



Multiplying diversity: strengthening community seedbanks in South Africa's smallholder farming areas

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Bioversity International is a global research-for-development organization. We have a vision – that agricultural biodiversity nourishes people and sustains the planet. We deliver scientific evidence, management practices and policy options to use and safeguard agricultural and tree biodiversity to attain sustainable global food and nutrition security. We work with partners in low-income countries in different regions where agricultural and tree biodiversity can contribute to improved nutrition, resilience, productivity and climate change adaptation.

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The Department of Agriculture, Forestry and Fisheries (DAFF) is a national sphere of the South African government, responsible for implementing the laws and policies decided by the South African parliament. It specifically derives its core mandate from section 27 (1) (b) and (2) of the South African Constitution which is to: “...take reasonable legislative and other measures, within its available resources, to achieve the progressive realisation of the....right (of everyone) to have access to sufficient food.” Within the DAFF, and more specifically the Agricultural Production, Health and Food Safety Branch of the DAFF, the Directorate Genetic Resources is mandated to regulate and provide an integrated national management system in support of the conservation and sustainable use of genetic resources for food and agriculture. This involves the development and implementation of policies, legislation, strategies and norms and standards on the management of genetic resources for food and agriculture, the regulation and promotion of propagating material of genetic resources for food and agriculture and to provide for a risk mitigating system in support of agricultural biodiversity.

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Front cover top: Members of the Sterkspruit community seedbank prepare the seed multiplication plot. Front cover bottom: The seed multiplication plot of the Gumbu community seedbank.

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Contents

Introduction: brief overview of 2013-2016 activities.....	2
Community seed bank operations.....	9
Farmers' assessment of progress.....	15
Strengthening capacities.....	18
Looking ahead.....	21
Publications 2013-March 2017.....	23
Annex 1: Short survey about seed flows.....	26
Annex 2: Training Workshop Programme.....	27

1. Introduction: brief overview of previous activities¹

South Africa's smallholder seed systems are under pressure from factors such as climate change (the country has been hit by recurrent droughts), inadequate seed supply and seed storage conditions, lack of technical support, poverty and marginalization. In many areas farmers are facing challenges with regard to the availability of diverse and good quality seeds that respond to the local agro-ecological and socio-economic conditions. Through subsidies and agricultural extension activities, the government's agricultural modernization policy encourages the purchase of modern varieties (such as maize hybrids) that are not always well adapted to local conditions. They are also costly. Nonetheless, many smallholder farmers are trying out these modern varieties (ABC 2017).

Although there has been no country-wide assessment made of agricultural biodiversity loss, a number of field studies indicate that farmers are losing locally-adapted varieties along with the associated traditional knowledge and skills in selection, storage and use (ACB 2017, Vernooy et al. 2013). This is resulting in reduced capacity to deal with adversity. Although some forms of traditional seed exchange among farmers still occur, and others have emerged here and there, for example through the involvement of civil society organisations, it is difficult to assess how vital to conserving against biodiversity loss these are. Very little research has been carried out on this issue.

Since 2013 the Department of Agriculture, Forestry and Fisheries (DAFF) of the Government of the Republic of South Africa and Bioversity International have been working together to establish and support community seedbanks as a means to strengthen farmers' seed systems, support conservation of traditional farmer varieties and empower local communities to maintain seed security at district and community levels. Following an in-depth community assessment of trends in agricultural biodiversity conservation and use carried out in 2013 in two selected pilot smallholder farming areas, the organizational process of establishing a community seedbank was initiated. The pilot sites are Gumbu village in Mutale Local Municipality in Limpopo Province and Sterkspruit town of Joe Gqabi District Municipality in Eastern Cape Province (Vernooy et al. 2015).

In 2014, in both project sites, the DAFF/Bioversity International team carried out an analysis of the existing household and community seed storage practices, including an identification of their strengths, weaknesses, threats and opportunities for improvement. The team also held several discussions with farmers about how to organize an effective and sustainable community seed bank. One of the year's highlights was the celebration of local crop diversity through the organization of a food fair during which farmers displayed and then tasted traditional dishes based on the available

¹ This annual technical report covers the period 1 January 2016 to 31 March 2017. Some of the activities planned for late 2016 were moved to early 2017.

local crop diversity (Maluleke et al. 2014). Farmers in Gumbu and Sterkspruit had not taken part in this kind of joyful event before. Based upon consent obtained from all the participating farmers, traditional food recipes were collected during the food fairs and published in a tri-lingual booklet (in English, Xhosa and Venda) in 2015 (Maluleke et al. 2015). Farmers expressed the importance to them of obtaining recognition for maintaining and sharing traditional dishes (crops).

In 2015, the DAFF/Bioversity International team trained farmers in both sites in the many practical aspects of running a community seedbank. Technical aspects included the steps related to seed management, while organizational aspects covered governance, leadership, participation, seed registration, book keeping and documentation. Based on the earlier seed management assessment the team communicated clearly about proper seed management including seed selection, seed cleaning and treatment (e.g. fumigation), seed quality control, weighing (in both sites, farmers received a simple electronic scale and learned how to use it), cleaning of containers, labelling of containers and storage. The team used a research and capacity development approach that builds on farmers' traditional knowledge and practices, but does not ignore scientific knowledge and methods. In 2016, farmers learned a new technique: the use of silica beads to improve storage conditions.

