is used to

purchase necessary household farm inputs like seeds, fertilizers, chemicals and to pay for hired labour.

HIV/AIDS is reducing these remittances in a number of ways. When an individual who is working away from the household farm is struck by an illness, s/he usually returns home to be cared for until s/he dies (Cohen, 1998). This does not only result in the loss of the remittances previously supplied by the now sick member, but also in overspending by the household while caring for the infected (Economic Commission for Africa, 2000). HIV/AIDS is thus a double-edged sword that stops remittances to the household, and at the same time saddles the other members of the household with the burden of using their meager resources to look after the sick member.

2.9 Food security, nutrition and health

From the preceding discussion on the impacts of HIV/AIDS on crop production, it is clear that a decline in the quality and quantity of crop yields has deleterious effects on household food security, nutrition and general health conditions of the household. In severely affected HIV/AIDS households, significant declines have been observed in household food security and nutrition (De Waal, 2002; Food Economy Group, 2002; Cohen, 1998; Topouzis, 1998). Food insecurity is resulting from the decline in harvested crop quantities. What is making the HIV/AIDS disease unique in its impact on household food security is the scale of resource depletion that it causes when it affects households in terms of both human and cash resources. Cash is used to buy alternative foodstuffs when the household does not produce enough. When a household member eventually dies of AIDS, the household is sometimes left unable to farm properly resulting in heavy reliance

on less labour intensive starchy staples like maize, cassava and sweet potatoes. Household members, particularly the younger ones progressively become undernourished and are unable to work on the farm, leading to an even more precarious situation in household food security.

Food security and household nutrition also decline when the household head or parents die, as is the case in HIV/AIDS illness and death. The remaining household members are usually unable to feed themselves adequately. Food consumption within the household declines and some children are taken in by the extended family to ease the burden of the affected household. Within the extended family where the orphans are absorbed, the increase in the number of mouths to feed however increases food insecurity. Members in the extended family thus face the threat of food shortages and risk being malnutritioned.

2.10 Increase in the prevalence of orphans, household dislocation

The major difference between an AIDS and a non-AIDS death is that in households where an AIDS death occurs, both parents are likely to die within a short period of time because of the sexually transmitted nature of the disease. This death of both parents is resulting in the increase in the number of orphans within households. The orphans are being left on their own, the elder ones assuming parental roles to their younger siblings. These older children take over the duties previously done by their late parents of feeding and even clothing the younger ones. In many cases however, the household dislocates as children are divided or assigned to different families within the extended family network for upkeep (Economic Commission for Africa, 2000).

Within the extended family network it has also been shown that the cost of feeding, clothing and educating these children is proving to be enormous and unaffordable (FAO, 2000). Ultimately when the host families can no longer afford to buy uniforms, books and to pay school fees, the children are inevitably withdrawn from school. The HIV/AIDS pandemic is thus causing havoc in smallholder agricultural systems in sub-Saharan Africa by creating large numbers of orphans whose livelihoods can not be guaranteed under the present conditions of high HIV/AIDS prevalence.

2.11 HIV/AIDS and coping mechanisms in sub-Saharan Africa

The impact of HIV/AIDS in agriculture through morbidity and mortality is putting households under stress. When individuals suffer from an AIDS-related illness and die, their families are affected by the immediate reduction in household resources and welfare. The household losses the deceased individual's earning capacity when s/he dies (Pitayanon, Kongsin and Janjareon, 2003). Families however are not remaining passive. Rather they are acting to minimise the impact of the disease on their overall welfare. When individuals first become ill, they work less and seek medical care. Increased medical expenses mean that fewer resources are available for the rest of the family to meet their basic needs. As a result, other family members reorganize their time to minimize the income loss and smooth out consumption. Studies carried out in different parts of sub-Saharan Africa (SADC/FANR, 2003; Mutangadura, 1999; Rugalema, 1999; SAFAIDS, 1999; Tibaijuka, 1997) have shown that households may develop different types of strategies designed to mitigate the impacts of HIV/AIDS. These strategies range from those that are targeted at maintaining household food security, widening the

household's resource base and trying to minimise the impacts of labour shortages caused by HIV/AIDS illness and death.

2.11.1 Maintaining household food security

The greatest preoccupation of the majority of the households that are affected by the HIV/AIDS pandemic is to maintain sustainable food security systems in their homes (Donahue, 2002). This is done by substituting more expensive foods like bread with cheaper food commodities like porridge. A study carried out by SAFAIDS (1999) in Zambia found that besides buying less expensive food alternatives, households were going to the extent of substituting purchased relish with indigenous or wild vegetables as a coping strategy. These non-purchased food alternatives tremendously help HIV/AIDS-affected household as some manage to save the little income that they generate for other pressing needs. Other households have been shown to have to save the available food in the household by reducing the number of meals consumed from three to two per day. In helpless situations of critical food shortages, some households in sub-Saharan Africa have resorted to sending children away to live with wealthier relatives. Households on the verge of starvation however have resorted to begging as a survival strategy.

2.11.2 Widening the household resource base

Some households that can not meet their household food requirements through agricultural production because of HIV/AIDS seek to widen their resource base by engaging in other income-generating activities such as beer brewing, firewood collection or working in the neighbours' fields (Mutangadura, 1999). While some may migrate to urban areas to look for employment, others resort to selling their assets to raise income

for food, clothes and medical expenses. Rugalema (1999a) in a study carried out in Bukoba (Tanzania) revealed that communal farmers sold assets like cattle and other agricultural equipment to raise funds for medical as well as funeral expenses.

2.11.3 Coping with household loss of labour

The most logical step in mitigating the shortage of labour is to hire labour from the surrounding areas. However as Rugalema (1999) points out, it is only those households that have cash resources at their disposal that afford to do so. Those that can not afford to hire labour are resorting to decreasing the household cultivated area. Hunter *et al* (1993), in a study carried out in Masaka and Rakai (Uganda), revealed that 80.4% of the interviewed households reported a reduction in the use of land currently owned as a strategy to cope with labour shortages. Other affected households were also substituting labour intensive crops like cotton with less intensive ones like maize as a labour saving technique.

Maintenance of household food security, widening of household resource base and reducing area under cultivation are all coping strategies that have been and are still being used by HIV/AIDS affected households in sub-Saharan Africa. Through these coping strategies, households are able to persevere and maintain fairly stable livelihoods. However as Rugalema (1999) argues, these HIV/AIDS affected households never fully cope in the sense that they cannot simply return to some semblance of normality following the HIV/AIDS shock. Rather HIV/AIDS affected households enter a downward trajectory of struggle. De Waal and Tumushabe (2003) make a similar case,

arguing that HIV/AIDS affected households may escape complete demise in the face of food shock, but cannot escape the longer-term downward trend in food security.

2.12 HIV/AIDS and communal agriculture in Zimbabwe

Zimbabwe has a serious HIV/AIDS pandemic. It has an adult prevalence rate of 24.6% (UNAIDS, 2004; Ray and Kureya, 2003; Poverty Reduction Forum, 2003). The potential impact of HIV/AIDS in Zimbabwe is enormous because the country is expected to lose about 23% of its agricultural labour force by 2020 (UNAIDS, 2002). What makes the impact of the disease in Zimbabwe so severe is that agriculture forms the backbone of the Zimbabwean economy in which over 70% of the population is directly or indirectly dependent for employment, food and other forms of livelihood (van Liere, 2002). About 7.5 million Zimbabweans directly depend on agriculture for employment, while a further 1.5 million indirectly depend on it through industries and services that require agriculture as a source of raw materials, or as a market for industrial products that they produce (Chenje et al, 1998). Moreover the sector contributes 15-20 % of the country's Gross Domestic Product and accounts for 40-50% of the total yearly exports (Whiteside, 1998).

In the agricultural sector, it is within the communal smallholder agricultural sector that the majority of the Zimbabwean people live. Already bedeviled with problems resulting from high population densities (soil erosion, land fragmentation) communal smallholder agriculture in Zimbabwe is vulnerable to HIV/AIDS because, unlike the highly mechanized commercial agricultural sector, communal smallholder agriculture is labour intensive and relies heavily on labour that is supplied by the household (Laver, 1999). It

is this heavy reliance on household labour that makes communal smallholder agriculture highly vulnerable to HIV/AIDS induced labour shortages.

2.13 Impacts of HIV/AIDS on communal agriculture in Zimbabwe

Although the linkages of HIV/AIDS to agricultural production have been widely acknowledged in Zimbabwe, not much has been done to research on the impacts of the epidemic on smallholder communal agriculture in the country (Poverty Reduction Forum, 2003; Munyombwe, Pfukenyi and Ushewokunze, 1999; Ncube, 1999; Kwaramba, 1997). Often, poorly or inadequately researched media coverage of HIV/AIDS and agriculture has tended to either overestimate or underplay the disease's impact on communal smallholder agriculture (SADC/FANR Vulnerability Assessment Committee, 2003). Some of these studies (e.g. Munyombwe, Pfukenyi and Ushewokunze, 1999) have concentrated on livestock production systems. Few have attempted to study the differential impacts of the epidemic in different geographical areas or to concentrate on crop production systems only, so as to find out if, how and why the impacts of the epidemic vary within the country. Knowledge of the impacts of HIV/AIDS on communal crop production systems in the country has therefore remained largely unknown or has been at best speculative.

2.14 Impact of HIV/AIDS on crop production systems in Zimbabwe

Few studies that have been carried out in the country indicate that HIV/AIDS is impacting negatively on communal crop production systems (SADC/FANR Vulnerability Assessment Committee, 2003). In a survey carried out by Ncube (1999) in Gweru, it was found out that some lands were being left uncultivated because of lack of labour caused

by HIV/AIDS. Draught power can not be used to compensate for these labour shortages as cattle are also being sold to cater for medical and funeral expenses. This study however was too descriptive and does not reveal much on the impact of the HIV/AIDS. Moreover the survey makes some general statements about the impacts of HIV/AIDS on agricultural production that are not backed by empirical evidence. Despite these shortcomings, the study however gives an insight into the impacts of the disease on smallholder crop production systems.

Another study on the impacts of HIV/AIDS on smallholder agriculture in Zimbabwe was done by Kwaramba (1997), in Manicaland province. In his report prepared for the Friedrich Ebert Stiftung foundation, Kwaramba argues that the HIV/AIDS epidemic in the province is responsible for harvest declines of 54%, 52% and 51% in maize, cotton and sunflower crops respectively. These declines were experienced in both dryland agriculture and in irrigated lands, especially within the resettlement areas. These declines he points out, are a result of labour shortages and shortages of purchased inputs. However there is no indication in the report as to the period within which these declines occurred or whether the shortage of inputs is due to resource diversion due to HIV/AIDS, shortage of the inputs from suppliers or due to the general increase in the prices of the inputs, which resulted in the farmers being unable to purchase them. Although the report mixes data from communal areas and irrigated resettlement areas, it gives valuable data into the possible impacts of the HIV/AIDS disease in communal areas.

2.15 HIV/AIDS and coping strategies in communal areas

Not much work has been done in Zimbabwe to try and identify the coping strategies being used by households to mitigate the impacts of the HIV/AIDS pandemic in smallholder communal agricultural systems. In one of the few studies carried out, Ncube (1999) in Gweru, asserts that HIV/AIDS affected households in the communal areas adopt a variety of coping strategies such as reducing their cultivated area, concentrating their labour on areas around the homestead and even withdrawing children from school to help in the household farm. There was however no attempt to find out whether the coping strategies employed are effective in mitigating the impacts of the HIV/AIDS pandemic.

2.16 Summary

The Chapter has established the link between HIV/AIDS and agriculture in the developing world of sub-Saharan Africa. It has reviewed the impacts of HIV/AIDS in sub-Saharan Africa and has shown that HIV/AIDS is affecting crop production systems through an increase in morbidity and mortality associated with the disease. The increased illnesses and deaths are resulting in reduced quality, quantity and variety of crops that are being grown. In Zimbabwe the chapter has reviewed the scarce literature that exists on the subject. It has however been pointed out that a lot of research still needs to be done if the sectoral and area specific impacts of HIV/AIDS on communal crop production systems is to be fully understood. Moreover the few studies that have been done have tended to dwell mostly on the resulting impacts and ignored methodological issues in dealing with HIV/AIDS and agriculture. This lack of information on methodological issues and about the impact of HIV/AIDS on communal agriculture in Zimbabwe thus creates a strong case for an academic enquiry into the subject.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This Chapter gives a background on the study areas, elaborates on the sources of data for the research, the sampling procedures employed to collect primary data, and the data analysis methods.

3.2 The study sites

3.2.1 Kandeya ward

Kandeya Ward, which lies in Zimbabwe's farming region III, is located in Mt Darwin District of Mashonaland Central Province, close to Mt Darwin town, 157km North of Harare (Figure 3.1, 3.2 and 3.3).

3.2.1.1 Physical setting

Kandeya ward receives 650-800mm of rainfall per annum. The rainy season begins in late November and ends in March while the dry season extends from April to November. Mid-season dry spells and high temperatures also characterize the rainy season. The soils in the ward are mostly infertile sandy and sandy loams derived from igneous parent material that require heavy inputs of manure and fertilizer for successful crop production.

3.2.1.2 Socio-economic base

Crop production and animal husbandry, which are labour intensive, are the main socio-economic activities in Kandeya ward. Crops that are grown in the ward include maize, cotton, tobacco, roundnuts, groundnuts, sunflowers, paprika and cassava, while the

livestock consist of cattle, goats, pigs and poultry. The majority of the people in the ward depend heavily on agriculture for their livelihood. However other households also supplement their agricultural income by engaging in urban economic activities in the nearby Mt Darwin town.

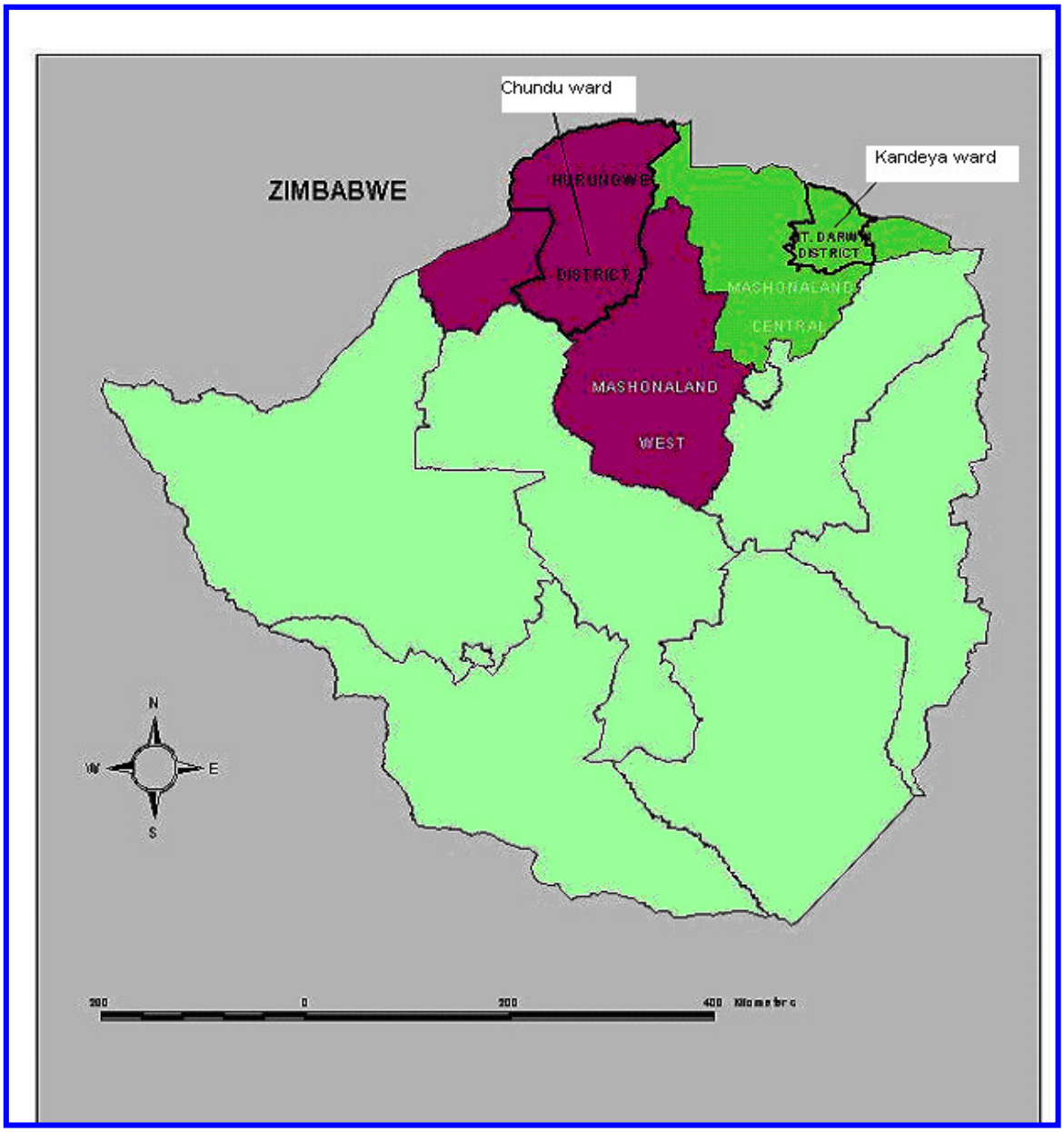

Figure 3.1: The Location of Chundu and Kandeya wards

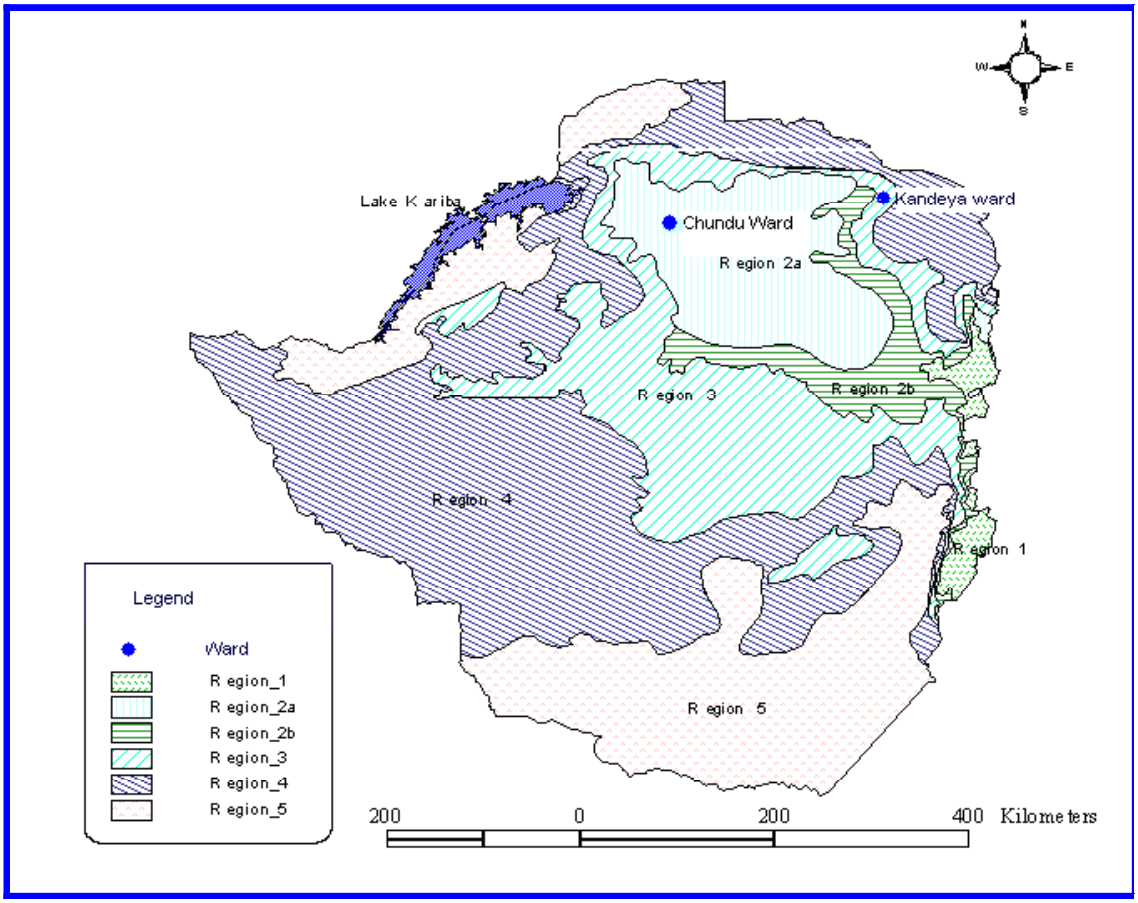

Figure 3.2: The location of Chundu and Kandeya wards in Zimbabwe's farming regions
(Source: Chenje, Sola and Paleczy, 1998, p147)

3.2.1.3 Population dynamics

There are 1554 households in Kandeya ward with a total population of 7685 people and an average household size of 5 persons (CSO, 2002; Mt Darwin District Council; 2002). The ward sustains a high population density of 65 persons/km^2. This is almost two times higher than the provincial average of 35 persons/km^2 (CSO, 2002).

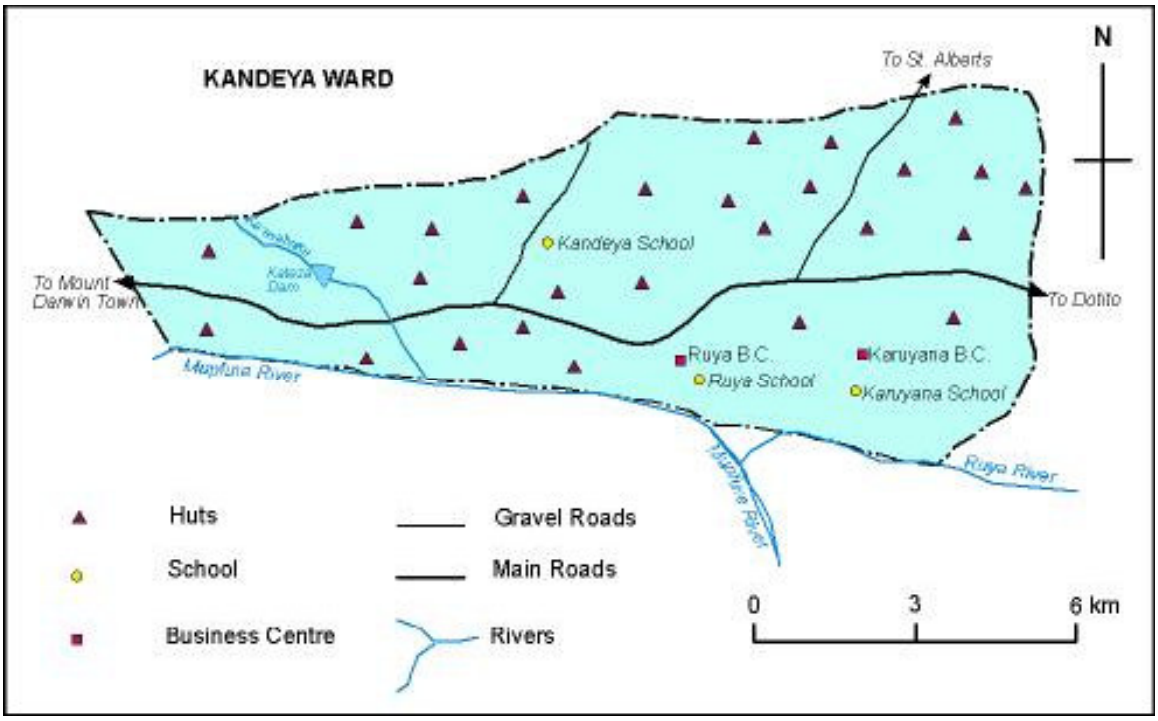

Figure 3.3: Kandeya Ward

3.2.1.4 HIV/AIDS prevalence rates in Kandeya ward

Kandeya ward was selected for study because of its high HIV/AIDS prevalence rate and low agricultural potential. HIV/AIDS estimates, based on surveillance of pregnant women in Mt Darwin District, indicate that the adult HIV prevalence in the area is 36.6%, which is 12.6% higher than the average national HIV/AIDS prevalence rate of 24.6 % (Ministry of Health and Child Welfare, 2002). Moreover, according to statistics from Mt Darwin District Hospital (2002) sexually transmitted infections (STI's) within the ward have also generally been on the increase (Figure 3.4).

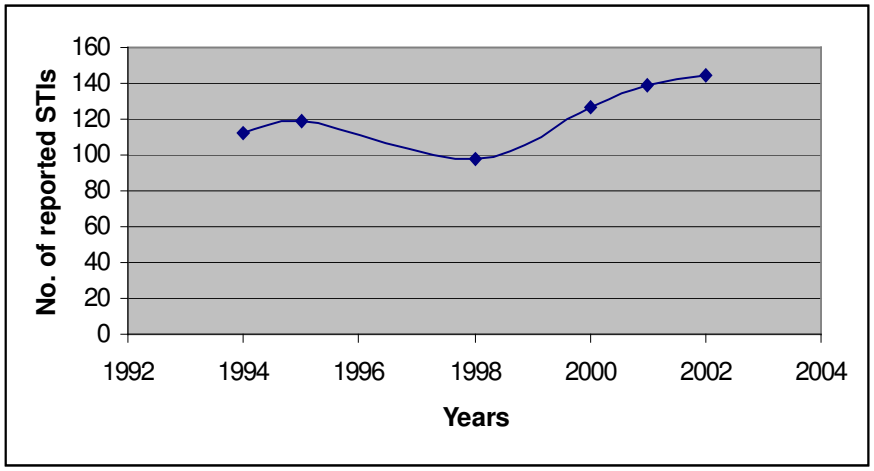

Figure 3.4: Number of Reported STI cases in Kandeya ward (Source: Mt Darwin STI Records, 1992-2002)

According to Robertson (2002) the prevalence of STIs in an area is a good indicator of HIV/AIDS prevalence in an area as HIV and other STIs are transmitted mostly in the same way through sexual intercourse. Moreover HIV is transmitted more easily in people with STIs than in those without. These statistics indicate the vulnerability of the population of Kandeya to HIV/AIDS as the virus is easily transmitted in individuals who have other sexually transmitted infections such as syphilis and gonorrhoea.

The high prevalence of STI's and HIV/AIDS in the ward is best explained by the historical social setting of Kandeya ward. Within Kandeya ward lies the former 2.1 Infantry Battalion Camp of the Zimbabwe National Army. The presence of the camp in the ward until 1995, when it was disbanded, gave rise to a booming prostitution industry that served the sexual needs of most of the soldiers who were separated from their spouses. Some commercial sex workers even sought lodgings in Kandeya and Makaza villages, where the rentals were cheaper than in Mt Darwin town. Prostitution in the area

thus became rife and STI's spread rapidly. Ten years after 2.1 Infantry Battalion camp was closed, prostitution is still rife and HIV and STI cases continue to rise, hence the high HIV sentinel survey estimates. Kandeya ward was thus purposively included into the study on the basis of its high HIV prevalence rate to enable comparisons with Chundu ward, which lies in a different agro-ecological region and has a low estimated adult HIV prevalence rate.

