

SECTION THREE:

**Policy and outcomes at regional
and country levels**

HIV/AIDS and agriculture: perception, challenges and management strategies

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Abstract

The Human Immunodeficiency Virus (HIV) is a retrovirus that causes Acquired Immune Deficiency Syndrome (AIDS) in humans. The HIV II and I are the most prevalent serotypes of the virus. The term AIDS applies to the most advanced stages of HIV infection when the immune system is so ravaged by the virus that the body cannot ward off certain bacteria, fungi, parasites and other microbes that cause opportunistic infections that generally do not affect healthy people. Having unprotected sex with an infected partner spreads HIV most commonly. The virus can enter the body through a wound in someone's skin or lining of the vagina, vulva, penis, rectum or mouth during sex. People who have sexually transmitted diseases such as genital herpes, syphilis, chlamydial infection and gonorrhoea are more prone to being infected with HIV during sex with infected partners. The negative perception of most communities to HIV/AIDS, due mainly to social and cultural barriers, as well as stigma attached to it, is a hindrance to the eradication, prevention or control of the disease. In most communities it is a taboo to assert that someone has died of AIDS. The most severe impact of HIV/AIDS has been on adults in their sexually-active and economically-reproductive years. This has socio-economic implications on the entire society including reduced life expectancy, increased burden on medical care, an increase in the number of orphans and single parent families, a decline in agricultural production and economic growth. Thus, food production is affected and family income is diminished, while poverty, hunger, despair and agony set in.

Key words: *HIV/AIDS, agriculture, perception, challenges, management, control*

Introduction

Agriculture is the largest employer worldwide and many people draw their living and livelihoods from it. A productive agriculture offers many benefits such as raw materials for agro-industries, food for local consumption, employment opportunities, commercial and service activities as well as export markets to earn foreign exchange. However, there are many constraints to agricultural production. These include pests, diseases, environmental stresses, government policies, political and socio-economic factors, human health risks and associated problems, migration, ageing and HIV/AIDS-related problems (Abo *et al.*, 2003). HIV/AIDS has been under the spotlight of government, the media and the scientific community in recent times but the spread of the disease is on the increase.

Viruses are sub-microscopic infective entities that multiply only intracellularly and are potentially pathogenic. They usually impair the mechanisms for controlling growth and affect both respiration and photosynthesis. Viruses have no metabolism of their own and are, therefore, metabolically inert, needing a living host to replicate. Once established they are difficult to control since they normally command the metabolism of their host into their own. Cell death is a common end result of virus-host interaction. The contributory factor to cell death is that, during this infection, the viruses selectively and irreversibly turn-off host DNA or RNA and protein synthesis in favor of their macromolecular synthesis. Most viruses possess either one type of nucleic acid-ribonucleic acid (RNA) or deoxyribonucleic acid (DNA). Very few plant viruses possess both types of nucleic acids, while animal viruses have mainly DNA. Viruses multiply in the form of their genetic material (nucleic acid) and do not grow or undergo binary fission. They multiply by independent synthesis of their constituent parts, which are assembled to reconstitute new virus particles. Virus-specified proteins are synthesized using host ribosomes. Viruses contain no “Lipman System”, the enzyme system that converts the potential energy of foodstuff into the high-energy bonds, which are needed for biological synthesis.

A virus particle basically consists of a core of nucleic acid surrounded by a protein coat, which is antigenic and specific for each virus type. The function of the coat is to protect the nucleic acid from a harsh extra cellular environment, facilitate its entry into host cells and, in many animal viruses, to play an important role in the initiation of virus macromolecular synthesis during the early part of infection. Apart from containing nucleic acid coated with protein, some virus particles may contain lipid and other chemical components such as water, carbohydrates, metallic ions and polyamines.

While microorganisms can usually easily be grown on artificial media and studied outside their host, viruses are not able to multiply in cell-free artificial culture media. They increase in amount only in association with living susceptibles. Infection by plant and animal viruses is host specific. There is no cross-infection between plant and animal viruses.

The events that take place during the virus growth cycle are as follows: (1) adsorption of the virion to the cell surface (2) entry of the nucleic acid or whole part of virion in the cell (3) transcription and translation of viral RNA from the virus genome (4) genome replication or synthesis and (5) assembly of progeny virus particles and their release from the cell. It is important to note that viruses enter the cells in different ways through an injury on the host in most cases.

HIV/AIDS

The human immuno-deficiency virus (HIV) is a retrovirus that causes Acquired Immune Deficiency Syndrome (AIDS) in humans. The only animal that can be infected by HIV is the chimpanzee, but it does not develop symptoms of AIDS. There are several variants of HIV as a result of mutational changes. The HIV I and II are the most prevalent serotypes of the virus. An individual can be infected by either one or both serogroups at the same time. The virus normally invades and kills cells such as T-lymphocytes (T4 or CD4 positive T cells) leading to the breakdown of the body's immune system, thereby progressively destroying the body's ability to fight infections.

The term AIDS applies to the most advanced stages of HIV infection. HIV was discovered as the cause of AIDS around 1984 and 1985. Its origin is still unknown or remains at a hypothetical deductive stage. However, the earliest documented case of AIDS was in 1981 in the United States of America. The US Center for Disease Control (CDC) and prevention reported that AIDS affects nearly seven times as many African-Americans and three times more Hispanics than whites. It is said that the AIDS pandemic dates from an unknown point in decades past when a primate infected with an ancestor of HIV bit a person or passed the virus through a wound in someone's skin. Then the AIDS virus was transmitted over time through sexual and oral intercourse, blood contact, intravenous drug use through contaminated needles, from mother-to-child, use of blood products such as clotting factors and contaminated blood transfusions to cause one of the worst pandemics in history.

The virus can also be transmitted through surgical blades and those implements used in beauty and shaving saloons. People with sexually-transmitted diseases such as genital herpes, syphilis, chlamydial infection and gonorrhoea are more prone to being infected with HIV during sex with an infected partner. A positive blood sample after laboratory serological testing is proof that the person has HIV. It is also an indication that he or she will develop symptoms of AIDS over a span of 1 to 10 years. The average time from HIV infection to death is estimated to be 5-7 years for HIV-I and 7-10 years for HIV-II, depending on a PLWHA's (person living with HIV/AIDS) status of health, treatment of opportunistic infections and access to ARV drugs. However, as with other viruses, individual level of tolerance to the virus varies. This depends on many factors such as strain variant of the virus, physiological and psychological state of the individual and nutritional status of the person involved. A person who harbors HIV without clear manifestation of symptoms of AIDS is termed a "carrier". Such a person looks very healthy and symptomless despite being sero-positive.

The initial or early symptoms of AIDS are fever, headache, tiredness or fatigue, diarrhea and enlarged lymph nodes. Other symptoms often experienced before the onset of AIDS include frequent fever, diarrhea, vomiting, fatigue, inflamed gums, loss of appetite, weight loss, mouth sores, swollen lymph nodes, enlarged liver/spleen, night sweats and frequent skin rashes or disorders. Furthermore, such people suffer lack of energy, short-term memory and pelvic inflammatory disorders in women. In other cases the signs will come with the development of opportunistic infections. These include tuberculosis, herpes simplex, oral thrush, candidiasis, pneumocystis carini pneumonia, salmonellosis, etc.

Symptoms of opportunistic infection common in people with AIDS include: coughing and shortness of breath, seizures and lack of co-ordination, difficult or painful swallowing, confusion and forgetfulness, severe and persistent diarrhea, fever, vision loss, nausea, abdominal cramps, extreme fatigue, severe headaches and coma. Children with AIDS may get the same opportunistic infections as do adults but children get the severe forms of the bacterial infections such as conjunctivitis, ear infections and tonsillitis. The pathogens that cause these opportunistic infections are bacteria, fungi, parasites and other microbes. However, it should be borne in mind that it is not in all cases that these symptoms are indication that someone has HIV. However, the person with HIV may have myriad health problems and could live with pain till death.

HIV/AIDS perception and stigmatization

Most people perceive HIV/AIDS as a deadly disease that has no cure. They look on it as highly contagious and infections. It is strongly associated with reckless behavior and a promiscuous way of life. The community-at-large perceives the person with PLWHA as of questionable character and running after worldly things. Many people stay away from PLWHA, thereby ostracizing them from society. In most communities the PLWHA find it difficult to get financial assistance from family members who are less prepared to lend them money because they feel that the victim will surely die and they may lose their money. Once a spouse dies of HIV/AIDS, the community looks at the surviving partner as a positive carrier. Such a person will not find a new life partner within the community.

Women are mostly the first to be accused of transmitting HIV to the husband, especially in communities in Africa. Such an attitude is depressing and frustrating and could lead to the early death of PLWHA. Fear of infection and eventual death is an important issue in most communities including those that express sympathy with the victims (Hilhorst *et al.*, 2004). It has been established that AIDS-affected households suffer more from social isolation than households experiencing chronic illness or death from other causes. Communities frequently deny the presence of HIV/AIDS in their domain even when it is known that such communities have high prevalence of the disease. Furthermore, Hilhorst

et al. (2004) found that any mention of HIV/AIDS was a taboo, stigma was high and it was initially impossible to conduct any prevention activities in the communities targeted. The community fear of the research was that it would lead to economic and social repercussions (LATH, 2002).

Such stigma and discrimination present a problem to the effectiveness of prevention efforts, and to the willingness of people to know their HIV status, to take up and adhere to ARV treatment (ICRW, 2002; Brown *et al.*, 2003; Foreman *et al.*, 2003; Nyblade *et al.*, 2003; Parker and Aggleton, 2003). The silence surrounding the disease hampers communities and individuals in their ability to actively deal with the epidemic, both in terms of prevention, home-based care and impact mitigation ((Hilhorst *et al.*, 2004).

Challenges and consequences of HIV/AIDS

The HIV/AIDS pandemic has now become a full-blown development crisis worldwide. The virus is wreaking social and economic devastation in the African continent. This development is due to the high level of poverty where children are malnourished and adults cannot afford a meal a day. There are now more than 16 countries where more than one-tenth of the population aged between 15-49 carries the HIV (*Sunday Punch*, Nigeria, June 18, 2000). Women are harder hit than men. And the children are worst off. The incidence of HIV/AIDS is increasing at an alarming rate. According to the chairman of the National Action Committee on AIDS (NACA), no fewer than 4m Nigerians are infected with the HIV that causes AIDS (*Daily Trust*, Nigeria, August 14, 2003). The disease is increasing in both the urban and rural areas in Nigeria. The most severe impact has been on adults in their sexually-active and economically-reproductive years (CTA, 1999). This will have socio-economic implications on society, including reduced life expectancy, increased burden of medical care, increase in the number of orphans and declines in economic growth. The impact on families, communities and indeed the whole country will be enormous. The results of a sentinel survey conducted across Nigeria in 1999 showed that the worst affected zone out of the six geographical zones was the North Central part of the country with the highest rate in Benue State. Benue State is, incidentally, known as the 'Food Basket of the Nation' in Nigeria.

Apart from reported cases of single-parent families and orphans, as a result of the AIDS pandemic, the implications for agriculture are enormous. The impact of HIV/AIDS is greatly felt in rural areas since many infected urban dwellers and migrant laborers return to their villages to be cared by their ageing parents and relatives. The immediate impacts of HIV/AIDS are the loss of a productive person and time that family members take off from agricultural work and businesses to care for the sick. The end result is that food

production is affected and family income is diminished; poverty, hunger, despair and agony set in. Extension services are also affected. Thus, the food supply problem is attributed to a dwindling farming population caused by AIDS and other associated factors.

Another worry here, according to experts, is that "young people infected with HIV are less likely to be aware of their disorder, and there is growing evidence that young people are less likely to comply with the demanding regimen of HIV medication" (*Punch Newspaper*, Nigeria, August 14, 2003). The younger patients are the most sexually-active and promiscuous group.

When HIV/AIDS strikes, the main labor force is mostly affected. Farming families will suffer from the loss of labor and subsequent loss of income. The Food and Agricultural Organisation (FAO) of the United Nations has estimated that seven million agricultural workers have died of AIDS worldwide. The scenario here is that of a complex web, especially in rice cultivation, where ageing, illiteracy, migration and human risk-associated problems are vital constraints (Abo *et al.*, 2003). The greatest challenge is how best to support communities, organizations and households which are involved in prevention, eradication of stigma and are now giving care and support to PLWHA (Campbell 2003; Hilhorst *et al.*, 2004)

Management of HIV/AIDS

At the moment there is no complete cure for AIDS. However, anti-retroviral drugs are available for the management of the disease. People living with HIV/AIDS (PLWHA) should maintain adequate nutrition because microbes thrive better where one's physiological and nutritional status are weak. The United Nations agencies, leading pharmaceutical companies, non-governmental organizations (NGOs), research institutions and the world at large are leading the campaigns for the control or management of HIV/AIDS. Bilateral and multilateral donors such as the Department for International Development (DFID), the Food and Agriculture Organization and the United States Agency for International Development (USAID) are quite active in funding HIV/AIDS projects in Nigeria.

The Federal Government of Nigeria has responded to rising prevalence of the disease by forming the HIV/AIDS Emergency Action Plan (HEAP) in 2001. This comprises the National Action Committee on AIDS (NACA), State Action Committees on AIDS (SACA) and Local Action Committees on AIDS (LACA) to oversee the implementation of the HEAP at national, state and local government levels. Modest achievements have been made in this direction. In some states such as Benue, a multi-sectoral co-ordinating

committee called the Benue State Action Committee on HIV/AIDS (BENSACA) was established in 2000. The Women-in-Development (WID) program of Benue Agricultural and Rural Development Authority (BNARDA) is involved in HIV/AIDS awareness raising activities with female farmer groups (Hilhorst *et al.*, 2004). There are numerous civil society organizations in Nigeria that are involved in the fight against HIV/AIDS. There is also awareness creation and sensitization in international and national languages through comedy, drama, jingles and advertisement on the television, radio, newspapers and magazines. Also practical demonstrations are carried out on streets, clubs, parks and other public places to expose the dangers of HIV/AIDS infections. NACA has a jingle on the Nigerian Television Network and Radio which says '*Sex is worth waiting for: Zip Up*'. This message is targeted at the adolescent youths who are the most sexually-active and promiscuous group in society. Her Excellency Mrs Titi Atiku Abubakar, wife of the Vice-President of the Federal Republic of Nigeria is in the vanguard to fight the ills of society through her NGO known as the WOTCLEF (Women Trafficking and Child Labor Eradication Foundation). It fights child trafficking, forced labor and prostitution, which could make victims vulnerable to HIV infections. The Federal Government of Nigeria has enacted a law on trafficking in persons, the Law Enforcement Administration Act 2003, to try to convict offenders. The Federal and State High Courts have the jurisdiction to adjudicate on this matter. The agency charged with prosecuting and bringing offenders to court is the National Agency for the Prohibition and Trafficking in Persons (NAPTIP). Furthermore, WOTCLEF has a drama series '*IZOZO*' which is aired on the NTA network. It addresses the ills, evils and consequences of prostitution, which include HIV/AIDS infection.

There are designated centers for the distribution of anti-retroviral drugs by Government health institutions and pharmaceutical companies. Some NGOs are running voluntary counseling and testing for HIV/AIDS. Churches are also involved in the campaigns against the HIV/AIDS pandemic. For example, the Catholic Church has Parish Action Committees on AIDS (PACA) in all its dioceses in Nigeria. Voluntary testing is the benchmark for effective management of HIV.

The National Special Programme for Food Security (NSPFS) of Nigeria, which is the arrowhead for achieving the Millennium and New Partnership in African Development (NEPAD) agricultural goals, is addressing the HIV/AIDS pandemic through the health and nutrition unit of the food security component.

The use of condoms is not really the solution for the prevention of infection by HIV but it is a right step in the right direction when used for the prevention of the unwanted pregnancies and other sexually-transmitted diseases (STD). Viruses are so tiny that they

can pass through the smallest pores in any cell including the condom. In fact this microbe was once described as a 'filterable virus'. Fresh or old wounds are the easy sites of entry into cells by viruses. This explains why HIV/AIDS is prevalent among people having *Herpes simplex*, which comes with sores on the reproductive organs. The person living with HIV should maintain an adequate level of nutrition. Society should treat him or her with love, care and affection. However, the prevention of HIV infection depends mainly on changes in attitude of individuals.

It is now claimed that there are herbal remedies for the management of HIV/AIDS. An edible, blue-green micro-algae called Spirulina (*Spirulina maxima*) rich in nutrients and with eight amino acids is being exploited for its potential benefits against AIDS (Spore No 116, 2005). It grows naturally in the waters of Lake Chad in Africa and is easy to cultivate.

It should be realized that 'prevention is better than cure' in virus infections. Viruses are difficult to eliminate or control once they gain entry into their hosts.

The Africa Rice Center (WARDA) is playing a leading role on HIV/AIDS and agricultural research and development (WARDA, 2002). The SWIHA systemwide initiative is a right step in the management of both HIV/AIDS.

The print and electronic media are also vital organs that should lead the campaigns for the eradication of HIV/AIDS. They should do this through awareness creation and community-based education activities.

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Harnessing social capital for HIV/AIDS impact mitigation: implications for agricultural technology targeting

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Abstract

HIV/AIDS is one of the most important livelihood stressors in sub-Saharan Africa today; one whose impacts comprise but are not limited to poverty, food insecurity, inadequate nutrition and labor shortfalls, income losses, high dependency burdens, gender inequalities and stigmatization. Farm households operating within such a vulnerability context may be unable to afford farm inputs or join networks that can facilitate their access to credit as they try to cope by pursuing livelihood strategies aimed at increasing their capital asset base – financial, human, natural, social and physical. This paper is an analysis of the contribution of social capital in mitigating the impacts of HIV/AIDS on agricultural production and marketing and draws implications for technology targeting. It presents results of a study that investigated the role of formal and informal community-based networks and organizations in mitigating the effects of HIV/AIDS on two communities in Zimbabwe. Three research questions are addressed: How does social capital contribute to household capacity to cope with HIV/AIDS impacts on food security and incomes? Does social capital only benefit wealthier community members who are well connected in formal and informal networks but fail to cater for poorer households? How best can agricultural technologies and market information be targeted to benefit vulnerable households? The paper concludes with policy recommendations.

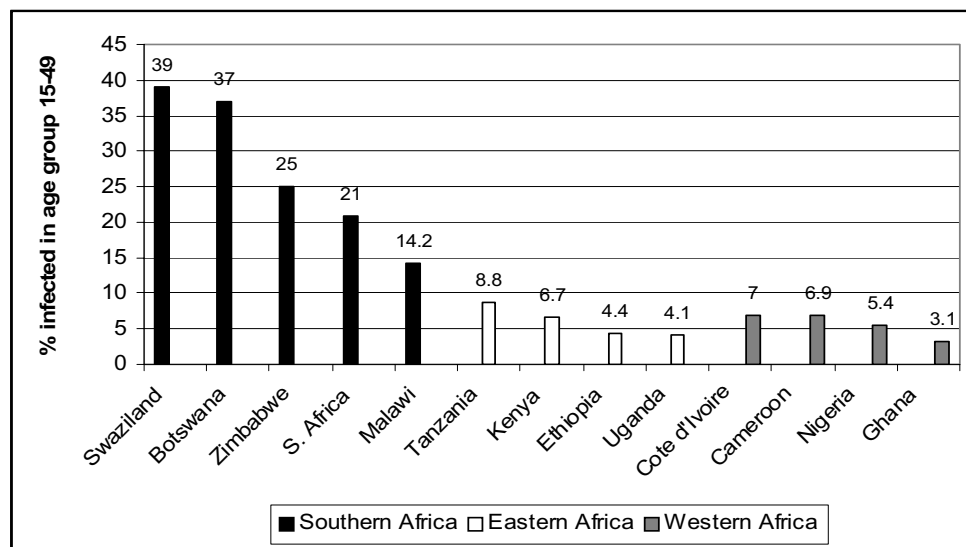
Key words: social capital, household capacity, mitigating HIV/AIDS

Impacts of HIV/AIDS

HIV/AIDS is the single most important livelihood constraint in sub-Saharan Africa today. By the end of 2003, 37.8 million people worldwide—two-thirds of them from sub-Saharan Africa—were living with HIV/AIDS. In this part of the continent, 7.5 per cent of all adults in the productive age group of 15-49 were HIV-infected by the end of 2003. This translated to 23.1 million such adults, of which 13.3 million were women. HIV/AIDS affect all categories of people including women and children. By 2003, 1.9 million children aged below 15 years were HIV-infected; and 12.1 million children aged less than 17 years had lost at least one parent to the disease (UNAIDS, 2004). Within sub-Saharan Africa, the spatial distribution of the infection is regional with southern Africa region being the worst affected. Figure 10 shows infection rates across selected sub-Saharan Africa countries.