Farmers practiced using the register as a farmer-managed database of genetic resources (photo 1). They registered relevant local knowledge about use, cultural values, and agronomic traits of the crops and crop varieties found in the community. The register includes information about the community members who deposit their seeds, such as name, sex, age and years of residence in the community. The register used in Sterkspruit is represented below. Photos of crop varieties being registered were not immediately available and can be added at a later stage. Note that the register for Sterkspruit has entries in Xhosa and English, whereas the Gumbu register has entries in Venda and English. As of December 2016 the Gumbu community seed bank had registered 126 farmer varieties (about 40 still had to be registered). Most likely these are not all unique varieties, given that farmers who donated seeds to the community seed bank might be growing the same variety. Farmers do not distinguish varieties by name, e.g. they name all yellow coloured maize "yellow maize". A more in-depth analysis would be required to identify the exact number of unique varieties.

Farmer's variety catalogue/community biodiversity register

Village/CSB name: Uvimba wembewu zakuda [Sterkspruit Community Seed Bank]

Date:

Code	Parameters	Description	Photos of the variety [key traits]
01	Igama lesityalo/ imbewu [Crop local/vernacular language]		
02	Igama lesingesi [English name]		
03	Uhlobo lwembewu [Variety name]		
04	Igama lithetha ukuthini [Local meaning of the name]		
05	Igama lo mfama onikizele ngembewu [Name of farmer who gave seed]		
06	Mingaphi iminyaka eyilinywa lembewu? [Number of years the variety has been cultivated by farmer]		
07	Uyifumene phi imbewu? [Where did you get the seed from?]		
08	Uhlobo lomhlaba [What is the type of soil]		
09	Yeyiphi ilali ezilima kakhulu lesityalo? [Which village in this area is crop mostly found]		
10	Singakanani isivuno kwi-hectare/morgan? [Productivity [range of yield/ha; dwarf/ medium/tall]		
11	Yeyiphi inyaka yokulima nokuvuna [Planting and harvest month]		
12	Yintoni eye hluke ngayo kwezinye imbewu? [What distinguishes this variety from others]		
13	Kutheni ulima oluhlobo lwembewu? [Why do you grow this variety]		
14	Sithini isimo sokulinywa kule minyaka mihlanu? [Current cultivation status in the past 5 years]		

[Scientific name]: igama lenzulu lwazi.....

Figure 1: The register for the community seedbank at Sterkspruit written in Xhosa and English



Photo 1: Seed registration, Sterkspruit

In Sterkspruit farmers continue to use a temporary seed storage facility. Plans for the construction of an appropriate permanent physical structure for the district level community seedbank did not progress much given the uncertain legal status of the farmer organization that supports the community seedbank. In Gumbu, the new physical structure, built on a piece of land donated by the village headman, was officially inaugurated in March 2016 (see below for more details).

Celebration in Gumbu: inauguration of the community seedbank facility

An official hand-over from DAFF to the community of the Gumbu community seedbank took place on 17 March 2016 in Gumbu village. Government officials from provincial Departments of Agriculture, staff of Bioversity international and DAFF, Gumbu community seedbank members, farmers from neighbouring villages and Gumbu villagers attended the ceremony. Chief Johannes Gumbu of Gumbu village welcomed everyone to the ceremony on this special day. He highlighted the importance of the villagers and the community seedbank members maintaining and taking care of the community seed bank. The Director of Genetic Resources of DAFF, Ms Noluthando Netnou-Nkoana, explained the purpose of the occasion, which was the handing over of the community seedbank to Gumbu village, and highlighted the objective of the Directorate Genetic Resources of establishing community seedbanks within farming communities.

Ronnie Vernooy from Bioversity International provided an overview of how the Gumbu community seedbank was established, highlighting the key role of Gumbu villagers as owners of the facility and partners in the process. He underlined that Gumbu still has considerable agricultural biodiversity and that this was one of the drivers behind the establishment of the community seedbank. The hope is that other villages within Mutale Local Municipality will follow Gumbu's example.

Dr Khathutshelo Tshikolomo, Crop Production Director of the Limpopo Department of Agriculture (LDA) was honoured to hand over the key of the community seedbank and the ownership document to Ms Rosina Ndou, chairwoman of the Gumbu village community seed bank (photos 2 and 3). The text of Dr Tshikolomo's inspiring speech, covering key aspects of the learning process set in motion by the pilot activities, is reproduced in Annex 3 of this report. Ms Rosina Ndou thanked Bioversity International, DAFF and the LDA on behalf of farmers for the great achievement in Gumbu village, for setting up the facility, and further encouraged all stakeholders to join efforts in order to help other farming communities to set up their own community seedbank.



Photo 2: Handover of the key of the Gumbu community seedbank by Dr Khathutshelo Tshikolomo

The inspiring speech of Dr Khathutshelo Tshikolomo, Crop Production Director at the Limpopo Department of Agriculture (LDA) at the official opening ceremony of the Gumbu village community seedbank, is reproduced below. It covers the key aspects of the learning process set in motion by the pilot activities. The text in blue is in Venda.

'A Community Seed Bank (CSB) is much more than a bank for money, it is a bank for life-food' – Woman farmer from Zimbabwe.²

Kani-ha ri nga tou ri ndi bannga ya mbeu... kana ri ri ndi tshisiku tsha mbeu? ...Aiwa, vha ri ndi tshisiku tsha zwiliwa zwa vhutshilo. Musi ri na tshisiku itshi vhutshilo vhu tea u leluwa.

