

38 Zimbabwe

The experience of the Community Technology Development Trust

*Andrew T. Mushita, Patrick Kasasa
and Hilton Mbozi*

Purpose and evolution

The 1991/92 drought that ravaged southern Africa and was declared a national disaster in Zimbabwe was instrumental in the establishment of community seed banks in our country. Most farmers lost their traditional crop varieties in the drought. The Community Technology Development Trust (CTDT), in consultation with government agencies and farmer communities, decided to initiate an intervention that would prevent further losses to farmers' plant genetic resources, prevent genetic erosion, act as a risk aversion measure against the effects of climate change and vulnerability and conserve local crop varieties on farm. It aimed to help farmers enhance cultivation of local, drought-tolerant crops, including sorghum, pearl millet, groundnuts, cowpeas and local vegetables.

In 1998, with financial support from Norway's Development Fund, CTDT established three community seed banks on a pilot project basis in Uzumba-Maramba-Pfungwe, Tsholotsho and Chiredzi districts (see Table 38.1). The community contributed local building materials, and the Ministry of Agriculture's Institute of Engineering provided the technical design. The

Table 38.1 Types of germplasm in community seed banks in three districts, 2013

Crop	Number of varieties		
	Uzumba-Maramba-Pfungwe*	Tsholotsho	Chiredzi†
Sorghum	17	12	7
Pearl millet	5	6	2
Groundnuts	6	4	4
Bambara	9	6	5
Maize	4	3	3
Cowpeas	12	16	8
Rapoko	4	2	2
Total	57	49	31

*Currently, 500kg sorghum, 100kg rapoko and 300kg pearl millet seed are in bulk storage. The seed was left last year as a strategic reserve in case of drought or other calamity.

†Because of recurring drought in Chiredzi, no substantial amount of seed has been accumulated in the seed bank.

community seed banks aimed to promote knowledge and seed exchange, local experimentation by farmers and community germplasm conservation. They are seen as a collective framework and institutional platform for making decisions about crops to cultivate, seeds to produce and locally adaptive germplasm to conserve. As such, they are a mechanism to implement farmers' rights as defined by the International Treaty on Plant Genetic Resources for Food and Agriculture.

Functions and activities

Each community seed bank measures 12m by 5m and is divided into five rooms (Plate 27). Two serve as seed-storage areas and are insulated with a 1m-thick concrete ceiling to maintain a constant room temperature. The rooms have shelves to protect accessions from pests. The accessions are labelled alphabetically by farmer's name. There is bulk storage for seed that is multiplied in the field. The facilities also contain an office and a meeting room.

Germination tests are conducted every two years to assess seed viability. Seed with a germination rate below 65 per cent is distributed to trained farmers for regeneration. A study carried out in 2008 showed that small grain crops can be stored for at least a decade.

To increase awareness of agricultural biodiversity conservation and management, diversity within crop species and the role of exchange of germplasm, seed fairs are held annually at each community seed bank and bi-annually at the national level. Initially organized by CTDT in collaboration with the farmers' management committee, these events are now planned by community seed bank committees. During seed fairs, farmers are encouraged to display their crops, and prizes are awarded based on number and range of crops on display, seed quality and presentation. The seed fairs provide a forum for farmers to meet, discuss and exchange seeds, knowledge and their experience with old and new crops and to exchange information about local-level seed production. Seed fairs also make it possible to evaluate the level of diversity within the community and assess and monitor genetic erosion. Seeds are also acquired at the fairs to increase seed bank collections.

Governance and management

Community seed banks are managed by local farmers with support from CTDT and government agencies. The community elects a management committee responsible for the coordination and management of all seed bank activities. The committee operates under a constitution drafted by farmers with guidance from CTDT. It is made up of a chair, vice chair, secretary, vice secretary, treasurer, security, vice security and five other members. Duties include the regulation and control of seed moving in and out of the seed bank, checking for pests, recommending and supervising fumigation of the building and conducting germination tests.

All members of the community who deposit seed in the general storage rooms have equal access to the seed. Farmers are issued a membership card that allows them to deposit seed in the general or family collection sections. They are required to produce the card each time they need a service from the facility. Member farmers are expected to be active and take part in seed fairs and training.

Seeds in the general storage room belong to individual members and are used by them free of charge. This acts as a seed reserve in case of drought, flood or any other catastrophe. The seed in the bulk storage room is sold to anyone who wants seed. However, non-members, especially the most vulnerable such as elders and orphans, may also be given seeds on the recommendation of the management committee – a social commitment made by the seed bank.

