



Sharing diversity: exchanging seeds and experiences of community seed banks in South Africa

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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 research documented in this report contributes to the **CGIAR Research Program on Climate Change, Agriculture and Food Security**. This programme is led by CIAT, a member of the CGIAR. <https://ccafs.cgiar.org/>

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 plant 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.

Citation: Matelele, L.A., Sema, R.P., Maluleke, N.L., Tjikana, T.T., Mokoena, M.L., Dibiloane, M.A. and Vernooy, R. 2018. Sharing diversity: exchanging seeds and experiences of community seedbanks in South Africa. Bioversity International, Rome, Italy and Department of Agriculture, Forestry and Fisheries, Pretoria, Republic of South Africa.

ISBN 978-92-9255-109-4

Acknowledgements

This study was commissioned and financed by the Department of Agriculture, Forestry and Fisheries (DAFF) of the Government of the Republic of South Africa. We thank Olga Spellman, Bioversity International, for editing this report. We would like to acknowledge Ms Mabjang Angeline Debiloane (DAFF) for her assistance in organizing the workshop held in Limpopo Province (Tshipise Forever Resort) and the Seed/Food fair held at the Gumbu community seed bank premises; and the local Provincial Agricultural office together with the local Agricultural Advisor(s) and the Scientist attached to the Gumbu community seed bank for their support. The events held in the province would not have been possible without your assistance. We also are thankful for the assistance of the Free State, North West and Northern Cape Provincial Departments of Agriculture to allow the officials together with the farmers to form part of the Seed and Food Fair event in Limpopo Province.

Photo front cover: Display of traditional foods during the 2017 community seed banks exchange workshop in Gumbu. Credit: DAFF

Photo page 5: Bhuwon Sthapit at the Gumbu community seed bank. Credit: Bioversity International/R.Vernooy

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We dedicate this report to our colleague Bhuwon Sthapit who passed away in August 2017. Bhuwon co-designed the project activities and until his death co-coordinated the implementation of the work. We miss his stimulating and always joyful presence, wealth of theoretical and above all practical seed knowledge and contributions to the fieldwork, interactions with the farmers and officials, communication activities and publication efforts.



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1. OVERVIEW OF WORK DONE IN GUMBU AND STERKSPRUIT

Introduction: the significance of establishing a community seed bank

The smallholders' seed and food production systems in South Africa are threatened in the face of growing food demand, global warming, climate change, declining land and resources and environmental degradation. In addition, as a result of agricultural modernization, farmers are increasingly purchasing more seed and losing locally adapted varieties along with the associated traditional knowledge and skills in selection and seed storage. The need to conserve and sustainably use plant genetic diversity is critically urgent. The establishment of community seed banks is critical for communities to be able to safely store farmers' seeds, function as an emergency seed supply when farmers experience a shortage of seeds due to failure or destruction of crops as a result of floods, droughts, pests and diseases, and be a channel to restore 'lost' varieties in the community. To date, DAFF, in collaboration with Bioversity International, has established three community seed banks in the country and a few more will be set up in the coming years eventually forming a network of community seed banks. The accumulated experiences of establishing and supporting community seed banks in South Africa have been used as input for the development of two community seed bank manuals, one for facilitators (Vernooy et al. 2017) and one for farmers (Vernooy et al. 2018a/b/c). The three community seed banks established so far will support the Department of Agriculture, Forestry and Fisheries' strategy on conservation and sustainable use of Genetic Resources for Food and Agriculture both *in situ* and *ex situ*.

Evolution of activities: a summary

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 seed banks as a means to strengthen farmers' seed systems, support conservation and sustainable use of traditional farmer varieties and 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 smallholder farming areas, the organizational process of establishing a community seed bank was initiated through a number of capacity development activities related to technical and organizational aspects of running a community seed bank. The first two pilot sites are Gumbu village in Mutale municipality in Limpopo province and Sterkspruit town of Joe Ngcabi municipality in Eastern Cape Province (Vernooy et al. 2015). In 2017, based on the experiences and lessons learned in Gumbu and Sterkspruit, a third site was added: Jericho in

North West Province. In addition, a potential site for a fourth community seed bank in Northern Cape Province was identified.

In 2014, the DAFF and Bioversity International team carried out an analysis of seed storage practices in Gumbu and Sterkspruit, including an identification of their strengths, weaknesses 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 local crop diversity (Maluleke et al. 2014). Farmers in Gumbu and Sterkspruit had not taken part in such an interactive and interesting 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 2015 (Maluleke et al. 2015). Farmers stated that obtaining recognition for maintaining and sharing traditional dishes (crops) was important to them. These initial experiences were encouraging and contributed to the design of a methodology appropriate for the South African context.

In 2015, the DAFF and Bioversity International team trained farmers in Gumbu and Sterkspruit in the many practical aspects of running a community seed bank. 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 provided focussed training on 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 (novel) scientific knowledge and methods and (new) technologies, such as zeolite beads to improve the storage of seeds in containers.

In Sterkspruit, farmers continue to use a temporary facility that was established on the terrain of the district farmers' association. For now, farmers are satisfied with this situation. In Gumbu, a solid and spacious new physical structure built on a piece of land donated by the village headman was officially inaugurated in March 2016. Gumbu farmers are very pleased with this new facility, which is equipped with a convenient meeting area where they can come and work together.

In 2016, farmers learned a new technique: the use of silica (zeolite) beads to improve storage conditions within the community seed bank. Farmers also learned to use a seed register as a farmer-managed database of its genetic resources. 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 register the seeds, such as name, sex, age, and years of residence in the community. It is worth noting that the register for Sterkspruit has entries in English and Xhosa, whereas the one for Gumbu has entries in English and Venda. As of December 2016, the Gumbu community seed bank had registered 126 accessions (Photo 1). Most likely these are not all unique accessions given that farmers who donated seeds to the community seed bank might be growing the same variety. Some farmers in Gumbu 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 find out the exact number of unique accession.



Photo 1. The Gumbu community seed bank seed collection in 2016.

Credit: Bioversity International/R. Vernooy

In December 2017, a total of 241 different crop varieties were stored in the Gumbu community seed bank (table 2). Maize and sorghum have the majority of varieties conserved as indicated in table 2. In 2017, the farmers managed to harvest some quantities of seeds from the regeneration plots set up on the land of the community seed bank. They set up and managed the whole process collectively and this brought some good results (Photo 2 on page 11, photo 3 on page 12, photos 4 and 5 on page 13). A challenge was the irregular supply of water which affected some crops and resulted in lower than expected harvests. For the 2017-2018 growing season they were planning to sow ten different priority crops for seed multiplication: Bambara nut, black-eyed bean, cowpea, mung bean, red maize, white maize, pearl millet and

watermelon. Unfortunately, the plan failed due to water shortage and low soil moisture content; they experienced late rains which were not enough to increase the soil moisture on time for the seedlings to emerge.

Table 1. List of different crop varieties stored at the Gumbu community seed bank as of December 2017.

Common Name	Local Name	Variety name	Amount of seeds/total weight (g)	Total weight of seed (g)
Pearl millet	Luvhele	Luvhele	18	18
Sorghum	Makhaha	Lushalane	25	35
		Magodwane	1	
		Tshikotame	6	
		Lutende	3	
Cowpea	Nawa	Luti	26	29
		Nawa ya mulomu mutshu	3	
Groundnut	Nduhu	Nduhu	13	13
Coriander			1	1
Mungbean	Thumbe	Thumbe	2	2
Wheat	Korong	Gwara	4	4
Moringa	Moringa	Moringa	2	2
Bambara	Phonda	Tshena	1	6
		Tshuku	5	
Tapary bean	NawaTapara	Tapara tshena	10	10
Pumpkin	Mafhuri	Madzungu	26	26
Calabash	Maranga	Ngota	3	17
		Maranga	14	
Sweet sorghum	Nkhwe	Nkhwe	7	7
Maize	Tshikoli	Tshikundanwedzi (red)	2	45
		Mutonga (dark red)	5	
		Tshikolitshitsena (white)	20	
		Tshikolitshitshuku (yellow)	16	
		Tshitavhatshindi	2	
Watermelon	Mabvani	Mabvani	15	23
		Ntshu-na-tshena	8	
Melon	Gwadi	Gwadi	3	3

The farmers in Gumbu indicated that they would like to receive training in novel planting and seed reproduction methods to expand their knowledge and skills.



