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Evidence of Impact from rural communities in southern Africa

Between 2003 and 2005, national research teams used a standardised questionnaire to collect data from seven SADC countries: Botswana, Lesotho, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. Using preliminary and advanced analysis techniques, researchers explored the effects of the epidemic on assets in the human, financial, physical, social and natural dimensions, and how these affect agriculture, food security and nutrition security.

Results from this research demonstrate that HIV and AIDS increase the vulnerability of households to food insecurity because they affect the core factors of production such as labour, financial resources and investments. Once a household member falls sick, this entails a reduction in the labour supply to agriculture as well as to the household's participation in markets. Resources are diverted from agriculture to paying for medical and funeral costs. As the situation deteriorates further, households are forced to sell livestock, household assets and other livelihood assets. Female-headed and child-headed households also risk losing their land after the death of a male household head. Agricultural production declines and nutrition is compromised, as households resort to eating the same diet for all three meals, and at times the number of meals per day is reduced from three to one.

Human capital data was collected to explore: demographic characteristics of households, mobility of household members, changes in labour patterns and gender dynamics.

With respect to **financial and physical capital**, researchers explored changes in household expenditure, income sources, liquidation of investments. In addition, data were collected on the impact of financial changes on household food and nutritional security.

To examine the effects on **social capital**, data were collected on a variety of social support networks, including those provided by the community, governments, non-governmental organisations as well as traditional safety nets.

With regards to **agriculture**, researchers explored the changes in production decisions - cultivated area, crop diversity, level of inputs use, productivity, as well as the impact of HIV and AIDS on the agricultural extension services.

In the **food security** dimension, data were collected on the household's ability to access food by exploring the stability of supplies and purchasing power.

In the dimension of **nutritional security**, researchers explored changes in the types of food consumed, changes in dietary composition, nutritional value, food safety, food quality and child nutrition. In addition, data were collected on the utilisation of food.

The following section presents and discusses the summarised findings of the study.

1. Human Capital

Human capital represents the skills, knowledge, ability to work and good health that enable people to pursue different livelihood strategies and achieve their livelihood objectives. The health of household members is a key variable within the human capital dimension. It relates to the number of days that family members are able to work. Within this dimension, data was collected on the demographic characteristics of households, mobility of household members, changes in labour patterns and gender dynamics.

Household Demographics

HIV and AIDS have affected adults between the age of 15 and 49 years - the prime productive and reproductive years. Over the past 20 years, countries in southern Africa have witnessed significant changes in life expectancy and demographic patterns. Many countries have witnessed a growing number of grandparents, single parents and children who are heading households. The impact of the HIV epidemic on households varies, depending on the sex of the household head. Typically, female-headed and child headed households are more vulnerable.

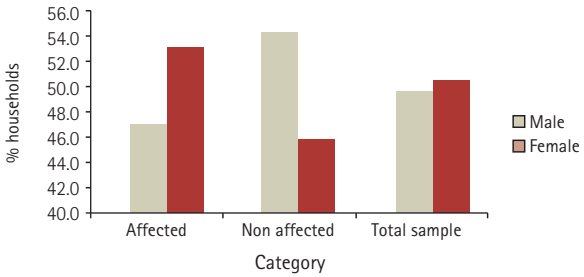

Figure 3.1: Gender of household heads in affected and non-affected households in South Africa

In all the seven study sites a large number of households in the rural areas are headed by a female. This has significant implications for agriculture as well as for total income for the household. Traditionally, men have been able to get employment off the farm and tend to have better access to job opportunities. In South Africa, women were found to head a greater proportion of the affected households (53%) in comparison to non-affected households (46%) (see Figure 3.1).

In Zimbabwe, researchers reported higher than normal mortality rates among young parents, which resulted in the transformation of rural families into single to zero parent households. Over 50% of the rural families surveyed in Zimbabwe have lost one or both parents. Most of the parents died between the age of 26 and 38 years, leaving the burden of farming, educating and raising very young children, to close relatives. In the surveyed areas, widowed female-headed (single parent) households appeared as the dominant family type followed by the traditional two-parent household, where both parents live in the village.

Throughout all countries, widows headed 12% of the households participating in the study. In Lesotho, the results confirmed a significant number of orphans were

living with elderly grandparents. Among the participating households, children (40%) and grandchildren (18%) formed a significant proportion of household members.

In South Africa, dual parent households were prominent in the study area. However, it was noted that fewer HIV-affected households were headed by both parents (46%) compared to the non-affected with 40%. The affected households have more households headed by either widows or widowers in comparison with non-affected households. Orphans headed approximately 2.4% of the households. In most cases, it was observed that after the death of a breadwinner, the affected households are integrated into households of grandparents.

2. Education and Employment

In all the seven countries, the education level of household heads was low. In South Africa, Zambia, Botswana, Lesotho, and Zimbabwe, approximately 50% of respondents had completed primary education. The exceptions were in Namibia, where the majority of respondents were not formally educated and in contrast, Swaziland, where the majority of respondents had completed secondary education. Three percent of respondents had completed tertiary level education.

The majority of all household heads participating in the study were not formally employed. Between HIV-affected and non-affected households in South Africa, it was found that fewer of the HIV-affected households have a head that is in wage/formal employment. The head of affected households tended to be more often involved in self-employment and other activities. It is possible that members from affected households who are self-employed, have a more flexible schedule, which allows them to care for sick relatives. However, in this study, fewer affected household heads spent time in childcare and housework than in non-affected households.

Mobility of household members: Urban to rural migration The frequent illness experienced by people suffering from HIV related illnesses can result in job losses. In the case where a family member is resident in the city, they frequently return to the rural areas to receive care from the family. This migration increases the dependency ratio of the rural household.

In Botswana, there was a clear unidirectional movement of sick persons from towns to villages. The most frequent reason for residing in town before illness was to find work. While the proportion of persons who lived in villages before illness was 37.4 %, the percentage increased to 92 % after illness. A significant proportion (31.7%) of the affected individuals lived in towns before illness, declining to 6.9 percent after illness. This has implications for rural households' food security.

Changes in Labour Patterns During this research, it was hypothesised that the productivity of household members and the number of available working days would decrease due to the impact of HIV and AIDS. It was anticipated that with greater HIV infection, household members would have to dedicate more time to caring and less time to agriculture or other income producing activities. In addition, it was hypothesised that, the dependency ratio- that is the number of dependants versus the number of economically-active individuals in the household - would increase.

Household labour allocation In South Africa, the household head made the decisions regarding planting, ploughing and marketing of agricultural crops. Where the head was not present, then the spouse, if available made such decisions. A variation between the HIV-affected and the non-affected households was noted in terms of labour allocation for specific chores. In affected households, women spent less time in summer field cropping compared to their counterparts in non-affected

households. Herding livestock is a chore frequently done by men and children. Yet in affected households, fewer children were involved in herding than in non-affected households. In affected households, fewer women (31%) were responsible for gardening activities whilst in non-affected households this figure is higher (47%). Children in affected households were responsible for gardening activities compared to children in non-affected households. With the exception of herding duties, children in affected households were increasingly called upon to assist with household chores and agricultural activities.

In Zambia, the majority (50%) of the households affected by HIV modified their agricultural and household labour activities. In the field, minimum tillage practices (mostly pot-holing) tended to be adopted. In the household, approximately (35%) households faced with labour constraints relied on children under the age of 15 years for agricultural labour.

In Botswana, activities such as land clearing, cultivation, weeding and fighting pests were undertaken through joint efforts of the household and hired labour. It was interesting to note that land cultivation was the exception, which was predominantly undertaken by hired labour. The reason for this might be that many farmers hired tractors for ploughing and the tractors come with the drivers (labour). When comparing HIV affected and non-affected households, it was reported that after an illness, there was an increase in the proportion of activities that are not completed. For example, in some cases it was reported that a male household head made decisions on the livestock enterprise. After illness, there is a noticeable increase in instances where no specific member of the household makes decisions. In HIV-affected households, the performance of family members in crop activities declined while the use of hired labour increased.

In Swaziland, households with members living with HIV or male members who had died, passed on the responsibilities of performing agricultural activities to a female adult or children. The death of a male head of household meant losing an individual responsible for agricultural labour and farm management activities. Equally, while the responsibility for farm management was transferred, in many cases the skills and agricultural knowledge were not transferred to surviving members. As a consequence, agricultural production and food production were affected.

In Namibia, all respondents aged 8 and above were asked if they had worked for financial or family gain during the previous week. The most prominent categories of employment are self-employed or subsistence farmer. Self-employment means running a cuca shop (shebeen), a small shop or selling roasted meat, called "*okapana*."

Hired Labour Hiring additional labour can be a key strategy for saving time and making household work easier. A household that hires additional labour may be able to use the free time to provide additional care for family members. However, in this study, few households hired additional labour or used alternative labour sourcing strategies. Of the 210 respondents interviewed in Lesotho, only 26% (55) admitted to having used hired labour; 11% (23) of the respondents hired labour for farming activities, while 6% and 5% hired labour for domestic work and gardening respectively. Another 5% hired labour for other household tasks that included caring for the sick. Only 3% of the respondents who used labour saving technologies in Lesotho reported that they did so because they were caring for someone living with HIV.

Approximately 15% of those who used hired labour maintained that it had serious budgetary implications.

Hired labour increased their expenditure and reduced resources for medication and health supplies for the patient.

Traditional labour sourcing strategies Yet, some households had other non-cash labour sources that they exploited. The barter system was used where households paid with clothes (1%) or with grain (10%).

Very few respondents used traditional Sesotho work groups called matsema. It was suggested that since *matsema* is a reciprocal community labour exchange, it may be difficult for households with infected members to reciprocate because of the additional time required to care for ill family members. Communities would expect equal and undivided reciprocity, even from households that are severely affected.

Labour losses as a result of deaths and funerals Throughout all countries, households reported various ways in which labour was lost as a result of chronic illnesses and death. Of the interviewed households in South Africa, 70 % said that taking care of an ill person means spending less time on other activities. It was found that labour losses were experienced due to the time lost when 1) a household member was ill and bedridden, 2) household members were caring for ill family members and 3) members attend the funeral of their family or another community member. The study revealed that the households lost an average of 3.23 hours per day, with death-affected households losing an average of 7.13, illness-affected households losing 6.24 and non-affected households losing 0.34 hours per day.

Gender Implications

Of the seven countries participating in the study, four countries (Botswana, Zimbabwe, South Africa and Namibia) reported that most rural households were lead by women. The exceptions were Swaziland, Zambia and Lesotho (see Figure 3.2). Current statistics indicate that women are increasingly more vulnerable to HIV infection. UNAIDS (2005) has estimated that 57% of people living with HIV and AIDS in southern Africa are women. Due to cultural and social traditions, women bear the brunt of the epidemic, both in terms of providing care for people living with HIV and AIDS as well as being at risk for HIV infection.

In Swaziland, gender inequality and poverty play a role in the HIV and AIDS epidemic. The vulnerability of women to HIV infection in Swaziland, as in many other countries, is related to gender biased cultural practices. The practice of polygamy increases the risk of women being infected. Women are also tasked with the responsibility of caring for the sick members of the household, which also increases the risk of getting infected. When the man falls sick, it is the responsibility of the wife to provide care and take on additional duties to support the family. However, when the wife becomes sick, it is traditionally the responsibility of other women (not the husband) to provide care.

