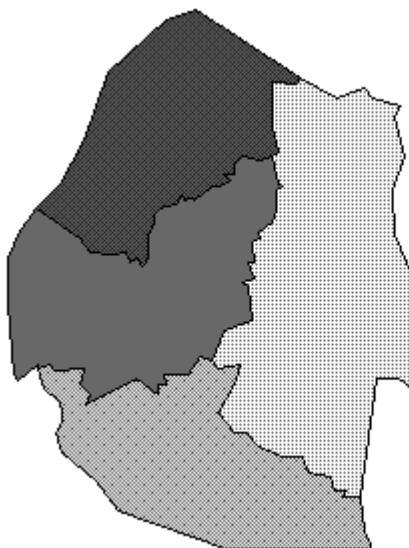


Impact of HIV/AIDS on Agriculture and the Private Sector in Swaziland

The Demographic, Social and Economic Impact
on
Subsistence Agriculture, Commercial Agriculture, Ministry of Agriculture
and Co-operatives and Business



Fred Tusuubira Muwanga
Swaziland

August 2002

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Executive Summary

Swaziland has one of the highest prevalence of HIV/AIDS in the world. The excess morbidity and mortality due to the disease has wide ranging socio-economic implications for the national economy and the various sectors. HIV/AIDS leads to destruction of social capital, weakening of institutions and deepens poverty. The demographic impact and resultant reduction in labour force; and associated income changes will have significant effects on society and

the economy. Households, the community, the national economy and business firms, will not escape the impact.

These challenges posed by HIV for the economies of the developing countries are easier to identify in theory than to measure quantitatively. Research at the sectoral level is more likely to be useful in informing policy than macro-modeling, and if resources are to be expended then sector impact studies are more likely to be productive.

This study was therefore done to determine the impact of HIV/AIDS on agriculture and the private sector, obtain vital information on vulnerability of agriculture and the private sector to HIV/AIDS related morbidity and mortality; and identify strategies that can be implemented to prevent and control the epidemic.

This study has demonstrated that households and the community will feel the negative socio-economic impact of HIV/AIDS more than any other sector. Problems of maintaining food supplies, in both quantity and quality will increase as the mortality and morbidity due to the disease unfolds.

In many cases a decline of family incomes has occurred because of higher adult morbidity and mortality, and additional expenditures on health. The deepening poverty and increased orphaning has led to children dropping out of school and worsening food insecurity. The Swaziland household farming systems are vulnerable to the negative economic impact of HIV/AIDS because of the reliance on remittances, in the face of poor soils and; erratic and little rainfall.

The response of the MOAC to the epidemic so far has been a health-based approach aimed at preventing new infections amongst its workforce. The response does not cover core areas of agriculture and rural development which are key to food security and maintenance of quality livelihood in the rural households.

Whereas increased morbidity and mortality amongst the workforce in the private sector has increased absenteeism and costs on funerals, there is no evidence

that HIV/AIDS has affected the profitability and productivity of Swazi businesses. The response by Swazi business to the epidemic has focused mainly on avoidance of costs associated with the epidemic. However, these cost avoidance strategies implemented by the business sector have passed over the burden of HIV/AIDS to households and the public.

It is therefore recommended that policy makers, the international community and agencies involved in the fight against the epidemic recognize that families and communities are the first line of response to HIV/AIDS. Appropriate interventions to meet agricultural objectives while at the same time addressing the epidemic should be implemented. There is need to protect the production capacity of household farms. This capacity includes labour supply, capital and the value-added chain. There is need to identify labour and capital saving technologies that can be implemented to deal with the labour supply and income changes that HIV/AIDS imposes on households.

The private sector should re-conceptualize their approaches so that the cost avoidance strategies implemented are beneficial to households and the communities. These strategies include investing in comprehensive management of the disease to increase quality and quantity of life amongst the workforce, community investment targeting the youth and home based care.

The above recommendations are detailed in chapter seven of this report.

THE WORKING GROUP OF THE PROJECT

Author

Fred Tusubira Muwanga MD
Department of Epidemiology, Graduate School Of Public Health,
University of Pittsburgh, Pennsylvania USA
and
TAT Health Services - Swaziland
tat@africaonline.co.sz

Researchers

Professor A.M Kanduza; PhD
Department of History
University of Swaziland
Kanduza@uniswacc.uniswa.sz

Professor Hezekiel Mushala; PhD
Department of Geography, Environmental Science and Planning
University of Swaziland
mushala@uniswacc.uniswa.sz

Tizie Maphalala B.Ed; MEd
UNICEF - Swaziland
tizie@realnet.co.sz

Moses Sithole PhD
Department of Agricultural Economics
University of Swaziland
msithole@agric.uniswa.sz

Rosemary Vilakati-Kiondo PhD
Department of Animal Production and Health
University of Swaziland
r.vilakati@agric.uniswa.sz

Gathu Kamanja B.Ed M.Ed
Department of Curriculum and Teaching
University of Swaziland
gathu@uniswa.uniswa.sz

Victoria Kelly Bsc, Msc
Department of Curriculum and Teaching
University of Swaziland
Victoria@educ.uniswa.sz

Eunice Mabuza SRN, SCM, MPH
Department of Community Health & Nursing
University of Swaziland
Emmabuza@healthsci.uniswa.sz

Isabel Zwane
Department of Community Health & Nursing
University of Swaziland
itzwane@healthsci.uniswa.sz

Thuli Zwane
UNISWA Consultancy and Training Centre, Swaziland.

ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| AIDS | ACQUIRED IMMUNODEFICIENCY SYNDROME |
| ASSA60 | ACTUARIAL SOCIETY FOR SOUTH AFRICA |
| CMTC | CRISIS MANAGEMENT AND TECHNICAL COMMITTEE |
| CSO | CENTRAL STATISTICS OFFICE |
| EPINFO | EPIDEMIOLOGICAL INFORMATION SOFTWARE |
| FAO | FOOD AND AGRICULTURE ORGANISATION |
| GOS | GOVERNMENT OF SWAZILAND |
| HIV | HUMAN IMMUNODEFICIENCY VIRUS |
| ILO | INTERNATIONAL LABOUR ORGANISATION |
| IOD | INJURY ON DUTY |
| ITF | INDIVIDUAL TENURE FARMS |
| MOAC | MINISTRY OF AGRICULTURE AND CO-OPERATIVES |
| NERCHA | NATIONAL EMERGENCY RESPONSE COMMITTEE ON |
| NGOs | NON-GOVERNMENTAL ORGANISATIONS |
| OR | ODDS RATIO |

SPSS STATISTICAL PACKAGE FOR SOCIAL SCIENCES

SNAP SWAZILAND NATIONAL AIDS PROGRAMME

SNL SWAZI NATIONAL LAND

STATA QUEST – STATA QUEST STATISTICAL SOFTWARE

STDs SEXUALLY TRANSMITTED DISEASES

TDL TITLE DEED LAND

UNAIDS JOINT UNITED NATIONS PROGRAMME ON HIV/AIDS

UNDP UNITED NATIONS DEVELOPMENT PROGRAMME

WHO WORLD HEALTH ORGANISATION

Glossary

Absenteeism: time employee is away from work when he should have been at work

AIDS: Acquired Immuno deficiency syndrome, a collection of symptomatic conditions caused by the Human Immunodeficiency Virus.

AIDS Orphans: AIDS orphans refers to children who lost their mother or both parents to HIV/AIDS when they were under 15 years

Base year: Year upon which projections are based

Case study: an intensive inquiry of a single unit with the purpose of yielding information on multiple variables.

Confidence Interval: 95% confidence Interval implies that 95% of results are expected to fall within the limits of the stated confidence Interval.

Cropping pattern: the type and variety of crops cultivated.

Crude activity rate: is the proportion of the working age population that is available for economic activity

Crude Mortality rate: Number of deaths in a specified period divided by average total population during that period. Usually expresses as per 1,000 people.

Currency \$: United states Dollars unless otherwise stated. Emalangeni – Swaziland currency E 10 = US\$ 1

Economic dependency ratio: is the ratio of economically inactive population to the economically active. A ratio of 2.36 indicates that 100 economically active people have to support themselves and 236 other economically inactive people.

Epidemic: A sudden unusual increase in cases that exceeds the number expected on the basis of experience.

Epidemic, generalized: an HIV epidemic in a country in which 5 percent or more of women attending urban antenatal clinics are infected; infection rates among individuals in groups with high-risk behaviour are also likely to exceed 5 percent in countries with a generalised epidemic.

Epidemiology: the study of the distribution and determinants of health and disease, morbidity, injuries, disability and mortality in populations

Head of household: is defined as “a person recognised or acknowledged by other household members as the head of the household”

General activity rate: proportion of the working-age population that is available for work.

High-risk behaviour: unprotected sexual intercourse with many partners, or sharing of unsterilised injecting equipment

HIV-positive: having antibodies to HIV

HIV Sentinel Survey: The systematic collection and testing of blood from selected populations at specific sites for the purpose of identifying trends in HIV prevalence over time and location.

Intervention: A set of activities through which a strategy is implemented.

Lilima: Swazi traditional practice where community members work jointly to assist each homestead in various farming activities.

Model: A model is a construct that is developed in an attempt to represent the real world.

Morbidity rates: The percentage ill over a particular span of time

Net Case Reproductive rate: average number of new infections attributable to each case in a real population comprising of some people who may be immune or already infected.

Non-governmental organization: for-profit firms and private non-profit organizations.

Non-Injury on duty: Sickness due to disease or infection not related to injury sustained while at work.

Opportunistic infection: an infection that affects people with weak immune systems

Prevalence: Number of people with condition at a specified time in a particular population at risk at a specified time

Prevalence of HIV: the number of people with HIV at a point in time, often expressed as a percentage of the total population.

Projection: Estimate of future characteristic based on past trends, information known and experience.

Public good: a good or service having the following two attributes: consumption by one person does not diminish the amount available to others; and excluding people from consuming the good is impossible or costly.

P-value: Probability(P) is a measure of compatibility between the hypothesis and data generated by the study. Usually set at 5%(0,05). A P-value of less than 0.05 means an association observed is with 95% certainty(confidence) and not due to sampling variation only. A P-value greater than 0.05 means that there is a reasonable chance that the observed association is due to sampling variation.

Sentinel surveillance: the use of limited or selected number of health facilities or practitioners to report a defined disease.

SISA Farm – a fattening ranch where the community can take their cattle for that purpose

Specific mortality rate: total number of deaths occurring in a specific group from a particular cause divided by the specific population during same period.

Seroprevalence: the prevalence of an infection as detected in blood serum

Susceptible: Vulnerable to becoming infected.

Sexworker: someone who offers sexual activity for money

Social Marketing of condoms: programmes designed to raise condom use by improving the social acceptability of condoms, making them more widely available through nontraditional outlets and offering them for sale at subsidized prices.

Symptomatic: exhibiting sufficient symptoms to require medical treatment.

Vulnerability: Vulnerability means the features of an economic entity that makes it more or less likely that excess morbidity and mortality associated with HIV/AIDS will have a deleterious impact on that unit.

CHAPTER 1 INTRODUCTION

1.1 BACKGROUND

At the end of 2001 around 33 million people were infected with HIV/AIDS in the whole world, with a large majority in Africa. Swaziland has one of the highest prevalence of HIV in the world – standing at 33.4 percent at the end of 2001. (UNAIDS, 2002). The HIV/AIDS pandemic engulfing Africa has completely reversed the improvements in health that were achieved during the 1980s. In Swaziland the first HIV case was reported in 1986. Within one year of the reported case, the government set up structures to deal with HIV/AIDS. In 1989, the government in collaboration with the World Health Organization (WHO) formed the Swaziland National AIDS/STDs Programme (SNAP). Initially AIDS advisory bodies were established in the country through non-governmental organizations. In 1992 government, in collaboration with WHO, initiated sentinel sero-surveillance. These are carried out every two years.

In 1999 the King declared HIV/AIDS a national disaster and a Cabinet Committee on HIV/AIDS and the Crisis Management and Technical Committee(CMTC) were established. Government recently setup the National Emergency Response Committee on HIV/AIDS (NERCHA) as a multi-sectoral body to co-ordinate the government response. NERCHA replaces the dissolved CMTC. Other initiatives for the prevention and control of the epidemic have been spearheaded by the Federation of Swaziland Employers(FSE), NGOs, churches and communities.

In the World Bank report (2000), it is indicated that the impact of HIV/AIDS in Swaziland is diverse but not enough data exists on how the epidemic has affected the economy of Swaziland. Very little is known about the costs elsewhere in the developing world, although this is now being remedied for some countries in Asia. In some cases it is necessary to predict what the impact will be

on households from observing how these have responded to similar crises in the past.

What is clearly needed, if policies are to be properly targeted, is a great deal of empirical work. Less at the macro level than at the sectoral, industrial and household levels.

The impact of the AIDS epidemic will be felt severely in the working population, since the proportion of the HIV infected populations is in the age group 20-49 years. International Labour Organisation (2000) contends that population growth rates will be reduced and life expectancy will decline as HIV/AIDS related mortality reaches its peaks. This would lead to a smaller labour force. The reduction in workforce could be as high as 10-22 percent in countries with high prevalence. Various sources of government revenues, health insurance, social security, pension funds and private savings will be reduced leading to reduced investment and job creation.

At the end of year 2001, 33.4 percent of the Swazis aged 15-49 years were affected by HIV/AIDS (UNAIDS,2002). Estimated forecasts show deaths among the skilled labour force increasing from 45 in 1992 to 281 in 2005. Among the unskilled labour force, the number of deaths could rise from 177 in 1992 to 914 in 2005 (World Bank, 2000). In general terms, the population of Swaziland will be lower by 41 percent in 2015 because of AIDS related deaths. In 1999, life expectancy at birth dropped from 58.8 years to 45.8 for males and 46.8 for females (Government of Swaziland, 1999). These figures are based on demographic modeling. Models so far used in modeling include ASSA60, SPECTRUM, EpiModel, EPP and iwgAIDS. Spectrum is a system of policy models produced with the aim to support awareness-raising, advocacy, and strategic planning for reproductive health. It is produced by the POLICY Project, a USAID-funded project implemented by the Futures Group International in cooperation with the Research Triangle Institute and the Center for Population and Development Activities. EpiModel was developed by Jim Chin at the Global Programme on AIDS and iwgAIDS is produced by Steve Seitz at the University of

Illinois. EPP was developed by the UNAIDS Reference Group on Estimates, Models and Projections. So far the most articulate model for predicting prevalence rates is the ASSA600¹ model which takes into account the vulnerability of four populations distinguished by their level of risk; namely sexually active people other than pregnant women, commercial sex workers, men who have sex with men and infants who may contract the disease from their infected mothers.

The demographic impact and resultant reduction in labour force will have significant effects on society and the economy. Households, the community, the national economy and business firms, will not escape the impact.(Sehgal, 1999). The various ways that HIV/AIDS impacts on these sectors is discussed below.

Household and community level impact

Increased morbidity and mortality due to HIV/AIDS will lead to increase in medical and funeral costs. In Rwanda annual per capita use of outpatient health services was 11 visits per year for people living with AIDS compared to 0.3 visits in the general population, and the annual per capita health expenditures in households were \$63 for HIV/AIDS patients compared to \$3 for households on average. Less than 30 percent of households were able to meet the costs of healthcare from their own resources.(Nandakumar et al, 2000).

As morbidity increases, an increasing number of households will divert labour from farm activities to care for the sick members of the household. In Ethiopia, rural families with an infected member spent 14 hours a week working their land compared with the average of 34 hours(Black and Michaud, 1997). In Tanzania when a household contained an AIDS patient, 29 percent of household labour was spent on AIDS-related matters, including care of the patient and funeral duties (Tibaijuka, 1997).

HIV/AIDS related deaths lead to loss of human assets – both formal and informal as children are pulled out of school, orphans go uneducated and there is loss of

¹ Actuarial Society of South Africa

indigenous knowledge. In Kenya, a study on households found that only 7 percent of orphan headed farming households had adequate knowledge of farming techniques (UN special session – Fact sheet, 2001).

The death of parents in a home leads to an increased number of orphans in society. Foster et al (1998) found an increase in parental deaths in Mutare district in Zimbabwe, with 50 percent of deaths being due to AIDS. 18.3 percent of households included orphans and 5 percent of orphans had lost both parents. In Uganda 25 percent of households are providing for an orphan (Lyons 1997), and in Tanzania 21 percent of families in Bukoba district are fostering an orphan (Rugalema, 1999).

The death of an adult in the household means a loss of income and labour. This translates into less farm labour, less money to hire labour and buy farm inputs. The result is reduction in area under cultivation, decline in crop yield and range of crops cultivated (FAO, 1995). Kwaramba(1997), found that households in Zimbabwe that had members suffering from HIV/AIDS showed a 29 percent reduction in number of cattle kept and a 61 percent reduction in maize yield.

Reduction in farm production leads to less amount of food for home consumption and for selling to raise income. With increased expenditure of the household on healthcare for the sick member, the household is pushed into destitution as household debt increases. The family usually responds by reallocating labour and land. There may be early entry of children in the labour market in order to supplement family income and children may have been withdrawn from school to provide farm labour. The lack of school fees sometimes leads to withdrawal of children from school. As the young and energetic succumb to the virus there is continued presence of older household members in the labour market, this increases the dependency ratios.

Households respond to reduced labour supply by shifting from labour intensive crops to less labour intensive ones; and from cash crops to subsistence crops - "tuberization" of agriculture (Black and Michaud, 1997). The end result is food insecurity, leaving survivors in a poor state of health.(Kongsin, 2000).

Therefore, the costs for a family of a prolonged illness includes increased expenditures particularly on health, lost income, reduced savings, and re-allocation of work and domestic responsibilities. It is inevitably the case that some households will be more able to meet these costs than others.

As one would expect, those with fewest assets are the most vulnerable. There is evidence that poor households incur debt in order to meet additional health costs. That they try, as far as possible, to hold on to productive assets, such as land, trees, for as long as possible to protect the continued existence of the family. Death itself imposes additional economic costs, which in many societies further drain the resources available to households (Cohen, 1993).

The scenario exhibits a direct linkage between the household, farming activities and off-farm activities. Whereas the household provides farm labour, the farm produces food for the household and farm products are sold to raise income for the household. Income from household members who are engaged in employment is used to buy farm inputs, hire labour and for general household use like paying school fees.

In Swaziland the Ministry of Agriculture and Cooperatives is the main link between Government and the agricultural activities occurring in the country particularly that on Swazi Nation Land. The rural subsistence farmer is the Ministry's primary client. The services offered by the Ministry are a critical component of government's development initiatives targeted at rural communities. Through the Ministry's extension services, communities and families are supported in their subsistence activities. If the MOAC employees are infected and affected by HIV/AIDS leading to reduced productivity of agricultural extension officers, the households and the community will feel the impact.

In Malawi Ministry of agriculture and Irrigation, mortality amongst the ministry employees doubled from 5 per 1000 in 1996 to 10 per 1,000 in 1998 (Bota et al, 1999).

A household survival is therefore sensitive to negative changes in labour supply and income associated with HIV/AIDS related morbidity and mortality. This may be on-farm or off-farm.

National level impact

The increased morbidity and mortality due to HIV/AIDS will lead to redistribution of scarce resources with an increasing demand for expenditure on health and social services. As younger and less experienced workers replace older, more experienced AIDS related casualties, reduction in productivity may be an outcome. In Kenya an estimated 58 percent of all deaths of staff in the ministry of agriculture is due to AIDS, 16 percent of Malawi's staff are living with HIV/AIDS (UN special session Fact sheet). On average extension workers spend 3 days per month (10 percent working time) attending funerals in their working area. Additional contact hours are lost due to staff attrition and time the farmers spend attending funerals. In Namibia 25 percent of production time was lost due to mourning (Engh, Stloukal and de Guerny, 2000).

While the immediate impact on employment may be mitigated by excess capacity due to unemployment and under-employment, there may be a mismatch between available human resources and labour requirements in terms of training and qualifications.

Impact on business

Excess morbidity and mortality due to HIV/AIDS has a negative impact on profitability and productivity of business. As employees and their relatives infected with disease start falling sick, there is increased absenteeism from work as employees take leave to seek healthcare or care for their sick ones. In a survey of five firms in Ethiopia, HIV/AIDS accounted for 53% of all illness incidences over a five year period (Bersufaked, 1994). Absenteeism has the potential to affect productivity as the employee's work for the time he is away is lost. It is also a cost as the worker is paid for a job he did not perform. Secondly,

other workers may be asked to work overtime to cover his work. There is overtime allowance paid to them. At Anglo Coal South Africa shifts lost to HIV/AIDS related illness doubled between 1994 and 2000 (Simon, 1999).

For businesses that provide healthcare for their employees, there will be increased utilization of the healthcare services, leading to increased cost of production. A survey of four businesses in Abidjan in 1993 showed that the cost due to increased healthcare utilization was between US\$1.8-3.7 million (Kone et al 1994). The prolonged period of morbidity is inevitably followed by death. For businesses that provide death-in service benefits and funeral benefits, these costs will increase as AIDS mortality increases. Time that employees spend attending funerals of colleagues is lost time of production. Dead employees have to be replaced, this is a cost to the business as productivity is lost as a replacement is sought and as he is trained to full capacity. Secondly, the companies incur recruitment and training costs. Therefore, employers are likely to face increased labour costs because of low productivity, absenteeism, sick leave, and other benefits, early retirement and additional training costs.(Sehgal 1999).

However, the impact on business in terms of costs of production will depend on the benefit package offered by individual firms and the country labour market. In Botswana, costs of HIV/AIDS to five firms was estimated to rise seven times between 1996 and 2004 and this would equal 5 percent of the wage bill (Greener, 1997). In Malawi production loss on a tea estate as a result of AIDS was shown to be more than 3 percent of gross profit in 1995/1996 (Jones, 1997). Aventin and Buard (1997) calculated the cost of AIDS to business in Abidjan to be 0.8-3.7% of the total wage bill; while Ntirunda and Zimba(1998) estimated the cost of AIDS to be 1.1-3.4% of total profits for Lornho companies in Malawi. These varying levels of impact reflect the production structures and benefit packages provided by the firms. Roberts and Raul (1999), in a study examining several farms in Botswana and Kenya documented that the most significant factors in increasing labour costs were absenteeism due to HIV/AIDS followed by

increased burial costs. By contrast, In Zimbabwe, the major expense was healthcare costs. In South Africa, the major expense was projected to be employee benefits (Southern African Economist, 1997).

Response to the epidemic

Response to the epidemic has largely been on two fronts: strategies aimed at prevention of new infections and strategies to cope with the impact .

Prevention of new infections

Most governments and firms have implemented strategies aimed at preventing HIV/AIDS (Murray and Lopez 1999). These strategies are aimed at influencing individual choices through increasing knowledge of HIV and easing social constraints to safe behaviour.

Increasing knowledge of HIV has been found to reduce risky behaviour. In Thailand, the public revelation in 1989 that 44 per cent of sex workers in Chiang Mai were infected with HIV contributed to increase in condom use (Porapakham et al, 1996). In Brazil, condom social marketing coupled with reduction in taxes and tariffs reduced the cost of a condom from US\$0.75 to US\$0.20. This resulted in an increase of condom use by three times over a period of four years(Clemente et al 1996).

Strategies to ease social constraints to safe behaviour have been advocated for developing countries. There are social and economic factors that shape and constrain individual choices about risky behaviour. The approach is directed at altering the social norms, raising the status of women and reducing poverty. Altering social norms involves strengthening those norms that prevent the spread of HIV and reduce risky behaviour. One typical example is sexual conservatism. (Murray and Lopez 1999). Altering social norms further involves discouraging behaviours that transmit HIV, those that are conducive to risky behaviour or discourage people from adopting safer behaviours.

Behaviors that have been associated with HIV transmission include: traditional polygamy (Caldwell et al, 1989), premarital sexual experiences (Caraël, 1995), men selecting brides ten years younger which spreads HIV from one generation to another (Morris et al, 1996), and taboo against marital sex when mother is breastfeeding leading to the man looking elsewhere for sexual gratification (Bankole and Westoff, 1995).

The lower social and economic status of women reduces their ability to insist upon male sexual fidelity and negotiate safe sex. Secondly, women's lower literacy, lower income and the dependence of women to men gives women reduced power to choose behaviour that would protect them from HIV. In Calcutta, over 50 percent of sex workers cited poverty as the reason for entering sex work (Chakraborty et al, 1994). Improving the status of women through encouraging social equality, raising economic opportunities for women and ending of legal restrictions on women's rights will foster development and expand their choices for safe behaviour.

Poverty and low socio-economic status constrain people from making decisions about risky behaviour. Poor families may turn to commercial sex to raise income, and people with less education have less access to information and prevention messages. So whereas the educated and in higher socio-economic status have a greater probability of HIV infection (Msamanga et al 1996; Dallabetta et al 1993; Ryder et al 1990), they have easier access to information and prevention messages and therefore tend to change behaviour faster.

Coping with the impact of HIV/AIDS

Countries that already have large numbers of infected people are faced with the negative impact that HIV/AIDS has on individuals, households, national economy and the business sector. It is therefore important that these countries implement strategies to cope with the negative impacts of the epidemic.

