# Celebrating smallholder farmers and seed diversity in South Africa:

Report from the national seed dialogue and celebration

8-9 December 2017 Constitution Hill, Johannesburg



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### Introduction

On 8-9 December 2017, African Centre for Biodiversity (ACB) hosted a national seed dialogue and celebration. The purpose of the event was to celebrate the role of smallholder farmers in maintaining and nurturing seed and life in South Africa and regionally, as well as to facilitate discussion on different aspects of seed systems in South Africa. It included dialogues interspersed with drama and music, and displays and sharing of seed and literature. Participants included farmer and civil society organisation (CSO) representatives from 8 provinces, government and public sector, as well as a few farmers and practitioners from the region and internationally (see Annex 1: participant list).

Dialogues were held on the political context; seed laws and policies and proposed amendments; seed, knowledge and culture; seed banks and seed saving; smallholder farmers and crop improvement; seed management at the national gene bank; and smallholder farmers in seed multiplication and quality control (see Annex 2: event programme).

This report provides a record of the proceedings. Not all discussions were captured because there was lots of parallel discussion, but it gives a flavour of the dialogues.

# Day 1: Friday 8 December 2017

The event was opened with a ritual performance by Simo Mpapa Majola and Mojalifa Mofokeng. This performance paid homage to the feminine and the ancestors. It is the narrative of a man carrying stories and songs of women who died trying to find a prayer to a mother God. He is telling the story of the women who work on a farm who have been marginalised over and over and yet they are relentless in their search for the She God and unswerving in their connection to the soil. Following the performance Mariam Mayet, ACB Director, welcomed participants.



Simo Mpapa Majola opened with a ritual performance

# Political framing of seed in the current context

The first dialogue on political framing aimed to provoke some discussion on the current political and social context, globally and in South Africa, and the implications for work on seed sovereignty, smallholder farmers and agroecology. Open discussion followed short inputs from Zayaan Khan (Environmental Humanities, University of Cape Town); Vishwas Satgar (Cooperative and Policy Alternative Centre, COPAC); Stephen Greenberg (ACB) and Mazibuko Jara (Ntinga Ntaba ka Ndoda).

**Zayaan** from **UCT** opened with a discussion about seed as an object and seed as a relation and the connection to power in food systems in South Africa and especially in Cape Town. Seed should be thought of as a commons, as a tool for transformation.

Zayaan gave the analogy of painting a picture: if seeds are as a landscape, there is the formalised seed system on the one side, the way government sees the seed system, with its corporate domination. Then on the other side is farmer seed systems and redistributed land. How do we bridge these, what is happening?

Stephanie Swanepoel's dissertation on this topic gives a timeline in South Africa, and a history of the seed/food system. To see seed

through the laws, and that seeds need to be a certain pedigree/ quality, who decides these things, and what about those people who seed differently?

The corporate model is entrenched in our legislative frameworks and in international commitments. Any attempt to move within this policy is therefore very difficult.

But we know seed is highly contentious. How can we be able to move towards other systems?

Smallholder farmers are different and diverse, so what do they want? It's very difficult therefore to group etc. and easier to view seed systems in these large scale, systemic ways. It is also then easier for government to get input from the corporate sector.

During apartheid there were many embargoes. When this was lifted, South Africa very quickly adopted international frameworks etc., and took on a free market economy, which remains today including in our food system.

In Vandana Shiva's book "Thievery of Kanak" (gold - which is wheat) farmers use an ancient traditional system to produce wheat, which is efficient and inexpensive. It gives a view of these systems (which currently produce 99% of wheat in India through decentralised production), but the picture is poorly shown, and misrepresents what is actually taking place.

Where are the bridges? There are different places that are emerging, but it will take time, we are building relationships.

**Vishwas** from **COPAC** said that the dominant corporate industrial system is losing ground, it is losing the grip on our society. But this does not mean that as it loses power that we are automatically able to claim this power.

There are some key issues globally. Climate change and climate shocks. We are living on a new planet. The temperature is already 1 degree hotter. It is showing the weaknesses of this system. In South Africa we had to import maize. We are living through the 3rd global shock from 2014 to the present. This has compromised the food security of millions. But we can build the alternative pathway, in this moment.

Millions of people die annually, from chemicals. This is increasingly recognised. Agroecology is a technology practice of the people, of the peasant, and demonstrates we can feed ourselves through healthy choices.