In Lesotho, women played a major role in caring for sick members of the household. Typically, between the age of 20 to 39 and 40 to 59, the women were directing their energies and time into caring activities, instead

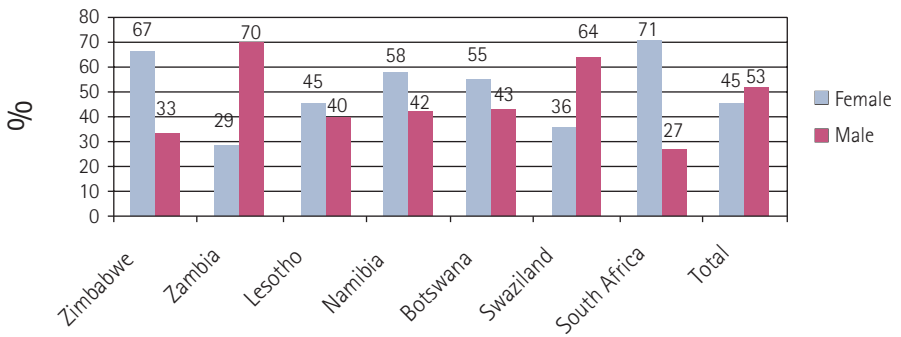

Figure 3.2 Gender of the household head in the study area

Socio-economic comparison of male and female-headed households: Case study in Zimbabwe

of farming or being employed elsewhere to generate income for their households.

In Botswana, women headed 57% of HIV - affected households compared to 47.1% of those not affected. On average female-headed households are bigger, with more dependants than male-headed households.

HIV-Affected households

In Zimbabwe, households affected by HIV, including male and female-headed households, do not own many cattle. The male-headed households were found to have more land that is cultivated, and their total land area is bigger compared to their female counterparts. Traditionally, women are usually dispossessed of their land or assets after the deaths of their husbands, such that they remain with little or no assets at all.

There is a significant negative gender difference in the area allocated to cash crops and in the number of crops that households grow. The male-headed household with HIV and AIDS continues to diversify and grow cash crops, while affected female-headed households shift out of cash crops. Since male-headed households have more income from other formal or informal jobs, they can afford to diversify and grow more crops in addition to maize, and still remain food secure. The time that women spend on care-giving roles is considered time lost from productive work in their own fields.

The male-headed household allocated relatively less land to food crops than the female-headed households and affected males. With price controls having reduced maize to a subsistence crop, there is no incentive for households to grow surplus acreage of maize over and above their food requirements. Households allocating more land to maize are concerned about their food security and may also be trying to compensate for low yields per unit area. Cash crops provide better returns in terms of income. Female-headed households are

concerned about growing enough food for the family. Affected female households invest very little in maize based farming compared to male headed households growing cash crops, who tend to invest more of their income into their cash cropping.

The female-headed households enjoy marginally higher levels of food security and food self-sufficiency than male-headed households. They are also more productive in terms of their maize yields as compared to male-headed households. Although females are affected more by HIV and AIDS, they appear to have offset the impact sufficiently by adopting cost and labour saving technologies for their maize based farming. The analysis shows that HIV and AIDS affected female-headed households are more self-sufficient compared to male-headed households.

See Table 3.2 Socio-economic comparison of HIV and AIDS affected male-headed and the female-headed households (Zimbabwe)

There is a significant difference in the number of orphans being cared for in male-versus female-headed households. Unlike Botswana, the two parent and male-headed families are entrusted with more orphans than female-headed households. The weighted index of the sick, which is a measure of severity of HIV and AIDS, is significantly higher in male-headed households. As the number of people who are sick increases, more resources - in terms of money and productive time - are diverted to take care of the sick, thus negatively affecting agricultural productivity.

HIV non-affected households

Non-affected households also suffer the impacts of HIV and AIDS, but to a lesser extent. In non-affected households, female-headed households have fewer assets as compared to male-headed households, but possess almost the same amount of land showing a high degree of gender neutrality in security of tenure (see Table 3.1 overleaf)

The asset/wealth index of male-headed households is higher than that of female-headed households for the reasons highlighted above. For the non-affected households, both male and female-headed households grow the same crops. The male-headed household grows relatively more of both maize and cash crops than the female-headed household, primarily because of his superior access to financial resources and ownership of his own team of oxen for draft power. However, in relative terms, male-headed households still dominate in growing of cash crops, whilst women still specialise in the growing of legumes. Female-headed households still enjoy superior yields for maize and greater levels of self-sufficiency

Since the female-headed non-affected households have more time for crop production compared to the HIV and AIDS affected female-headed households, one would have expected their yields to be considerably higher, but this is not so. This evidence points to the uncertainty regarding the extent to which labour is a constraint to productivity in households that are affected.

The weighted index of the affected is high for female-headed households, since they are the ones who take care of those who are sick with HIV & AIDS-related illnesses although this is not significant.

Table 3.1 Socio-economic comparison of HIV and AIDS affected and non-affected male-headed and female-headed households

Variable	Male-headed affected	Male-headed non-affected	Female-headed affected	Female-headed non-affected
Demographic factors				
Family size	5.38	5.17	5.81	5.19
Age of household head	48.29	45.67	49.06	47.19
Assets /wealth owned				
Number of cattle owned	0.90	2.28	0.71	1.02
Total land area	3.29	1.21	3.42	1.60
Total land cultivated	2.21	1.37	2.47	1.22
Total income (ZW$)X1000	164	1349	202	100
Asset/wealth index	20.22	27.50	19.29	19.86
Total expenditure (ZW$)X1000	938	2 064	1 086	999
Crop choice				
Number of crops grown	2	1.83	2.5	1.71
% of land allocated to maize	66.29	31.16	46.73	56.47
Area under cash crops	0.26	0.29	0.56	0.63
Area under legumes	0.40	0.18	0.35	0.28
HIV and AIDS factors				
Number of orphans	1.63	1.50	0.71	1.14
Number of deaths	1.86	1.17	1.82	1.12
Weighted index of the sick	4.07	1.97	5.31	2.05
Impact variables				
Maize yield/ha	759	699	748	679
Food self sufficiency	0.91	0.69	0.73	0.77
Food security index	1.42	2.03	1.33	1.45

3. Financial and Physical Capital Assets

Financial Capital represents the financial resources that people use to achieve their livelihood objectives. This includes active income earned through remuneration (for labour and services) and passive income earned from the sale of physical convertible assets. Throughout this study, researchers explored the impact of HIV and AIDS on household expenditure, income sources, and assets such as land, livestock and farm implements.

Impact on Household expenditure

HIV and AIDS are expected to have a negative impact on a household's capacity to earn income, thereby changing the household's expenditure patterns. Smallholder agriculture is labour intensive with low levels of mechanisation. HIV and AIDS have the potential to erode the active labour force in a farming system, thus reducing hours at work for both on-farm and off-farm activities. Therefore a household's opportunity to earn income is reduced and in turn, the expenditure pattern is altered.

HIV and AIDS are believed to be reducing farmers' ability to produce for the market in most countries in the SADC region. With fewer resources coming into rural households, it was anticipated that household expenditure patterns have also changed. Household expenditure included expenditure on crop production, household assets, food, hospital bills, transport and funerals.

More specifically, it is hypothesised that affected households spend most of their financial resources on medicines, hospital charges, special diets for the sick and funeral expenses. This reduces income invested in other important areas such as education and agriculture, thereby compromising the present and future food security status of the household.

Health Bills. Study results demonstrate that HIV and AIDS increase expenditure on health, especially in Lesotho, Zimbabwe and Swaziland. Expenses for medication and hospital bills were relatively high in affected households, when compared to other household expenses. This explains why households had little to spend on food and the purchase of assets. Most of the households' income was diverted to paying for medical treatment. Households who were covered by medical insurance, spent larger amounts compared with those who paid for medication out of their pockets. Individual households provided the money to pay hospital bills, with little assistance provided through loans from relatives and neighbours.

Food expenditures tended to be low before an illness or death, though representing a significant proportion of household income. Food was mainly produced by household members complemented by limited purchases of essential basics not normally produced, such as salt, sugar and cooking oil. The amount of money spent on food declined during illness and after the death of a household's main bread winner. It is important to note that many households could explain trends but could not remember the exact amounts spent on food, as they do not normally keep records.

Burials. Money spent on funerals has increased as a result of the epidemic. In Swaziland and Lesotho households reported that a significant proportion of their earnings was spent on funerals. The spending pattern on burials varied among households depending on whether a household has a funeral policy and its value.

Transport. In Lesotho, it was reported that transport expenses increased during illness because the ailing patients became weak and could no longer walk long distances. Consequently, affected households had to opt for motor vehicles instead of their traditional mode of transport such as walking and riding on horseback. The implication is that travelling became expensive for affected households who already had limited funds.

Within the South Africa sample, the overall household expenditure for affected households per month was much higher than is incurred by non-affected households. Affected households spent considerably more money renting farm machinery. Transport costs for affected households are however less for affected households than non-affected households. This may be because the epidemic reduces mobility of household members as they spend time looking after the sick. As expected health expenditure for affected households is higher than for non-affected households.

Impact on income

Income Sources. Income sources for the households include wage employment, casual employment, crop and livestock sales and remittances from non-resident household members. In South Africa, some households receive social grants. Most of the households did not participate in crop output markets. Of those that did,

affected households recorded higher crop sales than non-affected households. This number is however very small in comparison to the total households surveyed. The mean adult income for affected households was found to be lower than that for the non-affected household. In Zambia, in addition to income from agriculture, income is also generated through borrowing, selling of labour, selling of naturally occurring resources such as fish, wild fruits, other forest products and charcoal.

Impact on Physical Assets

The impact of HIV and AIDS on asset ownership has largely been negative. Barnett and Rugalema (2001) stated that HIV and AIDS reduce a household's ability to maintain old assets and acquire new ones. Rural households often resort to the disposal of productive assets, including domestic animals, as a short-term mitigation strategy (Chen & Dunn, 1996). This has resulted in loss of edible animal products, draught power and organic fertiliser.

The study investigated the impact of the epidemic on assets such as livestock, farm implements, land ownership, and non-agricultural utensils. Results indicate that HIV and AIDS have a detrimental effect on asset retention, especially for households already affected by poverty. A considerable proportion of households, especially in Zimbabwe, Lesotho and Botswana, reported selling livestock and farming implements as a result of HIV and AIDS (see Table 3.2). Some households indicated that farming time and financial resources were diverted from agriculture to health care. The diversion of resources is one of the short-term coping strategies that are being adopted. In Zambia, affected households rely heavily on the sale of assets such as domestic utensils and productive assets to raise money to meet household expenditure demands.

In Zimbabwe, the volumes of net transactions show considerable variability across all households (Figure 3.3). Household asset transactions are affected by a number of social, economic and household-specific factors, including HIV-related factors such as severity of illness and incidence of adult deaths. The issue to clarify was "To what extent are HIV and AIDS important in accounting for the disparities in observed volumes of net transactions across the 327 households in the study - in the presence of all other important factors"?