A CSB is a seed saving initiative designed and implemented to *conserve, restore, revitalize, strengthen and improve local seed systems*, especially, but not solely focussed on local varieties. Seed saving initiatives have taken various forms and names: community gene bank, farmer seed house, seed hut, seed wealth centre, seed-savers group (association or network), community seed reserve, and seed library.

As the Limpopo Department of Agriculture and Rural Development, we would like to express our gratitude to Bioversity International for the funding of the Gumbu Community Seed Bank and for all the support provided. Also, we wish to express our appreciation to our mother department, the Department of Agriculture, Forestry and Fisheries for identify our Province, specifically the Mutale Municipality as a host for the project.

² A quote from the Zimbabwe chapter in the book about community seedbanks around the world (Vernooy et al. 2015).

Important considerations for success of the Gumbu community seed bank

Considerations for the community seed bank itself

CSBs are local-level institutions that *contribute to seed conservation*, in particular of local or farmer varieties, countering erosion of crop diversity or its loss following natural disasters and societal pressures (commercialisation, monopolisation of seed production).

Though many CSBs were initially set up for the purpose of (1) *conservation*, additional functions were added over time, (2) *providing access to and availability of seeds, operating as a platform for community development, and (3) contributing to seed and food sovereignty*.

CSBs provide an opportunity for *interaction and integration of informal and formal seed systems, for the promotion of in-situ and ex-situ links to back up genetic resources locally* as building blocks of crop improvement, food security and sustainable community development.

CSBs should be competent and function well in terms of *collection, documentation (information and traditional knowledge), regeneration, storage, distribution, and marketing of seeds of diverse local and improved varieties*. Also important is *introduction of latest technologies and management innovations*.

CSBs should cultivate *partnerships and engage in networking and sharing of information and seeds* with other informal and formal seed system actors. Some CSBs interact with *researchers, extension and other development agents*.

Ndi ngoho, u bvelela ha tshisiku itshi tsha Ha-Gumbu tsha vhutshilo zwi thoga uri:

Tshiimiswa itshi tshapo tshi shume zwavhudi kha u vhlunga mbeu uri ra sa xelexwe nga ifa ili lashu.
Musi mbeu iyi yo vhlungwa, i a kona u wanala musu ri tshi i toda, nahone i ri fha vhudilangi ha ndisedzo ya zwiliwa;

Sa tshisiku, ri shumisane na zwinwe zwiimiswa uri mushumo washu u kone u vhone, ri amba mushumo u ngoho u kuvhanganya na u vhlunga mbeu na lupfumo lwa ndivho-yapo, khathihi na u kovhekana na u rengisa mbeu iyi. Itali vhe' munwe muthihi a u tusi mathuthu;

Also, there is need for exploration of options for *financial viability (funding, income-generating activities), and equipping members with adequate technical knowledge*. In some cases, *research organisations, NGOs and developmental agents* do provide *technical and financial support*.

A CSB should *develop niche outlets for local land races and farmer improved cultivars and strengthen the marketing of locally produced varieties*.

Successful CSBs must have *effective governance and management structures*, and these are formed by members of the seedbanks.

A hu na inwe ndila, ri tea uri:

Ri vhe na ndila dza u kuvhanganya masheleni uri ri kone u ya phanda. Naho ri tshi nga lambudzwa zwashu nga zwinwe zwiimiswa, na rine vhane kha ri vhe na zwine ra ita, itali vhe' hu vuswa l divusaho. Ri tea-ha u vha na mimaraga ine ra kona u isa mbeu yashu.

Ri pfumbudze mirado ya tshisiku itshi i vhe na ndivho na vhusila ha u ita mishumo ine tshisiku itshi tsha tea u i swikela... i tshi nga vha mishumo ya zwa thekiniki kana ya vhusi na vhlulangi.

Considerations for other role players

The success of CSBs is also influenced by such issues as *infrastructure (roads, communication, etc.), local culture, politics, occurrence of natural disasters, and civil unrests*. Support to CSBs is therefore very necessary, be it from *government, traditional authorities, political and other community structures*.

Well-operational CSBs need recognition, and this can be in the form of: *visits by officials, awards for special efforts and achievements, and invitations to important (policy) events*. Recognition may include *funding and other support* by government and donor agencies.

Kha ri shumisane zwavhudi na muvhuso washu, mahosi...Muhali washu Vho-Gumbu vha re vhukati hashu, zwinwe zwisiku zwi re kha lashu, zwiimiswa zwa u sedzulusa (research) na zwa pfunzo, na mazhendedzi a mveledziso uri ri kone u bvelela.

Maintaining the spirit of hard work, commitment and discipline, keeping clear strategies for governance, management, and income generation, and establishing networks and linkages with all relevant stakeholders, Gumbu Community Seed Bank is bound to succeed...

I declare the Gumbu Community Seed Bank officially opened, and I accordingly hand over this important facility to the community...

I thank you.



Photo 3: Gumbu celebrates the inauguration of its community seedbank

3. Community seedbank operations

In 2016, farmers in both sites contributed additional seeds to the collections of their community seedbanks. They were taught how to use a diversity register. All the seeds stored (from 2015 and 2016) were checked for quality, labelled, documented and stored. A community biodiversity register serves as a practical tool for the communities to: (i) establish an inventory to allow monitoring of crop diversity and to document its associated farmer (traditional) knowledge, (ii) generate a collective sense of community empowerment and ownership of genetic resources as a way to decentralize their management and conservation, and (iii) provide a record of the knowledge and uses of local biodiversity that can prevent biopiracy and enable the equitable sharing of benefits arising from the use of genetic resources. Moreover, by creating a register, i.e., a public record, an entire community or the members of a community seedbank carry out an act of legal protection of the documented resources (Monserrat et al 2016).

