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Strengthening Agricultural Technologies Among People Living with HIV: Lessons Learned in the Border Towns of Busia, Kenya and Busia, Uganda

October 2008

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IMPROVING LIVES



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Acknowledgments

This report is the result of the efforts and cooperation of community groups that support people living with HIV (PLHIV) and orphans and vulnerable children (OVC) in the border towns of Busia, Kenya and Busia, Uganda. These groups work with the Regional Outreach Addressing AIDS through Development Strategies (ROADS) Project (2005–2009) implemented by Family Health International (FHI) and funded by USAID/East Africa. The ROADS Project was designed to reduce HIV transmission, improve care, and test innovations to reduce the impact of HIV and AIDS along major transport corridors in East Africa.

This activity to apply appropriate technologies to improve the agricultural productivity of PLHIV in the two towns was coordinated by Food and Nutrition Technical Assistance Project (FANTA) consultant Alex Mokori. The Regional Centre for Quality of Health Care (RCQHC) at Makerere University in Kampala, Uganda, supported the field work and training components of the activity. Kenton Kayira and Robert Mwadime of FANTA provided technical management of the activity, and Dorothy Muroki and Gail Goodridge of FHI led the involvement of the ROADS Project. Wendy Hammond of FANTA contributed to the production of the report. All photos are by Alex Mokori. The activity was funded by USAID/East Africa, with guidance from Shelagh O'Rourke and Victor Masbayi.



Photo of demonstration in Busia, Kenya by Alex Mokori

Abbreviations and Acronyms

ACP	AIDS Control Program
AIDS	Acquired Immune Deficiency Syndrome
BATC	Busia Agricultural Training Centre (Kenya)
BCCC	Busia Cultural Centre (Kenya)
CBO	Community-based Organization
FANTA	Food and Nutrition Technical Assistance Project
FHI	Family Health International
FLEP	Family Life Education Programme (Kenya)
HBC	Home-Based Care
HIV	Human Immunodeficiency Virus
JICA	Japanese International Cooperation Agency
KARI	Kenya Agricultural Research Institute
MOA	Ministry of Agriculture
MOH	Ministry of Health
NAADS	National Agricultural Advisory Services (Uganda)
NACWOLA	National Community of Women living with HIV/AIDS in Uganda
NARO	National Agricultural Research Organization (Uganda)
NASCOP	National AIDS/STI Control Program (Kenya)
NGO	Nongovernmental Organization
OVC	Orphaned and/or Vulnerable Children
PLHIV	People Living with HIV
ROADS	Regional Outreach Addressing AIDS through Development Strategies
TASO	The AIDS Support Organization (Uganda)
USAID	United States Agency for International Development

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Summary

HIV prevalence in the two border towns of Busia, Kenya and Busia, Uganda is estimated at about 10 percent, compared with the national average of about 7 percent in both countries. Most residents in the towns are migrants who moved in search of employment, mainly in service provision to long-distance truck drivers. The Regional Outreach Addressing AIDS through Development Strategies (ROADS) Project implemented by Family Health International (FHI) is designed to reduce HIV transmission, improve care, and reduce the impact of HIV and AIDS along the major transport corridors in East Africa. The project implements its activities through clusters, which are usually autonomous community-based organizations (CBOs) or networks of people living with HIV (PLHIV) that come together for coordination and joint planning and implementation of activities to tackle common challenges. Group members are trained in topics that include home-based care (HBC), paralegal issues, peer counseling and food and nutrition.

The Food and Nutrition Technical Assistance Project (FANTA) and the Ministry of Health (MOH) AIDS Control Programs (ACPs) in Kenya and Uganda worked together between 2007 and 2008 to integrate nutrition into the activities of HIV support groups in the border towns of Busia Uganda and Busia Kenya, funded by USAID/East Africa. The aim was to build skills in nutrition and disseminate national materials on nutrition and HIV developed by the national ACPs. However, PLHIV in the border towns increasingly reported lack of access to adequate food, in terms of quantity and variety, as the main reason they could not apply the dietary practices recommended during counseling sessions. In response, between September 2007 and September 2008 FANTA and the ROADS Project collaborated to facilitate the diffusion and use of appropriate technologies to improve the productivity of PLHIV agricultural activities developed under the ROADS Project in the two border towns.

The process included identifying simple technologies and opportunities to apply them through linkages between the clusters of PLHIV in the towns and local agricultural institutions—the Ministry of Agriculture (MOA), Department of Culture and Social Services, Kenya Agricultural Research Institute (KARI), and Busia Agricultural Training Centre (BATC) in Kenya and the MOA, Ministry of Animal Industry and Fisheries (MAAIF), National Agricultural Research Organization (NARO), and National Agricultural Advisory Services (NAADS) in Uganda, as well as community development officers, CBOs, and nongovernmental organizations (NGOs) in the districts. FANTA facilitated the development of a participatory learning process to create the links needed to strengthen small-scale agricultural activities and motivate groups of PLHIV to learn new technologies to increase farm and garden output.

The ROADS Project's cluster approach was an ideal mechanism to initiate the activity among PLHIV networks, and sub-agreements allowed cluster groups to integrate nutrition and food security activities into their annual priorities. Agricultural institutions in Kenya were willing to adapt training for PLHIV, provide sites for group activities, and support Ugandans who came to them through the Kenyan groups. Local leaders were keen to support groups of PLHIV. Peer education was more appreciated and effective in diffusing technologies than reliance on formal institutions, and learning by doing in the farms was a powerful tool for educating communities.

On the other hand, with minimal financial inputs, coverage was low. Group members established 31 backyard gardens in Busia, Uganda and 11 in Busia, Kenya, but few resources were used to create demand for the technologies, provide field training, or monitor and follow up the activities. Post-election violence delayed activities in Kenya, and some PLHIV who would have been peer trainers were displaced. The need for income generation and reliance on development agencies for livelihood substantially limited participation in a program that provided only technical support, especially in Uganda. As most caregivers and PLHIV in the Busia communities were very poor, minimum support for basic tools and inputs such as herbicides and seeds would be needed to initiate such an activity on a large scale.

Recommendations include 1) integrating agricultural livelihood activities with clear monitoring and reporting indicators into sub-contracts with cluster groups and health facility and community services for PLHIV, 2) providing nutrition education on the importance of good nutrition for PLHIV to create demand for backyard gardens, 3) producing simple booklets or DVDs on how to improve garden productivity and use local resources to optimize food security, 4) providing low-cost individualized support to help PLHIV embrace and implement such technologies through peer training, 6) advocating for agricultural livelihood activities among PLHIV in urban areas and establishing model gardens for urban settings, and 7) conducting a formative assessment to identify unsound food preparation and storage methods to inform modification of messages for PLHIV.

