



## COMING TOGETHER (*Batanaï*): Learning from Zimbabwe’s experiences with community biodiversity conservation, participatory crop improvement and climate-change adaptation

Top photo: With the farmers of the Chimukoko Farmer Field School in Mudzi district. Credit: Bioversity International/R. Vernooy

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### Introduction

Since 2013, the Department of Agriculture, Forestry and Fisheries (DAFF) of the Republic of South Africa has collaborated with Bioversity International and South African Provincial Departments of Agriculture to establish and support a national network of community seedbanks in the country. This initiative is a means for the South African government to strengthen farmers’ seed systems, support conservation of farmers’ varieties, maintain seed security at district and community levels, and invite farmers to participate in making national-level decisions related to the conservation and sustainable use of plant genetic resources (Tjikana et al. 2016; Vernooy et al. 2017).

To date, the main results include: i) training of the National Plant Genetic Resources Centre (NPGRC) staff (responsible for implementation of the initiative), ii)

the establishment of three community seedbanks in Eastern Cape, Limpopo and North-West provinces, iii) increased access to and availability of quality seed, knowledge and seed exchanges among community seedbanks and between the NPGRC and community seedbanks, and iv) the publication of two training manuals



Photo 1: Seed display by farmers of the Rushinga Farmer Field School. Credit: Bioversity International/R. Vernooy

(one for technical staff, one for farmers) on community seedbank establishment and management (Vernooy et al. 2017, 2018a/b/c).

Notwithstanding the progress made, the team of DAFF and Bioversity International considered the need to learn more about community seedbanking, and strengthen and expand the work done so far. Thus the idea was born to organize a study tour to neighbouring Zimbabwe, a pioneer in community seedbanking through the work of the Community Technology Development Trust (CTDT, recently renamed the Community Technology Development Organisation, CTDO, box 1) in collaboration with national and international organizations operating in the country (Mushita et al. 2015; CTDO 2018). CTDO has developed a unique approach to community seedbanking through the use of the Farmer Field School approach and by complementing conservation of agrobiodiversity with participatory crop improvement and farmer seed production and distribution (photo 1).

## BOX 1: The Community Technology Development Organisation

CTDO was established in 1993 as a non-government organization with a head office in Harare. Over the years, it has grown and now has offices in Zimbabwe and Zambia with a total staff of over 90 people. Its mission is to achieve poverty alleviation and sustainable development in marginalized communities by building farmer and household livelihoods capacities through research, technology innovation, technology packaging and dissemination, policy advocacy and lobbying, and knowledge management, through gender-sensitive and people-centred approaches. It works on four major themes: food security; environment; agrobiodiversity; and policy and advocacy. CTDO was one of the pioneers of community seedbanking in Africa and globally. It established its first community seedbank in 1996.

For more information: <http://www.ctdt.co.zw/>

### The study tour

Between 25 and 29 March 2019, a DAFF and Bioversity International team visited Zimbabwe. Activities carried out included: i) meetings and discussions with CTDO staff about the work in South Africa and Zimbabwe and the prospects of future collaboration; ii) meeting with staff of the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement; iii) a visit to the national genebank of Zimbabwe;

iv) meetings with the Ambassador Extraordinary and Plenipotentiary of the Republic of South Africa in Zimbabwe, H. E. Mr. M. N. Mbete; and v) one-day field visits to:

- Mudzi district: to learn about the operations of the Chimukoko Community Seedbank, take part in a seed fair, and observe the Farmer Field School-led participatory crop improvement efforts (photo 2);
- Rushinga district: to take part in a seed fair and learn about the Farmer Field School-led participatory crop improvement efforts;
- Uzumba-Maramba-Pfungwe (UMP) district: to visit the Chemazumba Community Seedbank, observe the Farmer Field Schools participatory crop improvement efforts, and discuss the farmer seed production and distribution activities, including by the Champion Farmer Seed Cooperative Company.

This brief presents five main lessons learned during the study tour.