3.2.2 Chundu ward

Chundu Ward, which lies in Zimbabwe's farming region II, is located in Hurungwe District of Mashonaland West Province, approximately 60km from the nearest town of Karoi, and about 260km North West of Harare (Figures 3.1; 3.2 and 3.5).

3.2.2.1 Physical setting

Chundu ward receives an average of 750-1000mm of rainfall per annum, which is more than the amount received in Kandeya ward. The rainy season starts in mid-November and ends in March. The rainfall in Chundu ward is usually more reliable than that of Kandeya ward and is heavily influenced by the movement of the Inter-tropical Convergence Zone. Moderate temperatures throughout the rain season means that there is more effective rainfall in Chundu than in Kandeya ward, where temperatures are high and most of the water in the soil is lost through evapotranspiration. The soils in the ward range from sodic to loams that are more fertile than the sandy and sandy-loam soils of Kandeya ward. The sodic soils are however very fragile and thus easily become infertile if poorly managed. A combination of more rainfall, moderate temperatures and fairly fertile soils mean that Chundu ward has more agricultural potential than Kandeya ward.

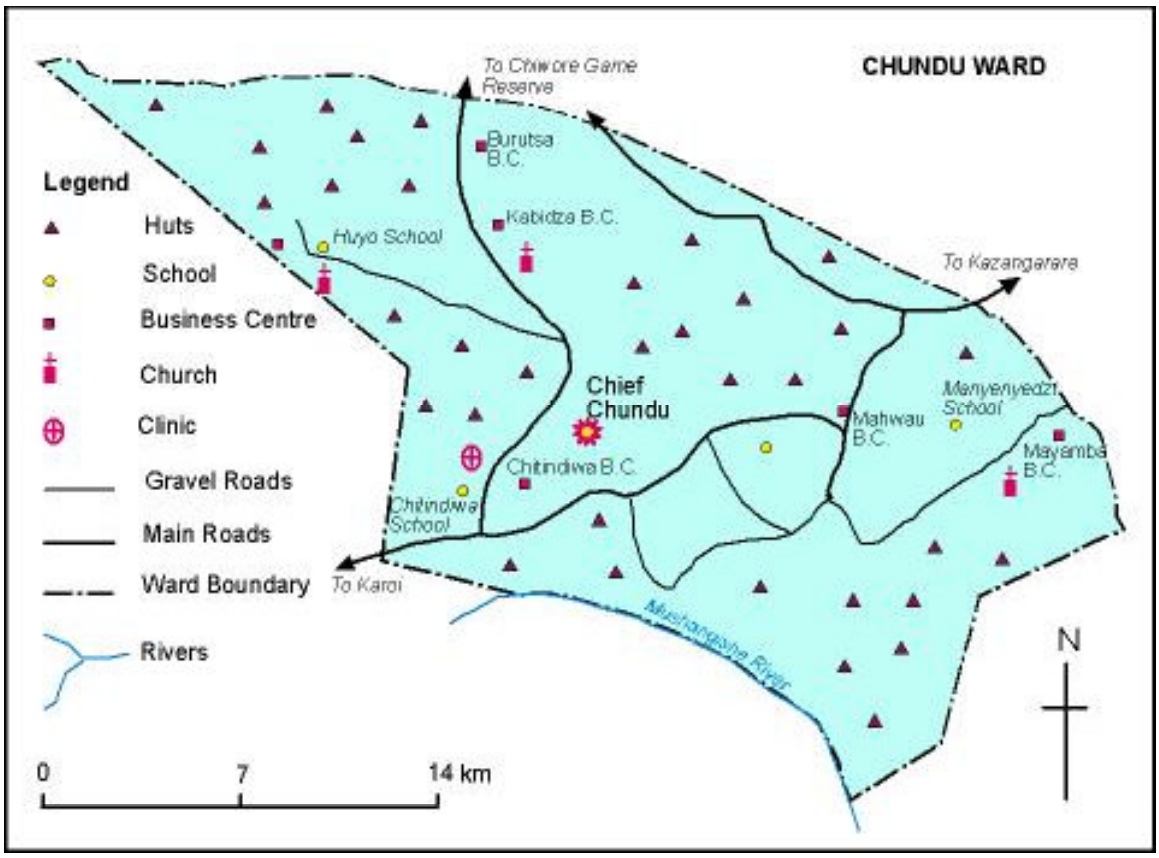

Figure 3.5: Chundu Ward

3.2.2.2 Socio-economic base

Chundu ward is located in farming region II, which is considered one of Zimbabwe's best agricultural regions and the country's bread-basket. Livestock kept in the ward includes mostly goats, donkeys and poultry. Less than 10% of the people in Chundu ward own cattle mainly because the area is *tsetse*-infested. Crops grown in Chundu ward similar to those grown in Kandeya and these include maize, tobacco, cotton, groundnuts, roundnuts, paprika and cassava. Farming is the dominant economic activity in Chundu ward and provides a livelihood for the majority of the people in the ward. Most households in the

ward practise subsistence farming, that is production for household consumption and a small amount for marketing.

3.2.2.3 Population dynamics

There are 9053 people and 1882 households, with an average household size of 5 persons per household (CSO, 2002; Hurungwe Rural District Council, 2002). Chundu ward has a low population density of 30 persons/km^2. Although this population density is higher than the Mashonaland West provincial figure of 22 persons/ km^2, it is almost two times lower than that of Kandeya ward which is 65 persons/km^2.

3.2.2.4 HIV/AIDS prevalence rates in Chundu ward

Chundu ward was purposively selected for this study because of its low HIV prevalence rate and high agricultural potential. HIV/AIDS estimates, based on surveillance of pregnant women in Hurungwe District, put adult HIV prevalence in Chundu ward at 18.5 %, which is 6.1 % below the average national HIV/AIDS prevalence rate of 24.6 % (Ministry of Health and Child Welfare, 2002). This contrasts with the situation obtaining in Kandeya ward, where the HIV/AIDS adult prevalence rate is estimated at 36.6%. Moreover statistics from Chitindiva Clinic (2002) show that sexually transmitted infections (STI's) within the ward are lower than in Kandeya ward and are continuing to decline (Figure 3.6). The fact that Chundu ward has a low HIV/AIDS prevalence rate and high agricultural potential enables comparisons to be made with Kandeya ward, which has a high HIV/AIDS prevalence rate and a low agricultural potential. Moreover the fact that Chundu and Kandeya wards lie in different geographic locations and farming regions

also allows useful comparisons to be made on how farmers in these different areas respond to the HIV/AIDS pandemic as the impact of HIV/AIDS on agriculture can not be generalized even within countries.

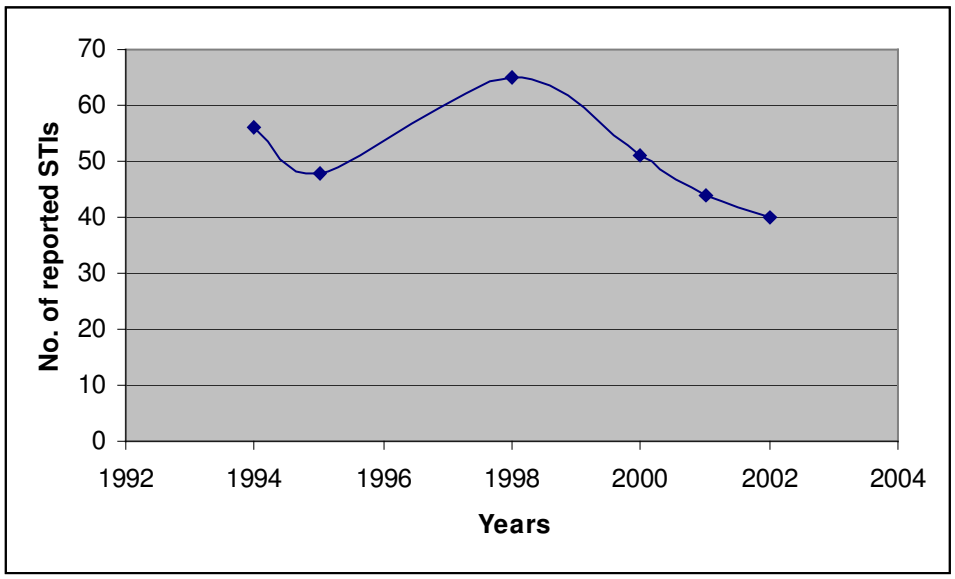

Figure 3.6: Number of Reported STI cases in Chundu ward (Source: Chitindiva Clinic STI Records, 1994-2002)

3.3 Secondary data sources

Secondary data sources were accessed from books, journals, pamphlets, population bulletins and magazines that were available in the University of Zimbabwe and the Institute of Development Studies (IDS) libraries, the Ministry of Health and Child Welfare (Zimbabwe), the National AIDS Council (Zimbabwe) and, SAFAIDS, CSO and UNDP resource centres and the Internet. These sources also provided the basis for the literature review relating to the impact of HIV/AIDS on agriculture, particularly in sub-Saharan Africa where the disease is most prevalent. The collection and review of

secondary data facilitated the conceptualization of this study and the development of the framework for field data collection and analysis.

Sexually transmitted infections (STI) data for Kandeya ward for the years 1995, 1998, 2000, 2001 and 2002 were obtained from Mt Darwin District Hospital and from Chitindiva clinic, STI data for Chundu ward for the years 1994, 1995, 1998, 2000, 2001 and 2002 were collected.

3.4 Primary data sources

Primary data were collected in both Chundu and Kandeya wards. Quantitative as well as qualitative methods were used to collect primary data on HIV/AIDS and agriculture in the wards. The two data collection methods were used because the quantitative approach alone would have been inadequate on a subject as sensitive as HIV/AIDS, particularly in the rural areas where the disease is highly stigmatized. As has been argued by Campbell and Fiske (1959, p268):

> *More than one method of data collection should be used as a measure of validation to ensure that any variance reflected is that of the trait and not of the method* and that the *results obtained are valid and not merely a methodological artifact.*

Methodological triangulation yielded a number of advantages for this study. First, the quantitative method was able to indicate trends in household expenditure, crop production (i.e. changes in size of cultivated area, harvested and marketed crop quantities) and preference to coping mechanisms. It was able to reveal how much money

households were spending on medical consultation, treatment, transport and on funeral costs. Secondly, the quantitative method also indicated which crops in Chundu and Kandeya wards were experiencing increases or declines in cultivated area, harvested and/or marketed quantities and by how much.

With regard to qualitative analysis, the method assisted in explaining information and aspects which are not quantifiable, but noted to be significant through observation and opinions and feelings expressed by participants in focus group discussions and other stakeholders in the study.

Additionally, participants to the focus group discussions in the study areas were more eager and willing to discuss the impact of HIV/AIDS on communal agriculture. This is because the questions during the focus group discussions focused on the study areas in general rather than on specific households. The fact that participants were more eager to talk during the focus group discussions resulted in a lot of useful information being gathered during the sessions. Lastly, the focus group discussions served as a platform to verify the authenticity of trends emerging in the data collected through the household questionnaire and also to collect new data that had not been captured through the questionnaires. The use of both the quantitative and qualitative data collection methods in this study thus enhanced the validity and quality of results.

3.5 Sampling procedures

It was not possible to study all households in the study areas because of limited time and financial resources. Hence the need for sampling, which was conducted in the study areas.

3.5.1 The Sampling frames

Two sampling frames were selected for use in this study, one was Chundu ward and the other Kandeya ward. The sampling frame for Chundu ward consisted of all 1752 households in the ward, while that of Kandeya ward consisted of all 1441 households. The household was used as the primary unit of data collection and analysis because farming operations and decisions on these operations in Chundu and Kandeya wards are made at the household level. Moreover, if an illness or a death occurs, it is the household as a whole that directly bears the burden and costs of that illness or death, and not an individual.

3.5.2 The Sample Size

The sample size refers to the number of households that took part in the survey in the study areas. Cohen and Manion (1994) suggest that in research there is no fixed or rigid sample size and that the size. The sample should however contain representative sub-groups with enough numbers to provide a basis for comparison. Statistical procedures have thus been developed to select statistically acceptable sample sizes (see Appendix 1). Using these statistical procedures, 155 households in Kandeya and 188 households in Chundu ward were selected for the study, giving a combined total of 343 households. (10% of the total households in the wards). These sample sizes were considered adequate

for this study because as Payne (1983) points out, a survey that involves 5-10 % of the target population is fairly representative of the whole especially where the total units from which the sample is selected are less than 10 000. With a larger research budget however, a much larger number of households might have been sampled.

3.5.3 The sampling methods

Four sampling methods were used to select respondents who took part in this study. These are random, purposive, convenience and stratified random sampling as detailed in Table 3.1.

Table 3.1: Summary of sampling procedures in Chundu and Kandeya wards.

CHUNDU WARD				**KANDEYA WARD**			
Target group	**Sampling method**	**n**	**n as % of target group**	**Target group**	**Sampling method**	**n**	**n as a % of target population**
Households	Random area sampling	188	10%	Households	Random area sampling	155	10%
Household heads	purposive	188	10%	Household heads	Purposive	155	10%
Chiefs	purposive	1	100%	Chiefs	Purposive	1	100%
Councillors	purposive	1	100%	Councillors	Purposive	1	100%
Headsmen	convenience	8	60%	Headsmen	Convenient	7	50%
A.R.E.X officials	purposive	1	100%	A.R.E.X officials	Purposive	1	100%
Traditional healers	convenience	2	n/a	Traditional healers	Convenient	2	n/a
Focus Group Discussions	Random stratified	40	21%	Focus Group Discussions	Random stratified	40	26%
Health Official	Purposive	1	100%	Health Official	Purposive	1	100%

Note: n = sample size, n/a =not applicable

3.5.3.1 Random area sampling

Random area sampling was considered the most appropriate sampling method because Chundu and Kandeya wards had scattered settlements and no comprehensive household registers. The northings and eastings on the 1:50 000 topographical maps of the two wards were used to demarcate the area in Chundu and Kandeya wards into sampling grids (Appendix 10 and 11).

The sampling grids were identified on the ground by using the Global Positioning System (GPS). Within each grid square all the households were listed alphabetically and assigned numbers. By using the random number table, 10% of the households in each sampling grid were selected for inclusion in the overall sample of each ward.

3.5.3.2 Purposive sampling

Purposive sampling was used to select household heads on whom questionnaires were administered. From each sampled household, the household head was targeted for interview because the head is best placed to provide sufficient data on household crop production, and on expenses incurred during the period of illness and death of a household member. In the absence of the household head, the questionnaire was administered to the most senior member of the household present after a single call back.

Purposive sampling was also applied to select and interview key informants such as chiefs, councillors and A.R.E.X and health officials in the two wards. In Chundu ward, the only chief (Chief Chundu) and one councillor were interviewed, and likewise in Kandeya ward. These two chiefs and two councillors were purposively selected since, as

traditional and local leaders, they would provide invaluable data on the impacts of HIV/AIDS on agriculture in the respective communities under their jurisdiction.

The A.R.E.X official in each ward was interviewed because these were the only agricultural experts within the wards to provide technical agricultural data. In the health sector the nurse-in-charge at Chitindiva Clinic in Chundu ward and the Medical Director at Mt Darwin District hospital were selected for interview because, as heads of their respective institutions, they were better placed to provide information on STIs and HIV/AIDS in the study areas. Thus all these key informants were deliberately and purposively chosen on the basis of their being able to provide useful data in the research.

3.5.3.3 Convenience sampling

Convenience sampling was used to select headsmen and traditional healers for interview in both Chundu and Kandeya wards. Only those headsmen and traditional healers who were present in their homesteads during the survey period were interviewed. Eight and seven headsmen were interviewed in Chundu and Kandeya wards respectively, and four traditional healers (two in Chundu ward and other two in Kandeya ward). Headsmen were interviewed because, as community traditional leaders, they were usually in regular contact with households in their villages. They were therefore in a position to provide valuable information on the impacts of the HIV/AIDS pandemic in their respective villages and how the disease was affecting agricultural production. Traditional healers were interviewed to establish whether they were treating people infected with HIV/AIDS and how much they were charging for their services. It was necessary to find out these charges inorder to calculate the economic costs borne by the household when a household

member is sick. Such costs normally impact on agricultural production by diverting money that could have been used to purchase agricultural inputs.

3.5.3.4 Stratified random sampling

The random stratified sampling method was used to select participants for the focus group discussions. It was assumed in this study that HIV/AIDS impacted differently on different groups of people within the study areas. The selection of the participants therefore made sure that both HIV/AIDS-affected and non-HIV/AIDS households were represented in the focus group discussions. Inorder to achieve this stratification, households that participated during questionnaire survey within each ward were divided into two categories of HIV/AIDS-affected and non-HIV/AIDS households. By using the random number table, 80 household heads (40 from each ward) were selected to participate in the four focus group discussions held in both Chundu and Kandeya wards. In Chundu ward, each focus group discussion consisted of 10 household heads from HIV/AIDS-affected households and 10 from non-HIV/AIDS households. This was in accordance with the proportion in the ward where 48% of the households had experienced an HIV/AIDS illness or death. In Kandeya ward each focus group discussion comprised of 12 household heads from HIV/AIDS-affected households and 8 from non-HIV/AIDS households in line with the proportion of 62% and 38% for households affected by HIV/AIDS and those not affected by the disease in the ward respectively. The proportional composition of the F.G.D numbers was representative of the households that took part in the questionnaire survey.

3.6 The household survey

A standard questionnaire (Appendix 2) was administered to 188 and 155 household heads in randomly selected households in Chundu and Kandeya wards respectively. The questionnaire asked for socio-economic, health and agricultural output data from households in Chundu and Kandeya wards. The standard questionnaire ensured that respondents were asked exactly the same questions in the same sequence. The administration of a standard questionnaire had the advantage that responses could easily be recorded and comparisons made on data analysis. Questions were written in English and interpreted into *Shona* language during interview. Both closed and open-ended questions were included in the questionnaire. Closed questions dominated the questionnaire for ease of data capture and analysis, but open-ended questions were used where explanations were needed. The responses from the household questionnaires were coded and inputted into the SPSS and Microsoft Excel software packages for computer aided analysis.

Two research assistants with environmental health backgrounds were employed to help administer the household questionnaires. These research assistants were trained intensively for two days to ensure consistency in questionnaire administration so as to minimise interviewer bias. Part of the training for the research assistants included taking part in the pilot study. The administration of each questionnaire lasted 30-40 minutes.

3.7 Interviews with key informants

The interviews in Chundu and Kandeya wards consisted of a series of orally delivered questions, which were designed to solicit information on the extent of HIV/AIDS prevalence and the impact of the HIV/AIDS disease on crop production in the two wards. These interviews also collected data on the strategies being used by households in the wards to mitigate against the impact of the HIV/AIDS pandemic. The interviews served to collect new data and to also partly validate the information obtained from the household survey.

In Chundu ward, the key informants interviewed included one chief, one councillor, 8 headsmen, one A.R.E.X ward official, one Sister-in-charge, one ZINATHA area coordinator and one traditional healer (Appendix 4(a)). In Kandeya ward the researcher interviewed one chief, one A.R.E.X ward official, one councillor, 7 headsmen, 2 traditional healers and. one Medical Director at Mt Darwin District Hospital (Appendix 4(b)). The key informants were asked a set of semi-structured open-ended questions from interview guides (Appendix 5-8). These interview guides allowed the researcher to direct the interview in a coordinated way and to probe the respondents for more information and clarification where necessary.

3.8 Focus Group Discussions

The focus group discussions in Chundu and Kandeya wards were essentially qualitative data gathering sessions where the interviewer directed the interaction and inquiry on the impact of HIV/AIDS on agriculture using a structured discussion guide (Appendix 3). A tape recorder was used to record the proceedings of the focus group discussions and the

information on the tapes was later transcribed for inclusion in data capture and analysis. Four focus group discussions were conducted, two in Kandeya ward and two in Chundu ward. In Kandeya ward these were held at Kandeya Primary School and at headmen Makaza's homestead. In Chundu ward one focus group discussion was held at Chitindiva Primary School while the other was held at Mahwau Primary School. Each focus group discussion lasted $2^1/_2$-3 hours. Twenty people participated in each session of the focus group discussion, bringing the total number of the people who participated in all the four sessions in the two wards to eighty. Twenty people per session were regarded as a manageable size for the researcher and research assistants.

3.9 Field Observation

One of the major reasons for carrying out the research during the crop growing season was to enable the researcher to observe how agricultural production in the wards was being affected by the HIV/AIDS pandemic. In the two study areas, fields that were being left uncultivated (fallow) because of labour shortages due to HIV/AIDS illness and death were observed. It was also possible to observe how households affected by HIV/AIDS were coping with the impacts of the pandemic in terms of labour and food shortages. During the questionnaire survey, the researcher and the two assistants were also able to observe the sick person(s) and note down their disease symptoms for use in determining each household's HIV/AIDS status.

3.10 Pilot study

A pilot study was carried out in the study areas in September 2003. In Chundu ward the study was carried out in Mocho village where ten questionnaires were administered to ten

household heads. Mocho village was conveniently chosen for the pilot study as it was the closest to Chitindiva Primary School where the reseacher and research assistants were residing. The ten questionnaires were administered to the first ten households visited since the only requirement to be fulfilled was that the pilot study be held in the study area. Chief Chundu and headmen Mocho were interviewed as the senior traditional leaders in Mocho village, and one traditional healer was also interviewed in the ward.

In carrying out the pilot study in Kandeya ward, ten household questionnaires were administered to the ten household heads first visited in Kakeza village. The choice of Kakeza village for the pilot study was convenient in that the researchers were residing in Kakeza village during the study. Moreover within this village the researchers were assured of interviewing the chief who resided in the same village. Headmen Kakeza and one traditional healer were also interviewed.

The pilot study allowed the major research methods to be tested in the field. After the pilot study a number of changes were made to the questionnaire. A question that directly asked respondents whether anyone in the household had fallen sick or died of HIV/AIDS was removed and replaced with one that simply asked the respondents to describe the signs and symptoms of the sick or deceased member of the household. This was after it was discovered that respondents felt uncomfortable with the question and would not directly answer it. It was also discovered during the pilot study that household heads could not give the size of the area being cultivated in hectares, but in acres. The question was thus changed accordingly.

On soliciting for information on household income, it was discovered that respondents could give their total earnings per year in either monetary value (Z$) or in terms of the quantity of crops harvested or sold (e.g bags of maize or buckets of cassava harvested per year). The question was thus altered to accommodate this problem. Besides testing the major research methods, the pilot study also gave an opportunity for research assistants to be trained in conditions similar to those that would be encountered in the actual survey. During this pilot study, the researcher was able to observe the research assistants at work and to gauge whether their standard of questionnaire administration was sound enough to ensure the collection of adequate field data.

3.11 Timing of the research

The research, which consisted of both the administration of questionnaires, focus group discussions and interviews, was carried out during the period 1st-13th of December 2003 in Chundu and 14th-30th of December 2003 in Kandeya. It was timed to take place during the crop-growing season so that respondents could easily relate their agricultural activities to problems arising from the HIV/AIDS pandemic.

3.12 Data analysis

As explained earlier, data from household interviews were organized for computer-aided analysis. Data from focus group discussions was transcribed from the tape recordings of the sessions and classified according to the order of questions on the focus group discussion schedule and the most frequent views and opinions were tallied. Data from key informants was also classified according to the order of the questions on the

interview schedule and important quotes from interviewees were noted for direct citation in text discussion. Data collected from field observations was recorded separately and used in the analysis as appropriate.

3.12.1 Determination of the household HIV/AIDS status

The World Health Organisation (WHO) (2002) Guidelines for the Diagnosis of AIDS in Africa (Appendix 9) were used to identify HIV/AIDS-related deaths and illnesses. These guidelines used the verbal autopsy approach, which is a technique that relies on clinical assessment of signs and symptoms of the disease during terminal illness, reported retrospectively by a close caregiver. In this study, the respondents were asked to describe in detail the disease symptoms of the patient and/or the symptoms of the disease(s) that had resulted in the death of a household member and these were recorded on the questionnaires. Where death certificates were available, the information from the death certificate on the cause(s) of death was also recorded and used to aid the verbal autopsy approach. In cases where a sick household member was at home during the time of the interview, his/her disease symptoms were observed and recorded for classification on HIV/AIDS status. A qualified epidemiologist (medical practitioner) familiar with the classification of HIV/AIDS and two research assistants with environmental health backgrounds helped in determining whether the illness (es) or death(s) that had occurred within households in the wards were HIV/AIDS related or not. While some measurement of total household mortality was necessary in order to fully assess the impact of HIV/AIDS on households, the smallness of the sample and the absence of comprehensive

death registration data for the two areas made the estimation of total household mortality rates impossible.

3.12.2 Assessing the economic costs of HIV/AIDS on households

A standard cost analysis was carried out to ascertain the economic loss suffered by households because of HIV/AIDS related illnesses and deaths. These costs included financial costs resulting from the patient's illness, such as medical and travel costs, funeral costs upon the death of a member and losses suffered by the household due to the inability of the sick member and care-giver(s) to fully apply themselves in agricultural activities. It was necessary to ascertain these costs since they could impact heavily income available for purchasing agricultural inputs including paying hired labour, and on the time available for agricultural activities.

To find out whether HIV/AIDS was resulting in increased medical, travel and funeral costs for the household, null hypotheses on no significant differences in costs incurred between HIV/AIDS-affected and non-HIV/AIDS households were set and tested. To test the hypotheses, the Analysis of Variance (ANOVA) at probability value (p-value) of 0.05 for 95% confidence level was applied. Where the p-value statistic was equal to or greater than 0.05, the null hypothesis was accepted, and rejected when less than 0.05. The 0.05 level of significance was selected because it is the one that is most widely used and accepted in scientific research. The assessment of economic costs of HIV/AIDS on the households was limited to using ANOVA because the smallness of the sample precluded the use of more robust and complex statistical methods such as logistic regression. With a

larger budget, a larger sample could have been studied and more robust statistical methods used.

3.12.2.1 Medical costs

The medical costs incurred by households per year included the financial costs of hospital, clinic and private doctors' consultation fees, as well as the costs of purchasing prescribed drugs from surgeries, pharmacies and hospital dispensaries. Medical costs also included the amount of money that households paid to traditional and faith healers as well as for herbs and concoctions obtained therefrom.

3.12.2.2 Transport costs

Travel costs were calculated to capture the household expenditure in seeking medication for the patient. These included the costs of travel by bus to and from hospitals, clinics and traditional and faith healers. They also included the costs of hiring vehicles and even scotchcarts to transport sick members to medical facilities.

3.12.2.3 Funeral costs

The study sought to establish the costs incurred by the household due to the death of one of its members. These costs included the cost of the coffin, transport costs of the deceased from the mortuary, expenses on food consumed for the duration of the funeral and for grave construction.

3.12.2.4 Time costs of caregiver

The time lost by a caregiver of an HIV/AIDS patient was calculated to establish whether it differed significantly from that of a caregiver of a non-HIV/AIDS patient. This was done by estimating the average hours per day the caregiver is absent from work. It is hoped that such an analysis gives insight on whether the diverted time is adversely on to impacting on crop production.