Strengthening Agricultural Technologies Among People Living With HIV: Lessons Learned in the Towns of Busia in Kenya and Uganda

Between September 2007 and September 2008, the Food and Nutrition Technical Assistance Project (FANTA) of the Academy for Educational Development (AED) and Family Health International (FHI) worked together to promote the use of appropriate technologies to improve the productivity of small-scale agricultural activities implemented by people living with HIV (PLHIV) under the Regional Outreach Addressing AIDS through Development Strategies (ROADS) Project implemented by FHI in the two border towns of Busia, Kenya, and Busia, Uganda (figure 1). This activity was funded by USAID/East Africa.



Figure 1. Busia towns on the border of Kenya and Uganda

The process involved identifying simple technologies to increase farm and garden outputs and linking clusters of people living with HIV (PLHIV) with local agricultural institutions including the Ministry of Agriculture (MOA), Department of Culture and Social Services, Kenya Agricultural Research Institute (KARI), and Busia Agricultural Training Centre (BATC) in Kenya and the MOA, Ministry of Animal Industry and Fisheries (MAAIF), National Agricultural Research Organization (NARO), and National Agricultural Advisory Services (NAADS) in Uganda, as well as community development officers, community-based organizations (CBOs), and nongovernmental organizations (NGOs) in the districts. FANTA facilitated the development of a participatory learning process to motivate groups of PLHIV to learn the new technologies to increase farm and garden output.

Objectives

The objectives of the participatory learning process are listed below.

1. Prioritize agricultural technologies to promote among PLHIV living in the Kenya and Uganda border towns of Busia.
2. Design a process to strengthen group implementation of agricultural activities in the two border towns.
3. Create links between clusters of PLHIV and local agricultural institutions for sustainable implementation of farming and gardening technologies to increase production.
4. Document lessons that can help similar groups access and adopt improved agriculture or other livelihood technologies.

Group members from the two border towns selected technologies to improve the productivity of backyard gardens as the best option to increase the variety of foods in their diets for the following reasons:

1. Backyard gardens are easier to access than farms because they are close to homesteads (and to the sick) and do not require large amounts of resources to establish and maintain.
2. Backyard gardens are easier to work on (e.g., weed) than farms and give group members self-esteem because they have something to improve their nutrition and wellbeing.
3. Garden care and extension services can be combined with HBC.
4. Crops and vegetables can be chosen to increase dietary variety for PLHIV and improve food flavor and intake.
5. Gardens can be designed to save water and minimize labor needs for PLHIV.
6. Vegetables grown from backyard gardens can be sold for additional household income, especially during the dry season, besides providing nutritious diets for PLHIV and their households.

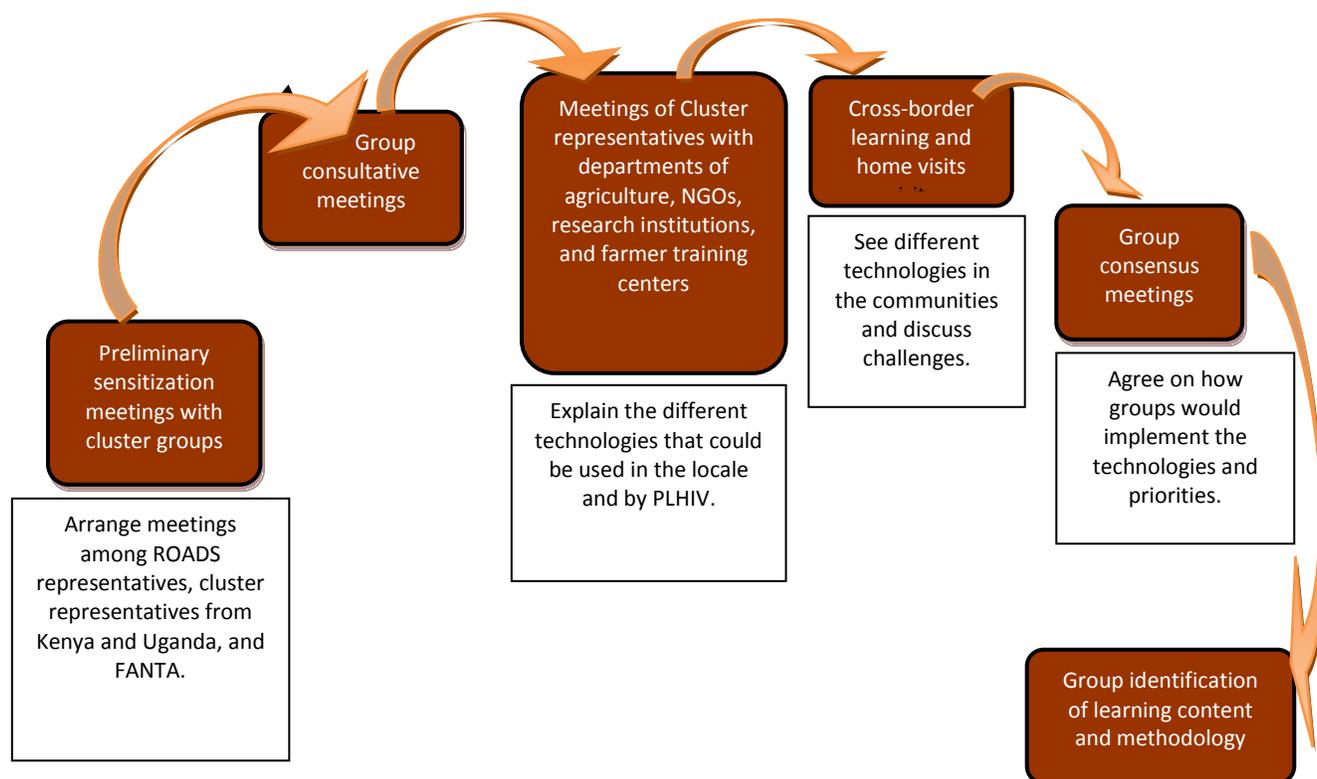
Participatory Learning Process

In phase one of the participatory learning process, FANTA and ROADS helped members of the clusters and agricultural institutions understand the agricultural technologies used in Busia, Kenya and Busia, Uganda to improve productivity. Phase two facilitated a process of linking cluster with agricultural institutions to help cluster members implement existing technologies that they had not widely used and to assess the impact of the process on the adaptation of the technologies. Neither FANTA nor ROADS invested substantial funds in the process, but provide technical assistance and connected the clusters to locally available technical assistance and support.

Phase One: Identifying Appropriate Agricultural Technologies

Figure 2 illustrates the process developed to identify productive local agricultural technologies that could be used by PLHIV living in the border towns.