Through unity and initiatives like this, we are all affirming in the national conversation that there is a systemic crisis, and there is a systemic solution. It is food sovereignty. The Food Sovereignty Act we are presenting to government relates to this. There is a network of seed banks, and there is clearly a willingness. There is a power shift, there are possibilities, the system is showing its weaknesses, there are solutions, we need to scale it up.

**Stephen** from **ACB** spoke about heightened political volatility not just in South Africa but in the region. This is unlikely to resolve quickly because it is embedded in political and governance structures. The likely result is policy paralysis and weak implementation. We are already experiencing this for a number of years, for example land reform. There is a policy that could be done but implementation is poor and it has not had much real impact.

There is an important role for smallholder farming in transformation in South Africa, on a model of decentralised production and distribution of diverse and culturallyappropriate food. Diversity in the production system as a goal, with a range of producers from small through to large, depending on crops and markets, including public sector and cooperative markets.

Smallholder farming can play a crucial role in supporting inclusion in food production systems beyond 'passive' (choice-constrained) recipients of government welfare. Social grants are used to purchase food in corporate supermarkets. We need alternatives to this. The task is to build an indigenous economy from the ground up based on the plentiful human capability and natural resources available at national and continental level.

Official policy theoretically favours smallholder farming as part of

transformation in South Africa, but in reality it is not well supported. Agricultural policy allows corporations to increase their power in the food system especially through trade, self-regulation, malls and supermarkets. It is difficult for smallholder farmers to compete with large scale commercial producers, especially when smallholders do not receive adequate or appropriate support.

Key issues for the success of a smallholder strategy are land, water and markets (not only large scale commercial markets). Markets could be based on locally diverse demand for and knowledge about niche crops. Public procurement from smallholders is supposed to be happening, how to link supply and demand, what is needed to be produced. We could look at producing a diversity of crops, not only maize, with different nutrition.

What role is there for seed? We can start with the ecological dimensions. Smallholders are more aware than others of climate change and ecological threats. They are facing drier conditions, drought, and unpredictable weather (including flooding in some places). There is a loss of agricultural biodiversity. Crops and varieties are getting lost as corporate seed (and food systems) displaces and marginalises other crops.

The whole system is channelled to supporting a few crops e.g. genetically modified (GM) and hybrid maize and soya. Public sector subsidy schemes are implemented to hand these seeds to farmers even if they are not appropriate for the conditions. To be effective these require irrigation, inputs, etc. which are not available to smallholders or which are not sustainable without ongoing subsidy to the benefit of private corporations. Regulatory, legal and institutional structuring are all geared towards supporting the formal seed system.

Globally smallholder farmers play a critical role in maintaining and reproducing agricultural biodiversity, local crops and varieties in polycultures. Even in South Africa, even though smallholders are so marginalised. Research ACB did with Surplus People Project (SPP), Trust for Community Outreach and Education (TCOE) and Farmer Support Group (FSG) showed smallholders producing over 50 different crops or varieties in very harsh conditions e.g. arid regions of Northern Cape. There is that diversity, it is fragile, but there is a base we can work with, and build up from.

This can be compared to large scale commercial agriculture which is based on monocultures. This is large areas of the same crop, the same variety. These areas of production become areas of very low biodiversity. As commercial agriculture - and in particular mono-cropping - expands, so biodiversity is reduced.

The challenge for us in these times is to integrate the social and ecological dimensions of transformation. The question is how to move away from a concentrated agro-food production system that marginalises smallholder farmers and their communities, reduces ecological diversity and poisons the environment in the process of producing food.

How do we start to make these links in our networks? Every time we do something, we should see if we are doing this on our own, or working together with others. We must build the network in practical partnerships with specific objectives. The network is not just a distraction, it is about working in different ways together.

We should contest the use of public resources, and we should seek to build links and partnerships with the public sector and government wherever possible. But in conditions of political uncertainty and paralysis, we cannot afford to sit back and wait for government to respond. We must also have a strategy of building our own networks, support and solidarity.

**Mazibuko** from **Ntinga Ntaba ka Ndoda** in Eastern Cape said that on the ground, in the village, in the inner city we are doing what we have to do to live, but when we come across blockages, and don't get responses from officials, we don't realise how this is related to power and seed. It is related to power, systems and interests.

Now we are in a situation, where the majority of people, many people will not be employed. The capitalist economic system

has developed and enriched. What do you do if you can't be employed, in this global economy? If you are without means to live, how do you become an actor, a fully developed human?