One way of coping with the impact is to implement strategies that reduce the cost of HIV/AIDS. By ensuring that those infected maintain a high quality of life and live longer, the costs associated with morbidity and mortality are avoided. This involves improved access to healthcare, provision of palliative care and treatment of opportunistic infections anti-retroviral therapy and home based care.

Secondly, poor households need protection from destitution due to death of breadwinners. Some of the measures involve labour and capital saving technologies to ensure continued household farming(Topouzis, 2000). This increases food security.

The private sector has implemented measures to avoid cost. These include early retirement on medical grounds, reduction in benefits given and avoiding taking on infected employees (Rosen et al 2000). Some companies in the private sector are providing anti-retrovirals to sick employees. This prolongs life of sick employees and maintains their productivity. This has been implemented among others by Anglo gold in South Africa(UNAIDS, 2000). The strategy postpones the costs associated with the epidemic (Rosen et al 2000).

Why an impact study?

HIV/AIDS leads to destruction of social capital, weakening of institutions and deepens poverty. However, these challenges posed by HIV for the economies of the developing countries are easier to identify in theory than to measure quantitatively. Research at the sectoral level is more likely to be useful in informing policy than macro-modeling, and if resources are to correctly allocated then sector impact studies are more likely to be productive. (Cohen,1993).

Very little of research has been about the actual sectoral and industrial impact of HIV as opposed to its probable impact, given the structural characteristics of production. Much applied work needs to be done to fill in the huge gaps in understanding, and to identify the scale and scope for policy response. But research to be useful must be founded on insight into how economic and social

structures function and this can be achieved through doing well structured impact studies.

Secondly, typical impact studies examine the effect of labour supply changes on production systems. In case of a farm this would be on particular types of crops. This measures the vulnerability of production systems to HIV morbidity and mortality, and the vulnerability of different types of producing units. The latter may display stress much earlier than the system, since some producers will be more marginal and vulnerable than others to changes in the labour supply. Agriculture and the private sector play a pivotal role in the lives of every Swazi and the economy as a whole; and these are sectors that are vulnerable to HIV/AIDS.

This impact study was commissioned by the Ministry of Agriculture and Co-operatives and the United Nations Country Team to determine the impact of HIV/AIDS on agriculture and the private sector, obtain vital information on vulnerability of agriculture and the private sector to HIV/AIDS related morbidity and mortality; and strategies that can be implemented to prevent and control the epidemic. It is this information that Swaziland policy makers urgently need to mount a comprehensive and effective campaign against HIV/AIDS and mitigate its impact on society.

The terms of Reference for the study stipulated the following:

- To determine the demographic impact of HIV/AIDS on the agricultural sub-sector, the private sector and the Ministry of Agriculture and Co-operatives and the consequent mortality rates.
- To assess the impact of HIV/AIDS on the Ministry of Agriculture and Co-operatives and its human resources in terms of the ministry's ability to fulfill its mandated functions and costs of losses resulting from the epidemic.
- To assess the likely economic and social impacts on the commercial agricultural sector and the private sector.

- To assess the impact of HIV/AIDS epidemic on homestead agricultural practices and socio-economic status (labour allocation, cropping patterns, livestock holdings, use of economic resources, assets)
- To make recommendations to assist in planning for the economic impact of HIV/AIDS on the private sector and commercial and smallholders agriculture.
- To make recommendations to assist in planning for and preventing impacts on all the sectors in the country.

1.2 METHODOLOGY

1.2.1 Research areas

The study focused on household farming (Subsistence Agriculture); Commercial Agriculture; the Private Sector; and the Ministry of Agriculture and Cooperatives. The choice of these sectors was based on the fact that they are part of the linkage between the household, household farm and off-farm activities. The private sector and commercial agriculture provide employment to members of the household who remit money to their families and this money is also used for household farm activities.

Secondly, the private sector accounts for 70% of Swaziland's total labour force. Commercial agriculture alone employs 18.8% of the total labour force.

The ministry of agriculture and co-operatives provides support of household farming through farm extension field workers. The efficiency of the MOAC has direct implications on household subsistence farming. Thirdly, agriculture and the private sector are the biggest contributors to Swaziland's GDP. Agriculture accounts for 10% of Swaziland's GDP, while the private sector accounts for 46%. Most importantly, agriculture provides the raw materials to Swaziland agro-industries that form the base of Swaziland industry.

1.2.2 Sampling

The sample of households used in the survey on subsistence agriculture was obtained through a two-stage sampling process. Initially households were

stratified randomly according to the four regions and then systematic sampling was used to select the households in each of the four regions of the country.

The sample for the survey on commercial agriculture involved multi-stage sampling. The first group comprised of 120 private commercial farms that were stratified according to the four regions and then random sampling was used to select the commercial farms in each region(92 firms were selected). The second group of farms included 34 government and Swazi national farms. Random sampling was used to select a sample of 10 farms. The third group comprised of 16 co-operative societies randomly selected out of 53.

In the private sector, 92 businesses were randomly selected from 440 businesses registered with the Federation of Swaziland employers.

1.2.3 Data collection techniques

Subsistence agriculture

In the collection of primary data, the study employed both quantitative and qualitative techniques. A structured questionnaire was used to collect quantitative data pertaining to the impact of the epidemic on households. This focused on the impact that excess morbidity and mortality due to AIDS has on labour supply and income of households. The impact of AIDS induced changes in labour supply and income on household farming activities was then investigated focusing on area under cultivation, crop yield and cropping patterns.

In households where death of a household member had occurred, cause of death was determined by verbal autopsy - a technique that relies on clinical assessment of signs and symptoms during terminal illness reported retrospectively by a close caregiver to determine cause of death. Where a death certificate was available, information from the death certificate was recorded. The first available 50 death certificates were used as a Gold standard to validate the verbal autopsy approach. The sensitivity was 89% and specificity 91%; with a predictive value positive(PPV) of 92%. Verbal autopsy has been described among

others by Fortney et al (1986), Gray et al (1990) and Kahn et al(2000.) Kahn et al (2000) found high sensitivity and specificity of verbal autopsy when applied to communicable diseases in a rural district in South Africa, They further found verbal autopsy findings to be reliable, but suggest the need for validation of the process. This was done for this study. Focus group discussions were held to inform the whole process of data collection.

Commercial agriculture, the private sector and MOAC

Primary data was collected through quantitative and qualitative methods. Structured questionnaires were administered to managers, workers, and health workers where a medical facility existed. The questionnaire focused on the link between mortality and morbidity due to HIV/AIDS, increased medical and funeral expenses, reduced efficiency and productivity; and intervention measures that have been implemented.

Secondary data was collected through review of records where available.

1.2.4 Data analysis.

Cause of death was determined by two independent clinicians. The Clinical definition of HIV/AIDS as described by Piot et al (1992) was used to identify HIV positive cases and AIDS related deaths. A strict and consistent criteria was followed. Data was entered by two clerks on different computers to ensure high quality. Epi Info2000 , SPSS 7.8 and Stata Quest were used to analyse the data.

Descriptive and analytic methods were used to determine the impacts on the various entities and their relationship to HIV/AIDS morbidity and mortality.

CHAPTER 2

SUBSISTENCE AGRICULTURE

2.1 Introduction

The rural population of Swaziland relies heavily on subsistence agriculture. Maize is the most widely grown crop. Figure 2.1.1 below shows the main crop zones of Swaziland. HIV/AIDS poses a great danger to subsistence agriculture, which is already under threat from unfavourable climate in Southern Africa. Over the past 10 years there has been a significant reduction in cereal production (Table 2.1.1) due to erratic rainfall characterized by prolonged dry spells during the critical flowering stage.

Figure 2.1.1 Main Crop Zones of SWAZILAND

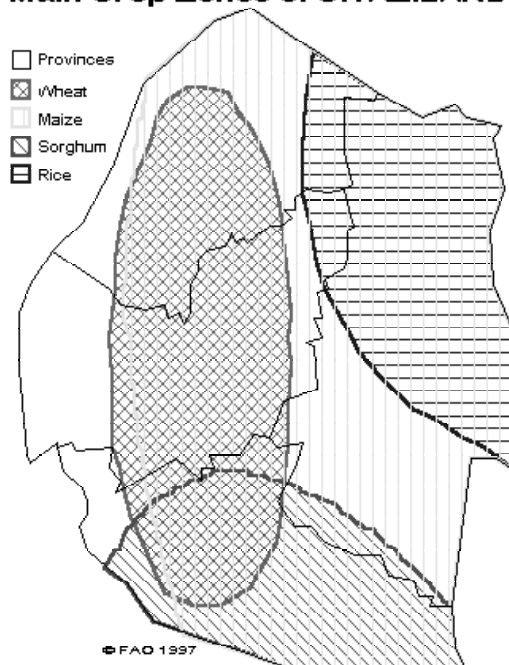
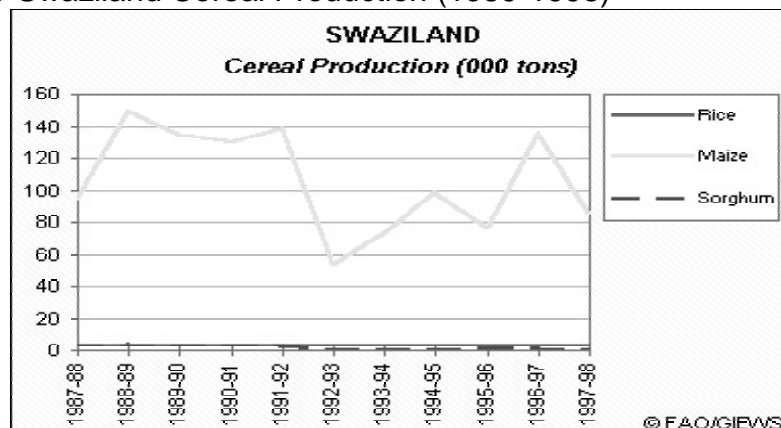


Table 2.1.1 Swaziland Cereal Production (1989-1998)



The data analysis for subsistence agriculture was done using EpiInfo2000. The analysis explores the linkage between household, the farm systems, sources and uses of income and labour and the impact of HIV/AIDS on these linkages.

Sample size

Swaziland has 172,416 households², of which 113,797 are rural households (Census data,1997). 417 rural households were included in the sample. 456 households responded and their distribution by region is shown in table 2.1.1 below.

Table 2.1.1 Sample size

| Region | Target Sample Size (number of households) | Number of Completed Instruments |
|------------|--|------------------------------------|
| Hhohho | 118 | 111 |
| Manzini | 107 | 90 |
| Lubombo | 88 | 102 |
| Shiselweni | 104 | 141 |
| No label | - | 12 |
| Total | 417 | 456 |

2.2 Description of the household and the farm

The focus of this section is a description of the sources of labour used on the farm, sources of income for households, what is produced on the farms and their use.

2.2.1 Sources of labour

Subsistence farming requires a regular supply of labour . The various sources of farm labour are shown in table 2.2.1.

² A household is defined as a group of individuals who share living quarters and have common cooking utensils(UN 1958, in CSO report 1997).

Table 2.2.1 Sources of labour used on the household farm

| Source of labour | Households (%) n=456 |
|-------------------------------------|-------------------------|
| Household members | 375(82.2%) |
| Hired labour | 200 (43.9%) |
| Hire farm machinery | 96(21.1%) |
| Use livestock to plough | 45(10.1%) |
| Communal pooling of labour (lilima) | 76 (16.7%) |

Over 80% of households rely on members of the household as a source of labour for the farm. The traditional communal systems of pooling labour together – called *lilima* is no longer widely practised. The communities feel that it is expensive to finance as one has to provide food for the community members who turn up. It is therefore out of reach for the poor households and expensive for those with small portions of land.

2.2.2 Source of income

Households draw from various sources of income needed to meet their household and farming demands. These are shown in Table 2.2.2 below.

Table 2.2.2. Source of income for households

| Source of income | Households (%) n=456 |
|---|-------------------------|
| Remittances from household heads and relatives working away from home | 228 (50%) |
| Household members and heads – self employed or work within community | 184(40.3%) |
| Sale of farm produce | 406 (87.7%) |
| Borrow | 44 (9.6%) |

Most households sell their farm produce to raise income. The second largest source of income is remittances from households heads and relatives working away from home(50%). This income is used to meet the daily needs of the households and maintain the farm. A good proportion of households(40.3%) raise income from supplying services and labour to other households within the community.

2.2.3 Employment of household members work away from home.

Household members working away from home are employed by either private companies, government or are self employed. The employment status of the household members working away from home is shown in Table 2.2.3 below.

Table 2.2.3 Employment of household members who work away from home

| EMPLOYER | NUMBER (%) N=228 |
|----------------|---------------------|
| Private sector | 118(51.8%) |
| Government | 78(34.1%) |
| South Africa | 18(7.9%) |
| Self employed | 14(6.2%) |
| Total | 228(100%) |

The private sector is the biggest employer of members of the households followed by government. The remittances from those employed away from home forms a large component of the off-farm activities that have a strong bearing on the continued survival of the household and production from the farms.

2.2.4 .Types of farm produce

Table 2.2.4 below shows the types crops cultivated and livestock kept by households. Chickens are kept by most households (62.1%) followed by cattle(20.8%). Maize is the most widely cultivated crop(86.4% of households), followed by beans (61%).

Table 2.2.4 : Types of farm produce

| Type of farm produce | Households (%) N=456 |
|--------------------------------------|----------------------|
| Livestock | |
| Cattle | 95 (20.8%) |
| Chickens | 283(62.1%) |
| Goats | 30(6.6%) |
| donkeys | 20(4.4%) |
| pigs | 20(4.4%) |
| Crops | |
| Maize | 394(86.4%) |
| Beans | 278(61%) |
| Peanuts | 196(43%) |
| Vegetables | 224(49.1%) |
| Cotton | 96(21.1%) |
| Other cereals – sorghum, wheat, rice | 98(21.5%) |

2.2.5 Uses of farm produce

The farm produce is mainly used for home consumption(97%), selling to provide income(50%), for cultural events(33.1%) and ploughing the fields(18.9%). Table 2.2.5 below shows the uses of the farm produce .

Table 2.2.5 Use of farm produce

| Use | Households (%) N=456 |
|---------------------------|-------------------------|
| Income which is used for | 226(50%) |
| - school fees | |
| - general household needs | |
| - healthcare costs | |
| - hire labour | |
| - funeral costs | |
| - buy farm implements | |
| Cultural events (lobola) | 150 (33.1%) |
| Ploughing (cattle) | 86(18.9%) |
| Food | 442(97%) |

2.3 AIDS related deaths

The focus of this section is the households that have experienced AIDS related deaths. 104 (22.8%) households reported having experienced an AIDS related death, while 122(26.8%) households reported having experienced a death in the household from other causes.

Tuberculosis was the most commonly reported illness amongst those who had died of AIDS(57.4%). Tuberculosis amongst HIV-infected people is a major problem in Swaziland. In the year 2000, 78% of all patients diagnosed with tuberculosis were also infected with HIV(Government of Swaziland, 2001).

The average age at time of death was 33.7 years for AIDS related deaths and 41.6 years for deaths from other causes. Whereas the average age at death for AIDS cases is testimony to the fact that HIV/AIDS affects the younger productive age group, the average at death from other causes is lower than expected.

Swaziland's life expectancy in 1997 was 60 years old (Census data, 1997), and

this is the expected age at death from other causes. The main reason for this is the increased mortality in the under fives due to HIV/AIDS which are not reported as AIDS related deaths.

Shiselweni region had the highest number of AIDS related deaths followed by Manzini region(Figure 2.3.1). However, Shiselweni region has the lowest prevalence of HIV – 27%, and Manzini region, the highest at 41% (Government of Swaziland 2001).

There are two possible reasons for this observation – the migration pattern within Shiselweni region and the lower socio-economic status of the region.

Census data (1997), gives Shiselweni as the region with the highest out-migration, with over 90 percent of these people migrating to Manzini, a region currently with the highest prevalence of HIV. Migration has been identified as a risk factor for acquiring HIV(Murray and Lopez 1999). Those who migrated from Manzini, could have acquired the infection elsewhere and only returned home to die. This study found many households that reported a situation where members of the household came back home in the terminal stages of the disease.

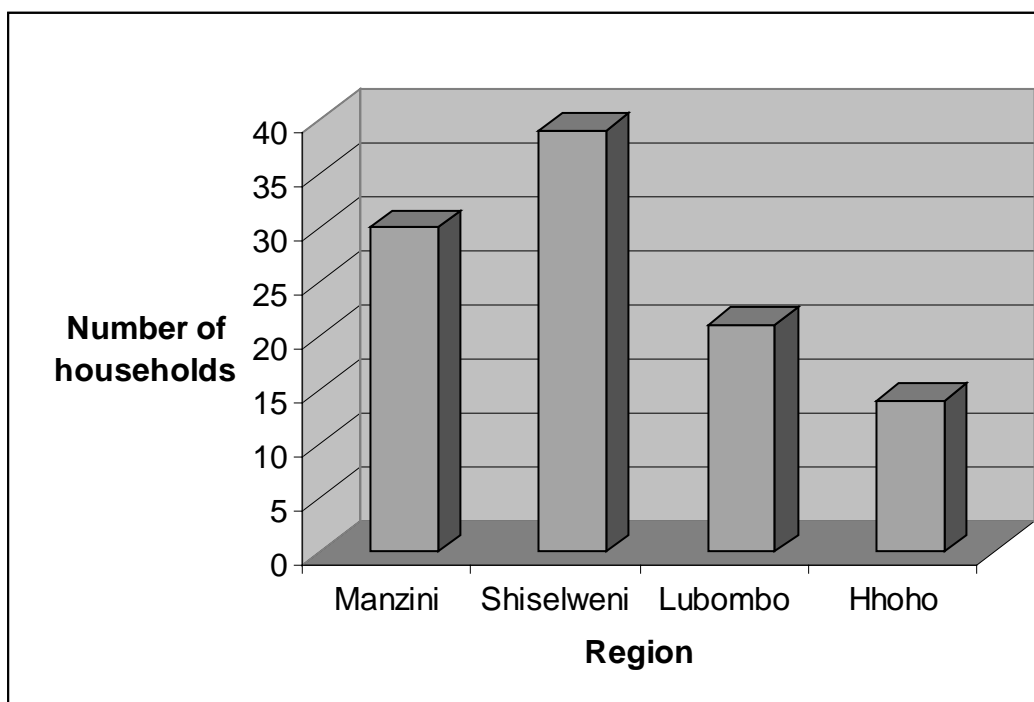
Secondly, Shiselweni has the lowest economically active population(20.5%), the highest dependency ratio³(2.36), the lowest crude activity⁴(17.8), the lowest general activity rate⁵(30.1%) and lowest employment rate(70.2%) in the country(Census data 1997). So the high number of deaths could be a reflection of the low socio-economic status of the region.

³ Dependency ratio is the ratio of economically inactive population to the economically active.(CSO 1997). A ratio of 2.36 indicates that 100 economically active people have to support themselves and 236 other economically inactive people.

⁴ Crude activity rate is the proportion of the working age population that is available for economic activity (Marshall et al, 1984: 261-2)

⁵ General activity rate is the proportion of the working-age population that is available for work. (Marshall et al, 1984: 261-2)

Figure 2.3.1 Number of households by region that have experienced an AIDS related death



2.4 Impact on the household

The focus of this section is the impact that prolonged morbidity and increased mortality due to HIV/AIDS have on the household and productivity on the farm. Morbidity and mortality in the household has wide ranging ramifications to the household. These include increase in costs for healthcare and diversion of labour from the farm to care for the sick person. In the event of death there is loss of labour, loss of institutional memory, loss of income if the deceased was a bread winner; and the household incurs costs for the funeral. These events in-turn have a negative impact on amount of land cultivated, crop yield and cropping patterns.

The data has been stratified according to whether there was any death at all in the household, death but not related to HIV/AIDS and an HIV/AIDS related death. This was done to control for confounding factors like climate, changes in income and the local labour market that operates within the communities. Measures of impact have been computed using non-AIDS related death as the reference. The impacts on the household and farm are shown in Tables 2.4.1. and 2.4.2

Table 2.4.1: Impact of an AIDS related death on the household and the farm

| | No deaths (n=230) (Control) Cases(%) | NON-AIDS related deaths (n=122) Cases(%) | AIDS related deaths (n=104) Cases(%) | OR | 95% Confidence Interval | P-value |
|--|--|---|---|-------------|--|----------------|
| Reduction in area under cultivation | 18(7.8%) | 22(18%) | 40(38.5%) | 2.84 | 1.48-5.46 | 0.00060 |
| Increase in healthcare costs | 23(10%) | 17(13.9%) | 23(22.1%) | 1.75 | 0.83-3.70 | 0.10903 |
| Reduction in crop yield | 34(14.8%) | 26(21.3%) | 49(47.1%) | 3.29 | 1.37-2.34 | 0.00004 |
| Change in cropping pattern | 46(20%) | 37(30.3%) | 44(42.3%) | 1.68 | 0.94-3.03 | 0.06180 |
| Children dropout of school due to lack of fees | 37(16.1%) | 31(25.4%) | 46(44.2%) | 2.33 | 1.28-4.25 | 0.00298 |
| Death of head of household | - | 28(23%) | 30(28.8%) | 1.40 | 0.74-2.66 | 0.27269 |
| Diversion of labour to care for sick member of household | - | 28(23%) | 32(30.8%) | 1.49 | 0.79-2.82 | 0.18561 |
| Loss of remittances due to death of member of household | - | 24(19.7%) | 40(38.5%) | 2.55 | 1.35-4.84 | 0.00182 |

Table 2.4.2 Farm Production for households

| Produce | Average Household Production per year | | Reduction in production due to AIDS | % age reduction in production due to AIDS |
|---------|---------------------------------------|-------------|-------------------------------------|---|
| | Non-AIDS deaths | AIDS deaths | | |
| Maize | 35.06 bags | 16.05 bags | 19.01 bags | 54.2% |
| Cattle | 13.610 herds | 9.583 herds | 4.027 herds | 29.6% |

Table 2.4.3 Land cultivation

| | Average household land under cultivation | | %age reduction due to AIDS |
|-----------------------|---|-------------|-----------------------------------|
| | Non-AIDS deaths | AIDS deaths | |
| % age Land cultivated | 84.2% | 50% | 34.2% |

2.4.1 Healthcare costs

The prolonged morbidity in patients living with HIV/AIDS leads to increase in healthcare costs. This study did not find a significant increase in health costs for households that suffered an AIDS related death(OR 1.75, P-value 0.109). Explanations for this trend could not be provided by this study. Whereas household members who are employed by the private sector companies that provide healthcare benefits continue to access these services during the terminal stages of the disease regardless of where they reside, the study on private sector(Chapter 5) shows that the majority of employees in the private sector pay for healthcare from out of pocket. Non-differential misclassification of the cause of death which can occur in use of verbal autopsy could have biased the measure of impact towards the null value.

2.4.2 Diversion of labour to care for the sick

During the terminal stages of the illness, family members take time away from working on the farm to care for the sick person. This study did not find a significant increase in diversion of labour to care for a patient with AIDS (OR 1.49 P Value 0.18). However, it is important to note that HIV/AIDS is associated with a prolonged morbidity, this means that the diversion of labour to care for the sick is over a longer period compared to non-AIDS illness. The resultant impact on the household is therefore greater in AIDS related illnesses.

2.4.3 Death of member of household.

The prolonged morbidity inevitably ends in death. This study did not find a significant difference in numbers of death of heads of households between households that experienced an AIDS related and non-AIDS related death. However, the death of households - mostly men has led to women taking over as heads of households.

This study found that men who were heads of households⁶ were dying more than women in the ratio of 3:2. The study further found that 57.1 percent of households are headed by women. The 1997 census had 49.44% rural households headed by women, this study shows an increase by 7.66 percent.

Thirdly, is the fact that the death of a member of the household leads to loss of remittances and increase in expenditure due to funeral costs.

This study found that there was a significant loss of remittances in 38.5 percent of households that experienced an AIDS related death (OR 2.55, P value 0.001).(Table 2.4.1).The fact that over half of the households depend on remittances for household expenditure and maintaining the farm means that this loss has wide ramifications for the household and the farm(Table 2.2.2).

Death of a household member who has off-springs leads to orphans. The study found that 17.04 percent of households were caring for AIDS orphans⁷. Seven households reported double orphans as a result of both parents dying from AIDS. From this study, the estimated total number of AIDS orphans in Swaziland is 29,379 ! 6,828. The UNAIDS estimated figure of 35,000 AIDS orphans at the end of 2001 falls within the range for this study. (UNAIDS 2002).

2.4.4 Impact on farm systems

The prolonged morbidity and mortality due to HIV/AIDS therefore lead to increase in expenditure due to healthcare and funeral costs, reduced savings, reduced income due to loss of remittances, loss of farm labour and loss of institutional memory. The households respond by initiating coping strategies. The coping strategies that the households initiated are sale of farm produce to raise income, reduction of land under cultivation, change in cropping patterns and reduction on household expenditure.

⁶ Head of household is defined as "a person recognised or acknowledged by other household members as the head of the household" (CSO 1997:10-6).