Figure 2. Methods used to identify and prioritize agricultural technologies



Three **sensitization meetings** were held, one joint meeting between cluster representatives, the FHI Cluster Coordinators, and FANTA staff and two meetings with groups on either side of the border. The meetings laid the foundation for agreement on the purpose of the activity and sharing of expectations. Over a period of two weeks, the group representatives identified viable and interesting agricultural technologies used in their localities and discussed how easily they could be implemented by PLHIV living in the towns (urban setting) and how they could improve their food diversity. In meetings with the agricultural institutions (mainly from Kenya), examples of



Sensitization Meeting in Busia Catholic Parish Church, Kenya

agricultural technologies and activities were identified and discussed. Ministry of Agriculture and BATC extension personnel were available in the meetings to explain the different technologies.

The **cross-border learning** process was initiated by 14 representatives of the Ugandan clusters, who visited their peers on the Kenyan side of the border in November 2007. For two days they visited homes and training centers to see different agricultural technologies and livelihood activities implemented in Kenya and discussed the feasibility of their adoption in their own context.

At BATC the Ugandan visitors toured all the model crop and vegetable gardens, soya processing plant, and livestock sections of the farm. **Visits** were also made to school gardens, community land (e.g., belonging to clusters of orphans and vulnerable children [OVC] in Kenya), seed multiplication sites, and farmer training centers. The cluster members discussed opportunities for and challenges of implementing similar activities in the urban Uganda context. Group consensus meetings were held to prioritize what the clusters wanted to learn about and the optimal methods of learning.



A Group member explains how she keeps small livestock and the challenges she faces.

Initial Findings

The clusters reported differences in organization and implementation of livelihood activities among PLHIV in Busia, Kenya and Busia, Uganda. Most groups in Busia, Kenya had group (communal) livelihood activities, which did not exist on the Ugandan side except for herbal soap-making done by the National Community of Women living with HIV/AIDS (NACWOLA). Groups on the Kenyan side were involved mainly in agricultural activities and depended on group efforts for land, sometimes donated or rented to the groups by the municipal council, a church, or individual group members. The Kenyan cluster groups had more outside support and interaction with agricultural institutions and extension than their Ugandan counterparts: in addition to nutrition training by FANTA and the MOH ACP, they had engaged in home economics activities with Japanese International Cooperation Agency (JICA) volunteers for six months in 2007. Cluster groups on the Ugandan side had less food and income security. A few members, mainly women, had practiced beekeeping, mushroom growing, and tailoring out of necessity. Many were HIV positive and were also caring for other family members, some of whom were also ill.

Gardens operated by PLHIV in the two border towns were mainly owned by individual group members. Almost all were less than one-eighth of an acre and grew fruits and vegetables. The produce from the gardens was used to increase consumption of fresh fruits and vegetables¹ and generate income. A 32-year-old owner of the only functional backyard garden in Busia, Uganda, said, “My small garden is very useful to the family. Even though I do not produce a lot of vegetables, the little I produce is used at home or sold to my neighbors ... I get a little money for oil and for buying scholastic materials for the children. I don’t have to buy boga (relish) for my posho (thick local cereal porridge).”

¹ In most of the small, individual backyard gardens, cluster members grow vegetables such as amaranth, pumpkin, kale, spinach, tomatoes, green pepper, eggplant, onions, and herbs.

In Kenya JICA volunteers had trained some cluster groups to prepare two-story sack gardens, and a few of the group members owned kitchen gardens. In Uganda the Africa 2000 Network² and The AIDS Support Organization (TASO) trained members of NACWOLA in planting sack and tire gardens in 2006, but only five women in the town center had such gardens when the groups made their learning visits in 2007. HBC and OVC cluster groups in Kenya owned larger gardens that were communally managed. The farms had been started as a means to support weak or bed-ridden PLHIV or OVC with basic food. They were operated by able group members or older OVC and grew soya, groundnuts, sweet potatoes, pumpkin, beans, and maize. The harvest was sold or distributed to support sick group members and OVC. Some of the harvest was shared among HBC caregivers as an incentive, as their services were totally voluntary.

In 2006 HBC caregivers in the Family Life Education Programme (FLEP) group in Kenya realized that most of their members did not have a reliable source of food if they fell sick for long periods. The Busia Parish Catholic church donated two acres of land, on which the 11 trained HBC caregivers and the stronger FLEP members planted maize, sweet potatoes, kale, beans, and groundnuts. Some of the harvest was accessed through group leaders and given to bedridden group members during home visits. Once the group member recovered, the support stopped. Some of the harvest was given to stronger clients as compensation for their labor input.

Some of the kale and sweet potatoes was sold to obtain income for group activities.



OVC sweet potato garden in BUCOC, Busia, Kenya

Group members valued these gardens, and many had benefited when they or their relatives were bed-ridden. Some gardens were established by orphanages to provide food for or improve the food diversity of OVC under their jurisdiction. At the time of the exercise, four groups on the Kenyan side had successful communal gardens. Some of the groups sub-divided the farms for management by smaller “solidarity groups” (care groups of peers who can influence each other to participate). No HBC or OVC group owned such gardens on the Ugandan side.

Challenges in Implementing Agricultural Technologies in Busia, Kenya and Busia, Uganda

Challenges in applying the agricultural technologies in Busia, Kenya and Busia, Uganda are listed in Table 1 on the next page. Generally, urban PLHIV without connections to neighboring villages did not feel they benefit from the activities as much as those who had connections with neighboring farms.

² The Africa 2000 Network-Uganda is an NGO dedicated to alleviating poverty by supporting smallholder farmer groups in improving and sustaining livelihoods.

Table 1. Challenges faced by PLHIV in applying agricultural livelihoods activities

Challenge	Description
Limited land for agricultural activities	More than half of the PLHIV in the two towns migrated from their home areas in other parts of Kenya and Uganda because of HIV-related stigma. They live in rented houses and have no access to land other than the compounds outside their houses. A few access land on the roadsides or riverbanks or rent land near the towns. On the Kenyan side, some PLHIV have access to family land and some registered PLHIV groups have access to small pieces of land donated by the town councils, religious groups, or government institutions.
Lack of agricultural skills and experience (leading to low interest)	Less than one-fourth of the PLHIV in the two towns were practicing farmers before they acquired HIV. Many had no experience in farming. Even the farmers used traditional technologies that were labor intensive, used little fertilizer, depended highly on rainwater, and were not very productive. Many PLHIV groups on the Ugandan side had never been trained. Unlike groups on the Kenyan side, the Ugandans had no model farms or links with agricultural training institutions.
Low levels of agricultural inputs	Almost all PLHIV complained that a lack of fertilizers and pesticides for their food crops reduced the harvest. Two PLHIV households on the Kenyan side had learned how to make and use organic manure for backyard gardens but had not taught their group members.
Destruction of crops and vegetables by stray animals	About one-half of the family backyard gardens in the two towns were reportedly destroyed by pigs, ducks, chicken, goats, and cattle from the neighborhood. This was a major barrier to continued kitchen gardening.
Gap in agricultural extension services	Less than one-fourth of the groups and individuals involved in backyard gardening easily accessed the services of agricultural extension officers. The officers were more concerned with larger, especially commercial, farms. They never provided practical skills to manage kitchen garden diseases or pests, make manure and other fertilizers, or deal with urban garden issues such as limited land, destruction by animals, and the need to purchase water.
Lack of links to income generation or nutritional wellbeing	Most PLHIV wanted to use gardens for income generation, but the gardens were too small to produce enough products for use at home and for sale. PLHIV also wanted knowledge and skills to handle product post-harvest and maximize the nutritional value of the produce.
Limited funding for agricultural activities	Groups indicated that they needed funds to buy agricultural inputs such as fertilizers, pesticides, water, and seeds and to rent land in neighboring villages. Some groups needed resources to buy equipment to process their products, e.g., to make soy milk or meal and to package foods.