Prevalence rates among the 15-49 age group are highest in southern Africa as shown by Botswana (37.3%), Zimbabwe (24.6%), South Africa (21.5%), Malawi (14.2%) and lower in eastern and west African regions: Tanzania (8.8%), Kenya (6.7%), Ethiopia (4.4%) and Uganda (4.1%); Côte d'Ivoire (7%), Cameroon (6.9%), Nigeria (5.5%) and Ghana (3.1%). These variations have implications for mitigation strategies employed to address the unique needs of different types of households, be they poorer, wealthier or infected by HIV/AIDS.

Figure 10. HIV prevalence in sub-Saharan Africa



Source: UNAIDS Statistics 2004

Impacts of the pandemic on the livelihoods of smallholder farm households are well documented: poverty, food insecurity, poor nutrition, farm labor deficits, losses in household incomes, gender inequalities, rising dependency burdens and stigmatization of the infected are some of these effects (SADC-FANRE VAC, 2003; Waal and Whiteside; 2002; Yamano and Jayne, 2002; USAID, 2001; Ngwira et al., 2001; Mutangadura, 1999; Tibaijuka, 1997; Loevihnsen and Whiteside, 1997). All livelihood capital assets are affected by HIV/AIDS: human capital through sickness, death, widowhood and orphanhood; financial capital through high costs of medical care and funerals, which is also tied to physical capital through disposal of household assets through distress sales. Consequent labor shortages impinge on natural capital and contribute greatly to less land area cultivated, poor water, soil and crop management practices,

inadequate harvests and food insecurity. Households in such a situation may be unable to afford farm inputs or join networks that can facilitate their access to credit. Such social capital is affected through the disintegration of social safety nets at the household, extended family and community levels caused by chronic illnesses and/or death (Alumira, Bantilan and Sihoma-Moyo, 2005). Social networks and safety nets particularly kinship ties may be overwhelmed as they also are afflicted by HIV/AIDS making support and care for the vulnerable yet another challenge. Despite this, smallholder farm households have been observed to depend on the build up of social capital, particularly networking within communities as an HIV/AIDS impact mitigation strategy.

Why Social Capital in mitigating HIV/AIDS impacts on farm households?

Defining Social Capital

The term "social capital" is encompassing. At the minimum, social capital is an association between two individuals guided by norms that influence decisions on choices – for instance whether to or not to invest in a specific technology. At the micro level, particularly household, extended family and community levels, social capital exists as informal networks that often function well in situations of limited membership and spatial distribution (Narayan and Pritchett, 1999; Palis *et al.*, 2002). At higher levels of integration it occurs as meso-level civil society organizations or macro-level public and private sector institutions, and as non-profit establishments with more distinct roles such as facilitation and coordination across institutions. For instance, agricultural production and marketing occurs at the micro levels but is influenced by policy-making institutions at the national and global levels. The focus of this paper is at the micro-level where informal and formal networks are relied upon to lessen the effects of HIV/AIDS on the livelihoods of smallholder farm households.

Micro- and meso-level applications of social capital

(i) Technology Exchange

Technology adoption has been defined as the decision to continue full use of an innovation; diffusion is the process by which an innovation spreads (Palis *et al.*, 2002). The usefulness of social capital in influencing individual decisions to adopt or not to adopt technologies is illustrated by the following synopses:

Kinship ties: Palis *et al.* (2002) investigated the probability of farmer interactions in the Philippines and showed that personal networks for Filipino farmers were kin-based. A trained farmer was found more likely to share agricultural information with his relatives

than with non-kin because kin talked to each other more than they did with non-kin. Kin interaction occurred regardless of whether the relative was a house neighbor or a farm neighbor. Such farmer-to-farmer extension reduced transaction costs while facilitating cooperation, coordination and action. In the Filipino study, kin networks, house neighborhood, farm neighborhood and membership of farmer associations were major forms of social capital.

Informal farmer groups: Diffusion of technologies through informal groups was also illustrated by the adoption of the wilt-resistant pigeonpea cultivar ICP 8863 in India (Parthasarathy and Chopde, 2000). Seed of a wilt-resistant cultivar of pigeonpea, ICP 8863, disseminated through informal kin and community networks resulted in widespread adoption within a short period. This showed the significance of informal farmer-to-farmer channels in producing and distributing an appropriate innovation. The adoption of short duration pigeonpea ICPL 87 in Western Maharashtra in India is another example. Farmer cooperatives provided agronomic advice. Related work in Mexico showed that many poor farmers preferred to obtain seed and technological information from informal social networks of family and friends (Adato *et al.*, 2002).

Participatory approaches: In Kenya, Indonesia, Philippines and Sri Lanka a new integrated pest management (IPM) technology was successfully disseminated through farmer field schools using a farmer participatory approach (Adato *et al.*, 2002). The IPM technology had been under promotion for over two decades in an effort to reduce the use of pesticides that caused harm to human health and the environment as a whole. Technology delivery was initially top-down through a lecture approach. It was only when IPM was delivered through farmer field schools using farmer participatory approaches and an agro-ecosystem perspective that the technology started being practised among trained and untrained farmers. In a related study of rural Tanzania, villages with high social cohesion utilized fertilizer, agrochemical inputs and improved seed. These villages also used credit for agricultural improvements (Narayan *et al.*, 1999).

(ii) Access to/management of common property resources

Nemaranwe *et al.* (2002) described how kinship ties in Zimbabwe were used to access water. Kinship ties were used as conduits through which local people could share resources like water, land and farm labor. By sharing the same *totem* or clan identity, households regarded each other as relatives within the communities. And the community considered it un-African to deny relatives water. Cultural beliefs and taboos added to the complexity. It was believed that local ancestral spirits would punish anyone who unnecessarily denied others access to water and would cause the wells to dry up.

Therefore water was a shared commodity. One outstanding finding was that people who shared the same water source had higher chances of implementing projects together because they understood each other; they could easily mobilize themselves for collective action; and the flow of information was found to be faster among them.

(iii) Access to credit

Social capital for most of the poor is derived from family and neighbors; the rich have been reported to belong to wider social networks that enable them to advance their interests (World Bank, 1999). In developing countries, local moneylenders, family and friends have been found to exist as landlords and traders. In Kenya, Bastelaer (1999) found that kinship and ethnicity ties overrode the formal requirements for credit access from commercial institutions. Ethnic ties among Asian groups in this country were found to affect access to trade credit. Although borrowers' ethnicity was officially not an important determinant of access to credit from commercial banks, Asian-owned firms preferred to give supplier-credit within their ethnic group, regardless of the length of the relationship between the supplier and purchaser. Baestler (1999) showed that mutual credit groups that permit the poor to have credit resulted in networks important for most types of formal and informal credit programs. In Cameroon, Sri Lanka and Bangladesh, Rotating Savings and Credit Associations (ROSCAs) facilitated access to credit for the poor. In the study population, ROSCAs were found to reach 90% of all households, and to mobilize 11% of village income.

(iv) Household/community welfare

Grootaert (2001) found that local associations and networks had a positive impact on local development and the well-being of households. In India social capital enhanced the ability of the poor to allocate resources efficiently and increased their resilience to hazards. In Tanzania households with high social capital were better able to accumulate physical assets and savings and obtain credit Grootaert (1997). Studies by Narayan and Pritchett (1999) revealed that local associations played an important role in environmental management especially for common property resources like water and forests. In Côte d'Ivoire rural water supply improved after responsibility for maintenance was shifted from the National Water Distribution Company to community water groups. A study in Indonesia by Grootaert (2001) showed that in areas where government associations were weak, voluntary associations stepped in to fill the gap; and membership of government-sponsored groups was found to have no measurable effect on the welfare level of households. In another study, the World Bank (1999) reported a correlation between social capital and different aspects of the economy. Schools were more effective when parents and local citizens were actively involved. Teachers were more committed, students achieved higher scores and better use was made of school facilities in those

¹ROSCAs are groups of individuals who make regular contributions to a collective fund whose proceeds are in turn alternately distributed to group members.

communities where parents and citizens took active interest in children's educational well-being. Doctors and nurses were likely to show up for work and to perform their duties attentively where their actions were supported and monitored by citizen groups.

(v) Coping with shocks

A South African study to explore the effect of economic losses on children's nutritional status (Carter and Maluccio, 2002) found that a household suffering from an economic loss was more vulnerable to stress when it belonged to a community where the household's neighbors suffered larger losses at the same time. This was so because the local social safety networks of support were strained. The same study also analyzed stunting in children and found that the damage to child nutritional status due to household-level economic losses was worse in communities that experienced large economic losses. The growth of young children was used as an indicator of coping capacity. It was found that idiosyncratic shocks influenced key indicators of child nutritional status. Some households were unable to insure against such shocks and therefore were at a higher risk. Households that suffered a loss were better able to absorb the shock if they belonged to communities with larger numbers of groups. Those in communities with large losses were less able to cope with their own loss whereas those in communities with more groups found it easier to cope. However, this capacity was weakened in those communities where losses of neighbors were very great. There was little evidence of the bridging sort of social capital that would allow shocks to be absorbed across communities.

Can social capital mitigate HIV/AIDS impacts on agriculture? A case study of Tsholotsho and Kezi communities in Zimbabwe

The experiences summarized in above offer lessons that encourage the harnessing of social capital in order to lessen the effects of HIV and AIDS on livelihoods of smallholders and especially the resource-poor farm households. This section presents a study that was undertaken in Zimbabwe to understand the role of social capital in mitigating the effects of HIV/AIDS on smallholder agriculture and to offer lessons for technology transfer.

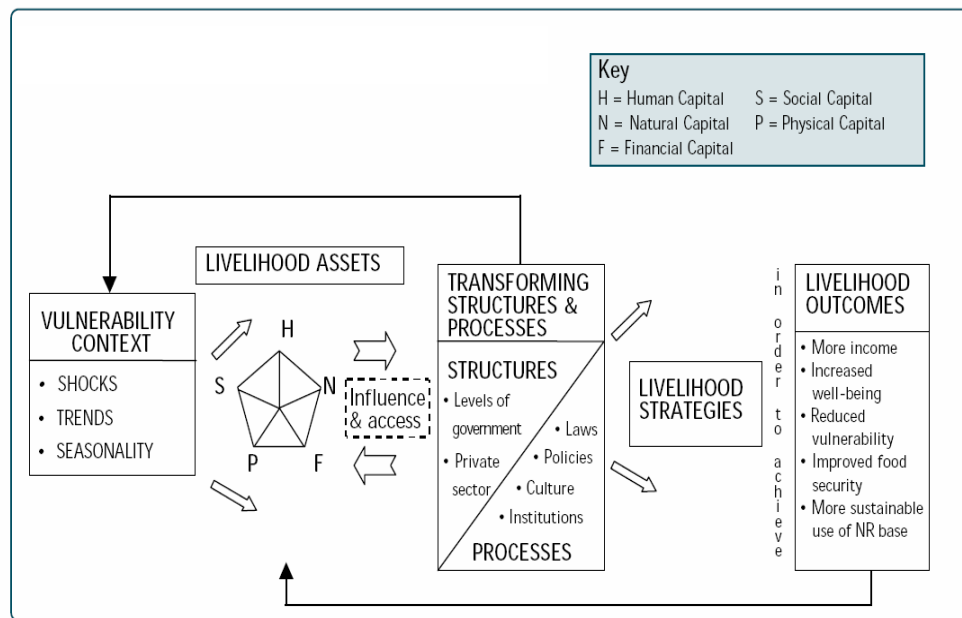
Conceptualization of the study

The Sustainable Livelihoods Framework (DFID, 1999) guided the study. This conceptualization is presented in Figure 11. A household was considered as an entity endowed with capital assets (natural, financial, physical, human and social) that it utilized to generate outcomes for livelihood sustenance. The study conceptualized types of households with different capabilities operating within an external environment comprising

enabling and disabling investment factors that manifested in various ways, among them shocks and trends constituting a vulnerability context. One of the main constituents of the vulnerability context was poor health due to HIV/AIDS. The study envisaged that successful technology targeting was dependent on the socioeconomic characteristics of the end-users that in turn made different decisions to invest in a specific technology depending on their capability to overcome barriers to investment.

In the context of HIV/AIDS, the study aimed to understand how different types of smallholder households coped with the impacts of the pandemic. It specifically investigated how the build-up of social capital mitigated impacts of HIV/AIDS on smallholder farm households.

Figure 11. Sustainable livelihoods framework



Source: DFID 1999

Hypotheses, research questions and objectives

This research tested the hypothesis that: social capital is instrumental in mitigating the impacts of HIV/AIDS on smallholder agriculture. Three research questions were addressed:

- How does social capital contribute to household capacity to cope with HIV/AIDS impacts on food security and incomes?
- Does social capital only benefit wealthier community members who are better connected in formal and informal networks but fail to cater for poorer households?
- How best can agricultural technologies and market information be targeted to benefit vulnerable households?

Three main objectives were pursued:

- To identify different forms of community-based social capital in Tsholotsho and Kezi
- To assess the role of social capital in mitigating impacts of HIV/AIDS for different types of smallholder farm households.
- To draw recommendations for informing policy

Methodology

(i) *Selection of study sites, sampling and research instruments*

The study was conducted in the semi-arid tropics (SAT) of Zimbabwe which fall in two main agro-ecological zones: ¹Natural Regions IV and V. Tsholotsho study site is in Natural Regions (NR) IV and Kezi communal lands are found in NR V. The study was carried out in two parts: a qualitative reconnaissance using participatory tools, mainly focus group discussions and key informant interviews; and a quantitative formal survey. The reconnaissance covered four communities: Khulumusenza and Tshitatshawa in NR IV and Matshetshe and Manama in NR V so as to identify livelihood constraints, understand livelihood diversification behavior and to firm up hypotheses to be tested in formal surveys. Each community studied comprised several villages and each village was made of 100-200 households. Focus groups comprised men, women, young and elderly farmers. Key informants were household heads and opinion leaders, equally distributed among male-headed, *de facto* female-headed, and *de jure* female-headed households. To be able to establish how different households relied on social capital, households were stratified on the basis of their resource endowments using the wealth ranking method. Wealth-ranking criteria are discussed in section 3.3 (ii) below. Sample surveys covered 182 farm households randomly selected from Kezi communal lands

and Ward 11 of Tsholotsho district. Of the 182 households, 101 were drawn from Kezi and 81 from Tsholotsho. The unit of analysis for sample surveys was the household. Both structured and semi-structured questionnaires containing different modules were utilized. One of the modules was the role of formal and informal local institutions and networks in livelihood sustenance, especially investments in crops and livestock, technology adoption and livelihood diversification strategies.

(ii) Household stratification criteria

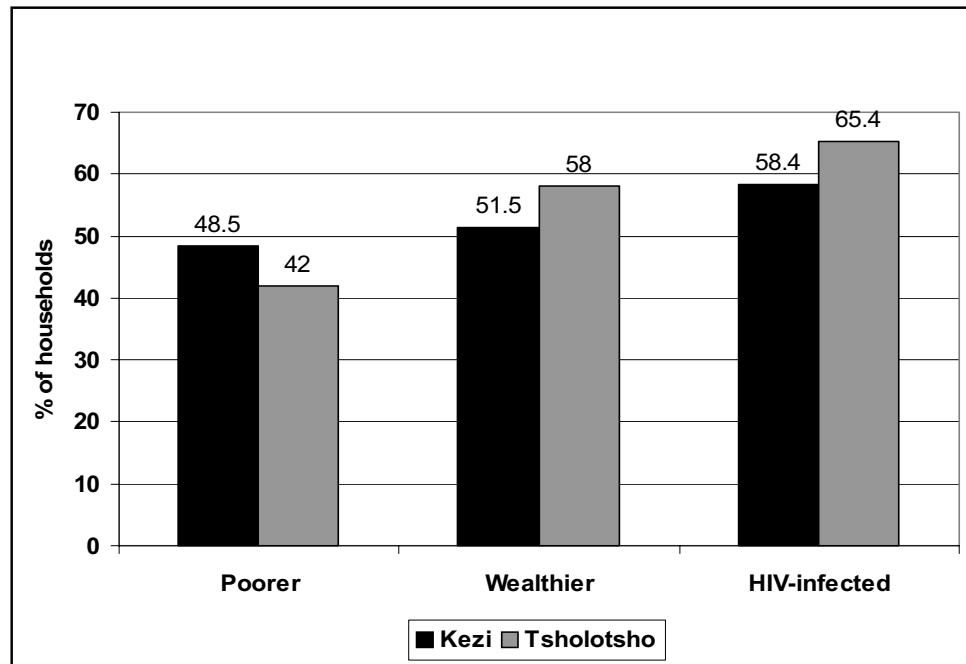
In order to assess the differential access to social capital as an HIV/AIDS impact mitigation. While Figure 12 shows the subsequent quantitative stratification of sample strategy, households were first qualitatively stratified on the basis of relative wealth and the wealth-ranking criteria later utilized to quantitatively stratify the sample households into wealth categories. Table 18 shows the wealth-ranking criteria developed through focus group households. These results show that resource endowments in NR IV and NR V were similar; and that cattle ownership was an important denominator in wealth ranking. Sample households were therefore stratified using cattle ownership as the main denominator. Poorer households did not own cattle while relatively wealthier households owned cattle. Close to 49% of households in Kezi and 42% in Tsholotsho were classified as poor while the rest were relatively wealthy. Fig 12 also shows proportions of HIV/AIDS-infected households. These were post-sampled based on key proxies: households that had experienced a chronic sickness over a period of the immediate five years prior to the study; households experiencing chronic sickness at the time of the study and those that had lost a member to death in the previous 12 months were selected as being HIV/AIDS-infected. In total, 58% of households in Kezi and 65% in Tsholotsho fell in this category. Both qualitative and quantitative data analyses cut across poorer, wealthier and HIV/AIDS-infected households.

Table 18. Relative wealth ranking criteria

Assets	Khulumusenza in NR IV			Manama in NR V		
	Poor	Average	Rich	Poor	Average	Rich
Cattle	Nil	4-6	25-30	Nil	5-10	20-50
Donkeys	0-2	4-6	4-8	0-2	4-8	4 8
Goats	0-2	6-10	10-20	0-5	10-50	50-150
Chicken	<10-20	10-20	20-30	8-10	10-20	10-30
Scotch carts	0-1	1	2	Nil	1	1-2
Harrow	Nil	1	1	Nil	1	1
Ploughs	Nil	1	1-2	Nil	1	1-3
Radio	Nil	1	1	Nil	1	1
W/ barrow	Nil	1	1-2	Nil	1	1-2

¹Natural Region IV has an annual rainfall range of 350-650 mm with semi-intensive farming systems suitable for livestock and drought-resistant crops. Natural Region V is drier, with rainfall of less than 400-600 mm, with extensive farming, suitable for cattle ranching.

Figure 12. Proportions of household types in Kezi and Tsholotsho



Results

Morbidity and mortality within study communities

Formal survey results showed that study communities were stressed by chronic illnesses (Table 19). Tuberculosis/chest pains and malaria had higher prevalence in the communities. Other sicknesses reported were stomach problems, rheumatism, herpes, heart problems particularly high blood pressure and to a lesser extent allergies, cancers, dementia and meningitis.

Table 19. Major sicknesses (% responses)

	Kezi		Tsholotsho		HIV-infected	
	Poorer (n=48)	Wealthier (n=56)	Poorer (n=52)	Wealthier (n=24)	Kezi	Tsholotsho
Tuberculosis/chest problems	31.3	32.1	23.1	16.7	20	18
Malaria	27.1	30.4	42.3	29.2	13	40
Rheumatism, digestive disorders and herpes	20.8	23.2	7.6	16.7	9	4
Heart problems/ High BP/ stroke	6.3	7.1	9.6	16.7	11	12
Other*	14.6	16.2	21	20.8	49	26

*allergies, mental illness, meningitis, cancer, poor eyesight and sexually-transmitted diseases

Consequences of these illnesses were telling. Table 20 shows the extent of illnesses across the different types of households. Between 21% and 56% of households across all types had experienced a chronic illness over the previous ten months prior to the study. Approximately 15% to 27% had experienced a death over the same period and as many as 46% of households cared for at least one orphan.

Table 20. Chronic illnesses, deaths and orphan care (% households)

	Kezi		Tsholotsho		HIV-infected	
	Poorer (n=48)	Wealthier (n=53)	Poorer (n=34)	Wealthier (n=24)	Kezi (n=58)	Tsholotsho (n=53)
Chronic illness in last 10 months	56.3	42.3	20.6	38.3	55	36
Experienced death in last 10 months	27.1	19.2	14.7	14.9	27.6	16
Caring for one or more orphans	45.8	38.5	26.5	42.6	41.4	30.2

Farm labor limitations

The main sources of draft power in both study locations were donkeys. Very rarely were oxen utilized for this purpose. The mean number of cattle was higher for wealthier households than for HIV/AIDS-infected ones (Table 21). This is because the latter were a combination of poorer and infected households and poorer households did not

own cattle. However, the standard deviations across all types of households owning cattle were very high. Poorer (11%) and HIV/AIDS-infected (30%) households in Tsholotsho had the least ownership of a minimum of two donkeys; the respective proportions for Kezi were 56% and 64%. Although it was common practice for farmers to yoke two donkeys for ploughing, the recommended number is four donkeys. Households with a minimum of four donkeys were much less numerous and ranged between 2.9% for poorer households in Tsholotsho to 47% for wealthier households in Kezi.