A key activity was the selection of priority farmer varieties to be multiplied in a dedicated plot of the community seedbank terrain. The team facilitated a discussion with farmers in both sites to decide which accessions to select and then worked together with farmers to prepare the multiplication plots and sow the seeds. Farmers decided to sow the seeds early in the season in anticipation of good weather conditions. By the end of 2016 they harvested the first seeds. At the end of March 2017 a number of the crops were still in the field (in particular, cowpea, pumpkin and sweet sorghum in Gumbu) to be harvested at a later stage (see below for more details).

Gumbu

The Gumbu village community seedbank is managed and operated by a group of 22 women farmers, who give priority to nutritious crops and varieties with good taste that are easy to combine in preparation of traditional dishes, require few inputs, are drought-, pest- and disease resistant, and have a short growing cycle and long-term storage qualities. The women contend that the community seedbank will allow them to maintain a range of different crop species and varieties inherited from their parents, support their households in terms of food supply, and also give them satisfaction and allow them to earn some extra cash. They also remarked that exchange of seeds amongst farmers from different communities and cultures will help to stop the loss of crop diversity that is occurring in the area. The Gumbu community seedbank illustrates the key role of women farmers in local conservation efforts and how these efforts in turn have the potential to change the local agro-

ecological and socio-economic landscape. During 2015 the members of the community seedbank put together the first seed collections. In 2016 farmers added new accessions. As of 31 December 2016 the Gumbu seed collection includes the accessions listed in Table 1.

Table 1: Seed inventory Gumbu community seed bank, 31 December 2016

Crop	2015 accessions	2016 accessions	Total
Sorghum (Makhaha)	15	13	28
Pearl millet (Luvele)	10	0	10
Maize (Tshikoli)	14	14	28
Calabash (Maranga)	6	9	15
Melon (Mabvani)	9	12	21
Cowpea (Nawa/Luti)	14	12	26
Pumpkin (Mafhuni)	5	18	23
Groundnut (Nduhu)	2	5	7
Wheat (Korong)	1	0	1
Gourd (Ngota)	1	0	1
Bambara groundnuts (Phonda) (Ditloo marapo)	0	4	4
Mung bean (Letlhodi)	1	0	1
Total	78	87	165
Moringa*	0	>250 seeds	

*Moringa (*Moringa oleifera*) is a tree species much appreciated by farmers that is disappearing from the village.

Seed multiplication

The crops selected for seed multiplication were sown in small plots of 3 m² each with the exception of sweet sorghum and mung bean, which were sown in plots of 0.5 m² due to very small seed quantities available in the community seed bank (photo 4, see also the photo on bottom of the front cover. The design of the multiplication plot is shown in the diagram below. Plots were sown quiet early in the season (August) in anticipation of early rains. Later, the farmers decided to add another plot of 10 x 2 m² to multiply yellow maize. For this they collectively contributed seeds from their homes. As this was the first cycle of seed multiplication farmers accepted the recommendation made by the DAFF/Bioversity International team to start small and learn by doing. Based on the results and experience gained in subsequent seed production cycles the size of the plot(s) could be augmented. Farmers also prepared more than 100 seed bags to plant the moringa seeds. They intend to plant the seedlings all around the fence that protects the parcel of land of the community seed bank.



Photo 4: Preparing the seed multiplication plot in Gumbu

Pumpkin (1)	Red maize	Black cowpea	'Blackeye' cowpea	Pumpkin (2) + Sweet sorghum	Cowpea	Beans (1)	Melon	Tapara beans (2) + Mungbean	Pumpkin (3)
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Figure 2: Seed multiplication plot of the Gumbu community seed bank



Photo 5: Seeds harvested, Gumbu

In March 2017 farmers and the DAFF/Bioversity International team carried out a first evaluation of the results of the seed multiplication (see Table 2).

Table 2: Partial results of the seed multiplication in Gumbu

Crop	Growing characteristics	Amount of seed harvested	Seed quality
Pumpkin (1)	Seeds germinated well, but the heat terminated the plantlets early on.	None	
Red Maize	Seeds germinated well, but the heat affected growth.	35 grams	Good. Seeds will be used for seed multiplication.
Black cowpea	Seeds germinated well. Growth was good, but too much rain has delayed germination.	Not yet harvested	
Blackeye cowpea	Seeds germinated well and growth was good.	430 grams	Good. Part of seeds will be conserved and part will be used for multiplication.
Pumpkin (2)	Seeds germinated well. Growth was good and. Flowering in progress.	Not yet harvested	
Sweet sorghum	Seeds germinated well and growth was good.	Not yet harvested	
Cowpea	Seed germinated well and growth was good. Some pest occurrence.	Not yet harvested	
Beans (1)	Seeds germinated well but growth was not good due to too much rainfall. Some pest incidence ('stinking' beetle)	117 grams	Not so good. Some seeds infested. The good seeds will be used for multiplication.
Melon	Seeds germinated well and growth was good. Some melons were eaten by donkeys ploughing the maize plot.	119 grams	Good. Seeds will be used for multiplication.
Tapara beans (2)	Seeds germinated well and growth was good.	502 grams	Good. Seeds will be used for multiplication.
Mungbean	Seeds germinated well but growth was not so good due to too much rainfall.	33 grams	Good. Part of seeds will be conserved and part planted on a farm.
Pumpkin (3)	Seeds germinated well, but growth was bad due to extreme heat.	None	
Yellow maize (second plot)	Seeds germinated well, but growth was affected by extreme heat.	1041 grams	Part of seeds will be conserved, part replanted for multiplication.

