

Agrobiodiversity, food security and HIV/AIDS mitigation in Sub-Saharan Africa

Strategic issues for agricultural policy and programme responses

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Abstract

Food insecurity and the impact of HIV/AIDS are priority concerns for rural development throughout Sub-Saharan Africa. This paper explores strategic components for the agricultural sector's response to them. Special emphasis is placed upon agrobiodiversity and the closely related issue of indigenous knowledge, due to their potentially vital, yet often overlooked roles in enhancing food security among poor rural communities, as well as in addressing evolving needs owing to the HIV/AIDS epidemic. Overall, the promotion of agrobiodiversity and indigenous knowledge represents a renewed emphasis on locally available resources with value and potential to strengthen the entire agriculture-food-nutrition-health structure among the rural poor.



Ethiopian peasant in her small home garden (Photo: Garí, 2001)

Introduction

In Sub-Saharan Africa, millions of rural people suffer from chronic poverty, socio-economic marginalisation, food insecurity and, most recently, the devastating impact of the HIV/AIDS epidemic. In particular, the combined threat of food insecurity and the impact of AIDS is leading to a rural development crisis, which requires integrated and cross-sectoral responses. As it concerns HIV/AIDS, the primary challenge for the agricultural sector is to mitigate the cumulative impact of the epidemic on the agricultural systems that sustain the food security and livelihoods of the rural poor throughout Sub-Saharan Africa. In poor rural households, AIDS causes severe labour and economic constraints that disrupt agricultural activities, aggravate food insecurity, and undermine the prospects of rural development. The chronic poverty and food insecurity of African rural households become further aggravated, whilst the local capacity to overcome such crises gradually weakens.

Unlike other major diseases and epidemics, HIV/AIDS escalates morbidity and mortality predominantly on the most active and productive segment of the rural society. The impact of AIDS on the rural socio-economic system is especially critical for the labour and economic systems of affected households, as follows:

- a. **Labour stress.** The cumulative scale of morbidity and mortality due to HIV/AIDS causes increasing labour losses in affected households, whilst there is an increasing need to divert time and labour to care for the ill and the AIDS orphans. Consequently, rural households affected by AIDS suffer labour stresses that affect farm, off-farm, and domestic work. Labour loss disrupts agricultural practices and, hence, aggravates livelihood vulnerability and food insecurity. Women are most heavily affected due to gender inequalities; they often have fewer resources to overcome the crisis and they generally tend to bear overwhelming workloads and responsibilities in the rural society.

- b. **Economic impoverishment.** In poor households, AIDS drives an economic crisis resulting from the increasing related expenses, such as costly medical care, and the reduced income sources as a result of labour loss. Consequently, the AIDS epidemic aggravates immediate food insecurity and impairs the future prospects of surviving family members.



Farmers examining local varieties of sorghum in Uganda (Photo: Garí, 2001)

HIV/AIDS raises an additional concern that directly challenges the agricultural sector: the nutrition-health interface in the context of HIV/AIDS. As HIV-infection and malnutrition seem to be mutually aggravating processes, balanced nutrition becomes a fundamental healthcare component for HIV/AIDS. For instance, a nutritionally balanced diet is likely to help to alleviate opportunistic diseases and to arrest a certain propensity to malnutrition related to AIDS. In fact, the rapid and devastating health impact of HIV/AIDS in Sub-Saharan Africa is partly due to the chronic malnutrition of the entire region. Another key factor is the lack of access to medical care and available drugs, due to poverty and to severe inequalities in the global economic-trade system.

The combined pressures of food insecurity and the impact of AIDS results in a rural development crisis that situates some vulnerable groups at the edge of survival. Integrated and cross-sectoral responses are urgently required. The agricultural sector has a crucial role to play since agriculture represents the primary foundation of food security and livelihood across rural Africa. Overall, the agricultural sector is relevant in the three key response areas to HIV/AIDS:

1. **Prevention.** Strengthening food and livelihood security, with a focus on women and vulnerable groups, is required to arrest socio-economic behaviour that increases HIV transmission risks (e.g. commercial sex as survival strategy, forced migration in search of employment).
2. **Care.** In the context of HIV/AIDS, nutrition represents a primary healthcare component. A nutritionally balanced diet seems to improve the control of HIV infection and to mitigate the health impact of AIDS (e.g. opportunistic infections, propensity to malnutrition). Therefore, nutrition-oriented policies should be a priority, yet they are often absent in agricultural development policies and programmes.
3. **Mitigation.** In AIDS-affected households and communities, the resulting labour and economic stresses impair agricultural activities and seriously aggravate food insecurity. In the mitigation of AIDS impact, priority action is required in the areas of household food security and nutrition. The agricultural sector has a fundamental role to play in mitigating the impact of AIDS on households and communities, including AIDS-sensitive projects and supplementary targeted interventions. Key objectives comprise alleviating labour loss and shortages, mitigating AIDS-related economic crisis, arresting agricultural disruption, advancing food security, enhancing nutrition as a basic HIV/AIDS healthcare component, and maintaining community dynamics. Mitigation also comprises tailored rural reconstruction efforts, the strengthening of local capacity to address the impact of AIDS and the launching of rural development beyond the current impasse.

In essence, the agricultural sector is challenged throughout the entire HIV/AIDS response spectrum, and, in particular, on issues addressing the mitigation of AIDS impact on agriculture, food security, and rural development. Strategic, cross-sectoral, grassroots-oriented, and feasible responses are thus required. The primary objective is to enhance the local capacity to address the concurrence of food insecurity and HIV/AIDS impact. In particular, agrobiodiversity and the associated indigenous knowledge represent locally available agricultural assets with

enormous value and potential in rural food and livelihood security, yet they suffer neglect and erosion.

Agrobiodiversity and indigenous knowledge

Agrobiodiversity comprises the whole plant resource diversity that human societies use and manage for agriculture, food, healthcare, and livelihood. It includes the enormous diversity of crops and crop varieties that small-scale farmers conserve and cultivate, representing both the basis for their subsistence and a source of income. To some extent, it also embraces wild food and medicinal plants that rural populations use for nutrition, healthcare and livelihood purposes. The maintenance and use of agrobiodiversity relies on extensive indigenous knowledge systems, which address aspects such as cultivation practices, uses, and genetic resource management of such plant species.

The fundamental roles of agrobiodiversity and the associated indigenous knowledge in sustaining the agricultural dynamics of rural communities throughout Sub-Saharan Africa have been absent from policies and programmes related to agriculture, natural resource conservation, and rural development. However, agrobiodiversity and indigenous knowledge represent locally available resources with enormous value and potential for food security and rural development. All too often, the only assets which remain in poor rural communities for livelihood and even survival are the local biodiversity and indigenous knowledge; these assume increasing significance as other resources dwindle or disappear.



Local medicinal plant from Uganda under clinical research for its effectiveness against herpes Zoster and other AIDS-related skin problems (Photo: Garí, 2001)

Among millions of poor and small-scale farmers, agrobiodiversity represents the foundation of food security, livelihood options, and well-being. The interaction between agrobiodiversity and indigenous knowledge provides the rural poor with numerous benefits and opportunities, such as capacity to address environmental conditions, provision of food and nutritional supplies, access to local market opportunities, and options to cope with evolving needs. In essence, the way rural people conserve, use, and manage agrobiodiversity shapes their food security, livelihood, cultural dynamics, and development opportunities. However, these fundamental roles of agrobiodiversity and indigenous knowledge have not been accordingly recognised and supported in policies and programmes relevant to rural development.

Modern agricultural and development forces have persistently neglected and eroded agrobiodiversity and indigenous knowledge. They have accelerated, albeit inadvertently, their depletion and depreciation at the grassroots level. The narrow focus on market-oriented agricultural components and cash crop farming has impaired the conservation, valuation and use of agrobiodiversity, eliminating many options for food security and nutrition among the rural poor. As a consequence, the erosion and neglect of agrobiodiversity and the associated indigenous knowledge reduce the capacity of farmers to control their subsistence systems, including their food security and nutrition. They also limit local capacity and options for addressing the evolving needs and challenges, such as the current HIV/AIDS impact.

The AIDS epidemic generates an additional paradox regarding agrobiodiversity and indigenous knowledge. As AIDS disrupts customary agricultural systems, socio-demographic structures, and community dynamics, it further impairs the maintenance of agrobiodiversity and indigenous knowledge. At the same time, as poor households and communities become severely impacted and impoverished, agrobiodiversity and the associated indigenous knowledge become increasingly important for achieving food security, whilst coping with the specific needs and changes owing to HIV/AIDS.