3.12.2.5 Calculating foregone income of a deceased household member

To calculate foregone income (FGI) of the deceased, the total number of agricultural production years lost due to premature death were calculated. This was done by subtracting the age of the deceased at death (y), from the average age of retirement from productive agricultural activities, which in this study was assumed to be 60 years (60 years is the average figure used by A.R.E.X for retirement from agricultural activities). The number of years lost by the deceased were then multiplied by the annual earnings of the deceased before death to obtain total foregone earnings as shown in the formula below:

$$FGI = \Sigma(60 - y)\, x$$

Where: FGI= Foregone income

x =annual earnings of the deceased before death ($)

y= age of the deceased at death (years)

Source: Kwaramba (1997)

The average figure for the annual earnings of the deceased was arrived at by dividing the total household earnings in the 2002/2003 season by the average household size.

Although this method has the disadvantage that it does not take into account household changing productive capacity, it nevertheless serves to give an estimate of how much, at the 2002/2003 productive capacity, the household stands to lose in foregone income from lost production over the coming years.

3.12.3 Analysis of crop production

The impact of HIVAIDS on agricultural production in Chundu and Kandeya wards was estimated by assessing changes in cultivated area, harvested crop produce, marketed crop produce and general cropping patterns. This assessment established whether there were significant changes in the size of the crop cultivated area, harvested and marketed crop quantities between the 2000/2001 and the 2002/2003 agricultural season. Agricultural performances were compared to establish whether there were any statistically significant differences between HIV/AIDS-affected and non-HIV/AIDS households in, and between the wards. One-way Analysis of Variance (ANOVA) was used. Null hypotheses, stating that there were no statistically significant changes in the size of the cultivated crop area, harvested and marketed crop quantities between HIV/AIDS-affected and non-HIV/AIDS households were also tested. As with the assessment of economic costs of HIV/AIDS, the analysis of crop production was limited to the use of ANOVA because the small size of the sample precluded the use of more robust statistical analysis methods such as logistic regression.

3.13 Limitations of the study

In carrying out this research, the researcher was faced with a number of constraints that include suspicion by villagers on the intentions of the research, the sensitivity of the topic, the accuracy of records for household costs, as well as the reluctance by government officials to make available information related to crop quantities delivered to the G.M.B.

3.13.1 Suspicion on research intentions

It was difficult to convince some households that the research was for academic purposes only. This mistrust was mostly evident in Chundu ward, where six months prior to this research, a group of researchers funded by displaced large-scale commercial farmers had misrepresented their research intentions to the local people. It was alleged that while the researchers purported to carry out a research on how they could help communal farmers with agricultural inputs, their true intentions were to gauge communal farmers' views on the land resettlement process and to persuade them not to participate in the process. Thus this research was at first viewed with suspicion as it was also asking for information concerning agricultural production in the ward. With the support of the local chief and councillor, these suspicions were allayed by explaining fully to the villagers the purpose of the research before it was carried out.

3.13.2 Sensitive nature of research

The collection of information relating to HIV/AIDS illnesses and deaths was also a difficult task. This is because HIV/AIDS is a sensitive subject in the rural areas of Chundu and Kandeya wards where the disease is highly stigmatized. It was therefore

difficult to get people to admit that their relative(s) had died of HIV/AIDS. The majority of the respondents in the two wards would not openly talk or discuss about HIV/AIDS in their households. The research thus avoided using the terms HIV and AIDS in collecting data with the household questionnaire. Instead the terms morbidity and mortality were the preferred and most appropriate terminology during the collection of field data. However 5 household heads in Chundu ward and 11 in Kandeya ward openly admitted that some of their household members had died of AIDS. During focus group discussions it was discovered that participants were free to talk about the impact of HIV/AIDS on other households rather than their own.

3.13.3 Determination of household HIV/AIDS status

Another limitation of this study concerns the classification of households into HIV/AIDS-affected and non-HIV/AIDS households. Without confirmed AIDS blood tests, it was impossible to attribute sickness or death to HIV/AIDS with 100 % confidence. However for the purposes of this study, the retrospective autopsy method was considered adequate and reliable in determining the HIV/AIDS status of the household.

3.13.4 Accuracy of household cost records

It was discovered that communal households rarely kept accurate records of their income and expenditure. Therefore some of the costs had to be estimated. The fact that some of these estimates were based on memory recall may have decreased the accuracy of the data. However despite these limitations, the findings of this study are generally reflective of the impacts of HIV/AIDS in Chundu and Kandeya wards.

3.13.5 Reluctance by government officials to release information

Officials from the GMB at Vuti and Mt Darwin refused to release data on delivered crop quantities from their catchment areas, arguing that they had been instructed not to disclose such information to anyone by their parent Ministry of Agriculture and Lands. Hence it was not possible to compare the information on trends in marketed crop quantities as supplied by farmers against those actually delivered to the grain-marketing agency.

CHAPTER FOUR

HOUSEHOLD MEDICAL, TRANSPORT AND FUNERAL COSTS

4.1 Introduction

This chapter analyses and presents research findings on the impact of HIV/AIDS on household medical, transport and funeral costs in Chundu and Kandeya wards. The aim is to establish whether HIV/AIDS morbidity and mortality in the household result in significantly higher medical, transport and funeral costs to the household. The chapter also examines whether household foregone income due to non-production on the household farm by the sick and/or deceased household member differs significantly between HIV/AIDS-affected persons and those affected by other kinds of diseases. In order to establish the significance of the relationships, null hypotheses are set and tested using One-way Analysis of Variance (ANOVA) test of statistical significance at 0.05 for 95% level of confidence.

4.2 The sample characteristics

4.2.1 Household illness and death (irrespective of cause of illness and death)

Most households in both Chundu and Kandeya wards have been in one way or the other affected by illness or death of a household member between January 2000 and December 2003 (Figure 4.1).

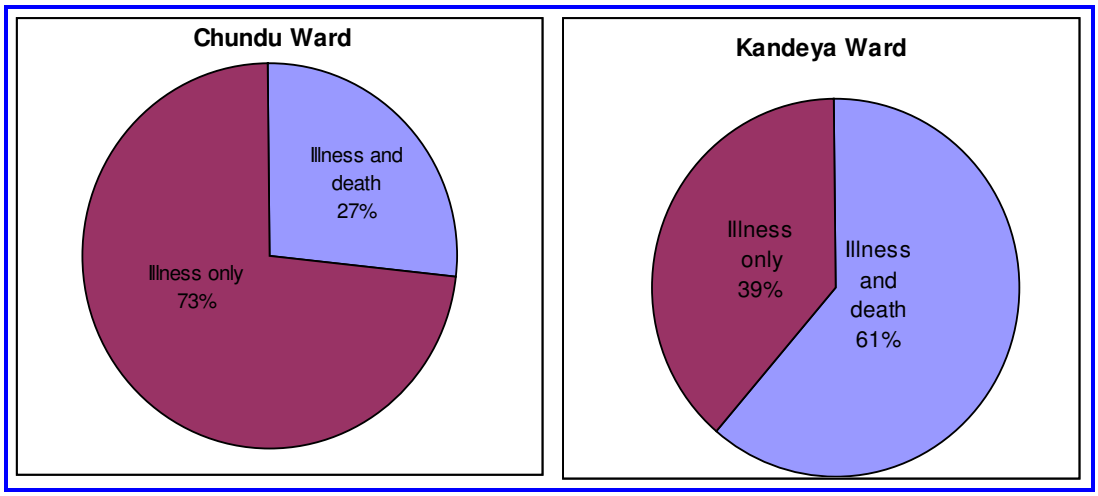

Figure 4.1: Household illness and death in Chundu and Kandeya ward (1 January 2000 and 30 November 2003) (Source: Research Survey, 2003)

This is evidenced by the fact in Chundu ward 73% of the households reported experiencing illnesses only, while 27% of the households reported experiencing both illnesses and death during that period. Kandeya ward however had more households (61%) reporting both illnesses and death than Chundu ward's 27%. The occurrence of death in more households in Kandeya than in Chundu ward could be an indication that HIV/AIDS is more widespread in Kandeya than in Chundu ward. HIV/AIDS is therefore predicted to be having more impact in Kandeya than in Chundu ward.

4.2.2 Cause of illness and death within the household

The verbal autopsy approach, as defined in the World Health Organisation (WHO) (2002) Guidelines for the Diagnosis of AIDS in Africa were used to identify HIV/AIDS-related deaths and illnesses within households in the two study areas. Caregivers within households in Chundu and Kandeya wards were asked to describe the signs and

symptoms of the disease(s) affecting a household member and/or those symptoms that resulted in the death of a household member.

Where a death certificate was available, the information from the death certificate on the cause(s) of death was recorded and used to aid the verbal autopsy approach. Where a sick household member was present and able to talk, he/she was asked to describe his/her disease symptoms. In addition to the patient's description, the researchers also observed visible disease symptoms. All this information was recorded on the questionnaires for use in identifying the HIV/AIDS status of the household. Using this method a person was classified as having HIV/AIDS (or died of AIDS) if he/she exhibited at least two major signs associated with at least one minor sign of the disease as defined in Appendix 9. The classification yielded results that are presented in Figure 4.2 below.

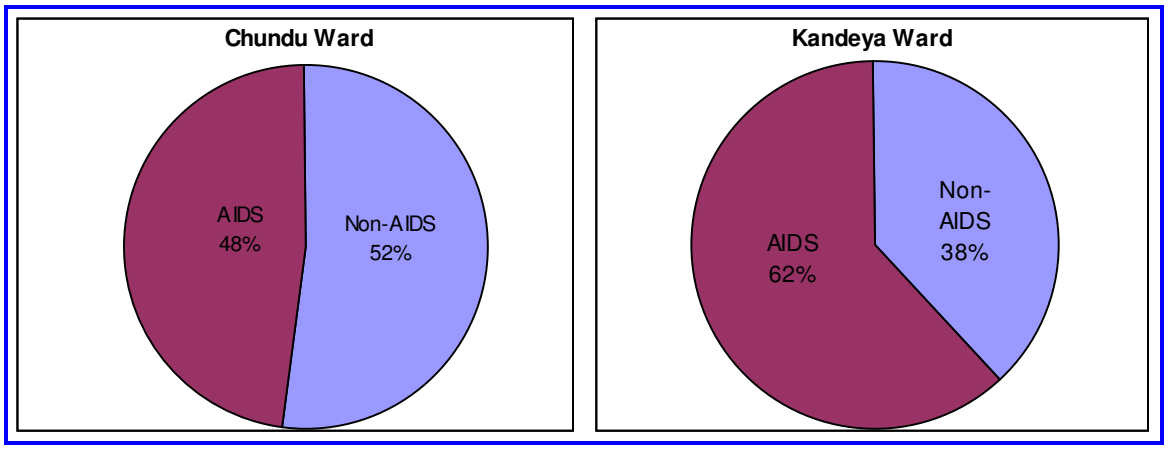

Figure 4.2: Cause of illness and death in Chundu and Kandeya wards
(Source: Research Survey, 2003)

HIV/AIDS related illnesses and deaths were found to have occurred in 62% of the households in Kandeya ward. This figure was higher than the 48% recorded in Chundu

ward. The fact that more HIV/AIDS illnesses and deaths were recorded in Kandeya than in Chundu ward validates the supposition made in Section 4.2.1 above, that the high number of households experiencing illnesses and deaths in Kandeya ward could be a reflection of high prevalence of HIV/AIDS in the ward. The occurrence of more HIV/AIDS related illnesses and deaths in Kandeya ward thus indicate that the epidemic has taken root more firmly and could probably have peaked much earlier in Kandeya than in Chundu ward. Crop production in Kandeya ward is therefore expected to be affected more than in Chundu ward.

4.2.3 Household annual income

The reported annual income for households in Chundu and Kandeya wards is presented in figure 4.3.

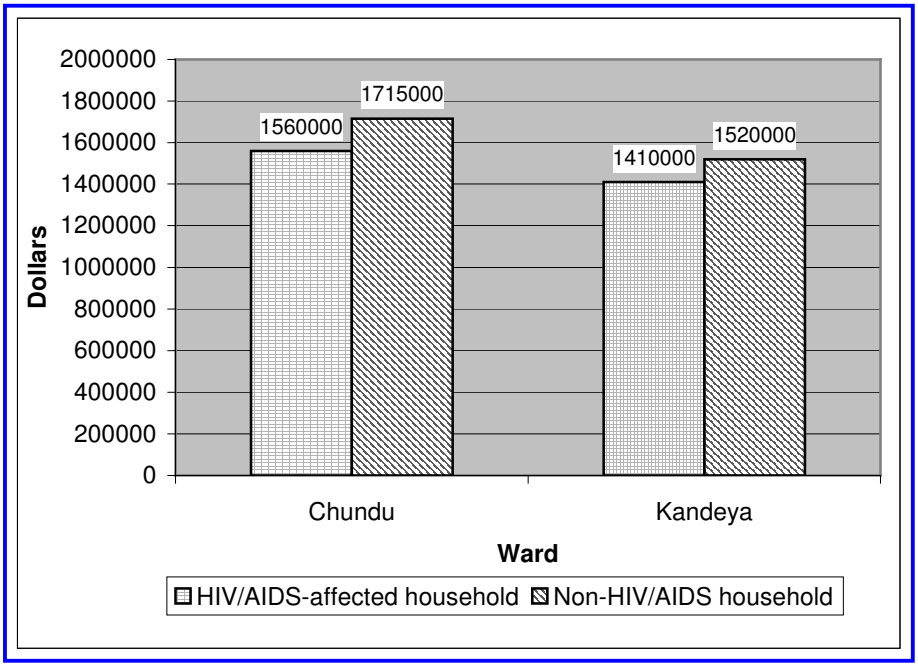

Figure 4.3:Average annual households income in Chundu and Kandeya wards (Source: Research Survey, 2003)

Non-HIV/AIDS households reported average incomes of $1 715 000 in Chundu and $1 520 000 in Kandeya wards. These average incomes were higher than the $1 560 000 and $1 410 000 reported by HIV/AIDS-affected households in Chundu and Kandeya wards respectively. To find out whether the differences in household reported annual income were significant, the following null hypothesis was formulated and tested in the two wards:

$H_{0:}$ There is no significant difference in reported annual income between HIV/AIDS-affected households and non-HIV/AIDS households.

A one-way ANOVA test established that non-HIV/AIDS households reported significantly higher annual household incomes than HIV/AIDS-affected households in Chundu ($p<0.05$) and in Kandeya ($p<0.05$). This is because HIV/AIDS-affected households divert some of their resources from agricultural production resulting in reduced production and income. This is particularly so since most of the households in the two wards depend on agricultural production for their income. Significantly higher ($p<0.05$) household annual incomes were reported among both HIV/AIDS-affected and non-HIV/AIDS households in Chundu than in Kandeya. These statistically significant differences reflect high agricultural potential of Chundu than Kandeya ward.

The translation of mean annual income figures into mean monthly household incomes shows that an average HIV/AIDS-affected household in Chundu was surviving on an average of $130 000 per month in comparison to $142 000 for a non-HIV/AIDS household. The comparative figures for Kandeya ward were $117 000 and $135 000

respectively. What is important about these average monthly incomes is that at least 73% of the households in Chundu and 86% in Kandeya ward indicated that they were living below the Poverty Datum Line (PDL) of $152 000 as of December 2003. This situation is attributed to the harsh economic conditions prevailing in the country. These findings are consistent with those of the Poverty Assessment Survey of August 2003 (CSO, 2003), which found that almost 80% of the households in the rural areas of Zimbabwe were living below the Poverty Datum Line (PDL), with most of them surviving on less than US$3 (Z$2472) a day. Although it is difficult to attribute the existing levels of poverty in Chundu and Kandeya wards to HIV/AIDS alone, the disease is certainly exacerbating the situation.

4.3 A household cost analysis

The economic impact of HIV/AIDS on communal households in Chundu and Kandeya wards was established through medical and travel costs incurred by the household per year and funeral expenses upon the death of a household member (Appendix 13).

4.3.1 Medical costs

The medical costs established in this study include the cost of consultation, hospitalisation fees, as well as the cost of purchasing drugs per year. In Kandeya ward, medical costs for a single person per year were higher for an HIV/AIDS patient ($710 000) than for a non-HIV/AIDS patient ($315 000) (Figure 4.4). This situation was the same as that obtained in Chundu ward where an HIV/AIDS patient incurred medical costs of $400 000 compared to $230 000 for a non-HIV/AIDS patient.

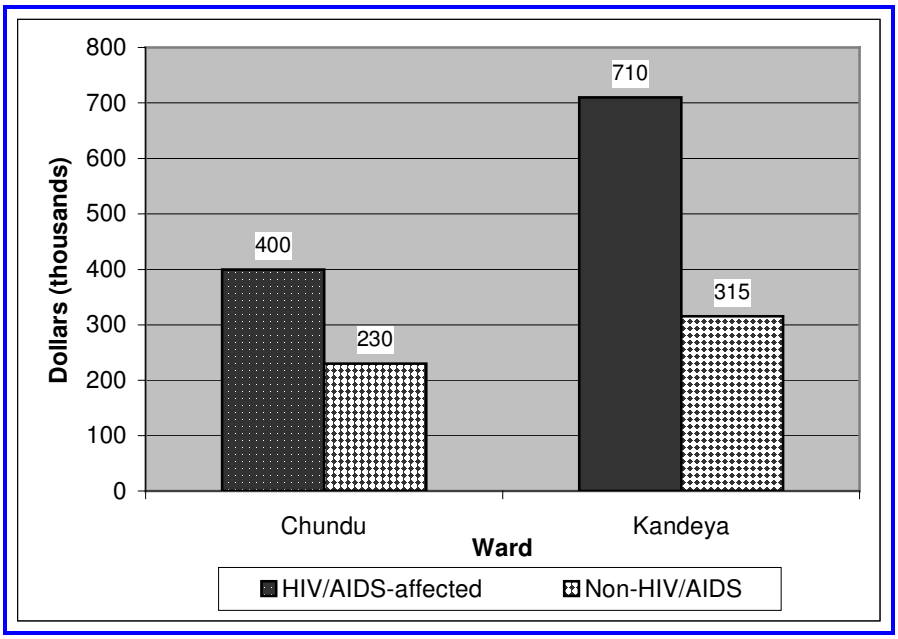

Figure 4.4: Household medical costs in Chundu and Kandeya wards

(Source: Research Survey, 2003)

To find out whether HIV/AIDS was resulting in a significant increase in medical costs within the households in the two wards, the following null hypothesis was formulated and tested:

$H_{0:}$ There is no significant difference in the medical costs incurred by a household with an HIV/AIDS patient and a household with a non-HIV/AIDS patient.

The study found significantly higher medical costs among HIV/AIDS-affected households than in non-HIV/AIDS households in Chundu ($p<0.05$) and in Kandeya ($p<0.05$). These huge differences in medical costs between households with an HIV/AIDS patient and those without could be attributed to the following factors:

(a) HIV/AIDS patients tend to visit clinics and hospitals more regularly than non-HIV/AIDS patients, resulting in them incurring higher medical costs. The frequency of visits by HIV/AIDS patients reflect the debilitating effect of the disease, which is characterized by many remission-recurrent cycles that require continuous medical attention.

(b) Most HIV/AIDS patients in both Chundu and Kandeya consulted private medical facilities that charge more than government owned clinics and hospitals. This is because government owned clinics and hospitals in Mt Darwin and Karoi towns lacked adequate drugs for HIV/AIDS related illnesses. While the average consultation fee per visit to a private facility in 2003 was $20 000, government district hospitals charged consultation fees as low as $3 000. In addition to this, rural clinics did not charge any consultation fees.

(c) Drugs for HIV/AIDS related illnesses are more expensive than drugs for other ailments that could easily be bought over the counter. The comparative expensiveness of HIV/AIDS drugs to other drugs is confirmed by Hansen *et al*. (2003), in a study on medical costs which found that HIV/AIDS drugs were costing an average of three times more than drugs for other non-HIV/AIDS ailments. A monthly dose HIV/AIDS antiretroviral drugs for a single patient, for example, was costing over $250 000/month. This figure was about five times higher than the $50 000 required by a diabetic person within the same period. Although the National AIDS Council of Zimbabwe (NAC) has provisions for providing money for anti-retroviral drugs to HIV/AIDS-infected persons,

only 3% of the HIV/AIDS-affected households in Chundu and 8% in Kandeya ward indicated having knowledge of the programme. To make matters worse, none of these households indicated ever benefiting from the programme in both Chundu and Kandeya wards.

Significant differences ($p<0.05$) were also observed on HIV/AIDS-affected households between the two wards with Kandeya reporting higher medical expenses of $710 000 compared to Kandeya's $400 000. These differences resulted from the fact that more households in Kandeya (68%) than in Chundu (26%) reported taking their patients to private medical facilities, which are expensive. In Chundu ward, most households were discouraged from consulting private medical practitioners because of prohibitive transport costs. This is because in Chundu private medical facilities could only be accessed in Karoi, 60km away. Most patients thus ended up visiting the local clinic at Chitindiva, which is considerably cheaper. In contrast those in Kandeya ward could however consult private medical practitioners in the nearby Mt Darwin town.

Additionally, most of the HIV/AIDS-affected households in Chundu ward indicated that they preferred to take their patients to traditional and faith healers who charge lower treatment fees. A possible explanation is that most households attribute HIV/AIDS-related illnesses to witchcraft, hence they do not consult clinics, but prefer traditional and faith healers who they consider are capable of dealing with witchcraft. Thus 74% of HIV/AIDS-affected households in Chundu and 32% in Kandeya ward indicated having taken their patients to traditional and faith healers who were charging between $5 000-

$10 000 per treatment session. This is lower than an estimated $40 000-$80 000 that was being charged by private medical practitioners. According to the Sister in Charge of Chitindiva clinic, few people in Chundu are keen to take their patients to Karoi General Hospital even after being referred to the hospital.

Few households were able to sustain such high medical costs since most households in both Chundu and Kandeya wards were surviving on less than $142 000 per month. This is shown by the fact that only 8% of the households in Chundu and 13% in Kandeya ward indicated that they subscribe to medical aid schemes that assist them to pay for medical expenses. Since households were failing to raise money for medical expenses, most were resorting to selling their cattle. In Kandeya ward, about 70% of the HIV/AIDS-affected households resorted to selling their cattle to raise money for medical bills. This is despite the fact that this practice deprives them of draught power and tends to have a negative impact on household crop production. Households in Chundu could not adopt a similar strategy to raise money for medical expenses because Chundu ward is *tsetse*-infested and hence livestock production is very limited.

4.3.2 Transport costs

Figure 4.5 below shows the transport costs incurred by households in seeking medication for sick relatives in Chundu and Kandeya wards. The study established that HIV/AIDS-affected households in Chundu ward were spending significantly ($p<0.05$) higher amounts on transport costs than non-HIV/AIDS households. HIV/AIDS-affected households were spending an average of $70 000 per patient per year. This was almost

twice the amount that was being spent by non-HIV/AIDS households, which were spending an average of $38 000 per year.

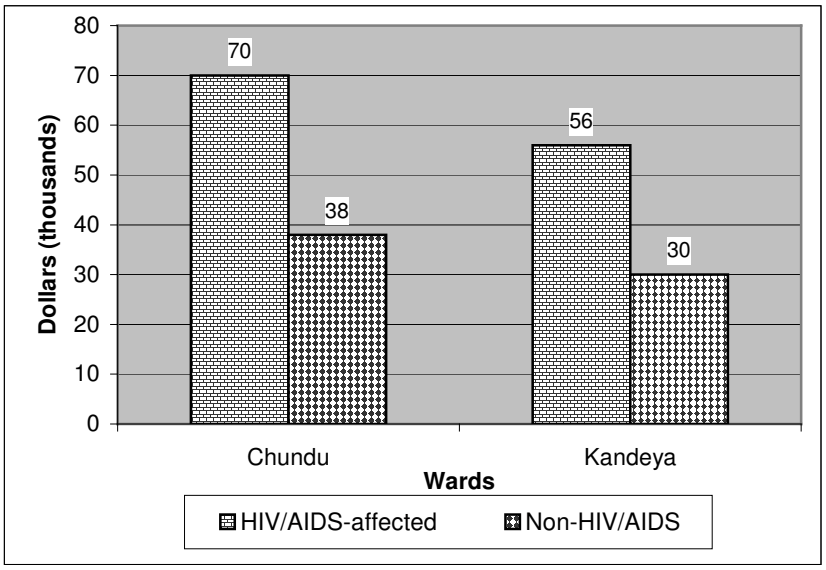

Figure 4.5: Average annual household transport costs in Chundu and Kandeya wards (Source: Research Survey, 2003)

Similarly in Kandeya, HIV/AIDS-affected households were spending significantly ($p<0.05$) higher amounts on transport costs than those households not affected by the disease. HIV/AIDS-affected households in the ward reported spending an average of $56 000 per patient per year. This amount was almost twice as high as the $30 000 reported by non-HIV/AIDS households.

The high transport costs for HIV/AIDS household in both wards resulted from the frequent travels made by HIV/AIDS patients and/or their caregivers to hospitals, clinics and private medical facilities. The study found that on average HIV/AIDS patients travelled to medical centres six times a year while non-HIV/AIDS patients travelled to medical centres twice per year. The higher transport costs reported by households in Chundu ward reflect the long distances that household members travel to access medical

services. In Chundu ward, some people travel 20km ($3 000) to Chitindiva clinic. In December 2003, those patients that were being referred from Chitindiva clinic to Karoi District Hospital would pay a further $6 000 bus fare to Karoi town where the District hospital is located. In contrast Mt Darwin District Hospital is located within walkable distance from most of the areas in Kandeya ward and it is only those that are incapacitated that usually board buses to the hospital for bus fares that cost about $1 000 per trip.

4.3.3 Funeral Expenses

Average funeral costs for HIV/AIDS-affected households were $595 000 per funeral in Kandeya ward. This is significantly ($p<0.05$) lower than the average $825 000 per funeral reported by non-HIV/AIDS households in the same ward (Figure 4.6). In Chundu ward, non-HIV/AIDS households reported average funeral expenses of $310 000 per funeral. Like in Kandeya ward, these costs are significantly ($p<0.05$) higher than the $250 000 per funeral reported by HIV/AIDS-affected households. These findings are contrary to the prediction that had been made earlier in this study that HIV/AIDS is significantly increasing household funeral costs.

