



AgEcon SEARCH

RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

No endorsement of AgEcon Search or its fundraising activities by the author(s) of the following work or their employer(s) is intended or implied.

AGRICULTURAL RESTRUCTURING
IN
SOUTHERN AFRICA

**Papers presented at an
International Symposium
held at Swakopmund, Namibia**

24-27 July, 1990

Edited by

**Csaba Csáki
Theodor Dams
Diethelm Metzger
Johan van Zyl**

**International Association of Agricultural Economists
in association with
Association of Agricultural Economists in Namibia
(AGRECONA)**

First published in 1992 by the Association of Agricultural Economists of Namibia

P.O. Box 21554, Windhoek, Namibia.

© International Association of Agricultural Economists.

This book is copyright. Apart from any fair dealing for the purposes of private study, research, criticism or review, as permitted under the Copyright Act, no part may be reproduced by any process without written permission. Enquiries should be made to the publisher.

Printed in Namibia by Windhoek Printers & Publishers (Pty) Ltd,
P.O. Box 1707, Windhoek, Namibia.

Distributed by the Association of Agricultural Economists of Namibia,
P.O. Box 21554, Windhoek, Namibia.

ISBN 99916/30/10/4

WILL AIDS ADVERSELY AFFECT AGRICULTURAL DEVELOPMENT IN SOUTHERN AFRICA?

A Whiteside

INTRODUCTION

Acquired Immune Deficiency Syndrome (AIDS) was first identified in the USA in 1981. Since then there has been quite remarkable progress in understanding the disease. The virus has been identified; the ways in which it is transmitted have been isolated; the epidemiology is being exhaustively studied; and the hunt is on for a cure and vaccine. Unfortunately, the pandemic has spread rapidly - nowhere more so than in Africa, a cure and/or vaccine may be years away, and the likely consequences of the disease are only now beginning to be realised.

AIDS will have an impact on all sectors of society and all aspects of human activity throughout the region. Southern Africa has a broad spectrum of incidence of AIDS. Malawi is one of the worst hit countries in the world, while Lesotho has only reported 11 cases to date. The AIDS epidemic will not be halted before the end of the century and its consequences must now be planned for. It is likely to impact particularly severely on agriculture.

It is necessary to highlight some of the key characteristics of the disease. AIDS is caused by the human immunodeficiency virus (HIV). There are a number of stages that a person will pass through once infected. Immediately after infection there is a seroconversion period during which the person is infected and infective but does not have sufficient antibodies for the virus to be detectable through laboratory testing. This is followed by a latent phase during which the virus is detectable, the person is healthy and infective, but the virus is replicating and beginning its attack on the immune system. This is followed by the onset of the disease, possibly initially through AIDS Related Complexes (ARC), and then full-blown AIDS, ending in death. Both seroconversion time and the latent phase vary from one infected individual to the next. Seroconversion time ranges from six weeks to 15 months. The mean seroconversion time is put at three months. The latent period can range from one week to 15 years, and possibly longer. The mean latent period in the West appears to be eight years. It may be less in Africa. The period from onset of disease to death ranges from a few weeks to three years.

To date two strains of the HIV virus have been identified. These are HIV I, the most common in the West and most of Africa; and HIV II, found mainly in West Africa. The HIV II virus is more difficult to detect and may take longer to affect the carrier. Worryingly, a growing number of HIV II cases are being reported in Mozambique and it has been seen in South Africa.

The progress of the disease is being meticulously recorded in the developed world. Unfortunately the methodology used and lessons learnt cannot readily be applied in Southern Africa, the reason being that the pattern of the epidemic is very different in the West. Various distinct patterns of spread have been identified, but only pattern I (Western) and pattern II (African) need concern us. The key features of pattern I are:

- It began to spread mainly from the late 1970s to the early 1980s.

Whiteside

- Most cases are in homosexual/bisexual men and intravenous drug users, with few instances of heterosexual transmission.
- The male:female ratio is 10:1, paediatric AIDS is uncommon.
- Other transmission routes are uncommon.
- The general level of HIV infection is low.

Pattern II AIDS is the epidemiologic pattern found in Africa. Here the key features are:

- It began to spread in the late 1970s to early 1980s.
- Most cases are among heterosexual men and women.
- The male:female ratio is about 1:1.
- Paediatric AIDS is common.
- Transmission via contaminated blood and blood products remains significant in many of these countries.
- National prevalence of HIV infection can exceed 1 percent and in some areas up to 25 percent of 15 to 49 year olds are infected.