Photo 2: Seed multiplication plot in Gumbu. Credit: Bioversity International/R.Vernooy

In 2017, farmers in the Eastern Cape could not harvest enough seeds from the regeneration plots due to lack of rains and due to irregular monitoring given the distance from their respective villages to the town of Sterkspruit where the community seed bank is located. Based on this experience the farmers decided to adopt a new strategy whereby they multiply priority crop varieties stored in the community seed bank on their own farms. This makes regular monitoring much easier. After the harvest, the farmers bring new quantities of seeds to the community seed bank for storage and possibly, exchange. This new strategy includes sowing, weeding, harvesting, cleaning and storage of seeds. Selected crops included Bambara nut, cowpea, maize, pumpkin, sorghum, watermelon and wheat. In addition to the existing inventory of 2016, the farmers brought 17 more accessions to the community seed bank. The Sterkspruit community seed bank has a large number of maize varieties which underscores the high importance of the crop; more than any other crop. One of the community seed bank farmers maintains a wealth of maize diversity on his farm, which he backs up in the community seed bank. The new 2017 accessions donated to the community seed bank are indicated in Table 1.

Table 2. New contributions to the Sterkspruit community seed bank as of July 2017 (7 farmer contributions)

Crop contribution by farmer	Common name	Local variety's name	Amount of seeds/ total weight (g)
Pumpkin	Amaphuzi	Amaphuzi amhlophe	24
Maize	Umbona	Galawe	97
Watermelon	Magapu	Amathanga	89
Maize	Umbona	Gxhebehlungulu	651
Maize	Umbona	Gxhebehlungulu	2384
Pumpkin	Amathanga	Solontsi	104
Bean	Imbotyi	Imbotyi	348
Maize	Umbona	Galawe	1167
Pumpkin	Amathanga	Solontsi	270
Maize	Umbona	Bosmaan	419
Maize	Umbona	Matinyane	202
		Gazitsekete	331
		Gxhebehlungulu	2534
		Galawe elimhlophe	100
		Galawe elibomvu	983
		Maplanka	>3000
		Gxhebehlungulu	2783
Maize	Umbona	Umbona umhlophe	500



Photo 3. Cleaning seeds to be stored in the Gumbu community seedbank.
Credit: Bioversity International/R.Vernooy



Photo 4: New seeds for the Gumbu community seed bank. Credit: Bioversity International/R.Vernooy



Photo 5: Gumbu community seed bank members register new accessions. Credit: Bioversity International/R.Vernooy

2. THE FLOW OF SEEDS: SURVEY RESULTS FROM GUMBU AND STERKSPRUIT

In order to find out how Gumbu farmers are using and benefitting from the community seed bank, the DAFF and Bioversity International team interviewed members of the community seed bank. This was done in March 2017. The main findings are presented in this section.

Results from Gumbu (n= 22; 22 women) Age: ≤36 years: 1; ≥37 years: 21

Table 3. Sources of seeds for all crop species in Gumbu for the 2016-2017 growing cycle

Crop	Self-saved	Bought from a shop	Received from relative, neighbor or friend	Received from a government agency	Other: please describe
Millet	9	1	5		1*
Sorghum and sweet sorghum	26		4		
Bean	11	5	4		1*
Sweet potato				2	
Bambara nut	7	3			
Ground nut	5	7			
Cowpea	16	1	2		
Maize	15	21	4	10**	3*
Melon	20	4	4		
Water melon	21	5	1		
Pumpkin	12	1	3		
Okra	1	4		6	
Calabash	6	3	1		
Squash	2	2		1	
Beetroot		6			
Onion		7			
Spinach		7			
Radish		1			
Carrot		2			
Tomato		8			
Cabbage		4			
Mochina (Chinese spinach)		7			
Chilli		5			
Green pepper		2			
Nightshade	2		2		
Garlic	1	1	2		
Green beans	4	4			
Total	168	111	32	19	5

*Hawkers from Zimbabwe. **White maize

Table 4. Origins of seeds by crop variety used in the 2016-2017 growing season in Gumbu (N=16)*

Farmer	Self-saved	Shop	Kin	Government	Other	Total
1	5	1		1		7
2	4	4	4			12
3	5	2		1		8
4	6		3			9
5	5					5
6	8					8
7	3	12	1	3		19
8	12	11		2		25
9	13	16	5	1		35
10	11	14	7	1		33
11	7	5	8			20
12	12	16	5	2		35
13	8	2	1	1		12
14	5	4		1		10
15	3	8		1		12
16	7		1	1		9
Total	114 (46%)	85 (34%)	35 (14%)	15 (6%)		249 (100%)
Average # crops by farmer	7	5	2	1		16

*N=16. Six interviewees answered this question as a group and individual numbers could not be retraced from the survey form.

The findings (Tables 3 and 4) indicate that Gumbu farmers continue to rely overwhelmingly on local seed sources with an important role played by local shops for the majority of the interviewed farmers. Vegetable production is an important activity in Gumbu; farmers obtain vegetable seeds predominantly from the local shops. Government sourced seeds play a limited role in Gumbu, in particular for maize. Hawkers (from Zimbabwe) play a small role; perhaps farmers swap local products for seeds from across the border (this could be further researched). All interviewed farmers obtain their seeds from at least two sources. Having diverse seed sources can be important for maintaining seed security. The findings also show the large range of number of crop varieties that farmers use, from a minimum of five to a maximum of 35, with an average of 16, which is a relatively high number.

For the following questions, interviewees were allowed to give multiple answers. The number of common responses is provided in brackets.

Challenges faced in obtaining seeds

- Seeds are often scarce (8)
- Seeds are attacked by pests and diseases (7)
- Lack of funds to purchase new, improved varieties (3)
- Lack of rain (3)
- No obstacles (1)

These responses suggest that Gumbu farmers continue to face multiple challenges in accessing good quality seeds.

Expectations about the community seed bank

- Store and conserve more seeds of our indigenous crops (22)
- Reduce seed loss due to pests and diseases (7)
- Share and exchange seeds (7)
- Obtain seed that I do not have (2)
- Exchange information (2)
- Receive seeds from the community seed bank (2)
- Help to improve production (1)
- Do something useful for the community and respond to people's needs for seeds (1)

These responses indicate that for Gumbu the conservation function remains the most important, followed by the sharing and exchange function.

Were expectations about the community seed bank met?

- Yes, everything is going well. (8)
- Yes, we managed to store seeds in bulk in the community seed bank instead of each of us storing a small amount of seeds individually. (6)
- Not yet met, because I am a new member. (3)
- Not yet met, as I have not yet harvested any crops planted with seeds from the community seed bank. (2)
- Slowly but surely the community seed bank is growing and if we continue planting and conserving seeds it will grow more. (1)

Overall, Gumbu farmers expressed satisfaction about the work done by the community seed bank so far. Some have recently joined and are still waiting to reap the first benefits.

Now that the community seed bank is up and running, what benefits have you received so far?