⁷ An AIDS orphans refers to children who lost their mother or both parents when they were under 15 years(UNAIDS ,2000)

Sale of farm produce to raise income

This study found a 29.6 percent reduction in number of cattle kept (Table 2.4.2). The cattle was sold to cater for increased costs of healthcare and funerals. The findings corroborate the findings by Kwaramba(1997) in Zimbabwe. He found a 29 percent reduction in number of cattle kept as a result of an AIDS death in the household.

Reduction on land area under cultivation

This study found that there was a significant reduction in area under cultivation in households that experienced an AIDS related death (OR 2.84 P value 0.000). The average reduction in land under cultivation was 51 percent compared to 15.8 percent in households that experienced a non-AIDS related death. The reduction in land area under cultivation attributable to HIV for this study is 34.2% (Table 2.4.3).

The result of reduction of land area under cultivation is reduced crop yield. Maize production was analysed to determine the impact on crop yield. This study found a significant reduction in crop yield in households that experienced an AIDS related death (OR 3.29 P value 0.000). The reduction in maize production due to AIDS was 54.2 percent. This is slightly lower than the 61 percent reduction in maize production in Zimbabwean households that had experienced an AIDS death (Kwaramba, 1997). The difference could be explained by the fact that maize production is already under stress from insufficient and erratic rainfall in the region over the past ten years. The reference value used for the calculation is therefore lower.

Change in cropping patterns

42.3 percent of households that experienced an AIDS death showed changes in cropping patterns like substitution of labour intensive crops like cotton with less labour intensive crops like maize, and moving from cash crops to purely

subsistence crops. However, the change in cropping patterns was not significant.(OR 1.68 P value 0.06).

Reduction of household expenditure

The study found a significant increase in children dropping out of school due to lack of fees in 46 percent of households that had experienced an AIDS death.(OR 2.33 P value 0.002). This is a measure that the households take to reduce expenditure as expenditure increases due to AIDS related costs and income drops due loss of remittances as members of the household die. It could also be aimed at increasing source of labour for the farm, however this could not be established in this study.

2.5 Vulnerability of households and farms to the impact of HIV/AIDS

The results of this study show the effect of labour supply and income changes on farm systems and on particular types of crops. What in effect has been measured is the vulnerability of farm systems to HIV morbidity and mortality, and implicitly the vulnerability of different types of producing units (Cohen, 1993).

There are several factors that point to vulnerability of Swaziland subsistence farm systems to the impact of HIV/AIDS.

1. *The dependence of production on labour inputs* means that as the younger members who are disproportionately affected by HIV/AIDS die, the reduction in labour supply will affect production.
2. Secondly, *the dependence on remittances for survival* in many of the households, means that as members of the household that remit money die of HIV/AIDS the reduction in income will lead to reduced production on the farm.

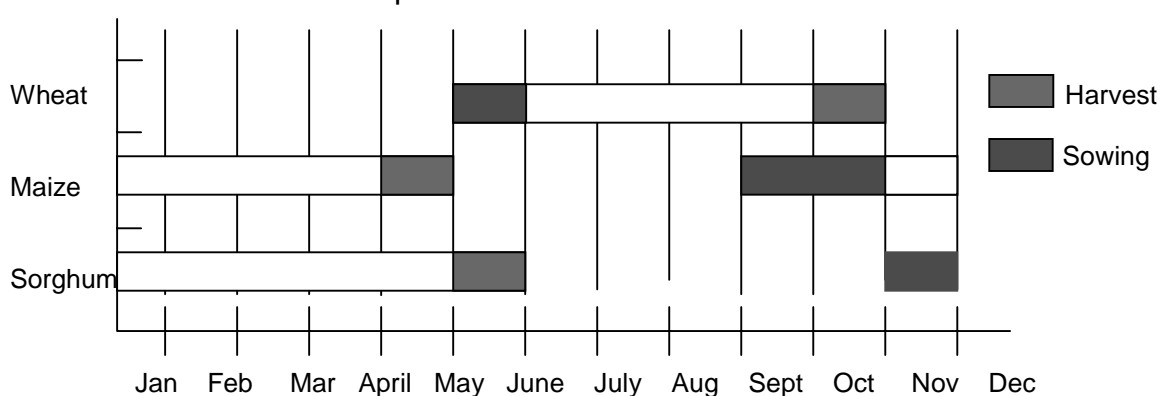
3. *The wide use of hired labour on the farms.* Over 40 percent of households used hired labour on their farms. This means that these farms are vulnerable to changes in income which is used to hire the labour. The income could be from remittances, sale of farm produce or sale of household labour. These sources of income are affected by the increased morbidity and mortality of the productive members of the household. This renders hired labour an unsuitable household labour saving technology as households face the epidemic.
4. The other factor is *female headed households*. The death of heads of households – usually men, means loss of institutional memory that is vital for sustaining production on the farm. As women take over as heads of households, they do so with limited skills and knowledge of the farm systems. It is not easy therefore for them to cope with reductions in labour supply and interruption of flow of remittances. In this study, a female head of one of the households lamented that she did not even know how many herds of cattle and land they owned since it was her husband who managed the farm.

Norse(1991) found that female headed households in Malawi were especially vulnerable to changes in labour supply and to reductions in the flow of remittances.

5. Limited range of crops in an area with erratic rainfall and poor soils. The Swaziland subsistence farm systems predominantly have maize as the main crop cultivated. Production of maize fell to 85,000 metric tonnes, in 1996/1997(Table 2.1,1), 73,000 metric tones in 1999/2000 season and it is forecast to further decrease by 4% to 70,000 metric tones for the 2001/2002 cropping season, the lowest so far(SADC, 2002; UN 2002). This was due to prolonged dry spells during the flowering season. Most of the rainfall is during summer(September to April), with the highest amount of rainfall being 250mm. It is during this time that planting of

maize takes place (Table 2.5.1). Therefore, the fact that Swaziland is located in a region with little rain and has poor soils that require use of fertilisers, makes Swaziland land farm systems dependent on income to maintain a good crop yield. This makes the subsistence farms systems vulnerable to changes in household income. Mortality of heads of households and breadwinners will lead to loss of income making farming difficult to sustain.

Table 2.5.1. Swaziland Crop Calendar



Source: FAO 2000

6. *Increase in number of orphans.* With the death of the parents, knowledge, skills and experience of agricultural practices, farm management and marketing are lost. The young members of the household may not have the necessary knowledge, skills and experience in farming to continue managing the household farm. The death of their parents may sometimes signal the end of farming in the household. The result is reduced income and source of nutrition in the household. In households where both parents had died, the orphans lamented that they did not have the necessary knowledge to continue with farm activities.

2.6 CONCLUSIONS

1. HIV/AIDS through increased mortality of heads of households and other able bodied members of the household has led to a reduction in quantity of household labour and source of income for the household. There is also an increased number of households headed by women; and increased number of orphans.

2. There is increased diversion of labour as household members care for the sick relatives, increased household expenditure on healthcare and funerals. This has led to:
 - reduction in crop yield and land under cultivation,
 - change in cropping patterns
 - increase in number of households caring for orphans
 - children dropping out school due to lack of fees

3. Swaziland households and their farming systems are vulnerable to the socio-economic impact due to HIV/AIDS. The fact that the region receives not only little but erratic rainfall and has poor soils increases these households' vulnerability to the impact.

4. From the projection made in Chapter 7, AIDS mortality is expected to reach its peak in the year 2008, the worst is therefore yet to be seen. The number of orphans is expected to rise by 10,000 every year for the next six years, and more homes will be left destitute by the epidemic.

CHAPTER 3 COMMERCIAL AGRICULTURE

3.1 Introduction

The farms that were included in the survey vary from small commercial agricultural farms to big agro-estates. The smaller farms did not keep records of much of their operations and costs, while the agro-estates maintained a blanket of secrecy around their operations. Secondly, there is poor flow of information from health workers to management on issues related to HIV/AIDS in the workforce. It was therefore difficult to access records from such farms. The impact studies have therefore been complemented by two case studies to further explore the impact,.

Agricultural practice relies on regular supply of labour, and commercial agriculture is no exception. The impact of HIV/AIDS on agriculture is a manifestation of the increased morbidity and mortality due to HIV/AIDS amongst the employees. The excess morbidity and mortality increases costs of production as sick employees utilise more healthcare, they are absent from duty and when they die the company incurs funeral and replacement costs. Absenteeism, high turnover of employees and reduced morale affects productivity. It is within this framework that impact of HIV/AIDS on commercial agriculture is analysed.

3.1.1 Sample

A total of 92 commercial farms out of 132 were surveyed and 38 responded. Most farms were afraid of the backlash from labour unions if they declared that some of their employees were living with HIV/AIDS.

Table 3.1.1 below gives the details of the sample.

Table 3.1.1 Sample of private commercial farms

| Region | Number of sampled farms |
|------------|-------------------------|
| Hhohho | 25 |
| Manzini | 21 |
| Lubombo | 12 |
| Shiselweni | 34 |
| Total | 92 |

3.2 Employment in Commercial Agriculture

Commercial agriculture is a leading employer of labour, providing employment to 18.8 percent of the Swazi total labour force. This is well demonstrated in the latest available employment figures from the 1997 census. The figures are shown in Table 3.2.1 below.

Table 3.2.1 Employment in Commercial Agriculture

| Year | Number of employees | | Total |
|------|---------------------|------------|--------|
| | Male | Female | |
| 1996 | 14,376(81%) | 3,372(19%) | 17,742 |
| 1997 | 12,499(83%) | 2,528(17%) | 15,027 |

Source: CSO 1997

3.2.1 Labour characteristics in the commercial agricultural sector

The commercial agricultural sector maintains a small permanent labour force and relies heavily on casual and seasonal labour. Whereas males are commonly employed on the agro-estates, agro-estates on individual title deed land tenure employed more females as compared to males. The data is presented in Table 3.2.1 and Table 3.2.2 respectively.

Table 3.2.2 : Commercial Agriculture use of Seasonal Workers

| Seasonal Employees? | Frequency | Percentage |
|---------------------|-----------|------------|
| Yes | 17 | 44.7 |
| No | 13 | 34.2 |
| No response | 8 | 21.1 |
| Total | 38 | 100 |

Table 3.2.3 : Male to Female Ratio of Employees in commercial Agricultural sector

| Male : Female Ratio | Frequency | Percentage |
|------------------------|-----------|------------|
| More Males | 18 | 47.4 |
| More Females* | 3 | 7.9 |
| Males Equal to Females | 9 | 23.7 |
| No response | 8 | 21 |
| Total | 38 | 100 |

* Most of these were in the individual title deed land tenure

One major finding of this research was that on individual title deed land, the permanent labour is generally between 20 and 35 percent of the seasonal labour hired annually. 44.7percent of these establishments employ seasonal workers.

Commercial agriculture is highly dependent on huge supply of labour. Although the permanent labour is small, it comprises most of the key skills needed to run the farm. This core staff is the most significant determinant of the quality of farm products. Casual and seasonal labour increases the quantity because heightened work demands more labour during certain key periods such as during planting, harvesting or packaging farm products for the domestic and external markets.

In Swaziland, casual and seasonal labour is available because certain groups of people need money during certain periods. In preparing for special festivities such as weddings or Christmas or opening of schools, many people seek short-term engagements. Such workers often contact farms with whom they have previous social contracts. This is also common in the forestry and agro-plantations.

3.2.2 Healthcare financing in the commercial agricultural sector

Out of 182 employees on commercial agricultural farms interviewed, over 70% finance healthcare out of pocket. Only 25.8% of the farms provide healthcare to their employees through either providing medical insurance or paying private healthcare providers for treatment of their workers.(Table 3.2.4)

Table 3.2.4 Healthcare financing on the commercial farms

| SOURCE OF FINANCING | EMPLOYEES(%) |
|---|--------------|
| Out of pocket disimbursements | 128(70.3%) |
| Employer - medical aid or pay healthcare provider | 42(25.8%) |
| No response | 7(3.9%) |
| Total | 182(100%) |

The fact that most of the commercial agricultural farms do not provide medical benefits for their employees means that they will not face increased healthcare costs as more of their employees fall sick with HIV/AIDS. However, this reduces on the quality and quantity of healthcare as employees have to pay out of pocket

for these services. This has the potential to compromise productivity which ends up as a cost to the employer. Secondly, the fact that most of these employees will turn to public sector for healthcare will result into a situation where the public sector will get overburdened. The increased expenditure on health in the public sector robs the nation of resources that could have been invested for the country's development

3.3 Mortality due to AIDS amongst employees on commercial farms.

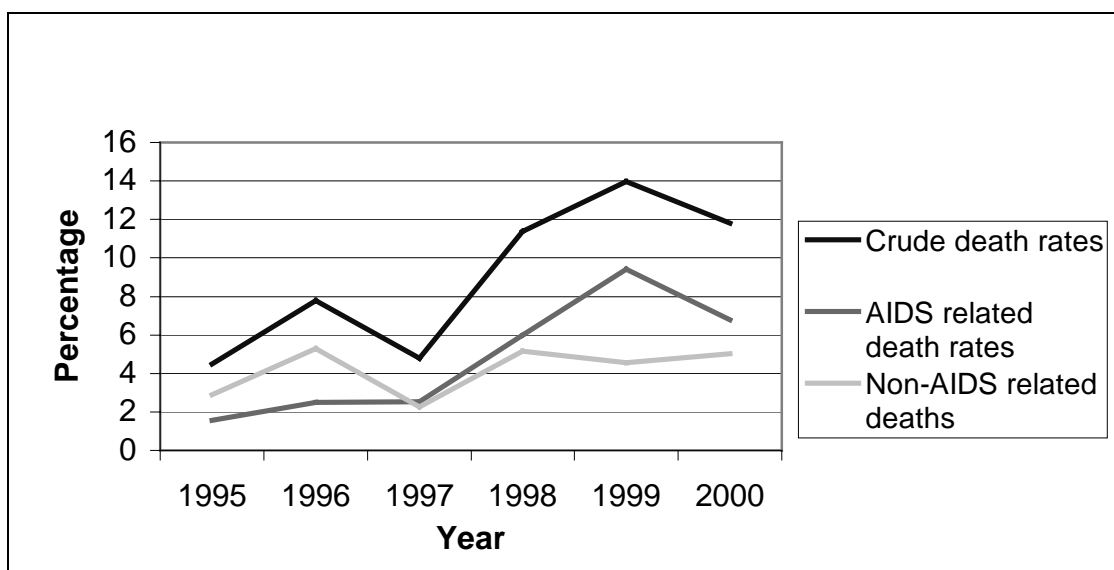
The focus of this section is the impact that HIV/AIDS has on mortality amongst employees on Agro-estate A. Agro-estate A has been in existence for over twenty years. It has established company townships for its employees. In addition to providing free housing, water and electricity for its employees the estate provides free healthcare, funeral benefits, and other insurance benefits like life insurance, disability and a pension scheme. In 1999 the company embarked on a major restructuring exercise which involved retrenchment of non-core staff and outsourcing some of their departments. 152 employees were retired, 23 of these employees were retired on medical grounds.

Agro-estate A has experienced an increase in death rates over the past six years. The total number of employee deaths for the period 1995-2000 was 180, of these 95 (52.8%) were attributed to AIDS. Table 3.3.1 and figure 3.3.1 show the trend for crude death rates and AIDS specific deaths from 1995 to 2000.

Table 3.3.1: AIDS and non-AIDS related death rates for Agro-estate A. (1995-2000)

| Year | No.of employees | Total deaths | Crude death rate | AIDS specific deaths (%) | AIDS specific death rate |
|-------------|------------------------|---------------------|-------------------------|---------------------------------|---------------------------------|
| 1995 | 3795 | 17 | 4.48 | 6 (35.3) | 1.56 |
| 1996 | 3595 | 28 | 7.79 | 9 (32.1) | 2.5 |
| 1997 | 3540 | 17 | 4.80 | 9 (52.8) | 2.52 |
| 1998 | 3496 | 39 | 11.36 | 21 (53.8) | 6.00 |
| 1999 | 3295 | 46 | 13.96 | 31 (67.4) | 9.41 |
| 2000 | 2793 | 33 | 11.80 | 19 (45) | 6.8 |

Figure 3.3.1:A comparison of AIDS related and non-AIDS related death rates for agro-estate A (1995-2000).



The data shows a general increase in crude death rates and AIDS related deaths up to 1999 and thereafter a decline. The non-AIDS related deaths leveled off after 1998. There is an unexplained dip in mortality rates in the year 1997, the point at which AIDS related deaths started increasing dramatically.

After applying trend analysis using the linear regression model, there is a significant increase in mortality up to 1999. Three fold increase for crude death rate and a six-fold increase for AIDS specific death rate.($p < 0.05$).

The drop in AIDS related mortality rates after 1999 coincides with the retrenchment exercise and outsourcing some of the non-core departments. 152 employees took a retirement package, and from review of the records 23 of these had either advanced tuberculosis or AIDS. This is reflected in the reduction of total number of employees between the year 1999 and 2000 (Table:3.2.1).

The reduction of AIDS specific mortality rate after 1999 can therefore be attributed to the retrenchment exercise that targeted the sickly employees.

The prolonged morbidity due to HIV/AIDS inevitably leads to death. Projections have been made that HIV/AIDS mortality will lead to loss of skills and reduction in quality workforce in the commercial agricultural sector (Rugalema et al 1999). The situation at agro-estate A gives an example to illustrate the likely impact on

HIV/AIDS mortality on labour and the effect of interventions to mitigate the impact.

3.4 Cost Impact of HIV/AIDS on commercial agricultural sector

There was wide acknowledgement that HIV/AIDS had affected most farming concerns visited . When human resources managers or the farm owners were asked to comment on the influence of HIV/AIDS in problems recently being experienced in the establishment, 25 out of 92 surveyed admitted that they had HIV/AIDS related problems but they were not certain at all.

The major HIV/AIDS related problems were absenteeism, employees frequently falling sick, attendance of funerals, death leading to loss of skilled labour and increased pay-outs for funerals and early retirement on medical grounds. Table 3.4.1 below shows the factors that are affecting production at the 25 farms. 13 of the farms attributed their reduction in production to AIDS related absenteeism, and high turnover of employees. The increase in costs of production were attributed to increased healthcare costs and funeral costs.

Table 3.4.1: Factors affecting production on the agro-estates

| Factors | Number of farms |
|---------------------------------|-----------------|
| HIV/AIDS | 13 |
| Normal Attrition | 4 |
| Lack of Farming Equipment | 2 |
| Labour relation problems | 2 |
| Increased Prices of farm Inputs | 4 |
| Total | 25 |

Healthcare costs.

The prolonged morbidity associated with HIV/AIDS means that people living with HIV/AIDS utilise more healthcare and for a longer period than people suffering from other diseases. On agro-estate A, costs of healthcare have increased significantly over a two year period.(Table 3.4.2)

Table 3.4.2 Costs of medicines and cost of transport for referred patients for agro-estate A (1999-2000)

| Year | Medicines(E) | referrals(E) | Total |
|------------------|--------------|--------------|---------|
| 1999 | 71,216 | 61,177 | 132,393 |
| 2000 | 80,260 | 73,493 | 153,753 |
| 2001(up to June) | 79,877 | 87,497 | 167,374 |

At Agro-estate A, on average employees with HIV/AIDS utilise healthcare services by one and half times more compared to other employees.

Funeral costs

One of the farms - Agro-estate C was faced with increase in funeral costs and attendance and early retirement on medical grounds. Table 3.4.3 shows the ranking of the impact on agro-estate C.

Table 3.4.3 : The economic impact of HIV/AIDS on agro-estate C

| PROBLEM TYPE | IMPACT | | |
|-------------------------------------|--------|----------|---------|
| | Least | Moderate | Serious |
| Absenteeism | Y | | |
| Sickness | | | Y |
| Loss of skilled labour | | Y | |
| Attendance of Funerals | | | Y |
| Increased Pay-outs for Funerals | | | Y |
| Early retirement on medical grounds | | | Y |

HIV and AIDS morbidity at agro-estate C has led to increased costs of healthcare. As the employees die of AIDS the company pays out funeral benefits and employees take time off to attend funerals of colleagues. This disrupts production and increases costs of production. Secondly, some employees decide to take early retirement on medical grounds when their sickness reaches the chronic debilitating stage. These have to be replaced and there is a cost that is attached to it in terms of recruitment and training of the new employee. During this phase of recruitment and training of the new employee, productivity is affected.

As mortality due to AIDS increases more agro-estates will face an increase in funeral benefits payout. Muwanga (2001) found that a majority of Swazi businesses(66%) provide funeral benefits to their employees. Funeral benefits payout for Agro-estate C have increased close to three fold over a period of two years (Table 3.4.4) .

Table 3.4. 4 : Employees' funeral benefits of agro-estate C

| Year | Funeral Benefits(E) |
|-------------|----------------------------|
| 1998 | 43, 600 |
| 1999 | 94,060 |
| 2000 | 124,000 |
| 2001 | 81, 713 (up to June) |

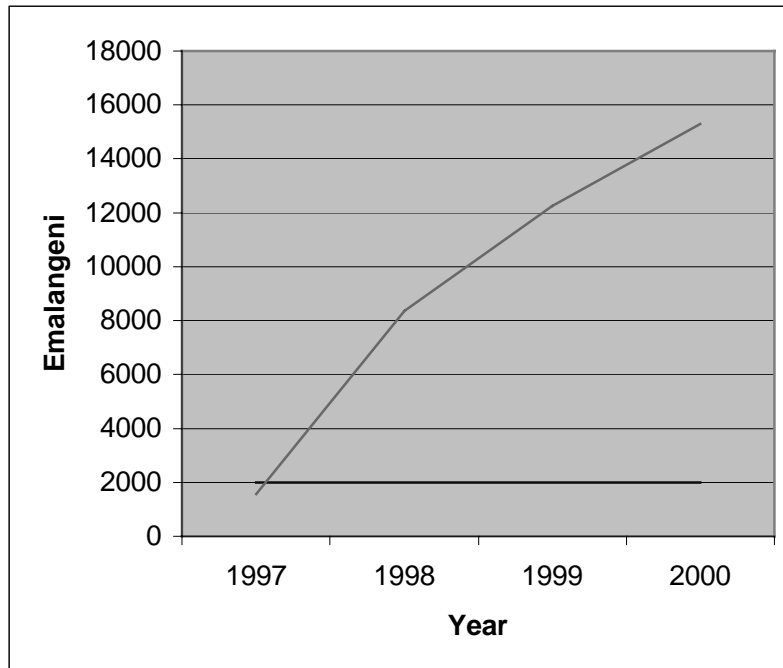
Absenteeism

There are worrying tendencies of absenteeism and frequent sickness. There are also increased tendencies to seek advances against salary because people want to consult traditional medical practitioners or want to attend a private clinic, which may not be frequented by fellow workers. Thus, there are behaviour patterns in seeking medical treatment, which hide the fact that someone is seeking medical treatment which is generally associated with AIDS.

Agro-estate A reported total sick leave days as 4709, a sick leave total utilisation rate of 2.05 days per year per employee in the year 1999.

The combined effect of increased funeral costs, healthcare costs and recruitment and training of new employees is an increase in operational costs. Agro-estate B(figure 3.4.1) has had a seven fold increase in operational costs over a four year period, most of it is attributed to HIV/AIDS

Figure:3.4.1: Operational Costs for agro-estate B (1997-2000)



3.5 Farming cooperatives in Swaziland

Commercial agriculture has backward and forward linkages in an economy. It feeds the economy through its contribution to GDP, while employment is a major social and economic service to a national economy. It also supports the national economy by drawing its inputs such as fertilizers, seeds, finance, machinery and diverse essential services from other units in the national and international economies. In view of this, research in many parts of Africa has recognized that in considering the impact of HIV/AIDS on commercial agriculture, there is need to look beyond the farm level to the entire industry (USAID, undated).

This complex social and economic linkage between commercial agriculture and the national economy is a major source of threats to the sector. .

3.5.1 Structure of farming co-operatives in Swaziland.

Farming cooperatives in Swaziland demonstrate two precautionary strategies relating to potential threats coming from labour. A number of farming cooperatives engaged in producing sugar cane in the Lubombo region have a small permanent staff and get most of their labour by organizing labour parties (lilima) and contracting some organizations to supply labour. The permanent

staff manage the office, represent the cooperatives in other organizations, operate and repair the irrigation systems and make business or development plans. In another strategy, farming cooperatives do not directly engage in farming. There is no common farm which the cooperative societies own. The cooperative societies coordinate farming activities which members undertake on their individual holdings. The cooperative society brings farming implements to a central place which is within a reasonable distance to and from where the cooperative members run their family farming units. A few of these cooperatives manage hammer mills. These farms are distinguished more by their trading activities than farming. In discussion with Senior Cooperative Officers in the Manzini region and Lubombo Region, it was found that these cooperatives merely coordinate the supply of inputs, marketing of crops and publicizing information. However, one recently formed cooperative society demonstrated an exception. This is illustrated in Case study 1.