In our case, we have a democracy which has not enabled us to become actors as social and economic beings. Without accountability, we cannot talk about seed, or the range of services that should be provided to smallholder farmers, we cannot talk about public goods. Now as emerging farmers we don't have access to these things, we have a government that has forgotten for institutions to work for the public. They are mired in corruption. It is the neoliberal political centre. It doesn't matter about the party, what is consistent is a neoliberal political centre, which means that all the institutions supposed to support public goods are limited. That political class is not prepared to shift. They are now promoting corporate agriculture, at a sustained rate. Investments are taking place. The political class is so secured.

How should we think about our relations with the state? That political class is aiming to control the state. We must think within, beyond, and against the state. We give them legitimacy. That is why we need to work with the state. But at the same time, we have to go beyond the state. It is not the state that will be able to reimagine a different future in ways that make sense. Against the state, the battle is not over, e.g. in the platinum belt.



Farmers brought seed and indigenous plants for display and sharing

The presenters joined the participants in small group discussions on issues arising. Points raised in plenary after the small groups include the following:

### Research and development (R&D)

- A body like the Agricultural Research Council (ARC) has an important role to play. There is need for R&D with an agenda that can help us build seed sovereignty and agricultural biodiversity. What we've seen is a decline in the budget going to ARC. We have only a small number of experts. We could be working more with the people, decentralising expertise, and building with the people.
- When the Treatment Action Campaign (TAC) challenged the politics and the science of anti-retrovirals (ARVs), they had people who know the science, bringing effective knowledge. We need to deepen our scientific knowledge, and how this knowledge is important and useful and the challenges.

#### Production

- We could look at areas where we stay, including suburbs with water, where ground could be used rather for food gardens.
- There is a concern, we do know agroecology, but in our own spaces. But can it really work, can it really work, we need to be sure, not to be scared.

#### Organisation

- The power of collective strength, smallholder farmers are in the millions, the power of a cent, a million people with this direction, this consciousness, there is a lot of power within us. Rather than looking at the gatekeepers, we should look at the power we have to push our agenda.
- What about the word power? Since 1994 the struggle has been about service delivery. Is this a move towards partnership development? We should work with communities, to develop themselves. If we do it for people, it won't work. This would help us to take back the power. At the moment government is developing our priorities for us.
- We must focus on reawakening, we have been sleeping for too long. The old is collapsing. We need to reawaken.

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- How to build an alternative system, going beyond the state. Agroecology is a practice, a science and a movement. We are coming from different places, how do we grow this movement? We need the youth, how do we bring this into the schools. How to motivate.

### Indigenous knowledge

• The culture of ploughing, long ago, there were cattle that were ploughing in the farm. During that time rain was falling more often, but today there is nothing. When they ploughed, they didn't put fertiliser or anything. We had cows, goats, compost. We were getting a lot of food at that time. And then, when the soil was tired they would put nuts, something from Zimbabwe. There was a lot of food. They would then take all the seeds, there would be a lot of seeds, they didn't have to buy seeds. They take the seeds and put it in the roof, and not affected by the rain, because of the grass roof. Then they make a fire, and the smoke goes up to the seeds, and after that the seeds can stay for 5-7 years without rotting. Because of drought we don't have enough seeds to keep in the houses, but if we harvest even a little, we have clay pots, we take our seed, and put them in the pots, but it needs to be cleaned to keep the seeds inside. Then we take fire ash, then we sprinkle inside, and can add more seeds, and add ashes. Then you want a clay lid. Then you seal it. No pests will go there because of the cow dung, and then the seeds are protected just like that.

### Nutrition

• There are issues around malnutrition and obesity, and South Africa is leading these trends. Education must be combined with agroecology and food sovereignty, people need to understand this is a way to sustain life.

### Seed policy and South Africa's seed bills

The second dialogue was on South Africa's seed laws and policies and proposed changes. South Africa's two main pieces of seed legislation, the Plant Breeders' Rights Act (PBRA) and the Plant Improvement Act (PIA), are under review at the moment. The bills are not new legislation. They intend to replace current legislation enforced since 1976 but with new provisions. The two draft Bills threaten to restrict farmer seed rights and activities even further than they currently are under laws designed for commercial operations.

There was strong civil society and farmer response to the proposed bills, resulting in almost all provincial legislatures raising issues with the bills in Parliament. Many participants at the dialogue have engaged in submissions and public hearings, some haven't had the opportunity to participate yet.

The session discussed the main issues, responses, experiences with interacting with the process, and ways forward related to these bills.