Table 21. Ownership of draft animals and farm implements

	Kezi		Tsholotsho		HIV-infected	
	Poorer (n=48)	Wealthier (n=53)	Poorer (n=34)	Wealthier (n=47)	Kezi	Tsholotsho
Cattle (mean)	0	13.9 (25.9)	0	10 (13.5)	6.9 (20.1)	5.4 (9.5)
% HH with two or more donkeys	56.3	79.2	11.7	46.8	64.4	30
% HH with four or more donkeys	25	47.2	2.9	23.4	32.1	15
% HH with one or more ploughs	79.2	94.3	38.2	87.2	88	69
% HH with one or more scotch carts	33.4	69.8	14.7	61.7	51	40
% HH with one or more wheelbarrow	64.6	83	32.4	63.8	75	51
% HH with one or more hoe/fork/spade	98	100	97	87.2	98	98

District Development

Fund Physical infrastructure – roads

Burial Society Social welfare – assistance during family bereavement

Micro-enterprise and savings clubs Women's groups involved in sewing, crafts, gardening and pottery and sometimes just contributed money as collective savings.

Social capital in mitigating impacts of HIV/AIDS

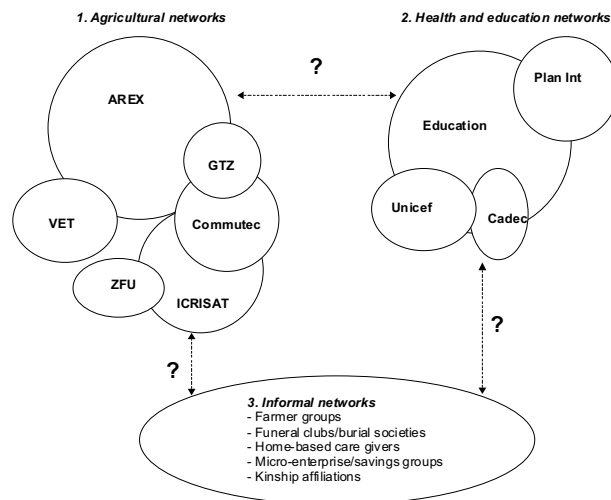
(i) Types of social capital inherent in the study communities

Both formal and informal networks were found in the study communities (Fig 13). The former consisted of agricultural and health-based public sector and civil society types of institutions; international agricultural research institutions were also found. Informal networks comprised primarily farmer groups, funeral or burial societies, home-based care-givers for the chronically ill, micro-enterprise and savings clubs and kinship affiliations. The agricultural research and extension department, (AREX), the veterinary department,

(VET), the international organizations (ICRISAT) and the NGOs Commutech and GTZ collaborated in the delivery of agricultural services. The Zimbabwe Farmers Union (ZFU) was also a collaborator in this respect. The second major group of collaborating networks focused on health and education and consisted of the Ministry of Education, Plan International, UNICEF and CADEC. Several other organizations were involved in agriculture, food security and health but operated rather independently. These comprised the Organization of Rural Associations for Progress (ORAP), World Food Programme (WFP) and Dabane Trust. Less important to the communities and operating individually were the Zimbabwe Republic police (ZRP), the Rural District Council (RDC), the Forestry Commission and the District Development Fund. There was no private sector organization regarded as beneficial and important by the community. The post office was recognized to be increasing in importance especially in the banking of remittances from household members working in South Africa and national urban centers.

Informal institutions included burial societies, home based care groups for the chronically ill, farm labor sharing groups, micro enterprise/savings groups, village development groups, and kin/family associations. Funeral groups or burial societies were informal associations comprising of volunteers who pooled their money together to assist each other in times of bereavement. Each member contributed money to a common pool that was then given to the bereaved family which was also a member of the group. Other obligations included gathering at the bereaved homestead to provide moral support until the funeral was over. Funeral groups were so common that every settlement line in a village had at least one burial society.

Fig 13: Primary networks in Khulumusenza community - Tsholotsho



Functions of the different institutions are summarized in Table 22. Organizations represented as collaborating with AREX were pursuing the same goal of improving agricultural production. These focused on crop and livestock production and health. AREX was involved in agricultural technology exchange. In collaboration with the veterinary department, AREX organized and carried out agricultural training for farmers.

Home-based care groups were associations of volunteers from the community who assisted in caring for the chronically ill and the orphans. Villagers reported that the majority of the chronically ill were HIV/AIDS patients. Home-based care groups were an initiative of the rural hospitals as a way of easing congestion in hospitals and freeing hospital beds for non-terminal sicknesses. These hospitals trained the home-based carers, offered free medicines, equipment/uniforms and monitored these services. Home-based Care Groups were reported to exist in almost every village. Each village also had a village health worker, who supervised the home-based carers. Village health workers were trained and paid employees of the Ministry of health.

Table 22. Institutions working with communities in Tsholotsho

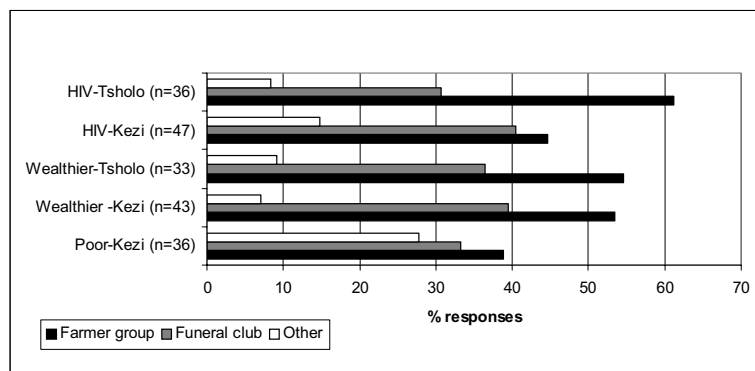
Institution	Activities
AREX	Technology exchange; land redistribution activities; food security/relief food distribution.
Veterinary Department	Animal health; marketing of cattle
ICRISAT, FAO and Commutech	Technology dissemination, seed multiplication through Farmer Field Schools; seed fairs; farmers' tours.
CADEC	Education; food relief; nutrition; water; seed donations; promotion of income-generating activities; school feeding programs for under five age group. Donated farm inputs and food grain to destitute households through the Catholic church.
BEAM	Targets orphans; donates blankets and pays school fees-
ORAP/WFO	Food Relief targeting the poorest of the poor
Dabane Trust	Water and sanitation and distribution of relief food
GTZ	Technology exchange and relief food distribution
Ministry of Education	Education and health
UNICEF	Food security, nutrition through promotion of nutrition gardens, health and education programs for children; child-feeding programs; provision of clothing for orphaned and vulnerable children.
Plan International	Education programs targeting destitute children; provision of farm inputs, water and sanitation and relief food distribution; housing for teachers; foster children program for AIDS orphans; restocking for livestock.
ZFU	Farmer credit for farm inputs
RDC	Collection of taxes and facilitation of livestock marketing
Forest Commission	Forest conservation; tree seedling production; boreholes

A dense network of formal and informal institutions that interacted with the farming communities and collaborated with each other served the study communities in Tsholotsho district. Horizontal networking was skewed towards the pursuit of common goals, which in turn varied across networks. Longer-term food security goals were pursued through the promotion of crop technologies and livestock restocking, and farm labor availability. Short-medium term food security interventions focused on mitigating the effects of drought through food aid, provision of farm inputs especially seed, fertilizer and implements. There were also health and welfare interventions aimed at assisting HIV/AIDS afflicted households mitigate the impact of the pandemic. Destitute children and foster parents were targeted with food relief, clothing, school fees and monetary assistance. Informal welfare networks particularly funeral/burial societies helped offset cash income constraints during bereavement. Micro-enterprise or savings clubs contributed to cash income security while home-based care groups for the terminally ill helped offset medication costs for the afflicted households.

(ii) Membership in informal community-based networks

Community members, who could afford it, belonged to more than one group and this was quite common. Objectives for joining these groups were varied. Basically, farmers joined these groups as a response to two main shocks – drought and HIV/AIDS. They formed and joined groups so as to help mitigate the impact of drought and HIV/AIDS on food security and to lessen the financial impact of HIV/AIDS and related deaths. Specifically, the reasons for forming and joining groups were to gain agricultural knowledge; access free seed packs and/or purchase farm inputs at subsidized prices; gain financial assistance for bereaved households; accumulate farm assets including boreholes for water; offer welfare assistance to the sick and orphans; and to benefit from food relief programs.

Figure 14. Membership of Community-based Groups



Two main types of groups had most membership: funeral groups and farmers' groups. Groups that cared for the chronically ill and those that facilitated human and draft labor sharing and participation in development activities such as food for work had less membership. It was, however, not clear how these groups worked with the meso-level intervening institutions; particularly how membership to community-based groups and participation in related group activities were influenced by intervening meso-level institutions; and how this impacted on the targeting of research and development interventions. To further understand how these institutions worked with members of the community, key informants were interviewed and responses of some of them are shown in following boxes.

Farmer 1 – Dube

My name is Dube. I am a smallholder farmer aged 56 and married. I am a member of several community-based groups: Zimbabwe Farmers Union (ZFU), Dabane Trust group, Farmer Field School (FFS) and a burial society. ZFU helps me to purchase farm inputs especially seed, ploughs, fertiliser and pesticides at discounted prices. Through ZFU, I am able to work with other organizations serving farmers such as seed companies and Commutech. Not all farmers are members of ZFU because some are unable to pay the yearly subscription fees of Z\$300.

I have also received assistance from Dabane Trust which is involved in drilling of boreholes and construction of underground water tanks but I had to pay half the construction costs. The water is usually used for watering orchards and gardens. Dabane Trust reaches the farmers through a distribution committee of which I am the chairperson. Last year Dabane Trust donated groundnut, beans, maize, sorghum and millet seed to everyone in the community as long as every beneficiary farmer paid Z\$500 per household towards transport costs. Unfortunately, very poor households could not afford and hence did not receive the relief packs. I also am a member of a Farmer Field School formed by FAO with the assistance of AREX and ICRISAT. Through the FFS we learn crop production, water management and use of manure and fertilizers. The two most important benefits from this group are seed and agricultural knowledge but sometimes seed reaches the farmers late.

I am a member of a burial society as well. The group was formed after the community realized that people needed to help each other in times of bereavement. Some community members could not afford to buy coffins, food and other items. Only the immediate family members of the deceased, such as parents, children and close dependants, benefit from the fund. The burial society pays for the coffin and members contribute towards food, water and firewood. They provide moral support to the bereaved family until the funeral is over.

Farmer 2 – Mrs. Nkiwane

My name is Nkiwane and I am a 51-year-old widow with five children. I am a village health worker. I have eight head of cattle and 10 goats. I am a member of Plan International group, a women's group, a Farmer Field School and a church-based burial society. As a representative of children who benefit from Plan International, I am a member of a group responsible for distributing whatever aid (clothes, school fees, seed, heifers, donkeys, etc) is provided through Plan International to all orphaned and vulnerable children who are meant to benefit from the organization. In return the representatives are given T-shirts and shoes for use while at work. The women's group I belong to is a grocery club where women contribute money every month to buy groceries that we store to be shared among members at the end of the year. Combining money to purchase groceries is beneficial because bulk purchases can sometimes be made at discounted prices.

The FFS teaches us water conservation for crop production, crop spacing and management, use of manure and fertilizers, and types of crops suitable for the dry area. The FFS group has a field of its own where farmers work together and share the proceeds. Farmers benefit by applying the learnt skills to their own individual fields, and also benefit from the seed and the produce from the FFS field. This improves their food security. The reason why I joined this group was because I could receive free seed and agricultural knowledge. Despite these benefits, farmers struggle to get draft power to work on the group's field in addition to their own individual fields. Persistent drought in the area reduces yield of the crops. Sometimes there is a problem of pests and diseases that the farmers cannot control.

The Catholic Church burial society was formed to assist very poor church members in times of bereavement. Members contribute money every month towards the fund. Currently we contribute Z\$50 per member per month. Whenever a member is bereaved, the society buys a coffin and a blanket and contributes some money to the bereaved family depending on what is left in the fund.

(iii) Informal networks in coping with farm labor limitations (% response)

Key informants provided useful insights into how smallholder farmers worked with and benefited from community-based networks and meso-level research and development organizations. They did not, however, show the relative benefits by different types of households: poorer, wealthier and HIV/AIDS-infected households. Further analysis provided this information (Table 23).

Table 23. Informal networks in coping with farm labor constraints (% response)

	Poorer HHs		Wealthier HHs		HIV infected HHs	
	Kezi	Tsholotsho	Kezi	Tsholotsho	Kezi	Tsholotsho
Human labor						
Pool labor	48	83.3	35.5	50	40.3	56.3
Hire labor	18	0	37	37.1	30.6	31.3
Other	28	16.7	27.8	12.8	29	12.5
Total	100	100	100	100	100	100
Draft power						
Pool draft animals	33.3	26.8	33.3	37.5	50.1	37.2
Hire labor	29.6	57.1	44.5	41.7	29	48.6
Other	28.5	14.3	22.1	29.1	20.9	6.3
Total	100	100	100	100	100	100

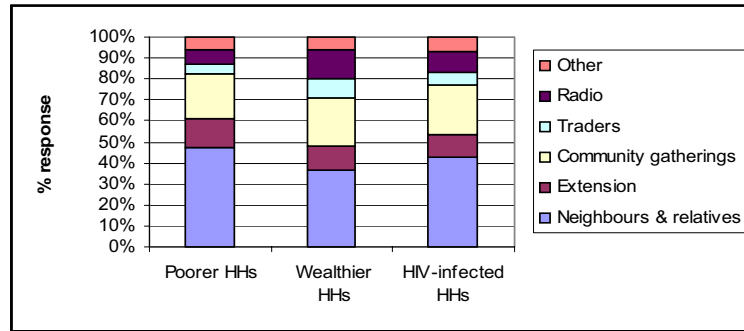
Other = work longer hours, no problem, plough less land

To cope with draft labor limitations farmers pooled human labor and worked on each other's farms in turns. This was practised across all types of households but poorer households (83%) and those infected by HIV/AIDS (56%) in Tsholotsho applied this strategy most. They also pooled their animals, mainly donkeys and farm implements, in order to plough for one another in turns. Fifty-seven percent of poorer households in Tsholotsho and 49% of HIV/AIDS-infected households in Kezi pooled draft power although other household types used this strategy to a lesser extent.

(iv) Access to Agricultural, Market and HIV/AIDS Information (% response)

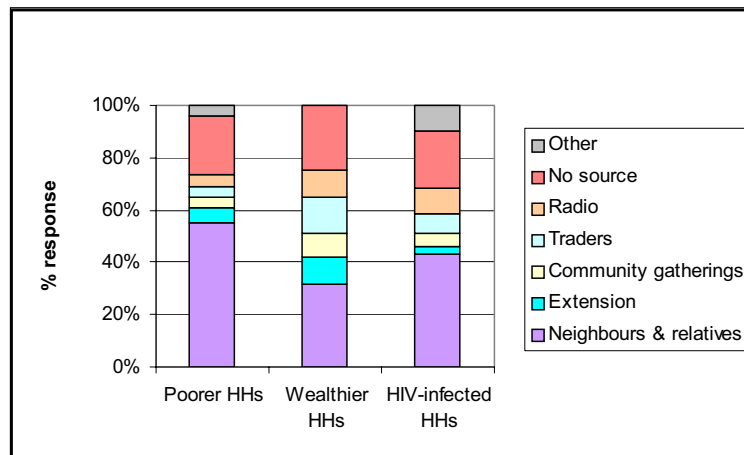
Social capital in the form of neighbors and kin and community gatherings was highly relied upon by farmers in accessing agricultural and market information (Figures 15 and 16). Close to 47% and 43% of responses indicated that poorer and HIV/AIDS-infected households respectively received agricultural information from neighbors and kinfolk. Between 20% and 23% of responses showed that all types of households depended on community gatherings for agricultural information. Lesser information sources comprised the formal agricultural extension services and the radio.

Figure 15. Sources of agricultural information - Kezi



Access to market information was similar to that of agricultural information. In Kezi, for instance, poorer and HIV/AIDS-infected households relied more on informal neighbor-based networks within the communities in accessing this type of information as shown by 55% and 43% of responses respectively (Fig 16).

Figure 16. Sources of market information

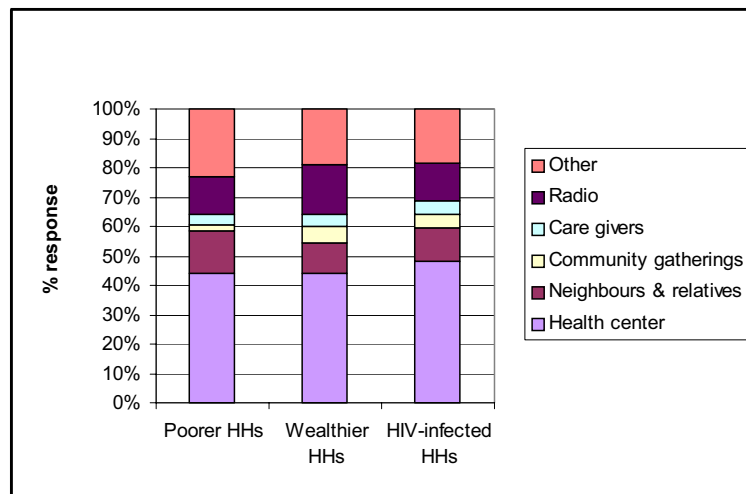


Relatively higher responses (14%) showed that wealthier households also received market information from traders who traveled to the communities to purchase livestock and grain; not many of the poorer and infected households received this type of information from traders.

Access to health information was more dependent on health facilities and the radio than on informal community-based networks as in the case of agricultural and market

information. Between 29% and 30% of responses showed that the health facilities were most relied upon for information on HIV/AIDS. Neighbors and kinfolk or the radio were also important sources of health information accounting for 14-17% and 16-25%, respectively, of the responses across all types of households.

Figure 17. Sources of HIV/AIDS information - Tsholotsho



Summary of findings and recommendations

Salient findings and key recommendations of the study are summarized as follows:

- Social capital was useful to smallholder households in coping with the impacts of HIV/AIDS. Two main forms of social capital were most useful to the communities: community-based networks and meso-level formal organizations working with the communities. Poorer, wealthier and households infected by HIV/AIDS benefited from these forms of social capital.
- Social capital in the form of funeral societies and clubs benefited households infected by HIV/AIDS by offsetting funeral expenses. Human and draft labor-sharing groups were a major form of coping with farm labor constraints.
- Existing social networks facilitated access to information relevant for decision-making. Households also accessed agricultural, marketing and HIV/AIDS information through social networks involving neighbors, burial groups, home-based care groups for the chronically ill, farm labor sharing groups, micro

enterprise/savings groups, village development groups and kinfolk/family associations.

- Group membership fees and annual subscription fees were the main causes of exclusion of the poor from community-based groups. There was evidence to the effect that poorer households who were unable to pay group membership and subscription fees were unable to access some of the benefits such as farm inputs and food grain distributed by meso-level development organizations through community-based networks. The exclusion of the poor from groups meant the groups only benefited the relatively wealthier community members. However, the available evidence was not conclusive on whether social capital benefited wealthier households more than it did the poorer ones. More information, especially on the functioning of formal and informal community-based networks, is required to help establish the extent of social exclusion and inclusion of different household types.
- Health facilities were the main sources of information on HIV/AIDS unlike in the case of agricultural and market information. This points to a need to integrate agricultural development and research institutions with formal and informal community-based networks and the health sector.
- Community stratification on the basis of relative wealth and the relative effects of chronic illnesses can be an important way of targeting agricultural and health interventions aimed at mitigating the impacts of HIV/AIDS on the livelihoods of different types of households.

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Adoption of HIV/AIDS preventive methods by farm households in rural Nigeria

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Abstract

Farming remains an important means of livelihood for a majority of rural households. It is carried out largely on smallholdings and is labor intensive, demanding good physical health. The level of awareness and infection of HIV/AIDS among farm households was assessed and the factors that affect the adoption of HIV-preventive techniques were also examined. Results show that affected household heads are within their economically-active life and there are more cases of morbidity than mortality. Thirty two percent of heads of affected households have undertaken an HIV test, yet there is still denial of the disease due to the stigma attached to it, thus increasing the spread. Community response is poor and social networks are weak to mitigate the impact of HIV/AIDS. Health institutions are inadequate and weak; this, coupled with wrong attitudes about the disease, results in risky behavior. About 40% reported a reduction in food intake, incomes and economic activities. Institutional and attitudinal factors were significant in determining the adoption of HIV-preventive methods. There is a need for inclusion of all stakeholders, including public health workers, extension workers, faith-based organizations, NGOs and traditional leaders, in devising improved strategies to effect attitudinal changes in addition to the conventional methods.