Innovations to Address the Challenges

The PLHIV in the two border towns undertook the following initiatives to address these challenges:

Limited land for agricultural activities. Most individual gardens were on roadsides or by riverbanks. Individual gardens were also found in backyards using methods that require little space, e.g., sacks, tires, and tins. Small livestock such as rabbits, doves, and chicken were raised in some areas. Communal farm lands were rented or donated by the local town council to groups that were legally formalized or registered. The Neema A and Neema B groups were given farmland in the locality by other group members, e.g., for seed multiplication or communal farming. Some groups had rented small gardens cheaply from their members.

Lack of agricultural skills and experience. Motivation for gardens grew after the training by the MOH and JICA. JICA volunteers trained groups on the Kenyan side in practical ways for PLHIV to diversify diets, prepare traditional vegetables, ensure optimal nutrient retention and availability, use soya products and herbs, and use roasting and fermentation to improve food taste and digestibility. The leader of the Jasho Group in Busia, Kenya said, “After the training by NASCOP [the National AIDS/STI Control Programme] and JICA, we emphasized eating well in all our meetings and started checking each other during meetings to make sure we all ate well; that is how the issue of backyard gardens came up.” Groups used peer pressure to improve the welfare of their members. They checked on each other and encouraged each other during their weekly and monthly meetings to eat well, grow vegetables, have their weight monitored, refill and take their medications as scheduled, live positively, and avoid behaviors that would negatively affect their health.

Group members were the main source of knowledge among network members. Peer education was useful for production and use of herbs and traditional vegetables. One group on the Kenyan side had a demonstration garden that had been established by the chairperson after she attended training on farming methods with the Kenya Agricultural Research Institute (KARI). Her garden was used for multiplying seedlings and training members on management of backyard gardens. Group members contributed labor during their biweekly meetings and got free seedlings from the demonstration garden. A group leader reported, “We started growing orange-fleshed sweet potatoes and soya beans after realizing they were very nutritious, and we needed to think about improving our nutrition to live longer.” Groups on the Kenyan side bought orange-fleshed sweet potato vines at US\$6 per sack from KARI and BATC. However, individual members and their families received no extension services or other support from these institutions or from the MOA. The secretary of another group on the Kenyan side, a retired agricultural extension officer, had a small farm of seedlings that he used as an income generating activity and sold trees, fruits, and vegetable seedlings and potato vines to group members.

Low levels of agricultural inputs. Group members pooled money to purchase agricultural inputs such as seeds and fertilizers. One businessman who is a member of a Kenyan PLHIV group sold fertilizer and pesticide to his group wholesale. The group leader said, “The price we buy from him is between 40 and 60 percent of the price we get from retailers who have repacked the products.” The group also accessed chicken droppings to use as manure from a local farmer.

Most extension services were free, however. BATC provides free technical advice to farmer groups who inform the center in advance. A fee of approximately US\$0.30 per visit/person is charged for people who need additional training in specific topics not covered in the center's training manual. Some groups indicated that BATC had previously taught farmer groups, not specific PLHIV networks, soya milk production, backyard gardening (zia pit gardens,³ mandala gardens,⁴ sack gardens, double layer digging, and manure preparation), and entrepreneurship skills.

Destruction of crops and vegetables by stray animals. Destruction of farms by animals was a problem in the town councils. Ugandan groups thought that urban crop production was impossible because of the animal destruction. Groups felt that keeping small animals would be the most feasible approach unless they had fences and gates to keep animals out of gardens, which was usually not the case on the Ugandan side. Relatively more homes on the Kenyan side had hedges around their houses.

Gap in agricultural extension services. Groups with communal gardens, only found on the Kenyan side, were elaborately organized. They developed regulations on contribution of inputs and labor by group members and use and sharing of the produce from the gardens. Some of these groups had approached extension officers for training on managing their farms, and some were connected to institutions that supported them with inputs, training, and sometimes marketing of their produce. According to the leader, Neema B group "... agreed with a local NGO, Farmers Own, to get soy seeds and extension services from the NGO on condition that they would sell 80 percent of the harvest to the NGO. A group member donated a piece of land, and members pooled money to buy fertilizers and farming tools." Opportunities for inter-group exchange of knowledge and farming skills had not been exploited. Discussions on the Kenyan side indicated that group members would be willing to share and report what groups were doing and to organize "field days" for the group to display the produce from their gardens.

BATC had outreach programs to farmer groups that were registered with them and living within a 5-km radius of the training center. A staff member commented that, "BATC services are free to groups that are serious and show results, because we are evaluated by the results and everyone wants to show results." The MOA had not directly worked with PLHIV in Busia, Kenya, although some of the staff had done so in their previous positions. Under the MOA's "demand-driven service policy", farmer groups or partners have to seek the MOA's services and be willing to cost-share some of the activities. The Ministry of Culture and Social Services was interested in working with PLHIV groups to establish demonstration gardens to produce and use traditional vegetables and fruits. Box 1 describes another example of farmers linking to agricultural institutions on the Kenyan side of the border.

³ Zai is a traditional land rehabilitation technology invented by farmers in Burkina Faso. Small pits 20–30 cm in diameter and 10–20 cm deep are dug into degraded soils. Two handfuls of animal dung or crop residues are placed at the bottom of the pits, and seeds are planted in the pits as soon as rainfall starts. The advantages of the technology are that the organic matter is placed at the bottom of the pit and not broadcast over the whole field, and water is concentrated on the plant. Zai combines water and nutrient management in a cheap technology that requires few external inputs.

⁴ A mandala garden usually has spokes radiating from a central area. The shape and design looks like a mandala, a geometrical pattern often used for meditation. Non-linear gardens are easy to establish, low maintenance, and more productive because they provide more gardening space.