Inputs were made by Busi Mgangxela (Ntinga Ntaba ka Ndoda), who was active in Eastern Cape on the bills and after pressure and advocacy they got the provincial government to host 3 additional hearings; Linzi Lewis (ACB) who has actively participated in ACB's work on the seed bills; Joan Sadie (DAFF: Registrar of Plant Improvement) on PIA and Thapelo Sekele who replaced Nolutando Netnou-Nkoana for DAFF: Plant Genetic Resources.



Linzi from ACB started with a short overview of the seed laws. PIA covers the trade and marketing of seed. The PBRA covers property rights on seed. It is the same at regional level which facilitates the trade of seed across borders through harmonisation. This is also the case for PBR in different ways, including though the Southern African Development Community (SADC), the Common Market for East and Southern Africa (COMESA) and the African Regional Intellectual Property Organisation (ARIPO). SADC recently passed a Plant Variety Protection (PVP) Protocol. ACB is engaging DAFF in trying to obtain the Protocol. CSOs made some gains in previous advocacy work but we suspect some may have changed again.

The laws are in the image of the European model of seed and agricultural systems which are different to most of Africa. Although South Africa differs from the rest of continent with its well-developed commercial sector, smallholder farmers still play an important role in biodiversity maintenance. The laws focus exclusively on the formal sector even though the seed and genetic materials historically are from farmer systems where there was exchange, saving and reuse.

PBRA and PIA were both developed in the 1970s. This was a different era. It is highly skewed in favour of industrial agriculture and plant breeding based on hybrid and GM varieties, and large scale monocrop commercial farming systems. There is a reliance on external inputs including fertiliser, irrigation and pesticides. There is deepening concentration in commercial seed and agrochemicals and in the food system in general. In biotech-seed-agrochemicals 6 large companies are merging. In this increasingly unequal system why is the focus still on the commercial system? It is not responding to issues of nutrition, obesity etc.

PIA regulates selling of seed and includes domestic sales and cross border trade. There are 3 aspects around variety release, certification and phytosanitary. These are based on international standards e.g. the requirement for seed to be distinct, uniform and stable (DUS) according to a set of measurable standards is not appropriate or suitable for farmer varieties. By default these seeds are criminalised and marginalised, with the result of a long term reduction of agricultural biodiversity. What is the future of food?

Where are the bills at? In the PIA bill that was shared for comment, exchange is included in the definition of sale, there is no definition of non-commercial scale for exemptions, there are exemptions but they don't really cater for farmer seed systems, they are mainly designed for home gardeners. Where is the support and recognition in these bills for farmer seed varieties, and alternative quality control and sanitary and phytosanitary (SPS) measures to include diversity?

The PBR Bill seeks to expand breeders' rights at the expense of farmer rights. These are already based on International Union for the Protection of Plant Varieties (UPOV) 1991 which favours breeders. The bill extends PBRs to all plant species, and the products of harvested material. There are increasing penalties, and breeders' rights are extended for a longer term. We propose breeders' rights only for first use. Rights must remain within the UPOV 1978 definition, and farmers' rights should be secured as per the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

There is a lot of administrative complexity, making it difficult for farmers to protect their varieties. This can lead to genetic exploitation and biopiracy. Crops are available as a result of farmers. There is little recognition of this in conservation and breeding.

The process of engagement so far: ACB with other CSOs and farmer associations have been vocal and have attending public hearings and made submissions to the National Council of Provinces (NCOP). Since then provincial negotiating mandates were produced. The provinces took a lot on board especially the implications for smallholder farmers and biodiversity. Western Cape and Eastern Cape rejected the bills and other provinces raised issues. Since then DAFF has responded, and it appears they are not taking comments into account. The issue is about what to do now. South Africa is a developing country and unequal. We should be pushing for a new system. How?

**Busi** from **Ntinga Ntaba ka Ndoda** talked about what they did as Eastern Cape farmers on the bills. She highlighted what farmers say, that seed is life, a source of power and dignity, it is wealth. Whoever owns the seed owns the land. Seed is our culture and our tradition. It is nature's gift to her people. We are seeking freedom and food sovereignty with seed for sharing and exchange. It is an insurance policy for the future food supply of the world.

On 8 May 2017 there was a public hearing in Bisho, with less than 20 farmers attending. They all voiced their feelings about the bills. They said they need to be amended. It was not publicised enough for other farmers to participate. The legislature said they advertised in the paper, but rural farmers will not get that information. The legislature said they did not have money to bring hearings to farmers.