Case study 1. Cooperatives in Commercial Agriculture

The cooperative has 42 members with a share capital of E12300. It employed 19 permanent employees on its 96.63 ha farm. When it was formed in January 1999, it borrowed E1,000,000-00 from the Enterprize Trust Fund. Its income in 1999 was E583,622-00 and in 2000 it rose to E1302 423-00. The planned and actual expenditure for 2000/2001 was:

| Budget for 2000 – 2001 | | |
|-------------------------------|-----------------------|---------------------|
| <i>Cost Item</i> | <i>Estimated Cost</i> | <i>Actual Cost</i> |
| Wages | 97,581-00 | 266,964-24 |
| Fertilizer | 28,922-14 | 88,216-96 |
| Spraying | 5,983-89 | 9,849-06 |
| Chemicals | 16,672-00 | 15,018-75 |
| Electricity | 35,000-00 | 137,987-15 |
| Transport | 169,474-63 | 390,390-77 |
| Protective Clothes | 300-00 | 4,973-30 |
| Food Ration | 10,921-67 | 24,188-11 |
| Fuel | 5,564-68 | 13,355-25 |
| Stationery | 500-00 | 320-05 |
| Travelling | 2,203-75 | 4,209-60 |
| Rent | 865-00 | 1,831-00 |
| Communication | 300-00 | 162-00 |
| Hospitality | 100-00 | 20-00 |
| Ripeners | 3,403-00 | 13,650-00 |
| Maintenance | 12,500-00 | 12,732-00 |
| Overtime | 997-32 | 959-75 |
| Battery and Touch | 67-28 | 269-10 |
| Other | | 16,000-00 |
| Total | 391,356.36 | 1,001,097.09 |
| Over expenditure by | | 609,740.73 |

The cooperative hired its labour from another cooperative society which specialized in hiring and supplying labour. Probably, the most critical purpose of all these cooperatives is their organized voice in their attempt to promote social and economic conditions of their localities and also to protect local communities. At a Government farm, residents or squatters protected themselves from eviction by forming a cooperative which would borrow money from funds the king recently established. The residents of the farm were served with eviction notice in 1999. It was only in 2000 that the government showed much determination to effect its eviction order which would affect about three thousand squatters. The Senior Regional Cooperative Officer and Senior Regional Extension Officer advised and assisted the community to form a cooperative society with the express purpose of borrowing from the funds the King had set up in order to develop their rural community. The threat of eviction united this community of squatters. They also cooperated for the development of their community. Speaker after speaker also acknowledged that HIV/AIDS was looming. On approaching the leaders on these squatters, a community meeting was organized. There were 17 women and 23 men. The leaders explained that the threat of eviction had left such suspicion that the community was hostile to seeing outsiders talk to groups or leaders in the cooperative society. They had experienced a few deaths which they suspected were AIDS related because of visible conditions they saw. There were also some signs among them that AIDS was prevalent. Thus, the human resource base of this cooperative society faced an ominous danger

The discussion above shows that all categories of commercial farming in Swaziland are susceptible and vulnerable to the consequences of HIV/AIDS. They are all highly dependent on human labour, and thus are exposed to potential effects of HIV/AIDS. For example, *'with HIV/AIDS impacting also in the rural subsistence areas, a commercial farm labourer may have to relinquish his paid position to take over the reins at home'*. At this point there will be competition for labour. The regular supply of seasonal labour from the communal lands may diminish, resulting in 'labour poaching' between farms. *'Poverty in communal lands may result in an increase in widow/single mothers seeking employment on the farms. This can have a destabilizing effect on marriages and exacerbate the spread of HIV/AIDS (USAIDS, undated)'*.

3.5.2 Accommodation and susceptibility to HIV/AIDS.

Cooperative societies do not provide accommodation to employees because they rely on labour recruited in the vicinity where the cooperative is located. Thus, the labour force in the Cooperative Societies is susceptible to the same extent as the general population in which the cooperatives are located. However, they are

vulnerable because the regular income of the people who work in the cooperatives enables them to attract social and sexual partners more regularly than people who do not earn a regular income. Some of the Cooperative Societies which are engaged in producing sugarcane took a deliberate policy decision to hire seasonal and casual labour in order to avoid the obligations of providing accommodation and related welfare services. In effect, the permanent agricultural labour force in Swaziland was between 20 and 35 percent.

The interaction from Monday to Saturday between the permanent and casual or daily paid workers fosters sex liaisons which can spread HIV. In the individual title deeds farms, most people are away from their spouses from Monday till Saturday. While the 7th HIV sentinel serosurveillance report for 2000 indicated that the relationship between HIV/AIDS and sex workers was not known, it was also documented that 'the highest HIV prevalence was found in the clients who were actively looking for work' (Government of Swaziland 2000).

Fifty percent of the respondents in the individual title deeds tenure hire more women than men (Table 3.9). At one agro-estate, while there are 1,518 unskilled male employees against 269 unskilled employees hired annually, the same company hired 615 unskilled males as temporary employees against 923 unskilled females as casual employees.

A number of individual farms on title deed land maintain a small permanent labour force and rely on casual and seasonal labour from the neighbourhood. It appears that so far, this access to a reservoir of labour has delayed the direct debilitating impact of HIV/AIDS on several farms. A number of respondents noted that this advantage may exist in the short term as there were signs that the pool of labour in the neighborhood of several farms was also a host to HIV/AIDS. Where individual farms provide accommodation, workers of the same sex share the accommodation during the week days. Most of this accommodation is provided to workers as single people irrespective of their marital status. These workers also eat their meals as if they are in a camp or they are a community.

Food ration is given to them as part of their wages. This food is cooked at a central place and workers take their meals at fixed times. The food rations are based on a scale set by the Government. The significance of this data is that housing has a bearing on the cost of running the farms and also on the extent to which workers are vulnerable to engaging in activities likely to make them acquire HIV.

The estate plantations provide accommodation to their workers; taking into account the worker's marital status and position of employment held in the company. The company plantations also provide medical facilities to their employees. The general workers cadre, and these constitute the majority of the employees, rely on the company medical facilities; and these are supplemented when the company makes arrangements for its sick employees to receive treatment in a Government or Government aided hospital such as Good Shepherd in Siteki or RFM in Manzini and Mbabane Government Hospital. Employees in the management category are on medical schemes and seek medical services away from the company medical facilities. The company contributes 50 percent of the premiums and every employee who is a member of the medical scheme pays the remainder. There is a substantial number of seasonal workers who provide their own accommodation and pay for their major medical services. These casual and seasonal workers link commercial agriculture to its neighbourhood and the wider national economy.

One major emerging impact of HIV/AIDS is that some commercial farmers are becoming concerned that their potential sources of labour are becoming depleted. The connections to these sources of labour also indicate how susceptible farm labour is to HIV infections, which originate from outside farm labour. Consequently, some commercial farmers have entered into arrangements with a variety of civil society organizations to address the epidemic. There are plans to consolidate this networking and provide education on HIV/AIDS beyond the group of workers who are attached to particular farms. However, unique this

response is, its continuation depends on resources which commercial farmers appear not to have.

3.6. HIV/AIDS Impacts on Health and Financial Behavior of Workers

One major finding of this study was that despite widespread denial among the respondents about the prevalence of HIV/AIDS and its impact, workers as individuals, and in many cases as heads of households, did not escape the impact of AIDS on their incomes and their response to morbidity and mortality. Social and economic impact of HIV/AIDS on workers and industry are diverse. Medical officers and human resources managers indicate that there were new trends in the behaviour of seeking treatment among the general staff. Human resources managers indicate that there is an increased frequency among general workers to seek financial advances in order to pay for medical treatment the workers receive outside the company medical facility. This was observed in 46% of the companies surveyed.

These non-company sources of medical services are either traditional healers or medical doctors considered able to treat certain ailments. Both medical officers and human resources managers indicate that a significant number of workers involved had displayed symptoms generally associated with AIDS. The medical officers and human resources managers also held the opinion that some workers sought medical treatment away from the company clinic because they did not want to show that they were receiving treatment for signs which appeared to be associated with AIDS.

Not all these behavior patterns are easily visible among workers in individual tenure farms. In these farms, the human resources managers also noted a growing trend to seek advances in order to pay for medical treatment. An overwhelming majority of individual farms on title deed land do not provide housing and medical facilities for their employees. There is, however, a growing trend to apply for financial advances against salaries in order to get medical treatment that is not readily available on farm premises.

This is depicted in Table 3.2.4 which shows the methods of financing of healthcare amongst commercial agricultural workers.

At the time of completing a questionnaire with one of the farm owners, he lamented that he had promoted a promising young man but in less than three months after promotion, the employee frequently sought financial support and permission to receive medical treatment. The farm owner was visibly worried about the rate at which the young man emaciated. The farm owner may well have, in retrospect, regretted a bad administrative and financial decision he had made. This kind of experience was echoed by other companies and shows the extent of denials about the prevalence of HIV/AIDS. This also shows the complexity of dealing with the prolonged, slow and hidden manifestations of AIDS on social capital and the economy. The evidence is growing that HIV/AIDS is depleting human, financial and infrastructural resources in the sector.

It was not a common practice for farmers on title deed land to provide transport to workers seeking medical treatment. So far, this is an ad hoc arrangement. It is also an arrangement based on compassion while resources permit at present. Farmers are afraid that this is not a healthy situation for business. There is a growing sensitivity among commercial farmers that mitigating activities are absolutely necessary and, in most cases urgent, particularly that the extent of the problem is difficult to measure and validate. However, in the estate plantations, there is an increase in the frequency of transferring sick employees from company clinics to Government Hospitals. There is also an increase in the cost of transportation because the transfers have increased. Similarly, the medical costs of running the company clinics have slightly increased because of AIDS related ailments.

3.7 Multiple Effects of AIDS

3.7.1 Case study

In a case study below, we see how quickly AIDS could change the fortunes of a commercial farm. The farm employs 54 permanent workers – 34 males and 20 female workers. It also takes on 160 seasonal workers during the peak season. It is involved in production of citrus fruits, bananas, mangoes in addition to 167 herd of cattle. This farm was visited twice. First at the end of October 2001 when discussions with several workers were held. The managing director of the farm was interviewed. On this visit, the workers and managing director indicated that there were no serious problems related to HIV/AIDS at the farm because they could not relate the two. In mid December, another visit was made to make a case study of this farm because of three considerations. First, it was clear that the research was not generating much quantitative data. Second, the managing director had comprehensive data on the financial position of his farm since 1991 when the farm started operations. Discussions within the research team suggested that more data could be obtained from this farm. Third, the farm had been visited by medical staff from a Government clinic near the farm to conduct educational workshops on health and appeared to be in a position to yield much information which would be extended to farming cooperatives, government or Swazi Nation farms and to agro-estates. As Babbie,E and Mouton,J (2001) pointed out that a case study must be an intensive inquiry of a single unit and must involve or yield information on multiple variables. The case study below is one such example.

Case Study 2 Private Farm in Commercial Agriculture

On the first visit, the managing director indicated that he provided single-person accommodation for all his permanent workers. They were released to visit their homesteads during the week –end. Only one couple was given married quarters. The husband was a reliable driver who was responsible for purchasing supplies for the farm and delivering products from the farm. The driver runs errands in Swaziland and South Africa. The driver's wife worked as a domestic worker in the farm managing director's house. The farm employed 20 female workers and 34 males. It employed 160 seasonal workers at peak points.

The farm compound has three small rooms for single occupancy. These are for senior staff such as indunas and supervisors. There are four big rooms which take three or four occupants per room. Most workers are single.

They are all allowed to visit their homesteads over the weekends. The food ration is 1.2kg of mealie meal a day; 400 grams of meat a day, 680 grams of sugar per week, 250 grams of salt a week and 3000 grams of jabula soup a day.

The farm has 89 ha which are divided as follows:

| Hectares | Productions |
|----------|---------------|
| 65 | Citrus Fruits |
| 17 | Bananas |
| 07 | Mangoes |

The farm also has about 167 herd of cattle. This farm is one of three in Swaziland. The holding company of which this farm is a part currently grows 14000 ha of citrus, 130 ha mangoes, 100 ha of litchis, 520 ha of deciduous fruits and 400 ha of sugar cane. The majority of the farms of the holding company are in South Africa.

The farm has a banking facility of E2.65 m. The turnover in 2000 – 2001 was E2,053,254 with a net income of E431,063 and a net farm loss of E120,459.

The impact of absenteeism, sickness, loss of skilled labour and early retirement on medical grounds was classified as moderate at this farm in October during the researchers' first visit. Payments to support funerals among workers were considered to have least impact on the farm. What was of serious concern was the workers attendance of funerals outside the farm.

So far, there was one claim for benefits in 2001 and this claim amounted to E1500. This was not attributed to HIV/AIDS annual increases in the cost of labour. The cost of labour rose from E18000.00 in 1991; E41, 000.00 in 1992; E62, 000.00 in 1993; E112,000.00 in 1994; E373.000.00 in 2000 and E370,000.00 up to August 2001.

On the second visit on 17 December 2001, there were some drastic developments. Three workers had died in the previous three weeks.

All the three workers who had died were permanent workers. These were skilled and highly experienced workers. One of the women who had died worked in the parkhouse where she also supervised and trained staff. She was multi-skilled and it would cost about E2000 to train a replacement. She left behind young children.

One of the workers fell ill in mid 2000. She was treated for TB at RFM; she returned to work in September 2001 but died in November. Another female worker fell ill on 5th March 2001. She went on sick leave from May to September. She went on paid sick leave on 12th November 2001 but died on 29 November 2001. TB was cited as cause of death in all these cases. The farm spent E12900.00 on the funerals of the three workers. The cost of the farm covered coffin, mortuary fees, funeral food, transport of dead bodies from hospital to mortuary and finally home for burial; transport for workers to attend funeral, week-end overtime for driver and staff digging grave at night and loss of labour from staff who attended funeral.

3.7.2 Impact on production

The impact on production in terms of reduction or increases in cost appears not yet as widespread evidence. However, there are several indicators of initial negative consequences. First, as indicated earlier there is a growing tendency to get advances more and more or to borrow from fellow workers. Second, in the company estates, there is an increase in the number of patients being referred to Government Hospitals. The rise in transport cost for transferring patients to a Government hospital was considered alarming and was thought to be largely because of increased and frequent opportunistic conditions among AIDS sufferers. Individual farms on title deed land were concerned about large numbers of workers they take to nearby Government clinics. As yet, there is no documentation which could isolate AIDS conditions

The increasing number of workers carried to the clinics using official farm transport subsequently leads to more time being spent receiving medical services. Cooperative farms and Government Sisa farms rarely provide transport because they encourage workers to return to work after complete recovery. At agro-estate A cost of transport for referrals rose by 43% over a three year period (Table 3.4.2). The official worry is that in 1997 the company upgraded the medical facility. Improvements were made in staffing and services.

The medical staff observed that although it is often not easy to talk about HIV/AIDS related infections, most serious referral cases appear to be likely AIDS sufferers. The same medical staff reported some concern over an increase in the cost of medicines at the local clinic by 12% over the three year period. The cost of transferring sick workers to other medical facilities and the increase in the cost of medicines at the clinic, at least double the cost of medical services to the organization. It was pointed out that while the annual increases in the cost of medicines may appear normal, there seems to be a trend that medicines for treating opportunistic infections due to AIDS are bought in increasing quantities and frequency. This level of detail has been ignored because there is no systematic monitoring for HIV/AIDS. In addition to evidence on the increasing cost of medicines and transport when workers are referred to government

hospitals, clinics and health centres, mortality is another cost to production units. At one agro-estate funeral benefits paid out following the death of workers has increased by more than 200% over a four year period. (Table 3.4.2)

3.7.3 Morbidity and Production

Many studies have shown that morbidity and mortality have psychological and social effects on workers. In addition to these conditions, the sufferers also undergo physical and physiological pain. In terms of quantitative data, Swaziland has not yet reached a stage of high death rates because of AIDS. This is particularly the case with farm labour on commercial farms. In response to a question about prolonged illness and how subsequent death of fellow workers affected them, 58.8 percent indicated that they were not affected at all. In part, this reflects widespread denial that AIDS related deaths have become common. Those who felt affected noted economic consequences such as “shortage of labour” leads to “overwork, no bonus”. Some respondents indicated that reduced labour force leads to delays in completing work. There are also multiple assignments. This is easy to do with farm labour because of the similarity in the tasks. In the second case study presented above, multiskilling is easy with farm work. Thus labour shortage causes a variety of burdens on other workers.

Three farm owners expressed much sadness at losing workers who had acquired specialist skills or experiences. One owner noted how the farm manager who had died in 2001 managed the farm so well that the farm owner could focus on making arrangements for procuring supplies for the farm and making marketing arrangements for the farm produce. One farmer complained that he had assigned a promising young man to specialize in managing the irrigation system but the young man had begun to get permission to receive medical treatment at a clinic near the farm. The productivity of both workers and farm managers or farm owners is affected either because of the prolonged suffering or death of workers or loss of productivity. This was observed in 18.4 percent of the establishments.

3.8 Responses to HIV/AIDS

The study found that there were two major and strategic responses to the prevalence of HIV/AIDS and the future consequences of the epidemic. The first deals directly with production, and the second deals with protecting human resources on the farm. Throughout the 1990s, estate agriculture in Swaziland adopted a variety of cost minimizing and production maximizing strategies. This was particularly pronounced in sugar cane and citrus fruit producing plantations. This was a combination of shedding out secondary activities. Some sugar producing companies have given away the growing of citrus fruits. In certain cases, they have sourced out some activities to which they redirected the retiring employees. In some cases multi-skilling programmes were implemented. Finally, where mechanization permitted, this was introduced. In general terms agro-estates and individual title deed farms rely on the fact that most of the agricultural labour and farm tasks easily render themselves to multi-skilling. The operational structure of farming cooperatives is such that as an institution, they have limited responsibility over the welfare of its labour force. The permanent labour in the cooperatives is also extremely small and only seasonally hired labour is large. There appear to be no programmes which have been adopted for purposes of coping with HIV/AIDS. This fact notwithstanding, many companies and farms have adapted these strategies to the adverse conditions which have arisen because of HIV/AIDS. In the sugar cane estates, it was pointed out that there was a worldwide trend in the 1990s to mechanise certain farm activities in order to increase production and quality of sugar.

The second strategy has been the introduction of educational health programmes. Some of these were introduced before HIV/AIDS became widely known as a danger to the health of workers and economic development. The programmes include advice on how to handle particular diseases, regular gymnastics and eating balanced diet. There are many information, education and communications (IEC) programmes which have been provided by the estate sector. The other commercial farming establishments do not have regular and

coordinated programmes. Some farms distribute condoms. Some farms use religious programmes to encourage workers to change sex behaviour. What is significant to note is the low level of collaboration between various civil society organizations. Equally significant is that financial and personnel resources have limited the level of collaboration.

Indeed, initial fears were confirmed through categorical claims and assertions that AIDS was not a major issue when the research found this mistaken position. The next problem was that commercial farming establishments had not systematically documented trends in AIDS related morbidity or mortality, the impact of AIDS on performance and absenteeism, and how AIDS affected the cost of providing medical services to workers and their dependants. While quantification of the experiences of AIDS has been difficult, qualitative data assembled in this report has developed deep understanding of subtle nuances in private and public attitudes and behaviour on how AIDS has affected workers and production in commercial farming.

3.9 Susceptibility and Vulnerability to HIV/AIDS of the commercial agricultural sector

Arrangements on accommodation, medical services and food ration increase susceptibility and vulnerability. Agro-estates and individual (tenure) title deed farmers have accommodation shared by workers of the same sex partly because they are away from their families. While this reduces the cost to the commercial establishment, the arrangement is an opportunity to engage in behaviour likely to increase and spread HIV and also increase burden of coping with morbidity due to AIDS because a person is away from one's immediate family. With regard to cooperative societies and commercial farmers on title deed land who supply food ration to their workers, this provision would tend to increase the farm's vulnerability to the deleterious economic impact of HIV/AIDS. While the commercial farm wants to control cost of production and the cost of labour, this approach could lead to inadequate feeding and increase costs beyond a level

that the farm can sustain. It is not clear from the findings of this study how satisfactory these feeding arrangements are. While in the agro-estates labour unions could compel compliance, cooperative societies and individual title deed farmers do not face the same threat of organized labour. It is, however, clear that it is necessary for workers and farm owners or farm management to work out structures to regulate accommodation, medical facilities and feeding.

The second case study has emphasized the need for this change. The farm unit which is the subject of the case study demonstrated the denial that AIDS was a current and future threat. This ignorance is widespread in all components of the commercial sector. Throughout the commercial sector compassion and the need for certain skills and experiences could make the sector harbour serious time-bombs. In the case study, relations built over some time, and the need for special skills obliged the farm not to abandon the workers who had prolonged illness and interrupted work performance. In the end, the farm had to shoulder the cost of funerals which took place in quick succession. Many establishments in commercial sector are experiencing devastating and untimely losses when it is clear that preparations for these eventualities could be made. The case study has shown that financial resources will have to be committed to ensure availability of substitute labour. This is costly. Other threats such as drought could seriously compromise commercial farming.

3.10 Agricultural commercial sector and the interaction with the wider Swazi community

The data in this report has also demonstrated that AIDS has manifested itself beyond the farm level. While commercial farming is a useful unit of investigation, a full story of the social and economic impact of HIV/AIDS should also include how the neighbourhood commercial farms have been affected. This would help to understand how and what cost the commercial sector passes to the public and national economy. This report has demonstrated several linkages between commercial agriculture and the wider Swazi community and economy.

For example, commercial sector recruits most of its labour with requisite skills, and experiences and potential from the Swazi society. From time to time, commercial agriculture needs temporary labour. The contracts regulating the hiring of seasonal labour absolves the commercial sector from taking full responsibility of the social and health welfare of this labour. Yet both the commercial sector and the wider community supplying labour are susceptible to HIV/AIDS and they interact in environments which increase their vulnerability to AIDS.

3.11 HIV/AIDS Control and prevention programmes in the agricultural commercial sector

It is consequently obvious that information, communication and education about HIV/AIDS should be mounted to help farm owners to plan for the future and to raise awareness among workers that the source of their livelihoods are threatened because of life styles and AIDS. The report has noticed that there are a variety of activities on health. The programmes are funded by the commercial sector such as in the agro-industries. In the sample only one farm organized educational activities on health as part of a regular prayer programme on the farm. The cooperative farms and individual title deed farms largely rely on the role of government clinics or rural health motivators and non-governmental organizations (NGOS) to conduct health education programmes. At a time Swaziland is discussing how to offer free education to young people, it also appears timely to build in education activities on HIV/AIDS. This would address the concerns of the industry and the working population. This would be an opportunity to carter for AIDS orphans. Certainly most critical is that this education programme of HIV/AIDS should lead to radical transformation of attitudes towards sex. It is absolutely critical that the nation should be mobilized around an educational programme to deal with HIV/AIDS, life-style and invest in future productivity. The educational campaign should be comprehensive, systematically intense and sustained; and involve a regular programme of social engineering.

3.12 CONCLUSIONS

This report could be summarized around five sub-headings.

1. First, the report has discussed the fact that denial and stigma are extensive and hinder the deployment of a comprehensive response.
2. Second, there is inadequate documentation in terms of how AIDS causes absenteeism, reduces productivity, increases medical costs and affects both workers and commercial farming. Where some documentation has been attempted, the impact of AIDS is profoundly negative.
3. Third, despite denial and poor documentation so far, it is inescapable that AIDS affects the commercial farm unit and the community beyond the farm. In so far as the commercial farming is linked to the wider Swazi society, so too are the problems arising from the AIDS epidemic.
4. Fourth, mitigation and coping strategies are at a preliminary stage and are yet to be refined. A number of commercial establishments have initiated health programmes to deal with chronic illnesses. These are being expanded and modified to deal with AIDS. Yet it is clear that response to AIDS needs more than adapting existing medical or social structures.
5. Lastly, because the commercial sector has reciprocal relations with the wider Swazi community, there is potential for the farming sector to dump AIDS problems on the public. The government is the only institution in collaboration with non-governmental organizations (NGOs) and the international organization that can effectively mobilize the commercial sector, workers and the entire nation to address HIV/AIDS and its potential threat to the national economy.

CHAPTER 4

THE MINISTRY OF AGRICULTURE AND COOPERATIVES

4.1 INTRODUCTION

Over 70% of Swaziland's labour force works on the land and the Ministry of Agriculture and Co-operatives(MOAC) is mandated with ensuring that the land remains productive and continues to serve the population. 50% of rural land is held in trust for the Swazi Nation by the King and is farmed on subsistence basis by small farmers. The balance is farmed using modern methods by companies and individuals often in partnership with Government and the Swazi Nation. The main objective of MOAC therefore is to provide guidance to the various agricultural sub-sectors and promote the development of viable co-operative activities, which aim to assist members with marketing their produce, and provision of supplies. (Government of Swaziland, 1999; Ministry of Agriculture and Cooperatives, 1996).

As HIV/AIDS affects the quality and quantity of labour available to produce, the Ministry may find itself with reduced productivity. The implication here is that the ministry would fail to fulfill its mandate to the agricultural sub-sectors. The rural subsistence farmers would be most affected as they rely on advice from agricultural extension officers for advice on agricultural practices and supplies. Secondly, increased costs of production within the ministry due to excess morbidity and mortality due to HIV/AIDS will reduce on resources that would have been freed and invested. This has a negative impact on the macroeconomic performance of the nation. It is within this framework that the study on the impact of HIV/AIDS on MOAC has been done.