Photo 2: The Farmer Field Schools lead the participatory crop improvement efforts.  
Credit: Bioversity International/R. Vernooy





**Photo 3:** At the start of activities in a community CTDO staff uses the diversity wheel to assess the status of local crop and variety diversity.  
**Credit:** Bioversity International/R. Vernooy

## Lessons learned

### 1. Empowerment of farmers

*“We have increased our knowledge about farming and seed management and, as a result, the quality of our seed is better now and our yields have increased.”*

(woman farmer from Chemazumba)

CTDO uses the Farmer Field School approach to strengthen the technical and organizational capacities of lead women and men farmers. CTDO staff trains farmers in the governance and management of a community seedbank, participatory crop improvement (including enhancement, variety selection and breeding), seed production and distribution, nutrition and health, and collection of weather data. They reach out to other farmers in the communities to raise awareness, bring new members of the Farmer Field Schools and community seedbanks on board, and coordinate activities with local authorities,

government departments, the national genebank and other organizations (photo 3).

During the field visits to the three districts, lead farmers presented their work in detail and with great clarity. Farmers organized the seed fairs splendidly, showcasing their diversity in a clear and accessible way, explaining the meaning of crop names, crop characteristics and nutritional uses of each of the crop varieties on display. At the seed fairs, women were the champion custodians of crop diversity. One of the women at the seed fair in Chimikuko showcased an impressive range of 51 different crop varieties (photo 4).

In the field, they explained the technical set up of their crop experiments, identification of breeding objectives, the results and challenges, and the next steps in the process of crop improvement. They demonstrated great confidence and pride in their efforts as plant

breeders. They answered all the questions from the visitors without hesitation. During the focus group discussion, they presented their efforts concisely, reflecting critically on the learning process over time, highlighting successes and challenges.



**Photo 4:** Seed custodian at the Chimukoko seed fair.  
**Credit:** Bioversity International/R. Vernooy



## **2. Effective and complementary inter-institutional collaboration**

CTDO's operational approach is to build strong collaboration with other stakeholders through joint planning, implementation, monitoring and evaluation, where no stakeholder is excluded. Partners include communal authorities, ward councils, government departments (e.g. responsible for youth and women), members of parliament, ministers and other key government decision-makers, AGRITEX (the national agricultural extension service), the national genebank, the Crop Breeding Institute, universities and CGIAR centres (CIAT, CIMMYT, ICRISAT). They all join forces for a common goal: to improve the livelihoods of farmers and contribute to seed and food security. For the South Africa team, this form of complementary collaboration was a real eye-opener. In South Africa, the community seedbank initiative is largely driven by the national government.

During the field visits, several partners introduced themselves and explained their contributions to the activities highlighting their roles and responsibilities. For example, the

AGRITEX staff detailed how they facilitate interactions among farmers and with other stakeholders, and how they provide technical support to the Farmer Field Schools and the community seedbanks. Working in a client-driven, participatory mode with organized farmer groups has made their work easier: lack of resources does not allow them to work with hundreds of individual farmers. Roles, responsibilities and way of working of AGRITEX differ remarkably from their counterparts in South Africa, where the Farmer Field School approach is not used. The Crop Breeding Institute and the CGIAR centres operating in the country (CIAT, CIMMYT, ICRISAT) collaborate in the participatory crop improvement activities. They provide seeds, knowledge and technical backstopping. In turn, they use the results of the experiments to improve their work.

## **3. Participatory crop improvement excellence**

In recent years, building on its pioneering work in the 1990s, CTDO has put participatory crop improvement centre stage as a means to adapt to climate change.

Through the Farmer Field Schools, farmers are gaining access to “new” crop and varietal diversity from other communities, the Crop Breeding Institute, national and international genebanks and CGIAR centres (photo 5). Together with CTDO, these institutions provide technical backstopping to the Farmer Field Schools. Following the sequence of experimental cycles, farmers then store the best performing varieties in the community seedbank. Best performers are selected from a number of experiments:

- Diversity plots: crops or varieties lost or new to the community are planted side by side and evaluated for performance according to criteria decided by the farmers (e.g. early maturity, which is increasingly demanded by farmers to cope with changing climatic conditions). The national genebank plays a key role in the restoration of lost crops: it has repatriated more than 100 accessions of key crops including cowpea, finger millet, groundnut, pearl millet, pigeon pea and sorghum.
- Plant variety selection (PVS): of segregating and stable lines/ varieties of open-pollinated varieties and hybrids; for example, lines of open pollinated maize varieties, advanced lines of pearl millet (such as in Rushinga; photo), finger millet (Rushinga), groundnut and sorghum (Rushinga).
- Plant variety enhancement: of farmers' and locally-adapted modern varieties;
- Participatory plant breeding (PPB): farmers' deliberate crosses to generate new diversity. To date, two new varieties have been released as PPB varieties, although they were not registered with the inclusion of farmer or community names.