The seed bank committee works closely with CTDT field officers and local agricultural extension (AGRITEX) officers to register participating farmers. New collections are added to the community biodiversity register kept at the seed bank office, and the following information is recorded: name of the farmer, identification or registration number, village name, ward number/name, crop name, variety, date of collection, accession number, shelf number, germination rate, quantity of seed collected and the name of the person receiving the material. This information is also kept at CTDT head office as a backup system. CTDT has produced a community seed banking manual for technical staff.

Women, who play a key role in household food security, participate in seed bank activities and make up at least half of the 12-member management committee. Because of socioeconomic and cultural norms and values, women are mostly involved in communal farming and, thus, contribute mainly to selecting seed in the field and after harvest, cleaning and depositing seeds, participating in seed fairs and general cleaning of the building. Youth participation is still minimal; only those engaged in conservation agriculture bring their seeds to the community seed bank. Youth are not much interested in farming, and most look towards formal employment opportunities in the cities.

Seed selection and management

Collecting and cleaning seeds is largely carried out by farmers who are supervised by the seed bank management committee with guidance from two AGRITEX officers and a CTDT staff person. Collection of seeds is done in individual households by farmers who have been trained in seed handling. When the crop is ready for harvesting, women do most of the seed selection, both in the field and after harvesting. What farmers consider good quality may vary: for example, size of grains or kernels, colour or drought tolerance. Seed destined for storage is taken through a winnowing or cleaning process to remove deformed seed, dust and dirt. Seeds are sun-dried at homesteads to reduce the moisture content to about 11 per cent. Farmers test for acceptable dryness by breaking the grain with their hands or teeth. Germplasm is stored either in plastic bags or tins. The management committee inspects all seed material before storage. When approved, seeds are placed in air-tight bottles, which are mainly provided by CTDT.

Regeneration of seed with low germination rates is facilitated by the management committee; this technical procedure empowers farmers in seed management methods. There is no rule about how much seed a farmer should return to the seed bank at the end of the growing season; however, the management committee encourages farmers to bring back twice as much as they withdrew. The CTDT field officer and management committee monitor deposits and withdrawals from the seed bank by recording pertinent information. The CTDT officer works in close consultation with the management committee, AGRITEX and the government agriculture department but is also part of the farming community.

Seed multiplication activities have deliberately targeted open-pollinated varieties of such crops as sorghum, pearl millet, cowpeas and maize. Farmers have received training on seed multiplication and seed production methods. Farmers in Tsholotsho and Uzumba-Maramba-Pfungwe are linked to seed companies (Seed Co and Agri-Seeds) from which they receive foundation seeds. In the 2009/10 season, they produced 185t of improved pearl millet, 120t of improved sorghum and 85t of improved quality cowpea seed. Communities in these districts also participated in crop-improvement programmes, such as participatory plant breeding and participatory variety selection. Four maize varieties stored in the community seed banks are products of such programmes. CTDT developed advanced maize lines that were given to farmers at field schools to develop further during the 2009/10 agricultural season.

Implications of the Seeds Act for community seed banking

The Zimbabwe Seeds Act regulates production of high-quality seeds by corporate seed companies for both domestic and export markets. However, a new seed variety can only be registered and marketed commercially after its distinctiveness, uniformity and stability (DUS) and value for cultivation and use (VCU) have been determined by a variety-release committee. The DUS and VCU tests delay the release of new varieties and the system is very expensive. The need for seed certification and standardization make it nearly impossible for smallholder farmers to trade their seed. Intellectual property rights are an issue when farmers want to sell their materials outside the defined borders of the communities. National seed laws prohibit farmers from selling any farm-saved seed. However, they are allowed to multiply farm-saved seed under the auspices of community seed banks, which provides them with a window of opportunity. The established seed banks are able to carry out on-farm seed multiplication and exchange between and among themselves as they are linked to the national gene bank.

Technical support and cooperation

Technical support is provided through training. In Tsholotsho, for example, the International Crops Research Institute for the Semi-Arid Tropics trained

CTDT and AGRITEX officers in crop improvement. The national gene bank also trained the same officers in germplasm collection, recording, processing and storage. AGRITEX is always on the ground working closely with seed bank management committees. CTDT provides technical back-stopping to both field officers and the committees. CTDT has also trained all committee members in leadership and seed bank management. Exchange visits (look-and-learn tours) have been organized to allow committee members to share information and ideas including best practices in plant genetic resource management. CTDT receives funds from OXFAM-NOVIB and the International Fund for Agricultural Development.

The seed bank committees have a close working relationship with the national gene bank. CTDT field officers, AGRITEX officers and committee members (the core seed bank management team) were trained by national gene bank staff in germplasm collection, documentation of collected materials, seed treatment and storage. The national gene bank also collects samples from community seed banks for its own collection, its officials participate in seed fairs and it repatriates germplasm to farmers for regeneration. Local farmers participate in germplasm collection for the national gene bank, and, in Tsholotsho, the national gene bank has occasionally paid a small amount of money (US\$1 per kg of seed collected) to individual farmers.