Sample

The study was accomplished through primary interviews with Ministry employees, compilation of information from key informants within the Ministry and other government departments as well as a review of secondary materials. A total of 254 employees were interviewed. Of these, 65% were males and 35% were females.

4.2 Employment in the MOAC

The total number of employees in MOAC is 3121 of which 2202 are permanent, 728 casual and 191 daily paid (Treasury Department Salary Registers 2001). The total number of employees depends on how many casuals and daily paid employees are engaged at that particular time.

4.3 Mortality rates

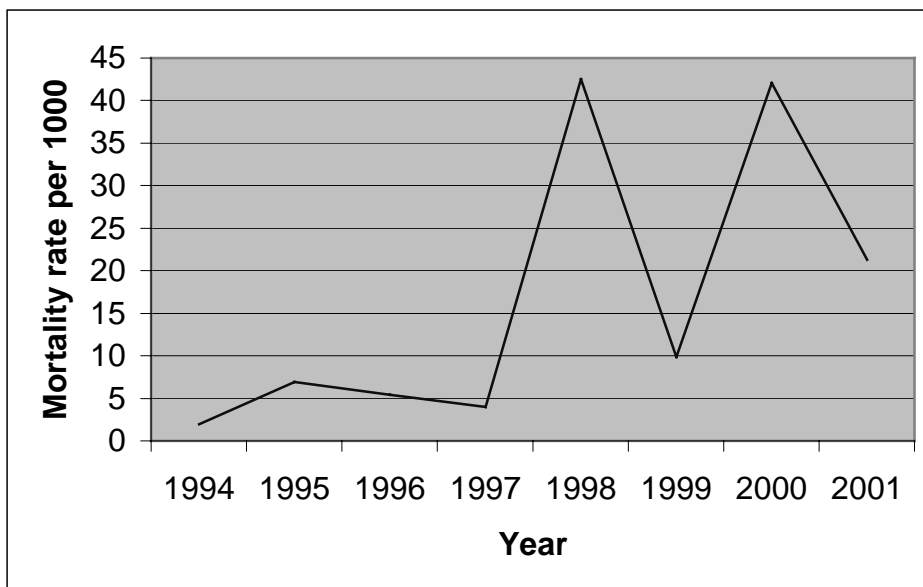
Data prior to 1994 was not accessible and so could not be used in this exercise. An average number of 2202 permanent employees over the seven year period has been used to calculate the mortality rates.

Table 4.3.1 : Total Number of Deaths of Ministry Employees (1994 – 2001)

| Year | Number of Deaths | Crude death rate Per 1000 employees |
|------|------------------|--|
| 1994 | 4 | 1.98 |
| 1995 | 14 | 6.94 |
| 1996 | 11 | 5.44 |
| 1997 | 8 | 3.94 |
| 1998 | 86 | 42.53 |
| 1999 | 20 | 9.89 |
| 2000 | 85 | 42.04 |
| 2001 | 43 (up to June) | 21.27 |

Source: Personnel Department, MOAC

Figure 4.3.1. Mortality rate for MOAC(1994-2001)



This data does not show a clear pattern of increase over time, however it is clear that there has been an increase in the number of deaths since 1994. The maximum number of deaths occurred in 1998 with 86 deaths recorded and in 2000. On smoothing the time series and applying trend analysis using the linear regression model, it was found that there was a significant increase ($P < 0.05$) of 10 deaths each subsequent year.

4.4 Retirement

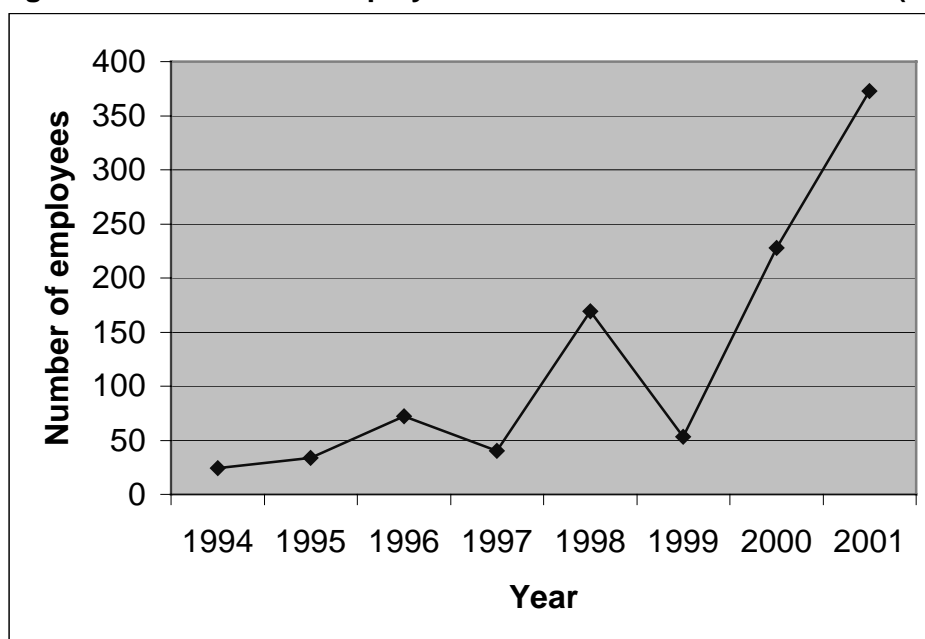
Data showing the number of employees within the Ministry who have retired are shown in Table 4.4.1 below. The nature of the records from which this data was derived does not allow for sourcing the reason for retirement and this makes it difficult to estimate morbidity rates.

Table 4.4.1: Total number of retirements between 1994 and 2001

| <i>Year</i> | <i>Number Retired</i> |
|-------------|-----------------------|
| 1994 | 24 |
| 1995 | 34 |
| 1996 | 72 |
| 1997 | 40 |
| 1998 | 169 |
| 1999 | 53 |
| 2000 | 228 |
| 2001 | 373 |

Source: Personnel Department, MOAC

Figure 4.4.1 Number of employees who have retired from MOAC (1994-2001)



4.5 Recruitment and training

There is increased retirement and death of employees. However the impact that increased mortality and retirements have on productivity due to loss of skilled workers, and the covert losses such as those incorporated in “institutional memory” which many long-serving workers possess has not been quantified. Secondly, costs associated with replacing these workers were not available.

4.6 Employee benefits

4.6.1 Medical expenses

The government does not provide any special medical benefits to its employees for healthcare within Swaziland. The employees and their dependants pay out of pocket for their healthcare. They seek care from public health care services and private providers.

In case of referrals for specialized care outside the country, the government has a medical fund that civil servants, their spouses and children under 21 years utilize. It requires authorization from the Prime Minister. Table 4.6.1 shows the expenses that government has spent in providing this services over the past five years. Specific figures for MOAC could not be obtained. Secondly the case mix, age structure and number of civil servants who have benefited from this fund could not be located.

Table 4.6.1 : Total Costs of Medical Expenses Incurred by Government for civil servants transferred to South Africa

| Year | Expenditure in Emalangeni |
|------------------------|---------------------------|
| 1996/97 | 310 815 |
| 1997/98 | 997 572 |
| 1998/99 | 4 507 021 |
| 1999/00 | 5 856 476 |
| 2000/01 | 5 020 568 |
| April to November 2001 | 3 970 971 |

Source: Ministry of Finance, Treasury Department Records (2001)

As indicated above, expenditure is increasing, although it is difficult to attribute this largely to HIV/AIDS. The facility was not known to most civil servants until

recently, but since the civil servants' awareness of its existence, its use has been increasing drastically. In any case, a major impact of the epidemic on the health sector is an increase in admissions of patients using this facility exhibiting HIV/AIDS related conditions and the attendant costs for medical care. It is not possible however, to ascertain the medical conditions of beneficiaries of this service.

4.6.2 Pension

The Public Service Pensions Fund was established in 1993 to administer benefits accrued to members. Members are civil servants who contribute 5 to 10 percent of their monthly pensionable salary whilst government contributes the balance of their pension package. Retirement of a member can occur due to compulsory retirement age at 60, early retirement from 45 years onwards, on death, or on medical grounds (Pension Fund, 1995).

Specific figures of pension payout to Ministry of agriculture employees could not be obtained. The data shown in Table 4.6.2 and Figure 4.6.1 below is pension payouts for all civil servants. Pension annuity refers to on-going payout due to member and/or dependants after the initial lump sum payout in the form of death or retirement gratuity. Available Pension Fund data indicates a sharp increase beginning in 1996 in total payouts to members.

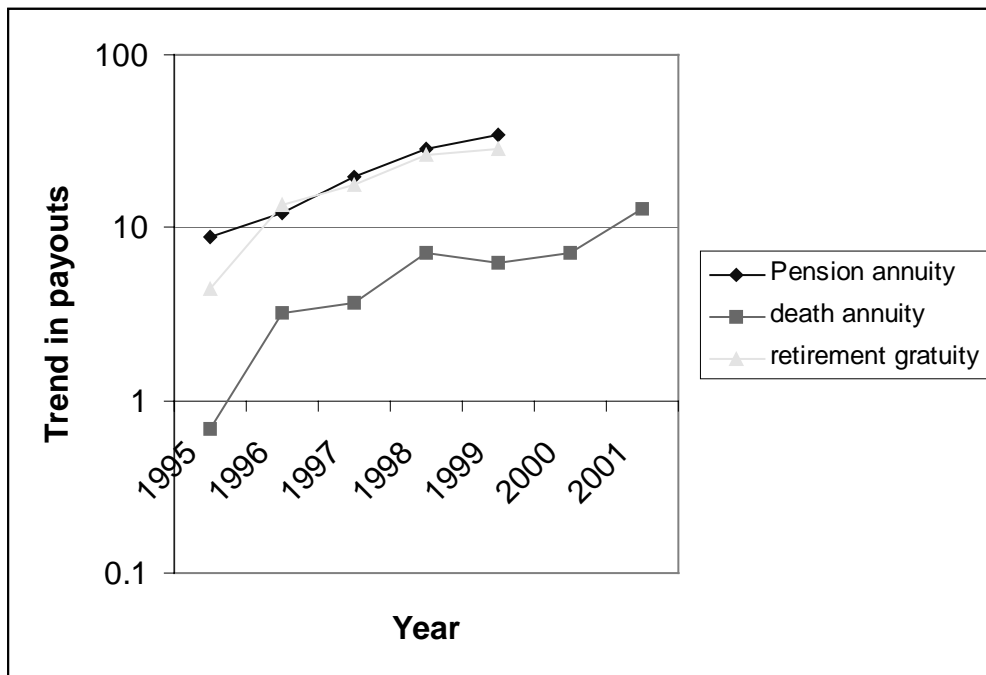
Table 4.6.2: Total Payments of Pension annuity (in 000's) for civil Servants (1995-2001)

| | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 |
|----------------------|-------|--------|-------|--------|--------|-------|--------|
| Pension annuity | 8 835 | 12 009 | 19755 | 28 798 | 34781 | | |
| Death annuity | 678 | 3 196 | 3652 | 7 078 | 6250* | 7 227 | 12 885 |
| Retirement gratuity | 4 416 | 13 506 | 17756 | 26 652 | 28 608 | | |

Source: Public Service Pension Fund Budget - Year ending March 2000.

*there are outstanding payouts not reflected in this figure

Figure: 4.6.1. Logarithmic scale showing trend in pension payouts by the Public service Pension Fund to its members (1995-2001)



There has been an increase in total pension annuity of about E6.9 million per year over the six year period (P value <0.01). Due to increased demand of member benefits, and the fact that the Fund was underfunded at inception, the Fund resorted to reinsurance strategies to assist in meeting its commitment to members.

Although the trend in death annuity indicates a general increase, there was a sharp increase between 1998 and 1999 and again after the year 2000.

On applying trend analysis using the linear regression model, it was found that there was a significant increase (P<0.01) of E1.7 million in death annuity for each subsequent year.

4.7 FINDINGS FROM FIELD INTERVIEWS

The field survey was conducted in order to obtain data pertaining to internal impacts within the Ministry. These include prevalence of HIV/AIDS amongst employees, absenteeism and productivity, morale, benefits, recruitment and training and the Ministry's response to HIV/AIDS.

4.7.1 Respondents' Demographic Information

The gender distribution of Ministry employees interviewed was found to be 35% female and 65% male. The age range pattern is as shown in Table 4.7.1 below.

Table 4.7.1 : Ages of Respondents

| Age range (years) | Frequency | (%age) | Cumulative %age |
|-------------------|-----------|---------|-----------------|
| Under 20 | 1 | (0.4%) | 0.4% |
| 20-29 | 65 | (24.4%) | 24.8% |
| 30-39 | 89 | (33.5%) | 58.3% |
| 40-49 | 76 | (28.6%) | 86.9% |
| Over 49 | 35 | (13.1%) | 100% |
| Total | 266 | | 100% |

Over 85percent of the employees of the ministry are between the age of 20-49 years. This is the most productive age group of society, unfortunately is also the most affected by HIV/AIDS.

More than half of the respondents (57%) were married and about 13% of those disclosed that their union was of a polygamous nature. Of the polygamous marriage group 66 percent were men and only 34 percent were women.

On average each respondent had 5.7 dependants, three of these being his own children. 26 percent of the respondents were caring for orphans. With such a scenario, death of young economically active people due to AIDS will worsen the already high dependency ratio⁸. The Swaziland economic dependency ratio was calculated at 140 in 1997, and currently projected to be 91.9. (Census data, 1997). This is higher than the average for developing countries of 64.5(UNDP 1997).

4.7.2 Employee Morale

Increased illness and absenteeism among colleagues affect productivity and employee morale. The MOAC experiences illness and frequent and protracted absence due to illness. It was difficult to ascertain the extent of this problem because of the unavailability of systematic records, at both department level and at Ministry headquarters. However, respondents indicated that they were aware of, and are affected by, absenteeism in various ways.

About 52 percent of employees interviewed indicated that their work was affected by protracted illness of colleagues. They also articulated that there was increased absenteeism. This resulted in the employees getting overworked. Secondly, they were not paid for the extra work they covered.

For those departments where teamwork is necessary and there is high reliability on individuals within the team, expressions of despondency were evident. A few respondents were bold enough to indicate that there is an apparent loss of

⁸ Dependency ratio is the ratio of economically inactive population to the economically active population(Marshall et al, 1984)

qualified staff who are difficult to replace and that there are employees who are unable to carry out their mandated functions due to ill-health or as a result of the demise of a key individual in a given department. As a result, there is a general deprivation of services to the public.

Heads of Departments concurred with these views and acknowledged that replacements within the public sector take a long time to be effected. Therefore, where possible, departments and sections develop their own coping mechanisms until the affected workers return or are replaced.

4.7.3 Health seeking behaviour

All respondents cited the local clinic or hospital as the place where employees and their families seek medical attention. Only 6 percent use traditional healers as well as clinic/hospital. However it is common practice to consult medical practitioners as well as traditional healers concurrently. Frequently a patient may go to the hospital and upon seeing no improvement resorts to the traditional healing methods or vice versa. 39 percent of employees interviewed indicated that they would explore all options (clinic/hospital, private doctor) *as well as* traditional healers.

4.7.4 Employee benefits

The MOAC provides transport to ferry sick employees to hospital. In case of serious illnesses the Ministry contributes towards transportation of employees to health facilities in South Africa. However, employees such as cordon guards who are stationed in remote areas lack transport for official purposes and it is more difficult during personal emergencies.

The MOAC also provides transport to the employees' families in the event of death of an employee. However, there is an increased demand due to 'too many deaths' among employees and their families. In addition, 26 percent of the respondents indicated that moral support from co-workers is diminishing as

“fatigue” has set in due to many more colleagues and their families becoming indisposed and dying.

Government transport accorded to the Ministry employees for ‘personal’ needs is a cost to government. However, this cost could not be computed into monetary terms due to unavailability of relevant data. This would require segregating requisitions for personal needs of employees from the official trips.

Government also offers generous sick leave, as well as compassionate leave. Current government policy allows an employee six months of sick leave with full pay, and the next six months on half pay. After one year of infirmity, the employee is retired on medical grounds. The proportion that retirement on medical grounds contributes to retirement annuity could not be computed due to lack of data on such retirements. However, such a policy will certainly lead to increasing number of people on sick leave and those retired on medical grounds as morbidity due to HIV/AIDS increases.

4.8 Ministry's response to HIV/AIDS

Whereas the ministry does not have a written policy to guide their response to the epidemic, the MOAC has mounted a multisectoral approach to HIV/AIDS.

The multisectoral approach has three components:

- a) Establishment of HIV/AIDS focal point within the ministry, run by a fulltime focal point officer
- b) Information, Education and Counseling (IEC) activities for their staff
- c) Control of Sexually transmitted diseases through condom distribution

However, these activities have not been sustained and the coverage does not extend to field workers and extension officers.

Secondly, these responses are primarily health-based and do not cover core areas of agriculture and rural development work. The ministry's response does not cover support of agricultural extension officers and the challenges that have arisen from the epidemic. The very important areas of food security and maintenance of quality livelihood in the rural households have not been addressed by the ministry. The agricultural extension workers are not engaged in any HIV/AIDS prevention and control activities in the activities they serve.

4.9 Conclusion

The MOAC is faced with increased morbidity and mortality amongst its employees. Whereas these could not be attributed to HIV/AIDS, there is a definite increase in retirements, pension payouts and expenditure on healthcare by government.

The generous sick leave policy of government has wide ranging implications for the ministry. First and foremost, an employee can only be replaced if he has been officially retired. This can only happen after one year in case of chronic conditions. During this time there is reduced productivity and increased costs of production as employees are paid overtime to cover his work. Secondly, the employee continues to draw his salary during this time.

The response that the ministry has mounted against the epidemic is primarily health-based and ignores protection of one of the fundamental duties that the ministry has – support of rural subsistence agriculture. It is important to go beyond health-oriented responses and initiate strategies that deal with the negative impact that young adult morbidity and mortality has on agriculture. Some of the negative effects include loss of agricultural knowledge, skills and experience. This has a direct impact on the ability of the MOAC to fulfill the mundane mandate of ensuring that the land remains productive and continues to serve the population.

CHAPTER 5

THE PRIVATE SECTOR

5.1 Introduction

5.1.1 Sample

According to the federation of Swaziland Employers(FSE) 2001 register, there are 440 businesses affiliated to the organization. Twenty four companies were randomly selected for this survey. The number of workers that each business employees ranges from two to over 3000. The sample and the respective type of industry in which they are engaged is shown in table 5.1.1.

Table 5.1.1: Types of establishments in study

| Type of establishment | Number in sample |
|-----------------------|------------------|
| 1. Manufacturing | 7 |
| 2. Food processing | 1 |
| 3. Wholesale/Retail | 7 |
| 4. Hotels | 1 |
| 5. Production | 4 |
| 6. Public parastals | 2 |
| 7. Agro-industries | 2 |
| Total | 24 |

5.1.2 Labour force characteristics in the private sector

The population of the labour force under the employment of the 24 companies is shown in table 5.1.2 below.

Table 5.1.2: Number of Employees in the private sector establishments.

| Sex | Permanent | | | | Temporary | | | | Total |
|--------------|-------------|--------------|-------------|-------------|-----------|--------------|-------------|-------------|-------------|
| | Skilled | Semi-skilled | Un-skilled | Sub-Total | Skilled | Semi-skilled | Un-skilled | Sub-Total | |
| Males | 1515 | 0 | 2518 | 4033 | 1 | 90 | 932 | 1023 | 5056 |
| Females | 371 | 0 | 819 | 1190 | 1 | 30 | 1164 | 1195 | 2385 |
| Total | 1886 | 0 | 3337 | 5223 | 2 | 120 | 2096 | 2218 | 7441 |

5.2 Health care financing in the private sector

The impact of HIV/AIDS on business depends on the benefit package offered by individual firms. This section focuses on the sources of funding for healthcare in the private sector and the healthcare benefits offered by the businesses. Table 5.2.1 shows sources of funding, and table 5.2.2 shows the type of healthcare providers utilized by the employees.

Table 5.2.1: Sources of funding for healthcare

| Source of funding | Frequency (%) |
|---------------------------------|---------------|
| Out of pocket disimbursements | 59 (51.3%) |
| Employer – pay private provider | 41 (36%) |
| Employer - Medical insurance | 12 (10%) |

Table 5.2.2: Employee health seeking pattern

| Place of treatment | Frequency |
|---------------------------------------|------------|
| Company clinic | 38(33%) |
| Public Hospital/clinic | 90 (78.6%) |
| Private health provider | 15 (13%) |
| Over the counter medication (chemist) | 5 (4.3%) |
| Traditional/spiritual healer | 12 (10%) |

The data given in the tables 5.2.1 and 5.2.2 above show that most workers pay for healthcare out of their pockets(51.3%). Secondly, most workers utilize the public sector healthcare facilities(78.6%). 46 percentof employers either pay private providers for the care of their employees or provide medical insurance. Muwanga(2001a) found that only 51 percent of smaller businesses(less than 100 employees) provide medical benefits to their employees compared to over 70 percent for bigger businesses(more than 100 employees).

The implication here is that businesses that do not provide medical benefits to their employees will be spared of the increase in costs of healthcare as morbidity due to HIV/AIDS increases. However, this is at the risk of compromising the welfare of their employees who because of lack of funds may fail to access quality healthcare. These employees would remain sick for a longer time and their productivity would reduce. Secondly, this increases the burden on the public sector healthcare services which has wider ramifications for society.

5.3 Prevalence of HIV/AIDS

16 (67%) of the 24 establishments acknowledged experiencing HIV/AIDS related problems in their organisations. However, such problems, experiences or impact were not quantified in cost terms.

Table 5.3.1 Management observed impact of HIV/AIDS on the organisation.

| Problem | Impact (N=24) | | | |
|-------------------------------|---------------|-------|----------|---------|
| | None | Least | Moderate | Serious |
| Absenteeism | 2 | 13 | 8 | 1 |
| Sickness | 3 | 9 | 8 | 4 |
| Loss of skilled labour | 6 | 12 | 6 | 0 |
| Funeral attendance | 4 | 11 | 7 | 2 |
| Increase funeral payouts | 7 | 9 | 5 | 3 |
| Retirement on medical grounds | | 14 | 5 | 0 |

5.4 Absenteeism

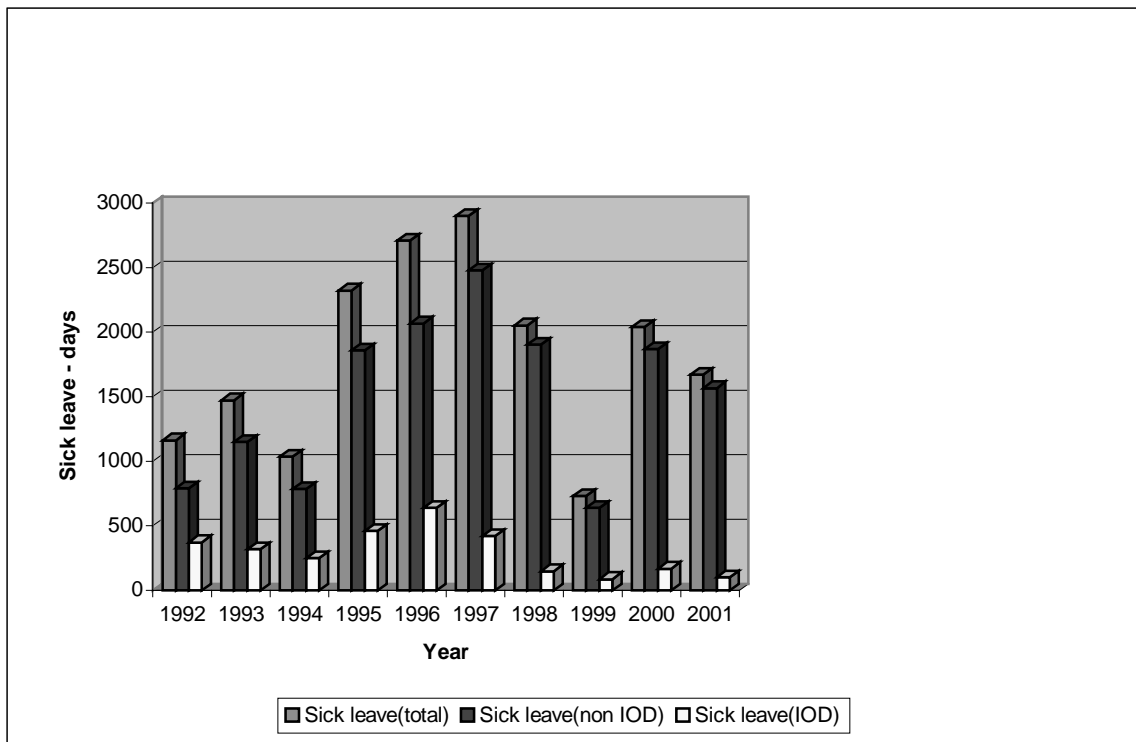
The prolonged morbidity due to HIV/AIDS makes workers to frequently take time off to seek healthcare and to care for relatives who are sick. When an employee dies, fellow employees take time off to attend his funeral. These scenarios contribute to absenteeism due to HIV/AIDS. A record review of sick leave given to Private sector company A for the past ten years yielded data shown in table 5.4.1 and figure 5.4.1 below. The data has been stratified according to whether sick leave was given due to an injury on duty(IOD) or general sickness(non-IOD).