(Sato et al., 1989:5303).

South Africa initially experienced pattern I AIDS: white homosexuals comprised the majority of AIDS victims. In 1987 the first case of AIDS was recorded in the black population, and it rapidly became apparent that pattern II AIDS had reached South Africa.

A further factor in the African HIV pandemic is the rapidly increasing incidence of endemic diseases previously reasonably well controlled. These include malaria, tuberculosis and, in HIV-positive infants, measles. Inoculation campaigns are hampered by HIV infection in that the vaccine, instead of conferring immunity, can cause the disease.

Finally, the HIV pandemic in less developed countries has resulted in extremely high infant infections. In some African states this is calculated at 15-20 percent of neonates. HIV-positive infants have a 50 percent life expectancy of three years with 100 percent mortality in five years.

AIDS IN SOUTHERN AFRICA

Data on AIDS in the region may be gleaned from a variety of sources. Firstly, there are the statistics produced by governments - these include the number of AIDS cases as reported to the World Health Organisation (WHO), information on HIV-positives from surveys and any other official statistics. Secondly, there are data produced and presented by non-government groups. These include surveys and reports on AIDS incidence and are generally done on a smaller scale - for a region or hospital. Finally, there is anecdotal evidence, usually reported in the local or international press. This is particularly important in instances where the official data do not reflect the true extent of the problem.

The official data on AIDS in the region are shown in Table 1 below. The cases per million and main transmission routes are shown on Map 1.

The quality of the data is highly variable as has been noted on numerous occasions by the WHO. They report: "Where stark differences in the level of health infrastructure development exist between countries, it is not surprising that global data are biased by wide inter-country and inter-regional variations in completeness of AIDS case detection and reporting. Completeness of reporting is thought to vary from 80 percent in some industrialised countries to less than 10 percent in some African nations" (Sato et al, 1989).

The underreporting in Southern Africa is due partly to the lack of medical coverage. There is no doubt that many AIDS victims will die without having been seen, diagnosed and

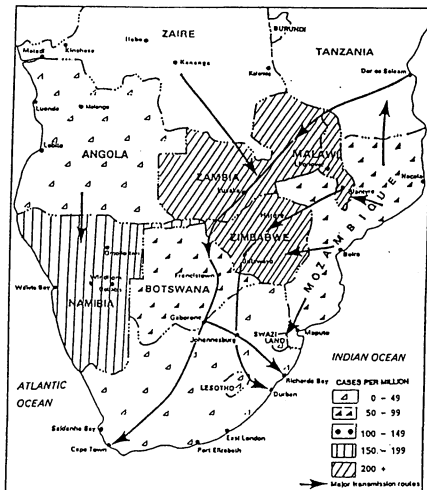
Will AIDS adversely affect agricultural development

recorded by the state medical service. This is particularly the case when the medical services are understaffed and underfunded, or when civil war means areas are beyond the reach of the government.

Table 1
AIDS cases in Southern Africa

Country	Official data		Date
	AIDS cases	AIDS cases per million pop.	
Angola	104	13	31/12/88
Botswana	87	73	17/01/90
Lesotho	11	6	27/04/90
Malawi	7 160	998	08/01/90
Mozambique	93	64	19/04/90
Namibia	232	178	31/03/90
South Africa	418	12	24/04/90
Swaziland	14	20	16/06/88
Zambia	2 709	366	29/01/90
Zimbabwe	2 357	261	31/03/90

Source: All official data are from Update: AIDS cases reported to Surveillance, Forecasting and Impact Assessment Unit, Global Programme on AIDS, 1 June 1990.



Map 1: AIDS cases per million: major transmission routes

Other AIDS cases will not present themselves to the health service because they cannot afford to or because they know it would be pointless. There may also be low reporting because of weariness among medical staff. The underreporting may also be due to a deliberate cover-up of data. The governments may do this so as not to frighten off tourists or investors. They may also simply be unwilling to face up to the problem of AIDS in their countries.

