



Photo: Author

A farmer, John Amizi, shows visiting extensionist (third person on the left) and farmers sweet potato flour.

Turning their backs to hunger

Aghan Daniel

Located some 400 km north-west of Nairobi, Kenya, Gamalenga village – like many other sub-Saharan villages – is struggling to harness local resources in its fight against intense poverty. Faced with low crop yields, the lack of appropriate agricultural information and poor government marketing policies, farmers can quickly lose the will to till their land or use their skills and knowledge in a creative way. In Gamalenga, however, a combination of external intervention and farmer innovation has resulted in improved sweet potato harvests and an increase in the crop's household and market value.

Challenges

The road leading to Gamalenga village from the Kenyan lake-side city of Kisumu, winds through a difficult and challenging countryside. The village has a small market, a few houses and one telephone booth. Some 657 households are clustered together in an area of 3 km².

Farmers in the area practise mixed farming, growing a range of crops and keeping livestock. Maize, the most important food crop, is complemented with root crops such as sweet potato and cassava for food security. However, pests and diseases, late maturing and poor yielding varieties, and lack of healthy planting material limit cassava and sweet potato production. A recent outbreak of cassava mosaic virus devastated cassava production in the area, making sweet potatoes even more important.

Local organizations working with farm communities are well aware of these problems and of the fact that due to weak agricultural extension services, farmers do not have proper access to information that could improve their farming practices. One Kenyan organization that has tried to provide support to farmers through its plant breeding and post-harvest programme is the *Biotechnology Trust Africa* (BTA). BTA's work with farmers is guided by participatory principles. Working together with farmers, supported by a bottom-up interactive approach, efforts have been made to identify the

main problems farmers face, and prioritize those that BTA can help them overcome.

Activities

Through a series of participatory activities, farmers in Gamalenga identified two areas where BTA could provide positive support: providing healthy planting material of sweet potato and helping to develop ways of dealing with post-harvest crop surplus. The farmers wanted productive and early maturing varieties of sweet potato, which are less vulnerable to pests and provide food during the hunger months. Women particularly favoured varieties that cook quickly, keep their appearance and are enjoyed by children.

BTA provided farm families with planting material of varieties with the desired characteristics. These materials were propagated through tissue culture, as a study in the area showed that this propagation technique was a viable method for obtaining and multiplying clean and healthy planting material. Farmers visited the tissue culture laboratory to observe the process of propagation and also participated in decisions about the collection and distribution of sweet potato vines. Farmers have been encouraged not to abandon local varieties because of the danger of genetic erosion and loss of diversity.

Tissue culture is a way of multiplying plants vegetatively. One or two cells are taken from a healthy parent plant and put into a rooting culture that includes nutrients and plant hormones. Once small roots have developed the plantlet is transferred to another culture to grow large enough for planting. In this way, many healthy plants can be propagated rapidly.

These interventions and farmers' efforts in the field have resulted in sufficient surplus to allow the development and implementation of post-harvest activities. BTA held workshops in the community and the post-harvest activities that were stimulated have had a deep impact on local livelihoods. For example, in the words of Beatrice Kirundu, 40, who heads the *Jitahidi Women Group*, access to surplus sweet potato has

“empowered many women to feed themselves, think independently and plan and make their own decisions” and enabled them to take up several money-making activities.

Farmers were supplied with nine vines each from the new tissue cultured stock. The *Jitahidi Women Group* decided to develop a group nursery because they wanted to help one another to build up their supplies of planting material as quickly as possible. By 2000, production was sufficiently stable to allow the group to experiment with different ways of selling their sweet potato crop. Ms Rhoda Nungo, a nutritionist of the *Kenya Agricultural Research Institute (KARI)* started discussions with the group and showed them some of the ways sweet potato could be processed.

Today, *Jitahidi* members are successfully processing their sweet potatoes into *crackies*, cakes, *chapati* flour, and *mandazis* (a popular small pastry) and selling them to local shopkeepers. Supported by information provided during field days, workshops and farmer meetings, women are continuing to learn new ways of improving their processing and packaging techniques. Some use the money they earn from marketing sweet potato to hire farm labour, others use it to pay school fees or buy food and clothes for their families.

Not only do these products provide some cash income, they also add variety to the local diet. “I am now able to eat *crackies* just like my urban friends who buy them from the supermarket,” says Priscah Vieriza, a Standard Five pupil at the local primary school, “and I can make them without my mother’s help”, she boasts. Other products have also been brought within the reach of local households. *Chapaties*, for example, previously eaten only at festivals and on special occasions are now widely available and much enjoyed.

Other products

Making *busaa*, a local brew, from sweet potatoes is the group’s latest innovation. It is reported to be very nutritious and full of vitamins. At the moment, according to the Assistant Chief of the area, it is being brewed for research purposes, but eventually it is hoped that it will be marketed officially. Such new products will mean that farmers will have to protect their innovations and ensure that these are registered in conformity with brand and trade mark legislation.

Farmers also have more sweet potato leaves to feed their animals, and villagers have noticed that milk and meat production have increased. The fact that farmers feed crop residues to ruminants mean that the sweet potato yields two harvests: the tubers that form the bases of food products for human consumption, and the meat and milk that are the indirect results of feeding cattle with vines and leaves. Healthy and productive

cattle also produce good soil-enriching manure and this valuable resource not only returns nutrients to the soil but also provides it with the organic matter needed to increase water retention capacity and improve aeration.

In the hunt for more ways to utilize the improved harvest, members of the *Jitahidi Women Group* have started to experiment for themselves. One of their ventures has been soap making. This is a laborious manual process and involves boiling sweet potatoes and mashing and sieving them into a pulp. A little water, beef fat from the local butcheries, caustic soda and salt are added and all ingredients are mixed together until a white colour appears. Because the end product contains a lot of starch, it takes a fairly long time to dry. It is, therefore, put into a cool dry place (safe from rats) and when it is ready it is divided into portions for sale. Local people use this soap-like substance for washing and sometimes colour it using food colouring substances to make it more attractive for sale. Such hard work and ingenuity needs to be supported by guidance and good information, and researchers have a definite role to play here.

Equipment

Laborious and slow production processes are not only a problem for local soap makers; the lack of equipment, machinery and money to invest in tools and other inputs are a more general problem. For example, the *Jitahidi Women Group* urgently requires a weighing machine so they can accurately measure the weight of their harvest and monitor changes in yield over time. The local office of the *International Potato Center (CIP)* in Uganda recently donated a sweet potato power chipper for chipping the potato in preparation for drying and making chips and *crackies*. The *Jitahidi Women Group* is optimistic that this chipper will save them time and increase their capacity to produce *busaa*, soap and other products.

Group spirit and compassion

A visit to the Gamalenga village can be revealing and refreshing in many ways. The kind of social organization and activities displayed by the *Jitahidi Women Group* shows what farmers can achieve if they are provided with information and the opportunity to develop and adapt resources like those they have been able to access through the sweet potato programme. This motivation and energy is shown each morning as *Jitahidi* group members descend on their small pieces of land to prepare new ground, plant, weed and harvest their crops. Their solution to the labour intensive work sweet potato cultivation and post-harvest processing involves, has been to adapt traditional forms of cooperation to modern needs. This together with the support and planning provided by BTA and KARI has gradually produced positive results.

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Farmers developed a range of criteria for selecting their most preferred sweet potato varieties, like early maturity, drought resistance, good taste and big root size.