Key words: *HIV/AIDS, adoption, preventive methods, Nigeria*

Introduction

The HIV/AIDS epidemic is one of the greatest challenges confronting the world today. Over 36 million individuals are currently living with HIV/AIDS, 95% of whom are from developing countries. Assuming that each HIV/AIDS case directly influences the lives of four other individuals, a total of more than 150 million people are being affected by the disease (Barnett and Rugalema, 2001). Sub-Saharan Africa is the region of the world that is most affected by HIV/AIDS and the magnitude and depth of HIV/AIDS impacts in sub-Saharan Africa are staggering (Gillespie *et al.*, 2001). The sub-Saharan population is about 10% of the world's population yet includes almost two-thirds of all people living with HIV. An estimated 25.4 million people are living with HIV and approximately 3.1 million new infections occurred in 2004. The epidemic claimed the lives of an estimated 2.3 million people last year. Around 2 million children under 15 are

living with HIV and more than 12 million children have been orphaned by AIDS. The prevalence rate is diverse within the continent. In southern Africa, all seven countries have rates that are above 17%; in Central and East Africa, the rates are between 4 and 13%, while in West Africa no country has a prevalence rate exceeding 10% and most have prevalence rates between 1% and 5%. (UNAIDS, 2004).

In Nigeria, the prevalence rate rose from 1.8% in 1993 to 5.8% in 2001 and declined to 5.0% in 2003. The country has the biggest population in Africa, with 1 in 6 Africans being Nigerian. Although HIV prevalence rates are much lower in Nigeria than in other African countries such as South Africa and Zambia, the absolute number of people affected is larger. By the end of 2003, there were an estimated 3,600,000 people living with HIV/AIDS which is the largest number in the world after South Africa and India (UNAIDS, 2004). However, there are significant differences in rates of infection within the country, and among different sectors of the population, living in different parts of the country.

The economy of Nigeria like other sub-Saharan African countries is largely agrarian and agriculture remains the main means of livelihood for the rural populace. On-farm activities have lately become an important source of income for a few while it supplements the income from agriculture for many. By and large, agriculture is still practiced either as a primary or secondary occupation by the majority of the rural populace and thus remains the backbone of the socio-economic life in rural areas. HIV/AIDS affects all sectors, agriculture inclusive, and therefore requires a multi-sectoral approach in combating the virus. HIV/AIDS is no longer considered only as a health issue but rightly as a developmental challenge (Loevinsohn and Gillespie, 2003, Du Guerny, 2002).

HIV/AIDS has implications for the social and economic lives of infected and affected households. It has adverse effects on life expectancy and strikes people in their prime years, when they are most productive. It leads to reductions in the available time, labor and other resources of individuals and households, thus disrupting their social and economic foundations. Because the disease has both a long incubation period and is accompanied by a lengthy period of illness, the socio-economic as well as psychological impact is felt over a prolonged period of time (Ainsworth and Over, 1992).

In response to these challenges, Government and non-governmental agencies are making efforts to create awareness of the disease, encourage safe sex attitudes and promote the use of preventive methods in the country. The object of this paper is to investigate the level of awareness of HIV/AIDS and attitudes towards the disease among rural farm households. In addition, the study seeks to identify the factors that affect the adoption of HIV/AIDS preventive methods.

An overview of the methods of spread and prevention of HIV/AIDS in Nigeria

About 80% of HIV infections in Nigeria are transmitted through heterosexual sex. The determinants of the spread have been summarized into three in a National Committee on AIDS (NACA) report. They are social, behavioral and biological determinants.

The social determinants include the role and impact of commercial sex workers, non-acceptance by religious and conservative groups of all proven HIV-preventive methods, stigma and discrimination against persons living with and affected by HIV/AIDS (PLWHAs). Other factors are low to irregular incomes, peer pressure for high-risk behavior, culturally-dictated subjugation and subordination of women. Also, the weaknesses in the legal and political framework and lack of support for out-of-school young people are contributing factors.

The behavioral determinants are unprotected sexual behavior among mobile population groups, unwillingness to acknowledge infection and seek assistance, and deterioration of traditional social discipline and norms of behavior that contribute to the spread of HIV/AIDS.

The biological determinants involve uncontrolled proliferation of infection associated with sexually-transmitted diseases, including both unsafe and unregulated blood transfusions. Blood transfusions are responsible for 10% of all HIV infections. There is a high demand for blood because of road traffic accidents, blood loss from surgery and childbirth, and anemia from malaria. As there is no coordinated national blood supply system, blood isn't routinely tested for HIV, and a study in 2003 found that 4% of blood donors in Lagos were HIV-positive.

The remaining 10% of HIV infections are acquired through other routes such as mother-to-child transmission, homosexual sex and injecting drug use. The rate of mother-to-child transmission in Nigeria has gone up in recent years as the number of HIV-positive women have increased. A recent study carried out in Benue state identified some cultural practices that assist the spread of HIV/AIDS. These include: circumcision, incision with blade, tattoo and tribal marks, wife inheritance without knowledge of the cause of the husband's death, high promiscuity during cultural rites and festivals, i.e. during wake-keeping and funeral ceremonies.

Others include loose moral habits, drinking lots of alcohol, eating at night at pepper soup joints and unprotected sexual activities. Polygamy and unstable marriages as well as poverty are also contributory factors. Increased poverty has led to the emergence of

a new cultural practice in which parents benefit from their daughters' engagement in transactional or commercial sex (Adeoti 2004).

The factors contributing to the spread of HIV have been highlighted to include lack of sexual health information and education, stigma and discrimination and poor healthcare services.

The methods of prevention of HIV/AIDS include the following:

Reproductive Health Education

Nigeria's STD/HIV control estimates that 60% of all new HIV infection occurs in young people between the ages of 15 and 25 years. In 2004, a new curriculum was introduced for comprehensive sex education for 10-18 year olds. It focuses on improving young people's knowledge and attitudes to sexual health and reducing sexual risk taking behaviors. In the past, attempts at providing sex education for young people were hampered by religious and cultural objections. The new curriculum was developed in consultation with religious and community leaders and hopefully will remain in place in the future.

Condoms

Condoms are available in Nigeria particularly in urban centers but their use is affected by people's perceptions of how effective condoms are, perceived effects on sexual satisfaction and people not wanting to be seen as promiscuous by buying them. In rural areas, availability remains inadequate and there is improper training in effective use.

Media campaigns

Media campaigns, particularly radio campaigns, to raise awareness of HIV are a way of reaching many people.

HIV Counseling and Voluntary Testing

This is available in some public hospitals and through a few non-governmental agencies but is not widespread, particularly in rural areas.

Literature Review

A review of literature has shown that besides the characteristics of the technology, respondents' profiles on socioeconomic status, risk, knowledge and behavior affect their decision to adopt a particular preventive technique. Other factors include access to accurate and personalized HIV information and prevention services, access to friendly treatment facilities, cost, characteristics of health personnel and the physical environment where healthcare services are available but, more importantly, economic circumstances.

In a study by Adedimeji *et al.* (2005) that examined the relationship between urban slum residence, risk perception and protective behavior in young urban slum dwellers in Ibadan, Nigeria, findings show universal basic knowledge of HIV/AIDS, high levels of STIs and high risk perception. Despite this, risky behavior was common and protective behavior was poor. All respondents had engaged in unprotected sexual intercourse in the three months preceding the survey and 48% of boys and 12% of girls had multiple partners. Similarly, considerable proportions of respondents were engaged in transactional sex. Only 14% of boys and 5% of girls initiated a protective behavior, however, with fewer proportions reporting condom use. Structural and environmental constraints were identified as barriers to adopting protective behavior.

In studies conducted in Uganda, Kenya and Thailand by Suraratdecha *et al.* (2004) that estimated private willingness to pay and demand for hypothetical HIV vaccine, the studies found that not all individuals will be willing to be vaccinated with a safe and preventive HIV vaccine, even if it were available free of charge. Only one of the three studies analyzed factors influencing the willingness to be vaccinated (WTV). Factors considered included the efficacy of the drug, price of the drug, income proxy, risk, knowledge of someone with AIDS, belief AIDS is curable, gender, marital status, age, education and preferred location. The study shows that income, price, HIV knowledge, personal experience with HIV/AIDS, and marital status are not significant determinants. However, perceived risk of HIV infection has a positive influence on WTV.

In another study of contraceptive use in Matlab in Bangladesh in 1990 by Koenig *et al.*, with a special focus on condoms, the results show that education and socioeconomic status were not related to contraceptive use, but were positively correlated to condom use. Development, particularly women's education and higher socioeconomic status, also seem important for increasing condom usage.

In Nigeria, as in most developing countries, poverty is common and the rural populace does not have access to information, health services and drugs as do their urban counterparts, thus making them more vulnerable. Also, HIV/AIDS victims with origins in rural areas are taken back to their home communities for care when sick, thereby exposing those in the rural areas to a higher risk of infection. In identifying the factors that affect adoption of HIV/AIDS preventive methods, these factors are considered alongside socio-economic factors. Since studies on HIV/AIDS in rural Nigeria are rare, this study's focus is on the rural farm household thus adding to the body of knowledge on the disease in Nigeria.

Sources and Methods of Data Collection

The study was conducted in the South West and South East parts of Nigeria. Both primary and secondary data were collected from various sources. Secondary data were collected from the National Committee on AIDS (NACA), State Ministries of Health and Agriculture. Primary data was collected through the use of well-structured questionnaires. A multistage sampling technique was employed in selecting the required sample. The first stage involved the selection of five states, two from the South East and three from the South West. The criteria for selection were based on prevalence rate and availability of resources. The second stage was the selection of farm households with and without HIV/AIDS. Information on HIV/AIDS problems in the farming areas were sought from the Ministry of Health (MOH) and Agricultural Development Project (ADP) in identifying the local governments with high prevalence rates in their states. Samples were taken from purposefully-chosen villages based on information from community health centers and zonal agricultural extension officers. Care was taken to include households with cases of HIV/AIDS and/or protracted illness. This study used data from 398 households from Cross River State (75), Ogun State (120), Lagos State (88) and Ebonyi State (115).

Method of Analysis

The households are HIV-positive where at least one member has tested positive for HIV/AIDS or is suffering from protracted sickness for more than six months. Descriptive statistics are used to describe the level of awareness and infection of HIV/AIDS, preventive methods, household food intake and socio-economic impact of HIV/AIDS on farm households. The probit model is used to identify the factors that affect the adoption of HIV/AIDS preventive methods.

The model can be stated as:

$$Y = \sigma_i + \dot{u}_i \sum_{i=1}^7 X_i + v_i$$

Where Y = dependent variable having values between 0 and 1 and σ_i and \dot{u}_i are the parameters.

The dependent variable Y is determined by the use of condoms while the independent variables are the socio-economic, health, institutional, attitudinal and economic factors of each farm household. The independent variables are:

Socio-economic factors: age of household head (years); gender of household head; marital status, number of wives; household size; years of schooling

Health factors: household head taken HIV test; at least one member of household is HIV positive; protracted illness in the household; household expenditure on drugs

Institutional factors: no health care center in the community; distance to the nearest public health care service center (km); no external support for public campaign on HIV; condoms are not available in the community

Attitudinal factors: Ignorant of HIV/AIDS; don't believe in HIV/AIDS; don't care about HIV/AIDS; visit brothels; has many sex partners; thinks AIDS is a lie; knows nothing about HIV/AIDS preventive methods

Economic factors: number of people financing the household; type of primary occupation

Results and discussion

Socio-economic characteristics of farm households

The mean ages of farmers in all the states is within the 35 to 50 age range. This implies that farming is actively undertaken by those in their economically-active age group as a means of livelihood, either as primary or secondary occupation. In view of their role as producers of food for the nation, their health status becomes a very important issue in improving agricultural output and national food security. There are about 77% of households with male heads, of whom about 78 % are married. Polygamy is practiced in 43% of HIV-positive households and in 29% of HIV-negative households, suggesting that polygamy has the potential of increasing the spread of the disease. The mean household sizes differ but are not statistically different. A probable reason might be that although the disease increases the morbidity of sufferers, the number of deaths due to the disease is not significant in the studied area. The modal number of years of schooling of farmers irrespective of health status is six years which implies most went through only primary school education. However, the mean number of years of schooling differs between HIV-positive household heads with about 9 years in school while for the heads of HIV-negative households it is 10 years.

Table 24. Socio-economic characteristics of farm households

Socio-economic characteristics	HIV-POSITIVE					HIV-NEGATIVE				
	CR	OG	LA	EB	ALL	CR	OG	LA	EB	ALL
Age of HH Head										
Mean	45.19*	39.16	36.85	49.31	41.62	50.67*	37.58	38.02	46.86	43.95
Mode	46.00	40.00	28.00	50.00	40.00	56.00	38.00	26.00	45.00	38.00
Standard deviation	13.10	8.36	9.45	15.43	12.13	10.49	6.85	10.56	10.45	11.50
Gender (%)										
Male	33.3	79.2	73.6	64.5	68.3	37.5	90.7	62.8	88.4	77.6
Female	66.7	20.8	26.4	35.5	31.7	62.5	9.3	37.2	11.6	22.4
Marital Status (%)										
Married	51.9	84.4	67.9	80.0	74.8	70.8	86.0	65.7	85.5	78.0
Divorced	7.4	2.6	1.9	2.2	3.0	6.3	0	0	5.8	3.6
Single	11.1	11.7	20.8	6.7	12.9	4.2	9.3	25.7	2.9	8.7
Widowed	29.6	1.3	9.4	11.10	9.3	18.7	4.7	8.6	5.8	8.7
No. of wives (%)										
1	62.50	65.38	48.27	42.86	57.26	51.71	88.86	57.13	72.22	70.68
2	25.0	30.76	34.47	39.28	32.45	41.38	8.32	42.87	12.95	20.30
3	0	3.63	10.33	7.14	5.12	0	0	0	7.40	3.01
>4	12.50	0	6.89	10.69	5.12	6.88	2.78	0	7.40	6.01
Household size										
Mean	7.19	5.77	4.74	4.89**	5.49**	7.69	5.14	4.29	6.59**	6.15**
Mode	7.00	5.00	1.00	5.00	5.00	5.00	5.00	1.00	5.00	5.00
Standard deviation	3.04	2.88	2.82	2.82	2.87	3.98	2.69	2.84	4.61	3.98
Years of schooling										
Mean	8.48	10.23	8.47	7.18	8.86	9.04	11.63	8.80	10.17	9.99
Mode	6.00	6.00	6.00	6.00	6.00	8.00	12.00	6.00	6.00	6.00
Standard deviation	4.99	3.67	4.16	4.65	4.35	5.01	3.16	4.96	5.44	4.90

Source: Field survey (2004)

*significant at 10% level of significance

** significant at 5% level of significance

C R - Cross River State

O G - Ogun State

L A - Lagos State

E B - Ebonyi State

Household health and community health information**Table 25.** Households and community health information

	HIV POSITIVE					HIV NEGATIVE				
	CR	OG	LA	EB	ALL	CR	OG	LA	EB	ALL
HH head has undergone HIV test (%)	18.5	50.65	22.64	20	32.18	10.42	53.48	88.57	51.43	48.46
HH with HIV/AIDS tested positive member (%)	11.11	1.29	-	13.33	4.95	-	-	-	-	-
Amount spent on drugs per month (Naira*)										
Mean	6911	397	1772	13122	4463	8905	532	1394	1680	3127
Min	400	65	250	375	205	150	128	200	50	114
Max	40000	3000	12000	25000	40000	17000	9000	10000	20000	12350
Number of HH with public/private health care delivery service center in village (%)	44.44	23.38	18.87	42.22	29.20	37.50	37.21	77.14	38.57	44.89
Distance to the nearest public health service center (km)	35	20	15	20	23	35	20	15	30	25

Source: Field survey (2004)

* US\$ = 129.5 Nigerian Naira (7/2/2006)

About 30% of household heads with protracted diseases have gone for AIDS testing and only 5% reported at least one household member having AIDS. However, this does not state the number of AIDS sufferers in each infected household. In all, less than half have been tested for HIV. This is not unconnected with the belief that it is safer to be ignorant of HIV status due to the attendant stigma and also lack of access to health facilities.

The amount spent on drugs per month is highest in the HIV-positive households in Ebonyi, Cross River and Lagos State in descending order. These figures represent conservative estimates since rural dwellers patronize traditional medicine practitioners and take herbal medicines whose costs are not reckoned in. There is a greater presence of public/private healthcare delivery service centers in Ebonyi and Cross River states, which explains the high expenses incurred on drugs in those areas.

The distance to the nearest public health service center is greatest in Cross River followed by Ebonyi, Ogun and lastly by Lagos states. This suggests that private healthcare service delivery practitioners are commoner in Ebonyi and Cross River states than public centers and they may not be involved in HIV/AIDS prevention campaigns.

The nature of protracted disease in HIV-positive households is shown in table 5. Only in five percent of the households have members tested positive and acknowledged being AIDS-positive. In view of the high rate of denial, the number of those tested positive may be greater. The others reveal the predominance of opportunistic diseases. Ebonyi and Cross River states have higher occurrence of AIDS relative to others. The other common diseases are malaria, typhoid, cough and tuberculosis.

Table 26. Nature of protracted diseases

Protracted Diseases	HIV POSITIVE				
	CR	OG	LA	EB	ALL
Typhoid	6(22.2)	18(23.4)	29(54.7)	-	53(26.2)
Malaria	4(14.8)	35(45.5)	4(7.5)	9(20)	52(25.7)
HIV/AIDS	3(11.11)	1(1.3)	-	6(13.3)	10(4.9)
Tuberculosis	-	6(7.8)	5(9.4)	8(17.8)	19(9.4)
Cough	1(3.7)	13(16.9)	6(11.3)	8(17.8)	28(13.9)
Asthma	2(7.4)	-	-	2(4.4)	4(1.9)
Heart problems	1(3.7)	-	-	-	1(0.5)
Cancer	2(7.4)	-	-	-	2(1.0)
Dysentery	1(3.7)	-	1(1.9)	1(2.2)	3(1.5)
Hypertension	2(7.4)	-	3(5.7)	-	5(2.5)
Skin rashes	-	-	-	3(6.7)	3(1.5)
Weakness	3(11.1)	1(1.3)	-	2(4.4)	6(3.0)
Others	2(7.4)	3(3.9)	5(9.4)	6(13.3)	16(7.9)
Total	27	77	53	45	202

Source: Field survey (2004)

Figures in parenthesis represent percentages

Attitude of households to HIV/AIDS

Table 27 reveals that those who believe AIDS is exaggerated or non-existent represent the majority, irrespective of health status, particularly in Cross River, Ebonyi and Lagos states. This portends danger for the eradication of the disease and suggests the need for improved strategies in carrying out awareness campaigns. Among HIV-positive households, travelers and singles also represent a high percentage of those with negative

attitudes to AIDS. Forty percent claim ignorance of AIDS preventive methods. This claim is doubtful since they live in the same communities with HIV-negative households with only 24% claiming ignorance. However, with about a quarter claiming ignorance of preventive measures, and in view of the distance to public health delivery centers, the irregular and unreliable supply of electricity for radios and the poor performance of NGOs dealing with health issues in rural areas, there is a need to improve on awareness campaigns.

Table 27. Attitude of households on HIV/AIDS by percentage (%)

Attitude	HIV-POSITIVE					HIV-NEGATIVE				
	CR	OG	LA	EB	ALL	CR	OG	LA	EB	ALL
I dont believe in the existence of AIDS	33.3	19.5	13.2	31.1	22.3	45.8	9.3	25.7	15.9	25.6
I dont care who I have sex with	7.4	19.5	3.8	11.1	11.9	14.6	9.3	8.6	4.3	8.7
I travel a lot and visit brothels	10.0	20.8	24.5	24.4	19.8	-	9.3	8.6	7.2	6.2
I no longer like my wife so I visit brothels	14.8	9.1	13.2	15.6	12.4	10.4	2.3	2.9	2.9	4.6
I am still single and date many girls	3.7	11.7	20.8	33.3	17.8	8.3	7.0	17.1	5.8	8.7
AIDS is exaggerated	44.4	61.0	13.2	28.9	39.1	37.5	32.6	17.0	10.1	29.2
I am ignorant of HIV preventive measures	40.7	48.1	17.0	48.9	39.6	39.6	30.2	14.3	18.8	23.6

Source: Field survey (2004)

Impact of HIV/AIDS on farm household food intake and social-economic activities

HIV/AIDS affects the social and economic life of sufferers. Table 28 shows the varying impact of the disease on infected farm households. Over half of households in Lagos and Ebonyi states reported reductions in their food intake. With less energy to work, it is expected that farm output will reduce, thereby impacting negatively on household income and food intake. About 58% reported difficulty to trade in Ebonyi state, which recorded the highest incidence of AIDS. It implies that as soon as an AIDS sufferer is identified, it becomes difficult to carry out normal economic activities. Social exclusion and stigma is suffered by the victims, particularly in Ebonyi and Cross River states. This shows a lack of understanding of the modes of spread of HIV and lack of positive

response from the communities to the sufferers. Stigma and the subsequent discrimination presents a problem to the effectiveness of prevention efforts such as condom use and HIV/AIDS, the willingness of people to know their HIV-status, the care and support provided and the uptake and adherence to anti-retroviral treatment (ART) (Foreman, Lyra and Breinbacher, 2003; ICRW, 2002).