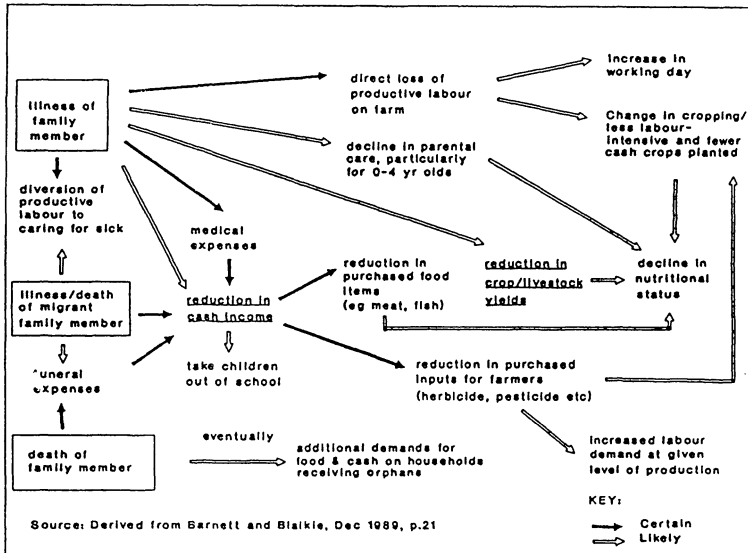


Figure 1: A diagrammatic representation of the possible impact of AIDS

In discussing the issues which may influence the rate of spread of AIDS, two factors loom large. These are the economy of the countries and the consequent rates of urbanisation and unemployment; and secondly, the political situation, including the number of refugees.

The economy is important for a number of interlinked reasons. If the economy is in trouble, there will generally be a paucity of consumer goods. This will result in money being spent on sex and beer with inevitable consequences for the spread of AIDS. Rapid urbanisation leads to a growing population living in an environment that lacks many of the controls of the more traditional rural areas. Unemployment will result in women being pushed into prostitution so as to provide for themselves and their families.

Politics are important. Where there is political turmoil and civil war, as in Angola and Mozambique and Natal Province in South Africa, there is a breakdown in normal behaviour which results in greater sexual activity. Refugees moving from place to place may also provide a pool of infection.

THE RESPONSE TO THE EPIDEMIC

The response, in all countries but South Africa, has been to implement WHO programmes. The WHO reacted to the AIDS pandemic by introducing a Global Programme on AIDS which is now working with 150 countries around the world. The WHO state that a global programme is necessary if AIDS is to be halted, and this requires a strong and comprehensive national prevention and control programme in every country (WHO, 1988).

By the end of 1988 all African countries had had a technical visit from the WHO during which a status report was prepared and an assessment of needs made. This resulted in two programmes being prepared, viz. an immediate short-term plan and a longer medium-term plan.

AIDS is a new disease and, although it is uniformly fatal, it is important that health care should provide appropriate support. Above all, other health programmes should not be compromised. The WHO argues that the response to AIDS should support the primary health care programmes in Africa.

One recent article noted however that it is clear that Africa will suffer uniquely from AIDS: "the continent certainly suffered tragic misfortune in being exposed to HIV before it made inroads in many other parts of the world. However, it is also indisputable that features of African social life encourage multiple sexual partners and frequent partner change that make Africans especially vulnerable to a deadly sexually transmitted disease" (Larson, 1990:16).

AIDS AND AGRICULTURE

There is a wide variety of agricultural activities in Southern Africa. On the one hand there is subsistence farming that characterises many of the communal areas. This comprises peasant agriculture, with growing of food crops, keeping livestock and occasionally some cash cropping. At the other extreme is plantation agriculture where production is capital-intensive and the labour is paid a wage. In general, much of the agricultural surpluses will be produced either on plantations or on private farms. AIDS will impact differently on these modes of production.

Peasant/Communal agriculture

There have been some attempts to assess the likely impact of AIDS on this type of agriculture in Central Africa. The Overseas Development Group of the University of East Anglia has been involved in a project in Uganda, which has resulted in a number of useful publications. The original research outline noted that Africa, even without AIDS, faces a food crisis as it is the only region in the world where food production has fallen over the past two decades (Barnett & Blaikie, 1989a).

For these authors, assessing the impact of AIDS involves a number of steps. Firstly, the spread of the disease needs to be projected. Secondly, the labour loss assumptions have to be superimposed on the existing rural production system. This requires an assessment of the labour demand in the rural production system. A subsequent paper noted "even relatively cautious observers are now beginning to recognise that mortality rates are likely to result in population decline in some parts of Africa within the next fifteen years" (Barnett & Blaikie, 1989b:7).