Researchers in Zimbabwe used an econometric analysis to test the significance of the relationship between a household's experience with HIV and AIDS and its asset transactions. Though HIV and AIDS related variables are not significantly affecting the net value of asset transactions (Table 3.3), their coefficients show

Table 3.2 Percentage of reported losses due to HIV and AIDS

Country	Livestock sold	Farming time lost	Financial resources diverted	Farming implement sold
Zimbabwe	19.4	68.1	54.1	0.9
Zambia	0.5	24.1	2.0	-
Lesotho	1.4	-	-	61.0
Botswana	13.4	51.6	-	-
Swaziland	-	-	92.4	3.8

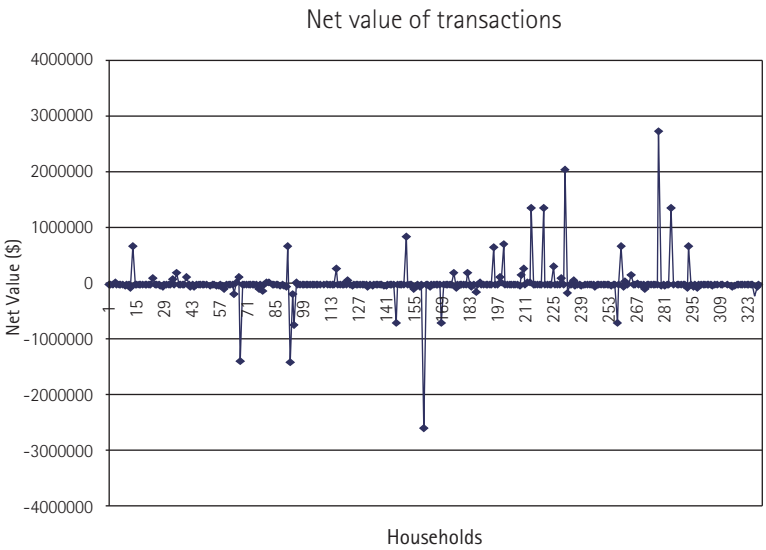

Figure 3.3: Volume of net transactions across households (Zimbabwe)

HIV and AIDS are shown to be indirectly affecting the pattern of asset transactions in rural households through their effects on other significant household demographic factors. The net value of asset transactions is higher for male-headed compared to female headed households. Net value from asset transactions also increases with family size. A larger family is likely to have older children of secondary school going age. Thus despite the effect that HIV and AIDS could have on such households, they are likely to dispose of more of their assets to invest in education and the purchase of food. As more orphans are absorbed, the overall family size increases as a consequence of HIV and AIDS, so too does the need for more income.

that they are resulting in households selling more assets than they are buying. The value of asset transactions increases with households that have sick adults and those that have suffered adult deaths.

Livestock Assets Over the past decade, the rate of livestock accumulation has been very low in most SADC countries, (particularly in Zimbabwe and Lesotho) due to a combination of factors such as drought, poverty

Table 3.3 Results from the Assets Transaction Model (Zimbabwe)

Dependent Variable	Log of Net Value from Asset Transactions		
	Std. Error	Standardized Beta Coefficients	t
Constant	0.02	15.50	1.12
With/without sick household members	0.38	-0.19	-1.42
Number of Aids related adult deaths	0.19	0.14	1.01
Logarithm of total income	0.19	-0.18	-1.20
Sex of household head	0.45	-0.40	-2.72***
Age of household head	0.01	0.50	3.79***
Marital status of household head	0.35	-0.31	-2.13**
Size of the family	0.09	0.42	2.91***
Number crops grown	0.29	-0.17	-1.27
R		0.76	
R squared Adjusted		0.43	
Durbin Watson		**1.96**	

*** Significant at 1%, and ** significant at 2%

Table 3.4 Livestock ownership in various countries

Country	Cattle	Donkeys	Pigs	Goats	Sheep	Poultry
Zimbabwe	1.1	2.3	2.0	2.3	0.0	6.1
Lesotho	2.8	1.7	1.8	7.7	2.3	5.0
Namibia	17.5	5.9	5.3	19.4	29.4	14.4
Swaziland	14.4	4.0	22.5	9.7	19.5	15.0

and environmental degradation. When compared to other countries in the region, smallholder farmers in Namibia and Swaziland own relatively larger numbers of all the identified livestock types (see Table 3.4).

In Zimbabwe, the households interviewed reported very low cattle holdings of approximately one beast per household. This is not surprising, given that the overall average cattle holdings for the whole sample is approximately three beasts per household. This is also a low figure given the importance of cattle in farm production and their role as an investment asset.

In Swaziland, the effects of HIV and AIDS on agricultural assets and livestock are indirect. It was observed that households with infected members, or members who have died, would usually find themselves with less money to pay hospital or funeral bills, which might force them to sell livestock to meet such costs (see Table 3.5).

In Zambia, livestock have remained as the major productive asset upon which rural households depend. With increasing HIV and AIDS-related illnesses and deaths however, livestock numbers have been declining, as affected household tend to sell stock to meet increasing household expenses. As can be seen in Table 3.14 below, all average herd/flock sizes per household, apart from sheep have decreased. The major reason for the declines in average herd/flock sizes were mainly selling to offset funeral expenses and to meet other financial obligations.

In Namibia, an interesting trend was noted. In general, data showed that households with middle-sized herds tend to have fewer livestock in 2004 than 2003. Those with very few livestock have either maintained their herd size – not necessarily a good sign because it means no increase in wealth – or, had a mixed record. Those with larger herds tended to maintain or increase their assets. Table 3.15 provides a summary of livestock sold in the three regions. Two factors stand out. First, very few households are selling livestock. Consumption and/or barter are the main means of disposing of animals. Second, the pattern holds true for households in the Kavango sample, this being the least economically active (or agriculturally productive) region, while those in Oshikoto are the most active.

Table 3.5 Percentage change in Livestock numbers for Households experiencing HIV and AIDS related illnesses or deaths of adult members (Swaziland)

Region	Bulls	Cows/ Heifers	Donkeys	Sheep	Poultry	Oxen	Young calves	Goats	Pigs
Lubombo	-14%	-24%	-1%	-	-24%	-10%	-2%	-5%	-2%
Manzini	-14%	-52%	-3%	-3%	-67%	-30%	-13%	-17%	-4%
Hhohho	-48%	-37%	-	-	-17%	-26%	-16%	-28%	-10%
Shiselweni	-56%	-40%	-	-	-43%	-21%	-32%	-32%	-4%

Table 3.6: Average stock herd/flock sizes per household type (Zambia)

	Household Type			
	Male HH		Female HH	
	Mean # owned in 2004	Mean # owned in 2001	Mean # owned in 2004	Mean # owned in 2001
Cattle	7.2	11.1	8.2	9.4
Sheep	7.0	0.0	0.0	0.0
Goats	9.9	12.5	4.5	10.4
Pigs	4.9	9.8	2.8	7.7
Chickens	13.9	20.5	10.6	19.9
Guinea Fowls	9	11.6	17.5	28.0
Ducks	5.2	9.6	7.25	21.3
Turkeys	5.1	13.0	2.5	0.0

Table 3.7: Sale of Livestock in 2004, Kavango, Oshana and Oshikoto (Namibia)

	Kavango	Oshana	Oshikoto
Cattle			
No. HH Sold	2	1	3
No. Sold	2	6	9
Total Value (N$)	3,400	N/A[1]	28,530
Range (N$)	1,000 – 2,400	N/A	1,800 – 9,000
Pigs			
No. HH Sold	N/A	6	3
No. Sold	N/A	9	19
Total Value (N$)	N/A	N/A	5,616.00
Range (N$)	N/A	N/A	35 - 600
Ave. Income per HH (N$)	N/A	N/A	1,872.00
Goats			
No. HH Sold	2	2	10
No. Sold	13	6	18
Total Value (N$)	2,550.00	N/A	4,405.00
Range (N$)	N/A[2]	N/A	120 - 650
Ave. Income per HH (N$)	1275.00	N/A	440.50

Table 3.8 Livestock Slaughter for funerals(Zimbabwe)

Proportion of households that slaughtered livestock at funeral of member	Type of livestock slaughtered	Proportion of households that slaughtered each type of livestock
	Cattle	31%
56%	Goats	22%
	Chickens	1.2%

[1] This was a refusal to provide information.
[2] Respondent gave total of all sales and not a breakdown of price per animal.

Table 3.9 Ownership of beasts slaughtered for funerals (Zimbabwe)

Type of Livestock		Frequency owner of the slaughtered livestock	Percent owner of the slaughtered livestock
Cattle	Deceased household	80	86
	Relatives	4	4
	Community members	1	1
	Bought	8	9
Goats	Deceased household	49	77
	Relatives	1	2
	Community members	1	2
	Bought	13	20
Chickens	Deceased household	2	67
	Bought	1	33

In approximately 86% of the cases where cattle were slaughtered, the beast belonged to the deceased, whilst 77% of the goats slaughtered belonged to the deceased individuals. These results are shown in Table 3.8. The implications of these results are very clear. The deceased families are losing their livestock holdings. Given that the average cattle holdings for each household that has suffered adult mortality is approximately one beast per household, then another adult death is likely to leave such a family with no cattle at all.

In South Africa, about 95% of the households which experienced death had to slaughter a beast for the funeral. The most common animal slaughtered was an ox (88%), whilst 6% slaughtered a goat. Only 1.4% of the households reported loss of assets as a result of asset grabbing by relatives of the deceased. For most households that have experienced death, livestock was left for the deceased's family, whilst clothes and utensils were, in some instances, shared amongst all present.

Farming Implements. HIV and AIDS threaten households' capacity to maintain existing farm implements and to acquire new ones. Whether it is an ox plough, or scotch cart, the acquisition or sale of a farm implement has an impact on a household's overall productive capacity. In Zimbabwe, in approximately 25% cases where the deceased owned an ox-drawn plough, indications are that in one out of five cases,the asset remained with the family of the deceased and was not given to other relatives. Where the deceased individual owned cattle and a scotch cart, these also remained at the deceased's household in most cases.

Table 3.10 Percentage of households with agricultural assets (South Africa)

Asset type	Non affected %	Affected %
Plough	11.0	12.0
Pump	5.1	4.0
Cultivator	5.9	7.0
Harrow	16.9	14.0
Wheelbarrow	70.3	66

In South Africa, there is no difference between affected and non-affected groups in terms of the agricultural implements owned (Table 3.9). As with many of the countries participating in the study, the most commonly owned agricultural implement is a wheelbarrow whilst just about a tenth of both the affected and non-affected households own ox-drawn ploughs.

Land Ownership. Land is an important asset in rural households. It provides the basis of most rural livelihoods, and as such little or no access increases poverty in rural communities.Most households in the study reported that they had user rights or Permission to Occupy (PTO). This means land cannot be sold to generate income. There does not seem to be any difference in terms of method of acquiring land between the affected and non-affected households. None of the households affected by HIV and AIDS reported that they had lost land due to the death of family members. Rather what was prevalent was that some of the households stopped using some of their pieces of land after the death of a senior male household member.

In Swaziland access to land by a household depends on the presence of a male adult. Therefore, when a husband dies and leaves behind a wife, the ability of that household to access and retain land becomes indeterminate if there is no male child in the household. Acquiring additional land is easy for households headed by men. Women-headed households in Swaziland risk having their husbands' land confiscated by the husband's family, as women do not have the right to inherit land in the rural areas. Sometimes widows also lose rights to land use. Forced removal of widows from land, and property grabbing by in-laws, which is common in Swaziland, is an aggravating factor to poverty, which further increases the exposure to the risk of HIV and AIDS.

The mean size of land holding for the affected households is 2.17 hectares, whilst that for the non-affected households is 2.37 hectares (Table 3.18). Almost a third (32.6%) of the affected households, and a fifth (20%) of the non-affected households said they were not utilising all the land that they had for crop production. The reduction in acreage under crop production is likely to impact on total agricultural production for these households, and for the affected households, this in turn affects the food security status of the household.