Table 28. Impact of HIV on farm household food intake and social-economic activities by percentage (%)

	HIV POSITIVE				
	CR	OG	LA	EB	ALL
Reduction in Food intake	40.7	20.8	52.8	64.4	41.60
Reduction in number of hours worked for income	40.7	31.9	67.9	60.0	48.4
Reduction in household income	44.4	37.7	66	66.7	52.5
Difficult to trade in the village	14.8	10.0	1.9	57.8	15.3
Reduction in participation in community development program	44.4	40.3	60.4	60.0	50.5
Reduction in leisure	40.7	39.0	64.2	66.7	52.0
Increase in social exclusion	44.4	7.8	15.1	64.4	27.2
Friends forsake the family	37.0	1.3	7.5	60.0	20.8

The result of the probit analysis is given in Table 29. A positive sign of a parameter indicates that the variable will increase the probability of adoption and vice versa. There are differences in the factors that affect adoption in each state. In Cross River state, household size is an important factor in the decision to adopt a preventive method. Age, amount spent on drugs, distance to public health centre, ignorance of HIV/AIDS and non-belief in the existence of AIDS reduce the probability of adoption. In Ogun state, while marriage, increased years of schooling and protracted sickness increases probability of adoption, the lack of healthcare centers, lack of availability of condoms within the community and non-belief in the existence of AIDS instead reduces the probability of adoption. In Lagos state, indifference to AIDS reduces probability of adoption. In Ebonyi, marriage and number contributing to household income are important factors increasing the probability of adoption. Contrary to a priori expectation, it is only in Ebonyi state

that financial factors affect the probability of adoption. In a related study in Zambia by Chapoto and Jayne (2005), the findings questioned the view that poverty leading to risky behavior is the major pathway through which the disease is spread, although it was agreed that it may be one of many pathways. The study asserts that individuals from poor households are not more likely to be victims of disease-related mortality than relatively wealthy individuals.

Attitudinal and institutional factors are the most important factors affecting adoption decisions in three of the four states. The household's health status is important in two of the states. Only in one state is the financial status of the household important.

The result of the pooled data reveals that factors that increase the probability of adoption include marital status, years of schooling, incidence of protracted illness and visiting of brothels. The factors that reduce adoption include increased age, increase in the amount spent on drugs, lack of healthcare service centers, longer distance to public health centers, lack of availability of condoms within the community and non-belief in the existence of AIDS.

It can be concluded that institutional factors are common in almost all the cases. This underscores the importance of improved health information and care delivery services. There is the need to influence the attitude of the rural populace by improving on strategies of awareness campaign.

Table 29. Probit model result for adoption of HIV preventive methods

	CRR	OGUN	LAGOS	EBONYI	POOLED
Age of HH	-0.0878*** (0.032972)	-0.01587 (0.029378)	0.007033 (0.025954)	0.001715 (0.021673)	-0.01456** (0.007299)
Sex of HH	-0.39868 (0.709094)	0.174283 (0.563135)	-0.38763 (0.460915)	-0.68879 (0.622304)	0.109222 (0.195954)
Marital status	0.436397 (0.275167)	0.586567* (0.3443)	-0.14953 (0.20949)	0.511621** (0.256256)	0.161186** (0.081701)
No of wives	0.522247 (0.361523)	0.124654 (0.302504)	-0.28365 (0.278238)	0.246692 (0.200109)	0.113615 (0.089861)
Size of household	0.178589* (0.10245)	-0.05921 (0.086923)	0.040742 (0.093029)	0.014291 (0.092761)	-0.00382 (0.027568)
Years of schooling	0.021946 (0.068421)	0.11923** (0.051962)	0.0138 (0.054735)	0.017606 (0.052276)	0.04395** (0.015822)
HH tested for HIV	-1.2103 (0.885472)	0.264815 (0.314249)	0.34074 (0.480517)	-0.69366 (0.695509)	-0.00166 (0.007755)
Hh with HIV+ member	0.604468 (0.725184)	0.02149 (0.368192)	-0.3434 (0.498474)	0.913381 (0.88942)	0.067286 (0.176989)
Hh member has protracted disease	0.6938 (0.561624)	0.687734* (0.38382)	0.403743 (0.423801)	-0.01952 (0.775138)	0.497497*** (0.164065)
Cost of drugs	-0.00014** (5.62E-05)	-0.00011 (0.000185)	4.64E-05 (8.45E-05)	-8.3E-05 (6.01E-05)	-3.7E-05** (1.67E-05)
No of health centers	-0.671274 (0.509636)	-0.805026* (0.43366)	0.418578 (0.476)	-0.11501 (0.636375)	-0.51081*** (0.160708)
Distance to health center (km)	-0.07687** (0.034116)	-0.06152 (0.041999)	0.040286 (0.046226)	0.040325 (0.040726)	0.002062 (0.010409)
No external support for HIV campaign	-1.0393 (0.655114)	0.078941 (0.343644)	0.162814 (0.42741)	0.487924 (0.632161)	0.174317 (0.149311)
Ignorant of HIV/AIDS	-0.95516** (0.477737)	-0.11967 (0.802533)	-0.94608 (0.728158)	0.922665 (0.818598)	-0.070245 (.234165)
Do not believe in HIV/AIDS	-1.54491** (0.707077)	-1.01720** (0.49612)	-0.13532 (0.657482)	-0.123347 (0.672972)	-0.72869*** (0.189084)
Don't care about HIV/AIDS	0.851713 (0.807126)	0.796038 (0.493162)	-1.57930** (0.711348)	-0.19477 (0.859403)	-0.417975 (0.257189)
Visits brothel	1.017102 (0.797725)	0.362961 (0.48714)	0.590762 (0.726111)	1.30845 (0.820705)	0.731818*** (0.246347)
Has more than one sex partner	1.966235 (1.498006)	0.421261 (0.650669)	1.015699 (0.665811)	-0.72188 (1.025603)	0.222135 (0.278475)
Its all lies	-0.08109 (0.648421)	-1.08451 (0.854081)	0.207651 (0.710967)	0.043203 (0.720712)	-0.01124 (0.249849)
Know nothing about prevention	-0.23925 (0.489604)	0.68188 (0.490941)	0.339812 (0.544813)	-0.51956 (0.765907)	0.128426 (0.172424)
No condoms in the vilage	0.426085 (0.782783)	-1.18274* (0.650034)	-0.30661 (0.430449)	-0.48033 (0.671636)	-0.41020** (0.163437)
Number financing Hh	0.240444 (0.252889)	-0.58888 (0.60081)	-0.0345 (0.209611)	1.57594** (0.672927)	-0.21054 (0.171156)
Primary occupation	-0.01156 (0.064554)	-0.00937 (0.214436)	0.004795 (0.009388)	-0.17861 (0.145112)	-0.0084 (0.055347)
_cons	1.706541 (2.437949)	0.550044 (1.536336)	-1.00796 (1.454757)	-2.0581 (1.707569)	-0.76619 (0.473832)
	CRR	OGUN	LAGOS	EBONYI	POOLED
Number of obs =	75	120	88	115	398
Prob > chi2 =	0.0317	0.0005	0.2053	0.0271	0.0000
Log likelihood =	-29.8520	-55.6929	-43.9096	-27.11174	-226.96021

Conclusion and policy recommendation

The study identified that the mean ages of farm households in all the states is within the economically-active age range of 35 and 50 years, with three-quarters being male. About 43% of males with HIV-positive households have more than one wife but there is no statistical difference in household size with those that are HIV-negative. This might imply that HIV/AIDS sufferers are still morbid but the rate of mortality might not yet be significant.

A lesser percentage of HIV-positive households have gone for HIV testing than in HIV-negative households. The fear of being diagnosed as being HIV positive inhibits sufferers of protracted diseases from undertaking the test. Ignorance of HIV status increases the spread of the disease and efforts need to be made to educate the populace on the importance of the test and to improve communities' responses to HIV sufferers. The amount spent on drugs is high particularly in Ebonyi and Cross River states, where there are a higher number public/private healthcare service centers; but the distances to the nearest healthcare service center are also furthest in these states. This implies that private health practitioners are more available in these states than the public ones. Apart from the fact that profit maximization is a primary objective of these private practitioners, AIDS prevention may not be an important objective for them.

Only 5% of HIV-positive households have at least a member tested positive for HIV/AIDS but this does not estimate the number of HIV-positive persons in these households. In view of the stigma attending the knowledge of HIV-positivity, there is denial of the disease which suggests that the figure may be higher.

About a quarter do not believe in the existence of AIDS while over 30% think it is exaggerated. Those who travel a lot and singles represent a high percentage of those people with a negative attitude about AIDS. These attitudes will increase the spread of the disease. About 40% of HIV-positive households claim ignorance of the disease. This result implies that awareness campaigns need to be intensified to change mindsets and bad behavioral patterns.

About 40% of HIV-positive households report reductions in food intake due to a reduction in household food production. The impact on ability to trade is felt most by about 60% of the HIV sufferers in Ebonyi state. Social exclusion is reported by 64%, which implies poor community response and weak social networks that do not mitigate the impact of the disease. Stigmatization is common which increases denial of the infection and increases spread. There is the need for an all-inclusive educational program for all age categories in their respective schools and workplaces.

The active participation of local government authorities, extension workers, faith-based organizations, community-based organizations, non-governmental organizations and traditional institutions will help improve responses to HIV/AIDS sufferers in rural areas.

The result of the probit analysis reveals that institutional and attitudinal factors are very important factors affecting the adoption of HIV/AIDS preventive measures. These include availability and distance to public health centers, availability of condoms within the community and non-belief in the existence of AIDS. Efforts must be made to improve healthcare delivery to rural areas.

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Community-based and gender approaches: panacea for mitigating impact of HIV/AIDS on agriculture

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Abstract

HIV/AIDS patients are increasing and the disease spreading in sub-Saharan Africa in spite of the present intervention levels. Many man-hours have been lost in the agricultural sector due to farmers' ill health or death. In the last decade, HIV/AIDS has been a disease that has ravaged the farming family with devastating effect on its socio-economic life, yet it could be controlled, prevented and managed for victim longevity. Sub-Saharan Africa has been more devastated by the HIV/AIDS epidemic than any other region of the world. By the end of 2003, 2.3 million people in the region had died of AIDS-related illness and about 27 million were estimated to be living with HIV/AIDS. HIV/AIDS is now a factor that must be taken into account in health care service provision in Nigeria given the prevalence rate of 5% among all adults aged 15 -49 years in 2003 and 4% among pregnant women aged 15 -24 years living in the capital city in 2001. HIV/AIDS intervention has proven most effective through a community-based approach in combating HIV/AIDS effects on agriculture, while gender consideration is very crucial in giving more insight to successful prevention and management. The Family Unity For Sustainable Development Foundation (FUSD) uses its widespread national infrastructure of farmers' communal groups/associations and young farmers'/foresters' clubs in secondary schools and out of school, and participatory development and community education approaches with gender concern, to institutionalize research, advocacy and awareness creation in health and crop production for rural poverty alleviation, nutrition and food security.

Key words: *agriculture, longevity, HIV/AIDS, gender, community-based*

Introduction

The rate of HIV/AIDS spread in sub-Saharan Africa is amazing and poses a threat to the present strategic HIV/AIDS control targeted to combat its effects. As the HIV/AIDS epidemic and other sexually-transmitted infections continue to advance worldwide, we are learning evermore about how they affect individuals, households, families, communities, organizations and nations. The individual loss has been enormous, particularly in those countries and regions affected early on. AIDS is increasingly recognized in developing countries as a serious concern for socio-economic development as a whole.

Its impact is seen in family and community structures and relationships in sectors as varied as agriculture, education, employment, health care, social welfare, the judiciary and human rights.

At FUSD Foundation, with the knowledge of research findings, we believe that to alleviate poverty and attain a viable sustainable development in the family and community, the health situation of the family and community must adequately be addressed, especially in the rural and urban slum communities where the neglected masses dwell, and agriculture is the mainstay of the rural economy.

Worthy of note and of urgent challenge is the effect of HIV/AIDS on the socio-economic lives of the family and community. By June 1998 a cumulative total of 1,893,784 AIDS cases (adults and children) worldwide had been reported to WHO. The actual number of AIDS cases is unknown because of under-diagnosis, incomplete reporting and reporting delays especially at the grassroots level. However, by the end of 1997 an estimated 11.7 million AIDS deaths had occurred in adults and children since the beginning of the epidemic, 2.3 million in 1997 alone. An estimated 29.4 million adults and 1.1 million children younger than 15 years were infected with HIV/AIDS. Of the adults 12.2 million were women (most of child bearing age); 36% of new infections in 1997 were in women. Moreover, an estimated 8.2 million children under 15 years of age had been orphaned, losing one or both parents, (UNAIDS/WHO, 1998).

In spite of the present intervention level in sub-Saharan Africa, HIV/AIDS patients are increasing and the disease is spreading fast. Sub-Saharan Africa has been more devastated by the HIV/AIDS epidemic than any other region of the world. Four of five women living with HIV are in this region and almost 9 of every 10 of the world's HIV-positive children. Transmission from mother to child is high in the region (30-40%) because of the lack of antiretroviral drugs to reduce transmission during pregnancy and delivery, poor nutrition and long breastfeeding. Because of high maternal infection levels and high fertility, the numbers of orphaned children, will continue to escalate dramatically. Potentially one-third of all children aged under 15 may be orphaned by 2010 in the worst affected countries (KIT/SAfAIDS, 1998). By the end of 2003, 2.3 million people in the region had died of AIDS-related illness, and almost 27 million were estimated to be living with HIV/AIDS (UNAIDS/WHO, 2003). The epidemic is taking an enormous toll of the region's youth: nearly 10 million women and men aged 15-24, roughly one in 14 young adults, are living with HIV/AIDS (UNICEF 2003). Half of the 3.0-3.4 million new cases of HIV infection in this region in 2003 occurred in this age group. In addition, youths have suffered indirectly from the epidemic: millions of children and teenagers in sub-Saharan Africa have lost at least one parent to AIDS, (UNICEF 2003).

HIV/AIDS is now a factor that must be taken into account in healthcare service provision in Nigeria, given estimated prevalence rates of 5% among all adults aged 15-49 years in 2003 and 41% among pregnant women aged 15-24 living in the capital city in 2001, (UNAIDS, 2004). Knowledge of HIV risk and ways to prevent infections is quite poor in Nigeria even among young women who have the highest level of infection and risk in sub-Saharan Africa.

The lack of sufficient knowledge about the disease and its determinants, the lack of tools for the control/prevention and management of the disease, failure to use the existing tools optimally and poor strategic disease control could be advanced as reasons for the high frequency in the spread of HIV/AIDS in Nigeria and sub-Saharan Africa as a whole. HIV/AIDS could be controlled, prevented and managed, especially given sufficient knowledge of the disease and optimal use of the existing strategic disease control. A community-based approach used by FUSD Foundation for HIV/AIDS control, prevention and management with strategic and innovative methodology has proven effective. A gender-based response to HIV/AIDS that focuses on how different social expectations, roles, status and economic power of men and women both affect and are affected by the epidemic is promising.

Materials and methods

This paper uses the review and discussion method with secondary data to appraise the author's work and related reported issues on the impact of HIV/AIDS in workplace, especially as it affects the agricultural sector. It discusses the gender-base implication in the spread and control of HIV/AIDS, the route of transmission peculiar to sub-Saharan Africa and the building of a community-based infrastructure as a powerful conduit to channel interventional measures to mitigate HIV/AIDS. FUSD Foundation uses a participatory approach in community education to reach out to the community and groups on issues of health, especially sexually-transmitted infections among which HIV/AIDS is paramount. The author proffers measures adapted by the Family Unity for Sustainable Development Foundation in its role of mitigating HIV/AIDS as being potent in combating HIV/AIDS in sub-Saharan Africa as a whole.

Results

With knowledge of research findings, a review of literature and transmission routes of HIV/AIDS, FUSD Foundation uses its communal groups and school club infrastructures with gender concern as sustainable strategies for combating HIV/AIDS.

In the rural communities, farmers' communal groups and associations are formed. These groups or Community-Based Organisations (CBOs) are spread over the local government areas and states in Nigeria where FUSD Foundation carries out its agricultural projects from on-farm trials through to crop production, post-harvest handling and marketing. At the urban level, FUSD Foundation establishes community-based early child/maternal health care centers such as at Bodija market, Ibadan and at Eleta-Anerin community, Ibadan. These centers contain a mothers' club, breastfeeding centre, nutrition centre, community clinic, community school, family planning etc. All these are used to reach out to the community at various levels to combat the impact of HIV/AIDS on agriculture and have proven successful.

All available tools for HIV/AIDS prevention, control and management are best disseminated through participatory approaches and community education for wider-spread sustainable technology adoption. All the routes of transmission of HIV/AIDS are addressed within the infrastructure. Giving sufficient knowledge about the disease and its determinants, maximizing the use of existing tools coupled with effective strategic disease control methods, especially among adolescents, has kept ignorance low and helped in the management of HIV/AIDS.

During early adolescence, the incidence of HIV/AIDS is the lowest of any period during the life cycle. The challenge is to keep it this way. Focusing on young people has been the most effective approach to confronting the epidemic, particularly in high prevalence countries (WHO 2003). The FUSD Foundation formation of young farmers'/foresters' clubs in secondary schools nationally provides an infrastructure, for advocacy, sensitization and conscientization of adolescents on health hazards, especially prevention, control and management of HIV/AIDS. However, the strong advice to adolescents from FUSDF against condoms and its education and counseling that abstinence is the best way to protect oneself and ensure a future and longevity has proven very effective. Furthermore, at marriage it advocates that young people should ensure that their partner certifies his or her HIV/AIDS negative status.

Discussion

Relevance of health in the production system

Fatimehin (1992) and Onitiri (1983) noted that in spite of the great scientific advances made by man, the standard of living of the vast majority of the world's population still depends more on man himself than on the technological aids that are available to him. It is down to man's disposition, will and attitude to work, his foresight in planning for the future and the exercise of wisdom in choosing a course of action among the various

alternatives that are available to him that provide the central explanation to his behavioral tendency that directly affect his input to the process of production. The health disposition of a man plays an integral part in the whole process and determines the output.

Within the concept of '4Ms' in the production system (man, money, machinery and materials), man is the most important factor. Also labor productivity in Nigeria actually demonstrates a consistency in trends and cycle over past years (Olushola, 2005). An inference could therefore be drawn from these facts that both theoretically and empirically, labor is the pivot of production, and hence holds a significant influence on the productivity of any workplace or production system. A priori, therefore, there is an indirect and direct relationship between health and agricultural productivity.

Health and welfare of the labor force are the responsibility of the employees. HIV/AIDS is not the exclusive reserve of any particular person; negligence in the health services of the production system could lead to the spread of HIV/AIDS and possibly collapse the system. It is crucial for small and medium enterprises in the agricultural sector to know the means through which HIV/AIDS can be contracted, the symptoms of HIV/AIDS and how to manage HIV/AIDS for increased productivity.

Economic consequences are already apparent. In highly affected countries, the agricultural sector is experiencing increased absenteeism as labor forces progressively reduce by falling ill, caring for the sick or attending funerals. Loss of experienced and skilled workers in the formal and informal sectors may lead to lower productivity, savings and investments. In subsistence and small-scale agriculture, loss of labor is resulting in documented changes in farming patterns, and in household and income security (KIT and SAfAID 1998).

Strategies and innovations

Mitigating impacts of HIV/AIDS on agriculture should be tactically addressed through innovative methodologies. In sub-Saharan Africa, HIV is transmitted predominantly through sexual intercourse, and from mother to child during pregnancy, delivery and breastfeeding. Needle-stick injury and use of contaminated sharp instruments in modern and traditional health settings also undoubtedly contributes a small amount to the overall infection, mainly in resource-poor settings. Infected blood transmission is another potential risk, particularly from women, who have more transfusions than men because of childbirth complications and anemia.

Gender-based responses

Gender refers to widely shared ideas and expectations (norms) about "typically" feminine and masculine characteristics and abilities and expectations about how women and men

should behave in various situations. These ideas and expectations are learned from families, friends, opinion leaders, religious and cultural institutions, schools, the workplace and the media. They reflect the influence, the different roles, social status, economic and political power of women and men in society (KIT/SAfAID/WHO, 1998). By analyzing gender stereotypes and exploring ways to reduce inequalities between women and men, a supportive environment can be created, enabling both to undertake prevention and cope with the epidemic.