Overall farmers expressed satisfaction about the initial results, but they observed that the variable weather of the recent months impacted on them negatively. From a prolonged period of severe drought and extreme heat the weather all of a sudden changed to heavy and prolonged rains. To make things worse, at the end of the drought period South Africa was invaded by the devastating fall of army worm. Limpopo province was among the most affected.

Sterkspruit

The Sterkspruit ‘community’ seedbank represents a district-level community seedbank, in which woman and man farmers from the villages of Jozana, N dofela, Phelendaba, Qhoboshana, Voyizana and Ximegha are active members. These villages are located within a 30 kilometre radius of the town of Sterkspruit in the table-mountains typical of the Eastern Cape. The community seedbank builds upon the efforts of another farmer organization that has been operating in the area for some years. This farmer organization owns a meeting facility that is constructed on a large piece of land in the town of Sterkspruit. The temporary community seedbank facility is located on the same piece of land. There are about 15 active community seed bank members, all experienced woman and man farmers who have been living in this part of Eastern Cape for considerable time. They all have a strong interest in maintaining and, where necessary, improving traditional varieties. In Sterkspruit the community seed bank collection includes the crop accessions listed in Table 3.

Table 3: Seed inventory Sterkspruit community seed bank, March 2017

Crop	Number of registered accessions
Maize	35
Sorghum (Amazimba)	4
Cowpea (Nawa)	4
Green peas (Ertysis)	5
Beans (Imbotyi)	8 (including 1 kidney bean, 1 broad bean/ <i>Vicia faba</i>)
Sunflower	1
Bambara nut	1 (plus 1 from National Plant Genetic Resources Centre not named)
Calabash (Mgcephe)	2
Pumpkin (Ithanga)	8
Melon (Ivatala)	5
TOTAL	73 (plus 1)

Farmers also offered a (small) local potato variety for storage, but for now they will maintain this crop in their own field (field genebank).

Seed multiplication

Similar to Gumbu, the crops selected for seed multiplication were sown in small plots of 3 m² each. Figure 3 presents the layout of the plots. Plots were sown quite early in the season (August) in anticipation of early rains.

Calabash	Maize	Beans	Sorghum	Bambara (1)	Bambara (2)	Pumpkin
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Figure 3: Layout of the seed multiplication plot of the Sterkspruit community seedbank



Photo 6: Seed multiplication plot, Sterkspruit

Unfortunately, the results assessed in March 2017 by farmers, local extension officials and the Bioversity International/DAFF team were not good (see Table 4). Although weather vagaries did not help (frost and snow occurred during the early stage), the main challenge was that farmers did not dedicate the required time and effort to plant management. They explained that it turned out to be difficult for them to travel regularly to the community seedbank in the town.

Table 4: Partial results of the seed multiplication in Sterkspruit

Crop	Growing characteristics	Amount of seed harvested	Seed quality
Calabash	Did not germinate at all.	None	n/a
Maize	Germinated well, but cobs were eaten by goats and stolen by people.	None	n/a
Pumpkin (1)	Germinated irregularly but snow and frost caused major damage.	None	n/a
Sorghum	Germinated well, but growth hampered heavy rains, weeds and some pest infestation.	Likely, a small amount could be harvested in the coming period	To be assessed
Bambara (1)	Germinated, but frost damaged all plants.	None	n/a
Bambara (2)	Germinated, but frost damaged all plants.	None	n/a
Pumpkin (2)	Low level of germination followed by some flowering. Then frost caused major damage and only one plant survived.	Likely, a small amount could be harvested in the coming period.	To be assessed

Lessons learned from the first two multiplication trials include: 1) the need to constantly look after the plots and apply proper crop management, 2) in the case of Sterkspruit, establishing plots in the villages will be more effective, 3) reproduction of very small quantities of seed might lead to genetic drift and a narrower genetic base, and 4) there is a need to enhance the farmers' seed production knowledge and skills.

4. Farmers' assessment of progress

In March 2017 the DAFF/Bioversity International team met with the core members of the two community seedbanks to capture the farmers' views on the progress made so far. A questionnaire was used for this purpose (see Annex 1). A summary of the findings is presented in this section.

Farmers expressed very clear views on what has been achieved so far, what was yet to be achieved, and what they expect to happen in the coming period. From not knowing what a community seedbank could be, they now have a well-formed understanding of what it can contribute. They also manifested clearly what they would like to see improved through their own contributions and through collaboration with others.