Box 1. Farmer-institution linkage in Busia, Kenya

Neema A group in Kenya has 86 members (about 75 percent HIV positive and others affected family members) organized in small cells of 12–15. The group is committed to communal and family-level livelihood activities. After a nutrition talk by the Ministry of Health and National AIDS/STI Control Program (NAS COP) and with encouragement from a Japanese International Cooperation Agency (JICA) volunteer attached to the Regional Outreach Addressing AIDS through Development Strategies (ROADS) Project, Neema A decided to grow soya to improve the nutrient value of its members' diets and provide food for those who were bedridden or could not tolerate cow milk.

The group obtained 40 kg of soya seed from an extension worker of the Tropical Soil Biology and Fertility (TSBF) Programme in Maseno, about 100 km from Busia). One of the group members offered to grow this produce, though she had never received training on soy growing before. After the initial planting and weeding, extension workers from the Busia Agricultural Training Centre (BATC) taught her how to apply fertilizer, space the plants, and other soya husbandry issues. After the first harvest, two other group members were given seeds. In the first year the three group members harvested over 200 kg of soya. TSBF trained the chairperson as the group's "extension officer." More members have received seeds from the group in the past year. The harvest has been used to produce soya milk and yoghurt (1kg of soya yields about 10 l of milk) to sell to group members at a discount (about US\$0.35/l) and to stalls in the Busia District Hospital (at US\$0.45/l). Although Farmers Own, a local NGO, purchases soya locally (currently offering US\$0.65/kg), Neema A has not yet sold to them because its objective is to produce seeds and high-value milk for its members and to sell the surplus.

The Ugandan side has had fewer partners to support farmer groups. In 2006 TASO contracted the Africa 2000 Network to assess food security needs of PLHIV in Busia and Tororo districts. Six areas were prioritized: local goats, improved pigs, maize, beans, orange-fleshed sweet potatoes, and vegetable growing. After the assessment 120 PLHIV (approximately 30 of them living in Busia municipality) were trained for a month and given goats, piglets, orange-fleshed sweet potato vines, and vegetable seedlings, and cassava stems. The training and inputs were not specifically targeted to PLHIV, in accordance with Africa 2000 policy, or urban settings. No follow-up or extension services were provided, and none of the PLHIV interviewed for this report indicated receiving this support. NAADS operates in the district and is a potential source of support that farmer groups in the municipality have not used.

Phase Two: Linking Cluster Groups with Agricultural Institutions

Based on the recommendations from the first phase of participatory learning, FANTA facilitated application of the backyard garden technologies in both border towns. Consultative meetings were held with group representatives on each side of the border to define what to learn and how. The cluster leaders agreed on the following principles:

1. They needed to do group advocacy to encourage the groups to “implement simple technologies to improve dietary diversity, and especially consumption of more fruits and vegetables” after the training.
2. Cluster groups would use peer pressure and support to promote the critical nutrition actions for PLHIV⁵ and cultivate interest in establishing and maintaining backyard gardens and seeking continuous help from group members.
3. Groups would organize learning sessions within and across groups, such as field days for PLHIV.
4. A few groups would receive training in a selected technologies for backyard gardens appropriate for urban settings, e.g., multi-storey (sack) gardens, double digging (totally removing the subsoil and replacing it with topsoil and manure), making and applying organic manure and manure tea, drip irrigation, and mandala gardens. The groups suggested the content of the training and the support to be sought from local agricultural and nonagricultural institutions.
5. Groups would have demonstration backyard gardens managed by a group in the cluster and use the demonstration gardens to produce vegetable and fruit seedlings for group members.
6. Linkages with local institutions would help the PLHIV groups a) access high-yielding seedlings that needed little weeding or water, such as orange-fleshed sweet potatoes, watermelons, pumpkins, passion fruit, pawpaw, grass onions, amaranth, spider plants, rosella, and aloe vera, b) learn to produce and use fertilizers, grow water harvesting gardens and multistory gardens, and practice conservation tillage, and c) learn to manage common crop diseases (most were interested in practicing organic farming, as they had been informed the products were better for their health).

⁵ The Critical Nutrition Practices for PLHIV are 1) getting weighed regularly, 2) eating more foods high in energy, 3) maintaining food and water hygiene, 4) practicing positive living behaviors, 5) getting physical exercise, 6) drinking plenty of clean, safe water, 7) getting treated promptly for infections and managing HIV-related symptoms through diet, and 8) managing drug-food interactions and diet-related side effects of medications.

Achievements

This section outlines the accomplishments of the FANTA/ROADS activity to strengthen the adoption of agricultural technologies for improved food production among PLHIV.

Training

In preparation for training, consultative meetings were held between the Kenya and Uganda PLHIV clusters and an agreement reached to approach BATC for training on backyard gardens. A meeting with BATC tutors produced a training syllabus, schedule, timeframe, and methodology. A meeting between a chief in Busia, Kenya and the Department of Culture and Social Services resulted in an offer of free training facilities at the Busia Community Cultural Centre (BCCC)⁶ and land for a demonstration garden. The cluster was allowed to use the land and the facilities at no cost for meetings related to its welfare.

The training aimed to provide PLHIV network members in Busia, Kenya and Busia, Uganda with knowledge and skills to 1) use various farming technologies to maximize the use of available land and increase production of local vegetables and fruits at the lowest possible cost and 2) store, process, and prepare available fruits and vegetables and other foods to improve micronutrient intake.

Two five-day training courses were held at the BCCC. Visits were made to selected homes to see the application of some techniques. The trainers were two BATC tutors and a field extension officer from the Busia, Kenya District Agricultural Office (MOA). Sixty-seven representatives (forty from Kenya and twenty-seven from Uganda) of HIV clusters attended the training. Trainees were selected by group leaders using the criteria of active group membership, prior experience in farming, residence within the municipality, and willingness to attend all the training and train others. Each trainee made a plan for a demonstration garden and use of the garden to train more group members in the cluster. All district government departments (health, social welfare, culture, prisons, agriculture, development), international organizations including USAID and the Red Cross, NGOs including the African Development and Emergency Organisation (ADEO), REHSO, and Médecins sans Frontières (MSF)-Spain, cluster members, representatives of FHI, and the general public attended the training, which was also used as an advocacy forum. The Busia District Cultural Officer opened the sessions, and the Provincial Director of Culture and Social Services closed them. Chiefs and other local leaders attended the opening and closing ceremonies.