Ntaba ka Ndoda held meetings with farmers from 44 villages. They called stakeholders from Fort Cox and others. Participants said they must approach the legislature to extend the deadline as they needed to have more public hearings. We were demanding that. Nthaba ka Ndoda helped with submissions.

A wider workshop was held in Bisho in July with representatives from Port St Johns all the way to Port Elizabeth. There were many farmer associations. The bills were explained. The voice there said we have amendments and it is not right the legislature should have only 1 public hearing in the whole of Eastern Cape. Power to the people. They forced legislature to have 3 more public hearings in PE, Umtata and Queenstown. We had to race around to ensure farmers attended.

Farmers said the bills are supporting commercial agriculture and promoting one system, and pushing away smallholders. Exchange of seed must be allowed. Farmers fear losing indigenous varieties. The bills are promoting genetic uniformity. The bills are imposing huge costs and complicated procedures and requirements for certification. This encourages monoculture and high use of chemicals. It is criminalising farmers from exchanging seed and taking away their seed rights. The state is being made into the police force of private breeders. Community and family seed banks and nurseries are not catered for in bills.

At the end of the day it came out that Eastern Cape was said to have rejected the bill, while other provinces accepted with amendments. As Eastern Cape farmers we need to go back, sit down and see how to go forward.

I [Busi] have some special seed. It is white maize M1523 from University of Fort Hare. It is drought resistant. My family was involved in piloting the seed. I would love to share it. In the shops there is little organic maize, it is mostly GM. I got finger millet from a farmer in Zimbabwe. There is a lecturer working in Rhodes with some pearl millet. You can imagine if the bills passed as they are, we will not have the liberty of sharing seed. If we spread it, we can have the whole land with millet where we can feed ourselves.



Busi Mgangxela from Ntinga Ntaba ka Ndoda in Eastern Cape refers to locally developed grain varieties

**Mariam Mayet** from **ACB** raised a few issues as facilitator. The first thing is that the laws are very difficult to understand because they speak to a certain seed sector, corporate, and international law. These discourses have gone on internationally for a long time, and are embedded. A lot of the time when we are in meetings with government and industry they say we do not understand. But what people do understand is that laws are part of the architecture that upholds and entrenches the formal seed sector that allows corporates to flourish. The laws are not concerned with farmer managed seed systems except to what farmers may or may not do with protected seed or to enter the commercial seed market. This is the only time issues around farmers arise especially in PBR.

The interest is to protect breeders' rights and stop farmers from replanting, especially the big commercial farmers. But if you start legislating that impinges on the rights to smallholder farmers to do what they want to do with the seed. All the resources go to protect one system, and it ends up ignoring and criminalising another system. It is setting policy even if this is not written. It says farmer managed seed systems mean nothing, they are outside the formal system but can't enter the market. Farmers understand this. The main objection is about an architecture that upholds one system only.

Joan from DAFF Plant Improvement said she appreciated being here. Linzi has introduced the bills and made some remarks. We cannot comment as the bills are in Parliamentary processes, currently at the NCOP. Amendments were proposed, we don't know what will come out yet. We cannot speculate. First we have to see what comes from that and then take it further.

There are a number of issues in the bills that seem to be unclear, especially farmers' privilege. Legislation is the framework. Details on putting limitations, on setting boundaries is done in the regulations after the passing of the legislation. We will make sure farmers are involved in that. The Portfolio Committee wants to see regulations before they are published to ensure consultations were sufficiently done.

An important thing especially in PIA is that it is only applicable and will only regulate plants declared in terms of Act. This includes maize, tomato, onion and pumpkin. Basic food stuffs are regulated. Indigenous crops are not regulated. Nothing is stopping anyone to produce and exchange seeds of these crops, you are not limited by the legislation that is for more commercial crops. Indigenous crops are free, they belong to people. Only if new varieties are developed, they must comply with DUS standards and are regulated. But what has been grown by farmers is for free for the farmers, it is yours. There is a reason for DUS requirements. One of the main issues is limiting uniform varieties. It regulates the commercial sector where large volumes are at stake. Then you need some form of regulation. If there are problems or mistakes, it has huge financial implications for farmers if seed quality is not good. It will ruin the farmer. So it is important to regulate quality when dealing with large quantities.

The reason for uniform and distinct is that in the formal sector you must define the variety, the variety begins here and ends there. A rights holder needs to delimit what they claim to be their property.