The key reasons given by respondents for failing to use all of the available land in the household included the following:

- Distance to field too far;
- Insufficient funds to purchase inputs and plough the land;
- Insufficient rain;
- Looking after ill person;
- Illness of person responsible for farming;
- No one is interested in using the land;
- Old age and sickness;
- Parents are employed off-farm far from homestead, labour for agriculture is not available;

Table 3.11 Household land ownership and utilisation

Category of household	Mean size of field in hectares	Mean size of land not being utilized in hectares
Affected	2.17	1.30
Non affected	2.37	2.63
Total	2.28	1.86

- The family cannot use it because the owner is dead;
- They do not have money and are taking care of livestock;
- Too busy to plough

It is important to note that most of the above reasons are exacerbated in situations where households are affected by sickness or the death of a household member.

Ownership of Non-Agricultural Assets. In South Africa, participants of focus group discussions were asked to indicate what measures of wealth the community used. It emerged from these discussions that indicators of wealth in the area, included the type and size of a person's house, livestock numbers, ownership of a car and ownership of businesses. Figure 3.7 shows that there are no differences in ownership of household assets between the affected and the non-affected households. Almost 50% of the households in the sample owned a television set and an even higher proportion owned a radio. This presents an opportunity for HIV and AIDS awareness campaigns through radio and television.

Social Capital Dimensions

Social Capital refers to the human resources upon which people draw support in the face of challenges whilst in pursuit of their livelihood objectives. These include membership of formal and informal groups, networks and relationships of trust and reciprocity. Information on social capital was collected on family and community support networks and support systems provided by the public and the private sector.

Community Support networks

Affected households and communities often devise means of coping with the epidemic and the associated problems. Households have to find ways of maintaining productivity levels with the reduced household labour supply, and also meeting the household's financial needs in the face of increasing medical expenditure. Communities also have to deal with the increasing number of deaths as well as the increasing numbers of orphans.

Membership of local support networks, organisations and clubs often enables a household to have greater access to agricultural production and marketing information, as well as assistance in times of need. However, HIV and AIDS affected households often have little or no time to participate in group activities. In addition, the stigma and discrimination associated with the epidemic often results in affected households isolating themselves. In South Africa, 60% of people, who were members of the social networks, clubs or organisations, were from the non-affected households.

Apart from the support from extended family members, there seems to be very little community support offered to HIV-affected households in South Africa. Traditional support structures seem ineffective due to limited knowledge about the disease and the widespread stigma and discrimination associated with the epidemic. Researchers in South Africa emphasised the need to put in place programmes that raise awareness and disseminate information.

In Lesotho, HIV-affected households join both informal and formal support networks. Some joined by virtue of having an HIV-positive member(s) or having experienced the loss of a family member(s) to AIDS. Households reported being affiliated with community and support groups for a variety of reasons, including increased access to voluntary HIV testing, availability of counselling services and referral to treatment centres. Participants emphasised that community groups, HIV and AIDS support groups,

social clubs, health and agricultural associations can act as informal safety nets and help HIV-affected households to cope with some of the challenges. However, the long distances between communities creates a barrier for households living in the remote areas of Lesotho.

In some cases households joined community support groups that deal with HIV and AIDS related issues before illness, with the intention of assisting affected households and learning more about the disease. Whereas some households joined because they already had some experience with HIV, others wanted to be assisted with financial resources and emotional support. One of the reasons for joining safety nets was to get advice and knowledge about the disease, in particular prevention messages.

In Swaziland, households reported adopting a variety of strategies to cope with the impact of HIV and AIDS (Table 3.18). As a result of labour shortage, affected communities and households adopted coping strategies that included: increasing children's involvement in agricultural activities; exchanging labour with neighbours and relatives; shifting to less labour-intensive mono-cropping; reducing the areas under crops; using in-kind payments for labour; and working longer hours, Traditional mourning periods have been reduced, from between five and seven days to about three days. During funerals, some households resorted to preparing the grave a day before the burial because of shortage of labour. In response to reduced per capita income, many families resorted to distress sales of household assets and livestock. Dependency on forest resources has increased. More women and youth groups were established for group income-generating activities.

Table 3.12 Household coping and mitigation strategies for with HIV/AIDS (Swaziland)

Issues	Present coping strategies among farmers	Present mitigation strategies for farmers
1. Labour shortages • Few people available for work in the household, • Little time spent on agricultural activities, (in many instances when a household has a chronically ill member, a considerable amount of time is spent caring for the patient) • Untimely agricultural activities,	• Most households in the Hhohho and Manzini region hired labour to assist with farming, whilst family members take care of the sick. • Children are forced to leave school and join the work force. • Use of reciprocal community labour (lilima) • Growing of less labour-intensive crops • Relying on elderly, children and extended family • Reduction in land utilisation • Formation of community labour groups (common among female headed households)	• Home-based care centres to take care of the sick, enabling survivors to go to work • Provision of antiretroviral drugs and food to boost the sick in order to continue working • Training by agricultural extension staff on the introduction of less labour-intensive crops. • Use of community councillors and educators in an effort to decrease the transmission rate of HIV and AIDS

Issues	Present coping strategies among farmers	Present mitigation strategies for farmers
2. Decrease in agricultural inputs	• Introduction of low purchased input technologies and practices • Growing of crops requiring fewer purchased inputs	• Availability of small loan facility to help affected households to purchase inputs
3. Loss of knowledge and skills	• Farmers keep local seeds • Sharing of practical experience with other survivors	• Provide training on agriculture to survivors by Agricultural extension officers
4. Increasing household food insecurity	• Eating less than three times a day • Introduction of miniature gardens • Consumption reducing and switching by reducing and switching to less preferred food or foregoing meals completely to be able to feed the sick. • Migration in search of food • Switching expenditure by changing patterns and reducing expenditure on other items to increase expenditure on health care.	• Provision of food by the disaster relief fund • Provision of agricultural inputs by National Emergency Response Committee on HIV/AIDS (NERCHA) (Indlunkhulu fields) • Provision of food aid to the sick and orphaned by NGOs.
5. Increasing medical, school fees, and other expenses	• Selling assets and livestock • Children are forced to leave school • Selling livestock and household assets • Expenditure switching – reducing expenditure on other items to increase expenditure on health care	• Introduction of government sponsorship to orphans by the Ministry of Education • Provision of free ARVs to the sick

Home-based Care

In each of the countries participating in the study, home-based care programmes are offered. Yet due to the stigma and discrimination associated with HIV and AIDS, some households affected by HIV refrain from using this service. Working closely with the local clinic as well as the district hospital, home-based care programmes provide the following services to members of the community;

1) Visit AIDS patients regularly to ensure that they take their medicines as required.
2) Provide information to household members on how to take care for the patients.

3) Look after affected people who live alone, for example preparing food for them, bathing them and etc.
4) Provide information about STIs (sexually transmitted infections), how to prevent teenage pregnancy and breast cancer (women are the target group).

Remittances

In South Africa, it was noted that remittances from non-resident household members and relatives played a major part in helping households cope with the impact of HIV and AIDS. This strategy was however only effective for households with relatives and members that are working and earning a decent income. Given the increasing rate of unemployment, this coping strategy may not be sustainable in the long term.

Formal Safety nets

Formal safety nets are normally found in medical insurance companies, government, hospitals and medical clinics. In Lesotho, a few participating households were affiliated to formal safety nets such as health cover schemes and other funeral insurance services. In most countries, the key reason for not joining such safety nets was lack of a regular income to pay subscriptions.

Social grants and Food parcels

South Africa case study. Some countries such as South Africa and Botswana offer extensive support to households in the form of grants and food parcels. The South African Social Welfare Department supports the affected by providing food parcels. The food parcels are distributed monthly to needy families and orphaned children and have the following contents; 80kg maize meal, 2kg sugar, 500g tea, Matches and candles, 3 large tins fish, Powdered milk, Samp, Juice (powder), 2kg powder soap, 2 bars soap. In addition, a number of social grants are available, including the pension grants, the orphan/foster care grants and the child grant. These are sources of income for both affected and non-affected households in the area. Sometimes, these grants are the only source of regular income. The South African government offers a disability grant for people suffering from HIV and AIDS; however none of the households interviewed in the South Africa study have been accessing this grant. It was noted that few apply for this grant because many have not disclosed the HIV status of household members. Apart from the stigma related to HIV, lack of information is another barrier to households' ability to access and utilise the grant.

Researchers in South Africa reported that a higher percentage of affected households participating in the study (85%) received social grants as compared to non-affected households (68%). Where children are left in the care of grandparents after the death of parents, the old age, orphan and child grants are often the major source of income for most households. Table 3.19 shows the types of grants and the mean amounts received from these grants. A greater proportion of the affected households (49%) receive the child grant compared to the non affected households (37.6%). The mean grant amount is also higher for the affected households than the non-affected households.

Table 3.13 Percentage of households receiving grants

Households Receiving grant	Affected n=85	Non affected n=80	Total n=165
Pension %	65.9	75.0	70.3
Child %	50.0	60.0	55.2
Disability %	7.5	9.4	8.5
Mean grant income in Rands	R929.06	R922.78	R926.01

Source: Survey data, 2005

Zambia Case study. To assist rural households cope with agricultural and food security issues, the Zambian government has set a clear agenda through the Agricultural Commercialization Programme, (ACP 2002-2005) to promote the development of an efficient, competitive and sustainable agricultural sector. This programme aims to enhance food security and increase small-scale farmer incomes. The ACP further calls for special efforts to strengthen the capacity of the agricultural sector to address food security (both emergency and mitigation strategies) gender, environment, information and extension services, HIV and AIDS cross-cutting issues; and the linkages between them. The following public programmes have been put in place to mitigate the socio-economic impact of HIV and AIDS on farming households and communities;

i) The Food Security Pack (FSP) programme. This collaborative programme between the Government of the Republic of Zambia and the Programme Against Malnutrition (PAM) targeting 'vulnerable yet viable Farmers'. The goal of FSP is to reduce poverty among the targeted vulnerable but viable farmers through improved household food security. Specifically, the programme is aimed at; promoting crop diversification for increased food production; promoting farming methods that help restore soil fertility and productivity; and encouraging timely, judicious and targeted use of agricultural inputs.

   The programme also aims to encourage the adoption of conservation farming (CF) technologies; developing cereal and seed banks for sustainable loan recovery; encouraging and establishing short- and long-term market relationships between buyers and sellers; and building capacity among NGOs, farmers and traders in entrepreneurship skills, post harvest handling and value-adding and marketing skills. Further, FSP promotes fish farming among the target groups for income generation, improved household food security and nutritional balance. The programme is also expected to develop partnerships with the communities in the management and exploitation of fish resources; and to promote livestock production and alternative sources of animal draught power in target areas.

   The FSP has national coverage and is earmarked to cover about 200,000 small-scale farmers. The programme however is finding it difficult to meet its targets due to untimely and sometimes inadequate funding. A lot of vulnerable farming households also complain of being sidelined (left out) from the programme activities.

ii) The Agricultural Support Programme (ASP [3]). Pursuant to the national policy on HIV and AIDS, the ASP has developed and is implementing a two-pronged HIV and AIDS mainstreaming policy aimed at; (i) raising awareness about HIV and AIDS within and among its target groups; and (ii) facilitating target groups in identifying and developing suitable mitigation strategies to assist rural households to deal with the effects of the pandemic. ASP also collaborates with other national stakeholders in mitigating socio-economic HIV and AIDS impacts.