Overall, agrobiodiversity and indigenous knowledge represent locally available resources for mitigating AIDS impact and developing agroecological strategies aimed at household food security and nutrition. At the same time, they represent grassroots components for sustainable agricultural and rural development, capable of enhancing the autonomy and dignity of rural people throughout their development process. Therefore, they constitute a fundamental component in the agricultural sector response to the concurrence of food insecurity and HIV/AIDS impact, especially in heavily affected areas in Sub-Saharan Africa.

Strategic components

The consideration of agrobiodiversity and indigenous knowledge results in new modes of agricultural and rural development, which directly address household food security and nutrition aspects, while providing an integral approach to the entire agriculture-food-nutrition-health complex at the rural grassroots. Next there follows a set of strategic components that can empower the rural poor in the face of food insecurity and AIDS impact, provided adequate changes in policies, in agricultural programmes, and in practices at the farmer level are accomplished.

1. Traditional, neglected and under-utilised crops. Rural people are often custodians of a rich diversity of crops and crop varieties. Most of these crops are neglected and under-utilised. Some of these crops are sometimes despised as "traditional" or "indigenous" in opposition to the handful of economically valuable crops that are relevant in agricultural trade and urban food habits. These traditional, neglected and under-utilised crops are excluded in agricultural policies and programmes, to the extent that their use and dignity have even declined among rural people themselves. However, they often represent strategic crop genetic resources in household food security and nutrition, whilst providing many options for improving rural livelihoods and addressing evolving needs, such as particularly the food security and nutrition concerns in the context of HIV/AIDS. They comprise crops and crop varieties that have strategic values and potential, including:

- advantageous adaptation to local agroecological constraints, such as drought and poor soils;
- provision of superior nutritional sources, such as many neglected legume crops that provide high protein supplies, and leafy vegetables that are excellent source of micronutrients;
- sensitiveness to AIDS-related labour stress, such as non-labour intensive crops;
- favourable characteristics for food processing and preservation;
- unexplored economic opportunities; and
- relevance and value in local cultural dynamics and food habits.



Malian woman husking fonio, a nutritious but neglected cereal from the Sahel
(Photo: Garí, 2001)

Traditional, neglected and under-utilised crops thus provide a wide range of options to address the complex interface between food insecurity and AIDS impact, allowing coping mechanisms specific to the conditions and needs of every household, community, and agroecological area. In particular, they contribute to resilient and reliable food security systems, they can improve the diets of poor farmers (including particularly HIV/AIDS infected people), they can provide new income-generating options suitable for AIDS-affected households, and they also entail an integral approach to food security as cultural values and local food habits are respected and enhanced.

2. Agricultural diversification. Agricultural diversification represents a key strategy to combat food insecurity and AIDS impact. It is the basis for providing and enhancing a balanced nutritional supply among poor rural families, particularly in the context of subsistence agriculture and socio-economic marginalisation. Agricultural diversification also provides a

local mechanism to manage agroecological risks. The promotion of agricultural diversification opposes narrow crop and farming approaches, as supported by modern agricultural development paradigms, and enhances the local control over food production and nutrition. In addition, agricultural diversification can represent a mechanism to alleviate labour shortages, as it allows for diffusing labour loads through time. That is particularly critical for AIDS-affected households, which suffer severe labour shortages. Overall, agricultural diversification provides a resilient and reliable strategy for food security and balanced nutrition, with specific advantages and benefits in the context of HIV/AIDS. Agrobiodiversity and indigenous knowledge are critically relevant for agricultural diversification efforts; in fact they have traditionally supported diversified agricultural systems.

3. Low-input agriculture. In the view that the AIDS epidemic generates an economic crisis in poor rural households, low-input agriculture becomes a pressing need. In fact, modern agricultural models have promoted high material inputs at the farmer level, such as the regular purchase of chemical products and improved seeds. That has however impaired the economic development of small-scale farmers, as the investment efforts have not often resulted in increased gains, but in a downward cycle of financial debits, development dependency, environmental degradation, and health impoverishment. Low-input agriculture aims at increasing the net economic gains of farming households, aside from arresting the related ecological and health impact. This represents a relevant strategy for poor farmers, more so in the context of AIDS. Overall, the success of low-input agriculture is highly dependent on local crop genetic resources (as they have coevolved with local agroecological conditions), on the optimal use of indigenous knowledge (which contains advanced understanding of the farming constraints and potential in a particular agroecological area), and on enhancing the seed autonomy of farmers (so to ensure seed availability and access). In consequence, the focus on agrobiodiversity and indigenous knowledge may support more economically viable agricultural systems, which becomes particularly useful in view of the economic impact of HIV/AIDS among the rural poor.