Table 5.4.1. Number of sick leave days for Private sector company A (1992-2001)

| Year | Number of sick leave days | | Total |
|------|---------------------------|----------|-------|
| | IOD* | Non- IOD | |
| 1992 | 373 | 790 | 1163 |
| 1993 | 321 | 1151 | 785 |
| 1994 | 251 | 785 | 1036 |
| 1995 | 460 | 1861 | 2321 |
| 1996 | 641 | 2067 | 2708 |
| 1997 | 420 | 2479 | 2899 |
| 1998 | 148 | 1905 | 2053 |
| 1999 | 89 | 642 | 731 |
| 2000 | 168 | 1871 | 2039 |
| 2001 | 102 | 1568 | 1670 |

* IOD = Injury on duty

Figure 5.4.1: Number of sick leave days given at private sector company A (1992-2001)



The emphasis for this analysis is the number of sick leave days given for non-injury on duty cases. Private sector company A employs 639 employees. This number has remained fairly constant over the ten year period. The company is involved in transport and has a healthcare clinic onsite run by nurses and visited

by a doctor twice a week. All sick leave is authorized by clinic staff and any sick leave provided by private practitioners to the company employees is checked and authorized by the clinic staff.

There was a three fold increase in number of sick leave taken from 1992 up to 1997 and thereafter a decline. In the year 2001, average sick leave for non-injury on duty cases was 2.45 days per employee per year compared to 3.88 days per employee per year in 1997. In 1997 the company implemented an occupational health policy that included the control and prevention of HIV/AIDS through information. The policy covered education and counseling(IEC) and voluntary counseling and testing(VCT); disease management protocols for HIV/AIDS related illnesses and other chronic illnesses. This was aimed at improving the quality of life of the employees that had chronic illnesses and in-turn improve maintain their productivity. The result was a decline in sick leave days taken.

However, further analysis shows that whereas total sick leave days taken have gone down the number of people taking sick leave greater that 30 days is on the increase. (figure 5.4.2 and figure 5.4.3)

Figure 5.4.2 Logarithmic Scale showing sick leave distribution for non-IOD cases for private sector company A (1992-2001)

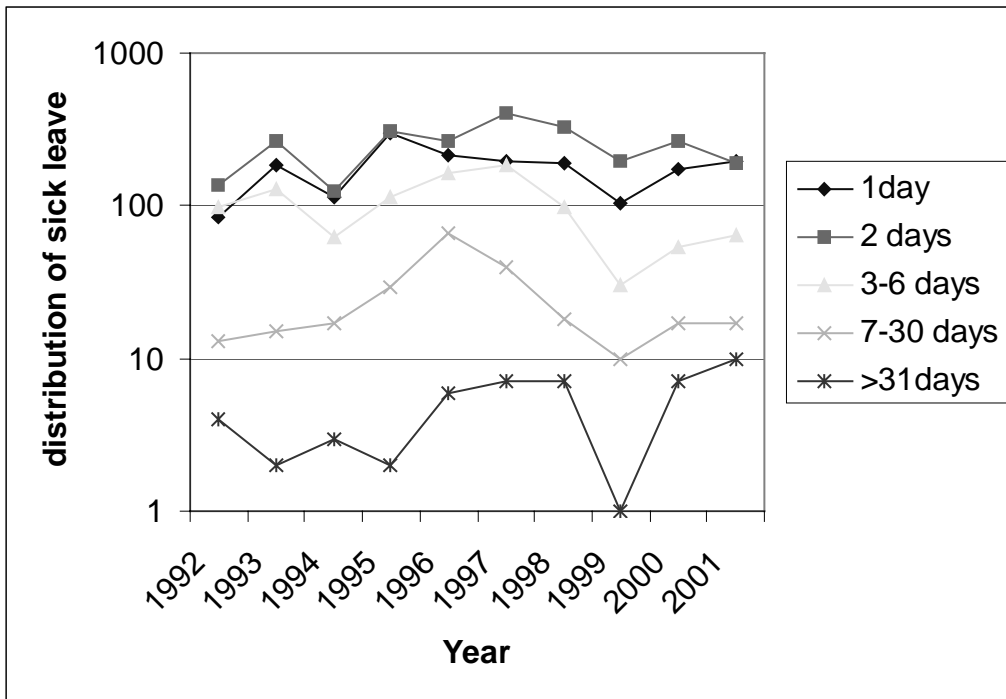
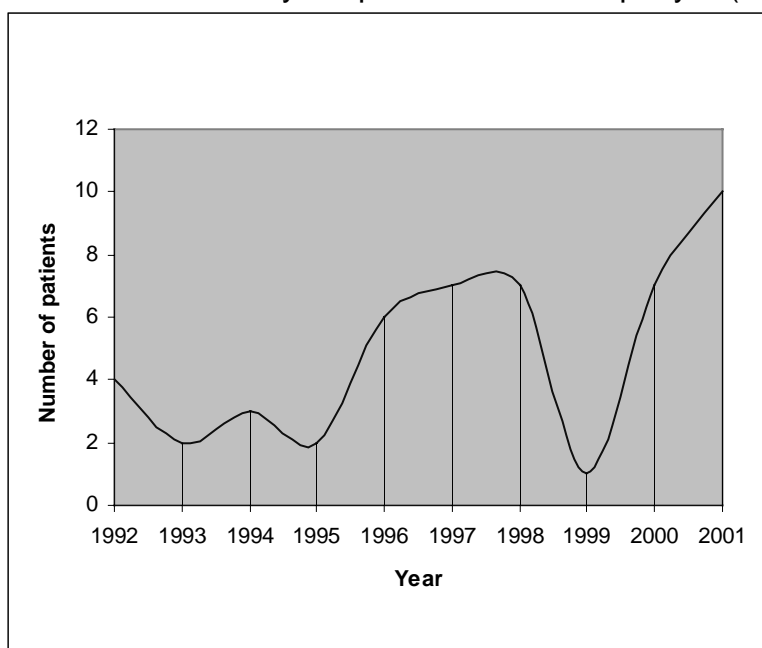


Figure 5.4.3 Number of employees taking sick leave for a period longer than 30 days at private sector company A (1992-2001)



The data shown above shows that the number of employees taking long sick leave is on the increase. The company has a policy of providing 60 days leave for employees suffering from tuberculosis. Sick leave given to employees with tuberculosis is the main contributory factor to the increase in number of employees taking long sick leave. The company clinic diagnoses an average of 7 new cases of tuberculosis every year – an incidence rate of 10.95 per 1000 cases. Over 90 percent of these cases are co-infected with HIV/AIDS.

Data from two other private sector companies is summarized below (table 5.4.3).

Table 5.4.3: Number of sick leave days taken for private sector companies B and C (1995-2001)

| Year | Sick leave days (non-IOD) | |
|------|---------------------------|-----------|
| | Company B | Company C |
| 2001 | 656 | 141 |
| 2000 | No data | 85 |
| 1999 | No data | 68 |
| 1998 | No data | 71 |
| 1997 | No data | 62 |
| 1996 | No data | 85 |
| 1995 | No data | 8 |

Company B has 133 employees giving a sick leave utilization of 4.93 days per employee per year for the year 2001. Company B sick utilization rate is on the high side. However, most employees(76.7%) took leave days of 5 days or less. Company C could not provide the total number of employees, therefore sick utilization rates have not been computed for comparison with other companies.

Cost of absenteeism

Cost of absenteeism includes direct and indirect costs. Direct costs are due to wages paid during sick leave, while indirect costs cover the additional production costs. The additional production costs include quality losses, loss of production, additional payroll costs, replacements, overtime work, work re-organisation, administrative costs and disruption of production and cost of downtime. The direct costs will depend on wages paid. Whereas the direct costs of absenteeism are inescapable, the indirect costs due to additional production costs depend largely on the production capacity's degree of use and the way the production is organized in the company. Production where workers work side by side but independently, the cost of an absent worker will be the value of his wage plus the extra costs for the idle work station(Teronen,2001). Whereas in production systems where one worker passes from one person to another in a team work fashion , the cost of the absent worker is greater as it involves the lost production of everyone else in addition to his wage.

The companies surveyed did not demonstrate reduction in production due to absenteeism. Most of these companies have production systems where workers work independently. This explains why production was not compromised. However, details of work re-organisation and disruption of production and downtime were not kept by the businesses which made it difficult to allocate costs. Cost of absenteeism for companies A and B in the year 2001 are calculated below

Direct cost of absenteeism

Private sector company A

Direct cost of absenteeism for company A was calculated at **E 354,000** for the year 2001 (Sick leave utilization – 2.45 days per employee per year for 639 employees, 264 working days per year. This translates in loss work done by 5.9 employees for the year, at an average salary of E60,000 per annum).

Private sector company B

Direct cost of absenteeism was calculated at **E104,314** per year for the year 2001. (Sick leave utilization 4.93 days per employee per year for 133 employees, translating in loss of work for 2.48 employees for the whole year. Average salary of E42,000 per annum).

The cost calculated above is the gross direct cost of absenteeism as regular payroll costs have not been deducted from the figures.

5.5 Mortality amongst employees in the private sector

The prolonged morbidity inevitably leads to death. Death of an employee has cost implications for a business. The dead employee has to be replaced. The process of replacement involves recruitment and training costs. Productivity may be compromised as new replacement is sought and trained. Secondly, some businesses provide funeral benefits to their employees and increased mortality means increased payouts. This section presents data on mortality from Private sector companies A and D.

5.5.1 . Mortality at Private sector company A

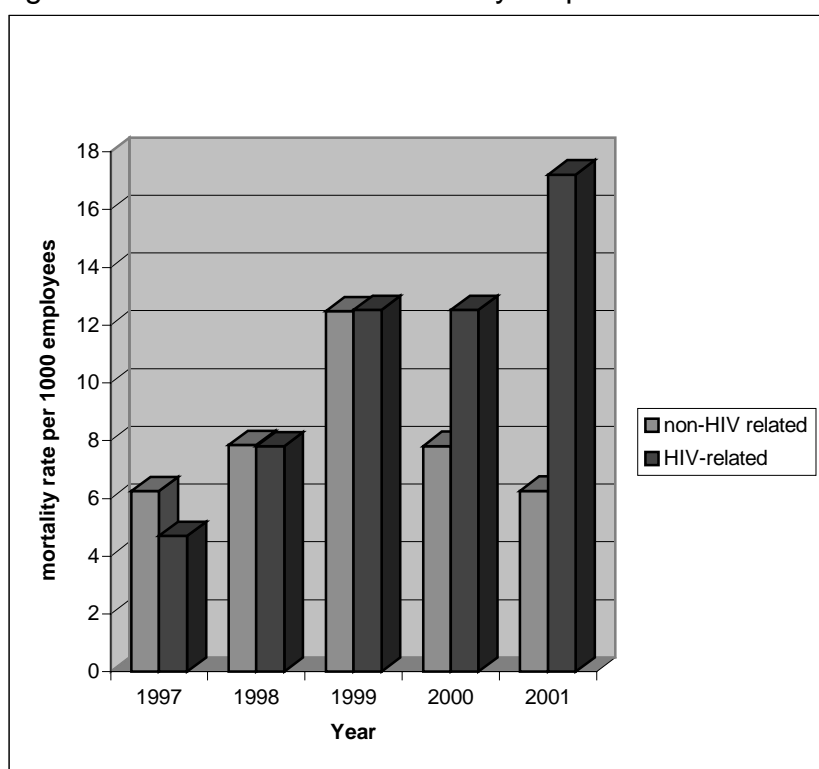
Company A is involved in rail transport and employees 639 workers, 604 male and 35 female. The data was extracted from company records that include death certificates of dead employees. Table 5.5.1 and figure 5.5.1 show mortality amongst employees of Private sector company A over a five year period..

Table 5.5.1 Crude and AIDS specific mortality rate for Private sector company A (1997-2001)

| Year | Total deaths (crude death rate) | Non-AIDS deaths | | AIDS deaths (%) | AIDS specific Death rate |
|------|---------------------------------------|--------------------|------|--------------------|-----------------------------|
| | | Number | Rate | | |
| 1997 | 7(10.95) | 4 | 6.25 | 3(42.8%) | 4.7 |
| 1998 | 10(15.65) | 5 | 7.8 | 5(50%) | 7.8 |
| 1999 | 16(25) | 8 | 12.5 | 8(50%) | 12.5 |
| 2000 | 13(20.3) | 5 | 7.8 | 8(61.5%) | 12.5 |
| 2001 | 15(23.47) | 4 | 6.26 | 11(73.3%) | 17.21 |

Death rate is per 1000 employees

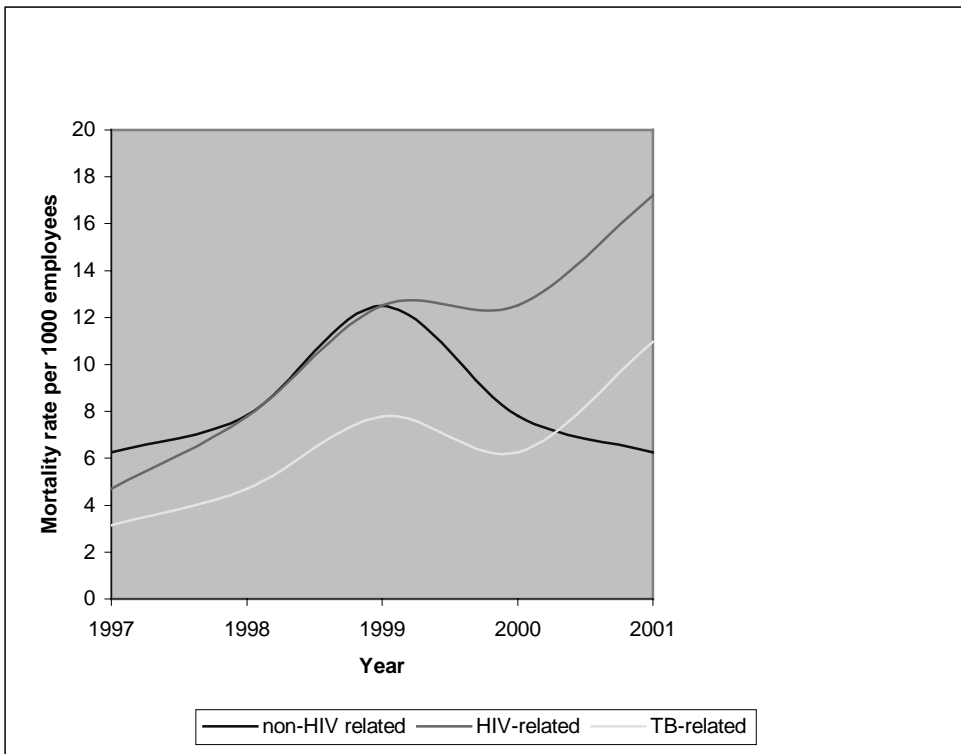
Figure 5.5.1 Trend of AIDS mortality for private sector company A (1997-2001)



Private sector company A has experienced a four fold increase in AIDS-specific mortality rate over the five year period, with AIDS deaths exceeding death from other causes after the year 1999. Over 50% of the employees that died had a co-infection with tuberculosis and in most cases tuberculosis was a contributory factor to their death.

The tuberculosis related death has increased 2- fold over the five year period(Figure 5.5.2). Over 90 percent of those who died were in the lower employee grades(low to unskilled labour).

Figure 5.5.2 The association between tuberculosis and AIDS deaths at Private sector company A (1997-2001)



Comparison of mortality between Private sector Company A and agro-estate A

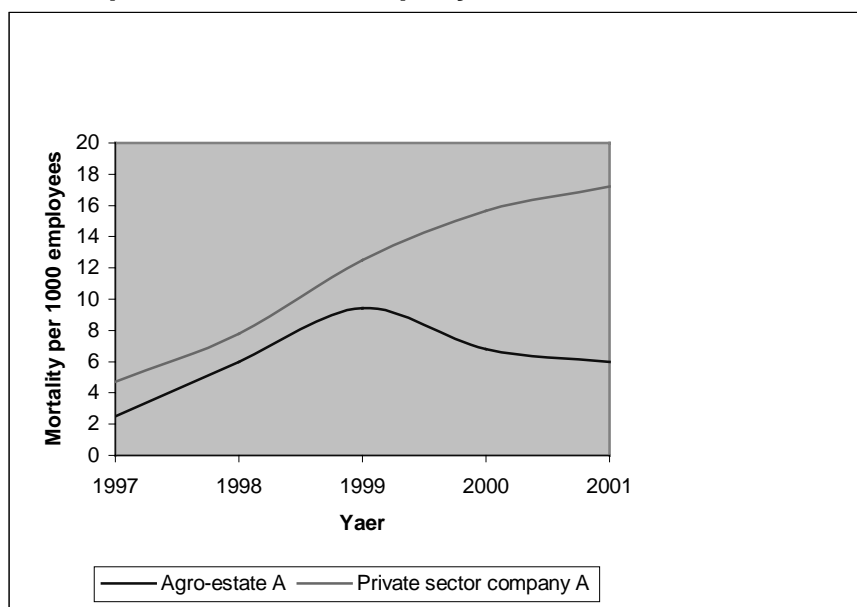
Private sector company A succeeded in reducing absenteeism by initiating HIV/AIDS control and prevention programmes (Figure 5.4.1), however the interventions have not reduced the mortality rate(Figure 5.5.1).

To explore this trend, a comparison of mortality amongst employees for Private Sector Company A and Agro-estate A was done. In addition an analysis of their response to the epidemic was done.

Agro-estate A, implemented a targeted retrenchment exercise as strategy to cope with the epidemic. 152 employees were retrenched in 1999, 23 of whom had advanced tuberculosis and AIDS. Agro-estate A managed to reduce mortality almost immediately (Figure 5.5.3).

Private sector company A implemented disease management protocols for HIV/AIDS cases as a means of coping with the epidemic. Whereas, they managed to reduce absenteeism (Figure 5.4.1), mortality due to AIDS is on the increase (Figure 5.5.3). Therefore retrenchment as cost avoidance measure implemented by Agro-estate A was effective in reducing mortality while Private sector Company A is faced with an increasing mortality amongst its employees. This raises questions on cost-effective measures that can be implemented to mitigate the impact of HIV/AIDS on business when prevalence of HIV is already high amongst the employees.

Figure 5.5.3 A comparison of mortality amongst employees in agro-estate A* and private sector Company A



* Agro-estate A is analysed under commercial agriculture (chapter 3)

5.5.2. Mortality and newly diagnosed HIV positive cases for Company D

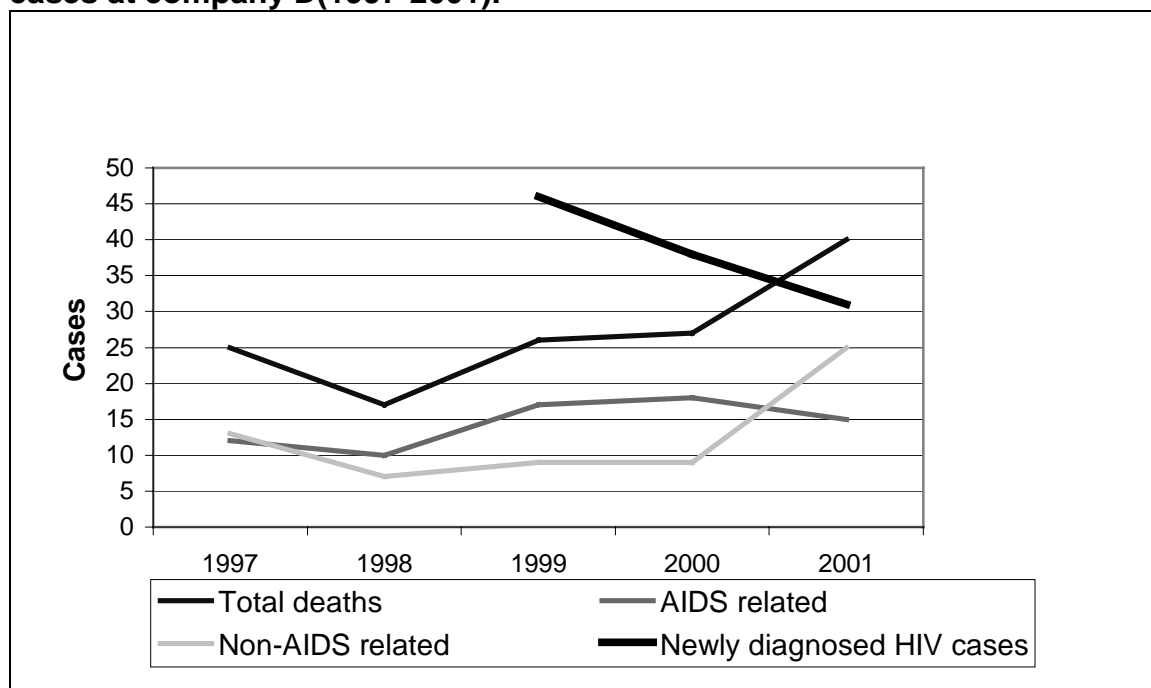
Company D is engaged in forestry-timber industry and is one of the largest employers in Swaziland. It encourages pre-post test counseling and testing for HIV. It also gives special treatment to HIV positive patients, by treating opportunistic infections and providing nutrient supplements and other specialized treatments required by people living with HIV. Company D underwent a major

restructuring exercise in the year 2000, where a number of workers in non-core departments were laid off and the departments outsourced.

Table 5.5 2: AIDS deaths for Company D(1997-2001)

| Year | Total deaths | Crude death rate | AIDS related deaths(%) | Non-AIDS related deaths(%) | AIDS Death rate |
|------|--------------|------------------|------------------------|----------------------------|-----------------|
| 1997 | 25 | 14.7 | 12 (48%) | 13 (52%) | 7.1 |
| 1998 | 17 | 10 | 10 (59%) | 7 (41%) | 5.9 |
| 1999 | 26 | 15.3 | 17 (65%) | 9 (35%) | 10 |
| 2000 | 27 | 15.9 | 18 (67%) | 9 (33%) | 10.6 |
| 2001 | 40 | 23.5 | 15 (37.5%) | 25 (62.5%) | 8.8 |

Figure 5.5.4 AIDS Mortality and cases of newly diagnosed HIV positive cases at company D(1997-2001).



Private sector company D shows a decline in numbers of AIDS deaths and newly diagnosed HIV positive cases. The data is shown in table 5.5.2 and figure 5.5.4.

Private sector company D employed 1700 workers in year 2000.

However, private sector company D did not provide total number of workers at the end of year 2000 and year 2001. Therefore the data presented in table 5.5.2

and figure 5.5.4 should be interpreted with caution as mortality rates have been computed based on the year 2000 total work force.

However, it is worth noting that analysis of data from Private sector company D gives further evidence to the fact cost avoidance measures through retrenchment of HIV/AIDS infected employees leads to reduction of mortality amongst the workforce.

Six other private sector companies provided data on deaths but these could not be attributed to AIDS. On average they experienced 4 deaths per year over the past five years, with mortality rates ranging from 0.6 per 1000 to 15 per 1000 employees. Because of poor recording keeping it was not easy to extract information to determine the trend.

5.6 Turnover and new recruitment

Five of the twenty four businesses surveyed provided their expenditure for training employees. However, no costs were allocated specifically for training new employees or improving skills of existing employees for purposes of replacing a dead employee. The budgeted cost for training ranged from 0.2%-0.69% of annual company budget.

The cost of replacing employees varies according to whether it is a managerial or non-managerial position. The costs include cost of advertising, travel, interviewing time and lost productivity due to vacant position. According to Berthal and Wellins(2000) the cost of replacing an employee ranges from 29-46 percent of the person's annual salary.

5.7 Employee Benefits

Most companies surveyed provide insurance to their employees that covers disability, funeral benefit, group life and a pension scheme. However, most of these benefits are provided to the higher skilled staff. The lower, skilled staff who are disproportionately effected by HIV/AIDS are not covered. Muwanga(2001b)

found that over 60 percent of Swazi businesses provide benefits to just under 30 percent of their workforce. The companies did not provide their annual cost for providing these services. Secondly, there was no indication that premiums had increased because of increased claims. The increase in premiums was mainly due to inflation tagged adjustments.

5.8 Employee morale

From the 24 companies included in the study, a total of 115 employees were interviewed about their experiences with HIV/AIDS at the workplace. Most of these employees had noticed colleagues suffering from HIV/AIDS, and had offered care and attended funerals for those that had succumbed to the disease. They were mostly middle to unskilled workers.

On average each employee had four dependants under his care and were either heads of households or bread winners. Over 90 percent of them were living away from their families and only returned periodically to remit funds for the upkeep of their families residing in the rural areas. 22.3 percent of the respondents were caring for orphans. 38 percent of the respondents reported increased workload and stress as they had to take over duties of colleagues who were ill with HIV/AIDS.

18 percent reported suffering reduced morale as a result of caring and taking over duties of fellow workers who were suffering from HIV/AIDS.