   Currently, ASP is implementing the following mitigation strategies; (i) crop diversification and intensification, involving among other activities, promotion of less labour intensive cropping technologies and conservation farming technologies; (ii) promotion of livestock rearing (especially small livestock (village chickens, rabbits,

goats), and dairy); (iii) promotion of business activities (involving such activities as promotion of savings mobilisation, technical and business skills training); and (iv) food demonstrations, processing and packing (this also promotes processing and consumption of local/traditional food stuffs).

Besides all the promotional efforts, field implementation of the above outlined mitigation strategies and general mainstreaming of HIV and AIDS considerations into ASP activities have not reached the programme's desired levels. The principal contributory factors, have been the lack of knowledge by ASP about the extent to which HIV and AIDS affect its target groups, and what appropriate and justifiable mitigation strategies the programme should promote, among different but all HIV and AIDS affected households and groups. As a result, little is known about the present mitigation strategies' appropriateness and effectiveness among individual target households and groups.

In addition to the above public programmes, there are a number of non-governmental programmes involved in assisting communities and individual households cope with the effects of HIV and AIDS. Researchers in Zambia highlighted a few NGOs involved in mitigating the socio-economic impacts of HIV and AIDS in farming households and communities. Despite efforts to promote crop diversification and the intensification and development of less labour demanding cropping technologies, the adoption of such measures has remained low among HIV and AIDS affected households and communities. The study in Zambia found that households affected by HIV and AIDS have continued to liquidate their productive assets to meet their household expenditures, resorting to environmentally unfriendly ventures (charcoal burning) as income generation activities. There is a need to further explore the barriers facing HIV-affected households and the existing strategies for mitigating the impact of HIV and AIDS.

Botswana Case study. The majority of households in Botswana did not use the agricultural subsidy schemes available to them. A sizeable proportion (46%) of respondents used the popular Arable Land Development Program (ALDEP) The reason for this is that ALDEP has been in existence for a long time (1975 to present), unlike other subsidy schemes, which are relatively new.

The Accelerated Rainfed Arable Programme (ARAP) was a drought recovery programme, which was discarded as soon as the incidence of droughts was thought to have relented. A majority (95%) did not use Services to Livestock Owners in Communal Area (SLOCA) in the past three years, probably because they do not own livestock and are not legible for SLOCA.

The Financial Assistance Policy (FAP) is a grant scheme where applicants are required to contribute some money towards the capital costs of the project. The reason for low participation might be that a majority of small holders are unable to raise the required contribution. The same arguments can be used to explain the low participation in Small, Medium and Micro Enterprise (SMME) and Citizen Empowerment Development Agency (CEDA), which are, subsidised loan schemes. As for drought relief work, two explanations could be put forward to explain the low participation of respondents. First, drought relief work is undertaken during drought period, which does not happen all the time. Secondly, the limited intake means only a few households can participate.

No household members interviewed participated in women finance and youth assistance schemes. These schemes are not yet popular or well established in the rural areas and hence people are not aware of their existence.

The Botswana research team noted an increasing dependency on government handouts. One of the major findings was that, due to programmes like drought relief, old age pension, home-based care food ration, under-five children's food rations (*tsabana*), orphan food ration, HIV and AIDS food baskets, etc, some people have decided not to bother with agriculture, especially crop production.

"Even if you plough a big area in a good rainy year hoping that people will help you as in the past, people prefer to depend on handout" Said another farmer. Statements like, *"rona re bereka namola le uba ga rena sepe le mabele a o a bone. Ga kere boupi ja mabele bo kwa dishopong* " or we are happy with drought relief money, we don't care for their crops from the fields, if you want sorghum porridge you simply go to the nearest store to buy sorghum flour with the cash from *namola leuba (drought relief)*. Those who did not see the future of agricultural production echoed these sentiments.

Impact on Agriculture

Throughout the seven-country study, researchers explored whether HIV and AIDS and the intensity of affliction on households influenced the agricultural production performance. In this section, data was analysed to explore the effects on various production dimensions within a household.

Changes in optimal farm-household production decisions

HIV and AIDS affects production decisions such as, cropped area, number and type of crops grown, acres allocated to each crop and inputs applied to each enterprise. There is a tendency for HIV and AIDS affected households to grow less labour intensive food crops compared to cash crops. Crop diversification is reduced in the presence of HIV and AIDS because of the household's incapacity to cultivate larger pieces of land, labour morbidity and mono-cultural tendencies of such type of households. Diversion of household financial resources from productive activities to more consumptive expenditures such as health care should reduce input application rates for affected households.

When a family member is ill and when there has been a death in Swazi households, the expenditure pattern changes with more resources channelled to non-food items such as health care, transportation and funerals. This compromises agricultural production, as less income is used to purchase agricultural inputs and other agricultural equipments. In the Lubombo region of Swaziland, the purchase of crop inputs decreased by 35%.

In Zimbabwe, the presence of HIV and AIDS within rural families is perceived by more than 60% of interviewed families to severely affect farming decisions though the effect is more on afflicted families (74% affected). Rural families indicated that HIV and AIDS would affect farming in a number of ways. The presence of HIV and AIDS in a family reduces time devoted to farming, diverts funds initially intended for agricultural activities and results in the selling of essential livestock such as cattle and farming implements such as the ox-drawn plough. Some survey participants indicated that HIV and AIDS also have very high informal effects. There is a significant difference in the percentage of affected and less affected rural families that perceived very high informal effects. More affected families (42%) perceived very high informal effects compared to less

affected families (35%). This confirms the presumed effects of time taken nursing the sick on the conduction of informal activities such as employment in local jobs (*maricho*).

Managing Livestock Affected households were faced with challenges in the process of livestock upkeep, and were compelled to adopt various coping strategies. Some households were faced with the challenge of keeping a manageable number of livestock because of reduced family labour and financial support. Some households, though few, were faced with a challenge of increasing livestock kept in order to serve multiple functions, including food for the sick and other members of the household, and income, to finance medication for the sick, meet funeral expenses and paying school fees.

In some cases households were faced with a challenge of livestock security mainly because a member(s) who used to herd livestock and protect them from theft was ill or had died. Coping strategies that were adopted included selling livestock, distributing livestock to relatives or friends and employing labour. Few households sold livestock and livestock products in large quantities. There was little income generated through livestock production.

In Botswana, a decrease in the number of livestock was reported after the household was affected by illness. Households that have been affected by HIV reported an average of 35 livestock before illness compared to 20 after illness. There is also a difference in the mean livestock numbers between affected and non-affected households. Illness in the household appears to erode the asset base.

Table 3.14 Mean Total Field Size (ha)

Country	N	Mean	Std. Deviation	Std. Error Mean
Zimbabwe	320	1.1	0.6	0.0
Zambia	201	2.5	2.8	0.2
Lesotho	210	0.9	2.0	0.1
Botswana	138	5.5	6.0	0.5
Swaziland	574	3.5	2.5	0.1
South Africa	48	1.1	1.3	0.2

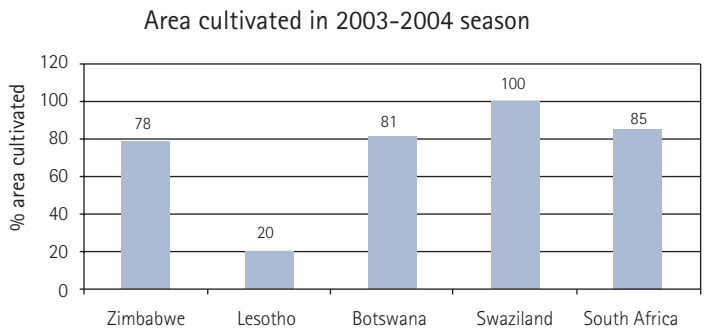

Figure 3.4: Area cultivated in 2003-2004: Comparison of 5 countries

Size of Fields and Area Cultivated

Most smallholder farmers participating in the regional study owned small plots (see Table 3.21) With the exception of Botswana, Zambia and Swaziland where the average total field sizes are between 2.5 and 5.5 hectares respectively, the average field sizes for the rest of the region average about one hectare per household. Smallholder farmers in Zimbabwe, Botswana, Swaziland and South Africa cultivated at least 75% of their arable land in the 2003-2004 season. Data from Lesotho show that only 20% of the available land is cultivated (Figure 3.9). Generally female-headed households own less arable land compared to their male counterparts and subsequently put less land under cultivation.

[3] ASP is an independent small-scale farmer based programme (currently serving 20,000 farming households in 4 of the 9 provinces of Zambia), supporting increased food security and income by promoting agriculture through the "*farming as a business*" concept. The programme specifically aims at improving food security and incomes among its target groups. Further the programme strives to meet its objectives by way of facilitation, business training, crop & livestock husbandry, seed issues, infrastructure improvement, capacity building among support structures/service providers and linkages to relevant service providers.

[4] It must be noted that, such knowledge gaps and implementation difficulties are not only unique to ASP, but to many other similar rural development programmes.

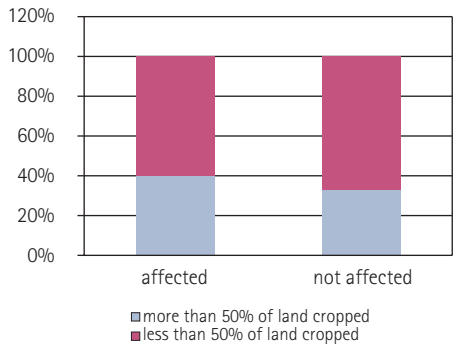

Figure 3.5 Comparison between affected and non-affected household's use of land

In Swaziland, households with a deceased adult member, experience a reduction in area under cultivation. Moreover, households who lose male members have difficulty in acquiring land in the rural areas. The impact of HIV and AIDS on the total land utilisation was examined by first looking at how many of the households, with sick or deceased members, reported a change in land utilisation. Secondly changes in land used during illness and after death were compared.

In Lesotho, two major components of crop production, cultivated area and yield, were reduced within affected households. In the first instance, most of the households had either arable land of small size or did not own any land for crop production. This contributed largely to low crop productivity observed from these households. A large number of households did not produce any crops or produced far below their food requirements. Arable land and yield declined during illness and continued to decline after a loss of a household member. In Zimbabwe, a greater proportion of the HIV-affected populations cropped more than 50% of their cropland during the 2003 (see Figure 3.10). This basically shows that these families greatly rely on farming as a means of survival.

HIV and AIDS have pronounced and significant impacts on household farming systems, especially maize acreage, when it has already resulted in adult mortality. Figure 3.5 shows that the presence of HIV and AIDS-related deaths in families, regardless of their status i.e. whether they are affected or not, greatly reduces the acreage that is allocated to the maize crop. This change in the cropping system has significant negative impacts on food self-sufficiency and hence the food security of families. Though deaths affect acreage allocated to food crops i.e. maize and legumes, it does not seem to affect acreage allocated to cash crops such as paprika and cotton.

In general, households participating in the Zimbabwean study mainly farmed to meet subsistence requirements with little land being devoted to cash cropping. It is important to note that in Zimbabwe, female-headed households, regardless of their HIV status, put significantly less acreage under maize production compared to male-headed households. This could be attributed to lack of time, due to the fact that women generally perform other core activities other than farming, i.e. family care, reproductive duties and in cases of illness, spend more time nursing the sick. This reduction in farming labour together with loss of important agricultural assets could result in reduction in land put under crop production.