- Our seeds are stored safely. (10)
- We have learned new seed storing techniques. (6)
- More seeds are stored in our community. (5)
- We have harvested some seeds of our landraces from our seed reproduction plot and stored them in the community seed bank. (3)
- We have exchanged useful information about seeds. (2)
- We have enjoyed good times together. (1)

Gumbu farmers have enjoyed a number of benefits including the community seed bank being a means to meet and have a good time together (promoting social cohesion).

Seed deposits and withdrawals since the establishment of the community seed bank

- There was not enough seed yet to receive seeds (4)
- As a new member, I deposited 500g red maize, 5 kg white maize and 2 kg sorghum. (1)
- As a new member, I deposited black and white pumpkin and Moringa seeds. (1)
- I deposited some seeds of Jugo bean, watermelon, millet etc. I received some seeds and planted them. (1)
- We have made many deposits, to give a few examples: sorghum (0.75 kg), pumpkin (0.75kg), black-eye cowpea (0.75kg) and we have received, for example, tapary bean. (1)
- I received some maize and sorghum. (1)
- I received some seeds (small amount). (1)

Gumbu farmers have made many deposits since the establishment of the community seed banks. Withdrawals have been few. Farmers have yet to explore this function.

Challenges with the seed flow in the community seed bank

- There is a lack of awareness raising about the community seed bank. (1)
- Some seeds have a poor germination rate and some are affected by pest and disease. (1)
- It is difficult to obtain seeds of Bambara nut from our harvest and sometimes even from other farmers. (1)
- There was some weevil damage in the plastic bottles of the community seed bank.
- Some seeds have pest and disease problems. (1)
- We still have not solved the water supply to the community seed bank. (1)

Gumbu farmers are clear about the challenges that the community seed bank is facing

Expected benefits for 2017 and following years

- Store more of our seeds. (9) (Photo 6)
- Solve the electricity problem of the community seed bank and get the water pump connected. (8)
- Obtain more training in seed management. (7)
- Obtain indigenous seeds from DAFF and other countries. (6)
- Exposure visits to other community seed banks. (6)
- Multiply more of the seeds in the community seed bank including of seeds that are hard to find. (4)
- Produce more seed and sell some to earn money. (4)
- Reproduce seeds so that we all can get more seeds to plant on our farm. (3)
- Obtain seeds of varieties that I have lost/that I do not have. (2)
- Increase crop production. (2)
- Exchange seeds. (1)
- Improve the quality of seeds. (1)
- Provide new varieties. (1)
- Distribute seeds stored in the community seed bank to farmers who need them. (1)
- Obtain peanut seeds and orange (tree) seedlings. (1)
- Obtain pesticides. (1)

They are also very clear about what they expect from the community seed banking efforts.



Photo 6: New seeds for the Gumbu community seed bank (September 2017). Credit: Bioversity International/R.Vernooy

Results from Sterkspruit (n= 11; 4 women, 7 men) Age group: ≥37 years: 11

Table 5. Sources of seeds for all crop species in Sterkspruit for the 2016-2017 growing season

Crop	Self-saved	Bought from a shop	Received from relative, neighbor or friend in the village	Received from a government agency	Other: please describe
Maize	15	5	4		
Bean	9		2		
Pumpkin	9		4		
Calabash			1		
Potato	2	3			
Pea	4		1		
Sorghum	3		2		
Spinach		4			
Beetroot		3			
Carrot		2			
Onion		1			
Watermelon	3	1	1		
Cowpea	3		3		
Wheat	1		1		
Cabbage		3			
Rhubarb		1			
Sweet potato	1				
Tomato		1			
Total	50	24	19		93

Similar to Gumbu, these findings (table 5 and table 6 on the next page) indicate that Sterkspruit farmers continue to rely overwhelmingly on local seed sources with an important role played by local shops while government and other sources play no role at all. Sterkspruit farmers use less crop diversity (18 crops) and fewer seed sources than Gumbu farmers and thus appear less seed secure than Gumbu farmers: about half of the interviewed farmers rely on only one seed source. The findings also show the range of number of crop varieties that farmers use to be less than in Gumbu, from a minimum of one to a maximum of 21, with an average of eight, which is a half of the average of Gumbu.

Table 6. Origins of seeds used in the 2016-2017 growing season in Sterkspruit (N=11)*

Farmer	Self-saved	Shop	Kin	Government	Other	Total
1	3	6				9
2	9					9
3	3					3
4	3	2				5
5	6	1				7
6	8	5	8			21
7	7	3				10
8	7	7	7			21
9	1					1
10			4			4
11	3					3
Total	50 (54%)	24 (26%)	19 (20%)	0 (0%)	0 (0%)	93 (100%)
Average # crops per farmer	4.5	2.2	1.7	0	0	

For the following questions, interviewees from Sterkspruit were allowed to give multiple answers. The number of common responses is provided in brackets.

Challenges faced to obtain seeds

- No. (8)
- Drought. (2)
- Some of my maize was eaten by livestock. (1)
- Our yards are small and newly developed. (1)

Expectations about the community seed bank

- Conservation in a safe place and multiplication of indigenous seeds so that in times of seed loss the community seed bank can supply new seeds. (8)
- Obtain enough seeds and sell them. (5)
- Acquire new knowledge and skills in agriculture. (3)
- Obtain better quality seeds. (2)
- Exchange information among farmers. (2)
- Develop the community. (2)
- Contribute seeds of traditional varieties. (2)
- Obtain seeds that I lost. (1)
- Share seeds with farmers from other villages. (1)
- Assist those who need seeds. (1)
- Have a good harvest. (1)

Similar to the farmers in Gumbu, farmers in Sterkspruit consider the conservation function as the most important. However, they are also interested in producing and selling seeds.

Were expectations about the community seed bank met?

- Yes. (7)
- No, because no seeds have been distributed yet. (2)
- I only joined recently. (1)
- No, because the members of the community seed bank are not united and do not meet often. (1)

Now that the community seed bank is up and running, what benefits have you received so far?

- New knowledge and skills about the management of seeds (from officials and other farmers). (5)
- Safe storage of seeds. (3)
- Not much yet as the community seed bank has no land to reproduce seeds. (3)
- Multiplication of seeds on our own land (encouraged by the officials). (2)
- It has improved my livelihood. (1)

Seed deposits and withdrawals since the establishment of the community seed bank

- No withdrawals have been made yet. (6)
- We have just started to multiply seeds, but in our own fields. Once harvested more seeds will be returned to the community seed bank. (2)

After the failed attempt to reproduce seeds on the land of the community seed bank facility, farmers have started to reproduce seeds on their own farm. They seem optimistic that this strategy will be more successful.

Challenges with the seed flow in the community seed bank

- None. (5)
- Lack of awareness raising. (3)
- People do not know about the community seed bank. (1)
- Lack of communication among the members of the community seed bank. (1)

Farmers face some challenges in taking the activities of the community seed bank to a more dynamic level and larger scale.

Expected benefits for 2017 and following years

- Multiply seeds of good quality and sharing among members of the community seed bank. (7) (Photos 7 on page 21, photos 8 and 9 on page 22)
- Multiply seeds and sell some of them. (6)
- Obtain more technical advice from the officials. (2)
- Good harvest. (10)
- Improve the communication among farmers. (1)
- Make more people aware about the community seed bank. (1)
- Obtain an irrigation system to produce more seeds (drought is affecting the region). (1)
- Obtain herbicides to control weeds. (1)
- Exposure visit to other community seed banks. (1)
- Community development. (1)

Farmers are very clear about their expectations, which include continuing the conservation efforts, starting to work on improving access and availability of seeds, and strengthening communications and awareness raising.