Status and power affect the individual's risk of infection and communities' ability to cope with the epidemic. The low status and power of women and young people lead to their subordination and restrict their possibilities of taking control of their lives in relation to HIV/AIDS and sexually-transmitted infection (STI). Societal pressure also makes it difficult for men to change their behavior in this regard. Their sexual behavior may be influenced by their relations with other men and women (e.g. fathers, sons, mothers, sisters, peers) (Reid 1994).

One of the most striking features of the response to the HIV epidemic to date is how far the policies and programs we have developed relate to women's life situations. The complex network of relationships and structures that shape daily lives are well known to women and well documented. Despite this, our theories, research agendas, policies and programs have not been grounded in and informed by these experiences. These relationships, together with physiological differences, determine to a great extent, women's and men's risk of infection, their ability to protect themselves effectively and their respective share of the burden of the epidemic – women are physiologically more vulnerable to HIV infection than men. Young women are especially at risk and AIDS rates are highest in women in their 20s.

Young people's greater vulnerability to HIV from behavioral and physiological factors stems from the fact that in sub-Saharan Africa, as well as elsewhere in the developing world, young people's reproductive health needs receive little attention (Kiragu, 2001). And even where reproductive health care for adolescents is available, many young people do not know where to obtain it or are unable to pay for it.

Young women in sub-Saharan Africa are at much greater risk of contracting HIV than young men. In part, this is because many adolescent women are married to men who are considerably older. Some of these older husbands have likely had several previous sexual partners and many have a STI, including HIV, which they may transmit to other young wives. Given this pattern, marriage in sub-Saharan Africa may actually increase adolescent women's risk of contracting HIV (UNPF 2003). In addition, young women are physiologically more vulnerable to infection than older women because during puberty

the vagina and cervix of adolescents are less resistant to infection (Bolan *et al.*, 1999).

Socio-cultural practices that encourage sexual relationships involving young people, such as child marriage and rituals initiating boys and girls into adulthood are still common in sub-Saharan Africa; traditional stereotypes remain prevalent in many societies. Sexual experimentation before marriage and having more than one sexual partner after marriage are still widely condoned for men while women are expected to abstain from sex until marriage and to be faithful to their husbands once married. Studies also suggest that young men in the region typically experience strong social pressure to prove their manhood by having sex; engage in sexual intercourse with commercial sex workers; have sex with many partners or unprotected intercourse (Awusabo-Asare K *et al.*, 1999). Sexual inequality may also lead to young women submitting to men's sexual demands because they fear being beaten or they are in a subordinate position and have no alternative. Women with little power may not be able to refuse sex or to ask their partners to use condoms even when they know that they risk getting pregnant or contracting an STI, including HIV. For example, in Uganda one in four women and men believe that a married woman cannot refuse sex, even when she knows her partner has AIDS. It is the analysis, information, ideas and examples that help stimulate gender-sensitive initiatives that could help in coping with HIV/AIDS and STI more successfully.

HIV/AIDS in community and infrastructural building

Infrastructural building of health care services in a community-based approach is very essential in combating killer diseases and implementing other primary health care services. HIV/AIDS as a killer disease should be accorded community-oriented public health interventions to reduce the number of HIV/AIDS patients and the disease spread. For the purposes of this paper, I have defined a community to be a group of families in a societal setting that have influence on and chart the track of generations in such settings. On the other hand, a community charts the future of families and can influence the course of an individual's journey in life. Hence, community is a powerful tool and a vital ingredient in the make-up of a man and the fight against HIV/AIDS. Sustainable and effective public health interventions depend largely on the understanding, seriousness and decisions of the community.

As a deadly disease, HIV/AIDS should be tackled with evolving strategic disease control in acknowledgement of swift changes in HIV/AIDS symptoms. Some effective means of HIV/AIDS prevention, control and management are identified, such as abstinence, fidelity, good nutrition and antiretroviral drugs, etc and are recommended. However, very poor and broken healthcare delivery systems bring adverse results and encourage the increase in HIV/AIDS patients and disease spread. Again, application of these recommended strategies are already underway but have yet to gain root with the poor

who largely live under adverse socio-economic conditions with limited access to healthcare. Rural and urban slum people are dying everyday in ignorance; some are aware that they are sick, but think rarely of leaving their farms, markets or shops for diagnoses, and some are unable to afford the cost.

To get HIV/AIDS control, prevention and management higher on the development agenda, strong and sustainable infrastructure development should be taken very seriously. Obstacles in HIV/AIDS expanded control, prevention and management could be adequately addressed through community involvement and sustainable infrastructure building in our efforts against HIV/AIDS. The Family Unity for Sustainable Development Foundation movements to alleviate pain and suffering has not left healthcare behind. This has instead fuelled the fight against killer diseases, and brought success where others failed. The role of FUSD Foundation is committed to building strong and reliable infrastructures for healthcare delivery systems with remote populations living under the most deprived conditions. Also sustainable infrastructural building in both government and community has strengthened it for the effective delivery of health care and poverty alleviation programs.

The FUSD Foundation establishes community-based organizations in the market places, remote urban slums and rural areas to get work done in its poverty alleviation program and healthcare services. They are varied and cover community-based early child/maternal health care centers in market places and slums, farmers' communal groups/associations in farming communities, mothers' clubs in rural and urban slums, young farmers'/foresters' clubs in schools and out of school and community clinics.

In government, it works in collaboration/partnership with various international/national bodies such as IITA, ILRI, UNICEF, WARDA, NIHORT, CRIN and various ministries in research, development and dissemination of research findings. Hence it has the capacity to provide the necessary components and play a leading role in the achievement of HIV/AIDS control, prevention and management by providing support services to these communities. It has an infrastructure in which any new program can be integrated and also collaborators and partners who can readily supply backstopping to such projects, hence its HIV/AIDS intervention effectiveness.

Conclusion

Combating HIV/AIDS should be seen as a compassionate and serious welfare issue and not an avenue for a talking shop, and all tools of application should be seen as a transfer of technology to appropriate end-users; to be a process in an institutionalized manner, not an event. Motivation, awareness, campaigning, dissemination of ICT on HIV/AIDS, sensitization and conscientization programs that are already an urban concern should be extended to grassroots level. This is where community-based organizations in integrated packaged programs incorporating gender concern are most favorable, targeted to the appropriate group/community through participatory development methodology to meet with their requirement for effective and sustainable adoption.

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Strategies, challenges and opportunities for agricultural research in mitigating the impact of HIV/AIDS in WCA

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Introduction

The HIV/AIDS epidemic is drastically reducing the agricultural workforce of sub-Saharan Africa, threatening household food security and the food supply throughout the world. Since it was first diagnosed in 1981, the disease has escalated at unprecedented rates and is now widely acknowledged as a catastrophe for mankind. HIV/AIDS is no longer just a medical issue, but a development crisis. Sub-Saharan Africa has been worst hit by the HIV/AIDS pandemic, accounting for 70% of the world's HIV/AIDS cases. Estimate suggests that at the end of 2004, 39.4 million people were living with HIV/AIDS, of which 4.9 million had been recently affected, and there had been 3.1 million deaths. As the worst affected region, SSA has 25.4 million people living with HIV (UNAIDS, 2004). FAO has estimated that in the 25 most affected African countries, AIDS has killed 7 million agricultural workers since 1985. It could kill 16 million more within the next 20 years (up to 26% of the agricultural labour force in those countries) by 2020 (FAOa, 2002). Most of these are in the prime of their lives, in the age group 15-49 years old, which supplies the main labor force for agriculture. The epidemic is no longer viewed as a health problem, but more broadly as a development issue affecting every sector in sub-Saharan Africa especially agriculture, health, education and national economies.

The impact of HIV/AIDS in Africa

Many countries in sub-Saharan Africa (SSA) have failed to bring the pandemic under control, with the result that SSA accounts for 70% of the world's HIV/AIDS cases. Nearly two-thirds of the world's HIV-positive people live in SSA, despite the region containing little more than 10% of the world's population. More Africans die as a result of HIV/AIDS infection—83% of the world total—and the disease has killed ten times more people in Africa than war (FAO, 2003). The epidemic is spreading with alarming speed into the remotest villages, cutting food production and threatening the very life of rural communities. In 2004, an estimated 3.1 million people in SSA have become newly infected, while 2.3 million died of AIDS, this including 7 million agricultural workers in

SSA with a further 16 million more deaths projected by 2020 (FAO, 2002). In all, 25.4 million Africans were living with various stages of infection at the end of 2004, the highest since its discovery. Among young people aged 15-24 years, an estimated 7% of women and 2.2 % of men were living with HIV/AIDS at the end of 2004 (UNAIDS, 2005).

There is a significant risk that some countries will become locked in a vicious cycle as the number of people falling ill and subsequently dying from AIDS has a tremendous impact on many parts of African society, including economies, demographics, households, the health sector, educational establishments, workplaces and, of course, agriculture, the main source of livelihood for the majority of poor Africans. The AIDS epidemic is affecting women and girls in increasing numbers. Women and girls make up almost 57% of adults living with HIV in SSA. Adult women in SSA are up to 1.3 times more likely to be infected with HIV than male counterparts (UNAIDS, 2004). This unevenness is greatest among young women aged 15-24 years, who are about three times more likely to be infected than young men of the same age.

HIV/AIDS in West and Central Africa

HIV/AIDS statistics in West Africa are quite alarming. Seven countries are believed to have reached or surpassed 5% prevalence in the general population. Côte d'Ivoire and Burkina Faso could lose 24% and 20% of their workforces by 2020, if current infection rates continued unchecked (FAO, 2002).

Overall, HIV prevalence is highest in Burkina Faso, Côte d'Ivoire and Nigeria, the latter having the third largest number of people living with HIV in the world (after South Africa and India) (UNAIDS, 2005). Côte d'Ivoire has the highest HIV prevalence rate in West Africa, whereas absolute numbers are largest in Nigeria. Côte d'Ivoire also has a large number of migrant workers from neighboring Burkina Faso, Mali, Guinea and Senegal who are engaged in both agricultural and non-agricultural sectors. These categories of workers often return home to their farm families when they fall ill, creating more burdens on the family.

Nigeria

Nigeria's sentinel survey stated the country's highest prevalence rate to be 6%. This rate is highest among the young people, particularly women aged 20-29 years. In Osun and Ogun, for example, the prevalence rate among pregnant women was 1.2% and 1.5% respectively, while in Benue State it was 9.3% and Cross River State 12%.

Côte d'Ivoire and Togo

Côte d'Ivoire has continued to report the highest level of HIV prevalence in West Africa since the beginning of the epidemic. Togo has stayed roughly steady at around 4%, but the sentinel surveillance, shows the epidemic is largely concentrated in urban areas, with prevalence among pregnant women exceeding 8% in 2003.

Serious epidemics are underway in Central Africa, with Cameroon and Central African Republic worst affected. HIV prevalence among pregnant women is roughly 10% among pregnant women at some sites in recent years.

Gender and poverty dimensions of HIV/AIDS in rural West Africa

Although women are often disadvantaged with respect to access to cash, land, other resources and related decision-making in SSA agrarian communities, they play a central role in agriculture and natural resource management. Thus, agriculture is heavily dependent on women's labor. Yet, they are disproportionately affected by AIDS compared to men (SAfAIDS, 2000). The African social expectation is that women are the carers for the sick, be it their husbands, relatives or children. The productive labor time of women is diverted to caring for the sick (Barnett and Blaikie, 1992). Ironically, women who are themselves sick often return home to their parents for care from their mothers. A study from Tanzania reported that 60% less time was spent on agricultural activities when a woman is taking care of a sick husband (UNAIDS, 1999).

The HIV epidemic is largely driven by some factors that cause malnutrition, namely poverty, conflict and inequality (Piot *et al.*, 2002). HIV/AIDS drives many families into deepening poverty, and poverty accelerates the spread of HIV/AIDS. In rural areas, poverty makes people more vulnerable to the disease, since the poor are more frequently landless migrant laborers. The poor are also, more likely to be undernourished due to poor harvests and therefore subject to repeated infections. Female-headed households are more vulnerable to poverty than male-headed households (Neema, 1999). In addition to losing cash income on the death of the spouse, women have fewer legal rights, are less literate and have restricted access to support services. Following a death of a breadwinner, poor households receive little from family, friends and other private sources, while the non-poor receive significant amounts of cash and non-cash gifts (UNAIDS and WHO, 2001).

In parts of West Africa, women have no rights to the land of a deceased spouse, which must pass to a male relative, and they commonly lose other possessions as well. These various problems have contributed to the feminization of rural poverty (TAIARD, 2003). Furthermore, the AIDS stigma can affect the access widows would otherwise have to

assistance from the extended family and the community. Often the widow is blamed for transmitting the disease and is accused of promiscuity and immorality. Some widows are harassed and forced to leave their villages. They migrate to towns where they can escape from stigma, earn their living as petty traders or by engaging in transactional sex, or they remarry in anonymity (TAIARD, 2003). Because of these deepening differences, it is important to bring to the forefront the gendered dimension of the HIV/AIDS epidemic.

Impact mitigation strategies need to be carefully targeted and differentiated by gender, income and wealth levels. The risk of HIV infection in women cannot be separated from poverty and the unequal status of women in society. Thus strategically, women must be at the center of the response to HIV/AIDS.

Threat to agriculture and household food security

AIDS undermines agricultural systems and affects the nutritional situation and food security of rural families. As adults fall ill and die, families face declining productivity as well as loss of knowledge about indigenous farming and loss of assets. FAO has estimated that in most-affected African countries, AIDS has killed seven million agricultural workers since 1985. It could kill 16 million more within the next 20 years. FAO, 2003). In addition, rural communities bear a higher burden of the cost of HIV/AIDS as many urban dwellers and migrant labourers return to their villages of origin when they fall ill. At the same time, household expenditures rise to meet medical bills and funeral expenses, and while the number of productive family members decline, the numbers of dependents grow. These factors endanger household food security.

The CGIAR Initiative and WARDA Program on HIV/AIDS

Given the increasing trend in the number of people affected by HIV, particularly the agricultural population – the largest client group of the CG centers – they decided to heed the wake up call. That is to be proactive!

The Consultative Group on International Agricultural Research (CGIAR) is a network of 15 international research centers present on every continent. The mission of the CGIAR is to achieve sustainable food security and reduce poverty in developing countries through scientific research and research-related activities in the fields of agriculture, forestry, fisheries, policy and environment. They work with national agricultural research and civil society organizations including the private and public sectors. The alliance mobilizes agricultural sciences to reduce poverty, foster human well-being, promote agricultural growth and protect the environment. In a world where 75% of the population depends on agriculture to survive, poverty cannot be reduced without investment in agriculture.

Many of the countries with the strongest agricultural sectors have a record of sustained investment in agricultural science and technology. The evidence is clear; research for development generates agricultural growth and reduces poverty (www.cgiar.org).

As part of the global fight against HIV/AIDS, the CGIAR and its partners worldwide have developed the CGIAR Systemwide Initiative on HIV/AIDS and Agriculture (SWIHA) to combat HIV/AIDS by mitigating its impact on agriculture and rural and peri-urban livelihood systems.

SWIHA was convened and facilitated by the Africa Rice Center (WARDA), in collaboration with the International Service for National Agricultural Research (ISNAR), the International Food Policy Research Institute (IFPRI) and national agricultural research and extension systems (NARES). WARDA, in addition to serving as host center and SWIHA facilitator, has also developed a program aimed at proactively mitigating the negative impact of the pandemic in the agricultural sector in the WARDA member states and at playing a catalytic role in enabling NARES to mainstream HIV/AIDS into their research and development programs.

Goal of SWIHA

The goal and purpose of SWIHA is to mitigate and prevent the negative impacts of HIV/AIDS on agriculture, food security, natural resources management, poverty and human suffering.

SWIHA at WARDA

Following the formation of SWIHA by the CG, the Africa Rice Center (WARDA) was designated as the convening center for the network. Progresses with developing SWIHA have admittedly been slow due to various factors that have affected the Africa Rice Center itself since 2002.

SWIHA and CG advantages

SWIHA being a program of the CGIAR brings important advantages to the challenge against HIV/AIDS;

- CG Centers have substantial involvement in participatory research approach in sub-Saharan Africa *and worldwide*, and have developed partnership & networks, with a range of government institutions, regional bodies, R&D organizations, public & private, and community based organizations.
- There is no equivalent to the CGIAR that covers the health professions, and thus the CGIAR can be uniquely useful in extending a global reach on HIV-agricultural research and livelihood questions.

- Through the work of the CG Centers, they have gained a good understanding of global agricultural systems and livelihoods support.
- For mitigating the immediate effects of HIV/AIDS, the CG Centers are already in the field for labor saving, food producing, income generating and assets saving technologies.
- CG Centers could offer technical interventions and policy recommendations focused on the needs of the rural and urban farmers and agricultural systems that are now being most affected by HIV/AIDS.
- The CG already has talented people on the ground for rapid collaboration on agriculture, food and nutrition intervention against HIV/AIDS in rural and urban areas that are deeply affected by HIV/AIDS. In these areas, valuable baseline information on agricultural systems is available.

The CGIAR SWIHA program is the best entry point for the integration of health and agricultural research at the grass roots level. SWIHA needs to draw in qualified public health and medical expertise in the field of HIV/AIDS especially as the integrity of agricultural research and outreach are affected by the pandemic.

SWIHA's achievements

This does not mean work has not been done:

1. We have completed a major baseline study on HIV/AIDS and agriculture in Nigeria with support from the Commonwealth of Learning, Vancouver, Canada;
2. A survey of people living with AIDS and agriculture in Côte d'Ivoire was conducted;
3. Workplace policy for Africa Rice Center has been developed
4. Database of institutions working on HIV/AIDS research has been developed and posted on the web;
5. Developed partnership relationship with CABI, COL
6. Developed working linkages with national HIV/AIDS programs in West Africa
7. Organized this workshop to help speed up actions.

WARDA strategy for HIV/AIDS: setting the research process

WARDA develops technologies for millions of impoverished farmers, farm families and communities, whose livelihoods depend on rice and rice-based production systems, as well as for non-resource-limited, capital-driven farmers in West Africa and beyond. The technology derivation process entailed assumptions of which the emerging HIV/AIDS had not been a component.

Recent UNAIDS statistics reveal alarming HIV/AIDS rates in West Africa, and the trends continue to rise. Given the current rates of sub-regional migration, e.g. by farming communities and others across the WARDA member states, it may not be long before communities succumb to rampaging HIV/AIDS. The consequences would be worsening of crop productivity, increased poverty, food security and endangering of the environment (Abamu, 2003)

CGIAR cannot ignore HIV/AIDS

Given its presence in almost countries in SSA, the CGIAR cannot ignore HIV/AIDS in its research activities. Yes, the CG centers do not have the comparative advantage to conduct medical research on the pandemic. But they cannot ignore HIV/AIDS because its impacts threaten agriculture and those who live from it as well as the researchers themselves. The pandemic has become a workplace issue with serious implications for gender and equity.

HIV/AIDS has increased the challenges to agricultural production: as parents die from HIV/AIDS, this will have an effect on the whole household and change livelihoods. When this happens, we wonder: who will pass on the farming knowledge to the remaining family members? Who will produce/grow the food? What is the implication for nutrition and food security? What sort of agricultural technologies are needed for the people living with AIDS (PLWA)?

Why the agricultural research centers?

While 80% of the people in the countries hardest hit by HIV/AIDS depend on agriculture for their livelihoods, the response to the epidemic has come largely from the health sector. But the agricultural sector has an important role to play in reducing people's vulnerability to the disease and its consequences.

Agricultural research for development has a record of delivering results and benefits to the people and the planet. Through their work with their national research partners, scientists have worked not only to increase incomes for small farmers but have at the same time enabled the preservation of millions of hectares of forest and grasslands, conserving biodiversity and reducing carbon releases into the atmosphere. The research portfolio has evolved from the original focus on increasing productivity in individual critical food crops. Today, it recognizes that biodiversity and environment research are also key components in the drive to enhance sustainable agricultural productivity. The belief still remains that agricultural growth and increased farm productivity in developing countries creates wealth, reduces poverty and hunger and protects the environment.

For farmer-communities at risk to food insecurity due to HIV/AIDS: labor saving technologies are essential, income generating activities need to be developed and access to labor-saving technologies will be helpful to mitigate the effect of AIDS on agriculture. Therefore, agricultural research in such communities must be developed within the framework of realities. Also as trained farmers, extension workers, researchers, etc. succumb to AIDS, the integrity of agriculture research and outreach is put into jeopardy.

HIV/AIDS and the challenges for the agricultural sector in WCA

Despite the great opportunities the CG centers have to contribute significantly to the fight against HIV/AIDS, they are confronted with a series of challenges. These are:

1. Funding: this has been a problem in carrying out research on HIV/AIDS and its implementation for nutrition, food security and agriculture.
2. The issue had been given low priority by the centers' boards, and only recently, have they considered this as an important researchable area.
3. Lack of capacity in collaborating NARES for HIV/AIDS and agriculture nexus research.

