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The Rubaya community gene bank

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The Rubaya community gene bank, located in the Rubaya sector of Gicumbi district in Northern Rwanda, is managed by the Kundisuka cooperative. It originated when a farmer by the name of Mpoberabanzi Silas and an agronomist working in the Rubaya sector recognized the need to preserve some of the genetic resources in the area that were being lost (e.g. several varieties of beans, peas, maize, wheat and sorghum).

Implementation of the project was supported by the staff of the Rwanda Agriculture Board (RAB) in cooperation with Bioversity International (Plate 18). The managing cooperative was created in September 2012 and consists of about ten members with Mpoberabanzi Silas as president. The community gene bank's storage facilities were constructed locally with support from Vision 2020's Umurenge Program and the Ministry of Local Government. Their main purpose is to store the region's priority crops (maize, wheat, beans and Irish potatoes), but farmers are free to use the facilities to store and conserve other seeds and planting material.

The community gene bank does not yet have a visible role in the community, for example, in seed production or participatory crop improvement, as it is still in its early stages. However, its members' vision is to invest in seed multiplication to make good-quality seeds available to the local community and regional gene banks. This will transform the enterprise into a business-oriented farmer cooperative certified by RAB.

Functions and activities

The community gene bank has three roles: conserving seeds of local crops; facilitating training in agricultural techniques; and propagating local varieties that are near extinction or are becoming less available as farmers turn to improved varieties. The community gene bank has begun collecting seeds from farmers in neighbouring villages and regenerating plant material that can be stored in the gene bank. In the beginning, it was confined to three small plots totalling 0.30ha, but it has now expanded to 15 plots (0.85ha) planted with varieties of beans, maize, garden peas, cow peas, Irish potatoes, sweet potatoes and sorghum.

Planting takes place at the beginning of each season. With support from the sector agronomist and RAB, farmers are able to monitor crops for pests, diseases and general growth. To ensure high-quality output, they adhere to good agricultural practices. RAB has provided support in the form of mineral fertilizer, which was added to farmyard manure. Normally, farmers have no access to such fertilizer: it is expensive and, therefore, there is no supplier in the area. RAB also offers technical support to farmers planting various varieties of beans and sorghum, including training in planting, weeding, pest and disease management, postharvest handling and storage. Such support is provided not only to the cooperative members but also to other farmers who have consolidated their small properties under RAB's Crop Intensification Program.

In the March–June 2013 planting season, crops grown by the cooperative for regeneration included beans (bush and climbing) in three plots, sorghum in three plots, Irish potato (Mbumbamagara) and sweet potato (Utankubura) in four plots, maize and peas in two plots. The average size of a plot was 0.15ha.

The sweet potato seeds were obtained from farmers, whereas sorghum seeds came from RAB and Irish potato seeds from the local market. After multiplication, the cooperative is planning to make these crop seeds available to other farmers. The community gene bank is playing a key role in the conservation and use of neglected and underused species, such as the local bean varieties, Kachwekano and Kabonobono, which are high yielding, but had been abandoned by farmers because of their susceptibility to disease.

The major challenge for the gene bank is drought. Lack of rain destroyed the crops in the first growing season, September–December 2012, partly due to late sowing. In addition, gene bank members have to cover operating costs, such as labour, land rental and agricultural inputs. The gene bank has two casual labourers who are paid 1,000 Rwandan francs (RWF) or about US$1.47 a day by the cooperative. They are cooperative members who choose to work seasonally on the common field for this salary. The cooperative hopes to increase its membership and envisions some form of community mobilization.

Similar to other cooperatives in the region, the one managing the community gene bank is governed by a committee composed of the president, vice-president, secretary, cashier and two advisors democratically elected by the cooperative members. The committee, which is made up of two women and four men, is working on guidelines for its officials. Cooperative members have agreed on a mechanism through which they have access to seeds and planting material in exchange for labour.

Technical issues and networking

High-quality seeds are selected in the field using ribbons attached to healthier plants, a traditional variety-selection method. Once harvested, cooperative workers label the selected seeds of different crops appropriately and store them separately. Currently, there is no formal system for documenting traditional knowledge and associated information about local varieties conserved at the

community gene bank. Information concerning varieties, lots, planting dates, weeding dates, fertilizer application and harvesting dates for all varieties is kept in notebooks, carefully differentiated by activity and season. These notebooks are kept by the secretary of the cooperative. Committee members hold monthly meetings to discuss issues, but the chair can call an impromptu meeting in case of an emergency. Minutes are kept by the secretary. The community gene bank receives technical and moral support from RAB and the sector agronomist. Recently, it benefitted from a small grant from Bioversity International to buy shelves, plastic containers, bottles and pesticides.

The community gene bank collaborates with the Isonga Mw'Isango youth cooperative and is also linked to other farmer and public organizations at the national level, such as Caritas Rwanda, a nongovernmental organization (NGO) working in the agriculture sector, and RAB. Recently, the members of the cooperative visited a community gene bank in Uganda to share experiences and discuss gene bank management issues, including processes for procurement, preservation and storage of bean seed samples. During the visit, farmers from both countries engaged with breeders and other scientists in participatory evaluation of their climate vulnerabilities and coping strategies and, subsequently, determination of the traits desired for adaptation to climate change. They also conducted a participatory evaluation of the seeds in their possession to see which ones have those traits. Last, but not least, they explored a mechanism by which farmers can exchange varieties of seeds.

Policy environment and prospects

Rwanda's policy of land consolidation and focussing on one priority crop has had a negative impact on the activities of the gene bank because local varieties of crops cannot be grown freely by farmers. The government distributes seeds (improved varieties) and fertilizer to farmers as part of the crop intensification programme. However, the Rwanda Cooperative Authority provides advice to the cooperative committee members on how to balance between the prescribed varieties and their varieties of choice.

The community gene bank invested RWF 889,000 (about US$1,306) in setting up and maintaining its seed bank. This covered the cost of renting land, purchasing seed and fertilizers and paying for labour. The gene bank cannot operate without outside support because rent for land and the cost of agricultural inputs are high. To make the gene bank financially independent and sustainable, farmers need more financial and technical support so that they can expand their activities and increase production and profits.

Looking to the future, the community gene bank has established connections with RAB at the national level and Uganda's National Agricultural Research Organisation at the regional level to obtain technical support. The cooperative also needs to be strengthened in terms of management.