Farmers consider that the issue of benefit sharing requires more attention. CTDT has conducted several awareness-raising meetings on access and benefit sharing. At the community level, this issue is complicated. In Chiredzi, for example, farmers indicated that there was no mechanism for obtaining royalties from the use of materials collected by researchers or outsiders. Women felt that this kind of benefit should be given individually rather than to chiefs or other traditional leaders.

Policy and legal environment

Currently there is no specific policy or legal framework to support community seed banks, apart from general support through the extension service, but there have been discussions on the need for comprehensive farmers' rights legislation. A proposed framework will cover the establishment of community seed banks interacting closely with the national gene bank and the South African Development Community (SADC) regional gene bank. Currently, a sub-committee has been established to work out details to be presented to the cabinet and, once approved, a draft law will be prepared for presentation to parliament.

In terms of moral support, the Government of Zimbabwe is supportive of community seed banking. In 2010, Vice President Mrs. J. Mujuru and other senior government officials attended a seed fair at the Mabika community seed bank in Uzumba-Maramba-Pfungwe. Officials agreed that community seed banking is a strategy not only to conserve plant genetic resources but also to cope with climate change. The same year, Ms. Thandi Luphupha, a

senior official from the SADC gene bank based in Lusaka, Zambia, visited Uzumba-Maramba-Pfungwe and Tsholotsho community seed banks. This visit was important as it cemented relations, links and cooperation between the community seed banks and the national and regional gene banks.

Local members of parliament, traditional leaders, government ministries and farmer organizations such as the Zimbabwe Farmers' Union are all working with seed bank committees. The SADC Plant Genetic Resources Centre in Zimbabwe has highlighted the success and relevance of community seed banks and is considering how the Zimbabwean model can be replicated in the 14 SADC member states.

Achievements and challenges

The major achievement to date is an increase in crop diversity among participating households and surrounding communities. Before the intervention, households in the district were growing an average of four crop varieties (both grains and legumes). Over the years, the number of varieties has increased to an average of eight in Uzumba-Maramba-Pfungwe, six in Tsholotsho and five in Chiredzi. The access to local germplasm desired by communities and community members has improved, and there is no longer a need to travel to far places in search of seeds. The major challenge women face is acquiring processing technology, which is usually highly priced and unaffordable for the poor. This is an area that requires more investment in terms of financial resources and research. Decline in soil fertility is also becoming a major challenge. Women are usually allocated fields with low inherent soil fertility and this affects productivity.

At least 1,500 households have directly and indirectly benefitted from seeds stored in the community seed banks (Table 38.2). Most of them are helping to conserve seed of varieties of indigenous grains and other wild crop relatives that are no longer found in most rural farming communities in Zimbabwe. Elderly farmers, who still remember some varieties that they used to grow years ago, happily make use of the seed bank. A woman farmer in her 70s commented that a long-season pearl millet variety they used to grow in the

Table 38.2 The number of farmers benefitting directly from a community seed bank in three districts

District (date of establishment)	At establishment		Currently (2013)		
	Male	Female	Male	Female	Total
Uzumba-Maramba-Pfungwe (1999)	32	65	237	474	711
Tsholotsho (2007)	3	60	52	421	473
Chiredzi (2003)	17	21	58	75	133
Total	52	146	347	970	1,317

1940s, 1950s and 1960s has been brought back thanks to the community seed bank; as she remarked, 'The seed bank is much more than a bank for money. It's a bank for life-food'.

According to local government leaders in Uzumba-Maramba-Pfungwe and CTDT staff, the community seed banks have acted as centres of excellence for sharing local knowledge and for generating new knowledge through farmer-extension worker-researcher interactions. However, farmers and field officers from CTDT have noted that there is a need to share and exchange knowledge through mechanisms, such as training provided by experts and exchanges of experience among partners at the national and regional levels. Although knowledge is shared at seed fairs and social meetings, this is mainly at a local level. Farmers feel that regional and inter-district visits would allow the exchange of knowledge among farmers from other areas who are not necessarily engaged in these activities. CTDT has signed a memorandum of understanding with the national Zimbabwe Farmers' Union to ensure adoption of the community seed bank concept on a larger scale, thus improving networking among farmers at the national level.

Access to and availability of seed has greatly increased for participating households. The community seed production initiative has filled a gap as farmers turn to growing small grains and legumes. Seed production is becoming a major source of household income. Marketing of small grains remains the biggest challenge because of low prices. Through other projects, CTDT has introduced income savings and lending clubs to improve household liquidity, and over 40 per cent of community seed bank beneficiaries are members of these clubs. All this has resulted in an increase in average household income of US\$35–50 a month.