

Agriculture, Trees and HIV/AIDS

For a long time, HIV/AIDS was viewed as purely a health issue.

Yet HIV/AIDS has implications that reach far beyond health - including great impacts on agricultural and food production systems. In Sub-Saharan Africa (SSA), most infected people live in rural areas and HIV/AIDS has become mostly a rural problem. In largely rural-based economies, it is unlikely that the epidemic can be controlled without the effective support of the agricultural sector, which is in a strong position to assist in both the prevention and mitigation of HIV/AIDS. Equally, however, there are limitations to the extent to which the health or agricultural sector can operate independent of each other in this regard, and for this reason a multi-sectoral approach is crucial.

HIV/AIDS deepens already existing poverty. Impacts experienced by People Living with AIDS (PLWA) include health constraints, labour shortages and a weakened labour force, social isolation, monetary shortages, impacts within the household (such as redistribution of tasks, and more attention paid to the sufferer at the expense of other necessary activities). PLWA are likely to provide less labour, have less capital and are more in need of risk-management strategies. As they struggle to pay increased medical and other bills whilst at the same time losing their earning capacity, their financial wealth decreases and assets may need to be sold, such as livestock, tools or seed reserves. Cash crop production is often abandoned due to its now excessive financial and labour requirements. All of these aspects contribute to a decline in production in rural communities, and to farm degradation in terms of a decrease in the use and conservation of (agro)biodiversity, a decrease in food quality and quantity, and an abandonment of and disinvestment in land.

Agrobiodiversity and Local Knowledge for strengthening rural livelihoods

Strengthening the agricultural system means a focus not on problems, but on internal strengths and external opportunities. African communities have, over centuries, developed a diverse resource base of cultivated and wild plants, trees and livestock, and site and gender-specific knowledge which has enabled them to sustain and enhance their livelihoods. This diversity of plants and animals is termed “agricultural biological diversity” - Agrobiodiversity - and the knowledge about these resources - here termed Local Knowledge. Agrobiodiversity and Local Knowledge are two very important internal strengths of rural communities.

Agrobiodiversity (AB) and Local Knowledge (LK) are invaluable resources in their contribution towards strengthening and stabilizing rural communities - in fact they are essential for their very survival. However, their value has been undermined by the relatively recent encouragement to adopt

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“improved” externally-sourced crop varieties, seeds and inputs, and market-orientated production. The local resource base is now further under threat due to the impact of HIV/AIDS, which strikes at the heart of these livelihood strategies.

In the face of the HIV/AIDS pandemic, agrobiodiversity and local knowledge are important factors for enhancing rural livelihoods by contributing to the following:

•**Food security.** The first essential for communities with PLWA is to ensure a more constant supply of locally accessible food, both in quantity and nutritional value. Neither pharmaceuticals nor traditional medicines can work without this basis - the best medicine is sufficient food. In the sub-Saharan African situation, communities have to grow, or gather, most of their food themselves.

•**Medicinal relief.** PLWA have higher medicinal requirements, but are usually unable to afford to purchase modern medicine. Most people in rural areas rely on traditional medicine; the availability and use of medicinal plants provides a cheap, and locally suitable form of health care.

•**Income-generating activities.** In the case of HIV/AIDS-affected households, while the need for income increases due to the rise in treatment and funeral costs, at the same time the capacity for income generation decreases. Useful income-generating activities based around local biodiversity are those requiring little capital investment and labour, bringing more constant dividends throughout the year, and being based on local resources, knowledge and skills.

In all of these factors, labour-, cost- and time-efficient provisioning strategies need to be considered. For example: producing one’s own food, and generating income to purchase food, are dependent on the local labour force, which can be strengthened through improved health, and be supported by more appropriate labour strategies. The weakened workforce of PLWA is less able to provide enough strong and timely labour; therefore, labour-intensive production and post-harvest practices become inappropriate for farmers. Production becomes less a measure of “yield per hectare”, than “yield per hour” (shifting to other less labour-intensive varieties or species and practices increases harvest security).

PLWA need more food security, better nutrition, more medicine, more income and increased risk management, and in most cases lower labour- and capital-investment approaches. Trees on farm as part of local agrobiodiversity can be a useful tool in the mitigation of HIV/AIDS. Trees in agroforestry systems, parklands or forests are an important part of agrobiodiversity for rural livelihoods. In seeking ways to enhance food security, food quality, plant-based medicines and income generation, as well as local coping mechanisms to deal with a weakened labour force, tree species (and local knowledge on them) should not be overlooked.

Access to knowledge and germplasm

Faced with HIV/AIDS, farmers often abandon market-oriented and high external-input agricultural practices and shift over to subsistence farming. To be relatively successful in subsistence farming, PLWA require access to germplasm and knowledge - farmers can only plant what is available and what they perceive as useful. A focus on local cultures, knowledge and agrobiodiversity is crucial to any HIV/AIDS mitigation strategy. However, local knowledge alone is insufficient to provide timely coping strategies for the HIV/AIDS pandemic.