In Botswana, before an illness, affected households cultivated a mean area of 10 hectares compared to 4 hectares after illness. Regardless of the location (Mmathethe, Lentsweletau or Mookane) or status of the participants (farmer, business community, health staff, agricultural staff, or the youth), it was reported that agricultural production has rapidly declined since the advent of HIV and AIDS**.** When respondents were asked about the reasons for the decline in agricultural production, the largest proportion indicated lack of

labour (36.8%) as a major contributing factor, followed by the presence of a sick person in the home (24.6%). By comparison, in South Africa, the cultivated fields of the death-affected and illness-affected households were 37.3% and 33.0% smaller than the non-affected households, respectively.

Similar trends occur in Namibia, as researchers noted that affected households are reducing cultivated areas and significant changes in crop choices have been observed. The reason given by the households was that the loss of labour, due to the epidemic, was negatively impacting farming (usually an adult male).

In Zambia, male-headed households cultivated an average of 3.2 hectares under rain-fed cropping, with about 0.40 hectares of land allocated to gardening. The same households also hold at any given time about 3.3 hectares of land under fallow. On the other hand, female-headed households cultivate an average of 2.7 hectares of land under rain-fed cropping, with about 0.20 hectares of land used for gardening. Females therefore cultivated 20% less land compared to their male counterparts and had 33% more land under fallow (4 hectares).

The reasons for keeping the land under fallow by the sample households varied and mainly revealed households' limitations in utilising land. Principal among the reasons for keeping the land under fallow was financial constraints, unfortunately not agronomic reasons as one would expect. Lack of inputs such as fertilisers and seeds were sighted as major constraints by 35% of the sample households. Other reasons included; lack of draught power (32%); agronomic reasons (14%); family labour (9%); illnesses (2%) and deaths (2%). With the increasing illnesses and death toll due to HIV and AIDS, it is very probable that households so affected will keep more of their land under fallow.

Crop Diversity

Maize remains the main staple food in the region. On average approximately 65% of smallholder households across the region grow maize. When there is a surplus, maize can be used as a cash crop. In addition, a significant number of smallholder households grow grain legumes, sweet potato and cotton. There is a considerable percentage of households in Zimbabwe, Zambia, Lesotho and Namibia that are also growing small grains such as millet and rapoko. Table 3.12 highlights the crops produced in the 2003-2004 production season.

Due to the high labour and capital demands of producing, cash crops, little is happening in the smallholder farming sector. Only a handful of farmers

Table 3.15 Crops grown in different study sample countries in 2003-2004 production season

Country	Millet	Rapoko	Ground-nut	Sweet potato	Maize	Cotton	Round-nut	Paprika	Beans	Fruits	Vege-tables
Zimbabwe	2%	10%	19%	6%	96%		7%	3%	10%		1%
Zambia	10%		27%	19%	90%	14%	23%				
Lesotho			18%			42%			19%	5%	25%
Namibia		58%			37%					4%	2%
Swaziland	0%		4%	7%	69%	1%	2%		5%		11%
South Africa				10%		94%			79%		25%
Total	1%	8%	8%	6%	65%	2%	5%	0%	8%	1%	8%

in Zimbabwe are growing tobacco, paprika and cotton. This reduces potential household income as households rely on marketing of subsistence crops.

Crop diversification implies that a household is likely to be food secure and hence has the option to venture into other crop enterprises that are sold for income. Between affected and less-affected households, in Zimbabwe, there was no significant evidence that the epidemic influenced crop diversity. However, the male-headed households were cropping a wider range of crops as compared to female-headed households. A greater percentage of male-headed households grow at least 3 crops compared to their female counterparts.

Crop substitution is used as a mitigation strategy by some affected households. In Namibia, pearl millet, maize and sorghum are the most common crops. However, maize and sorghum are apparently planted in place of pearl millet, due to the fact that they require less labour. This might appear as a reasonable strategy for affected households, but two factors make this more of a 'Devil's Trade-off' in a cycle of declining production. Maize is a heavy feeder and can deplete soil if not rotated. Fertiliser is a key input into maize production and it was shown that very little is spent by the sample population on agricultural inputs, particularly fertiliser. In Kavango where planting maize as an alternative is gaining popularity, no fertiliser was purchased. Maize also requires more rainfall than millet. In Namibia's variable climate, localised droughts are common, making regular production of maize a risky enterprise. Commercial maize growers in the country consider a good crop every third year as good fortune.

In Swaziland, study results show that land allocated to maize production and to other crops declined except for soybean, in households with members affected by HIV and AIDS related diseases. In South Africa, the most common crops grown in the study area were maize, sorghum and beans. Most of the households grow maize only, whilst about a fifth of the affected households grow maize and sorghum. During focus group discussions it was reported that some households had shifted from sorghum to maize production although they think sorghum is a quality grain. This shift commenced more than five years ago as a strategy to combat crop infestation by birds. However, some of the households are now considering reverting back to sorghum because it is a less demanding in terms of inputs.

The communities cited drought and lack of inputs as the major problems affecting agricultural productivity. During the focus group discussions, all the communities agreed that indeed there has been a change in the general level of agriculture production over the past five years. Reasons given for the decline in agricultural production included the increased costs of inputs and frequent droughts.

Table 3.16. Input application rates in Zimbabwe and Zambia

Input	Country	N	Mean per ha (kgs)	Std. Deviation	Std. Error Mean
Maize seed	Zimbabwe	301	17.2	25.1	1.4
	Zambia	203	36.0	153.5	10.8
Basal fertilizer	Zimbabwe	184	58.5	43.1	3.2
	Zambia	0	.	.	.
Top Dressing	Zimbabwe	256	332.0	4371.6	273.2
fertilizer	Zambia	0	.	.	.

Input Use

From the data collected by the regional research teams, maize seeding rates are very low in Zimbabwe (17.2 kg/ha) compared to the recommended 25kg/ha; whereas in Zambia, the average maize seeding rate is 36kg/ha. There was no data for Zambian smallholder farmers' use of basal or top dressing fertiliser in the production of their maize. In Zimbabwe farmers used a considerable amount of basal and top dressing fertiliser in maize production. More results are shown in Table 3.13. In Zimbabwe, fertilizer use was almost the same across affected and non-affected households.

Compared with non-affected households in South Africa, death-affected and the illness-affected households spent 45% and 60% less money respectively, on purchased agricultural inputs. This could be attributed to the fact that the affected households diverted income that would have been used to purchase farm inputs, to pay for medical bills and other related expenses.

Decline in agricultural production

Productivity is measured in terms of returns to land put under crop production. Available evidence indicates that once a household is affected by HIV and AIDS, this triggers a chain of events that are likely to reduce agricultural productivity. These include: disposing of livestock which is a critical source of draught power; the loss of a family member may mean that HIV-affected households switch from commercial to subsistence farming or from labour-intensive crops to less labour intensive crops; the extended interruption of the labour supply while HIV-affected households care for family members may mean a reduction in important activities such as land preparation, and manual irrigation. The sale of agricultural assets further constrains production. The study explored the extent to which HIV and AIDS affect these important household livelihood indicators.

In Zimbabwe, maize yields were marginally higher for HIV and AIDS affected farmers (583kgs/ha) than for non-affected farmers (570kgs/ha). However, there was significant variability in maize yields. Using a multivariate regression analysis, researchers demonstrated that the education of the household head, maize seed type and rates, nitrogen application rate, number of crops and the type of social club, emerge as factors related to the decline of household productivity. In addition, the level of management, input use, and gender of the household head influenced productivity. It is important to note that the HIV and AIDS status of the household however was not a significant factor in explaining observed variations in maize productivity across households. Maize yields for many of the households, both affected and non-affected, were found to be lower than the national communal/smallholder average yield of around 600kg/ha.

In Swaziland, a general decrease in maize production is observed after the death of a family member. This is particularly true if the family member was the main bread winner. In this study, the most affected region with respect to maize production was the Lubombo region, which reported a 44% decline in maize production. In comparison, maize production was reported to have decreased by 22% in the Shiselweni region. While the Lubombo region reported high HIV prevalence rates, it has also been affected by persistent droughts. The combined effect of HIV and AIDS and drought is the potential cause for the severe decrease in maize production. It was noted that, although there was a decline in the production of other crops, there was an increase in the production of beans, especially in the Lubombo and Manzini regions. This could be attributed to the intervention programmes, which encourage less labour-intensive crops as well as the promotion of legumes for their high protein value, in coping with AIDS-related illnesses.

Case Study: Botswana

Declining Production

In Botswana, the non-affected households produced 41 bags of crop on average. The HIV-affected households produced 30 bags before illness; these declined to eight (8) after illness. Respondents from the qualitative study commented that most fields were lying fallow because farmers who were mostly female and elderly skipped planting seasons for many years, due to taking care of working age children who were suffering from HIV and AIDS.

"ngwanaka, go oka ga bolwetse jo ke mathata. Letsema le gotola gantsi ntsi ka go okela ruri" said one respondent. This means that caring for people living with AIDS is a task that deters farmers from doing both the home-based care work and arable production. Caring for someone living with AIDS may mean skipping several planting seasons.

"nna ngwaga o, ke wa botlhano ke saleme ebile ke o ka malwetse a a mpaletseng. Jaanong ga kena bana… two e tlhokafetse, ga kena dijo lefa ele peo, le potsane e phataletse ke seyo ke le ko bo Gaborone kana mono gae (Mookane) *ke oka"* or I have not ploughed for the past 5 years because of taking care of AIDS children who eventually died. So not only have I lost my children but I have no food or seeds to commence production. The sad thing is that my small stock also strayed while I was running from one health provider to the next in the hope of saving my children.

"Masimo nono Lentsweletau a medile dithare fela. Batho ba ba kabong ba lema ke di kgoropa ba heditswe ke 8 or AIDS. Jaanong ka balwetse ba a phaka ko cliniking temo e sule." Our fields have transformed into forests because people who could be ploughing (the elderly women) are the true home-based caregivers. This has negatively affected arable production.

In the Namibian sample, households totally rely on agricultural production for subsistence. Yet, here too, there are major deficits. It is well known that pearl millet (known locally as *omahangu*) is the main crop in the study area, and that it is a staple food. In the selected study sites in Namibia, the Oshikoto region showed the highest level of food production followed by Oshana and then Kavango. Given the low levels of income from employment and other sources, the sale of crops could be an important source of financial support. In the Kavango sample, no grain was sold. Even the highest producing households kept all their crops, probably as a buffer against drought, or perhaps to barter for other goods and services. In Oshana and Oshikoto crops were sold. On average the few households that sold crops earned between N$ 160 and N$ 350 for the year. In Oshana only two households recorded sales, while in Oshikoto, 18 households sold sorghum, with six selling either maize or pearl millet.

The production and sale of non-staple crops was investigated. Only one household in the Kavango mentioned producing other crops, at a very meagre level of 25 kg. In Oshana one or two households grew other crops, fruits and vegetables. One household reported growing 1,250 kg of another grain (not

specified) and another grew 250 kg of fruit. In Oshikoto, no households produced any other grains. Five households produced almost 500 kg of fruit, while two households produced a total of 55 kg of vegetables.