In Gumbu, 22 farmers, all of whom women, were interviewed, and provided the following responses to the questions posed. The number of common responses is provided in brackets:

Concerning the expectations about the community seedbank:

"My expectations were met as we stored many seeds in the community seedbank in a safe way." (14)

"They have not yet been met as the harvesting of seeds has not yet been completed." (2)

"They have been met as we stored seeds in bulk instead of storing only a few seeds by each individual farmer." (1)

"I could exchange information about seeds with other farmers." (1)

"Slowly but surely the community seedbank is growing and if we keep planting and conserving the seeds, it will grow further." (1)

Concerning the benefits that the community seedbank has brought:

"More seeds are being stored than before." (8)

"Seeds are taken care of." (1)

"We multiplied our landraces and conserved them in the community seedbank." (2)

"We harvested some seeds and these were placed in the community seedbank." (1)

"I enjoyed being part of the group." (1)

"The seeds are stored safely. I learned new storage techniques." (6)

"I received new information about seeds from the exchanges we had." (3)

Concerning the future benefits of the community seed bank:

"We want to increase production of seeds, improve the seeds and introduce some new varieties." (4)

"I want to receive training in seed drying and storage techniques." (6)

"I hope to receive seeds that I lost and also seeds of some new varieties that I do not have on my farm." (2)

"I want to contribute my seed to the community seedbank." (1)

"I want to plough more seeds from the community seedbank in my yard and back yard." (1)

"We hope to distribute seeds to farmers who do not have enough seeds." (2)
"We expect to multiply more seeds for storage and for distribution." (5)
"I want to store my seeds in the store room." (6)
"I expect to receive new varieties of indigenous seeds from DAFF and foreign countries." (6)
"I expect to produce seed for marketing and generate some income for the activities of the community seedbank." (5)
"To exchange seeds with other farmers." (1)
"I want to participate in exposure visits." (6)
"I hope we will plant more Moringa trees and also fruit trees on the land of the community seedbank." (1)
"I expect to grow more crops and receive pesticides." (1)

In Sterkspruit 11 farmers (four women and seven men), were interviewed and provided the following responses to the questions posed:

Concerning the expectations about the community seedbank:

"I expected to contribute seeds, find seeds that I lost and share indigenous knowledge about traditional seeds." (1 woman; 1 man)
"To multiply seeds." (2 men)
"To help us with seeds." (1 man)
"To assist those who need seeds saved in the community seedbank." (1 man)
"I expected to safely store seeds and to have a good harvest of seeds." (3 women; 5 men)
"I expected to exchange information with other farmers." (1 woman; 1 man)
"I expected to multiply saved seeds and send them to the market to generate income." (1 woman; 3 men)
"To acquire knowledge and skills in agriculture." (2 men)
"To develop the community." (2 men)

Concerning the benefits that the community seedbank has brought:

"We have not yet received any benefits." (1 woman; 2 men)
"We conserved seeds." (4 men)
"I received training in seed management." (1 woman)
"I got new knowledge and skills about agriculture." (1 woman)
"We have conserved and multiplied some seeds." (1 woman)

Concerning the future benefits of the community seedbank:

“To work together as a team and multiply the seeds of the community seedbank.” (1 woman; 7 men)

“To receive technical advice from the officials.” (2 men)

“To make the community seedbank popular so other people become aware and join.” (1 man)

“To multiply my own seeds and contribute them to the community seedbank.” (1 woman)

“To do an exposure visit.” (1 man)

“To develop the community.” (1 man)

“To create awareness about the community seedbank.” (1 woman)

“To improve the communication among farmers.” (1 woman)

“To multiply seeds, sell them on the market, and earn money.” (3 women; two men)

5. Strengthening capacities

Another key activity in 2016 was the design and organization of a training workshop for DAFF staff and agricultural extension agents. This took place 15 – 17 March 2016 in Limpopo Province.

Bioversity International designed a capacity development strategy for DAFF staff and agricultural extension agents across the country, to equip them as facilitators of the process of establishment and support to a community seed bank. Based on Bioversity International’s global experiences, including the South African one, the strategy is informed by a participatory learning approach through which facilitators and learners interact actively, make use of their experiences and learning together. Lecturing is kept to a minimum. Most of the learning takes place through dynamic exercises in which trainees are invited to use and reflect on their own experiences and/or on the experiences of others (captured in practical case studies, for example). These experiences can cover any aspect of agricultural and rural development that involves farmers.

The strategy kicked-off with a training workshop held in March 2016 in Limpopo province for 15 DAFF officials and agricultural extension officers (see the training programme in Annex 2). The content of the training was based on nine subjects summarized below. As one important output of the training the agricultural extension officers drafted three plans to expand community seedbanks to other provinces and regions of the country.

Topics of the training workshop ‘Community seedbanks: concept and practice’

1: *Steps and process of establishing and supporting a community seedbank.* Under this heading, the trainers presented logical sequence of the major steps involved in setting up and supporting a community seed bank in a selected area (photo 7).

2: *Trends in agricultural biodiversity.* Here the trainers introduced two tools to assess the current abundance (richness) and distribution (evenness) of local agricultural biodiversity within farming communities at the crop species and crop variety levels, and to trace and analyse the trends over time.

3: *The multiple functions and services of community seedbanks* offered an analytical framework to help decide upon objectives of a community seed bank and organize the possible core activities of a community seed bank: conservation, access and availability, and seed and food sovereignty.

4: *Technical issues of operating community seedbanks* defined the key principles and practices for the effective operations of a community seed bank, from a technical point of view.

5: *Governance and management* looked at how community seedbanks deal with governance and aspects of management, including costs.

6: *Support and networking* discussed the importance of providing sound technical and organizational support to a community seedbank and what roles network building and networking can play.

7: *Policies and laws that influence the establishment and operations of community seedbanks* provided an overview of the institutional and regulatory environments that can influence a community seedbank and its viability/sustainability.