In what ways can the disease be expected to affect peasant agriculture? The morbidity and death of members of the production unit can be expected to have the following results:

- There may be a loss of labour available for production, leading to a decline in agricultural output, depending on how the balance of labour is allocated.
- There will be a loss of cash income from agriculture as productive capacity declines and resources are switched from food to cash cropping as a direct result of AIDS.
- Productive labour time will be directed to caring for the sick. This burden will fall especially heavily on the women who may also be the main agricultural workers.
- Cash and production might be diverted to medical care and costs of funerals.
- There will be a growing childcare burden as orphans increase in number and children may be forced into labour earlier than the norm because of labour shortages. The elderly may also increase as a proportion of the population. Again, women would bear the burden of caring.
- In Southern Africa, migrant remittances are important not only in purchasing goods for survival but also as a source of inputs for farming. This money will be lost as migrants die or are no longer able to move to employment.

A study from Rwanda "Potential Impact of AIDS on farming systems" (Gillespie, 1989) has similar findings. The author developed two models to predict the proportion of households experiencing the loss of a productive individual and applied this to five different farming systems. The conclusion was that the vulnerability to AIDS would depend on the labour requirements of the farming system. This would not only include total labour demand but also demand by season, and type of labour required by specialisation. The sensitivity of the farming system to a labour loss can be assessed. What might be found is that there will be a move away from labour-intensive farming and that extended families are better able to cope. Gillespie warns: "one long-term effect of increased mortality due to AIDS might be a loss of human control over ecological systems ... such a loss of control may lead to a return of bushland. Tsetse fly populations and the incidence of sleeping sickness may then increase together with increased livestock mortality and human morbidity, potentially setting off a downward spiral as land use contracts further" (Gillespie, 1989:302).

There can be no doubt that peasant agriculture will be severely affected if the epidemic continues to spread unchecked among the populations of the region. In most parts of Southern Africa there is a high level of rural:urban contact and this could lead to an even spread of AIDS through the entire population. At worst this will lead to growing food shortages in rural areas as production falls; a reduction in cash cropping as labour moves to food production; increased numbers of dependants as the numbers of orphans and elderly rise; and a loss of environmental control.

AIDS and commercial agriculture

The commercial agricultural sector may initially be more resilient to the disease than peasant farming. The reason for this is that it employs labour on a permanent and sometimes seasonal basis. Unemployment in the region means that, at least in the initial years of the epidemic, employers will be able to locate replacement labour. As the disease spreads, labour shortages will increase and it is likely that these will be exacerbated by the low pay and prestige attached to agricultural work. Labour will be able to move into other sectors (that will also be facing shortages) and will opt to do so rather than remain in agriculture.

The farmer will also need to consider the vulnerability of his inputs and his markets to the AIDS pandemic. It is suggested that the farmer should devise an AIDS Impact Analysis Model for his operations. An example of this for the Natal sugar industry is

outlined below.

The main inputs are fertiliser and machinery. An impact assessment might argue that fertiliser is not vulnerable as its production is capital-intensive and there is over-capacity in the region. The same logic could apply to machinery. However, increased demand through mechanisation might result in more efficient production. This could mean that cost of machinery would fall.

Cane-growing itself is relatively labour-intensive. Thus, if it is assumed that in 1996 there will be 25 percent HIV-positivity among workers and in 2000 50 percent HIV-positivity, then sensitivity to the epidemic is as shown in Table 2.

Table 2
Labour in the Natal sugar-growing industry (1985 figures)

Level	AIDS sensitivity ²				
	Number	25% HIV	Death p/a ³	50% HIV	Death p/a ³
Skilled	3 200	High	80	High	160
Semi-skilled ¹	5 300	Very high	130	High	265
Unskilled	60 500	Low	1 500	Very high	3 000
Seasonal	16 500	Very low	400	High	825
	85 500		2 110		4 250

Notes: ¹ Mainly drivers

² AIDS sensitivity denotes deaths and general disruption in a group

³ Deaths assume 10 percent of HIV-positives will die each year

The basis for the argument in Table 2 is as follows. It is assumed that 10 percent of those with HIV infection will die each year (this may be conservative); it is assumed that the level of HIV infection will be uniform across the entire labour force; finally, it is expected that the level of HIV infection will not exceed 50 percent.

At a 25 percent infection level the sugar-growing industry would be most vulnerable at semi-skilled level. The reason for this is that the semi-skilled workers are mainly drivers who, despite the assumption above, will probably report much higher rates of infection. Infection among skilled labour will also be a serious source of concern as these are the most valuable workers. Many will have training and years of experience and they will be hard to replace. They will also have the greatest call on their money and time in assisting in the care and funerals of their extended families. The unskilled and seasonal workers can initially be replaced from the pool of unemployed.