Photo 5: Giving seed away at the Chimikuko seed fair.  
Credit: Bioversity International/R. Vernooy



## BOX 2: Two examples of the crop improvement work

The **Chimukoko Farmer Field School** is doing PPB on pearl millet. The Crop Breeding Institute provided 16 segregating populations and ICRISAT provided F3 seed. Farmers set the following breeding objectives: early maturity, large panicle size and large grains. Selections started in the 2017/2018 season. For the second season, now underway, farmers selected the best performing plants as per the breeding objectives (photo 6; see also photo 12).



**Photo 6:** Pearl millet experiment led by the Chimukoko Farmer Field School.  
**Credit:** Bioversity International/R. Vernooij

The **Batanai Farmer Field School** (15 women and 3 men) is in its third year of operations. The group started with seed from a group member: the local sorghum variety (Gokwe) is common in the ward and has been grown for more than 20 years without any improvement in its performance, resulting in low yields. It became increasingly susceptible to diseases. The group set the following breeding objectives: large heads (which have a bearing on yield), drought tolerant, pest and disease resistant, early maturing to “escape” the increasing occurrence of mid-season droughts, and easily processable. The group has been selecting and harvesting the sorghum plants with large heads that matured in less than 90 days for the past three seasons and is now in the final year of selecting sorghum. They will then start multiplication and distribution seed within and outside the community. The members are depositing seed of this sorghum variety (plus many others) in the Nyamarodza community seedbank (photo 7).



**Photo 7:** Sorghum experiment led by the Batanai Farmer Field School.  
**Credit:** Bioversity International/R. Vernooij



CTDO complements the work in the communities with some on-station crop experiments in its garden in Harare, e.g. testing cowpea, millets and sorghum for drought tolerance and bulking promising materials for field-testing in the communities. Building on the experiences accumulated over the years, CTDO together with Oxfam Novib developed a series of farmer-friendly participatory crop improvement manuals.

#### 4. Farming as a business

*“Our interest in producing seed is motivated by the strong demand in our area for small grains. This demand is triggered by climate change, which requires new varieties that are better adapted to irregular rainfall and drought. At the same time we observed that the hybrids from the seed companies were no longer viable.”*

(woman farmer from Chemazumba, focus group discussion 29 March 2019)

CTDO stimulated farmer seed production and distribution in the 1990s, but initial attempts were not very successful. Only after the establishment of the first community seedbank in UMP in 1999, more systematic work was done which was further improved through the Farmer Field Schools using the so-called cluster method. In this method, farmers take responsibility for producing seed of one to four crops on an area ranging from 0.2 to 0.6 ha. Right now, crops include Bambara nut, cowpea, groundnut, pearl millet, finger millet, maize (open pollinated varieties and in some cases, hybrids) and sorghum. In many communities, seed produced through this method is sold locally, via the community seedbank, at seed fairs and during field days. CTDO and AGRITEX provide technical support. Farmers from the UMP community seedbank explained that this form of seed production has first

of all a social function: to make sure that everyone has access to good quality seed of crops important for smallholder farmers and neglected by the large seed companies.

However, in order to expand farmer-led seed system development on a larger scale, CTDO in partnership with Oxfam Novib, recently also developed another initiative: the establishment of the Champion Farmer Seeds Cooperative Company (formally registered in 2016, launched in 2017). Champion Seeds is both a commercial and social enterprise, with farmers as stakeholders, producers (on a contract basis) and buyers of high quality, certified seed of highly adaptable and high yielding varieties of dryland grains and legumes. Now in its third year and still

benefitting from donor support, the company is making good progress toward organization and financial sustainability. In its first two years of operation, the company produced almost 150,000 MT of certified seed. Farmer shareholders/seed producers from Chemazumba expressed satisfaction about their involvement in Champion Seeds (photo 8; see also photo 13).