8: *Viability and sustainability of a community seedbank* analysed what the key dimensions of viability and sustainability are and how they can be analysed and addressed in practice.

9: *Preparing a generic plan to establish and support a community seedbank at district or community level* concluded the training topics by presenting a framework to assist farmers and supporting organizations to develop a start-up plan.

The training was well received and served as an input for the development of a handbook for facilitators (Vernooy et al. 2017, under preparation) that can be used to train many more facilitators in the country and beyond. We provide below a few of the comments received as feedback from the workshop participants.

“In this workshop I learned the importance of the putting the concept of community seedbank into practice. I learned about the steps of how as an official I can bring awareness to the farmers on different methods of saving seeds for sustainable livelihoods. I realized the importance of the involvement of all stakeholders from local to international levels. Most of all I learned about the governance and management of a community seedbank.”

“The course planning was excellent. The presentations were of a high standard. Participation was equal to everybody. Information was of high quality. Learning material was enough and vital. The presenters know the subject and provided enough time to grasp the important points. Presenters were eager to share their knowledge with others. Presenters were bearing sympathy to everyone and being motivational speakers.”

“The workshop was relevant agricultural extension work. The facilitators were excellent. I think the management in the Department of Agriculture should be informed about the necessities of a community seedbank in order for the officials to obtain the support at district level.”

“The workshop was well planned; the lay out was good. The issues covered were relevant; the facilitators were good. I recommend that DAFF officials conduct the workshop in different provinces. This should be done with the senior management first so that they are in a position to support this programme. The implementation of pilot community seedbanks should then be done with DAFF support.”



Photo 7: Identifying the steps and process of establishing and supporting a community seedbank

6. Looking ahead

The activities carried out so far covered the various steps of a full community seedbank cycle of operations. It took ample time to proceed through these steps, but experience suggests that rushing things does not lead to fruitful results. The pilot experience has laid the foundations to working towards the establishment of a strong national network of community seedbanks. At the community level, community seedbank members will be encouraged to develop their own action plan including how seed produced by the group can be useful to community members. DAFF and extension agencies have an important support role to play until farmers have developed strong capacity to run operations autonomously.

Such a network of community seedbanks (whose features remain to be designed through a participatory process) will serve as a platform to create synergies for different actors committed to supporting farmers' seed systems, such as the National Plant Genetic Resources Centre under the Department of Agriculture, Forestry and Fisheries, other formal sector organizations, such as the national and provincial agricultural extension service, crop improvement stations, universities and civil society organizations.

The training carried out in 2016 was an important contribution toward this ambitious goal and will serve to train other extension agents in the country's provinces, other DAFF staff and perhaps staff of other organisations. The handbook for facilitators is being finalized (March 2017) and will be used for this purpose. It is envisioned to develop a farmer-to-farmer exchange strategy to train many more farmers.

At the policy level, the Department of Agriculture, Forestry and Fisheries is using the achievements and lessons learned of the pilot phase to contribute to new agricultural policy development such as the National Strategic Action Plan for In Situ Conservation and Use of Crop Wild Relatives 2015/2016 to 2019/2020 and the National Plan for Conservation and Sustainable Use for Plant Genetic Resources for Food and Agriculture (PGRFA) currently being finalized. This will further strengthen the support base for the work underway.

Publications: 2013 - March 2017

Blogs

<http://www.biodiversityinternational.org/news/detail/powerful-crops-empowering-farmers-through-community-seed-banks-in-south-africa/>

<http://www.biodiversityinternational.org/news/detail/supporting-community-seedbanks-in-south-africa/>

<https://grpi2.wordpress.com/2013/11/13/embracing-diversity/>

<http://www.biodiversityinternational.org/news/detail/seed-savers-of-gumbu/>

http://www.tandf.net/energy/articles/strengthening_local_level_seed_access_and_availability_of_crop_diversity/

<http://www.we.expo2015.org/en/news/womens-seedbank>

<http://www.biodiversityinternational.org/news/detail/gender-and-climate-change/>

<https://grpi2.wordpress.com/2016/03/31/official-opening-and-handing-over-of-the-gumbu-community-seed-bank-south-africa/>

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Vernoooy, R., Sthapit, B., Dibiloane, M.A., Maluleke, N.L., Mukoma, T. and Tjikana, T. (2015) South Africa: a new beginning for community seed banks. In R. Vernoooy, P. Shrestha and B. Sthapit (Eds.) *Community seed banks: origins, evolution and prospects*. Routledge, Oxon, UK and New York, USA,

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Tjikana, T.; Dibiloane, A.; Maluleke, N.; Moila, P.; Phora, G.; Sthapit, B.; Vernooy, R. (2017) U thomiwa na u tikedzwa ha mbulungelo ya mbeu (ḡulu) ya tshithshavha Afrika Tshipembe: mvelephanḡa na zwo swikelelwaho kha tshipiḡa thangeli 2013–2015 [Venda version of Sharing diversity: establishing and supporting community seedbanks in South Africa (pilot phase 2013-2015)], Bioversity International, Rome, Italy; Department of Agriculture, Forestry and Fisheries, Pretoria, South Africa.

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<http://www.cifor.org/library/5896/seeds-of-adaptation-climate-change-crop-diversification-and-the-role-of-women-farmers/>

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Vernooy, R., Sthapit, B., Tjikana, T., Dibiloane, A., Maluleke, N., Mukoma, T. (2013) Embracing diversity: inputs for a strategy to support community seedbanks in South Africa's smallholder farming areas. Bioversity International, Rome, Italy, and Department of Agriculture, Forestry and Fisheries, Pretoria, South Africa.