At a 50 percent level of infection the skilled and semi-skilled workers will begin responding to the threat - they will do so sooner than unskilled workers as they will have higher levels of literacy. In these groups the level of infection will peak and begin to fall. Deaths will follow this pattern (with a lag). The industry would at this stage be very vulnerable to the loss of unskilled workers. The reason for this is that the pool of unemployed will be in the process of being absorbed, and as all sectors of the economy will be adversely affected, there might be a growing labour shortage. Should this be the case, unskilled workers would be attracted away from the sugar fields - work which is regarded

as unpleasant, poorly paid and low-status - into other sectors, thus magnifying the crisis.

An interesting development in Natal is that small-scale growers are expected to make an increasing contribution to production with 7 000 new growers hoped for in the next decade (Natal Mercury 21/6/90). This development would be especially adversely affected as these people would be forced to switch from cash crops to subsistence food production as labour is lost.

Such an analysis of the labour situation might lead to the sugar growers deciding to take pre-emptive action. This could include education of all workers, but with special emphasis on skilled and semi-skilled employees. If it became apparent that the spread of the epidemic was not going to be halted, then contingency plans for mechanisation should be made. The key dates would be 25 percent HIV infection by 1996 and 50 percent by 2000.

Finally, the grower would need to consider markets. The size of the market will be the first consideration. Will AIDS kill consumers in sufficient numbers to reduce purchases? One of the first effects of AIDS will be to reduce discretionary income as more will be spent on care and funerals. Will this influence spending on sugar and sugar products? The conclusions might be that consumers will not decline in real terms (although growth could be reduced) and that, since sugar is a basic commodity, spending would not be switched from it.

Exports to external markets will depend on the AIDS profile in those markets. Europe and America can be considered to be a secure market, as the epidemic is under control there. It certainly will not cause high death tolls or adversely affect their economies. Finally, the grower might consider his competitors. The conclusion might be that, as producers in Latin America, the Caribbean and Central Africa will be severely affected by the epidemic, their production will fall. This would happen before AIDS really hits Natal, thus there would be an opportunity to enter their markets.

CONCLUSION

AIDS, the disease identified in the 1980s, can be expected to impact on Southern Africa in the 1990s. As this paper shows, the epidemic has spread rapidly. Data on the disease are sadly lacking and a number of countries are seeking to conceal the magnitude of the problem.

There is an urgent need for work on the epidemiology of the disease and its economic, social and political impact on the region. The existing work is exploratory and needs to be developed. Sounding a warning of the possible consequences might lead to programmes that result in changes in behaviour.

The impact of AIDS on agriculture is expected to be severe. The major problem will be the loss of labour with the consequential disruption of production as resources are reallocated. This can be expected to be particularly serious in peasant agriculture, but in the longer term AIDS will be as important a problem in commercial agriculture. If food and cash crop production is as badly affected as the worst scenarios suggest, then all sectors of society can be expected to face a traumatic decade.

Parts of the region are fortunate in that the epidemic is only just beginning. This means these countries have the opportunity to act now and minimise the potential damage of this deadly disease. It is to be hoped that the governments have the will and the ability to act. AIDS is possibly the most serious threat to development in Southern Africa in the decade ahead.

ACKNOWLEDGEMENTS

Much of the work on which this paper is based was funded by the Development Bank of Southern Africa. In particular I would like to thank Dr Stef Coetzee for his support. Dr Barnett of the University of East Anglia was very helpful. All faults are the author's.

REFERENCES

- Barnett, T. and P. Blaikie. 1989(a). AIDS and food production in East and Central Africa: A research outline. *Food Policy*. 14(1): 2-6.
- Barnett, T. and P. Blaikie. 1989(b). *The Possible Social and Economic Impact of AIDS in Central and East Africa*. Paper read at the Annual Conference of the Institute of Geographers, Glasgow, in mimeo, pp.1-38.
- Gillespie, S. 1989. Potential impact of AIDS on farming systems - a case study from Rwanda. *Land Use Policy*. 301-312.
- Larson, A. 1990. The Social Epidemiology of Africa's AIDS epidemic. *African Affairs*. 90(354): 5-25.
- Sato, P.A., J. Chin and J.M. Mann. 1989. *Review of AIDS and HIV infection: Global epidemiology and statistics*. AIDS, 3 (Supplement 1): pp.S301-S307.
- WHO. 1988. Guidelines for the Development of a National AIDS Prevention and Control Programme. *WHO AIDS*. Series No.1, Geneva.
- Whiteside, A.W. 1990 (forthcoming). *AIDS in Southern Africa*. Occasional Paper, Economic Research Unit, University of Natal.