Forests and other natural resources

The natural forest areas throughout Africa are decreasing and degrade due to the extraction of high-value timber and non-timber forest products. As PLWA are less able to grow crops, they increasingly shift to gathering for their daily subsistence needs. Wild foods are free, nutritious and require little labour input and are particularly needed in times of stress. The HIV/AIDS pandemic has also generated a greater need for medicine, and most plant-based medicine is sourced from the forest.

There are indications that PLWA in Africa rely more on forest and other available natural resources than non-affected households. It would appear that natural forests provide an essential safety net for PLWA for their livelihood; for food and medicine, but also for firewood, fodder and other income means. The particular HIV/AIDS related impact of this increased dependence on natural resources is not clear, but there is concern for the sustainable use of at least part of these resources.

Agricultural diversification

Most tree species provide several products and services at different times, but a considerable number of species and genotypes/cultivars are necessary to provide the multiple uses needed by individual farmers. There are many tree species that can be used to diversify the farming system. With careful species mixes, agroforestry systems in some localities may provide year-round production. PLWA need a balanced diet and also plant-based medicines, which requires the use of multiple species.

Depending on a farmer’s needs and capacities, s/he decides what mix of diversity to aim for, in terms of species (or variety) numbers, species composition, location and in evenness of distribution. Ecological experiments and models have shown that diversification of species composition could lead

to enhancements of the stability and productivity of ecosystems. Diversification could also reduce risks in an uncertain market environment, or if there are potential pest and disease problems with a particular species. Increasing the stability and productivity of agroecosystems is one of the objectives to assist PLWA. Diversifying the composition of tree species on farms appears to be a means of reaching this objective.

Example of a diverse production farm niche: the home garden

Home gardening differs from commercially oriented agriculture. Crops are grown because of their food and nutritional value rather than their market value. It concentrates on smaller-sized family (or community group-run) gardens and - with careful species mixes – produces all year round. It focuses on diversity, including traditional, neglected and under-utilised crops, and fruit trees are an important component of home gardens. Home gardens tend to appeal most strongly to women, who are often in charge of selecting, cooking and growing the family's food needs. Being in charge of production of food and medicinal plants endows women with greater control over their family's welfare. Overall, experience indicates that increasing local diversified production strategies improves nutrition more than efforts to increase incomes. Nevertheless, in practice, home garden projects must work hard to promote diversity.

Labour

Most tree species are not labour-intensive nor require timely labour. Apart from some watering after (trans)planting, most trees require minimum maintenance. Some even regenerate without intervention. The little maintenance needed generally does not require timely interventions. For example in Meru, Kenya, a 15-year-old orphan managed to survive because his parents had planted macadamia trees. The nuts provided him with steady income.

In agriculture, high-yielding varieties or breeds may have a higher potential yield, but it appears more beneficial for PLWA to rely on the more diverse traditional varieties (land races), with fewer risks and a more reliable, constant yield.

Trees as service-providers

Farmers are conscious of the micro-climatic variations within their plots and adapt accordingly. Depending on the species mix, trees in agroforestry systems provide many

services: they can affect the farm microclimate (cooling and moisture retention or drainage), they are more drought-resistant, control soil erosion, improve soil fertility (N-fixing, source of compost, tapping into subsoil minerals and aerating soils), provide shade, function as a windbreak, control weeds (through shading or natural repellence) and can serve as a water catchment. For example, research from Rwanda has showed that soil fertility was a major result of changed practices linked to HIV/AIDS. Trees are therefore vital to increasing stability and resilience of the farming system, particularly important as PLWA's farms suffer from degradation.

Example: tree fodder

One tree product that needs specific mention is fodder. The protein levels in pods and leaves of fodder trees complement those of most grass species, and these can boost livestock weight as well as milk production. During dry periods, tree fodder is often the only source of food. Raising a cow or even small livestock - poultry, sheep, goats and pigs, can make a substantial contribution to food security by providing protein-rich foodstuffs (particularly important for PLWA), income, draft power, fertiliser and fuel. Animal breeds adapted to the local environment and local feed sources are more persistent. In addition, trees also provide fodder and habitat for bees.

Improving the use of existing plants

More knowledge on species can increase the use of what is readily available. Many trees are already on farm, but their full potential has often not been realised. For instance, *Prunus africana* in East Africa is locally used for timber and medicine but the bark also has export value. HIV/AIDS requires diet rich in fruits- and vegetables. Some fruit-bearing species already grow on farms, wastelands or in hedges, but farmers may have never used them. Local, national or even regional exchange of knowledge among farmers, traditional medicinal practitioners and elders, as well as providing the community with external knowledge, may also improve the use of existing resources.

Conclusion

With most people in African countries living in the rural areas, it is unlikely that the HIV/AIDS epidemic can be controlled without the effective support of agriculture. Expanding agrobiodiversity and local knowledge can be one way to mitigate the effects of HIV/AIDS through enhancing rural livelihoods.

Tree species are part of the available agrobiodiversity on African farms. A greater focus on trees within agricultural systems - agroforestry - can help to promote food security and nutrition, medicinal relief, and income generation including the use of labour-, cost- and time-efficient provisioning

strategies. Trees also increase the stability and resilience of farming systems. Making more efficient use of tree species can be a valuable part of mainstreaming HIV/AIDS in agriculture, and allow PLWA to live longer and have healthier and more meaningful lives.