In Botswana, participants were asked to comment on future crop production trends. They expressed mixed feelings. One respondent expressed the need for training on HIV and AIDS prevention to be intensified. Youths who were involved in the study felt that government should provide incentives for young people to become more involved in agriculture. *"Unless agriculture is treated and introduced to the youth as a business like selling cellphones, the youth will not be interested in this tedious and low paying job. We want quick cash and the sale prices of crops are not encouraging," said one participant*

Most young people indicated that they frequent *masimo (arable fields) at harvest time* (magapu, nche, sweet maize) because they would eat and sell produce to raise cash for entertainment. The out-of-school youth in particular, felt that a community agricultural field in each village should be availed for out-of-school youth interested in agriculture to pursue some of the modern production activities they learnt at school such as bee keeping, horticulture, piggery, poultry, etc. There should be agricultural training brigades for the youth who do not qualify for diploma and degree programs at the Botswana College of Agriculture. These should be modelled along the same lines as the vocational skills training for building and construction, and auto mechanics currently offered by existing brigade centres.

Impact on agricultural extension services

Extension workers play a critical role in support of agriculture in most SADC countries. Therefore reduced capacity can significantly affect agriculture.

Due to the limited number of extension staff at the Botswana study sites, the only data available were collected key informants and focus group discussions. All participants including farmers and agricultural staff (extension and administration) confirmed that HIV and AIDS have affected everybody, including the extension workers, at a personal level and in the performance of their work. High absenteeism of extension staff, was reported as a major concern. Absenteeism was caused by two main factors, attending to sick family members, and incidences of agricultural extension workers being sick themselves.

"*kana bolwetse jo ba amile mongwe le mongwe, lelwapa lengwe le lengwe, motse mongwe le mongwe (*really this disease has affected everybody, every home, and every village). *Mo goraya gore (*this means that) *even the families of our extension workers are affected or infected,"* said a farmer,

"Balimisi ba rona bantse ba tlhaela gale even without HIV and AIDS, jaanong ke mo gogolo. Re kgona go nna dikwedi le fa ele ka matho re sa mmone Molimise, gontse gotwe oa lwala. Jaanong kana fa le sa bone dikgakolo ke mathata mo temong kana leruo-Our Agricultural Demonstrators were in short supply even before the epidemic, now it is worse. Sometimes we spend months without seeing the Agricultural Demonstrator. This situation affects both arable and livestock farming."

Gender Implications

The gender of the household head was found to be a key factor in the productivity of households in Swaziland, Botswana and Zimbabwe. Researchers in Zimbabwe implemented a comprehensive econometric analysis of the gender factors affecting household maize productivity. Maize is an important crop in smallholder agriculture grown by the majority of Zimbabwean farmers to meet their food requirements. Productivity of maize is measured in terms of output per hectare.

A number of gender-related factors were significant in explaining productivity. Interactions between gender and assets and between gender and income were significant. Female-headed households usually have fewer assets compared to their male counterparts, yet in this case, gender had a positive impact on the maize yield per ha, and this is significant at the 10% level.

The gender and income term is also positive and significant at 1%. This means that as one moves from the male-headed to the female-headed households, the income increases together with the maize yield per hectare. This superior performance by females is contrary to expectations. Although not significant, there was an interaction linking productivity to gender, HIV and AIDS.

In Botswana, results emerging from the qualitative study revealed that livestock management was affected by HIV and AIDS in terms of time accorded to livestock rearing. As one respondent put it, *"we practice communal pastoral agriculture and this requires long hours searching for stray livestock, pasture and water."* With the advent of the epidemic, livestock have in some cases been left unattended, as herdmen are occasionally required to help with home-based patients under full time care. One study participant narrated that, *"first its the woman who moves to the village or town to provide the care, but the patient gets worse… as the father, uncle or brother you are summoned to the village. In fact towards the terminal stages the whole extended family is involved in care giving and support.*

One other participant said, "Fa bo pala bolwetse (failure to recover) *kana jaanong the whole extended family comes to the village to camp for weeks consuming the very last portion of the available food (livestock)… re ja seswaa sa kgoma, sa pudi, le dikoko. This means nobody is either guarding the fields against predators or weeding or looking after the remaining livestock at the cattle posts."*

Gender differences also prevail in decision making regarding land utilisation in Swaziland. Decision-making on land issues is the prerogative of the household's male members. Although the woman is consulted, the final decision lies with the man. Decision making on land issues is only transferred to the woman after her husband dies. Land access decisions tend to shift from husband to wife then to son or from father to mother then to son. This subordinate role of women has far reaching implications regarding land utilisation when the man has died. When the woman assumes responsibility of being the head with all powers bestowed on her, she may find it difficult to cope because of little experience and interference from relatives. This could have a negative impact on land utilization, as the relatives usually make decisions against usage of some of the land.

In the study sample, Lubombo region was the worst affected with about 63 % of its households living on-farm, (with ailing or deceased adults) reporting a change in land access and decision-making. The Shiselweni region is the second most affected with about 50 % of its affected households reporting a change in land access and decision-making. The Manzini and Hhohho regions have about 47 % and 45 % of its affected households respectively reporting a change in land access and decision-making.

Given that land preparation for cultivation is a heavy task, which is mainly the responsibility of men, it is within expectation that land utilisation will decline as the male household head falls sick or dies. This clearly illustrates the gender dynamics in a household that has lost a male adult household member. The situation is further worsened if the mother or the wife who had assumed the responsibility of being the head, also becomes sick or dies. The surviving son might be too young, and either lacking knowledge of farming or not at all interested in farming. This leads to a decline in land utilised which translates to reduced agricultural production in the country.

Impact on Food Security

According to Barnett and Rugamela (2001), households are said to be food secure if four factors are in balance: food availability, equal access to food, stability of food supplies and quality of food. The impact of HIV and AIDS affects all these factors individually and has therefore been identified as having a key role in the reduction of household food security throughout southern Africa.

Impact on food availability

Food self-sufficiency is an important factor which influences a household's ability to be food secure. The self-sufficiency of a household improves with larger families, as more labour is available. A large cattle herd means more manure and draught power are available for crop production. Higher seed rate increases maize yield and hence food self-sufficiency. However, household food self-sufficiency is likely to be reduced when a family member dies; in cases where this is an adult, this also means the loss of agricultural knowledge, labour and farm assets such as ox-drawn plough, scotch cart, cattle, and land.

Apart from a household's capacity to produce its own food, food security is associated with a household's ability to generate income from other sources such as formal employment, informal employment, remittances, etc. Of the households interviewed in Botswana, the major source of household food is purchases (65%) followed by home production (39%), government assistance (5%) and labour exchange (1%).

Results from Zimbabwe show that only three factors are significant in explaining the likelihood of a household being food secure and self-sufficient. These include the maize yield per hectare, total land cultivated and total nitrogen use by a given household. The more productive a rural household is, the more fertiliser it uses and the more land it cultivates, thereby increasing the chances of the household being food secure. On the other hand factors that deal directly with agriculture production are significant in explaining the likelihood of a household being self-sufficient. These include family labour, asset base, land cultivated, crops grown, number of cattle and seed application rate. In Zimbabwe, there were large variations in self-sufficiency across households. This variation comes from pronounced differences in social and economic factors affecting each household.

Generally smallholder female-headed households are less food secure compared to male-headed households. Yet, from the households participating in the Zimbabwean sample, a greater proportion of HIV-affected female-headed households were found to be more self-sufficient compared to HIV-affected male-headed households. Although a greater percentage of less affected male-headed households are more self-sufficient compared to less affected female-headed households.

Formal and informal income among the households studied in Namibia, is low, leaving farm production as the main source of livelihood support. Two different categories of farmers were identified. These were collapsed communal farming and near collapse communal farming. The basis of these categories was the ability to produce enough '*mahangu*' to satisfy basic caloric requirements. The levels were set at 0 – 1500 kg for collapsed communal farming, and 1,501 kg and above kg, for near collapse communal farming. Within the collapsed communal farming category a further delineation is made at 750 kg of production.

Among the collapsed communal farming, hunger and food insecurity is a constant feature. The long-term prospects for these families are not good. Their children go to school hungry, and because they are not getting

This was a refusal to provide information.
Respondent gave total of all sales and not a breakdown of price per animal.

sufficient nutrition, their physical and intellectual development is threatened. In the sample, 113 (78%), of all households in the survey were categorised as "collapsed". In addition to not producing crops, very few of these households had livestock. Of the 113 households, only 29 had cattle. The size of herds ranges from 2 to 77. Half of the cattle owners have 11 head or less. Eleven cattle owners had between 12 and 43 head, while three have between 50 and 77 head. A larger number of households, 43, have goats though it is still far less than half of this category. The heard sizes range from 2 to 110 head, but half of those who own goats have less than 15. Fifteen households own between 16 and 35, while five households have between 37 and 110 head.

For most of the livestock owners in this group, their herds cannot be considered a major source of food. Half of cattle owners have less than 11 head and half of goat owners have less than 15 head. According to the Namibian Ministry of Agriculture, Water and Forestry's department of planning, reasonable off-take ratios for cattle can be set at 28% per year and for goats at 64% per year. Hence, half of cattle owners in this category can expect no more than three cattle per year for sale or consumption (even less if their numbers are below 5 head). Half the goat owners can expect 9 goats per year or less. Neither of these rates is sustainable if a household needs to meet food requirements and increase their flock size. A common phenomenon of collapsed households is that they have lost males who could provide labour. There is a strong possibility that households in this category are not able to supply the labour necessary to herd their livestock and may thus experience higher rates of loss due to theft and predators.

A sub-category of the collapsed communal farming household is the "crisis households". Households in this sub-category produce from 751 kg to 1,500 kg of millet. Twenty three (16%) of the Namibian sample fall into this category. These households are at the bare edge of production. They produce more crops than the previous category, and are more likely to own livestock. Over half of these households have cattle. The herd sizes range from 1 to 56 with half of cattle owners having less than 12. A similar number of households, 14, have goats. The range of animals owned was from 5 to 70 with half of owners having 12 or fewer animals. As with their counterparts in the previous category, off-take rates for most livestock owners will be too low for regular consumption or sale. Sustainable production for most livestock owners will be difficult, and they will be susceptible to loss of animals if they have increased household expenses. Many of these households had experienced a death, but due to the available assets, the impact was not as bad as for the "collapsed" households.

The final category was the "near collapse" communal farmers. In this group, households produce more than 1,500 kg of '*mahangu*' per year. Only 8 households (6%) of the total sample fit into this category. All of these households owned cattle and goats. The range of herds was 6 to 40 for cattle and 9 to 63 for goats. This group produces surpluses, which its members are able to sell. It is also the group most likely to have the capacity to invest in their own agricultural enterprises. It is not clear if this group is newly affected by the HIV epidemic, or if they have simply been able to maintain their status due to other socio-economic reasons.

Impact on Access to food

Access to food was measured with respect to consumption patterns. Researchers collected data on the household's ability to access food by exploring the stability of supplies, purchasing power and the dependency ratio. Information explored the direct consumption of goods and services and investment

expenditure. The data indicate monthly expenditures on food, clothing and health care in all the countries.

In Zimbabwe, a trade-off appears to exist between consumption and investment activities of rural families. In Figure 3.6 shows that less income is invested compared to that which is consumed. Both categories of households expend more on food compared to other income demanding activities but healthier rural families spend more on food. HIV and AIDS affected households invest more in farming and education.