4. Home gardens. Home gardens are an important agricultural space in many rural communities throughout Africa, yet they are largely neglected. In general, home gardens and their associated crop diversity represent an excellent foundation to enhance household food security and nutrition. Improving home gardening requires the optimal use of local agrobiodiversity, as well as a dynamic integration of additional crops and crop varieties with specific values and uses. Many neglected crops, such as the enormous diversity of African leafy vegetables, constitute important plant genetic resources for promoting and improving home gardening, and hence for enhancing household food security and nutrition. In addition, home gardening may expand household income-generating opportunities in relation to growing food demand from urban populations. However, the focus on home gardening for market exchange raises important concerns on equitable food utilisation at the households level, particularly in the context of HIV/AIDS; in other words, it is required to ensure that vegetable production does not serve only marketplace opportunities, but equally the household nutritional needs.

5. Wild food plants. As rural communities confront hunger and malnutrition, the increased use of wild food plants represents a strategy for food security and nutrition. In fact, the role of wild food plants in emergency situations is well extensible to the context of AIDS. The value and potential of wild food plants in the nutrition of rural people is however neglected in agricultural and environmental programmes. The promotion of wild food plants requires the simultaneous support to community ecological conservation and management systems, so to facilitate equitable access and ensure sustainable use. In some cases, highly valuable wild food plants may be considered for cultivation, for instance in home gardens. In fact, the domestication of many crops evolved from an increased value and use among people.

6. Medicinal plants. Medicinal plants constitute a fundamental component of traditional healthcare systems in rural communities throughout Africa. In fact, they constitute the fundamental basis of healthcare for the largest part of the world's population. Medicinal plant diversity and the associated indigenous healthcare knowledge represent affordable and locally

available resources capable of addressing many AIDS-related diseases and health problems. Their role is particularly significant in view of the fact that current economic and trade inequalities limit access to modern drugs and treatments among the poor.

7. Indigenous agroecological knowledge and practices. As illustrated above, indigenous agroecological knowledge and practices are inseparable from agrobiodiversity, and hence critical in agricultural strategies relevant to household food security and nutrition. They represent the connecting axis between rural people and ecosystems, being important to providing local food security whilst maintaining sustainable agroecological systems. In consequence, the indigenous agroecological knowledge and practices deserve adequate recognition, support and enhancement to strengthen the agricultural systems of small-scale farmers. Through cross-cultural exchange and co-operation, they can better improve and adapt to the evolving needs of farmers.

8. Community seed systems. The agrobiodiversity dynamic among small-scale farmers relies significantly on local seed systems. In fact, community seed systems represent the basis for the conservation, access and exchange of plant genetic resources, and hence the foundation for the effective use of agrobiodiversity in poor rural communities. Community seed banks and farmer seed fairs are relevant practices to strengthen and improving community seed systems. In conclusion, these strategic components represent valuable forces to enhance the local capacity to cope with chronic food insecurity and the AIDS impact. They pose significant changes in agricultural development policies and programmes, emphasising a priority focus on the rural grassroots.

Social dimensions

Using agrobiodiversity and indigenous knowledge to combat food insecurity and AIDS impact requires a simultaneous attention to the social matrix. Four relevant concerns are next suggested.

- a. **Enhancing appropriate coping mechanisms.** Agrobiodiversity and indigenous knowledge are relevant ingredients in local coping mechanisms to food insecurity and AIDS impact, since they represent the locally available resource base for agriculture, food production, and healthcare. This grassroots dynamic demands adequate recognition and support from agricultural policies and programmes.
- b. **Exploring agrobiodiversity-based livelihood options.** Agrobiodiversity encompasses a number of options for livelihood and economic development in rural communities, but they are severely constrained in the existing socio-economic framework. The effective use of agrobiodiversity to enhance rural economies requires active support at all levels, including policies, institutional mechanisms, and targeted interventions; for instance in research projects, extension programmes, rural microcredit schemes, and market policies.
- c. **Gender equity.** Gender inequalities aggravate food insecurity and HIV/AIDS impact among rural women, whilst constraining their roles and capacity to combat such constraints at household and community levels. Rural women play numerous and vital roles throughout the agriculture-food-nutrition-health complex, including particularly the conservation and use of agrobiodiversity, as well as the transmission of indigenous knowledge. All these elements become of utmost importance in the context of AIDS, but the persistent gender inequalities constraint their effective use to cope with food insecurity and HIV/AIDS. The interrelated roles of rural women comprise active conservation and management of biodiversity (e.g. seed conservation and selection of neglected but nutritious crops), holding and transmitting indigenous and local knowledge (e.g. farming practices, knowledge on wild food plants), specific agricultural tasks (e.g. home gardens, subsistence agriculture), post-harvest practices (e.g. food processing