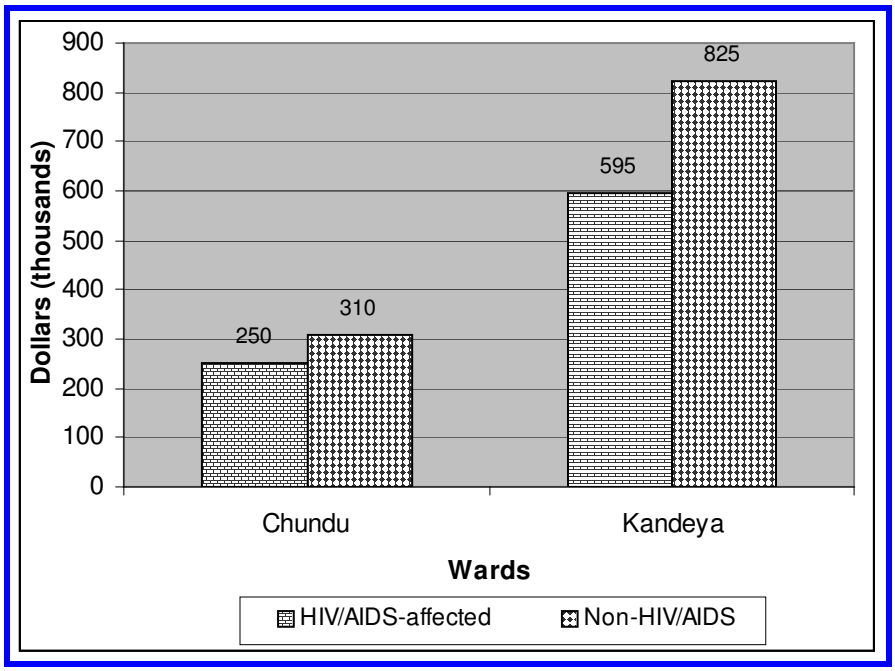

Figure 4.6: Funeral Expenses in Chundu and Kandeya wards

(Source: Research Survey, 2003)

These significant differences were accounted for by the fact that since HIV/AIDS is a prolonged disease, HIV/AIDS-affected households spend most of their resources on medical treatment for the patients such that by the time patients die, most household income would have been exhausted. This was confirmed by Chief Z. Kandeya, who pointed that most funerals among HIV/AIDS-affected households in Kandeya ward are held in conditions of extreme poverty. The chief described the funeral ceremonies as being less than decent as there is only minimal spending at such funerals. Most households can not even afford to slaughter cattle, as most of them are sold during the period of prolonged illness. Mr. B. Kapuya (Chundu ward councillor) explained the situation more aptly when he said:

Kazhinji munhu anofa neAIDS anofa nezvinhu zvizhinji kubvira

kumari yaanenge akambochengeta; mombe nezvimwe zvipfuyo

pamwechete nemidziyo mizhinji. Zvose izvi munotozvitengesa kuti mumurapise asi achizongofa chete. Paanozofa munenge musisina nechekubata mongoita zvekuti aende chete.

(In most cases HIV/AIDS patients die with their possessions; from their savings, cattle and other livestock as well as other properties. You have to sell these things to pay for medical costs such that by the time the patient dies, you are destitute. Without resources, burials have become just mere formalities.)

A comparative analysis of the funeral costs for both HIV/AIDS-affected and non-HIV/AIDS households between the two wards shows that the costs are significantly higher ($p<0.05$) in Kandeya than in Chundu ward. The high funeral costs in Kandeya ward are attributed to the fact that household members bear most of the costs on their own. This is in contrast to Chundu ward where numerous local burial societies exist. The system of burial societies in Chundu ward, which is more developed than in Kandeya, help the affected households in paying some of the funeral expenses. Some of these burial societies with a fairly large membership are: Donhodzo, Zororo, Mocho, and Runyaradzo. On average, members pay a joining fee of $20 000, and a monthly subscription fee of $5 000. Upon the death of a member, households benefit by getting a modest coffin from the society. As of December 2003, a standard coffin was worth $200 000. Thus households that were part of the local funeral societies ended up contributing a smaller proportion of the total costs of the funeral, while those that did not have

membership contributed more. In contrast to Chundu ward, only one burial society, namely Makaza**,** offers funeral services in Kandeya ward.

Funeral costs incurred by households in Kandeya ward were also higher than those incurred by households in Chundu ward because they include the costs of beasts that are slaughtered during the funeral ceremony. In December 2003, a single beast in the ward was worth $400 000-$500 000. While most of the households did not purchase these beasts but got them from their own stock, they still constitute funeral costs that are incurred by the household. In Chundu ward on the other hand, few households own cattle and relish consumed at the funeral ceremony consisted mostly of goat meat and vegetables which are cheaper, but more readily available.

4.3.4 Agricultural time lost to care-giving activities

The average amount of time per day that a single caregiver is absent from agricultural fields due to caregiving activities in Chundu and Kandeya wards is presented in Figure 4.7. In Chundu ward, the study revealed that a single caregiver looking after an HIV/AIDS patient could absent him/herself from agricultural activities for 4 hours/day while tending to the patient. This figure is significantly ($p<0.05$) higher than the average 2 hours/day for a caregiver looking after a non-HIV/AIDS patient. Similarly, in Kandeya ward, a single caregiver looking after an HIV/AIDS patient was absenting him/herself from agricultural activities for 3 hours/day. This is three times significantly ($p<0.05$) higher than the reported 1 hour/day reported by caregivers looking after a non-HIV/AIDS patient.

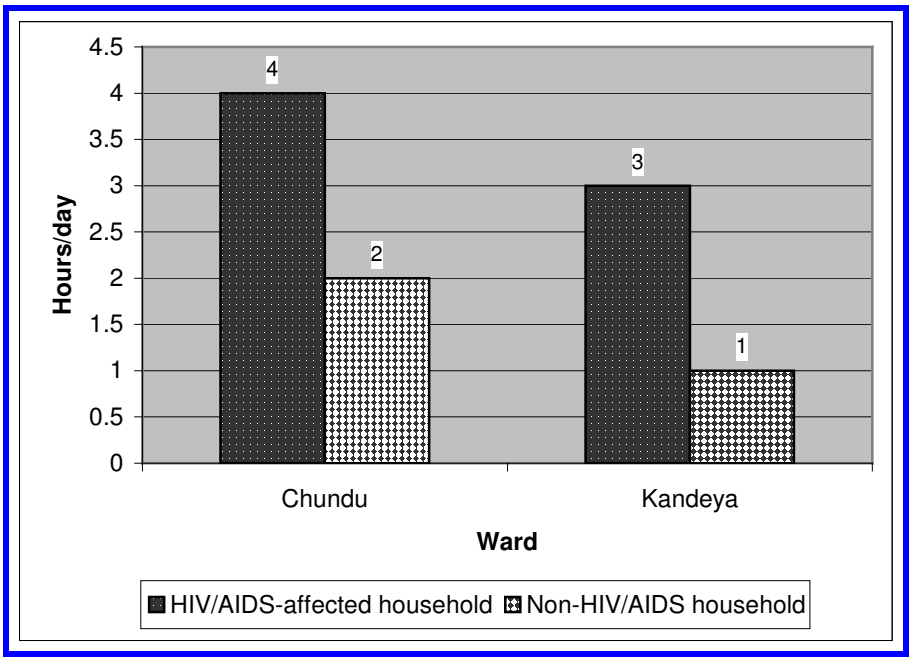

Figure 4.7: Agricultural time lost to caregiving activities/day in Chundu and Kandeya wards (Source: Research Survey, 2003)

The significantly higher time diversion of caregivers looking after HIV/AIDS patients than those looking after non-HIV/AIDS patients in both wards is attributed to the fact that AIDS is a debilitating disease. It therefore renders the patient powerless to carry out even the simple task of feeding or bathing. This results in a caregiver looking after an HIV/AIDS person to tend to the sick person most of the time. A lot of time that is supposed to be devoted to agricultural production is thus lost to caring activities. On the other hand, patients not affected by HIV/AIDS are usually able to look after themselves fairly well such that caregivers devote less time to them. In Chundu and Kandeya wards, where the major economic activity is crop production, this finding has grave repercussions on household crop production. This is because the household members whose labour is diverted are the primary and most important labour source on household crop production in the two wards (see Section 5.3).

Chundu ward recorded significantly ($p<0.05$) higher time diversions to caregiving activities than in Kandeya ward. The fact that less time is spent on caregiving activities in Kandeya than Chundu ward is due to the fact that in Kandeya ward there are volunteers from Home Based Care Organisations such as Batanai and Hope. These volunteers complement and therefore reduce caregiving time devoted by household members to their patients. These volunteers, who are trained in caring for HIV/AIDS patients, make two weekly visits per household and this significantly reduces the caring burden of on the household members. Additionally these volunteers give expert training and advise caregivers on how to effectively care for sick relatives. Such organisations however do not operate in Chundu ward.

4.3.5 Foregone income

Table 4.1 below shows foregone income for the household in Chundu and Kandeya wards due to future non-production by deceased household members.

Table.4.1: Foregone income in Chundu and Kandeya Wards

	CHUNDU WARD		KANDEYA WARD	
Household HIV/AIDS status	HIV/AIDS	Non-HIV/AIDS	HIV/AIDS	Non-HIV/AIDS
(a)Average earnings/ individual/ year	$675 000	$675 000	$586 000	$586 000
(b)Average age of death	35	51	27	50
(c)Years of foregone production (60-average age of death)	25	9	33	10
Years of life lost prematurely (YYL)	25-9=14		33-10=23	
(d) Foregone income (a×c)	$16 875 000	$6 075 000	$19 338 000	$5 860 000

(Source: Research Survey, 2003)

In Chundu ward household foregone income due to a single HIV/AIDS death was estimated at $16 875 000. This was significantly ($p<0.05$) higher than the estimated $6 075 000 for a non-HIV/AIDS death. Similarly, in Kandeya ward, a single HIV/AIDS death was estimated to cost the household $19 338 000 in foregone income due to non-production of the household deceased member. This amount was significantly ($p<0.05$) higher than the $5 860 000 estimated foregone income for non-HIV/AIDS households.

The significant differences in foregone income between an HIV/AIDS and a non-HIV/AIDS death are mainly due to the fact that those that die of HIV/AIDS illnesses are generally younger than those who die from other diseases in Chundu and Kandeya wards (Table 4.1). This study found that HIV/AIDS-affected persons are dying at the average age of 35 in Chundu and 27 years in Kandeya ward. This is lower than the 51 and 50 years recorded for non-HIV/AIDS patients in the two wards respectively. The lower mean age of death for HIV/AIDS-infected persons in comparison to non-HIV/AIDS persons means that the death of an HIV/AIDS-infected person results in more years of foregone production than for a non-HIV/AIDS death. Moreover there are more years of life that are lost prematurely (YYL) because of the occurrence of an HIV/AIDS death within the household (14 years in Chundu and 23 years in Kandeya). These findings bring to light an important issue that HIV/AIDS is threatening the viability of agricultural production by incapacitating mostly adults below the age of 35 in the two areas. These are the people who are the backbone of agricultural production in the areas and their premature deaths could have negative impacts on communal crop production.

4.4 Summary

The study established that most households in Chundu and Kandeya wards have been affected by HIV/AIDS illness and/or death. In both wards, HIV/AIDS is causing significant increases in household medical and transport costs. These increases result from the fact that HIV/AIDS patients require constant medical attention as well as making frequent visits to medical care facilities. However, no significant increases in funeral expenses were established. In fact, on average, funeral costs for an HIV/AIDS death were significantly lower than those for a non-HIV/AIDS one. This is attributed to the fact that most households exhaust their financial resources on medical care, such that by the time the patient dies, the household is almost destitute and therefore unable to spend much on a funeral. The study also found that the occurrence of HIV/AIDS in the household is resulting in significant loss of household income due to foregone production of the deceased. This is because those persons that are dying of HIV/AIDS are generally younger and therefore lose much more production years than those that are dying from other diseases.

CHAPTER FIVE

HOUSEHOLD CROP PRODUCTION AND FOOD SECURITY

5.1 Introduction

This Chapter analyses and discusses the impact of HIV/AIDS on crop production. It examines the impact of the pandemic on labour availability for crop production and assesses whether this results in significant changes in the amount of crop-cultivated area, harvested and marketed crop quantities, as well as changes in general cropping patterns in Chundu and Kandeya wards. Household food security is also analysed to establish whether it is being affected by the occurrence of HIV/AIDS within the household. The crops analysed are maize, cotton, tobacco, groundnuts, roundnuts, paprika and cassava. These crops form the household food and cash income base in the two wards.

5.2 Major crops grown in Chundu and Kandeya wards

Maize, which is the staple crop in the two wards, is the most widely grown crop in the two wards. This is confirmed by the fact that all households interviewed in the two wards indicated that they grow the crop (Table 5.1). The second most widely grown crop is cotton, which is grown by 61% and 56% of the households in Chundu and Kandeya wards respectively. Other major crops that are grown in the wards are tobacco, groundnuts, roundnuts, paprika and cassava.

Table 5.1: Major crops grown by households in Chundu and Kandeya wards

Type of crop	Chundu ward		Kandeya ward	
	Number	%	Number	%
Maize	188	100	155	100
Cotton	115	61	86	56
Ground/roundnuts	83	44	59	38
Paprika	75	40	40	26
Tobacco	53	28	23	15
Cassava	50	27	16	10
	n=188		n=155	

(Source: Research Survey, 2003). NB: Multiple responses were allowed

While maize is the major food crop, cotton and tobacco are the major cash earners in the wards. Any significant changes in the production of these three major crops (maize, tobacco, and cotton) are therefore likely to disrupt household food and income flows. For all the crops, there are more households growing the crop in Chundu than in Kandeya ward. This may be an indication that household crop production in Chundu ward is more diversified than in Kandeya and could probably explain why households in Chundu were realising higher mean annual incomes than those in Kandeya ward (see Section 4.2.3).

5.3 Major sources of labour on the household farm

The major sources of labour for crop production on the household farm in Chundu and Kandeya wards are presented in Figure 5.1 below. The study found that 75% of the households in Chundu and 60% in Kandeya ward rely on household members as their major source of labour on the household farm. This is higher than the 10% and 35% that rely on hired labour, or the 15% and 5% that rely on *nhimbe* (communal labour pooling) in Chundu and Kandeya wards respectively.

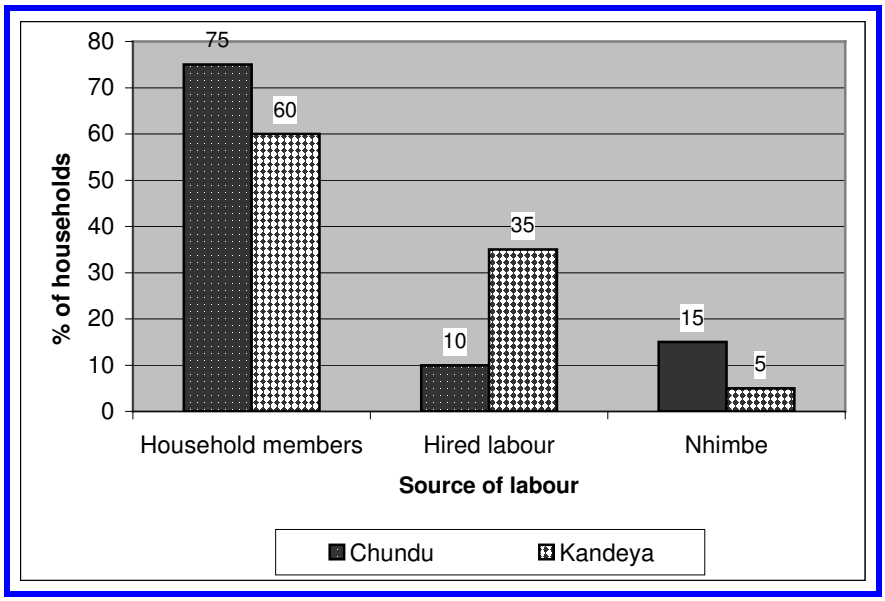

Figure 5.1: Major sources of labour on the household farm in Chundu and Kandeya wards (Source: Research Survey, 2003)

Although household labour is under threat from HIV/AIDS, this study found that household human labour is still the most important and essential agricultural input in Chundu and Kandeya wards. This finding confirms the FAO (1996) findings in some sub-Saharan African countries that household members provide the bulk of the labour requirements on smallholder agricultural farms. It is however the disruption in the productivity of these household members due to illness and/or death that is likely to have a negative impact on crop production on the household farm.

Kandeya ward has more households (35%) relying on hired labour as their major source of labour on the household farm than Chundu ward (10%). This could be an indication that HIV/AIDS is more severe in Kandeya than in Chundu ward. A depletion of the household labour force in Kandeya through higher HIV/AIDS morbidity and mortality rates necessitates that households in the ward supplement their labour requirements

through hiring labour. On the other hand, the study found that the lower percentage of households in Chundu ward using hired labour could, to some extent, be indicative of the unavailability of a large pool of cheaper labour to hire in times of labour crises. This is in contrast to Kandeya ward where a large pool of former large-scale commercial farm workers (made redundant through the acquisition of the surrounding farms for resettlement purposes) is available and cheaper.

The fact that communal labour pooling (*nhimbe/hoka*) is not as widely relied on as household members as a source of household farm labour is attributed to the fact that most households concentrate on their own household farms rather than helping others. One participant to a focus group discussion in Kandeya ward stated that:

> *Vanhu vemudunhu rino vane chindini. Vanongoda kuenda kunhimbe kana ichiitirwa pamba pavo chete. Kwevamwe havadi..*
>
> (People in this area are self-centred. They only want to participate in the communal labour pooling sessions if they are the ones hosting them and are not worried about helping others)

Other households argued that *nhimbe/hoka* is expensive as the host is required to provide a lot of food and drink to those that attend the session. One communal farmer who had recently hosted a *nhimbe* in Chundu ward said:

> "*Ungaite nhimbe yerudzii kana vanhu vachiti vanoda tii nechingwa chine margarine, mupunga nehuku nedoro remascud nemabhotoro? Pakupera kwenhimbe ndiwe unenge watoruza panekuti ubatsirwe`.*

("What kind of labour pooling session can you have if people demand tea with bread, rice and chicken, soft drinks and bulk beer from the beerhall? At the end of the labour pooling session you will have wasted a lot more resources than you will have gained from their help")

Households with low incomes thus find it difficult to conduct these *nhimbe/hoka* sessions as they do not have sufficient funds to purchase food items required to feed the participants to the sessions.

5.4 Impact of HIV/AIDS on the adequacy of crop production labour

Figure 5.2 below presents the findings on the adequacy of household labour for crop production in Chundu and Kandeya wards.

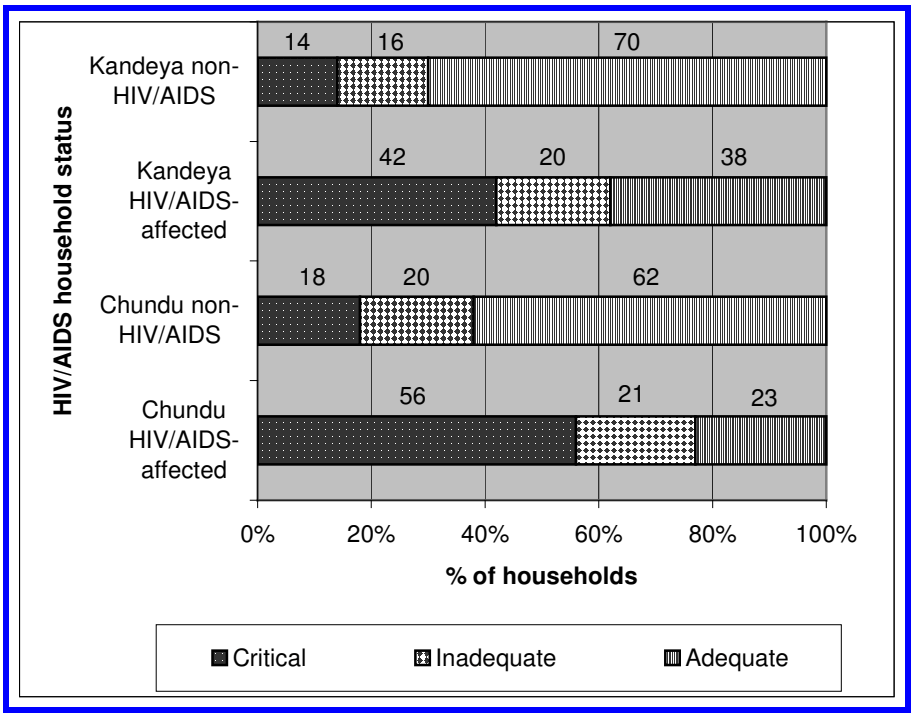

Figure 5.2: Labour status within the household during the crop-growing season in Chundu and Kandeya wards (Source: Research Survey, 2003)

In Chundu ward, 56% of the HIV/AIDS-affected households reported experiencing critical labour shortages. This is over three times higher than the 18% reported among non-HIV/AIDS households in the same ward. This was the same situation obtaining in Kandeya ward, where 42% of the HIV/AIDS-affected households reported experiencing critical labour shortages in comparison to 14% among non-HIV/AIDS households. From these findings it could be argued that HIV/AIDS is the major factor determining the adequacy of household crop production labour in both Chundu and Kandeya wards. This is because a higher percentage of HIV/AIDS-affected households in the two wards reported experiencing critical labour shortages than non-HIV/AIDS households. Such a scenario could be due to the fact that HIV/AIDS is debilitating and affected household members are mostly unable to partake in crop production as the recurrent-remission nature of HIV/AIDS illness means that they are, for the most part of the production period, mostly bedridden.

Moreover the fact that HIV/AIDS is fatal means that HIV/AIDS-affected households lose part of their labour prematurely through death. Additionally, HIV/AIDS households lose some of their labour time caring for sick household members (see Section 4.3.4). The fact that more non-HIV/AIDS than HIV/AIDS-affected households reported having adequate labour for crop production (Figure 5.2) is further evidence of the influence of HIV/AIDS in determining the adequacy of household crop production labour in the two wards.

Although more HIV/AIDS-affected than non-HIV/AIDS households in both wards reported experiencing critical labour shortages, it is in Chundu than in Kandeya ward that

a higher number of households reported critical household labour shortages. These differences could be attributed to the fact that most people in Chundu ward do not own cattle to use in ploughing, cultivating (weeding), and/or ridging. In Kandeya ward, on the other hand, draught power is more available such that chores on the household farm are lightened. Thus the vulnerability of Chundu ward to household labour shortages stems, in part, from the inadequacy and unavailability of draught power.

5.5 Impact of HIV/AIDS on crop production

The impact of HIV/AIDS on crop production in Chundu and Kandeya wards was investigated through assessing changes in the household's size of cultivated area, quantity of harvested and marketed crops and general cropping patterns. The results obtained in the study are discussed below.

5.5.1 Impact on the size of cultivated area

Table 5.2 shows the results of a comparative analysis of the size of the area cultivated by households for particular crops in Chundu and Kandeya wards between 2000/2001 and 2002/2003-crop production season.

Table 5.2: Crop cultivated area (acres) in 2000/2001 and 2002/2003 season

Crop	Ward											
	Chundu						Kandeya					
	Non-AIDS households			AIDS households			Non-AIDS households			AIDS households		
	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change
Maize	6.0	5.0	-17	5.6	4.4	-21	5	4	-20	4.5	3.6	-18
Cotton	3.2	2.6	-19	3.0	1.8	-40	3.0	2.5	-17	3.0	1.5	-50
Tobacco	1.2	1.0	-17	1.1	0.7	-36	1.0	0.8	-20	1.0	0.5	-50
Groundnuts/ Roundnuts	0.5	0.7	+40	0.4	0.3	-25	0.3	0.2	-33	0.4	0.3	-25
Paprika	0.6	0.8	+33	0.4	0.5	+20	0.3	0.2	-33	0.2	0.1	-50
Cassava	0.2	0.3	+50	0.3	0.5	+67	0.2	0.3	+50	0.2	0.5	+150

(Source: Research Survey, 2003) Note: Cultivated area figures were used as given/estimated by households

The study hypothesised that HIV/AIDS was causing significant declines in the size of the cultivated area for particular crops in both Chundu and Kandeya wards. Thus, to find out whether there were any significant changes in the size of the area cultivated for particular crops between HIV/AIDS and non-HIV/AIDS households, the following null hypothesis was formulated and tested:

$H_{0:}$ There are no significant differences in changes in the size of area under crop production between HIV/AIDS-affected and non-HIV/AIDS households.

Applying One-way-ANOVA as explained in section 3.12.2, the following findings with regard to the size of the cultivated area for particular crops were established:

5.5.1.1 Maize

In Chundu ward, HIV/AIDS-affected households experienced a decline in cultivated area for maize of 21% (1.2 acres). This was higher than the 17% (1.0 acres) decline in cultivated area recorded by non-HIV/AIDS households in the ward. These differences in area decline in Chundu were however not statistically significant ($p>0.05$). In Kandeya ward, HIV/AIDS-affected households recorded a decline in cultivated area of 18% (0.9 acres). Although this was lower than the decrease of 20% (1.0 acres) recorded by non-HIV/AIDS households, the difference, like in Chundu ward, was not statistically significant ($p>0.05$). The study also did not find any significant ($p>0.05$) differences in cultivated area decline between HIV/AIDS-affected households in Chundu and Kandeya wards as predicted earlier in the study.

These findings are contrary to the SADC/FANR Vulnerability Assessment Committee (2003) assertions that HIV/AIDS in Zimbabwe's communal areas is causing significant declines in household cultivated area for maize. The absence of any significant decline in cultivated area could be a result of the fact that maize is a staple crop in Zimbabwe. This means that even in times of household critical labour shortages, households concentrate most of their labour to maintaining a constant cultivated area large enough to produce adequate food for the household. If there is a real need to reduce household cultivated area, this is often done in other crops that are not as critically important as maize in household food security.

5.5.1.2 Cotton

Cotton experienced a significant ($p<0.05$) decline in cultivated area of 40% (1.2 acres) in Chundu ward. This was two times higher than the 19% (0.6 acres) decline experienced by non-HIV/AIDS households in the ward. Similarly, in Kandeya ward, HIV/AIDS-affected households recorded a significant ($p<0.05$) decline in cultivated area of 50% (1.5 acres). This was three times higher than the decline of 17% (0.5 acres) experienced by non-HIV/AIDS households in the ward. No significant ($p>0.05$) differences were however noted in decline in cultivated area between HIV/AIDS-affected households in Chundu and Kandeya wards.

These significantly higher declines in cultivated area for cotton among HIV/AIDS-affected households than among non-HIV/AIDS ones in both wards could be best explained by the nature of the crop. Cotton is a labour intensive crop. It demands a lot of

human labour as well as heavy financial investment in pesticides and herbicides. These demands are usually not met by HIV/AIDS-affected households that are mostly cash-strapped because of cash diversion to medical expenses and face labour shortages due to HIV/AIDS morbidity and mortality. Most HIV/AIDS-affected households in Chundu and Kandeya wards are therefore opting to reduce household cultivated acreage for cotton to meet the scarce cash and labour resources. The scarcity of cash resources among HIV/AIDS-affected households has been established earlier in this study (see Section 4.2.4) where HIV/AIDS-affected households in both Chundu and Kandeya recorded lower annual household incomes than non-HIV/AIDS households. Thus, even though the District Development Fund (DDF) tillage unit is providing tractors to assist farmers with tillage, the cost of hiring the tractors (Z$160 000 per hectare as of December 2003) is too prohibitive for HIV/AIDS-affected households to manage.

5.5.1.3 Tobacco

In Chundu ward tobacco recorded a significant ($p<0.05$) decline in cultivated area of 36% (0.4 acres). This is two times higher than the decline of 17% (0.2 acres) recorded by non-HIV/AIDS households in the ward. Similarly, in Kandeya ward, HIV/AIDS-affected households recorded a significantly ($p<0.05$) higher decline in the size of cultivated area for tobacco of 50% (0.5 acres). This decline was almost two and half times more than the 20% (0.2 acres) decline recorded by non-HIV/AIDS households in the same ward.

The reasons for the significant decline in household cultivated area for tobacco are mostly the same as those affecting the size of cultivated area for cotton. Tobacco is also a

labour intensive crop. It demands a lot of human labour and a heavy capital outlay. When there are shortages of labour and cash resources due to HIV/AIDS morbidity and mortality, households reduce their cultivated area to fit existing cash and labour supply resources.