Photo 7: New seeds for the Sterkspruit community seed bank (September 2017). Credit: Bioversity International/R.Vernooy



Photo 8: Seed multiplication on the farm of one of the community seed bank members, Sterkspruit. Credit: Bioversity International/R.Vernooy



Photo 9: Seeds harvested on the farm of one of the community seed bank members, Sterkspruit. Credit: Bioversity International/R.Vernooy

3. SHARING DIVERSITY: THE FIRST COMMUNITY SEED BANKS EXCHANGE WORKSHOP

In August 2017, the Department of Agriculture, Forestry and Fisheries through the Directorate: Genetic Resources, sub directorate: Plant Genetic Resources, in collaboration with the Mutale district of Limpopo province organized a traditional seed/food fair event and information sharing workshop, in Gumbu and at the Tshipise Forever resort (located about 90 km west of Gumbu), respectively, to encourage farmers to exchange seeds and knowledge; and learn from each other about the crop diversity from their provinces. Farmers and officials from Eastern Cape (Sterkspruit), North West (Jericho), Free State (Thaba Nchu) and Northern Cape (Kuruman) and farmers from nearby villages to Gumbu attended and participated in the dynamic and joyful event.

Traditional seed and food fair

The traditional seed and food fair was conducted at the Gumbu community seed bank on 29 August 2017. The purpose of the seed and food fair was for Gumbu and Sterkspruit farmers to share their community seed banking experiences through the exchange of knowledge, seeds and food recipes among the two community seed banks and with farmers from North West, Free State and Northern Cape Provinces. Farmers from Gumbu and Sterkspruit prepared different types of traditional foods for display and tasting; they also brought seeds to put on display (Photo 10).

During the event, all attendees were given a chance to view and taste the food prepared by farmers, and ask for information about ingredients and recipes. Participating farmers explained how they prepared their food and which seeds were used. Farmers from Gumbu and Sterkspruit each had prepared a diversity kit (a seed diversity basket) as a way to exchange and promote traditional seeds and related indigenous knowledge. Representative farmers from Gumbu and Sterkspruit gave brief presentations about their experience to date with community seed banking highlighting achievements and challenges. With regard to the seed and food fair, they observed that the food recipes and seed diversity from the two provinces are different which allowed them to experience new recipes and become familiar with “new” seed diversity. They confirmed that were more determined than ever to conserve their unique traditional seeds, ensure that they are recognised through exchanges and conserved through the well-functioning of the community seed banks in their communities.



Photo 10: Food fair and seed exchange at the Gumbu celebration. Credit: DAFF.

Information sharing workshop

The information sharing workshop took place on 30 August 2017 at Tshipise Forever Resort, Limpopo Province, where a total of 45 farmers, 5 officials from North West, Northern Cape, Eastern Cape and Free State and 6 officials of the Department of Agriculture, Forestry and Fisheries officials attended the workshop (Photo 11 on page 25). The purpose of the day was to provide farmers with a platform to share their experiences of community seed banking and reflect on their relevance. Farmers pointed out that community seed banks are key to:

- Conserve local seed varieties within the community
- Identify multiplication sites for local seed varieties that are rare and unique
- Prevent genetic erosion
- Preserve cultural and historical values.

Participants reflected back on how the pilot sites were selected and why they were selected. The methods used to select areas where community seed banks were to be established were:

- **Transect walk** in the village(s) to check the diversity in the fields
- **4 cell analysis** to identify specific features of crop diversity in the village: total number of crops cultivated, by number of household and by area, and trends over time; and identification of crops that have disappeared

- **Venn diagram** to analyse seed system actors and their relationships (or absence of relationships), and identify institutional barriers; identify actual potential roles and ways to strengthen cooperation and support to farmers seed systems
- **Seed system network mapping and analysis** to identify seed exchange patterns and custodian farmers; and to identify bottlenecks
- **Seed diversity fair** to display local diversity and share knowledge and seeds among participants; to raise awareness about the value of agrobiodiversity; and to celebrate local and traditional agrobiodiversity
- **Food fair** to display local food diversity and share knowledge and food among participants; to raise awareness about the importance of seed diversity for food diversity; to celebrate local and traditional food diversity.

During the workshop the outcome of the above exercises was presented, indicating how the diversity in both Provinces is being lost at a high rate and recommending that precautionary measures need to be taken. The establishment of the community seed banks in Gumbu and Sterkspruit was based on the findings of the situational analysis. In terms of varietal diversity, it was found that in Gumbu there were 168 varieties and 114 in Sterkspruit before the community seed banks were established.



Photo 11: Participants of the workshop at the Tshipise Forever resort. Credit: DAFF

Individual farmers, representing farmers from Gumbu, Sterkspruit, Free State Province, Northern Cape Province and North West Province were given an opportunity to share their experiences about the establishment of the community seed banks or plans to establish one. Responses from the Sterkspruit farmers were that they would like to have a relationship with Gumbu farmers where they could share ideas and information on their traditional knowledge as far as the crops are concerned. They applauded the good work done by the Gumbu farmers, highlighting that it is done by both old and young women and maintaining the community seed bank in very good order. One of the Sterkspruit farmers also emphasized that in Gumbu there is a diverse food chain with a large diversity of crops. The Gumbu community seed bank serves as a good example to motivate them to work hard as the Gumbu farmers. Gumbu farmers thanked DAFF, Bioversity International and the Provincial officials for offering them an opportunity to showcase their work and for sharing their experience with other farmers from the other three Provinces. They also indicated that they need to expand their community seed bank and for that to happen they will need to work hard. A farmer from Gumbu said: *"...if farmers don't work hard they will starve. The indigenous foods can assist in reducing poverty. Women need to be encouraged to continue farming so as to feed the nation"*. Here is some of the feedback received from farmers in the Provinces where the process to establish community seed banks has recently started or will start in the near future.

Farmers from Free State:

"Now we understand the concept of community seed bank. At first, we did not have a clear picture of what it is."

"We are impressed about how the Gumbu community seed bank functions and how this can help in improving the indigenous knowledge."

"We now have knowledge how a community seed bank is established, its importance and purposes."

"We saw diversity of seeds, some of which we thought do not exist anymore; and the foods were delicious and healthy."

"We would love to have a community seed bank in the Free State as indigenous knowledge is slowly disappearing due to new varieties introduced and many other factors."

Farmers from Northern Cape:

"We learned a lot about the functioning of community seed banks, especially about the importance of conserving traditional seeds."

"We think that it is important to revive the traditional ways. These ways should be encouraged among the youth."

“Traditional food is vital for human well-being, for example, the Moringa that was given: the Gumbu farmer explained the health benefits of the Moringa.”

“It is important to maintain our natural resources and not lose our tradition.”

An official from North West:

“Economic empowerment of farmers: the economy starts at the household and through activities of a community seed bank poverty can be reduced, for example, farmers can sell their crops to generate income or use them for household consumption (and thus save money).

Indigenous knowledge: we have lost our tradition and have adopted the western life style. By having community seed banks, we can help the new generation to learn the indigenous knowledge and continue to restore it. There is a need for strong support to community seed banks by officials from different provinces.

Production for food security: farmers can multiply seeds and obtain enough material and share among themselves, but they will need to keep production in mind. They will need to follow production standards and protocols and ensure that phytosanitary requirements are taken into account. What are the requirements for seed exchange? The traditional seed system is not yet regulated.”

Some of the publications resulting from the work were on display at the workshop. Participants were eager to review them. Farmers expressed appreciation for the publication of the booklet of traditional food recipes following the organization of the food fairs in Mutale and Sterkspruit. They asked if they could register other recipes. The DAFF team suggested that there could be a new edition that hopefully can include new recipes from other provinces as well. The booklet aims to highlight and celebrate food prepared by farmers using the very same seeds from their community and community seed banks.