Secondly, declining trends in agricultural productivity pose challenges that can only be addressed through science and technology, as well as interventions through research. Use of science and technology is expected to come up with new baskets of technologies and packages offering potential solutions that will help to reverse the declining bioproductivity.

"The biggest challenges faced by the HIV/AIDS research however are the halt of the overall decline in food production. Even if you take AIDS out of Africa, she will have difficulties maintaining basic food production over the next decades" (future harvest.org, 2001).

Moreover, as the causes and consequences of the HIV epidemic become clearer, so does the fundamental importance of agriculture. Agriculture is the main source of livelihood for the majority of people globally affected by HIV/AIDS. Agriculture as a sector is particularly threatened by the pandemic given the implications of reduced labor for food production and other livelihood activities.

Urgent attention is needed for prevention, care, treatment and mitigation. However, there is a need for a broader understanding of the integral role that agriculture, the food system and nutrition can and should play in HIV/AIDS pandemic.

Africa Rice Center (WARDA) and its research and development institutions have joined the global fight at preventing the further spread and mitigating the negative impact of the disease on human suffering. Therefore WARDA's proposed strategy is through the mainstreaming of HIV/AIDS in the institute's agricultural research for development activities. Specifically, this entails mitigating the key food security constraints, especially those affecting production and nutrition, through generating empirical evidence necessary for directing, monitoring and impact assessment of these interventions.

Another strategy is through the improvement in the flow of technological information to and from vulnerable households for increased adoption of improved crop varieties, innovative income-generating activities and access to health and nutrition information.

Also, improvement in food security, nutrition and incomes through the involvement of vulnerable households in the production of less labor-intensive high nutritive value legumes/ grains (rice, maize, groundnut, etc.).

Furthermore, through diet fortification/biofortification with proteins, and micronutrients can help increase resistance infected individuals and households to the disease and to delay the actual onset of the AIDS condition.

WARDA acknowledges the value of experiences and has been forging and would continue to forge partners with relevant sectors. The institute has established a strong relationship with the UNAIDS Inter Country Team for West and Central Africa in Côte d'Ivoire and other NGOs, and internationally with COL and other partners to address the HIV/AIDS pandemic in WCA.

Research and development impacts

For over three decades, the CGIAR has been a strong partner in Africa's development, providing new crops, and farming technologies that target the crucial agricultural sector, benefiting poor farmers, creating wealth and protecting the environment. Agricultural research won't end the epidemic nor cure it, but it can help lessen its impact on survivors. For example, researchers are now working to increase the nutrient contents of several food crops to help boost the body's immune system, a concept known as biofortification. Many of the technologies developed are very important for HIV/AIDS affected/ afflicted households, for example:

1. New Rices for Africa (NERICAs), which have been developed by Africa Rice Center (WARDA), provide higher yield; are drought tolerant and thrive in salty soils; require less water and fewer agro-chemicals; and are well adapted to local conditions. These new rice varieties were developed in part with the idea of

making weeding and harvesting easier for women in Africa, as African women are involved in 57% of agricultural work and are more infected with HIV/AIDS than men (www.warda.org).

2. Another development is the new improved drought-resistant maize (*Zeamays* L.) varieties, and quality protein maize is boosting household nutrition in Africa and elsewhere and delivers more protein to help people at risk to fight off HIV infection (www.cimmyt.org).
3. CIP's Vitamin A for Africa (VITAA) Partnership is helping tackle one of the most pressing health and nutrition problems in SSA – Vitamin A deficiency (VAD). New, orange-fleshed sweet potato varieties with enhanced beta-carotene are proving valuable in the fight against VAD that affects about one million children in SSA under the age of five. (www.cipotato.org/vitaa). It is also believed that the absence of sufficient Vitamin A in the diets of pregnant women and lactating mothers is believed to contribute to HIV-transmission from mother to child. Therefore, to reduce the transmission of the virus from mother to child, efforts are being made to popularize protein-rich crops such as soybean and the new varieties of high vitamin A sweet potatoes.

But AIDS also impacts research directly. The disease affects many research and development organizations, causing illness and death among personnel at all levels, thereby moving the pandemic from being a health problem to a developmental crisis. AIDS threatens the ability of developing countries to harvest sufficient food for their people.

CGIAR Centers research activities

Other CGIAR centers in SSA are actively involved with HIV/AIDS research. For example:

1. Agroforestry – ICRAF is conducting research on how AIDS is affecting uptake of agroforestry technologies and adoption, and their potential for alleviating the impact of HIV/AIDS.
2. International Crops Research Institute for the Semi-arid Tropics (ICRISAT) is mainstreaming HIV/AIDS in agriculture and nutrition research. The strategy will identify and promote incentives that will cause vulnerable households to re-invest in productive farming as opposed to continued reliance on emergency/relief interventions. Among initial ongoing activities at ICRISAT are an impact assessment study and mitigation strategies to be applied by vulnerable households. They are also looking at equipping orphaned and vulnerable youths in Zimbabwe with agricultural skills, in collaboration with other partners.

3. CIAT and its partners are undertaking an exploratory study aimed at improving understanding of the dynamics in the assets and livelihood strategies induced by HIV/AIDS and their linkages with agriculture. Special attention is being paid to the erosion of knowledge, to coping strategies in agriculture and to understanding implications for technology generation and dissemination that benefits HIV/AIDS-affected households and communities.
4. International Food Productivity Research Institute (IFPRI) with the Regional Network on HIV/AIDS, Rural Livelihoods and Food Security (RENEWAL) is concerned with the impact of the HIV/AIDS pandemic on agriculture in South and East Africa.
5. Harvestplus Challenge Program, based at IFPRI, is an agriculture-based public health intervention that aims to reduce micronutrient malnutrition.
6. International Institute of Tropical Agriculture (IITA) is looking at the impact of HIV/AIDS and agriculture through the farmer field school approach.
7. Africa Rice Center (WARDA) is also mainstreaming HIV/AIDS in agriculture and nutrition into its research activities, paying special attention to the impacts of AIDS in post-conflict countries, mainly in West and Central Africa. This is a major research theme in the center's 2005-2007 Medium-Term Plan (MTP).

Opportunities for the CGIAR centers

The CG centers are present in every country in sub-Saharan Africa (SSA), either directly or through collaborative partners and activities. Through their activities, they are substantially involved in urban and rural activities. In each of the countries where they work, the CG systems have developed partnerships and networks with a range of research and development organizations. As a result of their work, they have gained good understanding of specific food and agricultural systems in sub-Saharan Africa. They also have talented people on the ground in SSA for interventions against HIV/AIDS impact at rural and urban levels, particularly as it relates to their main livelihood source – agriculture.

Technologies at WARDA that could mitigate HIV/AIDS

The research system at WARDA has continued over the years to develop technologies for resource-limited farmers and farming communities. HIV/AIDS could create more farmers in this category, but coupled with poor health. In sub-Saharan Africa, the millions of small farmers producing most of the food are not part of any comprehensive medical care scheme. Medical costs associated with caring for the sick (or the dead) are borne by the family. FAO experiences in the worst hit villages in Eastern and Southern Africa showed that affected farm families are diverting more of their resources (financial and labor) to deal with HIV/AIDS health problems. Less time is available for cropping, as

time is spent off-farm attending to the sick. Coping mechanisms included adopting less demanding crop production practices. Thus, technologies that require less labor could mitigate the impacts of HIV/AIDS on food security. This would include (but is not limited to) high yielding and weed-competitive varieties (the NERICAs), small machinery and equipment (e.g. ASI), faster cooking and more nutritious varieties, fertilizer and nutrient-efficient plant types (the NERICAs), direct seeding methods and leguminous fallow species, all of which have been developed without HIV/AIDS in research objectives. The fact that these technologies were developed without HIV/AIDS in the perspective still leaves the question open for further research consideration.

Lessons learned

Based on the work and experiences in WCA, we shall highlight some lessons learned so far:

1. We found a strong willingness within the NARES to address HIV/AIDS and carry out related agricultural research activities.
2. However, there is no clear understanding yet of how HIV/AIDS impacts on their activities, national food security in the broader sense, and on the necessary actions to take.
3. There is a need to forge or develop a platform for capacity building in the agricultural sector for addressing HIV/AIDS.
4. Strategies are needed to deal with the issues of stigmatization and taboos, especially in West Africa, where HIV/AIDS-related deaths are increasing, yet there is significant denial.

SWIHA moving ahead:

This workshop organized with support of the Africa Rice Center and the Canada Fund for Africa is one step in forming:

1. A viable platform between agriculture research and health institutions in the fight against HIV/AIDS
2. Establishing new partnerships and cooperation to mitigate the effect of HIV/AIDS on agriculture, food security and poverty reduction.

Finally, we do not need to wait until the situation gets out of hand before acting.

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Impact socio-économique du VIH/SIDA en milieu rural : cas de l'usine de production sucrière de Siribala

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Présentation lors de l'atelier

Il existe en zone Office du Niger (Région de Ségou, Mali) un complexe agro-industriel sucrier (SUKALA) localisé à Dougabougou et Siribala. L'usine de Siribala rassemble un personnel administratif et ouvrier important, constituant de ce fait un cas intéressant par rapport aux questions relatives à la pandémie du VIH/SIDA.

Objectif

L'objectif de l'étude était de déterminer l'incidence actuelle et potentielle du VIH/SIDA sur la productivité et la compétitivité de l'usine de production sucrière de Siribala. Spécifiquement, il s'agissait de collecter des données et informations, de les analyser afin de couvrir les préoccupations suivantes :

1. repérer le niveau de prévalence de l'infection par le VIH/SIDA dans la zone cible de l'étude ;
2. déterminer et évaluer l'impact socio-économique du VIH/SIDA au niveau de l'usine de Siribala ;
3. proposer des politiques et stratégies susceptibles d'atténuer l'incidence des coûts économiques, sociaux et psychologiques du VIH/SIDA.

Méthodologie

Dans le but d'atteindre les objectifs de l'étude, la méthodologie adoptée a été la suivante : la revue de documents, dans le but de collecter des données secondaires déjà disponibles sur le VIH/SIDA. Il s'agit par exemple du rapport final d'Enquête Démographique et de Santé au Mali (EDSM III, 2001), des rapports donnant la situation épidémiologique des régions ou localités concernées, des rapports de la division de la surveillance épidémiologique et d'évaluation de la situation du VIH/SIDA sur le plan national, des rapports au niveau de l'ON relatifs au sujet traité.

Les données primaires ont été les données socio-économiques collectées au cours des enquêtes ou interviews.

Les données épidémiologiques, particulièrement sur le VIH/SIDA ont été collectées à trois niveaux :

1. niveau régional : les différentes organisations impliquées dans la lutte contre le SIDA, la direction régionale de la santé de Ségou et les structures de santé ont été contactées ;
2. niveau entreprise ou usine de Siribala : les discussions ou interviews ont concerné les différentes catégories socioprofessionnelles considérées sous l'angle de « Groupes Focus » (l'administration, les ouvriers permanents, les manœuvres temporaires et les travailleurs contractuels, le personnel d'infirmier de l'usine ;
3. niveau local : des questionnaires ont été adressés aux malades du SIDA déjà identifiés par le personnel sanitaire du centre de référence de Niono.

Données effectivement collectées

Au cours de la phase d'enquête proprement dite, il a été possible de collecter des données et informations sur la situation du VIH/SIDA au niveau de la région de Ségou, au niveau du cercle de Niono et au niveau de l'usine de Siribala qui est localisée dans une zone reconnue sur le plan sanitaire comme « Aire de santé de Siribala », regroupant un ensemble de villages dont Siribala. Il a été possible de faire un aperçu sur la situation épidémiologique de l'usine et d'avoir la perception des différentes catégories socioprofessionnelles sur les IST, le VIH/SIDA et les autres maladies constituant des sources de mortalité et de morbidité.

Limites de l'étude

La pandémie du VIH/SIDA demeurait toujours un sujet « tabou » dans la zone de l'étude, tant au niveau de l'aire de santé qu'au niveau de l'usine proprement dite. Malgré le fait que l'usine de Siribala est un pôle d'attraction de migrants ou de ressortissants des villages de l'aire de santé à la recherche du travail, et malgré toute la sensibilisation par les médias, il n'existait à notre passage aucun dispositif mis en place par l'usine pour prévenir spécifiquement la pandémie du VIH/SIDA. Par conséquent, il n'existait aucun système de dépistage ou de suivi systématique propre à l'usine permettant d'entreprendre un travail d'évaluation systématique de l'impact socio-économique du VIH/SIDA sur les performances de l'entreprise.

L'impact socio-économique du VIH/SIDA sur quelques entreprises ivoiriennes a été évalué par Aventin Laurent et Huard Pierre en 1995 et 1996. La morbidité et la mortalité du personnel par suite de l'épidémie du VIH/SIDA étaient les principales sources

d'accélération du turnover des entreprises, les départs devant être compensés par de nouvelles embauches pour maintenir le niveau des effectifs. Selon ces auteurs, même si de cette manière, le nombre d'employés restait stable, la rotation du personnel et le déséquilibre provoqué, par la modification de la proportion entre les anciens et les nouveaux employés, demeuraient des problèmes de formation et de socialisation. De façon explicite, la modification de proportion entre les nouveaux et les anciens employés posaient deux problèmes essentiels :

- 1) celui de la perte de la cohérence de l'activité du fait de l'inexpérience des nouveaux, notamment pour les connaissances tacites difficilement transférables ;
- 2) la diminution de capacité des transmissions des savoir-faire si des employés compétents sont décédés ou inactifs par suite de SIDA.

Approche alternative

Compte tenu de la complexité et de la sévérité que le VIH/SIDA peut avoir sur les performances des entreprises, l'équipe d'étude, à défaut d'un plan de lutte contre le VIH/SIDA au niveau de l'usine de Siribala, a décidé donc d'aborder la question sous deux angles principaux :

- 1) Détermination de la perception des différentes catégories socioprofessionnelles sur les maladies en général et le VIH/SIDA, en particulier. A ce niveau, les questions de prise en charge ont été abordées ;
- 2) Détermination de l'impact qualitative du VIH/SIDA selon quelques personnes atteintes par le VIH/SIDA dans l'Aire de santé de Siribala, et notifiées par le centre de référence de Niono.

Aperçu sur l'évolution de la situation épidémiologique des IST et du VIH/SIDA

On peut voir sur le tableau 30 ci-dessus une évolution progressive de la prévalence du VIH/SIDA dans la région de Ségou à travers les années (2001 à 2003). Cet état de fait est inquiétant pour une région à forte concentration démographique et à forte mobilité.

Tableau 30 . Evolution des infestations de VIH/SIDA dans la région de Ségou

Nombre de personnes					
	Testé	positif	négatif	% cas positifs	IST¹
Année					
2001	287	77	210	27	1 025
2002	1 761	533	1 228	30	7 633
2003	160	59	101	37	988
Total	2 208	669	1 539	94	9 646

Source : fiche de synthèse de notification des cas des IST/SIDA, Rapport EDS (Enquête Démographique et de Santé), DRS (Direction Régionale de la Santé), Ségou

Tableau 31 . Evolution de l'incidence du VIH/SIDA dans le Cercle de Niono en 2001

Tranche d'âges	hommes				femmes			
	Cas	%	DC	%	Cas	%	DC	%
0-4	0	0	0	0	0	0	0	0
5-14	0	0	0	0	0	0	0	0
15-19	1	8	0	0	1	20	0	0
20-29	2	17	1	33	2	40	1	33
30-39	5	42	0	0	0	0	1	33
40-49	2	17	1	33	2	40	0	0
50-59	2	17	1	33	0	0	1	33
60 et plus	0	0	0	0	0	0	0	0
Total	12	100	3	100	5	100	3	100

Source : fiche de synthèse de notification des cas de VIH/SIDA/CSREF (Centre de Santé de Référence), Niono

Cas : Séropositivité

DC : Cas de décès

Tableau 32 : Evolution de l'incidence du VIH/SIDA dans le cercle de Niono en 2002

Tranche D'âge	hommes				femmes			
	Cas	%	DC	%	Cas	%	DC	%
0-4	1	100	0	0	0	0	0	0
5-14	0	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0	0
20-29	0	0	0	0	0	0	0	0
30-39	0	0	0	0	0	0	0	0
40-49	0	0	0	0	0	0	0	0
50-59	0	0	0	0	0	0	0	0
60 et plus	0	0	0	0	0	0	0	0
Total	1	100	0	0	0	0	0	0

Source : fiche de synthèse de notification des cas de VIH/SIDA /CSREF Niono

Tableau 33 : Evolution de l'incidence du VIH/ SIDA dans le cercle de Niono en 2003

Tranche D'âge	hommes				femmes			
	Cas	%	DC	%	Cas	%	DC	%
0-4	0	0	0	0	0	0	0	0
5-14	0	0	0	0	0	0	0	0
15-19	0	0	0	0	0	0	0	0
20-29	0	0	0	0	5	50	0	0
30-39	2	0	0	0	4	40	0	0
40-49	0	0	0	0	1	10	0	0
50-59	0	0	0	0	0	0	0	0
60 et plus	0	0	0	0	0	0	0	0
Total	2	100	0	0	10	100	0	0

Source : fiche de synthèse de notification des cas de VIH/SIDA /CSREF Niono données du 1er et 2ème trimestres

Aperçu sur les cas de SIDA dépistés dans les différentes zones de l'étude

Sur le tableau 34 ci-dessous, le taux de prévalence du VIH/SIDA au niveau des femmes est nettement plus élevé que celui observé au niveau des hommes, et cela dans les zones concernées et à travers les années. Ce qui montre que les femmes sont beaucoup plus exposées au risque de contracter le VIH/SIDA que les hommes.

Ceci pourrait s'expliquer par la vulnérabilité de la population féminine aux IST et au VIH/SIDA. En effet, le Ministère de la santé et le Policy Project de l'USAID (2002), rapportent que les femmes sont particulièrement vulnérables à l'épidémie pour plusieurs raisons :

- Physiologiquement, le risque de contracter l'infection au cours des rapports sexuels non protégés est plus élevé à leur niveau ;
- Une femme pourrait être infectée, même en situation de monogamie, si son conjoint a d'autres partenaires sexuels ;
- Certaines pratiques socio-culturelles et économiques pourraient accroître le risque de transmission, par exemple le lévirat, le sororat, l'excision, la prostitution, etc ;
- L'assistance aux personnes malades incombe davantage aux femmes et aux filles.

Selon Marcella Villarreal, chargée de liaison de la FAO pour le VIH/SIDA, les femmes pauvres sont particulièrement vulnérables. Elles sont généralement mal informées sur les questions de santé et n'ont guère voix au chapitre en matière de relations sexuelles, ce qui signifie qu'elles sont fortement exposées si leurs époux sont contaminés.

Tableau 34 : Aperçu sur le taux (%) de prévalence par sexe au niveau de Niono, Markala et la ville de Ségou

Année	2001		2002		2003	
	Masculin	Féminin	Masculin	Féminin	Masculin	Féminin
Niono	42	58	38	62	17	83
Markala	32	68	42	58	39	61
Segou	29	71	28	72	35	65
Ensemble	34	66	36	64	30	70

Tableau 35 : Aperçu sur le taux (%) de prévalence par tranche d'âge dans les zones de l'étude

Année	2001					2002					2003				
	0-5 Ans	6-10 ans	11-15 ans	16-50 ans	51 plus	0-5 ans	6-10 ans	11-15 ans	16-50 ans	51 plus	0-5 ans	6-10 ans	11-15 ans	16-50 ans	51 plus
Niono	6			94		2	2		96					100	
Markala				96	4	10	1		80	7	2			93	5
Segou		4		89	7				98	2	1	1	1	96	1
ensemble				93					91					96	

Source : données des enquêtes

Le tableau 35 ci-dessus permet de voir que les personnes situées dans la tranche d'âge 16-50 ans sont les plus infectées par le virus du SIDA. Les personnes situées dans cette tranche d'âge représentent la force active de la population, ce qui sur le plan productivité constitue un manque à gagner.

Tableau 36 : Aperçu sur le taux (%) de prévalence par activité dans les zones de l'étude

Activité	Niono	Markala	Ségou	Ensemble zone (moyenne)
Ménagère	69	60	40	56
Cultivateur	13	15	8	12
Pêcheur	3	6	1	3,33
Eleveur	0	1	1	1
Elève	3	1	5	3
Chauffeu	0	5	4	3
Enseignant	0	1	3	1,33
Ouvrier	1	6	4	4
Animatrice	0	1	1	1
Tradipraticiens	1	0	0	0,33
Professionnelle du sexe	10	0	8	6
Commerçant	0	4	22	9
Ancien combattant	0	0	1	0,33
Militaire	0	0	2	1

Source : Centres de dépistage des localités de Ségou, Markala et Niono, 2003.