No significant ($p>0.05$) differences were however observed in the size of cultivated area between AIDS-affected households in Chundu and Kandeya wards where declines of 36% (0.4 acres) and 50% (0.5 acres) were experienced respectively.

5.5.1.4 Groundnuts and roundnuts

HIV/AIDS-affected households in Chundu ward experienced a decline of 25% (0.1 acres) in cultivated area for groundnuts and roundnuts. This was significantly ($p<0.05$) lower than the 40% (0.2 acres) average increase in the size of the cultivated area recorded among non-HIV/AIDS households. Unlike in Chundu ward, no significant ($p>0.05$) differences in the size of household cultivated area for groundnuts and roundnuts between HIV/AIDS-affected and non-HIV/AIDS households in Kandeya. In this ward HIV/AIDS-affected households recorded an average decline of 25% (0.1 acres). This was almost the same as the average decline of 33% (0.1 acres) experienced by non-HIV/AIDS households in the ward.

The 40% increase in the average size of the household cultivated area in Chundu ward could be attributed to the easy availability of seeds in the ward. Since the year 2001, a number of N.G.Os operating in the area have been giving the people of Chundu

groundnuts and roundnuts as part of their drought relief programmes. While non-HIV/AIDS households use these seeds to expand area under production, HIV/AIDS-affected households use them to supplement their diet and increase protein intake, rather than increasing cultivated area. The N.G.O's operating in Kandeya ward during the period under consideration, were however mostly giving maize and soyabeans meal to households in the ward.

5.5.1.5 Paprika

In Chundu ward, both HIV/AIDS-affected and non-HIV/AIDS households recorded increases rather than decreases in the size of the cultivated area for paprika. In this ward HIV/AIDS-affected households recorded an increase in average size of cultivated area of 20% (0.1 acres). Although this is lower than the 33% (0.2 acres) increase recorded by non-HIV/AIDS households, the difference was not significant ($p>0.05$).

The increase in cultivated area under paprika production in Chundu could be a result of a major campaign by A.R.E.X officials in the ward to encourage farmers to diversify into paprika production. Farmers are periodically assisted with seeds and given lessons on growing the crop. The A.R.E.X official at Chitindiva Business Centre runs classes on paprika production and assists four groups of farmers to run nurseries at Chitindiva dam. These nurseries supply most farmers in the ward with seedlings. The A.R.E.X official in Chundu ward also revealed that a Ruwa-based company has contracted most farmers in the ward to grow the crop. By giving the farmers cash loans and access to seedlings, the

company is thus responsible for most of the increases in cultivated area that is being experienced in Chundu ward.

Unlike in Chundu, Kandeya farmers have no such arrangements. This could most probably explain why both HIV/AIDS-affected and non-HIV/AIDS households in Kandeya ward recorded decreases in the size of cultivated area for paprika. While HIV/AIDS-affected households in the ward recorded a decline of 50% (0.1 acres), non-HIV/AIDS households recorded a decline of 33% (0.1 acres). This significant ($p<0.05$) difference between HIV/AIDS-affected and non-HIV/AIDS households in Kandeya could be due to the fact that HIV/AIDS-affected households have less labour to grow the crop which requires much labour and capital investments.

5.5.1.6 Cassava

HIV/AIDS-affected households in Chundu ward recorded an increase 67% (0.2 acres) in cultivated area for cassava. This is significantly ($p<0.05$) higher than the average 50% (0.1 acres) increase recorded among non-HIV/AIDS households. Similarly, in Kandeya ward, HIV/AIDS-affected households recorded an average increase in cultivated area of 150% (0.3 acres). This is three times higher than the 50% (0.1 acres) recorded by non-HIV/AIDS households in the same ward. These findings are contrary to the assumption made in this study that the presence of HIV/AIDS within households in Chundu and Kandeya wards is resulting in significant decreases in the size of household cultivated area. Rather increases in the size of the cultivated area for cassava were recorded in both

wards. Moreover, higher increases were recorded among HIV/AIDS-affected households than in those households not affected by the disease.

The increases in cultivated area for cassava in both Chundu and Kandeya wards for most households (both HIV/AIDS-affected and non-HIV/AIDS) could be best explained by Zimbabwe's economic situation. The economic downturn of the country's economy since the year 2000 has meant that most households did not have money to buy bread for breakfast. In some cases, during the years 2001, 2002 and 2003, the bread was mostly not available in retail shops. Most households in Chundu and Kandeya wards thus ended up increasing the size of the area under cassava production. This is because cassava serves as a substitute for bread. Because most HIV/AIDS-affected households are usually cash-strapped, it could also be argued that HIV/AIDS-affected households were also the least able to afford to buy bread and thus relied mostly on cassava for breakfast. Hence the higher increases in the size of the cultivated area among these households than among those households not affected by HIV/AIDS.

The increase in cultivated area among HIV/AIDS-affected households of 150% (0.3 acres) in Kandeya ward was significantly ($p<0.01$) higher than the 67% (0.2 acres) recorded in Chundu ward. This difference could be due to the fact that in Kandeya, more than in Chundu ward, cassava is believed to have nutrients that slow down or even stop the progression of HIV to AIDS. Most HIV/AIDS-affected households in Kandeya thus have more incentive to increase their cultivated area so as to have adequate supply of the tuber throughout the whole year.

5.5.1.7 Anticipated changes in total household cultivated area for 2003/2004 season

To determine possible changes in the total size of the cultivated area for all crops for the 2003/2004 crop-growing season, households heads in Chundu and Kandeya wards were asked whether they intended to cultivate more, less or the same size of area in 2003/2004 season compared to the 2002/2003 season. The findings on this question are presented in Figure 5.3.

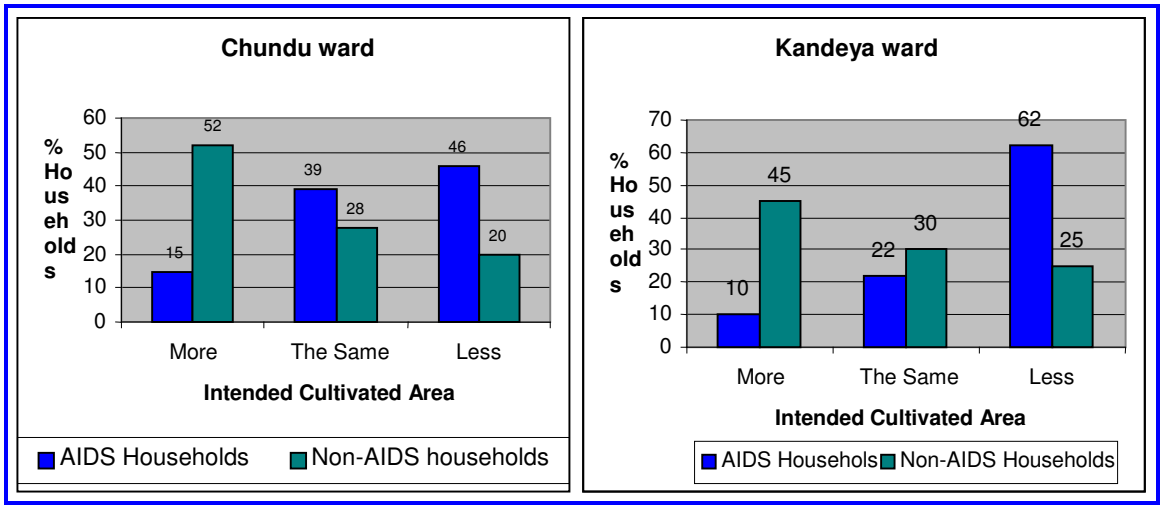

Figure 5.3: Household anticipated changes in total size of cultivated area in Chundu and Kandeya wards for the 2003/2004 season (Source: Research Survey, 2003)

In Chundu ward, 46% of the HIV/AIDS-affected households indicated that they would cultivate less area in the 2003/2004 season than they did in the 2002/2003 season. This is over two times higher than the 20% who predicted cultivating less total area in 2003/2004 than in 2002/2003 season among non-HIV/AIDS households. Similarly, in Kandeya ward, 62% of the HIV/AIDS-affected households indicated their intention to cultivate less total area in 2003/2004 than in the 2002/2003 season. This is two and half times higher than the 25% among non-HIV/AIDS households who indicated their intention to

cultivate less area in the 2003/2004 season than in the previous 2002/2003 season in the same ward.

An important point to note is that, in both Chundu and Kandeya wards, more HIV/AIDS-affected than non-HIV/AIDS households indicated an intention to reduce the size of cultivated area in 2003/2004 than they cultivated in the 2002/2003 season. As a result most of the households that indicated an intention to increase total household cultivated area were those that were not affected by the disease. The significance of this finding is that it shows that HIV/AIDS is a critical factor in determining the total household cultivated area. This is because in both wards, 55% of the HIV/AIDS-affected households who indicated intention to reduce the size of the cultivated area gave shortage of labour as the major reason for the intended decline. Moreover, 31% indicated the shortage of cash (most possibly due to cash diversion for HIV/AIDS medical and transport costs), while only 14% intended reducing their total household cultivated area due to low expected cash returns (Figure 5.4).

In contrast to HIV/AIDS-affected households, 45% of those non-HIV/AIDS households that indicated intention to reduce total household cultivated area cited low expected cash returns on crop produce as the major reason for the intended reduction. Furthermore, 33% cited shortage of cash to purchase inputs and only 22% indicated shortage of labour as the major reason for the intended reduction in cultivated area in the 2003/2004 season. These findings thus confirm the hypothesis made in this study that most HIV/AIDS households in Chundu and Kandeya wards could be reducing their cultivated area

because of the shortage of labour and cash resources to buy such seed and fertiliser inputs.

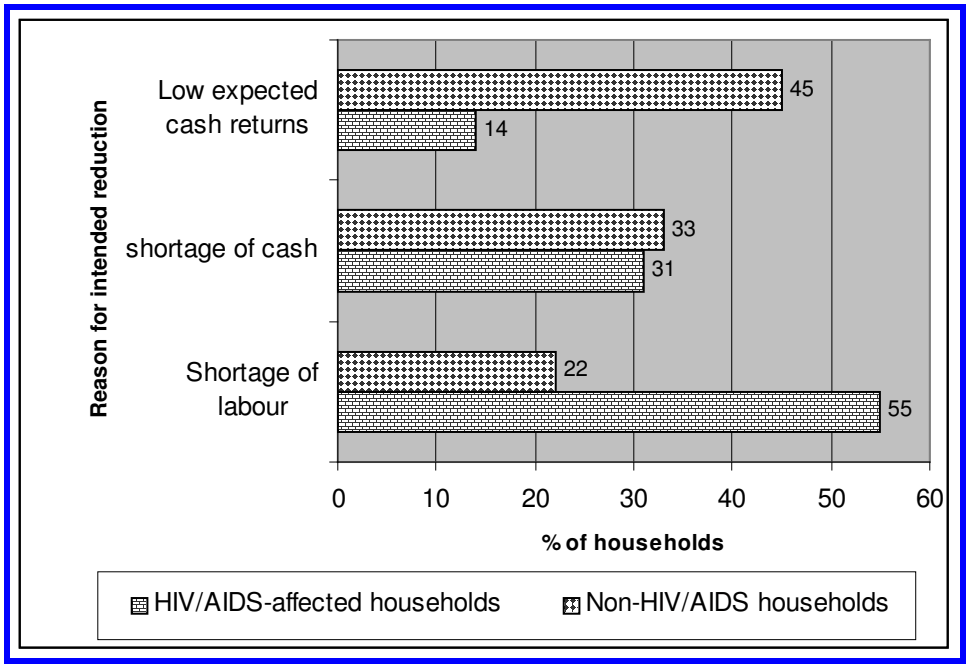

Figure 5.4: Reasons for intended decline in total size of household cultivated area

(Source: Research Survey, 2003)

The study also established that HIV/AIDS-affected households in both Chundu and Kandeya wards intended to reduce their cultivated areas by higher sizes than those households not affected by the disease. This finding confirmed by the fact that in Chundu ward the average size of the intended reduction was 2 acres among HIV/AIDS-affected households, five times higher than the intended 0.5 acres among non-HIV/AIDS households in the ward. In Kandeya ward, the situation was the same as that obtaining in Chundu as HIV/AIDS-affected households intended to reduce their total household cultivated area by 3.0 acres. This intended reduction is almost four times higher than the the 0.8 acres recorded among non-HIV/AIDS households.

5.5.2 Impact on harvested crop quantities

The changes in harvested crop quantities in Chundu and Kandeya wards between 2000/2001 and 2002/2003-crop season are presented in Table 5.3. The study hypothesis was that the occurrence of HIV/AIDS within the household was having a significant impact in the changes in the size of the cultivated area for particular crops in Chundu and Kandeya. The following null hypothesis was thus formulated and tested:

H_0: There are no significant differences in the changes in harvested crop quantities between HIV/AIDS affected and non-HIV/AIDS households in Chundu and Kandeya wards.

A One-way-ANOVA test was applied to establish the significance of these differences. The findings made with regard to the changes in the harvested quantities in particular crops are as follows:

5.5.2.1 Maize

In Chundu ward, HIV/AIDS recorded a 38% (21bags) decline in the harvested maize quantities. This decrease is significantly ($p<0.05$) higher than the average 21% (14 bags) recorded by non-HIV/AIDS households.

Table.5.3: Harvested crop quantities in 2000/2001 and 2002/2003 season

Crop	Ward											
	Chundu						Kandeya					
	Non-AIDS households			AIDS households			Non-AIDS households			AIDS households		
	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change
Maize (bags)	66	52	-21	55	34	-38	44	32	-27	40	21	-48
Cotton (bales)	10	7	-30	9	3	-63	7	5	-29	7	3	-57
Tobacco (bales)	8	6.5	-19	8	4	-50	3.5	3.0	-14	3	2	-33
Groundnuts/ Roundnuts (bags)	6	10	+67	6	5.5	-8	4	3	-25	5	4	-20
Paprika (bags)	8	11	+38	8.0	7.5	-6	3.0	2.5	-17	2.5	1.5	-40
Cassava (buckets)	10	14	+40	8	11	+38	7	10	+43	10	16	+60

(Source: Research Survey, 2003), Note: The figures for harvested crop quantities were used as given by households

The same situation obtained in Kandeya ward where HIV/AIDS-affected households recorded a significantly ($p<0.05$) higher decrease of 48% (19 bags) in comparison to the decline in harvested quantities of 27% (12 bags) reported by non-HIV/AIDS households. Although most of the HIV/AIDS-affected households in the two wards did not significantly reduce the size of the cultivated area for maize (see Section 5.5.1.1), they were unable to maintain their production levels for maize between 2000/2001 and 2002/2003. From focus group discussions, it was revealed that this decline in harvested maize quantities resulted from the affected households being unable to thoroughly weed and feed the crop due to labour and cash resource diversion.

Significant ($p<0.05$) differences in the decline in harvested maize quantities were also recorded between Chundu and Kandeya wards, with households in Kandeya ward recording higher declines than those recorded in Chundu (Table 5.3). The major reason cited by most households in Kandeya ward for the decline in harvested maize quantity was the shortage of cash to purchase inputs. During focus group discussions in Kandeya ward, most households revealed that maize seed and fertilizer were expensive. This is in contrast to Chundu ward where households purchase maize seed only once every two years. In the intervening year they plant traditionally preserved seeds from the previous crop that is guaranteed to germinate and produce a good harvest. The seed is preserved in kitchen soot to prevent it from attacks by weevils.

5.5.2.2 Cotton

With regard to cotton, HIV/AIDS-affected households in Chundu ward reported an average decline in harvested quantities of 63% (6 bales). This significant ($p<0.05$) decline is twice higher than the decline of 30% (3 bales) reported by non-HIV/AIDS households. The situation was similar in Kandeya ward, where HIV/AIDS-affected households reported a significantly ($p<0.05$) higher decline of 57% (4 bales) compared to 29% (2 bales) reported among non-HIV/AIDS households in the ward. These significantly higher declines among HIV/AIDS-affected households are attributed to the fact that cotton is labour intensive and requires constant attention as well as more cash resources for chemicals (herbicides and pesticides). HIV/AIDS-affected households thus find it difficult to maintain constant production levels. This is because HIV/AIDS induces shortage of labour in the household due to sickness and/or death. Moreover cash resources that could be used for chemicals are diverted towards medication.

The significant differences ($p<0.05$) in the decline between Chundu and Kandeya wards resulted mostly from four factors:

(a) The unavailability of draught power- 74% of the households in the ward attributed the decline to the shortage of draught power to cultivate and ridge their fields. Most farmers in the ward use the hoe to weed and ridge. This is in contrast to Kandeya where most farmers own cattle, which they use as draught power to weed and ridge.

(b) Shortage of chemicals- 26% of the farmers in Chundu ward cited the shortage of cash to purchase pesticides and herbicides as the major reason for the decline in harvested cotton quantities. During focus group discussions in the ward, it was revealed that

pesticides and herbicides are very expensive to obtain since they have to travel 60km to purchase them from the nearest town. Most farmers in the ward thus grow cotton with little or no pesticides or herbicides, resulting in a marked decline in harvested cotton quantities. In Kandeya however the pesticides and herbicides are easily and cheaply accessed from the nearby Mt Darwin town.

(c) Differing climatic conditions of the two wards-Chundu ward is located in farming Region II, where the moist and humid conditions of the Zambezi valley encourage the proliferation of fungal and viral diseases as well as pests. Thus farmers spray their cotton more often than those of Kandeya in region III, which is drier and therefore less humid. According to the A.R.E.X official in Chundu, cotton fungal diseases are numerous in the area to the extent that farmers spray their cotton 5-6 times before its harvested. This is more than the 2-3 times that Kandeya farmers spray their crop. In the absence of cash to buy these chemicals, households in Chundu ward therefore suffer heavily as pests and diseases destroy their cotton.

(d) The unavailability of hired labour-Some of the cotton crop in the ward is destroyed in the field due to late picking. The majority of the farmers in the ward usually pick their cotton twice rather than three or four times resulting in some ripened cotton being destroyed together with the stalks. Unlike in Kandeya where farmers can hire cheap casual labour displaced from former commercial farms in Matepatepa and Centenary (see Section 5.3), casual labour in Chundu is scarce and therefore expensive.

5.5.2.3 Tobacco

The findings on trends in harvested quantities of tobacco are almost similar to those of cotton. HIV/AIDS-affected households in Chundu registered an average decline of 50% (4 bales). This significant decline ($p<0.05$) is more than two times the average decline of 19% (1.5 bales) registered by non-HIV/AIDS households. In Kandeya ward HIV/AIDS-affected households also registered a significantly ($p<0.05$) higher average decline of 33% (1 bale) in comparison to the 14% (0.5 bales) decline in harvested tobacco quantity registered by non-HIV/AIDS households. Like cotton, tobacco is a labour intensive cash crop. It requires high labour inputs from the nursery up to the curing stage. While non-HIV/AIDS households may be able to meet this labour demand throughout the season, HIV/AIDS-affected households do not. This finding is confirmed by HIV/AIDS-affected households in Chundu ward who indicated that they sometimes harvest only the best crop in the field. Hence some of the crop rots in the field before harvesting. The significantly ($p<0.05$) higher crop quantity decline in Chundu than in Kandeya ward for HIV/AIDS-affected households is attributed to the fact that hired labour is cheap and easily available in Kandeya ward. Even some HIV/AIDS-affected households are able to hire labour and thus minimise the crop quantity declines.

5.5.2.4 Groundnuts and roundnuts

Non-HIV/AIDS households recorded an increase in harvested quantities of 67% (4 bags). This is almost eight times higher than the significant ($p<0.05$) decline of 8% (0.5 bags) recorded among HIV/AIDS-affected households. In Kandeya ward, however, both

HIV/AIDS-affected and non-HIV/AIDS households reported decreases of 20% (1.0 bags) and 25% (1.0 bags) respectively. This difference was however not significant ($p>0.05$).

This significant increase in harvested groundnuts and roundnuts quantities among non-HIV/AIDS households in Chundu ward is attributed to the 40% (0.2 acres) increase in cultivated area for groundnuts and roundnuts recorded among non-AIDS households in the ward between 2000/2001 and 2002/2004 season (see Section 5.5.1.4). With seeds being available, non-AIDS households were able to plant most of their cultivated area, tend the crops effectively and thus increased their harvested quantities. In Kandeya ward, shortage of seeds to plant meant that even non-AIDS households were unable to plant large areas and thus this resulted in decreased harvested quantities.

5.5.2.5 Paprika

Significant differences ($p<0.05$) in harvested paprika quantities were recorded between HIV/AIDS and non-HIV/AIDS households in Chundu ward. Whereas non-AIDS households recorded an average increase in household harvested paprika of 38% (3 bags) HIV/ AIDS-affected households recorded a decrease of 6% (0.5 bags). In Kandeya ward, however, both HIV/AIDS-affected and non-HIV/AIDS households recorded decreases in the quantities of harvested paprika. These decreases of 17% among non-HIV/AIDS households and 40% among HIV/AIDS-affected households was however not significant.

The significant increase in harvested produce by non-AIDS households in Chundu ward is attributed to the fact that farmers increased their cultivated area for paprika by 33%

(0.2 acres) between 2000/2001 and 2002/2003. Although HIV/AIDS-affected households in the ward also increased their cultivated area by 20% (0.1 acres), they were unable to increase harvested quantities as well. This is due to labour shortages in the household.

Significant differences ($p<0.05$) were recorded between HIV/AIDS-affected households in Chundu and Kandeya wards where households recorded average decreases in harvested quantities of 6% (0.5 bags) and 20% (0.5 bags) respectively. The availability of an assured source of seedlings at Chitindiva, and expertise in growing the crop that is abundant in the ward could have contributed to the smaller decrease in Chundu than in Kandeya ward. Moreover, the growing of the crop in Chundu ward since 1990 has developed groups of farmers with expertise in growing the crop. This situation contrasts with that of Kandeya where paprika was first grown in the ward in 1995.

5.5.2.6 Cassava

Unlike most crops that experienced decreases in harvested quantities, cassava experienced increases in harvested quantities in both wards. In Chundu ward, non-HIV/AIDS households recorded an increase in harvested cassava of 40% (4 buckets). This is higher than the 38% (3 buckets) recorded among HIV/AIDS-affected households. The differences in the increases were however not statistically significant ($p>0.05$).

In Kandeya ward HIV/AIDS-affected households recorded an average increase in harvested cassava of 60% (6 buckets). This is significantly ($p<0.05$) higher than the 43% (3 buckets) recorded among non-HIV/AIDS households. The statistically significant

($p<0.05$) difference in the increases between HIV/AIDS and non-HIV/AIDS households in Kandeya is explained by the fact that cassava is regarded as a special crop with nutrients that slow the progression of HIV to AIDS. As one interviewed traditional healer in Kandeya ward revealed, herbalists and traditional healers heavily recommend cassava as a concoction for patients with weak immune systems. During focus group discussions in Kandeya ward it was revealed that people in the ward believed that HIVAIDS-affected people that ate cassava consistently prolonged their lives more than those that did not. Thus HIV/AIDS-affected households work tirelessly to maintain production of the crop and give longevity to affected household members.

The fact that both HIV/AIDS-affected and non-HIV/AIDS households in both wards recorded increases in harvested cassava demands further explanation. The years under consideration (2000-2003) coincided with the period of severe economic hardships in the country. Most of the people in the communal areas could not afford to buy bread. They therefore used cassava as a substitute for bread. Hence the increased harvested quantities recorded.

5.5.3 Marketed crop quantities

The findings on the impact of HIV/AIDS on changes in marketed crop quantities are presented in Table 5.4. To find out whether there were any significant changes in marketed crop quantities between HIV/AIDS-affected and non-HIV/AIDS households, a null hypothesis was set and tested:

H_0: There are no significant differences in the changes in marketed crop quantities between HIV/AIDS-affected and non-HIV/AIDS households in Chundu and Kandeya wards.

After testing the hypothesis, the following findings were made with regard to the following different crops:

5.5.3.1 Maize

Significant ($p<0.05$) differences in marketed maize quantities were recorded between HIV/AIDS and non-HIV/AIDS households in Chundu ward. In this ward HIV/AIDS-affected households recorded a decline of 35% (13 bags). This is higher than the average 25% (11 bags) recorded among non-HIV/AIDS households in the same ward. This disparity in marketed maize quantities is a reflection of the marketing problems in the ward. Most transporters to Vuti G.M.B depot (60km away) demand cash payment for deliveries, rather than the stop order payment system, where the G.M.B deducts the transport costs from the farmer's payment and later forward it to the transporter. Most transporters argue that the system is inefficient as they sometimes get paid 6-8 months after making deliveries. While most non-HIV/AIDS households can afford to pay cash upfront, most HIV/AIDS-affected households are unable to do so. Hence most of the affected households deliver minimal maize quantities to the market. Failure to market the maize means that the cash base for most HIV/AIDS-affected households in the ward is reduced. This results in such households being unable to meet their medication requirements as well as future demands in agricultural investment.

Table 5.4: Marketed crop quantities in 2000/2001 and 2002/2003 season

Crop	Ward											
	Chundu						Kandeya					
	Non-AIDS households			AIDS households			Non-AIDS households			AIDS households		
	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change	Mean 2000/ 2001	Mean 2002/ 2003	% change
Maize(bags)	44	33	-25	37	24	-35	24	14	-41	22	15	-32
Cotton(bales)	9	6	-33	6.5	4	-38	7	5	-29	4.5	3	-33
Tobacco(bales)	6	7	+14	6	4	-33	2	2.5	+25	2.5	1.5	-40
Groundnuts /roundnuts(bgs	3	4	+33	3.5	3	-14	2	1.5	-25	1.5	0.5	-67
Paprika (bags)	7	9	+29	4	5.5	+38	2	1.5	-25	2	1	-50
Cassava(bkts)	3	2	-33	2	1	-50	3	1	-33	3.5	0.5	-86

Source: Research Survey, 2003, bkts=buckets, bgs=bags
Note: The figures for harvested crop quantities were used as given by households

In contrast to the situation in Chundu ward, HIV/AIDS-affected households in Kandeya recorded significantly ($p<0.05$) lower average declines of 32% (7 bags) in comparison to 41% (10 bags) among non-HIV/AIDS households. As revealed from F.G.Ds, this disparity is accounted for by the fact that most HIV/AIDS-affected households in Kandeya made concerted efforts to sell most of their maize produce to raise money for medication and other expenses. Marketing the crop is not difficult since they can even use ox-drawn scotchcarts to ferry their maize to Mt Darwin G.M.B depot. Cases have been recorded in the ward of affected households who sell most of the maize produce, but face imminent food shortages. It should thus be noted that the fact that HIV/AIDS-affected households in Kandeya recorded lower declines in marketed maize quantities does not reflect stable production in such households. Rather, it underlines the fact that HIV/AIDS-affected households are prone to food shortages, as their situation compels them to sell most of their maize to raise cash for medication and transport expenses.

The significant ($p<0.05$) difference recorded in the declines between HIV/AIDS households in Chundu and Kandeya ward is attributed to the ease with which households in Kandeya transport their maize produce to the GMB. This is in contrast to Chundu ward, where transport is problematic.