4. SCALING OUT EFFORTS

Seed saving is a practice that farmers and their families have been engaged in for millennia. This practice has allowed them to cultivate and contribute to the evolution of a large number of varieties which are adapted to different local environmental conditions such as water shortage, strong winds, and limited soil nutrients. Farmers need viable seeds for the survival of their household. The ways that farmers obtain seed are as old as agriculture. Most small-scale farmers in developing countries routinely save their seed from one harvest to the next. Currently, approximately 60-70 percent of seed used by these farmers is still saved on farm (FAO 2004). Most of the remaining seed is obtained from local sources through seed exchanges and purchases from farmers in other communities (Almekinders et al., 1994). Women play important roles as seed custodians (Pionetti 2006). The research findings in South Africa are very similar to these observations.

Climate change can have a significant impact on crop's productivity. Growing local varieties, which have a high degree of genetic diversity, is a potentially important adaptive strategy because these varieties have the ability to better withstand and adapt to environmental stresses and changes (FAO 2010). Setting up community seed banks should be able to help farmers to develop, conserve and acquire varieties that are adapted to local conditions. Often these varieties are not accessible through formal seed systems, or they may be too costly or they may suffer from erratic supplies (Shrestha et al. 2012). Community seed banks are local institutions that conserve and maintain locally adapted seed and planting materials for farmers. The establishment of community seed banks is imperative against genetic erosion and ultimately the disappearance of local varieties.

The DAFF and Bioversity International team identified the North West Province, Jericho area as the next site for the establishment of a community seed bank, to be started in 2017. Meetings were held with the North West Department of Rural, Environment and Agricultural Development (READ) officials and the farmers in Jericho regarding the plan of establishing a new community seed bank in Jericho village. The establishment of a community seed bank in Jericho village will assist farmers to safeguard, exchange and acquire local or traditional varieties that are adapted to local conditions. The Directorate Genetic Resources of DAFF had previously collected plant genetic materials from North West Province, in Jericho Village of the Madibeng Local Municipality. These materials were collected over the past ten years.

Initial outreach to North West Province

The purpose of the initial outreach was to conduct briefing sessions for READ officials and Jericho farmers on the establishment of a community seed bank. DAFF officials made a detailed presentation on the collections of Plant Genetic Resources in the national genebank, noting that some collecting missions were previously conducted in Bojanala district in 2004, including calabash, cowpea, maize, melon, mung bean, pumpkin, sorghum, sweet sorghum, spider flower (*Cleome hassleriana*), and watermelon. DAFF now maintains and safely conserves these collected samples at the National Plant Genetic Resources (NPGRC) for future utilization purposes and to reduce genetic erosion. Although DAFF collects and conserves local traditional crops for food and agricultural purposes, it also encourages conservation of local traditional crops by local farmers through the use of community seed banks. Discussions were held on the envisioned objectives of the establishment of a community seed bank:

- To ensure seed availability for the next planting season in the community
- To conserve local varieties thereby preventing genetic erosion
- To facilitate further evolution of local varieties through repeated cycles of exposure to environmental and farmer selection in local settings
- To maintain cultural and historical values
- To maintain sufficient genetic diversity to meet the needs of current and future utilization
- To provide a source of crop and tree genetic resources for research purposes.

The READ officials recommended Jericho village for the establishment of a community seed bank in the Bojanala District, Madibeng Local Municipality, due to high level of genetic erosion and unsuccessful crop projects in the area. In order to follow the local protocol, it was agreed that READ officials approach the local traditional authorities on the proposal and arrange a formal meeting with DAFF for further discussions and engagement. The briefing meeting with Jericho Traditional Authority and farmers was held on 26 June 2017, where DAFF made presentations on the plan to establish community seed banks and collection of plant genetic resources in Madibeng Local Municipality, Jericho village. It was indicated that DAFF, in collaboration with Bioversity International, is introducing and implementing conservation of farmers' traditional crops in South Africa through the use of community seed banks. Madibeng Local Municipality was one of the prioritized municipality for establishment of new community seed banks due to the collections conducted over ten years. Permission was granted by the Jericho Traditional Authorities to proceed with the establishment of a community seed bank and to continue with the collection of farmers' traditional crops. A committee made up of

farmers was then elected for the administration of the establishment of a community seed bank at Jericho. The selected committee will oversee all the activities of the community seed bank and arrange meetings to discuss next steps.

Site identification and selection of the community seed bank

Following a meeting held between DAFF, READ, the Traditional Authorities and Jericho farmers on the 27 July 2017, the elected committee members of the Jericho farmers, together with READ and DAFF officials, visited and inspected two proposed sites/ buildings that could be used as a seed storage facility. The farmers identified a building with two rooms, that was initially used as a crèche, as suitable for hosting a community seed bank. The building needed to be renovated by painting the walls, replacing broken windows, adjusting the roofing and replacing the broken doors. The traditional authority representative indicated that the farmers could use the building, but the challenge is water scarcity in the area. Renovation work started in the second part of 2017 and inauguration of the renewed facility is expected to take place in the spring of 2018 (Photo 12).



Photo 12: The renovated facility for the Jericho community seed bank. Credit: DAFF

Diversity assessment in Jericho

The DAFF and Bioversity International team then carried out a situational analysis along the lines of the one done for Gumbu and Sterkspruit to obtain a better understanding of the status and trends of agrobiodiversity.

Historical crop trend analysis

The purpose of this exercise was to assess what the farmers have now versus what they had 15-20 years ago and to identify how the crops (and important crop varieties) have changed throughout years, which crops are still available and which are extinct. The exercise revealed that farmers currently have and plant the following crops: Jugo beans (Bambara), groundnut, watermelon, cowpea, yellow maize, white maize, pumpkin, sweet sorghum, sorghum, bean, melon and calabash. It also revealed that white maize is the most preferred crop for human consumption and yellow maize is preferred for chicken feed. The exercise further revealed that Jugo beans, calabash and sorghum are the crops that farmers used to plant in large quantities, but no longer regard them as important (Photo 13). One of the reasons for this is because of newly introduced crops. Farmers also indicated that the other reasons for losing these crops include: changing food habits, negligence, infestations, commercial farming and new technology. They noted that children no longer want to eat calabash dishes and they throw the seeds away. However, the diversity of crops in Jericho appears relatively good considering the history of crop varieties in the area. During the discussion session, the team indicated to the farmers that it is imperative that they conserve those crops that are about to become extinct in order to minimize genetic erosion. The analysis did not include an assessment of intra-specific diversity; a task still to be done.



Photo 13: Historical crop trend analysis carried out with the community in Jericho, North West Province. Credit: Bioversity International/R.Vernooy

- **Four cell analysis for crop varieties**

This exercise was performed to identify the unique, common crops and crop varieties of species cultivated in the community to document the reasons why crop species or varieties are in a dynamic state within a community. Five questions were used:

- What varieties/crops are cultivated in large areas by many households?
- What varieties/crops are cultivated in large areas by few households?
- What varieties/crops are cultivated in small areas by many households?
- What varieties/crops are cultivated in small areas by few households?
- What crops/crop varieties have disappeared from the community?