5.9 Business response to HIV/AIDS at workplace

Companies responded to HIV/AIDS and its effects in two ways. One of the responses involved implementation of strategies to reduce new infections, and the other involved strategies to reduce the cost of the disease on their businesses. These are shown in table 5.9.1.

Table 5.9.1: Private sector response to HIV/AIDS at work place.

| <i>Programme</i> | <i>Company frequency (%)</i> N=24 |
|---|--------------------------------------|
| No intervention | 6 (25%) |
| Information, education and Counseling (IEC) | 9 (37.5%) |
| Condom supply | 10 (42%) |
| Peer education | 6 (25%) |
| AIDS awareness campaigns | 10 (42%) |
| Policy formulation | 3 (12.5%) |
| Disease management protocols | 1 (4.2%) |
| Reasonable accommodation | 1 (4.2%) |
| Health education to neighbouring community | 1(4.2%) |

It is evident from the data above that Swazi businesses have largely not implemented strategies to reduce the spread of HIV amongst their employees. Secondly, few companies have formulated policies to guide management in the process of implementing these programmes.

Thirdly, limited measures to mitigate the impact of excess morbidity and mortality due to HIV/AIDS on business and the employees have been put in place. Muwanga(2001a) found that only 22.2% of Swazi businesses have workplace policies on HIV/AIDS and less than 50% have sustained HIV/AIDS awareness campaigns.

5.10 Conclusion.

The study shows that HIV/AIDS related morbidity and mortality has affected labour supply to Swaziland businesses. There is increased absenteeism, increased utilisation of healthcare services and death of employees from HIV/AIDS. However, there is no evidence that these have reduced profitability and productivity of the private sector in Swaziland. There is some evidence that the employees in some companies are experiencing psychological problems as their colleagues and relatives die of the disease, but there is no evidence that this has disrupted business operations in anyway.

The AIDS specific mortality rates are still below what has been projected. From earlier projections the private sector in southern Africa would lose up to 3% of its workforce per year to AIDS (Whiteside and Wood, 1993; Smart, 1999). This translates into a mortality rate of 30 per 1000 employees. The highest from this study is 17.21 per 1,000 far lower than the estimated figures. The projected mortality from this study is 15 per 1,000, rising by 2 per 1,000 per year for the next six years to a peak of 27 per 1,000 in 2008.

Tuberculosis and HIV co-infection is prevalent amongst employees.

The response of the private sector to the epidemic has largely been on two fronts – the implementation of HIV/AIDS prevention activities and cost avoidance.

Whereas some businesses have gone ahead and drafted HIV/AIDS work policies to guide the response, most businesses have not had a systematic approach to the epidemic. There are programmes to increase awareness, reduce risk and distribute condoms but these have not been sustained.

The big businesses have avoided the cost of HIV/AIDS by implementing targeted retrenchment of employees suffering from HIV/AIDS. They have moved to outsourcing of non-core business units and limited benefits provided to their employees. However, this is a strategy that passes over the burden and cost of HIV/AIDS to the government, households and the public at large.

So whereas the private sector has the great flexibility in containing and avoiding the cost of HIV/AIDS, this is done at the expense of households who have no flexibility at all to avoid these costs.

Provision of treatment and support of sick and infected employees to extend their productive working lives has been suggested as one way of postponing costs (Rosen et al, 2000). This strategy is not widely practised by the private sector in Swaziland.

Whereas business may escape the deleterious economic impact of HIV/AIDS, the poor unskilled workers and their families may not be as lucky as their employers. It is therefore important that business intervenes comprehensively to protect their employees and the households.

Chapter 6

The Demographic Impact of HIV/AIDS

6.1 Introduction

This report has used the AIDS Impact Model (AIM) to project the demographic impact of HIV/AIDS in Swaziland. AIM is a component in the SPECTRUM system of policy models. The AIM combines epidemiological calculations regarding new HIV infections, progression to AIDS-related death, and the impact of HIV on fertility with demographic projections that track the population over time by age and sex. HIV/AIDS affects the demographic projections through increased adult and child mortality and a reduction in fertility among HIV-infected women. The demographic projection affects the HIV/AIDS calculations through changes in the age structure of the population and the underlying fertility and non-AIDS mortality rates.

There are several approaches to making demographic projections. The United Nations Population Division and World Health Organization use the EpiModel with UNAIDS estimates of HIV prevalence to project total AIDS-related deaths. These deaths are then distributed by age and sex according to a standard pattern. These AIDS-related deaths are then added to deaths due to causes other than AIDS calculated by the UN demographic model to determine total number of deaths and life expectancy. The EpiModel is useful for making short-term projection. The projections are based on three key assumptions which within themselves create limitations of the model. These are: the year in which the infection first became spread, number of people alive with HIV infection in a recent year and shape of the epidemic curve. Usually, the modeler decides where the epidemic curve in the current year lies. This does not take into account the demographic structure and sexual activity of the population which are relevant in understanding the course of the epidemic.

The U.S. Census Bureau uses the iwgAIDS model to develop standard scenarios of AIDS-related deaths by age and sex. These scenarios are then calibrated to the estimated prevalence level in a particular country to determine AIDS-related deaths by age and sex. These deaths are added to the non-AIDS deaths calculated by their demographic model to determine total deaths. Whereas this approach allows the United Nations and the US Census Bureau to continue to use their standard demographic models, the disadvantage is that there is no interaction between the HIV projections and the demographic projections. For example, there is no competing risk of mortality. That is, the models ignore the possibility that people infected with HIV might die of causes other than AIDS before they die of AIDS.

A third approach is the use of full-scale simulation models, such as iwgAIDS. In this case, the model uses epidemiological factors, such as number of sex partners, coital frequency, prevalence of sexually transmitted infections, and condom use, to calculate the incidence of HIV. The number of AIDS-related deaths by age and sex is determined from incidence and is fully integrated with the demographic projection processes. This approach is especially useful for investigating the impact of interventions to change behaviour. However, this could not be used as there is not enough epidemiological, behavioural and intervention data to specify a simulation model correctly for Swaziland .

The Actuarial Society of South Africa has developed ASSA60 Model and of recent the ASSA200 Model. So far this is the most articulate model for predicting prevalence rates as it takes into account the vulnerability of four populations distinguished by their level of risk; namely sexually active people other than pregnant women, commercial sex workers, men who have sex with men and infants who may contract the disease from their infected mothers. However, information on vulnerability of these four populations is not available for Swaziland.

AIM strikes a compromise and takes a middle ground. It links the demographic and epidemiological projections but uses an exogenous estimate of HIV prevalence rather than trying to simulate the incidence of HIV. However, this raises problems for this study as estimate of HIV prevalence in Swaziland are scarce. Modeling the demographic impact of AIDS endogenously has been adopted by UNAIDS for its bi-annual epidemic updates. These updates include estimates of the number of adults and children infected with HIV, new infections, AIDS-related deaths, and AIDS orphans for about 150 countries. The latest UNAIDS update, released in July 2002, was prepared using the AIM.

The AIM is also used in numerous national programmes for making projections for purposes of awareness-raising, advocacy, and strategic planning. In these countries, AIM is used for projecting the consequences of the AIDS epidemic. Policy presentations using this information are prepared and used with high-level audiences to engage them in dialogue about the consequences of the AIDS epidemic and the need for effective action. The AIM projections are also used as part of the strategic planning process for estimating future requirements for care and support.

The AIM presentations have been prepared by a number of countries in the last few years, including Ethiopia, Kenya, Zambia, Zimbabwe, Ghana, Benin, Cote d'Ivoire, Burkina Faso, Cambodia, Honduras, and Panama.

The greatest limitation in these types of projections is that these are based on assumptions about future HIV prevalence levels. In this report we have assumed that prevalence in adults will stabilize at 39%.

In the UNAIDS projections, a separate model—Epidemic Projection Package (EPP)—is used for projecting prevalence on the basis of surveillance in clinics for antenatal care. These projections are inherently risky. In the early 1990s, few people expected the epidemics in southern Africa to reach the levels seen today, and few people expected the rapid decline in prevalence seen in Uganda.

However, these exercises are not about predicting the future so much as these are about exploring the consequences of today's trends. These are intended to show what the future will look like if today's trends continue for the next decade or two. As for Swaziland the predicted future is sufficiently undesirable that it should serve to focus our attention on implementing programmes today that will protect people from HIV infection and promise a brighter future.

6.2 Assumptions

- Base year, 1990 is the base year used in the projections. The data used is extrapolated from the 1986 census data. Comparisons have been made with the results from the 1991 Health Survey.
- Starting year of epidemic – 1986
- Adult HIV prevalence has been computed from available serosurveillance reports and interpolated to cover the period 1990-2015 using the EPP model. This was then fed into the AIM Model.
- Death rate of infants with AIDS in the first year – 67%(default for Spectrum)
- Perinatal transmission rate – 35%(default for Spectrum)
- Life expectancy after AIDS diagnosis – 1 year, this is based on limited information from unpublished studies done in the private sector
- Percent reduction in fertility for HIV-Infected women – 30% (default for Spectrum)
- Age and sex distribution : 1:1

6.3 Limitations

There is limited epidemiological, behavioural and interventional data on Swaziland to effectively specify a simulation model.

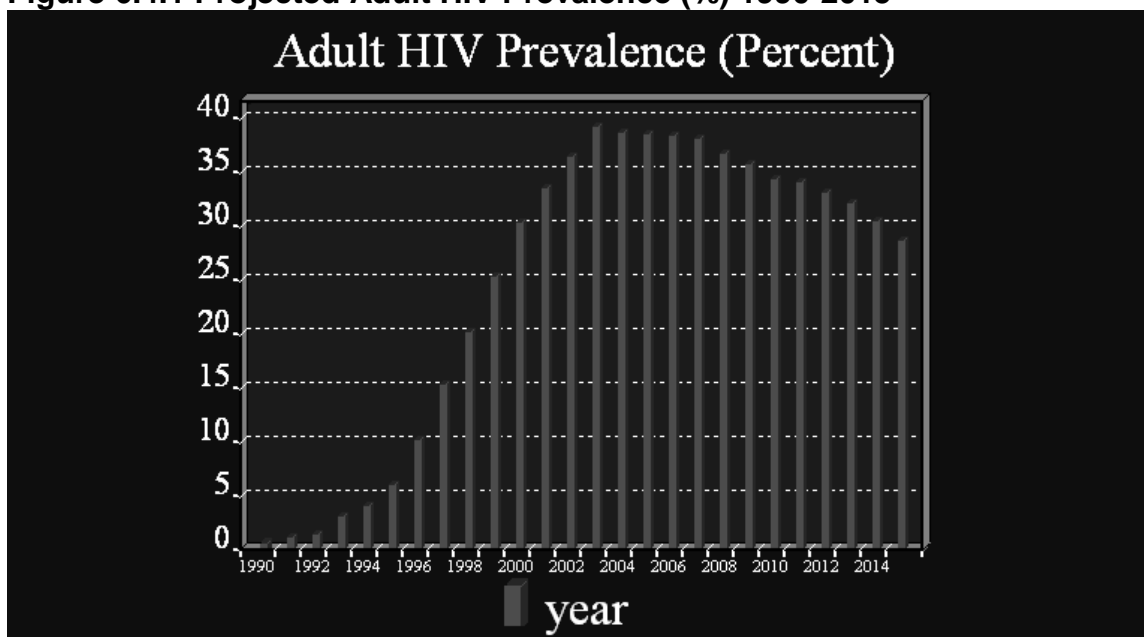
6.4 Output

This section presents the output from the AIM projection model. The output includes projections of adult prevalence, New AIDS cases, AIDS deaths, cases of tuberculosis, child deaths, young adult deaths and cumulative deaths.

6.4.1 Adult HIV prevalence

The Adult HIV prevalence is projected to rise from the 33% at end of 2001 to 36.3% at end of the year 2002 to a peak of 38.9% by the year 2003 and thereafter stabilize (Figure 6.4.1). This is referred to as endemic stage. This is due to running out of susceptibles within the Swazi population and an increase in AIDS mortality. What is of great concern here is that HIV prevalence will remain high within the population during this endemic stage. AIDS deaths will continue rising to a peak in 2006-2008 (Figure 6.4.4) As AIDS mortality peaks up, adult HIV prevalence will start dropping significantly. This is because AIDS deaths effectively reduce on number of people living with HIV within the population.

Figure 6.4.1 Projected Adult HIV Prevalence (%) 1990-2015

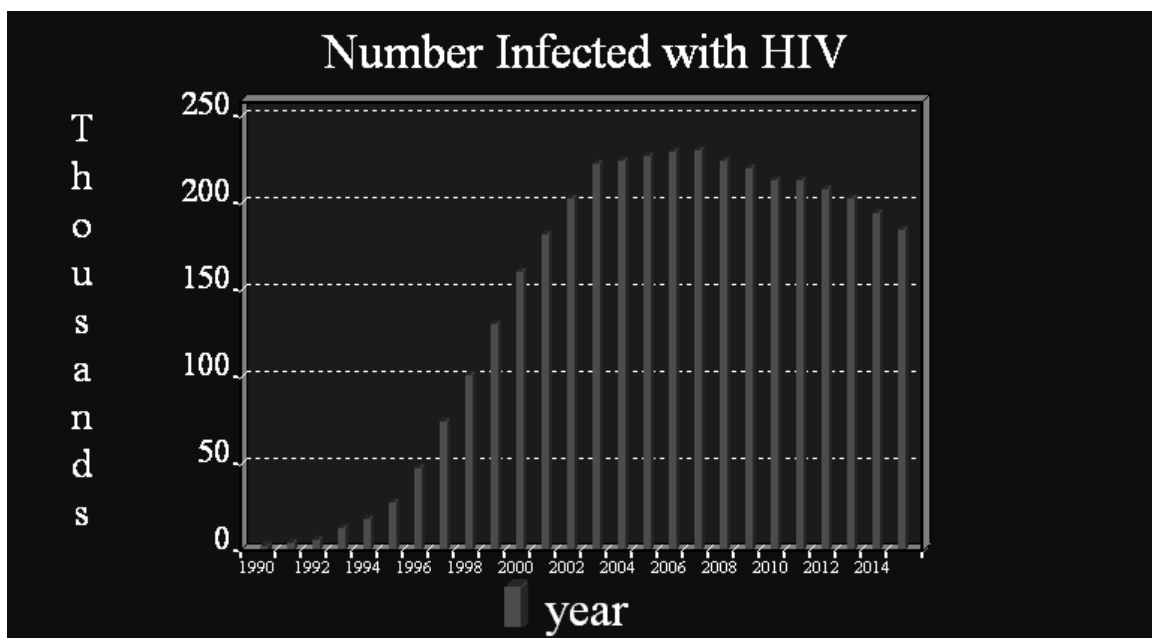


6.4.2 Number of people Infected with HIV

The number of people infected with HIV is projected to rise from the current estimated 170,000 at end of 2001 to 180,000 at end of year 2002, rising to a peak of just over 200,000 by the year 2006 and stabilize thereafter (Figure 6.4.2) This phenomenon is due to running out of susceptibles within the population, leading to a low net case reproductive rate. The number of people

infected with HIV is combination of new cases of HIV, and the balance from living with HIV progressing to terminal stage of the disease (AIDS) and dying of the disease. It gives an indication of the number of new cases that can be averted by effective interventions, and the life expectancy of those living with HIV. Interventions to reduce new infections will effectively reduce the number of people living with HIV overtime, as those living with the disease die. However, implementation of disease management including anti-retrovirals will increase life expectancy of those living with the disease and therefore maintain a high number of people infected with HIV.

6.4.2 Projected Number of People Infected with HIV (1990-2015)

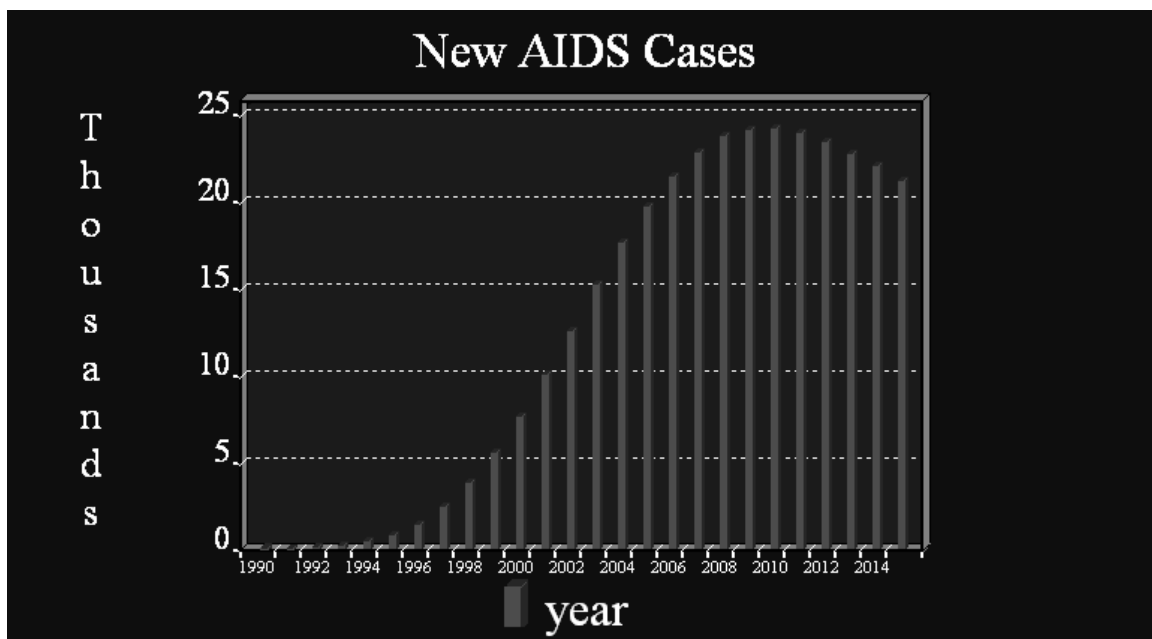


6.4.3 Number of New AIDS Cases

The number of New AIDS cases is projected to increase to a peak of 24,000 in the year 2008. It currently estimated to be 17,000 (Figure 6.4.3). The number of new AIDS cases gives an indication of HIV positive cases progressing to the terminal stage of the disease within that time. This is the burden of illness(morbidity) that households, employers and public hospitals will be faced with. This is the stage of the disease when people seek healthcare frequently,

are off-sick from work and their productivity drops. So the greatest socio-economic impact is likely to be felt in the years 2006-2008 when AIDS morbidity is expected to be at its highest. Introduction of disease management protocols and anti-retrovirals to delay the progression of HIV positive people to terminal AIDS stage will reduce on the number of new AIDS cases and therefore postpone/delay the burden (morbidity associated with HIV/AIDS) and the resultant socio-economic impact. Some of these impacts include increased absenteeism, increased diversion of household farm labour to care for sick members of the household and diversion of household income to pay for healthcare costs of the sick members. As discussed in chapter 2 on subsistence agriculture the result is reduction of land under cultivation, reduced production of food - leading to worsening of food insecurity and children dropping out of school due to lack of school fees. These impacts are projected to be at their peak in the years 2006-2008.

6.4.3 Projected New AIDS cases (1990-2015)

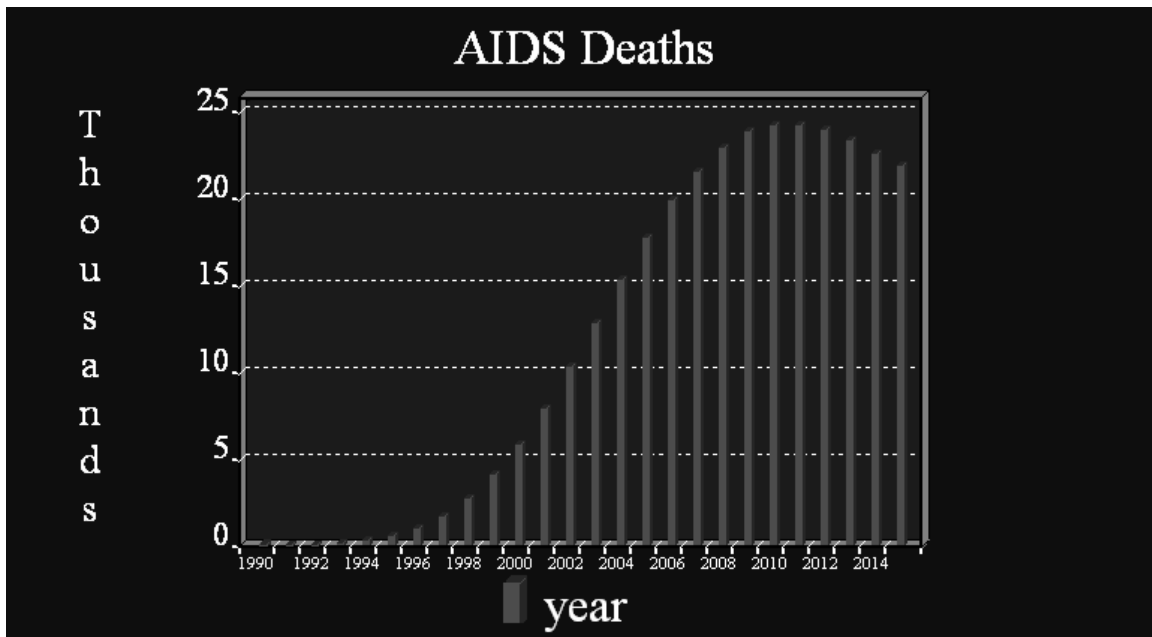


6.4.4 AIDS Mortality

Morbidity is closely followed by death (mortality). AIDS mortality will peak in the year 2009, rising from the estimated 8,000 at end of 2001 to 24,000 at the end of year 2009(Figure 6.4.4). So the socio-economic impacts associated with AIDS mortality are likely to be most felt in the year 2009. Some of these impacts include increased funeral costs, increase in number of orphans, loss of household farm labour and remittances. As deaths accumulate (Figure 6.4.8), the impacts will accumulate within the communities leading to further vulnerability as social order is disrupted and food insecurity worsens.

The number of AIDS orphans is projected to rise at an average of 10,000 per year for the next ten years. This translates into an increase from the estimated 30,000 at end of year 2001 to 140,000 AIDS orphans by the year 2011(Figure 6.4.5).

6.4.4 Projected AIDS deaths (1990-2015)



6.4.5 Projected Number of AIDS Orphans (1990-2015)

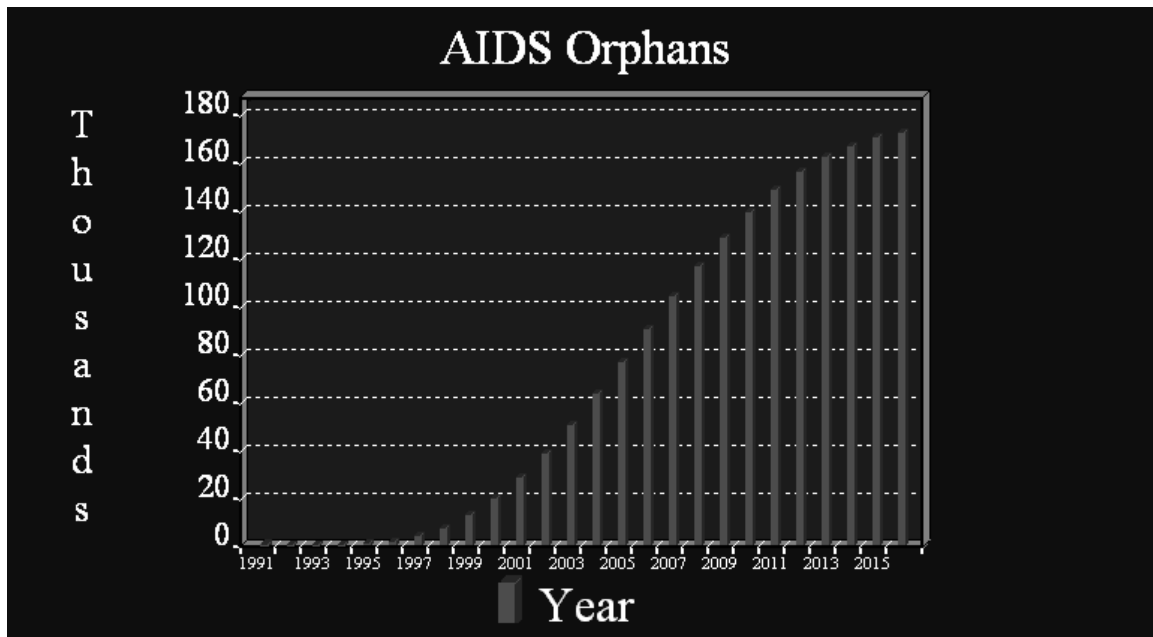
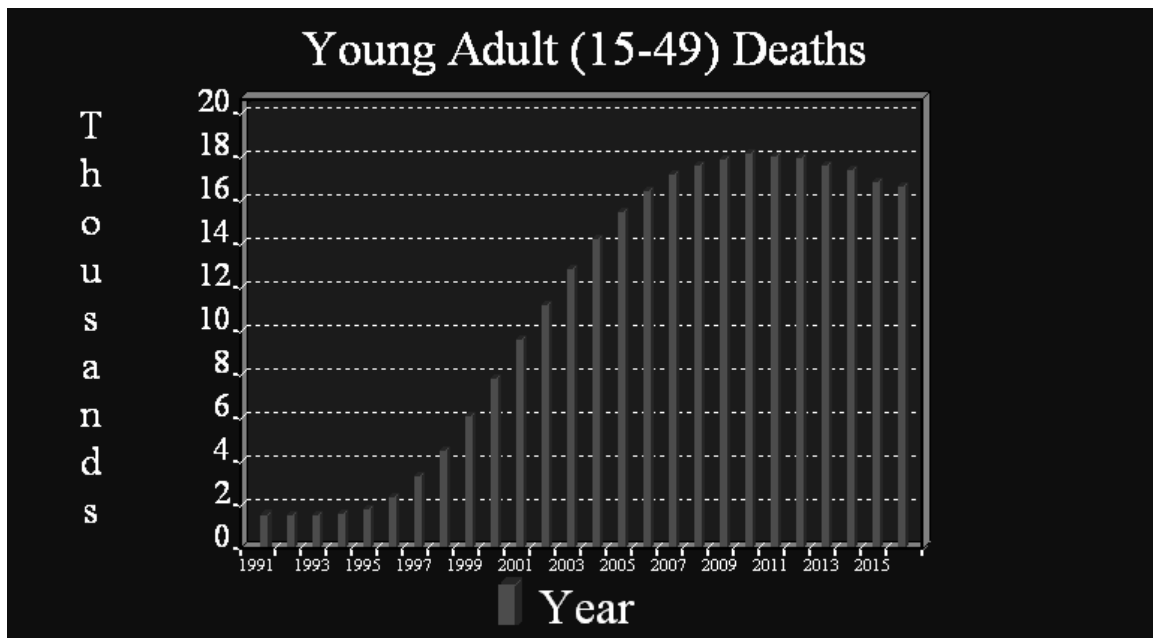


Figure 6.4.6: Young Adult deaths



6.4.6 Young adult deaths

Young adult deaths will rise to 18,000 by the year 2008 (Figure 6.4.6). This reflects the loss in source of labour for the employment sector as this is the productive age group. It also gives an indication on the impact that households that rely on remittances from members of households working away from home are likely to face in the future.