5.5.3.2 Cotton

No significant ($p>0.05$) differences in the declines in marketed cotton were recorded between HIV/AIDS-affected and non-HIV/AIDS households in both Chundu and Kandeya ward. While HIV/AIDS-affected households recorded decline of 38% (2.5 bales), non-HIV/AIDS households recorded an average decline of 33% (3 bales) in

Chundu ward. In Kandeya ward, the declines were 33% (1.5 bales) and 29% (2 bales) respectively. Furthermore, no significant ($p>0.05$) differences in the declines were also recorded between HIV/AIDS-affected and non-HIV/AIDS households in Chundu and Kandeya wards. The absence of any significant differences is accounted for by the fact that in Kandeya ward, there is a cotton marketing company (Cottco) in the nearby Mt Darwin town. Similarly, in Chundu ward, the same company has a seasonal depot at Chitindiva Township in the ward. Thus marketing of the crop is easy.

5.5.3.3 Tobacco

The quantity of marketed tobacco increased by an average 14% (1.0 bales) in Chundu ward. This is significantly ($p<0.05$) higher than the 33% (2 bales) decline recorded among non-HIV/AIDS households in the same ward. Similarly, in Kandeya ward, non-HIV/AIDS households recorded an average increase of 25% (0.5 bales), which is significantly ($p<0.05$) higher than the 40% (1.0 bales) decline recorded among HIV/AIDS-affected households. However no significant ($p>0.05$) differences were recorded between households in Chundu and Kandeya wards.

The significant average increases among non-HIV/AIDS households in both Chundu and Kandeya wards result from the fact that tobacco is a heavy foreign currency earner and most farmers try to market as much of the crop as they can. On the contrary, the declines experienced among HIV/AIDS-affected households could be attributed to the following factors:

(a) Tobacco is labour intensive- tobacco is labour intensive, especially during the curing stage. A lot of labour is required to cut wood for firing barns and to continuously monitor curing temperature even during the night. HIV/AIDS-affected

households thus find it difficult to cure all their harvested tobacco. It is thus common for farmers to harvest tobacco, but fail to cure all of it such that it gets destroyed without being cured. Hence a marked decline in marketed produce results.

(b) Distances to auction floors-both Chundu and Kandeya wards are located far away from Harare, where the only auction floors in Zimbabwe are. Farmers ferry their tobacco bales by bus to Harare. Thus most farmers with one or half a bale of tobacco see no economic value in travelling over 200km to market the crop, as the returns will be minimal. Such a scenario means that some farmers even fail to market their crop.

5.5.3.4 Groundnuts and roundnuts

Non-HIV/AIDS households in Chundu ward reported experiencing an increase of 33% (1.0 bags). This is significantly ($p<0.05$) higher than the 14% (0.5 bags) decline reported among HIV/AIDS-affected households. This difference results from the fact that HIV/AIDS-affected households in the ward also recorded lower harvested quantities for groundnuts and roundnuts (see Section 5.5.2.4), leaving them with little to sell. This situation is the same as in Kandeya ward, where HIV/AIDS-affected households recorded a significantly ($p<0.05$) higher decrease in marketed quantities of 67% (1 bag) in comparison to a an average decline of 25% (0.5 bags) recorded among non-HIV/AIDS households. The significantly ($p<0.05$) higher decrease in Kandeya (25%) in comparison to the increase of 33% in Chundu among non-HIV/AIDS households is due to the higher increase in harvested quantities of 67% recorded in Chundu ward among non-HIV/AIDS households.

5.5.3.5 Paprika

Chundu ward reported increases in marketed paprika. Non-HIV/AIDS households reported an increase of 29% (2 bags). This is higher than the average 38% (1.5 bags) increase recorded by HIV/AIDS-affected households. The differences were however not significant ($p>0.05$). The increases are attributed to the easy marketability of paprika in the ward. This is because there is an agency from Ruwa that buys paprika at Chitindiva Township during the marketing season. It is this same agency that also contracts some farmers to grow the crop, which it buys.

Contrary to the situation obtained in Chundu, both HIV/AIDS-affected and non-HIV/AIDS households in Kandeya recorded decreases of 50% (1 bag) and 25% (0.5 bags) in marketed paprika respectively. The significant ($p<0.05$) differences between the decline among HIV/AIDS-affected and non-HIV/AIDS households in the ward stem from the fact that HIV/AIDS-affected households find it difficult to market the crop in Harare, over 200km away. This is also the reason why households in Kandeya ward recorded significantly ($p<0.05$) higher declines than in Chundu ward. The cost of transporting the paprika to the market from Kandeya is so enormous that it diminishes the profits derived by the farmers from the crop. In the end most households in the ward market only a small part of their harvested crop to the local market. The greater part of the crop is thus either consumed by the household or destroyed while in storage.

5.5.3.6 Cassava

Cassava recorded huge declines in marketed quantities in both Chundu and Kandeya wards. In Chundu ward HIV/AIDS-affected households recorded an average decrease

of 75% (3 buckets). This is significantly ($p<0.05$) higher than the 50% (2 buckets) recorded among non-HIV/AIDS households in the same ward. Similarly, in Kandeya ward, HIV/AIDS-affected households recorded a significantly ($p<0.05$) higher decrease in marketed cassava of 86% (3 buckets) than the 33% (2 buckets) recorded by non-HIV/AIDS households. These differences indicate the reluctance by HIV/AIDS-affected households to sell cassava on the belief that it is crucial in boosting an HIV/AIDS patient's immunity system. Thus in Kandeya ward, where this belief is strong, greater decreases were recorded for marketed cassava than in Chundu ward. Even though the majority of the households in both wards were reducing their marketed produce so as to use the cassava as a substitute for bread, HIV/AIDS households withheld more of their produce from the market for both food and medical purposes.

5.5.4 Household food security

Household food security is assessed from the perspective of how households view their food security situation. The household food situation is rated as either critical, inadequate or adequate (Figure 5.5). In Chundu ward 40% of the HIV/AIDS-affected households reported the household food security situation being critical. This is four times higher than the 10% reported among non-HIV/AIDS households in the ward. In Kandeya ward, the situation was the same as that obtained in Chundu. In this ward, 65% of the HIV/AIDS-affected households recorded critical household food security situation. This is two and half times higher than the 25% who indicated critical household food status among non-HIV/AIDS households.

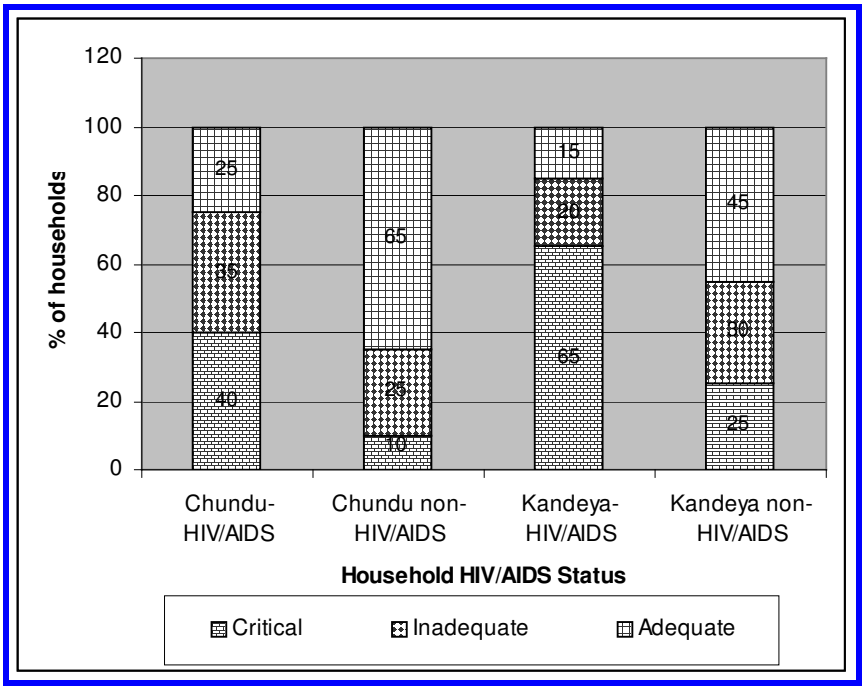

Figure 5.5: Food security situation in Chundu and Kandeya wards

(Research Survey, 2003)

The higher percentage of HIV/AIDS-affected households recording critical food security situation than non-HIV/AIDS households in both wards is a result of the fact that HIV/AIDS-affected households recorded significantly lower harvested quantities in food crops (see Section 5.5.2). That is also why only a lower percentage (25% in Chundu and 15% in Kandeya) of the HIV/AIDS-affected households than the non-HIV/AIDS households (65% in Chundu and 45% in Kandeya) reported having adequate food. The food security situation of HIV/AIDS-affected households is worsened by the fact that the HIV/AIDS-affected households also reported lower average annual incomes than non-HIV/AIDS households (Section 4.2.4), which makes it difficult for them to buy food. Thus HIV/AIDS is a critical factor in determining household food security in Chundu and Kandeya wards.

Figure 5.5 also shows that more households in Kandeya than in Chundu ward indicated critical household food security situation. This is explained by the fact that that, on the average, Chundu ward produces more food than Kandeya ward. The higher agricultural potential in Chundu ward results from the fact that the ward receives more rainfall and has relatively more fertile soils than Kandeya. Thus even though HIV/AIDS is affecting household food security in both wards, it is impacting heavily in Kandeya than in Chundu ward.

5.6 The prevalence of orphans

In Kandeya ward 54% of the households indicated the presence of at least one orphan in the household (Figure 5.6).

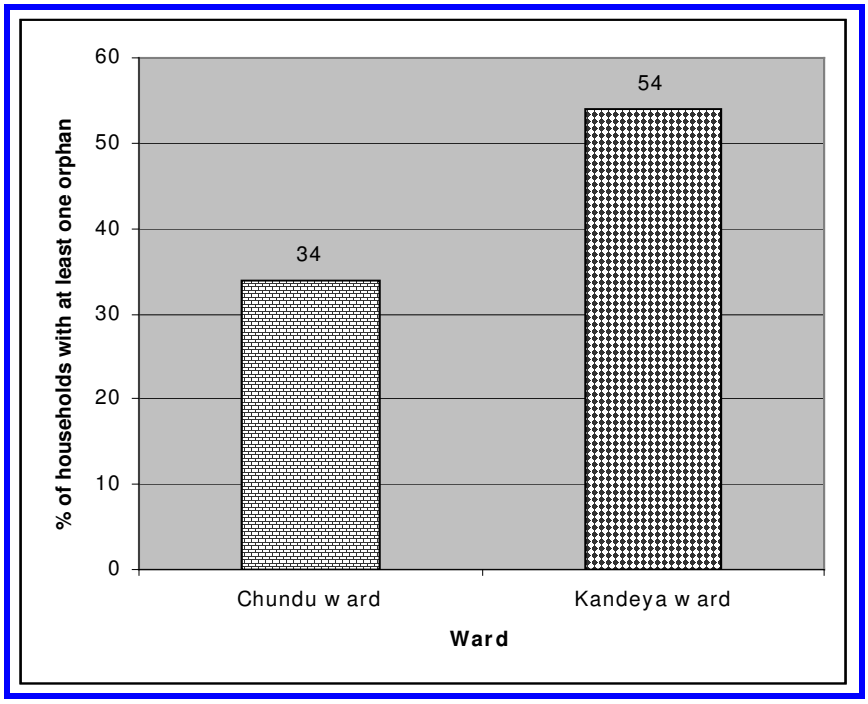

Figure 5.6: Percentage of households with at least one orphan in their household

(Source: Research Survey, 2003)

In Chundu Ward, the figure is lower, as only 34% of the households reported the presence of at least one orphan in the household. The prevalence of more households

with orphans in Kandeya than in Chundu is explained by the fact that there are more HIV/AIDS-affected households in Kandeya than in Chundu ward (see Section 4.2.2). HIV/AIDS kills parents prematurely, leaving children before they have attained the age of fifteen. This explanation is confirmed by the fact that more HIV/AIDS-affected than non-HIV/AIDS households reported having an orphan in Chundu and Kandeya wards (See Appendix 12).

5.7 Social discrimination

In order to determine the levels of discrimination in the two wards, households were asked whether they had suffered any form of discrimination as a result of the illness or death of a household member. The findings given in Figure 5.7 below indicate the percentage of households that reported being discriminated against because of the illness and/or death of a household member.

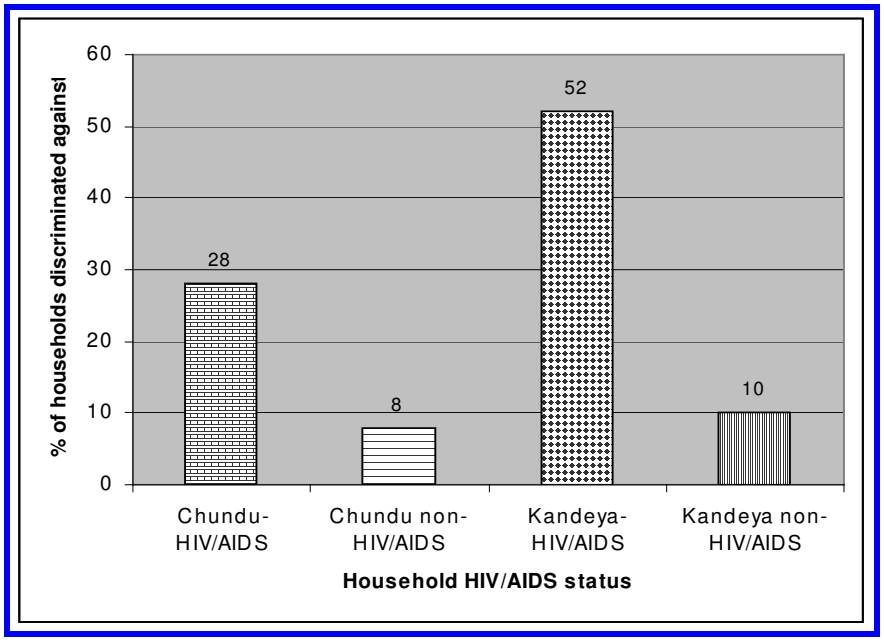

Figure 5.7: Households facing discrimination in Chundu and Kandeya

(Source: Research Survey, 2003)

In Chundu ward 28% of the HIV/AIDS-affected households reported being discriminated against in their communities. This is higher than the 8% who reported

facing discrimination because of the illness and/or death of a household member in the same ward. Similarly, in Kandeya ward, more HIV/AIDS-affected households (52%) than non-HIV/AIDS ones (10%) reported being discriminated against.

The fact that more HIV/AIDS-affected households in both wards reported social discrimination confirms the assumption made earlier in the study that HIV/AIDS is leading to discrimination against affected households. The most common form of discrimination in the two wards is the reduced interaction with the extended family unit and friends. It was revealed during F.G.Ds in Kandeya and Chundu that friends and extended family members shun the HIV/AIDS-affected households, as they fear that they may also contract the disease. Additionally, most people in the wards regard HIV/AIDS as a disease of the promiscuous. Hence they do not want to be seen associating with members from such families. These findings concur with those made in Uganda by Tibaijuka (1997), who found that HIV/AIDS-affected households were being shunned by relatives and friends who fear contact with infected members. The fact that more HIV/AIDS-affected households in Kandeya than in Chundu ward are facing discrimination is explained by the fact that people in Chundu ward sometimes attribute the HIV/AIDS sickness to witchcraft. Thus they are less likely to discriminate against those whom they think are bewitched, as witchcraft can befall anyone.

5.8 Summary

It has been shown in this chapter that household members supply the bulk of the labour requirements for crop production on the communal household farm. HIV/AIDS is however threatening this household labour in Chundu and Kandeya wards by debilitating and prematurely killing the household members. The result is

that significant declines in the size of the cultivated area are occurring among HIV/AIDS-affected households in labour intensive crops such as cotton and tobacco. HIV/AIDS is also causing significant declines in harvested quantities of maize, cotton, tobacco and paprika crops. The declines are much more pronounced in Kandeya than in Chundu ward. This is because Chundu ward has a high agricultural potential than Kandeya, owing to the high rainfall and relatively more fertile soils in the ward. The decline in harvested quantities means that most HIV/AIDS-affected households are facing critical household food shortages in both wards with the situation being more critical in Kandeya than in Chundu ward. HIV/AIDS is also causing significant declines in marketed crop quantities of maize and cassava. The significant decline in marketed cassava is due to HIV/AIDS-affected households consuming most of their produce in the belief that cassava boosts the immune system of an HIV/AIDS patient, while the decline in maize is a result of the reduced quantities harvested by affected households. No significant declines were however recorded in marketed cotton, tobacco, groundnuts and paprika quantities.

CHAPTER SIX

HOUSEHOLD COPING STRATEGIES

6.1 Introduction

This chapter identifies and discusses the major strategies that are being employed by households in Chundu and Kandeya wards to cope with the HIV/AIDS pandemic. Three major categories of coping strategies were identified. These are: strategies aimed at alleviating household labour loss, strategies for raising household income and strategies for improving household food security.

6.2 Strategies for alleviating household labour loss

Four major strategies are being used in Chundu and Kandeya wards to mitigate household labour loss. These strategies are:

(a) Decreasing the size of the household cultivated area,

(b) Switching from labour-intensive cash crops to less labour intensive food crops,

(c) Increasing the length of the working day and,

(d) Reducing the number of crops grown by a single household

These strategies are shown in Figure 6.2, below.

6.2.1 Decreasing the size of cultivated area

This is the most frequently used strategy as 56% of the HIV/AIDS-affected households in Chundu and 67% in Kandeya ward reported adopting this strategy to mitigate household labour loss induced by the epidemic. By decreasing the size of the cultivated area, households hope that they will be able to cultivate, feed and weed the reduced area than they would on the larger one. The most affected crops are those that are labour-intensive like cotton and tobacco. Although 68% of the households who

adopted this strategy in Chundu and 55% in Kandeya ward regarded the strategy as being extremely effective, it is argued in this study that reducing cultivated area also tends to reduce household production. This is because HIV/AIDS-affected households do not usually have resources to invest in inputs such as fertilisers. Thus, even after reducing the size of the cultivated area, most of these households continue to farm intensively, thereby decreasing the quantities of crops harvested. Successive reduction in the size of the cultivated area thus may result in increasing food shortages and decreasing household income. HIV/AIDS-affected households may thus end up without either the food to feed themselves or the money to pay for transport and medication.

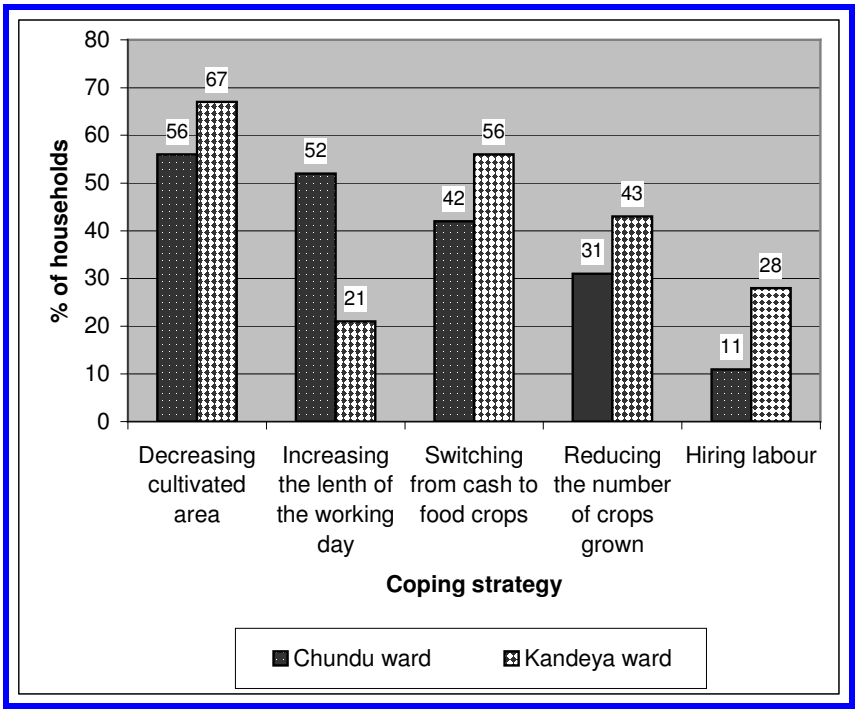

Figure 6.1: Major coping strategies for mitigating the loss of labour in Chundu and Kandeya wards (Source: Research Survey, 2003)

6.2.2 Lengthening the working day

This is the second most frequently used strategy in Chundu ward, with 52% of the HIV/AIDS-affected households reporting its use. In Kandeya ward this strategy is the

least used as only 21% of the affected households were using it. In Chundu ward, lengthening the working day entails starting the working day as early as 5:00 a.m. and stopping at 5:00 p.m. rather than the usual 6:00 a.m.- 4:00 p.m. Households adopting this strategy want to ensure that more work is done by putting in more man-hours to compensate for those lost through illness or death of household members. The effectiveness of this strategy in mitigating household labour loss is limited by the excessively hot conditions, especially in Kandeya ward, which make working in the afternoon almost impossible.

6.2.3 Switching from cash to food crops

More households (56%) are using this strategy in Kandeya than in Chundu ward (42%). Cash crops such as cotton and tobacco are the first to be stopped because they are labour intensive and require more attention than food crops like maize. In Chundu ward, for example, cash crop cultivation presents a major challenge during periods of labour shortages because there is very limited use of cattle as draught power. Such crops are thus the first casualties of this labour rationalization to fit existing demands. During periods of critical labour shortages, it therefore becomes rational to concentrate existing labour on growing food crops, whose low labour demands are easily met by the household. This strategy is effective as it enables households to concentrate on food crops, which provide both food and generate income for the households when sold. Furthermore, food crops have the advantage that they are accessed as soon as the crops ripen, while it takes a longer time for cash crops to be sold and benefit the household.

6.2.4 Reducing the number of crops grown by a household

Reducing the number of cultivated crops is an effective way of dealing with the shortages of labour caused by HIV/AIDS. By growing few crops, households in Chundu and Kandeya wards want to have enough time to focus on core crops that sustain the household in terms of food and money. This strategy was adopted and being used by 31% of the HIV/AIDS-affected households in Chundu ward and 43% households in Kandeya ward. The crops that are the first to be abandoned are the labour intensive ones like cotton and tobacco. Most households end up concentrating on maize, groundnuts, roundnuts and cassava, whose labour requirements are low. With minimal labour, affected households in the wards are able to cultivate and produce fairly enough food for the household. Most households using this strategy in Chundu (64%) and in Kandeya (76%) indicated that this strategy was effective in mitigating labour shortages within the household. It should be noted however that the effectiveness of this strategy is limited by the fact that it eventually leads to a narrower range of crops being grown by the household, thereby decreasing the household's income base. This income base is vital in generating income to pay for transport and medication for the infected household members.

6.2.5 Hiring labour

This is one of the least used strategies in the two wards. Kandeya ward recorded a higher percentage (28%) of households adopting the strategy than Chundu ward (11%). The low usage of this strategy in Chundu ward reflect the acute shortage of people to hire as casual labour in the ward. Moreover the local people deem the practice of working in other people's fields (*maricho)* degrading. The comparatively low usage of the strategy to other strategies in both wards is due to the fact that

HIV/AIDSD-affected households usually do not have the cash to pay the hired labour. Thus households that are using this strategy are struggling to pay the hired labour as this exhausts their meagre resources sooner than they would want.

6.3 Strategies for raising household income

6.3.1 Selling crop produce.

This is the most frequently used strategy to raise income for HIV/AIDS-affected households in Chundu ward. In this ward, 76% of the HIV/AIDS-affected households (Figure 6.2) reported adopting this strategy to raise household income. This is higher than the 50% who indicated adopting the strategy in Kandeya ward. The higher percentage of households using this strategy in Chundu than in Kandeya ward could be an indication of the availability of the crop produce to dispose due to the higher production levels in the former ward (see Section 5.5). The strategy is widely used because crop production is the backbone of economic activity in the wards.

While selling agricultural produce is normal for households that produce excess quantities, HIV/AIDS is bringing into play an aspect of "forced selling", where even those households that do not produce excess are forced to sell even the little quantities that they produce so as to raise household income. Some of this income is required to pay for medication and transport for HIV/AIDS infected household members. The situation could not have been alarming if the households were mostly selling cash crops such as cotton and tobacco. Given the fact that HIV/AIDS-affected households in the two wards are shifting from cash to food crops, one can surmise that food crops form the greater percentage of the crop produce being sold by the HIV/AIDS-affected households. Thus the affected households, already experiencing significant declines in harvested crop quantities (see Section 5.5.2) are selling their meagre food resources to

raise household income. This strategy is thus not effective as it pushes HIV/AIDS-affected households into food crisis, while raising only a little income for the household.

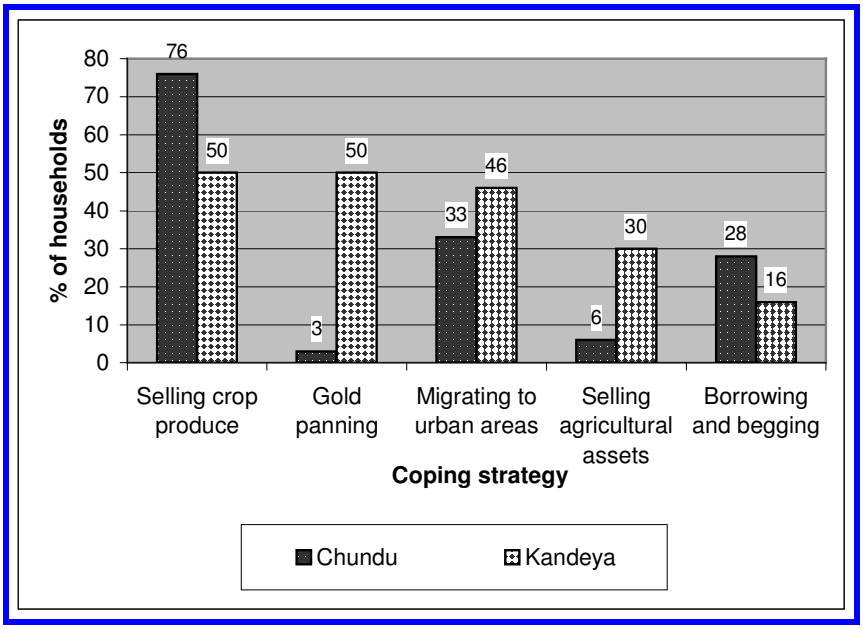

Figure 6.2: Coping strategies for raising household income in Chundu and Kandeya wards (Source: Research Survey, 2003)

6.3.2 Gold Panning

In Kandeya ward 50% of the HIV/AIDS-affected households indicated that they resort to alluvial gold panning as a strategy for raising household income. This makes gold panning the most frequently used strategy in the ward. In contrast to Kandeya, only 3% of the HIV/AIDS-affected households in Chundu ward reported adopting and using this strategy (Figure 6.2). This is because there are no important alluvial gold deposits in the ward. Although most households in Kandeya ward are adopting this strategy to raise household income, the effectiveness of the strategy is reduced because of the following four reasons:

(a) Gold panning is labour intensive and therefore most HIV/AIDS-affected households, already suffering from critical labour shortages, are unlikely to pursue the activity for a long time. The HIV/AIDS infected members tire easily and those that are not infected have little spare time to pan due to demands for caring activities as well as farming activities.