It further facilitated the identification of the interventions for the conservation of a crop species or variety within the community. Farmers were asked to bring samples of crop varieties they are growing in order to distinguish the four categories as indicated below (Table 7 and photo 14)

Table 7. Four cell analysis of crop varieties in Jericho, North West Province

<p><u>Many households, large area</u> White maize Cowpea Calabash Pumpkin Beans Amaranthus Cat's whiskers (<i>Cleome gynandra</i>)</p>	<p><u>Many households, small area</u> Sweet sorghum</p>
<p><u>Few households, large area</u> Yellow maize</p>	<p><u>Few households, small area</u> Jugo beans Calabash Groundnuts Melon <i>Corchorus</i> (Thelele) Moringa</p>



Photo 14: Doing the 4 cell analysis exercise with the community participants in Jericho, North West Province. Credit: Bioversity International/R.Vernooy

The exercise revealed that seven seven crops, ranging from yellow maize, Jugo beans, calabash, groundnuts, melon, *Corchorus* spp and Moringa are being planted by few households in Jericho; the first six on a small area of land. This usually implies that these seven crops are the ones under threat from biodiversity loss. This was discussed with the farmers highlighting the key role of the community seed banks to conserve these crops.

- ***Seed network mapping by important crops***

The seed network mapping by important crops exercise was carried out to help the community to evaluate the changes in its natural resources, facilitate exchange of information among different generations of community members and help farmers understand the current problems in a historical context. The importance of seed networks and exchange of knowledge on the way in which communities maintain varieties, and the fact that most farmers maintain their own seeds and regard seed exchange as a secondary option, raises important questions about the ways in which variety identity is appreciated and maintained.

Farmers mapped maize and watermelon seed exchanges (Photo 15) by asking individual farmers where they obtain their seeds and with whom the exchange seeds. The results of this exercise indicated that farmers' seed networking in the area is very weak with limited

connections and infrequent exchanges of seeds. This weak seed network suggests that accessing new crop diversity in Jericho could be a challenge. Once the community seed bank is established in this area, there will be an expected increase in seed varieties and exchanges; and farmers will be given training on how to manage a community seed bank. The training will help farmers to identify crops, clean seeds, store seeds, document the collection and multiply seeds.

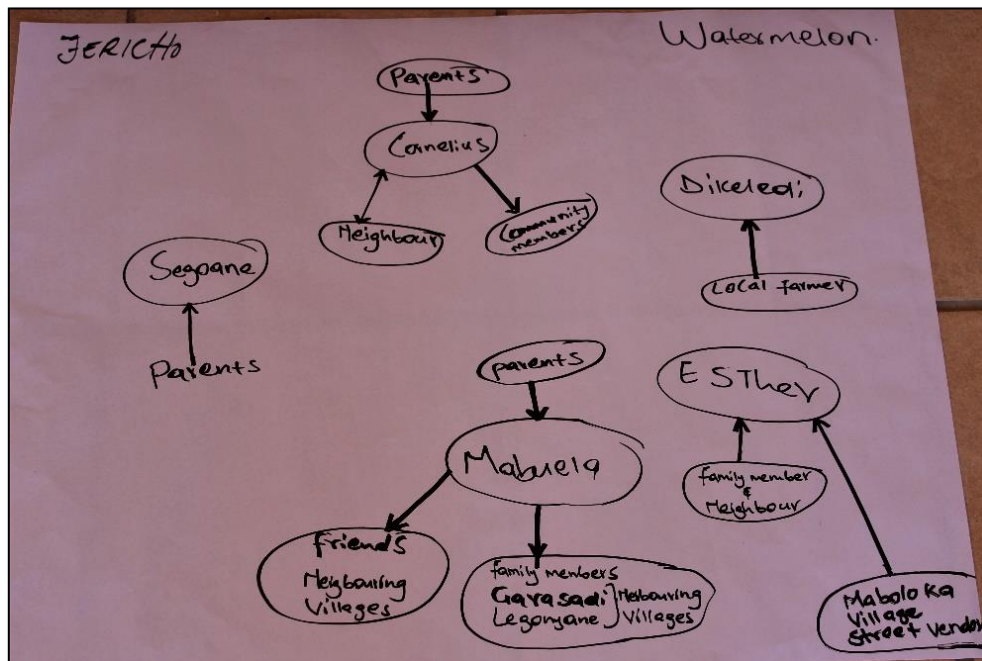


Photo 15: Seed exchange map for watermelon, Jericho.
Credit: Bioversity International/R.Vernooy

- **Farmer questionnaire**

A survey with questionnaire was conducted to investigate factors influencing farmers' choice of crop variety, seed source, and strategy for seed security (see Annex 1 for the questions asked) (Photo 16 on page 35). Some of the survey responses indicated that most farmers in the area are planting new and introduced crop varieties, but they are still maintain the traditional seeds. Table 8 presents an overview of the crop and tree diversity in Jericho (based on ten surveyed farmers) totalling 29 species (the number of varieties was not asked). Most of the surveyed farmers stated that they engage in some exchange of seeds and related knowledge, but only two stated that they carry out some experimentation to improve crops. Farmers explained that they maintain diversity for a number of reasons including family heritage, food security, cultural and religious values and adaptation to climate stress. All surveyed farmers expressed interest in maintaining and strengthening their crop diversity through better collaboration with farmers, with researchers and through the establishment of

a community seed bank. Among the major challenges faced, farmers mentioned: water scarcity, land scarcity, no fencing, birds, aphids and changing weather patterns.

Table 8. Crop and tree diversity on farm in Jericho indicated by survey respondents (n=10: 7 women, 3 men)

Vegetable crops		Grain crops		Fruit trees	
Crop names	# of farmers	Crop names	# of farmers	Crop names	# of farmers
Pumpkin	6	Maize	9	Orange	3
Tomato	6	Means	3	Peach	5
Beetroot	2	Watermelon	5	Guava	4
Hot chilli	3	Cowpea	3	Lemon	2
Moringa	1	Calabash	3	Mango	6
Green pepper	2	Bambara groundnut	1	Mint	1
Calabash	1			Fig	1
Spinach	1			Grape	1
Calabash	1			Pomegranate	2
Amaranth	2				
Spider plant	2				
Onion	2				
TOTAL SPECIES	12		6		9



Photo 16: Answering the farmer questionnaire, Jericho.
Credit: Bioversity International/R.Vernooy

5. OUTREACH ACTIVITIES

Apart from the fieldwork in South Africa, the DAFF and Bioversity International team also participated in a number of international events where the experiences and lessons learned from this project were shared with others working on conservation and sustainable use of plant genetic resources. This section summarizes the main events where this occurred.

Rome, Italy: International workshop on community seed banks

On 22 September 2017, during a one day workshop about community seed banks in the world, held at the Food and Agriculture Organization of the United Nations (FAO) in Rome, Italy, hosted by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA), Ronnie Vernooy (Bioversity International) made the presentation on “Community seed banks: achievements and challenges” referring to the work conducted in South Africa, in particular highlighting the role of the Plant Genetic Resources Centre of South Africa and its efforts to establish a national network of community seed banks. There are only a few countries in the world with a similar kind of effort and experience (some federal states of Brazil, Bhutan, Ethiopia, Nepal). A workshop report is being finalized by DIVERSIFOOD (<http://www.diversifood.eu/>). The workshop programme and a brief info note can be found here:

<http://www.diversifood.eu/community-seed-banks-sharing-experiences-from-north-and-south/>

[https://mailchi.mp/diversifood/diversifood-high-quality-food-systems-newsletter-6?e=\[UNIQID\]#mctoc4](https://mailchi.mp/diversifood/diversifood-high-quality-food-systems-newsletter-6?e=[UNIQID]#mctoc4)

On 21 September 2017, during a one day workshop about community seed banks in the global North and the global South organized by DIVERSIFOOD and partners in Rome, Italy, Ronnie Vernooy, building on the experiences gained in South Africa and other countries, made a presentation about a proposal for a global community seed bank platform. The idea behind this proposal is to connect community seed banks and their supporters globally and offer technical, organizational and policy support. National networks under development, such as in South Africa, could be linked to the platform and play an active role.