The participants learned about land requirement, demarcation, and preparation; seed selection and planting; weed control; harvesting, storing, and using fruits and vegetables such as orange-fleshed sweet potatoes and soya; creating and managing a vegetable seedling nursery; growing herbs such as rosella for tea; the significance of legumes in gardens; and the production, preservation, utilization, and nutritional value of local vegetables. In practical sessions at the

⁶ The Busia Community Cultural Centre is a department of the Kenyan Ministry of Culture and Social Services and has a mandate to promote good eating habits, especially using indigenous crops and food preparation methods, support performing artists and the oral tradition, and promote child care and positive cultural practices.

BCCC, participants prepared the land and learned how to obtain the right tilt for a good mandala garden. They did double digging, drilled and built zai pits, and used different forms of broadcasting and crop spacing in the gardens. Improving soil fertility and breaking the hard soil pan were emphasized. Practical sessions were also held on production of compost manures, conservation agriculture, biomass-intensive gardens, drip irrigation, and drainage systems (location and farm pathway establishment).



Demonstrations were given on handling food hygienically; adding nutrients through fermentation, mixing vegetables, and enriching food with oil, ghee, milk, and groundnut paste; and using different cooking techniques to preserve nutrients and improve flavor. Vegetables including cleome gynandra (spider plant or saaka), Solanum nigrum (black nightshade or osuga), Amaranthus dubris (amaranth, or dodo, michicha), Crotalaria brevidens (Ethiopian rattlebox or mto, kipkuriet), and Vigrioa virguiculata (cowpea or kunde, likhubiwere) were bought in the local market and prepared with the support of the home economist from the Kenyan MOA. The favorites, steamed green plantain (matoke) and cassava and ugali bread were shared among trainees.

Trainees developed workplans to apply what they learned and a biweekly program for attending to crops at their new demonstration site at the BCCC. Two cluster groups from Kenya agreed to meet with the BATC tutors every two weeks. Ugandan trainees were invited to attend the meetings. Trainees agreed to establish gardens in their homes and to train at least five other PLHIV or families in the following three months. Cluster members from Kenya with experience in the technologies discussed in the training were to help their counterparts establish demonstration gardens on the Ugandan side. Participants agreed to meet after two months to review progress and to invite senior government officials to the meeting.

Establishment of Demonstration and Individual Gardens

PLHIV cluster groups on both the Ugandan and Kenyan sides of the border established individual backyard gardens after the training.

Gardens in Busia, Uganda

The greatest achievement of the training was the change in the attitude of the Uganda cluster groups toward farming and nutrition among PLHIV members. Immediately on their return from the Kenyan side, two groups (Mawero and Madibira) were established to develop gardens among PLHIV. The groups were formed to maximize participation of members living close to each

other. The groups drafted their rules and regulations, and each had a chairperson and secretary who were to mobilize other members.

Each group identified sites to establish the demonstration gardens on land donated by group members or their relatives. The Mawero group obtained a piece of land from the mother of one of the group members. A small portion of land on the homestead was used to plant the local vegetable seeds obtained from Kenya for seed multiplication. Initially group members gathered to contribute labor at the demonstration



Multi-storey garden in Jasho

gardens, but after three weeks of meetings many decided to develop individual gardens in their homes. They agreed to use the Kenyan model of going from home to home contributing labor to establish each garden. Multi-storey and tire gardens were more common among group members, as they required little maintenance labor and water. The members appreciated the shared labor to collect manure and soil and to fill the sacks or tires. One member commented, “At the beginning I thought I could do the activity on my own, but during the making of the garden I realized not even two people could do it.”



However, a few group members and the owners of the farms where the demonstration gardens were to be based were interested in using the improved technologies in the communal gardens. FANTA provided small quantities of seeds, fertilizers, and basic tools and invited members of the Kenyan cluster to act as peer trainers to help the Ugandans prepare the land, select and plant seeds, weed, and harvest. Members were guided on how to control soil erosion, space crops, and intercrop to control pests and disease. FANTA provided the transport costs for the Kenyan team to cross over to Uganda for two weeks.

Although some members of the Madibira group left, the six who remained continued to work together with support from the Kenyan peer trainers. They planted cowpeas, spider plant, Ethiopian rattlebox, and red and white amaranth. Carrots and coriander (dania) were planted between other crops. Green pepper was planted along with rosella to demarcate the front of the garden, and soya was planted behind it. By the end of September 2008, the group was selling some of its produce locally. They had sold UGX 45,000 (US\$26) during the week of this assessment visit. Group members bought the produce at a slightly cheaper price than non-group members. A member reported, “Group members have come back. We share labor to produce our vegetables in the lower part of the farm. We share vegetables every week and have recently stated selling some of the produce. We are just keeping the money with our treasurer.” In the upper part of the farm the owner tried to produce seedlings of different vegetables, fruits, and



trees to sell to group members and the public. In September 2008 he was selling over eight varieties of seeds, including two varieties of okra, Ethiopian rattlebox, spider plant, rosella, eggplant, soya, a vegetable called gobbe, and three varieties of amaranth. “I have sold different kinds of seedlings worth more than UGX 72,000 [US\$41] since I started selling a month ago,” he noted. “Even when our Kenyan teacher visited me, he carried some seedlings for his farm. I plan to start selling to our Kenyan friends too.”

After the members of the Mawero group left the communal farm, the owner, a member of one of the

PLHIV groups, continued to work on the site. Although it was also supposed to be a demonstration garden, the members were not faithful in attending the meetings. The Kenyan peer educator helped this farmer implement the technologies he had learned. He and his wife planted local indigenous vegetables including saka, dodo, mto, esuga, cowpeas, nakati, and sukuma wiki. Orange-fleshed sweet potatoes were planted as hedges to prevent soil erosion. The owner turned to production of vegetables for sale in the local restaurants and people who visited the farm to see the different technologies. “We were encouraged by the Kenyans when we visited them to use our knowledge to also earn an income,” he said. “Initially we did not think we would take it through the small garden outside the house. But see what we have now. I think it is a good business for me and my wife. It is better than doing nothing and begging every time.”



After the training in Kenya, more than 38 PLHIV on the Ugandan side (14 were trained in the groups after the Kenya training) registered to start individual multi-storey sack or tire gardens. However, only 17 of these gardens remained by September 2008. The first five multi-storey gardens had problems, and the Ugandan groups invited two PLHIV group members from Busia, Kenya to give them advice. The Kenyan peer trainers found errors in the preparation and positioning of the sacks, the mixing of soil and fertilizer (compost manure), the choice and amount of gravel used in the sacks, the transfer of the seedlings to the sacks, and the source of manure applied. The groups and the Kenyan peer trainers helped the Ugandans redo or plant gardens using sacks, tires, and other container including tins and jerry cans. Other simple techniques such as building hedges to protect against animals were implemented. The two Kenyan cluster members continued to go to support the Ugandans weekly basis and to monitor progress.