(b) Alluvial gold deposits are not permanent and households are unlikely to depend on income from gold panning for a long time. Hence gold panning becomes only a temporary way of raising household income.

(c) Alluvial gold panning is illegal. Most of the time gold panners are either arrested or face harassment from police and environmental agencies that protect the environment from being degraded.

(d) Engaging in gold panning takes away most of the time that household members are supposed to be farming. This is because alluvial gold panning is carried out mostly during the rainy season, when water for the panning process is adequate in the rivers and streams. Most households that engage in the practice thus risk ignoring food production and therefore face critical food shortages. Hence in both Chundu and Kandeya wards, this strategy can not be relied on to effectively cushion households from problems resulting from shortages of income within the affected households.

6.3.3 Temporary migration to urban areas for employment

Households affected by HIV/AIDS in Chundu and Kandeya are also sending some of their uninfected household members to urban areas to look for employment. In Chundu ward these household members migrate to Karoi, Kariba and Chirundu towns, while in Kandeya they move to Mt Darwin and Bindura towns. In Chundu ward 33% of the HIV/AIDS-affected households and 46% in Kandeya ward reported

using this strategy (Figure 6.2) and having at least one member of the household who had temporarily migrated to town to work and raise income for the survival of the household. By adopting this strategy, 52% of the households using the strategy in Chundu and 40% in Kandeya indicated that this strategy is effective in raising income for the household to survive. In Chundu ward this strategy is effective because the majority of the migrants easily find employment in the fishing camps of Kariba and Chirundu. They therefore send home sizeable remittances of about $70 000/month to help the other household members. The lower percentage of households who indicated success in raising household income through this method is a reflection of the fact that it is relatively difficult to find employment in the small industries of Mt Darwin and Bindura than it is in the larger fishing camps of Kariba and Chirundu. The relative success of this strategy over other strategies is based on the fact that industrial incomes are generally higher than agricultural ones.

6.3.4 Selling agricultural assets

Only 6% of the HIV/AIDS-affected households in Chundu ward indicated selling agricultural assets to raise household income (Figure 6.3). The absence of cattle in most households in the ward means that a negligible few households own assets such as ox-drawn ploughs, harrows and scothcarts. Thus the most important agricultural asset in the ward is the hoe, whose disposable value is very minimal. In contrast 30% of the HIV/AIDS-affected households in Kandeya ward reported selling agricultural assets as a means of raising household income to meet food, transport and medication expenses. The assets being sold in Kandeya include cattle, ox-drawn ploughs, harrows and scothcarts. While selling these assets forms a temporary source of household income, the long-term impacts are severe as the loss of these assets ultimately results

in the decline in household agricultural productivity. This is because the households (HIV/AIDS-infected) that are disposing cattle are the ones that require them most for draught purposes since they are the ones that suffer from acute labour shortages. In Kandeya ward, most households that sold their cattle are finding it difficult to produce because of the critical shortage of draught power. As Chief Kandeya aptly put it, selling cattle is "auctioning the engine that drives agricultural production". While most households sell their cattle in times of distress, hoping to buy others when the crisis ends, few are able to restock because of the astronomical cost of buying them. As revealed during F.G.Ds, the cost of cattle rises astronomically to levels beyond the reach of many. In December 2003, the price of one beast was averaging $700 000, and few households could afford such a price. Selling cattle is thus not strategy, but only a temporary household income source that in the long term leads to increased household impoverishment due to less production.

6.3.5 Borrowing and begging

In Chundu ward 28% of the HIV/AIDS-affected households were resorting to begging and borrowing from the extended family and from friends. This is higher than the 16% of the affected households who reported adopting this strategy in Kandeya ward. The difference in the percentage of households using this strategy between Chundu and Kandeya could be due to the fact that there are more HIV/AIDS-affected households in the later than the former ward (see Section 4.2.3). This means that there are fewer households to beg or borrow from in Kandeya since most of the HIV/AIDS-affected households are unable to meet their own cash resource requirements. The effectiveness of this strategy depends on the income status of relatives and neigbhours, as they give what is in excess of their own requirements. This means that

the strategy has limited room for success in Chundu and Kandeya wards, where most households were living below the poverty datum line in December 2003. Moreover few households are willing to lend money to poor households who can not guarantee its return.

6.4 Strategies for maintaining household food security

6.4.1 Reducing the number of meals per day

HIV/AIDS-affected households faced with food shortages in Chundu and Kandeya wards are reducing the number of meals that they are having per day (Figure 6.3).

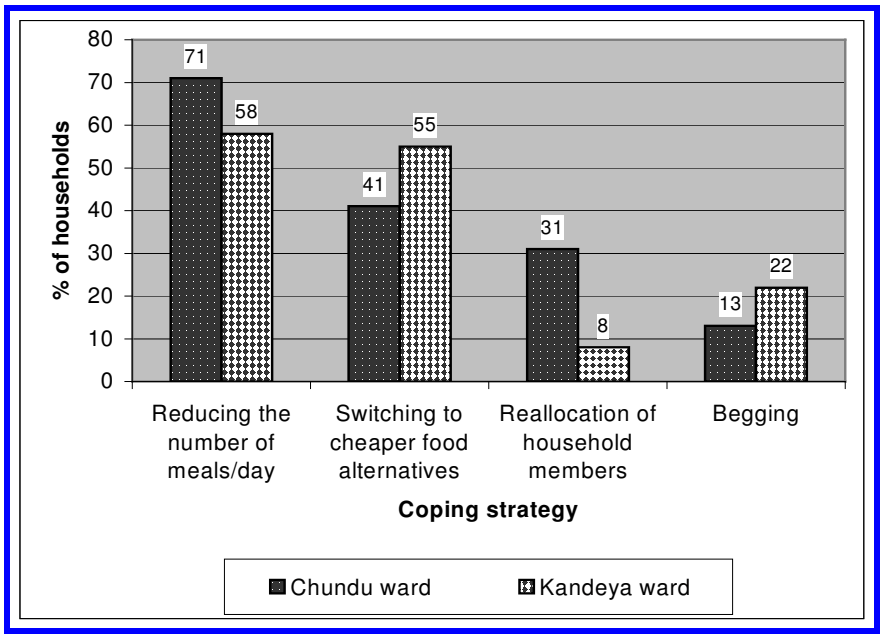

Figure 6.3: Strategies for maintaining household food security in Chundu and Kandeya wards (Source: Research Survey, 2003)

In Chundu ward, this is the most frequently adopted strategy. This is because 71% of the HIV/AIDS-affected households in the ward reported employing this strategy to maintain household food security by stretching their meagre food reserves to last for a long time.

Similarly, in Kandeya ward, this was also the most frequently adopted strategy for maintaining household food security, with 58% of the HIV/AIDS-affected households reporting the adoption and use of the strategy. Most households adopting this strategy in the two wards indicated that they were reducing their meals from the standard 3 meals to 2 meals/day.

Although, by using this strategy the meagre household food resources are stretched to last for a longer time, the strategy lacks viability in that HIV/AIDS patients are inadequately fed. Contrary to the assertions by most of the households using this strategy that the strategy is effective in maintaining household food security, it can be argued that less food, especially for HIV/AIDS patients aggravates their already falling health standards as patients get less energy, proteins and other micronutrients. As Loevinsohn and Gillepsie (2003) point out, reduced food intake and food quality are likely to hasten the progression to full-blown AIDS among people already infected with HIV. For those household members that are not infected by the disease, reduction in the number of meals/day entails less energy to carry out effective farming operations. Consequently, households will end up growing less food thereby worsening the already precarious household food situation. Thus, this strategy, though being adopted and used by households in Chundu and Kandeya wards, is less effective as it gradually leads to increased household food insecurity due to decreased food production.

6.4.2 Switching to cheaper food alternatives

This is the second most important strategy being adopted by households in both Chundu and Kandeya wards to maintain household food security. The strategy was

being adopted by 41% of the HIV/AIDS-affected households in Chundu and 55% in Kandeya ward. HIV/AIDS-affected households in the two wards are substituting cassava for bread at breakfast, *sadza* for tea at breakfast and *maheu,* a home-made non-toxic brew for dinner. In Chundu ward especially, the existence of the *mukoyi* wild herb that is used to make *maheu* without the need for adding sugar or yeast is proving to be a cheaper food alternative. This strategy is more effective in maintaining household food security than reducing the number of meals per day in that household members are assured of at least three standard meals per day. The major shortfall of the strategy is that some households end up having an unbalanced diet where there is too much of carbohydrates only (as in heavy reliance on *sadza*) and less proteins or other nutrients.

6.4.3 Reallocation of household members to extended families

More households in Chundu ward (31%) than in Kandeya ward (8%) are using this strategy (Figure 6.3). HIV/AIDS-affected households using this strategy in Chundu ward attribute the effectiveness of the strategy to the existence of strong family ties within the extended family system in the ward. This is also evidenced by the fact that a higher percentage of households (44%) in Chundu ward than in Kandeya (26%) indicated willingness to accept guardianship of members from the extended family. Moreover the strong social ostracisation (see Section 5.7) of members from HIV/AIDS-affected households in Kandeya means that few households in the ward are likely to accept responsibility to look after an extended family member.

During focus group discussions in Kandeya ward, respondents revealed that even though extended family members are sometimes not bold enough to openly dissociate themselves from HIV/AIDS-affected households, their actions leave no doubt as to

their intentions as they want nothing to do with the affected households. As one participant to the F.G.D commented:

"Unongoona nemaitiro avo kuti apa ndiri kusemwa"

("Their actions easily tell you that they shun you")

In Chundu ward, the situation is however different, as households are ready to help the affected household members. One of the reasons could be that HIV/AIDS symptoms are associated with witchcraft. Since witchcraft befall anyone, most are willing to help as they may find themselves wanting other people's help in future. It is however prudent to note that this strategy is mostly effective where the host household is not affected. This is because reallocating members to another affected household end up creating more problems for the host.

6.4.4 Begging for food

Begging is one of the least used strategies in Chundu and Kandeya wards where it is being used by 13% and 22% respectively. This shows that begging for food is usually the last strategy resorted to by households facing critical household food shortages. This is because begging has connotations of poverty and laziness. Hence households have to gather courage to beg. The greater percentage of households adopting this strategy in Kandeya is an indication of the severity of the pandemic in the ward. Most households affected by HIV/AIDS have reached crisis status where necessity for food is taking precedence over shyness from begging. Begging as a survival strategy is however not sustainable as the food realized from begging is mostly not adequate. Moreover, because of the tough economic conditions existing in the country during

2001, 2002 and 2003, few households could afford excess food to give. Thus those households begging for food cannot be said to be coping, but struggling to survive.

6.5 Summary

A variety of strategies are being employed in Chundu and Kandeya wards to mitigate the impacts of the HIV/AIDS pandemic. While in the short term the majority of the coping mechanisms are helping households to adjust to problems like labour and cash income losses due to HIV/AIDS illness or death, the long-term impacts of the coping mechanisms are disastrous. This is because most of the coping strategies result in the progressive narrowing of the crop base, the abandoning of cash crops, the reduction in agricultural asset base and the progressive decline in household food resources. On the basis of the findings in this study it is therefore logical to conclude that, in the long-term, households in the two wards are finding it difficult to cope with the impact of the HIV/AIDS pandemic on the household's agricultural activities and on household food security. The findings of this study are consistent with those of Rugalema (1999), who argues that most HIV/AIDS-affected households never fully cope, in the sense that they cannot simply return to some semblance of normality following the HIV/AIDS shock. Rather HIV/AIDS-affected households enter a downward trajectory of struggle. Other effective coping mechanisms are therefore needed for HIV/AIDS-affected households to survive.

CHAPTER SEVEN

SUMMARY, CONCLUSION & RECOMMMENDATIONS

7.1 Introduction

The aim of this study was to establish the socio-economic impact of HIV/AIDS on communal crop agricultural systems in Chundu and Kandeya wards. This chapter presents the major findings of the study and draws conclusions upon which key recommendations for preventing, mitigating and tackling the problems caused by HIV/AIDS in the wards are suggested.

7.2 Summary of major findings

7.2.1 Medical, transport and funeral costs

The study established that most households in Chundu and Kandeya wards have been affected by HIV/AIDS illness and/or death. In both wards, HIV/AIDS is causing significant increases in household medical and transport costs. These increases result from the fact that HIV/AIDS patients require constant medical attention as well as making frequent visits to medical care facilities. However, no significant increases in funeral expenses were established. In fact, on average, funeral costs for an HIV/AIDS death were significantly lower than those for a non-HIV/AIDS one. This was attributed to the fact that most households exhaust their financial resources on medical care such that by the time the patient dies, the household is almost destitute. The study also found that the occurrence of HIV/AIDS in the household results in significant loss of household income due to foregone production of the deceased. This is because those persons that die of HIV/AIDS illnesses are generally younger than those that die from other diseases. They therefore lose much more production years than those that die from other diseases. The greater percentage of these household costs are borne by

the households since only a negligible number of households in both Chundu and Kandeya wards are part of any medical aid scheme.

7.2.2 Crops grown and the major sources of labour on the household farm

Maize, which is the staple crop in the two wards, is grown by all households in the two wards. While maize is the major food crop, cotton and tobacco are the major cash earners in the wards. Any significant changes in the production of these three major crops (maize, tobacco, and cotton) are therefore likely to disrupt household food and income flows. The majority of the households in Chundu and Kandeya wards rely on household members to provide labour for crop production on the household farm. Although household labour is under threat from HIV/AIDS, this study found that household human labour is still the most important and essential agricultural input in Chundu and Kandeya wards.

7.2.3 Adequacy of household labour for crop production

More HIV/AIDS-affected households (over three times higher) reported experiencing critical labour shortages than those households not affected by the disease in both Chundu and Kandeya wards. It is thus argued that HIV/AIDS is the major factor determining the adequacy of household crop production labour in both Chundu and Kandeya wards. Such a scenario is caused by the fact that in most cases HIV/AIDS patients are bedridden due to the debilitating nature of the disease. Moreover the fact that HIV/AIDS is 100% fatal means that HIV/AIDS-affected households lose part of their labour prematurely through death. Chundu ward reported a higher number of households with critical household labour shortages than Kandeya because of the fact that most people in the ward do not own cattle to use as draught power.

7.2.4 Impact of HIV/AIDS on size of cultivated area

HIV/AIDS is resulting in significant decreases in the size of the cultivated area for such crops as cotton and tobacco. The greatest declines were recorded in Kandeya ward where households reported declines of 50% in cotton, tobacco and paprika. In Chundu ward the greatest declines were recorded in cotton (40%). The major reasons for the declines in cultivated area among HIV/AIDS-affected households included severe shortage of money for tillage purposes as well as severe labour shortages to cultivate larger areas. HIV/AIDS is however not impacting significantly on the size of the cultivated area for crops such as groundnuts, paprika and cassava. Increases in cultivated area for cassava were even recorded among HIV/AIDS-affected households. This could be due to the fact that the tuber was believed to have immune-enhancement proteins to prolong the life-span of HIV/AIDS patients. Moreover the harsh economic times in the country between 2000 and 2003 resulted in cassava being a suitable and inexpensive substitute for expensive bread.

7.2.5 Impact of HIV/AIDS on harvested crop quantities

HIV/AIDS is causing significant declines in harvested quantities in maize, cotton, tobacco and paprika crops. The declines are much more pronounced in Kandeya than in Chundu ward. This is because Chundu ward has a high agricultural potential than Kandeya, owing to the high rainfall and relatively more fertile soils in the ward. The decline in harvested quantities means that HIV/AIDS-affected households are facing critical household food shortages in both wards with the situation being more critical in Kandeya than in Chundu ward. Both HIV/AIDS and non-HIV/AIDS households in Chundu ward Kandeya wards however recorded increases in harvested quantities of cassava. These increases resulted from the increased cultivated area that was recorded in the wards.

7.2.6 Impact of HIV/AIDS on marketed crop quantities

Significant declines in marketed crop quantities of maize, tobacco and cassava have been recorded as a result of HIV/AIDS. The significant decline in marketed cassava is due to the fact that HIV/AIDS-affected households are consuming most of their produce in the belief that cassava boosts the immunity system of an HIV/AIDS patient. Moreover cassava had also become an inexpensive substitute for bread at breakfast. The decline in maize is a result of the reduced quantities harvested by HIV/AIDS-affected households. Declines in marketed tobacco are attributed to poor marketing system in the wards. This is because farmers sell their produce to just two tobacco auction floors in Harare, over 200km away. No significant declines were however recorded in the quantities of marketed quantities of cotton, groundnuts and paprika. Rather paprika, especially in Chundu ward, experienced an increase in marketed quantities. The increase resulted from the presence of a paprika-marketing agency at Chitindiva Township. This agency buys for cash most of the paprika that is grown in the ward. HIV/AIDS households in the ward are also selling as much as they can to raise money for medical purposes.

7.2.7 Household food security

In both Chundu and Kandeya wards, more HIV/AIDS-affected households are facing critical food shortages. In Chundu ward the percentage of HIV/AIDS-affected households reporting critical household food security situation were four times higher than among non-HIV/AIDS households. In Kandeya, the situation was the same as the percentage of HIV/AIDS-affected households reporting critical household food shortages was twice that among non-HIV/AIDS households. The higher percentage of HIV/AIDS-affected households recording critical food security situation than non-

HIV/AIDS households in both wards is a result of the fact that HIV/AIDS-affected households recorded significantly lower harvested quantities in food crops (see Section 5.5.2). Thus HIV/AIDS is a critical factor in determining household food security in Chundu and Kandeya wards. The situation is however more critical in Kandeya than in Chundu ward due to the fact that HIV/AIDS-affected households in Chundu ward are producing more food than those in Kandeya ward.

7.2.8 Social discrimination

HIV/AIDS patients are facing a higher degree of social discrimination. Women are being discriminated in churches and women clubs, while children whose parents had HIV or had died of AIDS face discrimination at school and at playgrounds in the villages. This discrimination is more apparent in Kandeya than in Chundu ward as people in Chundu sometimes attribute the HIV/AIDS sickness to witchcraft and therefore are less likely to discriminate against those whom they think are bewitched.

7.2.9 Prevalence of orphans

The occurrence of HIV/AIDS within households is resulting in the increase of orphans in Chundu and Kandeya wards. This is because HIV/AIDS is prematurely killing parents, thereby leaving children before they attain the age of 15. The prevalence of orphans is more pronounced in Kandeya than in Chundu ward. This shows that the disease has established itself more firmly in Kandeya than in Chundu ward.

7.3 HIV/AIDS coping strategies

A number of strategies are being employed in Chundu and Kandeya wards to mitigate the impacts of the HIV/AIDS pandemic in the wards. These strategies include strategies for alleviating household labour loss, strategies to maintain household food security and strategies aimed at raising household income. While in the short term the majority of the coping mechanisms help households to adjust to problems of labour and cash income losses resulting from HIV/AIDS illness or death, the long term impacts are disastrous. This is because most of the coping strategies result in the progressive narrowing of the crop base, in abandoning cash crops, in the reduction of the agricultural asset base and in the progressive decline of household food resources. It can be argued therefore that rather than coping, the majority of the households are struggling to cope and survive. Other effective coping mechanisms are thus needed for HIV/AIDS-affected households to survive.

7.4 Conclusion

HIV/AIDS is impacting negatively on household costs in Chundu and Kandeya wards. It is increasing the medical and transport costs that HIV/AIDS-affected households are incurring. Cash crops such as cotton and tobacco are being affected, as the size of their cultivated area is being cut back because of shortages of labour due to the HIV/AIDS pandemic. The reduction in cultivated area is also resulting in decreased crop yields. A consequence of increased household costs and reduced crop yields is a progressive decline in household food security. To counter these impacts of the HIV/AIDS epidemic on the household, a number of coping strategies aimed at rationalizing labour shortages, raising household income and maintaining household food security are being employed by the households. Unfortunately, most of these

strategies offer only short-term benefits. There is therefore need for alternative strategies to enable the survival of affected households.

7.5 Recommendations

7.5.1 Protecting the sources of labour.

7.5.1.1 HIV/AIDS education and risk awareness

The agricultural sector should recognize the fundamental fact that household labour, which is the most important input in communal agriculture, as revealed in this study, is under threat from the HIV/AIDS pandemic. There is therefore need to protect this labour source from the pandemic for communal agriculture to remain viable. The best way of protecting this labour is to ensure that household members do not get infected by the HIV virus. This is possible by incorporating HIV/AIDS education and risk awareness programmes into the school curriculum and into agricultural extension messages. This comes out of the realisation that awareness on how HIV/AIDS affects agriculture in the areas is low. Moreover the current agricultural extension services are focussed on giving farming advice to farmers without making them aware that their farming operations and livelihoods are threatened by the HIV/AIDS pandemic. Agricultural extension workers should be well trained in programmes that aim at preventing, controlling, and mitigating the impacts of HIV/AIDS on households and their farming systems. This recommendation is not expensive since A.R.E.X already has adequate personnel in the wards. What is only needed is to equip them with enough knowledge to handle the interface between HIV/AIDS and agriculture.

7.5.1.2 Introducing low paying medical and funeral schemes

The study has revealed that HIV/AIDS is causing significant increases in household medical costs. It is therefore recommended that Government introduce an inexpensive medical aid scheme tailor-made for communal farmers, just as there are medical aid systems tailor-made for the civil service. This will help communal farmers to reduce medical expenses that are impacting negatively on crop production in the communal areas. Local funeral schemes, such as those in Chundu, should be encouraged in Kandeya to reduce the money spent by the household on funeral expenses. This will leave households with more money to invest in crop production.

7.5.2 Introducing labour saving schemes and technologies

Since HIV/AIDS increases morbidity and mortality and consequently reduces available labour it is imperative that labour saving schemes and technologies are introduced in both Kandeya and Chundu wards. These strategies include:

(a) Communal labour pooling (*nhimbe/hoka*)-It is recommended that communal labour pooling be revived and given new impetus in both Chundu and Kandeya wards. It should be revised in a format where there is minimal spending by the host on food. These *nhimbe/hoka* sessions can be organized at household as well as community levels and coordinated by local leaders such as V.I.D.C.O officials and village headsmen.

(b) Introduce practices that reduce labour use- Recognizing that HIV/AIDS is decimating huge numbers of agricultural labour force in Chundu and Kandeya wards, it is recommended that strategies like intercropping be implemented in the wards. Less labour will be used in terms of ploughing and weeding because, as the farmers weed maize for example, they will also be weeding other leguminous crops like

groundnuts and roundnuts in the same field. Labour conserving methods such as zero tillage should also be used.

7.5.3 Promoting programmes to improve draught power availability

HIV/AIDS is decimating the size of the household head in Kandeya as cattle are sold to pay for medication and at funerals. Draught power in the ward is being drastically reduced. It is therefore imperative that restocking be carried out in Kandeya ward to ease labour shortages. It is recommended that government introduce low interest rate restocking schemes for farmers to purchase cattle and pay back their loans after the harvest period. Once the scheme is started and other farmers begin paying back, a revolving fund can be set up so as to benefit more people. In Chundu ward it is recommended that *tsetse* control programmes be intensified to enable households to keep cattle. Additionally, donkeys can also be introduced as draught power in the ward as they are less costly to acquire. Moreover donkeys are not as affected by *tsetse* flies as cattle are.

7.5.4 Maintaining and/or increasing current crop production

7.5.4.1 Improving the availability of inputs

Government should, through the GMB, Z.F.U and A.R.E.X, provide communal farmers with loans in the form of seeds, fertilizers and herbicides at low concessionary rates that take into account the poverty of communal farmers. The inputs should be supplied to farmers well ahead of the start of the planting season so that they are able to prepare their land and plan in advance. Another strategy for having access to cheap inputs is to introduce low external (purchased) input

technologies and practices such as using specially preserved maize from the previous season as seed rather than buying seeds every year.

7.5.4.2 Promoting short maturation high yielding crop varieties

Farmers in Chundu and Kandeya wards should use crop varieties that mature quickly so that they do not spend a lot of time in the fields. This will mean that they will concentrate their labour for short periods of time and at the same time reap good harvest from the high yielding varieties. This can be done for crops such as cassava and maize.

7.5.4.3 Introduction of farming lessons

Farmer schools should be introduced to teach good soil conservation methods, proper timing of the onset of the farming season, and how to grow other crops that are fairly new to the wards such as paprika and tobacco. While in Chundu ward these farmers' lessons already exist, they are done infrequently and very few people, who are usually over 50 years, are attending them. Concerted efforts thus have to be made to revitalize the programme in Chundu while in Kandeya the programme has to be introduced as it is not currently available. In both wards participation of young farmers below the age of thirty should be encouraged, as they are the backbone of future agricultural production.

7.5.5 Community investment

The communities of Chundu and Kandeya should invest in community-owned assets such as ox-ploughs, cultivators and scotch carts which all those who contribute towards their purchase can use. This recommendation comes out of the realization

that it is very difficult for most of the individual households in the wards to purchase these assets on their own, as they are now very expensive. In times of household cash crisis, it will also be difficult for the affected households to dispose assets belonging to the community.

7.5.6 Transfer of knowledge, information and technology

The death of household members in their agriculturally prime productive years is depriving households of agricultural skills, knowledge and experience that are necessary to maintain agricultural production. It is therefore prudent that programmes that ensure the smooth inter-generational transfer of agricultural knowledge and skills be put in place in the wards. Agricultural extension workers should thus ensure that they include women and children in their farming training programmes. This will reduce household vulnerability to the loss of institutional memory, skills and experience should the household members who make agricultural decisions die.

7.5.7 Income generating activities

One of the best ways that agricultural communities that are threatened by HIV/AIDS can survive is to ensure that they diversify their income generating projects to include economic activities other than crop production. Such activities include poultry, bee farming and pig rearing. In addition to the "food-for-work" programmes currently running in Chundu and Kandeya wards, the government and N.G.Os should also implement programmes for paying farmers in cash. Even if the farmers are paid minimal amounts of money, that little is better than nothing as it will allow the people to generate income to fund agricultural activities. It is ,however, emphasized that

these money-for-work programmes be done only on the non-working days (*chisi)* so that they do not interfere with agricultural activities.

7.5.8 Household food security

Household food security is critical in both Chundu and Kandeya wards, especially among HIV/AIDS-affected households. It is thus recommended that the following schemes be put in place:

7.5.8.1 Zunde ramambo

This scheme involves the farming of communal fields where all the people in the villages will be required to donate some of their time to the farming of the communal fields. In Chundu the *Zunde ramambo* concept has been adopted, though at a low scale and is proving to be reliable in supplying food to needy households in times of crises. It is thus recommended that this concept be carried out at a larger scale that will benefit a lot of families that will be in need of food. In Kandeya ward this scheme is not functional even though the chiefs indicated that it would work if introduced. Thus the concept has to be encouraged to take root in the ward.

7.5.8.2 Encouraging adequate food storage

Households in both Chundu and Kandeya should keep adequate food stocks before selling the excess. This comes out of the realization that, as a coping strategy, some of the households that reported food insecurity in the wards are selling their produce even before meeting their household food requirements.