Kigali, Rwanda: Seventh Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture

The book edited by Ronnie Vernooy, Pitambar Shrestha and Bhuwon Sthapit “Community seed banks: origins, evolution and prospects” (2015) including the South Africa case study,

was presented at a side-event at the Seventh Session of the Governing Body of the International Treaty on Plant Genetic Resources for Food and Agriculture (Plant Treaty) in Kigali, Rwanda, in October 2017. The side event aimed to share experiences of community seed banks around the world, strengthen their functioning and obtain more support. Resolutions adopted at the Seventh Session of the Governing Body of the Plant Treaty mark the increasing awareness among the Contracting Parties of the value and importance of community seed banks in fulfilling the objectives of the Plant Treaty on the conservation and sustainable use of crop genetic diversity for food security. The Governing Body invites the countries that are Contracting Parties to promote sustainable biodiverse production systems and facilitate participatory approaches such as community seed banks, along with a range of other supportive measures. Although South Africa is not a Contracting Party to the ITPGRFA, the work on community seed banks that is underway is inspiring many people around the world while at the same time the DAFF and Bioversity International team benefits from other experiences. The workshop report can be found at:

http://www.diversifood.eu/wp-content/uploads/2017/09/DIVERSIFOOD-Community-Seed-Banks-Workshop-Sept-22nd-2017_v17-9-5.pdf

Johannesburg, South Africa: South African national seed dialogue and celebration

On 8 and 9 December 2017 the African Centre for Biodiversity (ACB) organized a national seed dialogue and celebration at Constitution Hill in Johannesburg. The well-attended and lively event aimed to celebrate the important roles of smallholder farmers in conserving and adapting agricultural biodiversity, exchange experiences and ideas about important seed issues (access, availability, quality, improvement and adaptation to climate change, variety registration and release, breeders' and farmers' rights), and reflect on and debate about the possibilities for alternative food and seed systems. Among the participants were farmer representatives from eight provinces, among whom three farmers of the Sterkspruit community seed bank (members of the Gumbu community seed bank were invited, but encountered transport problems), civil society organizations, academics, officials from the Agricultural Research Council (ARC) and the Department of Agriculture, Forestry and Fisheries (DAFF), and representatives of international partners organizations, including Bioversity International.

Throughout the two days, the three farmers of the Sterkspruit community seed bank shared their experiences in plenary and group discussions about setting up and managing a community seed bank. They highlighted what they had gained and learned so far from the

collaboration with DAFF and Bioversity International, emphasizing the importance of community-led seed saving and exchange of traditional varieties (Photos 17 and 18).

On the second day, Thabo Tjikana (DAFF) and Ronnie Vernooy (Bioversity International) made presentations about how to effectively manage the different activities of a genebank, about the strengths and challenges of participatory plant breeding, and about farmer-led seed production and marketing and alternative seed quality control mechanisms.

A narrative report of the event can be found at: <https://acbio.org.za/en/seed-laws/publication/2018/celebrating-smallholder-farmers-and-seed-diversity-south-africa-report>



Photo 17 (left): Community seed bank poster and seed display at the South African national seed dialogue and celebration

Photo 18 (right): Plenary intervention by Sterkspruit farmer Mr. Landu. Credits: Bioversity International/R. Vernooy

6. NEXT STEPS

In 2018, the results in the three sites will be consolidated through additional awareness raising, capacity development and outreach activities while an additional component, participatory crop improvement, will be added.

PUBLICATIONS

(2013-March 2018)

Articles

Tjikana, T.; Malueke, N.; Mokoena, M.; Vernooy, R.; Sthapit, B. (2016) Community seed banks: farmers' platform for crop conservation and improvement. *GRAIN/GRAAN South Africa*. <http://hdl.handle.net/10568/79179>

Vernooy, R., Sthapit, B., Otieno, G., Shrestha, P. and Gupta, A. (2017) The roles of community seed banks in climate change adaptation. *Development in Practice*, 27:3, 316-327, DOI: 10.1080/09614524.2017.1294653

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/>

Books and book chapters

Maluleke, N.L., Moila, P., Phora, G., Dibiloane, M.A., Vernooy, R., Sthapit, B. (2015) *Indigenous food recipes*. Department of Agriculture, Forestry and Fisheries, Directorate: Plant Genetic Resources, Pretoria, South Africa. [Not available online]

Vernooy, R., Sthapit, B., Bessette, G. (2017) Community seed banks: concept and practice. Facilitator handbook. Biodiversity International, Rome, Italy and Department of Agriculture, Forestry and Fisheries–Directorate: Plant Genetic Resources, Pretoria, South Africa. <https://www.biodiversityinternational.org/e-library/publications/detail/community-seed-banks-concept-and-practice/>

Vernooy, 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. Vernooy, P. Shrestha and B. Sthapit (Eds.) *Community seed banks: origins, evolution and prospects*. Routledge, Oxon, UK and New York, USA, pp. 254-258. Available:

<http://www.biodiversityinternational.org/e-library/publications/detail/community-seed-banks-origins-evolution-and-prospects/>

Vernooy, R., Bessette, G., Sthapit, B., Dibiloane, A., Maluleke, N.L., Matelele, L.A., Mokoena, M., Phora, G., Sema, P., Tjikana, T. (2018) How to develop and manage your own community seed bank. Farmers' handbook. Booklet 1: Establishing a community seed bank Biodiversity International, Rome, Italy and Department of Agriculture, Forestry and Fisheries–Directorate: Plant Genetic Resources, Pretoria, South Africa. <https://www.biodiversityinternational.org/e-library/publications/detail/how-to-develop-and-manage-your-own-community-seed-bank-farmers-handbookestablishing-a-commun/>

[also available in French and Spanish]

Vernooy, R. Bessette, G., Sthapit, B, Gupta, A. (2018) How to develop and manage your own community seed bank. Farmers' handbook. Booklet 2: Technical issues. Biodiversity International, Rome, Italy and Department of Agriculture, Forestry and Fisheries–Directorate: Plant Genetic Resources, Pretoria, South Africa. <https://www.biodiversityinternational.org/e-library/publications/detail/how-to-develop-and-manage-your-own-community-seed-bank-farmers-handbooktechnical-issue/>

[also available in French and Spanish]

Vernooy, R., Bessette, G., Sthapit, B., Porcuna Ferrer, A. (2018) How to develop and manage your own community seed bank. Farmers' handbook. Booklet 3: Management, networking, policies and a final checklist. Biodiversity International, Rome, Italy and Department of Agriculture, Forestry and Fisheries–Directorate: Plant Genetic Resources, Pretoria, South Africa. <https://www.biodiversityinternational.org/e-library/publications/detail/how-to-develop-and-manage-your-own-community-seed-bank-farmers-handbookmanagement-networkin/>

[also available in French and Spanish]

Briefs

Gómez César, M.; Sthapit, B.; Vernooy, R. (2016) Safeguarding local crop knowledge: the use of community biodiversity registers. Biodiversity International, Rome, Italy; Department of Agriculture, Forestry and Fisheries, Pretoria, South Africa. Available: <http://hdl.handle.net/10568/78415>

Tjikana, T.; Dibiloane, A.; Maluleke, N.; Moila, P.; Phora, G.; Sthapit, B.; Vernooy, R. (2016) Sharing diversity: establishing and supporting community seedbanks in South Africa (pilot phase 2013-2015). Biodiversity International, Rome, Italy; Department of Agriculture, Forestry and Fisheries, Pretoria, South Africa. Available: <http://hdl.handle.net/10568/78666>

Tjikana, T.; Dibiloane, A.; Maluleke, N.; Moila, P.; Phora, G.; Sthapit, B.; le Vernooy, R. (2017) Go hloma le go thekgamafelo a bobolokelobjapeu Afrika Borwa: tšwelopele le diphihlelelotšakaroloyalesolo la 2013–2015 [Pedi 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.