The group members established 31 individual gardens in Busia, Uganda, but 14 of the members dropped out. The members gave the following reasons given for not continuing with the gardens:

- Three gardens dried up because of lack of watering (water was expensive) or destruction by animals.
- Six people wanted an activity to support their livelihoods. When the Alliance against HIV/AIDS started activities in the area, most of the PLHIV network members joined as “volunteers” but expected monthly stipends and other motivational support.
- One person indicated that gardening was difficult and that he did not receive support from other family members.



Gardens in Busia, Kenya

Besides the demonstration garden, only 11 individual gardens were initiated on the Kenyan side after the training because of the political turmoil that hit the country early in 2008, although 37 PLHIV indicated interest in starting gardens during the training. Cluster groups did not restart the activities until mid-year.

The demonstration garden based at the BCCC was developed during the inter-country training at the beginning of the activity. The demonstration garden was used as a learning site during the training, but one cluster group from Busia, Kenya maintained it. One of the BATC tutors visited the garden every month to support the PLHIV groups beginning in May 2009. A male PLHIV commented, “I and my colleagues have found this farm to be very educative [sic]. By coming here [in the] last one month I have learned ways to make it easy and productive. I thought farming was difficult but I have learned a lot and techniques that I can use to produce valuable crops for my family.” The garden sold produce worth Ksh 720 (US\$20) in two weeks. PLHIV working on the garden estimated that they earned about US\$50 a week. They also wanted to sell seedlings in the local market. Most of the farms operational in September 2008 were very productive, and the owners also sold vegetables to their neighbors.



Gardening methods, clockwise from left: Zia pit garden, mandala garden, double bed garden of sukuma wiki (kale), sack and tire garden, intercropping, and vegetables on land cleared with herbicide without digging.

Participatory Review of the Activity

Two approaches were used to review progress and conduct advocacy in this activity, a food exhibition/fair and a one-day meeting with local leaders and key stakeholders in the townships.



In May 2008 a half-day food fair was organized by PLHIV cluster groups on the Ugandan side for groups and individuals to display the crops they had grown and discuss how they used the produce. Thirty-four PLHIV who had worked on individual or communal gardens participated in the event. They demonstrated ways to prepare different vegetables and shared the foods. Using plastic bags to cover or cook food to retain flavor or keep food warm was discussed and found unhealthy. The event highlighted the following differences between the Kenyan and Ugandan gardens:

- Plots on the Kenyan side were more productive, but the Ugandans planted a greater variety of vegetables because of their reliance on traditional vegetables.
- The Kenyans grew more herbs than the Ugandans.
- The Kenyan groups relied on productivity (not farm size) to increase harvest.
- To improve food flavor, the Kenyan groups added oils or spices, while the Ugandans mixed, steamed, or fermented foods.
- The Kenyans, particularly male PLHIV, generally ate more vegetables than the Ugandans.
- The PLHIV from Uganda saw the activity as a source of income and mainly opted for individual farms. They tried to grow high-value crops such as mushroom but were discouraged by the lack of a local market. On the other hand, the groups from Kenya used the group communal farms to grow soya to generate income, as there was a ready local market for soya and soya products among PLHIV and other clients.



- The Ugandan groups prepared most vegetables without oil. The Kenyans learned how to do this but discussed the implications for taste and absorption of some micronutrients.
- The Ugandan groups ate more groundnut paste and avocados than the Kenyans, and the Kenyans periodically used milk more often (even to cook vegetables).
- The Ugandans used more millet, root crops, and tubers than the Kenyans, whose main carbohydrate source was maize. The Kenyans used mainly maize meal to make porridge for the sick, while the Ugandans also used millet, usually fermented.
- The Ugandans used more refined maize meal (dehulled and whiter), while the Kenyan maize meal was less refined (whole maize and coarser).
- Both communities, but more often the Ugandans, mixed foods in one serving (known as *katogo* in Uganda).
- The Kenyans used modern green vegetables such as kale and amaranth, while most of the Ugandans used traditional vegetables and more cabbage (a vegetable without most nutrients).

The groups exchanged seedlings of some vegetables. The Ugandans brought seedlings of indigenous vegetables and fruits, including *malakwang*, indigenous cucumber (*akobokobo*), amaranth (*nakati, dodo*), avocados, mangos, and spider plant. The Kenyans shared seedlings unique to Kenya including *mto, osuga* and rosella. The Ugandan cluster groups also learned how to produce soya milk, soya yoghurt, and other soya products. The Kenyan cluster members learned to prepare vegetables, legumes, and cereals using Ugandan methods.

In September 2008 a one-day advocacy meeting was held at the BCCC in Kenya to brief local leaders and key stakeholders in the townships on the achievements of the gardening program. Organized by group members from both sides of the border, the meeting was attended by over 160 guests, community leaders including local chiefs, senior government officers, and representatives of the ROADS Project, FANTA, and MSF-Spain. Cluster group members presented the different food and nutrition activities they had been involved in, what they had learned, and what they had put into practice. Guests were taken around the garden, and produce from both Kenya and Uganda was displayed. Youth drama groups presented a play with the title, “The Food and the Stomach”, and local dance troupes danced and sang songs on eating well, investing in simple technologies to improve productivity, and eating plenty of fruits and vegetables, especially traditional vegetables. The event was covered on local FM radio. “I have learned a lot from this demonstration farm today,” said the mayor of Busia, Uganda. “I like the way they show the way we do it compared to how to do it better. I associated with the low production methods. I would like us to have a similar demonstration farm in Uganda.” A woman PLHIV group member from Uganda added, “Most education we get has been for the sake of knowledge, but this has been practical. We have learned by doing it in our farms.”



During a time for questions, the following issues were discussed.

- Seasonality limits vegetable production and consumption because it affects availability and prices. Groups were informed of simple water conservation methods and farming methods that require little water. BATC and MOA extension officers discussed solar drying in times of plenty and storage (as in plastic bags).
- Increasingly households (and especially PLHIV) face problems finding fuel for cooking. The price of firewood/charcoal, the main source of cooking fuel, had risen 140 percent since 2007, while the cost of kerosene/paraffin had increased by 60 percent since the beginning of 2008). A representative of the Ministry of Energy talked about energy-saving stoves and asked participants to visit its “demonstration village” to see to different energy-saving technologies.
- People who were not living with HIV felt that the technologies should be accessible to all and that mixing groups would avoid stigmatization of the programs. The MOA indicated that this was what it advocated but that HIV programs wanted specific technologies for PLHIV.
- More groups from Uganda than from Kenya were interested in income-generating activities. Kenyan groups indicated that larger farms were more likely to generate income for group members. Ugandan groups felt that the lack of markets for their commodities was a barrier to using agriculture to generate income for PLHIV.

Key results from the meeting are listed below.