7.5.8.3 Targeting HIV/AIDS-affected households

Government and non-governmental organizations that give food aid should affirmatively target HIV/AIDS-affected households. This is because the ones that are experiencing critical food shortages. Although such affirmative action may be hindered by the fear of the HIV/AIDS-affected households to self-identify, all efforts should be made to try to reduce the stigma attached to the disease and therefore help the affected households.

7.5.9 Stigma and discrimination

The communities of Kandeya and Chundu need to address the stigma associated with HIV/AIDS. HIV/AIDS education should emphasize that the disease is like any other disease that can strike anyone, anywhere. Those that are affected should therefore be treated as equals in society. This will make those that are affected to come out and be helped and make their lives bearable.

7.6 Possible future research

HIV/AIDS is spreading rapidly in the rural areas of Zimbabwe. The absence of a possible cure in the near future means that households will have to deal with the pandemic for a long time to come. Research is thus essential on how rural households can best cope with the pandemic. The findings of this research have demonstrated that most of the HIV/AIDS-affected households in the rural areas are finding it difficult to survive. Hence more research is required to come up with effective survival strategies that strengthen agricultural production practices, rather than diminish them, so that the ability of affected households to cope with the disease is enhanced. The other area relates to the behavioural aspects such as *nhaka* (the adoption of a dead person's wife

by a brother), which is still being practiced in the rural communities and is partly responsible for the spread of HIV/AIDS. Therefore behavioural research on such aspects of livelihoods may help to reduce and possibly stop the spread of the epidemic.

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APPENDICES

Appendix 1 (a): Statistical formulae for calculating sample size for a population of less than 10 000

$$n^* = \frac{(n)}{[1+(\frac{n}{N})]}$$ ----------

where:

n^* = necessary sample size

n = desired sample size when population is greater than 10000 (see (b) below)

N = estimated population size

n/N = the sampling fraction.

Source: Mutambirwa (2002)

1 (b) Calculating the sample size

$$n^* = \frac{(384)}{[1+(\frac{384}{3436})]} = \mathbf{343}$$

where:

n^* = necessary sample size for Chundu and Kandeya wards

n = desired sample size when population is greater than 10000 (384)

N = estimated population size (which is 3436 households)

n/N = the sampling fraction.

Appendix 2: Household Questionnaire

Preamble

I am Godfrey Tawodzera. I am a Master of Philosophy student in the Department of Geography and Environmental Science at the University of Zimbabwe. I am carrying out an academic research on the Socio-Economic Impact of HIV/AIDS on communal agriculture in the ward. I would be very glad if you could help in the research by answering the following questions. All the answers that you give will be confidential. Once I leave your home there will be no link between you, your home and the data that you will have provided. *Please tick the appropriate box or fill in the appropriate responses in the spaces given.*

Section A: Household Profile

1.What is the size of your household?…….members

2. How many acres of arable land are available to the household for farming every year? (*Please tick the appropriate box)*

1-5 acres	
6-10 acres	
11-15 acres	
More than 16 acres	

3. How much income does the household realise per year from agricultural activities as well as other sources?

$……

4. What is the major source of labour on the household farm?

Household labour	
Hired labour	
Nhimbe	
Others (*specify*)	

5. How would you rate the adequacy of your current household labour in relation to your labour needs on the household farm?

Critical	
Inadequate	
Adequate	

Section B: Morbidity Profile

6. Is there any current long illness amongst the adult members of the household (more than 30 days)? Yes No . If yes state nature and length of illness.

Member	Age as at last birthday	Sex(M=1, F=2)	Nature of illness*	Length of illness**
1.				
2.				
3.				
4.				

7. For any long illness in the household state main economic activity before illness and lost remittances.

Member	Main economic activity of patient before illness	Number of working days lost by patient because of illness/month
1.		
2.		

8. Who cares for the patient?

Patient	Cared for by	Sex of caregiver (Male=1, Female=2)	Main economic activity of caregiver	Time spent caring for the sick/day (hrs)
1.				
2.				

9. What health seeking behaviour has been engaged in for the chronically ill adult in the last 12 months?

Member	Visit clinic, hospital, traditional healer, faith healer?	Total money spent on consultation, drugs and transport ($)
1		
2		

10.Has there been any adult death in the household in the past 4 years. Yes No .If yes please state age at death, cause of death, and loss of income.

Member	Sex	Age at death	Cause of death	Total cost of funeral	Loss in remittances/ income per month
1.					
2.					

11. What health seeking behaviour has been engaged in for those who died in the last 12 months?

Member	Visit clinic, hospital, traditional healer, faith healer?	Total money spent on consultation, drugs and transport ($)
1		
2		

12. Are there any family members of school going age who are not in school currently? Yes ☐ No ☐ If yes, state their age and reasons for not being in school.

Member	Age as at last birthday	Sex (M=1, F=2)	Reason for being out of school
1.			
2.			

12. Has your household suffered any form of discrimination as a result of the illness affecting of one or more members of the household?

Yes	
No	

If yes, explain how you were discriminated…….

13. Has there been a change in cultivated area between the 2000/2001 and 2002/2003 seasons? Yes ☐ No ☐ If yes, state the change and reasons for the change

Crop	Area cultivated 2000/2001	Area cultivated 2002/2003	% change in cultivated area	Reason for change
Maize				
Cotton				
Tobbaco				
Paprika				
Groundnuts and roundnuts				
Cassava				

14. Has there been a change in crop yields on the household farm between the 200/2001 and 2002/2003 season? Yes ☐ No ☐ .If yes, state the change and reasons for the change.

Crop	Average produce 2000/2001	Average produce 2002/2003	% change in production	Reason for change
Maize				
Cotton				
Tobacco				
Groundnuts and roundnuts				
Paprika				
Sunflower				
Cassava				

15. Has there been a change marketed crop produce from the household farm between the 200/2001 and 2002/2003 season? Yes ☐ No ☐
If yes, state the change and reasons for the change.

Crop	Average produce 2000/2001	Average produce 2002/2003	% change in marketed produce	Reason for change
Maize				
Cotton				
Tobacco				
Groundnuts and roundnuts				
Paprika				
Sunflower				
Cassava				

16. Has there been a change in the type of crops grown by the household between the 2000/2001 and the 2002/2003 season?

Crop	Change (grown/not grown)	Reason for change
Maize		
Cotton		
Tobacco		
Cassava		
Paprika		
Groundnuts and roundnuts		

17.Have there been changes in household food consumption patterns since the beginning of illness or onset of death? Yes…… No……..If yes, how do you now rate the household food security situation?

Household food security situation	Reasons for change
Critical	
Inadequate	
Adequate	

18.How has the nutritional status of the family changed due to illness or death of a household member?

Declined	
Increased	
No change at all	
Don't know	

State the reason for the change

……

19. Has the illness or death of the household member affected the household's access to agricultural extension services? Yes ☐ No ☐

If Yes, explain

……

20. Was the decease a member of a medical aid society? Yes No If no how were the medical expenses paid?(*Tick the appropriate response)*

Sold livestock e.g. cattle	
Used savings	
Borrowed from friends/relatives	
Others (Specify)	

COPING STRATEGIES

21.What strategies are you using to make up for labour lost through illness or death of a household member (s)?

Coping Strategy	
Increasing the length of the working day	
Hiring labour	
Decreasing area under cultivation	
Switching from cash crops to less labour-intensive food crops	
Relying on labour from extended family and friends	
Community labour pools (Nhimbe)	
Abandoning labour-intensive activities such as weeding	
Increased use of chemicals and fertilizers	
Reducing number/variety of crops grown	
Fields further away from home abandoned	
Others(Specify)	

22.What strategies are you using to maintain food security in the household after the illness or death of a household member?

Coping Strategy	
Reducing number of meals per day	
Reducing household diet to basic surplus	
Switching to cheaper food alternatives	
Reallocation of intra-household food distribution	
Relocation of household members to extended families	
Begging for food	
Gathering wild food e.g. fruits	
Others (Specify)	

23.What strategies are you using to raise income in the household following the illness or death of a household member?

Coping Strategy	
Selling agricultural produce	
Selling agricultural assets	
Brewing beer to sale	
Working in neighbours' fields	
Migrating to urban areas to seek employment	
Others (Specify)	

THANK YOU

Appendix 3: Focus group discussion guide

I am a Master of Philosophy student in the Department of Geography and Environmental Science at the University of Zimbabwe. I am in this ward carrying out an academic research on the impacts of HIV/AIDS on communal agriculture. Please feel free to discuss openly what you know or think about the issues that we will discuss in this forum. This discussion will last for 2-2:30 hours. Thank you.

1 (a) Are there people who are infected by HIV or have died of AIDS in this ward?

1 (b) If yes, how serious is the problem?

2 (a) Is HIV/AIDS affecting agricultural production in this ward?

2 (b) If yes, how is the disease affecting agricultural production in the ward?

3 (a) What agricultural activities are being affected by the HIV/AIDS disease?

3 (b) At what stage of agricultural crop production is the disease having a greater impact? Why is this the case?

4 (a) What crops are being affected most by the HIV/AIDS pandemic in the ward?

4 (b) Why are these crops the most affected?

5 (a) What can be done to reduce the impact of HIV/AIDS on crop production in this ward?

6 (a) Is the HIV/AIDS pandemic affecting the area being put under crop cultivation in this ward?

6 (b) If yes, how is it doing so?

7 (a) Is HIV/AIDS affecting marketing of crop produce in the ward?

7 (b) If yes how is the crop marketing process being affected by the pandemic in the ward?

8 (a) Is HIV/AIDS affecting the availability of labour on the household farm in this ward?

8 (b) If yes, how serious are the labour shortages within households in the ward?

8 (c) During which stage of the crop-growing season are the labour shortages critical?

8 (d) What strategies are households in this ward using to cope up with the shortages of labour within the household during the growing season?

8 (e) How effective are these strategies in mitigating the loss of labour caused by HIV/AIDS?

8 (f) Are there any strategies being implemented at community level to mitigate the impact of labour shortages caused by HIV/AIDS? If yes, what are they and how effective are the strategies at community level?

9 (a) Is communal labour pooling (*nhimbe*) still widely practised in the ward?

9 (b) If yes, is it helping in alleviating labour shortages on household farms?

9 (c) If no, why is it no longer widely practised?

10 (a) How would you describe the household food security status in the ward at both household and community level?

10 (b) If the food security situation is critical, what strategies are households using to cope with the food shortages? How effective are these strategies in improving household food security?

10 (c) Are there community level strategies that are being used to enhance the food security situation in the ward?

10 (d) If yes, what are they and how effective are they in improving food security in the ward?

10 (e) If no, why is this the case?

11 (a) Are there many orphans in the ward?

11 (b) If yes, what is contributing to the increasing number of orphans in the area?

11 (c) What is the community doing in helping the orphans attain a socially acceptable standard of living in the ward?

11 (d) What is your perception regarding the acceptance by the community of people living with HIV/AIDS within the ward? Is the community prepared to socially and economically help these people?

Thank you!

Appendix 4: List of Key Informants Interviewed in Chundu and Kandeya Wards

(a) Chundu Ward

Name of Person	Occupation/Position
Mr. B. Berewu	Chief Chundu
Mr. D. Kapuya	Ward Councillor
Mr. W Mafukidze	A.R.E.X Area representative
Mr. T. Musara	Nurse-in-charge
Mr. S. Zuze	Headsmen Mocho
Mr. D. Mangwaira,	Headsmen Mangwaira
Mr. S. Manyumwa	Headsmen Manyumwa
Mr. P. Kaswaurere	Headsmen Kashumba
Mr. C. Napwaro	Headsmen Napwaro
Mr. D. Dzomba	Headsmen Gwangwawa
Mr. L. Jamba	Headsmen Gonga
Mr. R. Jera	Headsmen Jera
Mr.. F. Kabende	ZINATHA Area Representative
Mrs A. Mavhukeni	Traditional healer

(b)Kandeya Ward

Name of Person	Occupation/Position
Mr. Z. Kandeya	Chief Kandeya
Mr. P. Kadungure	Ward Councillor
Mr. L. Gwaze	A.R.E.X area representative
Dr. R. Sibanda	District Medical Director (Mt Darwin Hospital)
Mr. G. Makaza	Headsmen Makaza
Mr. I. Chinove	Headsmen Chinove
Mr. B. Lifa	Headsmen Karihwi
Mr. O. Makomo	Headsmen Makomo
Mr. Z. Marema	Headsmen Marema
Mr. T. Chibhavu	Headsmen Chibavu
Mr. F. Million	Headsmen Kabanga
Mr. T. Kavhumbura	Traditional Healer
Mr. J. Mutyambizi	Traditional Healer

Appendix 5: Interview Guide for Chiefs and Headsmen

I am a Master of Philosophy student in the Department of Geography and Environmental Science at the University of Zimbabwe. I am in this ward carrying out an academic research on the impacts of HIV/AIDS on communal agriculture. Please feel free to discuss openly what you know or think about the issues that we will talk about in this discussion. This discussion will last for about 1:30-2 hours. Thank you.

1 (a) Are there people who are infected by HIV or have died of AIDS in this ward in the past 3 years?

1 (b) If yes, how serious is the problem?

2 (a) Is HIV/AIDS affecting agricultural production in this ward? If yes, how?

3 (a) What crops are being affected most by the HIV/AIDS pandemic in the ward?

3 (b) Why are these crops the most affected?

4 (a) Are there any strategies being implemented at community level to mitigate the impact of labour shortages caused by HIV/AIDS? If yes, what are they and how effective are the strategies at community level?

5 (a) Is communal labour pooling (*nhimbe*) still widely practised in the ward

6 (a) If yes, is it helping in alleviating labour shortages on household farms?

6 (b) ? If no, why is it no longer widely practised?

7 (a) How would you describe the food security status in the ward at community level?

7 (b) If the food security situation is critical, what strategies are households using to cope with the food shortages? How effective are these strategies in improving household food security?

8 (a) Are there community level strategies that are being used to enhance the food security situation in the ward?

8 (c) If yes, what are they and how effective are they in improving food security in the ward?

8 (d) If no, why is this the case?

8 (e) Are there many orphans in the ward?

8 (f) If yes, what is the community doing in helping the orphans attain a socially acceptable standard of living in the ward?

9 (a) Is the *Zunde Ramambo* concept still being practised in the ward?

9 (b) If yes, is it helping in maintaining food security in the ward?

9 (c) If not, why is it no longer practised?

10 (a) Can it be revived? If yes, what would it need for it to be viable?

10 (b) What is your perception regarding the acceptance by the community of people living with HIV/AIDS within the ward? Is the community prepared to socially and economically help these people?

10 (c) Are there any programmes that the chieftainship is putting in place to combat the spread of HIV/AIDS in the ward?

10 (d) If yes, are you equipped to deal with the requirements of the programmes?

10 (e) If not, what would you suggest be done to equip you with skills to initiate, carry and coordinate such programmes.

Thank you

Appendix 6: Interview Guide for Health Personnel in Chundu and Kandeya ward.

I am a Master of Philosophy student in the Department of Geography and Environmental Science at the University of Zimbabwe. I am in this ward carrying out an academic research on the impacts of HIV/AIDS on communal agriculture. Please feel free to discuss openly what you know or think about the issues that we will talk about in this discussion. This discussion will last for about 1:30-2 hours. Thank you.

1 (a) What are your estimates of the current HIV prevalence in your area?

1 (b) How many AIDS related deaths are recorded at this institution every week?

2 (a) What are the HIV and AIDS estimates for the ward?

2 (b) Has the STI/HIV/AIDS prevalence for the district been increasing/decreasing in the past 3 years?

3 (a) In your own opinion and from experience what are the factors driving the epidemic in the ward?

3 (b) What programmes does your institution have in place to counter the spread of STI/HIV/AIDS in the area?

4 (a) What programmes should be put in place to reduce the spread of STI/HIV/AIDS in the ward?

5 (a) How much is the consultation fee at this institution?

5 (b) Are there any home-based care programmes coordinated by this institution in the district? If yes what are they and what do they do?

Thank you

Appendix 7: Interview Guide for A.R.E.X personnel

I am a Master of Philosophy student in the Department of Geography and Environmental Science at the University of Zimbabwe. I am in this ward carrying out an academic research on the impacts of HIV/AIDS on communal agriculture. Please feel free to discuss openly what you know or think about the issues that we will talk about in this discussion. This discussion will last for about 1:30-2 hours. Thank you.

1 (a) What has been the general trend on crop production in your area in the last 3 years? Is production increasing or decreasing?

1 (b) What are the reasons for either the decline or increase in crop production in the ward in the last 3 years?

2 (a) Is HIV/AIDS affecting agricultural production in your area?

2 (b) If yes, how?

3 (a) Which crops are being affected most and why?

3 (b) How can the problems caused by HIV/AIDS in agriculture be solved in your ward?

3 (c) What is A.R.E.X doing to try and help farmers to arrest or minimize the problems caused by HIV/AIDS in the ward?

4 (a) What other problems are faced by farmers in your area (besides those caused by HIV/AIDS)?

4 (b) How do you think these problems can be solved?

5 (a) What role do you think A.R.E.X can play in trying to reduce the spread of HIV/AIDS in your area?

5 (b) Are you equipped to deal with issues relating to the spread of the epidemic in agriculture in the ward?

Thank you

Appendix 8: Interview Guide for ZINATHA personnel

I am a Master of Philosophy student in the Department of Geography and Environmental Science at the University of Zimbabwe. I am in this ward carrying out an academic research on the impacts of HIV/AIDS on communal agriculture. Please feel free to discuss openly what you know or think about the issues that we will talk about in this discussion. This discussion will last for about 1:30-2 hours. Thank you.

1 (a) What is your perception of the existence of HIV/AIDS in this ward?

1 (b) Do you treat people with HIV/AIDS?

2 (b) If you do, how often do you treat them?

2 (c) How much do you charge for a single dose of your medicine for those suffering from HIV/AIDS?

3 (a) Are the many people who visit you for medication on HIV/AIDS?

3 (b) If yes, why do you think they choose to come to you for treatment?

4 Are you able to diagnose the HIV/AIDS disease?

5 Do you tell your patients that they have HIV/AIDS? Why?

6 What do you think should be done to arrest the spread of the disease in this ward?

Thank you

Appendix 9: **Classification of household HIV/AIDS status**

The identification of AIDS deaths in this study was based on the World Health Organization (WHO) Bangui clinical definition of 1992, and as updated in 1996 and 2002. Using this definition HIV/AIDS is defined by the existence on a person of at least two major signs associated with at least one minor sign of the disease, in the absence of known causes of immunosuppression such as cancer or severe malnutrition.

Major Signs

(a) Weight loss of ≥ 10% of body weight or abnormally slow growth in children)

(b) Chronic diarrhoea of over 1 month

(c) Prolonged fever of over 1 month (intermittent or constant)

Minor Signs

(a) Persistent cough of over 1 month (usually accompanied by thrush in the mouth and/or throat)

(b) Generalized pruriric demartitis.

(c) Recurrent herpes zoster (recurrent shingles).

(d) Oropharyngeal candidiasis.

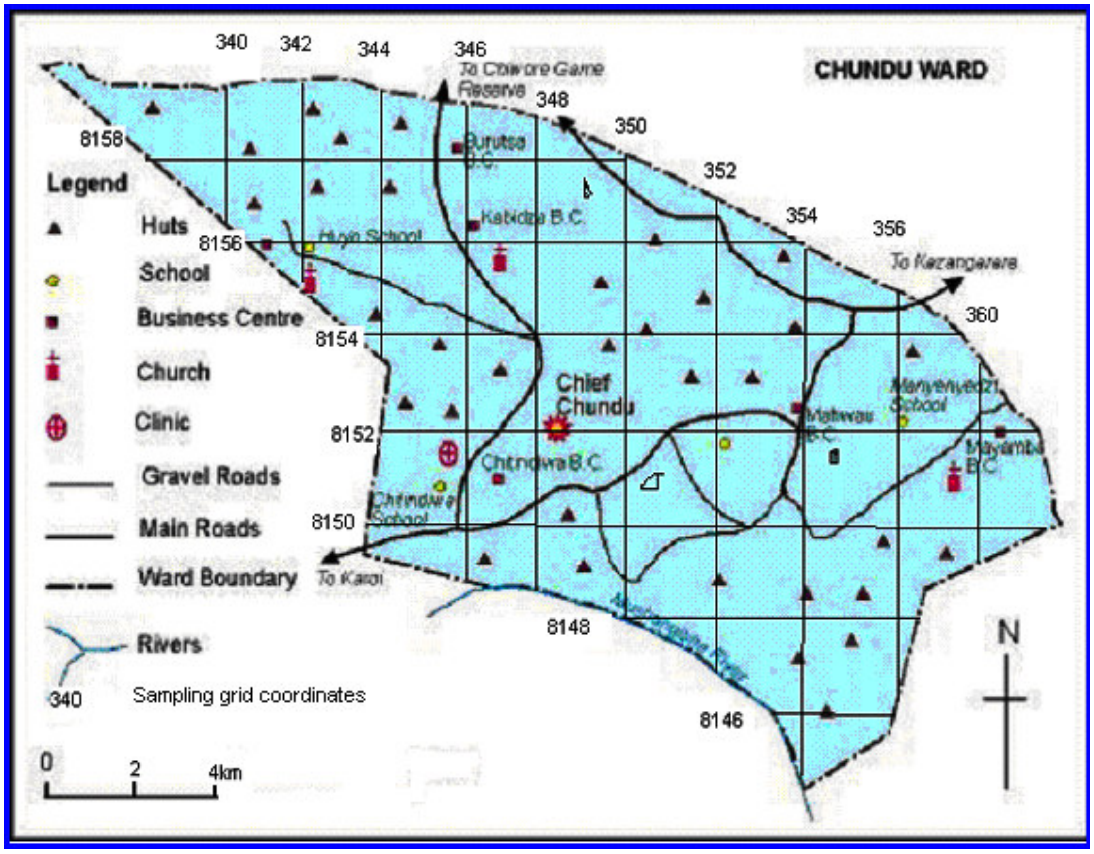
(e) Chronic progressive and disseminated herpes simplex infection (long lasting, spreading and severe cold sores).

(f) Generalized lymphadenopathy (long lasting swollen glands).

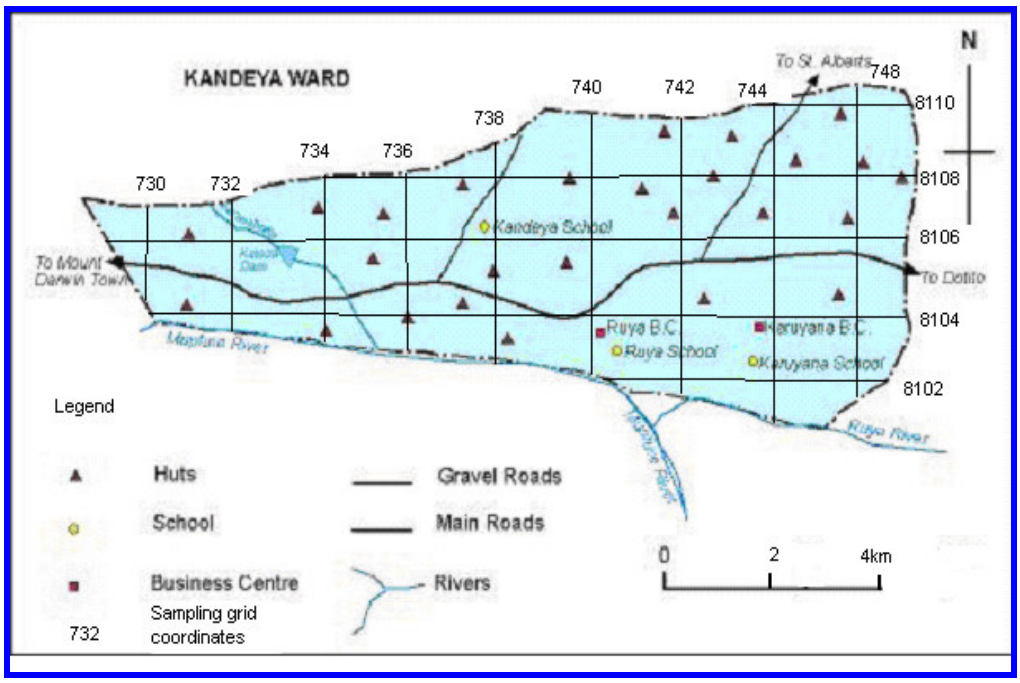
(g) Cryptococcal meningitis

Source: WHO, 2002; Mindel and Miller (1996); Piot, Kapita, Ngugi, and Mann (1992)

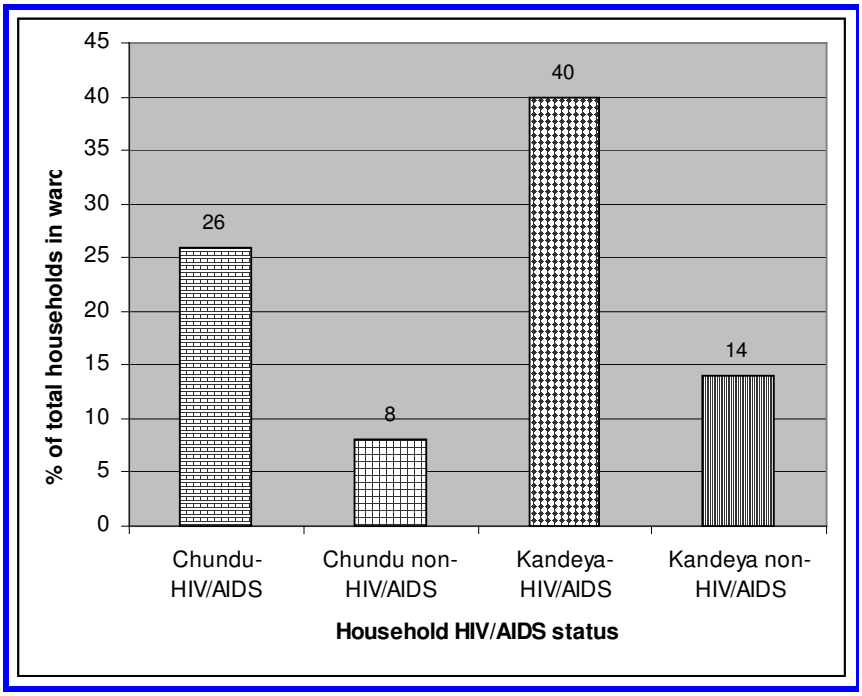
Appendix 10: Random area sampling map for Chundu ward



Appendix 11: Random area sampling map for Kandeya ward



Appendix 12: HIV/AIDS-disaggregated data on the presence of an orphan within a household in Chundu and Kandeya wards



Appendix 13: Average annual costs of HIV/AIDS on a household in Chundu and Kandeya wards

Household HIV/AIDS Status	WARD			
	CHUNDU		KANDEYA	
	HIV/AIDS affected	Non-HIV/AIDS affected	HIV/AIDS affected	Non-HIV/AIDS affected
Medical treatment costs	$400 000	$230 000	$710 000	$315 000
Travel expenses	$70 000	$38 000	$56 000	$30 000
Funeral expenses (per funeral)	$250 000	$310 000	$595 000	$825 000

Source: Research Survey, 2003; US$1=Z$824 (Official Government Exchange Rate, Nov/Dec 2003)