De l'analyse de ce tableau, nous constatons que les femmes ménagères sont les plus infectées. La vulnérabilité des femmes en général et des ménagères en particulier peut s'expliquer par le fait qu'elles sont sous informées. Les hommes (les agriculteurs) sont aussi infectés. Ces deux communautés se côtoient étroitement à travers les relations de mariage, d'amitié, etc. Dans ce contexte, les risques de forte expansion pourraient être particulièrement élevés dans les années à venir (compte tenu de l'existence de groupes déjà infectés) si aucune mesure adéquate n'est prise.

Aperçu sur la situation épidémiologique de l'usine de Siribala

Sur le plan administratif, Siribala est une commune rurale située à 30 km de Niono. Il est lié au chef lieu de cercle (Niono) par une route bitumée.

Du point de vue climatique, Siribala dispose d'un climat tropical semi-aride de type sahelo-soudanien, caractérisé par une courte saison pluvieuse s'étendant de juin à septembre, une saison sèche fraîche d'octobre à janvier et une saison chaude de février à mai. La température moyenne annuelle varie de 27 à 30 mm. La pluviométrie annuelle moyenne varie de 500 à 600 mm.

L'aire de santé de Siribala compte environ une population totale de 21 827 habitants en 2003 dont 10 695 hommes et 11 132 femmes les plus nombreuses soit 51 % de la population totale.

Présentation de l'usine de Siribala

L'usine de Siribala est une entité de Sukala-SA. Cette entité jouit d'une autonomie par rapport à l'office du Niger depuis 1984. Son objectif est la production du sucre, du mélasse et de l'alcool.

Elle forme avec l'usine de Dougabougou une société d'économie mixte avec les experts chinois. La production de Siribala comporte deux volets : production de canne (ferme), et de sucre exigeant une main-d'œuvre suffisante, regroupée surtout au niveau de la ferme. L'évolution de la production de canne, de mélasse et de sucre est présentée sur le tableau 37 ci-dessous.

Tableau 37 : Evolution de la production

Campagnes	Sucre tonnes	Mélasse m³	Canne en tonnes
2000-2001	20 685,600	6 644,475	223 677,280
2001-2002	20 194,400	6 540,582	207 331,090
2002-2003	23 519,650	8 282,584	242 527,750

Ce secteur industriel constitue un pôle d'attraction de la population des villages situés dans la zone, et des travailleurs migrants en provenance d'autres zones du Mali, faisant de l'aire de santé de Siribala une aire pleine de risques en ce qui concerne la contamination et la propagation de plusieurs types de maladies, y compris les IST et le VIH/SIDA. L'usine utilise beaucoup de travailleurs de différents types pendant les différentes phases de la production et de la transformation de la canne. L'évolution des effectifs de travailleurs est la suivante :

- **Année 2000** : 387 travailleurs permanents dont 20 femmes ; 1 528 travailleurs contractuels et autres dont 16 femmes.
- **Année 2001** : 352 travailleurs permanents dont 20 femmes ; 1 380 travailleurs contractuels et autres dont 16 femmes.
- **Année 2002** : 333 travailleurs permanents dont 20 femmes ; 1 576 travailleurs contractuels et autres dont 16 femmes.
- **Année 2003** : 319 travailleurs permanents dont 20 femmes ; 1 340 travailleurs contractuels et autres dont 16 femmes.

Le nombre d'allocataires (inscrits auprès de l'INPS¹) de l'usine se chiffre à 480 travailleurs dont 20 femmes travaillant au niveau de l'administration de l'usine. Cette inscription au niveau de l'INPS entraîne des charges tant au niveau de l'employeur (l'administration de l'usine de Siribala) qu'au niveau des intéressés (les travailleurs inscrits à l'INPS). En effet, la charge patronale (la contribution de l'usine auprès de l'INPS en faveur des allocataires) s'élève à 9 500 000 FCFA par an contre une contribution de la classe ouvrière (part du salarié ou cotisation versée par les allocataires eux-mêmes) est de 2 100 000 FCFA.

En retour, la direction régionale de l'INPS de Ségou fait des versements (allocations) en faveur des inscrits de l'usine. L'INPS reverse en moyenne 6 000 000 FCFA par trimestre aux allocataires de l'usine, ce qui fait environ 1205 FCFA par allocataire. Ce montant reversé par l'INPS et la prime mensuelle payée par l'usine elle-même à toutes les catégories de travailleurs sont des apports financiers permettant aux bénéficiaires de faire face à certaines dépenses personnelles et de la famille. La situation financière se présente de la façon suivante :

Périodes	Types de Travailleur	Salaire net mensuel (FCFA)	Prime mensuelle (FCFA)	Apport INPS (FCFA/mois)	Dépenses moyennes de santé/mois	Montant résiduel
Toute l'année	Permanent	45000	1500	1205	2155	45550 (\$79.20)
Octobre-Avril	Temporaire	27500	800		1750	26550 (\$46.17)
	Contractuel	37000	1200	1205	7500	31905 (\$55.48)
Octobre-Avril	Femmes	25000	800		1750	24050 (\$41.82)

La prime mensuelle et l'apport de l'INPS ne constituent que 6 % du salaire net au niveau des travailleurs permanents et 6,5 % au niveau du salaire net des travailleurs contractuels, et n'améliorent pas de façon significative le pouvoir d'achat des bénéficiaires. Les diverses dépenses que pourrait entraîner la maladie du SIDA seraient propres à réduire de façon considérable le montant résiduel du salaire après prélèvement des frais entraînés par d'autres maladies. Cet impact des maladies en général et de l'impact plausible du VIH/SIDA en particulier sur le pouvoir d'achat des ménages des travailleurs de l'usine ne fera qu'aggraver la situation de pauvreté. En effet, selon les enquêtes avec quelques personnes atteintes de SIDA, les dépenses moyennes mensuelles s'élèvent à 9550 FCFA réparties entre les rubriques suivantes :

Médicaments modernes : 5330 FCFA,
 Médicaments traditionnels : 2220 FCFA
 Autres dépenses (déplacements éventuels, etc.) : 2000 FCFA

Aperçu sur la situation épidémiologique de l'usine de Siribala

Le tableau 38 ci-dessous permet de voir qu'il existe de nombreuses maladies qui frappent les travailleurs de l'usine. Les principales maladies rencontrées sont : le paludisme, la diarrhée sans déshydratation, l'amibiase, l'accès pernicieux, les carences en vitamine, les maladies oculaires et les maladies abdominales, le gono présumé, la bilharziose, les tumeurs, les luxation/entorses, la hernie hydrocèle etc.

En 2003, la situation sanitaire a évolué avec l'apparition des MST¹/SIDA, comme on peut le constater sur le tableau 10 ci-dessous.

Tableau 38 . Situation épidémiologique de l'usine de Siribala en année 2001

Maladies	Assurés	Divers	total	%
Amibiase	130	25	155	4.85
Diarrhée sans déshydratation	168	76	244	7.63
Accès pernicieux	77	22	99	3.09
Paludisme	817	115	932	29.13
Gono présumé	17	5	22	0.69
Bilharziose	25	10	35	1.09
Maladie infectieuse ou parasitaire	26	15	41	1.28
Tumeurs	8	5	13	0.41
Carence avitaminose	99	52	151	4.72
Anémie et maladie du sang	17	31	48	1.50
Autres maladies vénériennes	29	12	41	1.28
Hernie et hydrocèle	9	1	10	0.31
Toux (- de 15 jours)	149	95	244	7.63
Toux (+ de 15 jours)	9	3	12	0.38
Maladie oculaire	210	30	240	7.50
Otite et mastotite	15	10	25	0.78
Affection nez, gorge, oreille	26	12	38	1.19
Maladie tissus, os et articulation	45	7	52	1.63
Affection condition vasculaire	9	6	15	0.47
Angine	23	31	54	1.69
Rhinite	41	19	60	1.88
Entorse, luxation	39	3	42	1.31
Affection de la bouche et des dents	33	3	36	1.13
Brûlure	29	3	24	0.75
Déchirure et plaie	219	17	236	7.38
Autres infections indéfinis ou mal définis	17	7	24	0.75
Maladie abdominal	121	59	180	5.63
Affection traumatolo	83	12	95	2.97
Autres trauma, morsure piqûre	29	2	31	0.97
Total	2 519	688	3 199	100

Source : données infirmerie de Siribala

¹Maladies sexuellement transmissibles

Tableau 39 . Cas des assurés 2003

Maladies	0 - 11 mois				1 - 4 ans				5 - 14 ans				15 ans et plus			
	Masculin		Féminin		Masculin		Féminin		Masculin		Féminin		Masculin		Féminin	
	nbre	%	nbre	%	nbre	%	nbre	%	nbre	%	nbre	%	nbre	%	nbre	%
Diarrhée présumée en début de choléra	24	40	16	22.22	19	34	18.89	20	44	24.44	43	62	34.44	180		
Toux de 15 jours, broncho-pneumonie	16	34	18	25.95	14	24	18.32	15	33	25.19	21	40				
IRA	14	27	13	21.43	13	30	23.81	15	28	22.22	26	41	32.54	126		
	50	75	25	9.42	51	84	10.55	84	123	15.45	396	514	64.57	796		
Fièvre palu présumé	11	22	11	17.89	12	25	20.33	25	39	31.71	20	37	30.08	123		
IST	3	3	3	5.36	2	8	10	17.86	3	25	44.64	7	18	32.14	56	
MST/SIDA		0		0.00		0	0.00	7	12	54.55	7	10	45.45	22		
Traumatisme plaie, blessure, brûlure	8	17	9	7.62	13	26	11.66	50	61	27.35	109	119	53.36	223		
Affection oculaire	9	16	7	17.39	7	13	14.13	17	25	27.17	30	38	41.30	92		
Affection bouches et dents	10	20	10	22.22	9	19	21.11	13	23	25.56	20	28	31.11	90		
MPE	7	13	6	22.03	6	11	18.64	12	19	32.20	7	16	27.12	59		
Total	149	267	118		146	276		265	432		686	923		1898		

Source : Infirmerie de Siribala

L'apparition MST /SIDA se situe au niveau des travailleurs assurés et non assurés. Les cas notifiés sont rencontrés au niveau des personnes de la tranche d'âge de 15 ans et plus (59 %). Ces personnes représentent la force active de la population.

Perception des travailleurs sur les maladies et le VIH/SIDA

Cette section est la synthèse des opinions des différentes catégories socioprofessionnelles sur l'environnement socio-sanitaire de l'usine de Siribala. En effet, cet environnement est précaire et aucun plan de lutte préventive contre le VIH/SIDA n'a été mis en place par l'administration de l'usine. Cet état de fait est ressenti par tous les travailleurs comme une source de danger, le VIH/SIDA pouvant faire des ravages si l'on n'y prend garde. Ce souci est largement partagé de façon générale par l'ensemble de l'usine. Les problèmes spécifiques à chacune des couches sont présentés ci-dessous.

Travailleurs permanents

Selon les travailleurs permanents de l'usine, le système de prise en charge mis en place par l'usine est inefficace, compte tenu du bas niveau de la prime mensuelle (1500 FCFA/mois). Ce système remplace un autre beaucoup plus meilleur (l'ancien système) qui prévoyait une prise en charge par l'usine qui était la suivante : remboursement de 50 % des frais d'ordonnance, prise en charge totale des frais d'hospitalisation. Cette mesure, bien que meilleure par rapport au nouveau système, excluait les familles du mécanisme de prise en charge. En dehors des problèmes liés au système de prise en charge, les travailleurs ont dénoncé plusieurs aspects liés à l'environnement dans lequel ils travaillent. Certains de ces points sont les suivants :

- manque de sensibilisation par l'administration ;
- insuffisance de couverture sanitaire ;
- insuffisance de personnel dans le domaine de la santé (2 agents pour 3000 travailleurs) ;
- obsolescence des infrastructures et matériels de santé ;
- insuffisance des mesures d'hygiène et manque d'eau potable (sources de nombreuses maladies abdominales) ;
- manque de matériels de protection contre les produits chimiques qui sont responsables de beaucoup de maladies respiratoires.

Travailleurs temporaires et contractuels

Les contraintes signalées ci-dessus par les travailleurs permanents sont partagées par les temporaires et les contractuels. L'aspect le plus décrié est le système de prise en charge sur le plan sanitaire par l'usine.

Travailleurs administratifs

Bien que le personnel de l'administration soit sous le couvert de l'INPS (Institut National de Prévoyance Sociale), il déplore le système de prise en charge et la faiblesse de l'environnement socio-sanitaire et de travail.

Travailleurs féminins de l'usine

Les travailleurs féminins de l'usine, à tous les niveaux, déplorent elles aussi le système de prise en charge et la faiblesse de l'environnement socio-sanitaire et de travail.

Impact qualitatif du VIH/SIDA dans l'Aire de santé de Siribala

La recherche a été plutôt présentée comme une étude des conséquences et des modifications entraînées au sein d'un ménage ou d'une exploitation par une maladie.

Résultats des interviews

Premier cas

La malade est d'origine peule et âgée de 47 ans. Elle est atteinte du VIH/ SIDA depuis 2001. Elle a pour profession le commerce inter-urbain. Son cas n'a pas fait l'objet d'hospitalisation, mais elle effectue périodiquement des visites médicales. La maladie selon ses dires, se manifeste en elle sous forme de courbatures constantes, de pneumonie, de manque d'appétit et de paludisme. Le traitement s'effectue soit à domicile et au centre de santé de référence de Niono. La fréquence de ses visites est semestrielle.

Elle associe au traitement moderne, les médicaments traditionnels surtout pour traiter le paludisme. Les frais engagés pour le traitement s'élèvent de 3500 FCFA à 4000 FCFA par ordonnance. Selon la patiente, l'impact directe de sa maladie a été la diminution de la vivacité, la diminution et par la suite l'interruption des activités au niveau des foires hebdomadaires qu'elle fréquentait. Le régime alimentaire a complètement subi des perturbations d'ordres quantitatif et qualitatif du fait de la maladie et de la réduction des économies monétaires. Les enfants à charge vivent dans des conditions désastreuses.

Deuxième cas

Mécanicien de profession, le malade est âgé de 27 ans et d'origine bambara. Il est marié et vit à Niono-ville avec sa famille. Le malade en question a été testé séro-positif en 2001 par suite d'un dépistage au centre de santé de référence de Niono. La maladie s'est déclarée par une infection cutanée (plaies sur les fesses) empêchant le malade de dormir et de travailler. Il a effectué plusieurs visites à l'hôpital de Markala, associant ainsi des médicaments modernes et traditionnels. Les frais totaux d'ordonnances avoisinent

75 000 FCFA, lesquels, selon le malade, constituent des charges insoutenables (vu la faiblesse des revenus tirés de sa profession de mécanicien). La maladie a provoqué une malaise au niveau de l'intéressé au point de lui enlever toute l'envie de manger et de dormir. Le malade, en plus de sa profession de mécanicien, aidait son beau frère dans les travaux champêtres. La gravité de la maladie a provoqué l'abandon des différentes activités, la dégradation des revenus, l'incapacité de se nourrir correctement, et la psychose sous-tendue par l'idée de la mort.

Troisième cas

La malade est de sexe féminin, mariée et âgée de 38 ans, et vivant avec la famille. L'infection a été identifiée suite au dépistage en 2001 effectué au centre de santé de référence de Niono. L'infection s'est manifestée sous forme d'accès de plusieurs formes :

- réchauffement de la plante des pieds ;
- indigestion ;
- manque d'appétit ;
- vomissement (souvent pendant tout un mois).

Les frais occasionnés par l'achat des médicaments modernes s'élèvent à peu près à 120 000 FCFA.

Avant la maladie, elle pratiquait la riziculture, le maraîchage et le petit commerce. A elle seule, c'est-à-dire sans l'aide de la main-d'œuvre salariée ou sans l'aide d'un autre membre de la famille, elle avait l'engouement et la force de pratiquer toutes ces activités qui généraient des revenus substantiels. Une des conséquences directes de la maladie a été le besoin faire recours à la main-d'œuvre salariée (1000 FCFA à 1250 FCFA par travailleur et par jour). Très souvent, le nombre de manœuvre comporte 5 à 6 recrutés sur une période de 3 à 6 mois en période des travaux rizières intensifs. A cela, il faut ajouter le recrutement d'un manœuvre temporaire pendant 3 à 4 mois pour un salaire de 7500 FCFA par mois, ce qui selon la malade coûte extrêmement cher et insoutenable à moyen et à long terme.

Quatrième cas

Ce sidéen est de sexe masculin, âgé de 45 ans, exerçant comme activité lucrative le commerce d'articles divers (fournisseur). Il résidait en Côte d'Ivoire avant son retour à Niono pour se marier à une femme qui est décédée avant lui en 2001. Il avait eu une liaison extra conjugale avec une autre femme qui a contracté une grossesse avec lui. Cette femme est décédée une semaine après son accouchement, le nouveau-né aussi. Le malade en question vit de nos jours mais avec un faible espoir de survie. Les soins prodigués à la défunte se répartissent comme suit :

Médicaments traditionnels : 65 000 FCFA
Médicaments modernes : 30 000 FCFA
Sacrifices selon les croyances traditionnelles : 300 000 FCFA.

La défunte, âgée de 35 ans exerçait la profession de teinturière et le petit commerce. Le chef de famille ne sait plus comment faire par suite de la réduction des revenus du ménage et de la présence de nombreuses bouches à nourrir.

Cinquième cas

Le malade est d'ethnie dogon, en déplacement pour les soins à Bamako ; son logeur et grand frère s'occupe de l'entretien de sa famille pendant son séjour à Bamako. Le test sérologique a été effectué au centre de santé de Niono. L'intéressée est âgée de 53 ans et n'exerce aucune profession lui apportant un revenu. Son logeur doit faire face à des coûts relatifs à l'achat de médicaments. Les frais médicaux s'élèvent à 86 000 FCFA (médicaments modernes) et 25 000 FCFA (médicaments traditionnels).

Le malade n'a pas subi d'hospitalisation mais effectuait avant son évacuation sur Bamako des visites périodiques selon la manifestation de la maladie (fréquents malaises, perte d'appétit, etc). L'insuffisance des moyens financiers au niveau du logeur l'empêche de s'occuper correctement de la famille du malade et de sa propre famille. Les enfants, les femmes et les autres membres de la famille vivent dans des conditions extrêmement pénibles.

Interviews

Il ressort des interviews ci-dessus que la maladie du VIH/SIDA n'épargne personne. Autrement dit, le VIH/SIDA ne fait aucune distinction entre l'âge, le sexe, la profession, le lieu de résidence, et les frontières entre pays ou continents. Bien que les individus interviewés n'ont pas révélés la cause de leurs maladies, il ressort des interviews et de l'état des malades que le VIH/SIDA est une source sûre de morbidité et de mortalité pouvant avoir des répercussions physique, psychologique, et socio-économique en chaîne, au niveau de n'importe quelle entité (exploitations, entreprises) où des rapports ou relations s'établissent entre les individus et les familles, etc.

Bien que les entrevues aient été essentiellement qualitatives, on peut imaginer à partir des résultats obtenus, combien la propagation du VIH/SIDA peut coûter à l'usine sur le plan économique. La conséquence immédiate peut être décrite de la façon suivante : baisse ou disparition de la productivité entraînant la faible production de biens et de services. La faible production des biens et services entraîne la réduction des revenus monétaires et la réduction de la compétitivité. On voit alors toute l'importance que peut

représenter pour l'usine l'amélioration de l'environnement socio-sanitaire, avec des mesures préventives dans le cadre de la lutte contre les maladies opportunistes (tuberculoses, diarrhées, etc.), les maladies sexuellement transmissibles et le VIH/SIDA.

Conclusions et recommandations

Malgré les conséquences socio-économiques potentielles du VIH/SIDA sur les exploitations agricoles et les entreprises, bref sur le développement, les questions se rapportant à cette pandémie restent toujours un sujet « tabou » à plusieurs niveaux. C'est le cas de l'usine de Siribala où la mise en place d'un plan de prévention ou de lutte contre le VIH/SIDA n'est pas dans les priorités. Cependant, l'environnement socio-sanitaire de l'usine est précaire et le système de prise en charge ne prend pas en compte les préoccupations de l'ensemble des travailleurs par rapport au VIH/SIDA.

Dans ce contexte, si le VIH/SIDA venait à exploser, la dimension du désastre sera très grande compte tenu du nombre élevé de travailleurs vivant avec leur familles à l'usine, les travailleurs temporaires venant de toutes les horizons possibles, notamment l'Aire de santé de Siribala dont la population totale en 2003 était de 21 827 personnes. Une large partie de cette population représente la main-d'œuvre potentielle pour l'usine. On voit donc la nécessité de mettre au niveau de l'usine un plan budgétisé de sensibilisation, de formation, d'éducation et de prise en charge adéquate des malades. Toutes les structures de santé et les ONG impliquées dans la lutte contre le VIH/SIDA doivent être contactées pour qu'elles apportent leur contribution dans l'élaboration et la mise en oeuvre du plan de lutte l'usine.

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