- His Worship the Mayor of Busia, Uganda promised to provide seven acres of land to organized PLHIV groups that had gone through the training.
- The ROADS Project coordinator asked groups to incorporate nutrition and food security activities in the year's sub-agreements for the first time. ROADS also asked the groups to identify and include in the sub-agreement proposals monitoring indicators that could be used to assess progress.
- The director of the BCCC assured the groups of support in access to its facilities and invited the Ugandans to take advantage of the demonstration site without fear. He encouraged the groups to use more land from the site, especially for production of indigenous tree and vegetable seedlings.
- BATC assured PLHIV groups of free extension services and talks at the BCCC on the last Friday of every month for trained and interested group members.
- A businessman from Busia, Kenya offered to buy vegetables from the BCCC garden for his hotel and proposed a six-month contract with the group running the demonstration site.

Discussion and Conclusions

The aim of the collaboration between FANTA, the FHI ROADS Project, and various institutions providing agricultural support in the areas of Busia, Kenya and Busia, Uganda was to facilitate linkages between agricultural institutions and groups/networks of PLHIV to diffuse agricultural technologies to increase production and consumption of fruits and vegetables by PLHIV. Below are listed the opportunities and challenges presented by the situation in the two border towns, as well as the lessons learnt from the activity and recommendations for future initiatives.

Opportunities

1. The ROADS Project's cluster approach to reach PLHIV networks was an ideal mechanism to initiate the agricultural technology activity. The approach brings PLHIV and affected groups (e.g., business people, youth groups, women groups, and religious groups) together. The cluster groups are easy to reach without stigmatization. The funds provided through sub-agreements with the groups were seen as an opportunity for groups to integrate nutrition and food security activities into their annual priorities. In addition, ROADS was willing to integrate agricultural livelihood activities into its program.
2. Key institutions were willing to work with formal groups of PLHIV. Most of the agricultural institutions were in Kenya, but they were willing to support Ugandans who came to them through the Kenyan groups. The new performance evaluation system for government programs in Kenya compelled institutions such as BATC (one of 27 such centers in Kenya) and KARI to reach out to organized groups including PLHIV. Institutions like BCCC were also willing to provide sites and security for group activities, as long as these could be documented.
3. There were agricultural institutions near or in the border towns where PLHIV groups could get support on agricultural technologies. Although the institutions did not have specialized packages for PLHIV, they were willing to adapt whatever they had for this target group. This was made possible by the change in the internal policy of these institutions from a "push of services" policy to a demand-driven policy.
4. The two communities differed in their exposure to agriculture technologies and their organization to use agriculture to improve livelihoods and food diversity of PLHIV. In addition, because a few group members had successfully implemented some of the technologies, group members could learn from each other and the "experienced experts" could help educate the beginners.

Lessons Learnt

1. Learning among and between group members (peer education) was more appreciated and probably more powerful in diffusing technologies than reliance on formal institutions. Teams from one community had more time with individual farmers at their homesteads and were able to respond to specific concerns. BATC and other extension service institutions could only give group support and did not have adequate time for individual support.

2. Learning by doing in the farms was a powerful tool for educating communities. Continual individual support made it possible for the cluster group members to either implement or not implement the technologies and for the projects to document the reasons for success or failure.
3. Local leaders had a strong propensity to support groups of PLHIV. Some of the leaders were also looking for opportunities to meet their professional, political, or moral obligations. Local leaders seemed to have a soft spot for groups of PLHIV.
4. Promotion of technologies would be successful if motivated by the real concerns of PLHIV. In Uganda the diffusion of technologies could be sustained by the desire for income generation for caregivers or PLHIV. In Kenya PLHIV's need for nutritional wellbeing may have been a factor in the cluster groups' interest in the activity, but this also could be attributed to the long interaction of PLHIV in Busia with nutritionists from the MOH, MOA, Academic Model for the Prevention and Treatment of HIV (AMPATH), and JICA.
5. Culture determined which technologies were adopted. The Ugandan urban groups had fewer links to rural communities and no hedges around their homes, so that most of their gardens were destroyed by animals. In contrast, the Kenyans had a tradition of building hedges around their homesteads, even in urban areas. Culture determined the kinds of crops preferred and the way the produce was stored and used. For example, PLHIV from Uganda grew more traditional vegetables and used more traditional technologies such as fermentation and steaming in their food preparation than those in Kenya.
6. The quality of leadership in the clusters and groups affected the implementation and continuity of the technologies. Successful groups had committed, innovative, and hardworking leaders and large memberships. Peer support and pressure were critical in encouraging members implement the technologies and participate in group/ communal gardens.
7. Financial inputs to facilitate the activity were minimal, but coverage was low. Few resources were used to create demand for the technologies, provide field training in the technologies, and monitor and follow up the activities. Some resources may be needed for peer education and support.

Challenges

1. Political instability resulting from post-election violence delayed activities in Kenya. Many models of individual backyard gardens failed during the violence in Kenya, and some PLHIV who would have been peer trainers were displaced.
2. The agricultural institutions on the Ugandan side were not as active as the Kenyan institutions. This made the activity one sided, with most technologies and support coming from Kenya.
3. The need for income generation and reliance on development agencies for livelihood substantially limited participation in a program that provided only technical support. In Uganda, whenever a new program that offered more than technical support arrived in the district, group members loss interest in the FANTA/ROADS activity, as it did not offer direct material support.

4. Most caregivers and PLHIV in the Busia communities were very poor. Minimum support for basic tools and inputs (e.g., herbicides and seeds) would be needed to initiate such an activity on a large scale.

Recommendations

1. The ROADS Project should integrate agricultural livelihood activities into sub-contracts with cluster groups and develop clear monitoring and reporting indicators for these activities with the groups.
2. Nutrition education and counseling on the importance of eating well every day to improve the health and quality of life of PLHIV should be used to create demand for backyard gardens.
3. Health facility and community services for PLHIV should integrate livelihood activities. Simple message booklets or DVDs that explain or demonstrate various technologies to improve garden productivity and use of local resources to optimize food security should be developed and provided to PLHIV networks. Low-cost individualized support is needed to help PLHIV embrace and implement such technologies. Some agency will have to facilitate a peer trainer model.
4. Strong advocacy is needed to promote agricultural livelihood activities among PLHIV in urban areas. Local leaders, business people, and government institutions are willing to provide additional support.
5. A number of traditional storage and preparation methods (e.g., the use of plastic bags to wrap food during steaming and cooking green vegetables without oil) are unhealthy or nutritionally unsound. Some of these were discussed with PLHIV, but a formative assessment is needed to identify such practices to inform modification of messages communicated to PLHIV.
6. Model gardens are needed with fruits and vegetable appropriate for PLHIV and affected families living in urban settings. These models should take into consideration the challenges of limited water, land, motivation among PLHIV, agricultural experience, and labor.