Tjikana, T.; Dibilwane, A.; Maluleke, N.; Moila, P.; Phora, G.; Sthapit, B.; Vernooij, R. (2017) U thomiwana u tikedzwa ha mbulungeloyambeu (dulu) yatshitshavha Afrika Tshipembe: mvelephandanzwoswikelelwahokhatshipidathangeli 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.

U-Thabo Tjikana, u-Angeline Dibilwane, u-Nkat Maluleke, u-Percy Moila, u-George Phora, u-Bhuwon Sthapit kunye no Ronnie Vernooij (2017) Ukumiswa kunye nokuxhaswa kweebhanki zembewu zasekuhlaleni eMzantsi Afrika: inkqubela-phambili kunye neempumelelo zesigaba sokulinga 2013–2015 [Xhosa 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.

Vernooij, R. (2015) The women's seed bank. Women for Expo/Expo Milano 2015. Available: <http://www.we.expo2015.org/en/news/womens-seedbank>

Vernooij, R. (2015) Seeds of adaptation: climate change, crop diversification and the role of women farmers. Gender climate brief 1. Center for International Forestry Research (CIFOR), Bogor, Indonesia. Available: <http://www.cifor.org/library/5896/seeds-of-adaptation-climate-change-crop-diversification-and-the-role-of-women-farmers/>

Vernooij, R. (2016) South Africa implements a national strategy to support community seed banks. PIM Outcome note. IFPRI, Washington DC, USA. https://www.bioversityinternational.org/fileadmin/user_upload/South_Africa_Vernooij.pdf

Reports

Vernooij, R., Sthapit, B., Tjikana, T., Dibilwane, 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. https://www.bioversityinternational.org/fileadmin/user_upload/Embracing_diversity_inputs_1698.pdf

Maluleke, N., Moila, P., Phora, G., Dibilwane, A., Vernooij, R.; Sthapit, B. (2014) Savouring diversity: first steps in implementing 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. https://www.bioversityinternational.org/fileadmin/user_upload/online_library/publications/pdfs/Savouring_diversity_first_steps_in_implementing_a_strategy_to_support_community_seedbanks_1873.pdf

Vernooij, R., Sthapit, B., Tjikana, T., Dibilwane, 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
https://www.bioversityinternational.org/fileadmin/user_upload/online_library/publications/pdfs/South_Africa_2015_report_final.pdf

Vernooy, R., Angeline Dibilane, Nkat Lettie Maluleke, Leholgonolo Matelele, Percy Moila, Mpolokeng Mokoena, George Phora, Precious Sema, Bhuwon Sthapit, Thabo Tjikana, (2017) Multiplying diversity: strengthening community seedbanks in South Africa's smallholder farming areas. Bioversity International, Rome, Italy and Department of Agriculture, Forestry and Fisheries, Pretoria, Republic of South Africa.
https://www.bioversityinternational.org/fileadmin/user_upload/Multiplying_Vernooy.pdf

REFERENCES

- Almekinders C.J.M., Louwaars, N.P., de Bruijn, G.H. (1994) Local seed systems and their importance for an improved seed supply in developing countries. *Euphytica* 78: 207 – 216.
- FAO (2004) 1. Seed diversity of crops and varieties. In: Diversity of Experiences – understanding change in crop and seed diversity. Available at: <http://www.fao.org/tempref/docrep/fao/010/ai502e/ai502e00.pdf>
- FAO (2010) The Second Report on the State of the World's Plant Genetic Resources for Food and Agriculture. Rome
- Pionetti, C. (2006) Seed Diversity in the Drylands: Women and Farming in South India. Gatekeeper 126, International Institute for Environment and Development, London. Available at: <http://pubs.iied.org/pdfs/14520iiED.pdf>
- Shrestha P., Sthapit, S., Devkota, R. and Vernooy, R. (2012) Workshop summary report. National Workshop on Community seed Banks, 14-15 June 2012, Pokhara, Nepal. Li-Bird/USC Canada Asia/Oxfam Nepal/Bioversity international. Available at: http://www.nuscommunity.org/uploads/tx_news/Community_seed_bank_national_workshop_summary_report_final.pdf

ANNEX 1. Questionnaire – Custodian farmers

The current working definition of custodian farmers is *farmers (men and women) who actively maintain, adapt and disseminate agricultural biodiversity and related knowledge at farm and community levels.*

1. How many different grain/vegetable/fruit types do you maintain on your farm?
 1. Vegetable crops:
 2. Grain crops:
 3. Fruit types:
2. Do you maintain more crop species and varieties than other households in your village?
 1. No
 2. Yes
 3. I don't know
3. Do you have some very rare or special species or varieties at your farm which others don't have?
 1. No
 2. Yes
 3. I don't know
4. Do you often share or exchange seeds with other farmers?
 1. No
 2. Yes
5. Do other farmers come to you for advice or help regarding seeds?
 1. No
 2. Yes
6. Do you experiment to improve your crops through making crossings?
 1. No
 2. Yes

A. Why do you maintain a wide range of different species and varieties at your farm?

7. My parents or forefathers have planted them and I want to keep it like it is.
 1. Very important reason for me
 2. Not important reason for me
8. I am just interested in collecting different types; it's a hobby for me.
 1. Very important reason for me
 2. Not important reason for me
9. I get better income by combining many different crop species and varieties as it gives me more certainty having income in different seasons and makes me less vulnerable to bad prices.
 1. Very important reason for me
 2. Not important reason for me

10. My family uses the fruits, seeds or leaves of some of the rare species and varieties for religious or cultural celebrations in the village or when we have family gatherings. During the celebrations fruits, seeds or leaves are consumed or used as decoration or used when we perform offerings.
- 1. Very important reason for me
 - 2. Not important reason for me
11. I grow some of the rare species and varieties because they are better adapted to the local weather and soil conditions in my village than commercial types.
- 1. Very important reason for me
 - 2. Not important reason for me
12. I grow some rare species and varieties because we use them mostly for home consumption as fresh fruits or processed into pickle, spice, jam or other products as food items made of the grains.
- 1. Very important reason for me
 - 2. Not important reason for me
13. I am concerned about the loss of diversity, we should protect it, also the rare varieties/species that gain less income.
- 1. Very important reason for me
 - 2. Not important reason for me
14. Do you think your children or a younger person will take over your conservation activities and maintain the wide range of crops that you still have?
- 1. No
 - 2. Yes
 - 3. I don't know
15. What are the difficulties that you face in maintaining different kinds of species and varieties, especially the rare and traditional types?
- 1.
 - 2.
 - 3.
16. Do you need financial support to compensate for the little income you earn from the rare species and varieties so you do not need to replace them with commercial/improved types or crops?
- 1. No
 - 2. Yes
 - 3. I don't know
17. Do you need technical support to be able to explore and developing new products from the rare species and varieties that earn little income now?
- 1. No
 - 2. Yes
 - 3. I don't know

18. Would you avoid losing rare species and varieties if you can work together with researchers to document your diversity and be involved in research?
- 1. No
 - 2. Yes
 - 3. I don't know
19. Do you have interest to meet-up with other farmers with diverse crops and exchange your knowledge and seeds with them?
- 1. No
 - 2. Yes
 - 3. I don't know
20. Do you have interest to become involved in a community seed bank to conserve and exchange local seeds?
- 1. No
 - 2. Yes
 - 3. I don't know



Bioversity International is a member of the CGIAR Consortium. CGIAR is a global research partnership for a food-secure future.
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ISBN: 978-92-9255-109-4

www.bioversityinternational.org