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Vernooy, R., Sthapit, B., Tjikana, T., Dibiloane, A., Maluleke, N., Moila, P., Phora, G. (2016) Mobilizing diversity: establishment of the first two community seedbanks in South Africa's smallholder farming areas. Bioversity International, Rome, Italy, and Department of Agriculture, Forestry and Fisheries, Pretoria, South Africa <http://hdl.handle.net/10568/73242>

Annex 1: Short survey about seed flows

Name:

Male / Female

Age group: 36 and below / 37 and above

Place and date:

1. For your last growing cycle, please indicate how you obtained the seeds for all your crop varieties. [Expand the table if necessary.]

Crop variety	Self-saved	Bought from a shop	Received from relative, neighbour or friend	Received from a government agency	Other: please describe (e.g. community seed bank)

2. Did you face any challenges to obtain the seeds that you wanted? (Yes/No and explain)
3. What were your expectations when CSB were established?
4. Were your expectations regarding CSB met so far?
5. Now that the community seedbank is up and running, what benefits have you received so far?
6. Where there any seeds deposits or withdrawals request done since the establishment of the CSB and for which seeds?
7. What are some of the challenges you are encountering with the seed flow of the community seedbank?
8. What benefits are you expecting from the community seedbank in 2017 and following years?

Annex 2: Training workshop programme

Community seedbanks: concept and practice

15-17 March 2016, Tshipise, Limpopo, South Africa

Objectives

- of tools to analyze the status and trends of agricultural biodiversity at local level
- *Distinguish* the major functions of community seedbanks
- *Identify* the main components of an effectively functioning community seedbank
- *Prepare* a plan for the establishment of a community seedbank at district or village level
- *Recognize and support* the role of women in the conservation and sustainable use of agricultural biodiversity
-
- At the end of the training workshop, participants will be able to:
- *Apply* a number

PROGRAM

Monday 14 March: Arrival of participants

19:30pm: Dinner (buffet) in the restaurant

Day 1: Tuesday 15 March

9:00 – 9:30am	Welcome and self-introduction of participants
9:30 – 9:45am	Workshop learning objectives, facilitated by Ronnie Vernooy
9:45 – 10:30am	Steps and process of establishing and supporting a community seedbank (Exercise 1), facilitated by Ronnie Vernooy
10:30 – 11:00am	Coffee and tea break
11:00 – 12:30pm	Trends in agricultural biodiversity (Exercise 2), facilitated by Bhuwon Sthapit with the participation of the DAFF team
12:30 – 13:30pm	Lunch
13:30 – 15:00pm	Functions and services of a community seedbank (Exercise 3), facilitated by Ronnie Vernooy
15:00 – 15:30pm	Coffee and tea break
15:30 – 17:00pm	Technical issues, part 1 (Exercise 4), facilitated by Bhuwon Sthapit with the inputs of the DAFF team

19:30pm Dinner (buffet) in the restaurant

Day 2: Wednesday 17 March

9:00 – 10:30am Technical issues, part 2 (**Exercise 4**), facilitated by Bhuwon Sthapit with the inputs of the DAFF team

10:30 – 11:00pm Coffee and tea break

11:00 – 12:30am Governance and management of a community seedbank (**Exercise 5**), facilitated by Bhuwon Sthapit

12:30 – 13:30pm Lunch

13:30 – 15:00pm Viability of a community seedbank (**Exercise 6**), facilitated by Ronnie Vernooy

15:00 – 15:30pm Coffee and tea break

15:30 – 16:30pm Preparing a plan for the establishment of a community seedbank at district or local level (**Exercise 7**), facilitated by Ronnie Vernooy

16:30 – 17:00pm Review of days 1 and 2; next steps

19:30pm Dinner (buffet) in the restaurant

Day 3: Thursday 17 March

9:00am – 15:00pm Field visit to the community seedbank of **Gumbu village**, Mutale district, Limpopo province; official inauguration of the community seedbank (see separate program for details)

19:00pm Workshop evaluation (in the restaurant)

19:30pm Dinner (buffet) in the restaurant

Friday 18 March Early morning departure

Learning plan

Objective	Exercise	Readings
Apply a number of tools to analyze the status and trends of agricultural biodiversity at local level	2	Sthapit, Shrestha, Upadhyay (eds.) 2012. Vernooy et al. 2013.
Distinguish the major functions of community seedbanks	3	Shrestha, Vernooy, Sthapit 2015. (Chapter 3) Vernooy, Sthapit, Galluzzi, Shrestha 2014.
Identify the main components of an effectively functioning community seedbank	4, 5, 6	Chapters 4, 5, 6, 7, 8 in Vernooy, Shrestha, Sthapit (eds) 2015. Vernooy et al. 2015. (Chapter 43)
Prepare a plan for the establishment of a community seedbank at district or village level	1-7	Sthapit, Shrestha, Upadhyay (eds.) 2012. Shrestha, Vernooy, Chaudhary (eds.) 2013. Vernooy, Shrestha, Sthapit (eds.) 2015.
Recognize and support the role of women in the conservation and sustainable use of agricultural biodiversity	1-7	Vernooy et al. 2013. Maluleke et al. 2014. Vernooy 2015.

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