and preservation), and provision of household well-being (e.g. nutrition through meal preparation, care-giving for ill family members). A priority focus on gender equity is required to adequately mainstream agrobiodiversity and indigenous knowledge to combat food insecurity and AIDS impact at household and community levels. Gender approaches are relevant also in the view that women are the dominant actors in subsistence agriculture, playing relevant roles in agrobiodiversity management and transmission of indigenous knowledge, yet they suffer unequal access to agricultural productive resources (e.g. land and credit schemes) and notable socio-political exclusion in many cases. Accordingly, a gender-oriented approach to agrobiodiversity and indigenous knowledge is highly required to ensure that men and women equally participate in, and benefit from the use of agrobiodiversity for food security and HIV/AIDS mitigation.

- d. **Community mobilisation.** The scale of AIDS impact in some rural areas is likely to undermine community dynamics, which are however increasingly important to support affected households, mitigate the impacts, and launch rural development. In particular, AIDS may erode the community-based conservation of agrobiodiversity, as well as social reproduction systems that facilitate the exchange and transmission of indigenous knowledge. In this context, community-led initiatives that promote the conservation, use, and management of biodiversity and the associated indigenous knowledge are highly important. Such community mobilisations are relevant to enhance local capacity to cope with food insecurity and AIDS impact. They are equally important to maintain biodiversity and indigenous knowledge as grassroots components for rural development. In particular, as AIDS generates a rural emergency situation, the active stance for conserving and making available agrobiodiversity and indigenous knowledge becomes increasingly important to maintaining the prospects of reconstruction, development and autonomy among surviving community members, including the youngest generations.

Concluding remarks

Agrobiodiversity and indigenous knowledge represent a strategic force to combat the concurrence of food insecurity and AIDS impact among poor rural communities in Sub-Saharan Africa. In fact, their roles in household food security and nutrition, as well as in coping with evolving conditions such as currently the HIV/AIDS impact, have been poorly recognised and supported. Accordingly, tailored agricultural policy and programme responses are urgently required.

The effective integration of agrobiodiversity for food security and AIDS mitigation requires an adequate research basis. Due to the nature and urgency of the topic, participatory and grassroots-oriented research is highly needed, so to better advance the understanding and share the results. Key research tasks are as follows:

1. Understand agrobiodiversity dynamics in the context of food insecurity and AIDS impact, looking at the paradoxical tensions between: (i) erosion of agrobiodiversity, as particularly aggravated by AIDS impact, and (ii) the roles of agrobiodiversity in enhancing food security and mitigating HIV/AIDS impact at household and community levels.
2. Document the role of agrobiodiversity and indigenous knowledge in local coping strategies, revealing their importance and potential in poor rural communities.
3. Document emerging grassroots initiatives that integrate agrobiodiversity, food security, and HIV/AIDS mitigation, as the basis for further action and co-operation.

Although research is essential to adequately design and deploy agricultural responses, the urgency of the matter requires immediate action. As the minimal knowledge base on the scale and dimensions of HIV/AIDS impact is being raised, it is already time for the agricultural sector to react. The indigenous resource and knowledge base is unquestionably a critical component in the food security, nutrition and healthcare of millions of rural people, and hence a relevant issue for researchers, development partners, and policy-makers working in the interface between food insecurity and HIV/AIDS.

Overall, the progressive recognition and support of agrobiodiversity and the associated indigenous knowledge will empower rural people to combat the perverse concurrence of food insecurity and AIDS impact in Sub-Saharan Africa. It will also enhance the capacity and autonomy of rural people to foster development and confront evolving challenges, freeing them from the dilemma between isolation and relief dependence. In essence, without safeguarding and promoting the indigenous resource and knowledge base, many poor rural communities run the risk of being left with nothing but despair to combat food insecurity and HIV/AIDS impact.



Ugandan women farmers
looking at the local diversity
of Amaranth
(Photo: Gari, 2001)