6.4.7 Child AIDS Deaths

The number of child AIDS deaths is projected to rise to a peak of 2,500 by the year 2006. This number reflects what proportion of child deaths would be saved by implementing the prevention of mother to child transmission programme. It also gives an indication of the burden of illness associated with HIV/AIDS that will be reduced if this programme was implemented.

Figure 6.4.7; Projected Child AIDS deaths

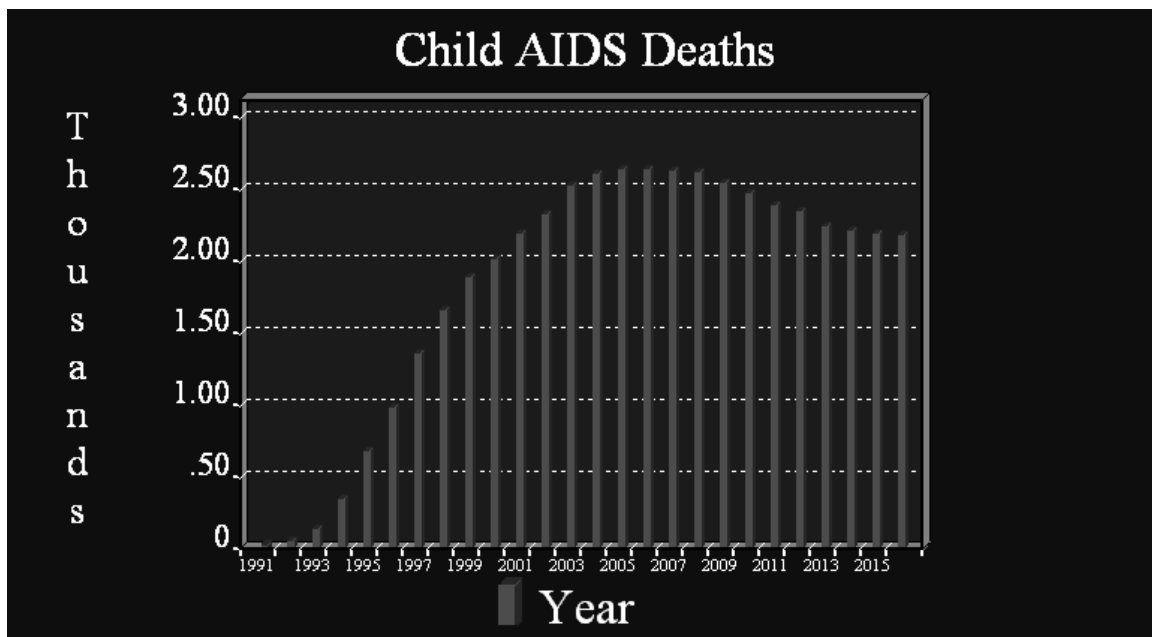
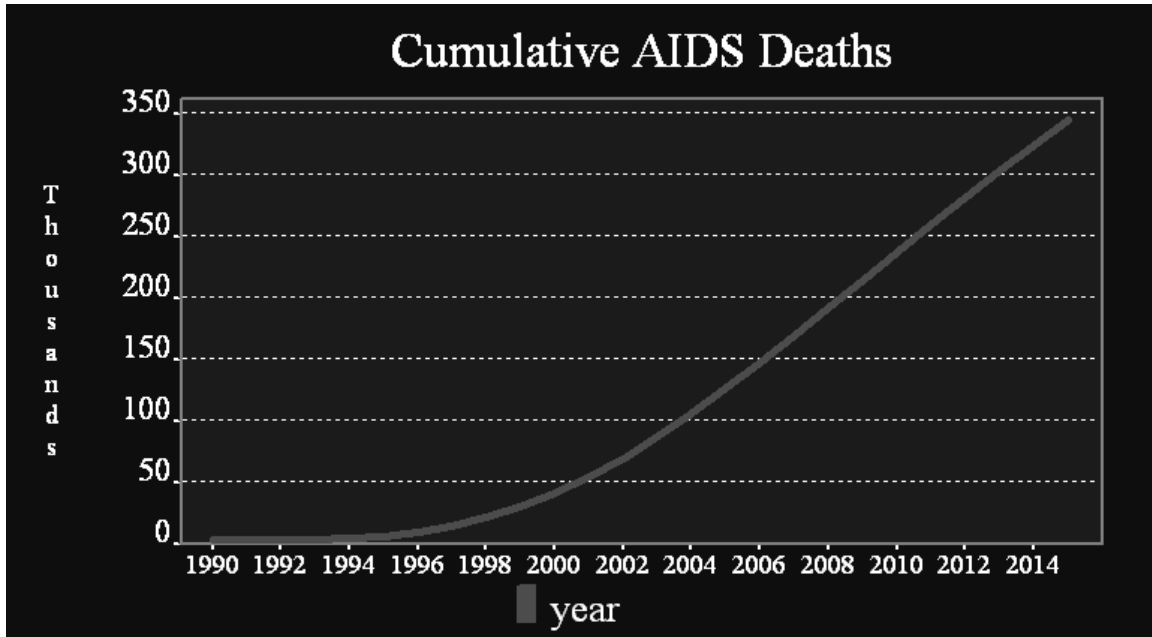


Figure 6.4.8 Cumulative AIDS deaths

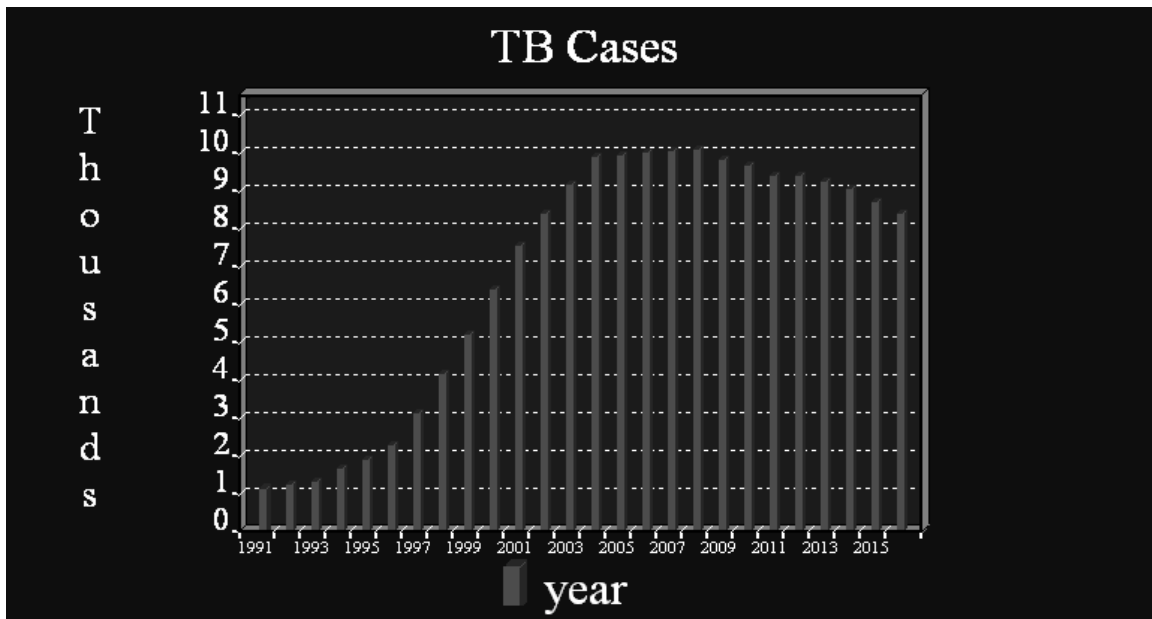


6.4.8 Tuberculosis

Cases of tuberculosis are projected to increase an average of 1,000 cases per year to a peak of 10,000 cases in the year 2008 (figure 6.4.9). Tuberculosis remains a big contributing factor to low life expectancy of AIDS patients.

Secondly, early and active case finding and treatment of these cases is crucial to breaking of transmission of tuberculosis within the community.

Figure 6.4.9 Tuberculosis cases



Chapter 7

Summary

This study has demonstrated that households and the community will feel the negative socio-economic impact of HIV/AIDS more than any other sector. Problems of maintaining food supplies, in both quantity and quality will increase as the mortality and morbidity due to the disease unfolds. Projections of the demographic impact of the epidemic indicate that the number of HIV cases and AIDS deaths is still rising. The number of AIDS deaths is expected to rise to a peak in the year 2008. The worst is therefore yet to be seen.

In many cases a decline of family incomes has occurred because of higher adult morbidity and mortality, additional expenditures on health and reduced savings. The deepening poverty and increased orphaning has led to children dropping out of school and worsening food insecurity. The Swaziland household farming systems are vulnerable to the negative economic impact of HIV/AIDS because of the reliance on remittances, in the face of poor soils and erratic weather. The food security situation remains tight as the country faces a cereal deficit of 131,000 tonnes, composed of a maize deficit of 79,000 tonnes, wheat deficit of 48,000 tonnes and rice deficit of 4,000 tonnes. Household food supplies are extremely tight especially since harvests of the last two seasons were also very poor. The FAO/WFP Crop and Food Supply Assessment Mission suggest that some 231,000 people may require some targeted food aid assistance, amounting to 18,000 tonnes, during the current marketing year(SADC,2002). The convergence of the two calamities – HIV/AIDS and erratic weather, sharply worsens the food insecurity and increases the people's vulnerability to the deleterious impacts of the epidemic.

In the case of the Business Sector their coping strategies through cost avoidance have been effective in mitigating the impact of the epidemic on productivity and increase in costs of production. However, this has been done at the expense of the public sector, households and the community.

Most businesses provide limited benefits to their employees and therefore have been able to escape the increased costs of production that the epidemic would have imposed on them. Employees are using out of pocket to pay for healthcare. The financing of healthcare from out-of-pocket increases the households' expenditure. The prolonged morbidity associated with HIV/AIDS means increased expenditure on health for a very long time. This has negative consequences for household farming as savings that would have used to hire farm labour and buy farm inputs are diverted to financing healthcare and buying food. The result is decreased food security.

Secondly, whereas some of the coping measures aimed at avoiding the cost of HIV/AIDS - like targeted retrenchment have been effective in reducing mortality and morbidity, they have in effect passed over the burden to households and the public. The households are left with no support to look after members of their households who return home to die after being retired on medical grounds.

Therefore as the private sector introduces measures to mitigate the impact, the impact is passed on to the households and the community. This coupled with the absence of community investment by business and provision of limited benefits to employees leaves it to the households to cater for their sick and those orphaned by the epidemic. This raises the vulnerability of the household and the farming systems to the impact of HIV/AIDS. It also means that the households have to increasingly turn to the public health sector for care. This increases the burden on the public health sector and diverts resources that government would have invested in developing its people. Therefore the intervention strategies that the private sector implements have direct implications on the extent of the impact of the epidemic

The Government as an employer and a provider of services is affected in several ways. Its current expenditures will in general be raised by HIV, especially on health, and it will also need to increase budget allocations to deal with increasing numbers of orphans and an intensification of poverty. It will also need to spend at a higher rate to replenish the losses of human resources caused by higher adult

mortality. But most importantly Government may fail to meet its mandate to the people leading to further negative impacts to households and their farms. The continued support from the MOAC through the agricultural extension officers is crucial to the sustainability of household farming in Swaziland. It is through the support of agricultural extension officers from MOAC that the households can come up with effective strategies to deal with the labour supply changes and changes in income that HIV/AIDS related morbidity and mortality imposes on the households.

Government's active involvement in the prevention and control of HIV/AIDS is crucial if the response is to succeed. It is only government that has the mandate and resources to finance the public goods required for control of the disease. Government is also placed in a unique position through which care and treatments of AIDS related conditions that benefit the general public can be implemented. A typical example is tuberculosis.

Lastly, some of the coping strategies implemented by the private sector and the results achieved raise questions on effective intervention measures in the face of high prevalence of HIV amongst the workforce. Agro-estate A managed to reduce mortality immediately by retrenching staff and outsourcing some of the departments. Private sector company A through health education and disease management protocols managed to reduce absenteeism but the mortality due to HIV/AIDS and absenteeism due to tuberculosis is on the increase.

The 2000 serosurveillance report predicted that Swaziland was about to reach the endemic stage of the disease, where new infections decline but the number of people with the virus remains high for sometime. However, from projections made by this study, the epidemic will only reach endemic stage in the next two years, stabilizing at a prevalence of 39%.

The question that is raised here is whether prevention measures aimed at reducing new infections are still cost effective for individual businesses in the face of high prevalence and mortality. Companies may have to look more at

avoiding the cost of AIDS by reducing the morbidity and mortality amongst their workforce. Targeted retrenchment is one method., though it raises moral issues as it passes over the burden to the community . The other alternative is investing in comprehensive management of the disease to increase quality and quantity of life amongst the workforce. This should be based on early detection and management of HIV/AIDS related complexes, outcomes measurement of health status and quality of life. Implementing disease management protocols and provision of anti-retrovirals can go a long way in ensuring the employees live longer and remain productive for a longer period.

Chapter 8 **RECOMMENDATIONS**

8.1 Paradigm Shift

This study emphasizes the point that the starting point for initiating responses to prevent and control the epidemic is to recognize that households and the community are the first line of responses to HIV/AIDS. The capacity of households and the community in handling the effects of the disease should be reinforced and the interventions should make sense in relation to the daily needs and challenges that households and the community face.

From the sentinel sero-surveillance results for the past four years, the epidemic is on the increase, from this study it is projected that mortality from AIDS will only pick up in the year 2008. The projected impacts are enormous and their full magnitude is yet to be seen. The interventions should therefore match the scale and duration of the epidemic. Due to scarcity of resources, interventions that are implemented should be achievable, sustainable, widely replicable and cost effective.

Secondly, it is important to acknowledge that the nature and intensity of the impacts vary among sectors, communities and households. Therefore identifying the most vulnerable population groups, geographic areas and communities is vital to establishing programmatic priorities and mounting a successful response.

Thirdly, it is important that policy makers and all those involved in the prevention and control of the epidemic accept the fact that health-based approaches alone are not enough to deal with the epidemic.

8.2 Strategic response

This study has shown that the nature and intensity of the impacts vary widely. With such a scenario, no single intervention will make a substantial impact on the full range of socio-economic problems that HIV/AIDS is causing to agriculture and the private sector. There is therefore need for government, the private sector, NGOs and the international community to come up with a well planned and co-ordinated set of policies that will guide the programmatic interventions,

and the monitoring and evaluation of these interventions. This will require government leadership. Effective monitoring and evaluation will guide priority setting and allocation of resources to ensure that the scarce resources are spent wisely and that they benefit the vulnerable.

Secondly, a strategic response requires full and committed involvement of a range of actors. Intersectoral collaboration and information sharing is needed among key government ministries, international organizations, donors, NGOs, the private sector and the communities.

This study found an increase in female headed households and orphans. These form part of the most vulnerable groups of society. Secondly, sick employees in the private sector are increasingly being faced with targeted retrenchment on medical grounds as the private sector turns to cost-effective means of mitigating the impact of HIV/AIDS on productivity and cost of production. Government therefore has the responsibility through policies, and laws to initiate a framework that will help to support and protect these vulnerable groups. These include:

- ensure women have the right to own property
- protection of inheritance rights of widows and orphans
- eliminate barriers to orphaned children to continue with their education
- labour laws that protect the rights of sick employees

8.3 Programmatic interventions

Programmatic interventions that are aimed at solving particular problems identified by this study should be implemented. These should cover subsistence agriculture, MOAC and the private sector.

8.3.1 Subsistence Agriculture

Rural subsistence agriculture is threatened by the impact of HIV/AIDS on farm labour and remittances that are used to purchase farm inputs. There is urgent need to ensure food security and livelihood of rural households by designing appropriate interventions to maintain household farm production while at the same time addressing the reduction in spread of HIV/AIDS.

To maintain household farm production there is need to protect production capacity and protect sources of labour supply.

a) Protection of production capacity

The MOAC through the agricultural extension officers should train households how to protect the environment including natural resources. This would ensure sustainability of land fertility.

The MOAC should train households on introduction of methods that maintain soil fertility. Indigenous methods of mulching and intercropping are possible alternatives. This would reduce on farm inputs that households need to ensure high yield.

Thirdly, the MOAC should introduce disease-resistant crop varieties and active management of pests to maintain production while at the same time reducing on the need of pesticides.

b) Maintain farm labour supply

To ensure farm labour availability the household members should be protected from acquiring the virus. This could be done through well structured health education, awareness programmes, and risk reduction programmes that conform to the cultural practices of that particular community. The agricultural extension officers should be trained in implementing these interventions as part of their activities in the community.

This study found that the communal labour sharing practice (*lilima*) is no longer widely practised. Lilima is one way of providing farm labour and the communities should be encouraged to revive the lilima practice. This could be done through agricultural extension officers, local chiefs and community based organizations. Secondly, lilima can be achieved through galvanising community responses by creating awareness amongst the community to the negative impact of HIV/AIDS .

This study found that households with reduced labour supply through either death of household members or diversion of labour to look after the sick ones ended up with less area under cultivation, less food produced and reduced income in the household. There is need to introduce labour saving technologies that can be utilized by households faced with a shortage of farm labour.

Some of the labour saving technologies that can be implemented are:

- intercropping to reduce time spent weeding fields
- introduce crop varieties that are not labour intensive, but high yielding or mature early. Cassava is a typical example of a crop that requires less labour and can be high yielding.
- Introduction of lighter farm equipment that women and the youths can easily use. This would cater for loss of stronger labour that widows and orphans face after the death of the more active men (husbands and fathers).

However it is important that these technologies are developed with community participation. This will ensure their relevance and appropriateness while at the same facilitating adaptation to particular community and household needs. It is also important that these labour saving technologies are integrated in curriculum for training at various levels in the Kingdom.

This study found that women were increasing becoming household heads. In some instances double orphans have taken over as heads of households. However, these women and orphans lacked the knowledge to carry on household farming activities. It is therefore important that agricultural extension officers train women and youths on household farming practices and labour saving technologies. This will ensure that they are adequately empowered to maintain the household farm when the heads of households die.

c) Community investment to provide capital to maintain production

The presence of a sick member in the household leads to increase in expenditure on healthcare, and when he dies – funeral costs. If the household member was a bread winner there is loss of income to the household. This is income that is used to buy labour and farm inputs; and pay school fees for the children. This study found that households with HIV/AIDS related death had children falling out of school due to lack of fees.

There is therefore need to increase the capacity of households and communities to respond to the loss of income and increased expenditure. This can be done through community mobilisation, building economic resources of households and introduction of community safety nets. This will ensure economic stability of the communities.

Community mobilization and community safety nets

Increasing awareness and reducing stigma to HIV/AIDS in the community will allow communities to come together, identify and provide assistance to vulnerable members in their community. Government should therefore implement programmes aimed at increasing awareness and reducing stigma.

Creating an environment where communities can come together will allow the creation of community safety nets. Through the safety nets emotional support is given to bereaved families, material relief and labour can be organised.

Community safety nets should include:

- organization of communal labour (lilima)
- building of economic resources of households through the community engaging in fund-raising activities or community run microcredit schemes

This income can be used to smoothen income and insure against emergencies. This would help to maintain household farm activities leading to increased food security and nutritional status.

- creating linkages to the private sector, civic groups and donor community and NGOs.

Through these linkages,

- subsidised agricultural inputs can be provided to the community,
- the private sector can arrange home based care for employees in terminal stage of illness
- the private sector can establish income generating activities for the community
- provide carers for AIDS orphans

d). Protect chains through which information is transmitted

The loss of heads of households also leads to loss of institutional memory, skills and experience. There is need to protect chains through which information on household farming is transmitted. The agricultural extension workers should target women and children farmers for training on agricultural practices.

The agricultural extension workers should pay attention to imparting a wide range of skills involved in household farming and maintenance of food security. This should cover the actual food production, harvesting methods, marketing, storage and consumption.

The knowledge that they pass on to the community should comprehensively cover labour and capital saving technologies, gender-appropriate agricultural practices, crop diversification and a reduction on dependency on external inputs.

8.3.2 Ministry of Agriculture and Co-operatives

The support that MOAC gives to households about household farming is crucial for the mitigation of the impact that HIV/AIDS has on household farming systems.

- Through the MOAC, government should establish a multi-sectoral approach that goes beyond the health-based response. The approach to the epidemic should be centered around protecting the household and its farm activities.

The developmental implications of the epidemic for food security, livestock and food production should be adequately addressed.

- The MOAC should involve agricultural extension workers in setting up programmes aimed at the prevention, control and mitigation of the impact of HIV/AIDS on households and their farming systems
- Implement prevention programmes that will ensure that agricultural extension officers are well trained to deal with the challenge and that they are protected from acquiring the infection.
- The curriculum for training of extension officers should be reviewed to arm them with the necessary skills to face the new challenges that subsistence agriculture faces.
- Increased the participation of Co-operatives in the provision of micro-credit facilities to the community.

8.3.3 Private sector and commercial agriculture

The private sector is already faced with a high prevalence of HIV amongst its employees. This is projected to rise to a peak the year 2000-2005. Mortality and morbidity due to HIV/AIDS is therefore on the increase.

It is important for the private sector to invest in the youth who are the future source of labour. Prevention programmes targeting the youth in the community should be implemented.

There is need for further studies on business response to the epidemic, to identify strategies for cost avoidance that can be implemented by the private sector without transferring the burden of the disease to the households and individuals. In the meantime, comprehensive programmes aimed at reducing spread of the infection and coping with the epidemic should be implemented.

Chapter 9

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THE WORKING GROUP OF THE PROJECT

Author

Fred Tusubira Muwanga MD
Department of Epidemiology, Graduate School Of Public Health,
University of Pittsburgh, Pennsylvania USA
and
TAT Health Services - Swaziland
tat@africaonline.co.sz

Researchers

Professor A.M Kanduza; PhD
Department of History
University of Swaziland
Kanduza@uniswacc.uniswa.sz

Professor Hezekiel Mushala; PhD
Department of Geography, Environmental Science and Planning
University of Swaziland
mushala@uniswacc.uniswa.sz

Tizie Maphalala B.Ed; MEd
UNICEF - Swaziland
tizie@realnet.co.sz

Moses Sithole PhD
Department of Agricultural Economics
University of Swaziland
msithole@agric.uniswa.sz

Rosemary Vilakati-Kiondo PhD
Department of Animal Production and Health
University of Swaziland
r.vilakati@agric.uniswa.sz

Gathu Kamanja B.Ed M.Ed
Department of Curriculum and Teaching
University of Swaziland
gathu@uniswa.uniswa.sz

Victoria Kelly Bsc, Msc
Department of Curriculum and Teaching
University of Swaziland
Victoria@educ.uniswa.sz

Eunice Mabuza SRN, SCM, MPH
Department of Community Health & Nursing
University of Swaziland
Emmabuza@healthsci.uniswa.sz

Isabel Zwane
Department of Community Health & Nursing

University of Swaziland
itzwane@healthsci.uniswa.sz

Thuli Zwane
UNISWA Consultancy and Training Centre, Swaziland.