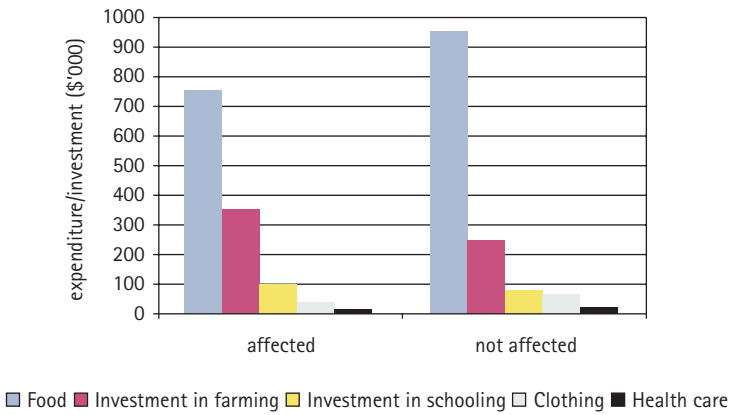

Figure 3.6 Household consumption and investment activities (Zimbabwe)

In Namibia, an analysis of food consumption requirements versus crop production was implemented. Calculations were based on the basis that an average male requires 2,944 calories per day, and a non-lactating female requires 2,140 calories per day. Since the questionnaire did not distinguish between lactating and non-lactating females, all women are assumed to be non-lactating. According to the FAO, Namibians get 53% of their Daily Energy Supply (DES) from cereals. This means that men receive 1,560 calories and women, 1,134 calories from grain daily. One hundred grams of cooked millet yields 119 calories. Hence, on a daily basis, an adult male requires 1.31 kg of cooked millet, and an adult female requires 0.952 kg of cooked millet.

An assumption is made that in making millet porridge (known locally as "*oshifima*") only 75%, or in this case 75 grammes, of millet flour is needed to make 100 grammes of porridge. The daily requirements of adult males and adult females will be 0.982 kg and 0.714 kg of millet flour respectively. On an annual basis a man needs 358 kg of millet flour while a adult non-lactating woman requires 261 kg of millet flour. The conversion rates between millet flour and threshed millet were assumed to be the same.

The number of kilogrammes required to meet DES per average household in the sample (see table overleaf). Two additional assumptions were made. First, that the number of men equals the number of women. Hence, for each adult an annual average of 310 kg. millet is required to meet DES. Second, that adult values apply to household members above 15 years, while for those below 15, half the adult rate is assumed. Hence, for those 14 and below, the annual requirement of millet is 155 kg. This results in annual household requirements for pearl millet production as shown in Table 3.17.

Table 3.17 Annual Pearl Millet Production Requirements per Household (Namibia)

	Kavango	Oshana	Oshikoto	Sample
Ave. HH. Size	10	7	6	8
Ave. under 15	4	3	3	3
Ave. over 15	6	4	3	5
Kg. of pearl millet to meet 53% of caloric requirements	2170	1550	1395	1705

With the above figures it is possible to examine crop production to ascertain if agriculture compensates for the shortfall in other forms of income. In terms of pearl millet, it does not, as can be seen in the table below.

Table 3.18 Annual Pearl Millet Production Requirements per Household (Namibia)

Households	Kavango	Oshana	Oshikoto	Sample
No. HH Below calorific requirements (Produced a crop)	37	40	47	125
Did not produce a crop	6	5	0	11
No. HH above calorific requirements	0	6	3	8
Percent below calorific requirements	100%	87%	94%	%86
Percent above calorific requirements	0%	13%	6%	%14

Almost nine out of ten households in the sample are food insecure, though there is variation across regional samples. Another study carried out in the Ohangwena Region found that HIV affected households were more susceptible to going for days without food.

Stability of supplies

In Zimbabwe, researchers found that the extended interruption of the labour supply in affected households, affected land preparation or maintenance of irrigation systems, thereby affecting future production and yield realisations in turn. Loss of agricultural assets in HIV and AIDS affected households constrained production and the attainment of food security.

Purchasing power

Household consumption was measured through purchases of groceries, fuel, health care and social welfare goods and services. Investment expenditure was measured through expenditure on education, farm implements and social networks.

The majority of households in Lesotho spent little amounts on groceries and fuel.

In Swaziland, a small increase in income from the different sources was demonstrated, with the exception of the Manzini region where a 59% increase in income from livestock production was recorded. This implies that a large number of livestock were sold in this region to gain income. However, in the Shiselweni region, a 5% decline

in income from crop production was realized. The Lubombo region registered a decline in income of 4% and 5% from other off-farm agricultural and other on-farm non-agricultural practices respectively. The decline in income influences the households' overall ability to purchase other goods and services. For a household affected by HIV and AIDS, a decline in income may influence their capacity to pay for food, supplies and services to care for ill family members.

'New Variant Famine' = HUNGER+HIV+AIDS

According to De Wall and Whiteside (2003), hunger, HIV and AIDS reinforce each other leading to "AIDS-induced famine" or what they refer to as the "New Variant Famine". HIV and AIDS induced famine is different because it affects the strongest, able-bodied and most productive members of the household. There are a number of ways in which the HIV epidemic could affect the household economy when compared to the traditional food crises that have been experienced in the SADC region. For example, the epidemic affects the most productive age groups in society hence reducing the labour supply leading to reduced productivity; the epidemic leads to diversion of household income from food to medical and funeral expenditures leading to food shortage; and children may be taken out of school for financial reasons.

A one-way analysis of variance and regression analysis was used on the South African sample population to explore the impact of the proxy variables on household income and expenditures and food security. The analysis showed that the differences in medical and funeral expenses among the categories were highly significant. It was also observed that the difference of mean expenses between any two categories was statistically highly significant at 1 percent. The mean expenditures on food and education were however found not to be statistically significant. Table 3.16 below presents the mean medical and funeral expenses, food and education expenditures incurred by households during the year(2003) preceding the study. As is the tradition in most rural communities, Non-affected households also contributed money to meet medical and funeral expenses of non-household members.

The results of the analysis indicated that affected households experienced a decline in their food and education expenditures for all proxy categories, but these declines were not statistically significant. The average household off-farm income is positively related to the dependency ratio. The combined effect of reduced incomes and increased expenditures on medical and funeral expenses may result in less access to food.

Table 3.19 Mean expenditures of household per year (Year 2004)

Type of medical expenses	Mean medical expenses	Mean food expenditure	Mean education expenditure
Death-affected	2290 (244)	3955 (373)	440 (111)
Illness-only affected	1114 (286)	4179 (340)	623 (155)
Non-affected	306 (75)	4538 (218)	761 (144)
All households	925 (109)	4329 (165)	659 (90)

Source: Survey data, 2005

Impact on Nutritional Security

Without good nutrition, a person living with HIV becomes more susceptible to malaria, tuberculosis and other opportunistic infections which hasten the progression from HIV to AIDS. As HIV progressively weakens the immune system, an individual living with HIV may find it harder to access food, or contribute to household food production. Proper treatment and nutritional support can increase an individual's recuperation from HIV-related infections and allow people living with HIV to continue to participate directly in household activities. In addition, individuals living with HIV have between 10 and 30% more energy requirements than healthy uninfected individuals.

With respect to nutritional security, country research teams explored if the epidemic was impacting on households' nutritional security. Researchers analysed the impact of HIV and AIDS on household nutrition security by exploring changes in dietary composition, nutritional value, food quality and child nutrition.

A balanced diet?

Although maize is a staple in the diet of many households in southern Africa, and is a less labour intensive crop to grow, maize meal is generally considered less nutritious than sorghum and millet flour. In Swaziland, researchers noted that many farmers were making an effort to improve the nutritional quality of their diets by including more beans and legumes. It was suggested that this change was partially due to the promotion of protein-rich diets for people living with HIV and it was recommended that agricultural interventions should encourage this shift.

The low agricultural productivity and unemployment observed within many affected households contributes to a household's poor nutritional status. For example, in Lesotho, households participating in the study did not produce enough to meet their food requirements and had no funds to purchase additional food. This created a situation where members of households tended to eat the same food for all meals of the day. Many households ate only bread, mealie-meal porridge and vegetables as the standard routine ration. Only very rarely did they eat proteins. The regular consumption of an unbalanced diet may contribute to the increased prevalence of opportunistic diseases.

Changes in dietary composition and meal frequency. In South Africa, the impact on food intake was significant when households suffered a death of a family member. However it was noted that the impact on food intake was very high when one member of the family suffered from a long-term chronic illness. Vulnerable households, particularly illness-affected and death-affected households were found to be less food-secure.

Food shortages within households compelled some households to adjust their diets. Some members, in particular adults, were forced to forego some or all meals in a day, so that ill members and children could have enough food to eat. The majority of household members who were found to forego meals for the whole day were mainly women. This demonstrates some of the sacrifices made by women who are caring for household members.

In Botswana, the majority (81%) of respondents had three or more meals per day before illness, however after illness, this proportion falls to 49%. Over 18% of the respondents have two meals per day before illness. This however increases after illness to 49%, demonstrating that when a household is challenged by prolonged illness, the number of meals taken per day falls.

Child nutrition

Children are especially vulnerable to malnutrition. Starting before birth, poor nutrition in pregnant women affects the physical and mental development of a baby. Children who are under-nourished, often have weakened immune systems and can experience severe, long-term developmental challenges throughout their lives.

UNAIDS (2004) estimates that there are 12 million orphans in the sub-Saharan Africa region affected by HIV and AIDS. Orphans have been absorbed into many families, increasing the number of dependents in a household. However a small, but increasing number of orphans are abandoned or left to fend for themselves in child-headed households. Households headed by children are considered among the least food secure. Where a household is barely food secure, the additional dependents are thought to reduce a households' food security. However this depends on a child's age, as they may be able to provide more support to households in terms of labour for food production.

In Zimbabwe, the presence of orphans in a household did not seem to significantly affect a household's food security status. Households with increased numbers of orphans were found to be more food secure. The positive impact on food security associated with increased number of orphans could be related to the increased food handouts being given to households with orphans by various NGOs, working in the study area. In addition, children can provide additional labour to boost the household's capacity to purchase food, though too often, this occurs at the expense of the child's education. According to the Zimbabwe National Vulnerability Assessment Committee (2002), 18% of households have removed one or more children from school due to lack of finances.

In Namibia, participants of the survey recommended increased support in the form of cash transfers or grants to support orphans, AIDS patients and the disabled. They felt that this strategy would allow these households to keep their children in school and eventually be better able to provide for the family, whether they chose to be farmers or not. Hopefully such households would eventually recover, and then interventions geared toward boosting agricultural production can be introduced.

Summary

Results from this research demonstrate that HIV and AIDS increase the vulnerability of households to food insecurity because they affect the core factors of production in the household i.e. labour, capital and land. Once a household member falls sick, this entails a reduction in the labour supply to agriculture as well as the household's participation on the labour-for-income market. Furthermore, available resources are diverted from agriculture (e.g. purchase of inputs), to paying for medical expenses and funeral costs. In some instances, households are forced to sell livestock, household assets and other livelihood assets to meet the escalating expenses. Female-headed and child-headed households also risk losing their land after the death of a male household head.

Results of this section were drawn from a preliminary analysis (basic descriptive and comparative statistical analysis) and the advanced analysis (multivariate regression, logistical regression and principal component regression), aimed at exploring the nature, extent and depth of the HIV and AIDS epidemic on rural households in southern Africa. These analyses however neither demonstrate the degree of vulnerability to shocks that the different impacts have introduced to a given household, nor identify the most vulnerable households. This is addressed in Section 4, which introduces the Household Vulnerability Index and presents the results of its analysis in two countries.