As a woman farmer expressed (29 March 2019):

*“We are earning money from the seed production and I can now pay the school fees for my children.”*



Photo 8: Focus group discussion at the Chemazumba community seedbank.  
Credit: Bioversity International/R. Vernooij





Photo 9: Community seedbank internal organization.  
Credit: Bioversity International/R. Vernooy

### 5. Community seedbanks as rural development organizations

*“When we have a disaster [such as the devastating cyclone that hit Mozambique, Malawi and Zimbabwe in March 2019], rest assured, we have our community seedbank.”*

(women farmer from Chemazumba, focus group discussion, 29 March 2019)

*“The community seedbank has a place for everyone. It is a social meeting place for everyone.”*

(AGRITEX officer from UMP district, focus group discussion, 29 March 2019)

CTDO established the three first community seedbanks in 1998 in Uzumba-Maramba-Pfungwe, Tsholotsho and Chiredzi districts. To date, CTDO has established 14 community seedbanks; the most recent one in 2017. Communities contribute local building materials and labour, while CTDO uses donor funds for the other construction costs. Originally, the community seedbanks aimed to promote conservation of local varieties, knowledge and seed exchange, and local experimentation. The first community seedbanks were simple, two-room buildings; one room for family and community

collections, one for bulk storage of seed. However, over time the design and functions have changed due to farmers’ demands to make the community seedbank a social platform for farmer empowerment.

The newer community seedbanks have five rooms, each with a particular function, as explained during the visit to Chimikuko: one for reception of people and seed, one for family and community seed collections (general storage room), one for bulk seed storage, one for meetings, and one office and documentation centre (photo 9). Plans are underway to install internet and add an information gathering and sharing function. Each of the newer community seedbanks has a large, fenced area for crop experimentation –actively used as was observed in Chimikuko. The carefully organized collections held in the community seedbanks are impressive. For example, there are 64 varieties of 17 crops in the Chimikuko and 95 varieties of 19 crops in the Chemuzumba community seedbank.

Elected local farmers manage each community seedbank with support from CTDO and other stakeholders. A management committee, guided

by a constitution, is responsible for coordination and implementation of the activities. The names and phone numbers of the management committee members are written on a poster, which is glued to a wall in the reception area. Duties include the regulation and control of seed moving in and out of the seedbank, checking for pests, recommending and supervising fumigation of the building and conducting germination tests. Simple, but effective technologies are used, such as a self-built seed dryer (photo 10).



Photo 10: Sun powered seed dryer.  
Credit: Bioversity International/R. Vernooy





Photo 11: Crop diversity at the Rushinga seed fair.  
Credit: Bioversity International/R. Vernooy

Each year, community seedbank committees organize a seed fair at local level (photo 11). These fairs have become very important social events. During the fairs, farmers are encouraged to display their crops, exchange knowledge and seed, and discuss their plans for new activities. Seed fairs also make it possible to evaluate the level of diversity within the community and assess and monitor genetic erosion.

Community seedbanks not only function as a social platform for community biodiversity conservation and management, they also give farmers a strong voice in rural development affairs. Committee members from all the community seedbanks visited during the study tour explained that they are now recognized in the community as capable citizens and professional farmers. They are consulted by local, district and even national authorities

about important livelihoods issues, seed and food security and adaptation to climate change. This is the achievement of a learning journey of more than 20 years.

### Next steps

DAFF and the Bioversity International team plan to implement several of the things learned during the study tour:

1. Introduce farmer-driven participatory crop improvement activities.
2. Introduce some of the simple technologies, e.g. permanent diversity wheel, solar power, seed dryer, space for family seeds.
3. Strengthen the engagement of the extension departments.
4. Address some of the challenging policy issues, for example,

concerning the implementation of Farmers' Rights.

5. With the collaboration of CTDO, train farmers, genebank officials and extension staff from South Africa in Zimbabwe.
6. Explore future collaborative activities with CTDO and other Zimbabwean institutions, including at the sub-regional level.

As Ambassador H. E. Mr. M. N. Mbete of the Republic of South Africa to Zimbabwe remarked in the debriefing meeting with him:

*“Agriculture is a niche for Africa. Africa should feed the world. We should be proud and believe in ourselves. The future is in our hands as Africans. We should look at other African experiences and learn from each other.”*



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Photo 12: Participatory variety selection of pearl millet (Chimukoko Farmer Field School). Credit: Bioversity International/R. Vernooy



[org/e-library/publications/detail/how-to-develop-and-manage-your-own-community-seed-bank-farmers-handbook-establishing-a-commu/](https://www.biodiversityinternational.org/e-library/publications/detail/how-to-develop-and-manage-your-own-community-seed-bank-farmers-handbook-establishing-a-commu/)

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**Photo 13:** Participants of the focus group discussion at the Chemazumba community seedbank  
**Credit:** Bioversity International/R. Vernooy