There are exemptions for where smallholders are dealing with the same crops as commercial farmers but not on big volumes. SPS measures are required to manage diseases and general plant health (mildew, insects etc.). Usually SPS is for cross border movement. The Agricultural Pests Act governs that. The Plant Health Bill is to deal with plant issues to replace those sections in the Agricultural Pests Act. Only plants declared in terms of the Act are to be regulated by the Act. The regulations will indicate the amount of seed that can be exchanged that will be exempted. It provides for those who want to become commercial, but others are exempted. This may still be amended in the Bill.

**Thapelo** from **DAFF Genetic Resources** indicated the directorate is responsible for registration of PBRs. They can't say much about the bills at this stage.

Godwin Mkamanga from Biodiversity Conservation Initiative (BCI) in Malawi and former director at Malawi's national gene bank commented that we must go to the seed treaty (ITPGRFA) and the Convention on Biological Diversity (CBD). Germplasm in a country belongs to that country. But materials are collected in the Consultative Group on International Agricultural Research (CGIAR) system. There is a question of how to deal with that germplasm. The World Trade Organisation (WTO) requires a plant protection system but it can be sui generis [designed to meet the country's specific needs and priorities]. ITPGRFA is good [on farmers' rights to use, exchange, recycle and

sell seed] but funds are to be provided by the country itself. If we have this background, even under farmers' rights, farmer varieties also should be regulated. In Malawi, only a few crops are produced commercially, the rest is farmer seed. On regulation, I don't like the adoption of UPOV which requires DUS. Farmers have been farming for 10,000 years, were they using DUS? No. Our varieties are resilient to climate change. There is a wide genetic base. I didn't hear anything about quality declared seed (QDS). At the UN Food and Agriculture Organisation (FAO), it was agreed that not all member states can afford to produce varieties conforming to UPOV. South Africa is key to new developments. If you don't lead us in the right way, all of us will be lost.

Points in the plenary **discussion** after the inputs, included the following:

### Intellectual property and plant breeders' rights

- The PBR Bill raises questions about private ownership of life and monopoly private ownership over seed. It is also the product of human ingenuity on the part of women farmers. Where does this get covered? We must talk about transitioning out of this system, it is inequitable. We must not underestimate the power of the seed industry. There are 4 that control up to 75% of world's commercial seed and also agrochemicals.
- From the scientist/researcher point of view we must make it clear that PBRs are based on a legal framework which is a way of recouping money spent in developing varieties. It is not a tool of control. It costs a few millions to develop a variety, then it is registered for PBR for 20-25 years, largely to allow research to recoup the money after which it becomes public property. This system was developed so it is not a financial burden on the user. Royalties are between ZAR5-10 for potatoes for example. When we speak about seed, we must speak about the process that goes into breeding improved seed. We should not undermine the importance of PBR to allow financing of the system.
- How long does it take to get a PBR and what are the requirements from a breeder. What are the possible benefits or incentives if any for a breeder?

- Response: It depends on the type of crop. We usually evaluate over 2 cycles. On incentives, as a variety is granted PBR, the breeder will get royalties on sales for an exclusive period of selling and marketing alone. The requirement is that the variety must be new.
- Let us not be side-tracked. Government hasn't made an effort to consult with smallholders especially on ownership of seed. If we ask questions on how to apply and register, we will be side-tracked and find ourselves on the side of the laws.
- What is the incentive of being a seed custodian as a traditional farmer, and what is government trying to support? One day that seed will be in the hands of breeders. Where do breeders get their materials? From farmers through gene banks. What is the incentive for the gogo who has produced and maintained that seed, but is not recognised?
- Whose idea was it to formalise the seed system? You talked about royalties which breeders are getting when they have improved the seed. Where does this improved seed originate from? They don't originate from a vacuum. Breeders use farmers' seed and make a few changes and then claim royalties. Whereas smallholder farmers, the owners of the seed, don't get anything.
- Government is departmentalised. Responsibilities are given to certain departments. Our focus is on everything else while the bills are on commercial seed. We focus on our own core mandate. We have got seed from Zimbabwe. If it is developed, are the rights to the farmer who developed it or the person from Zimbabwe? Ownership of seed is difficult to say. The way the department handles material we develop is we provide seed to universities and the Council for Scientific and Industrial Research (CSIR). CGIAR also has South African materials. The farmer is protected by a contract when they give out seed for development by researchers. In the event of commercialisation, they come back and engage on contributions and division of royalties. The issue of ownership is still the same. The country is obligated to international agreements. South Africa has not yet assented to ITPGRFA.
- We realise that from the previous dispensation, many African farmers

were not in mainstream. If you put PBR on the table, how does it enable smallholder farmers to move away from marginalisation, but not necessarily referring to commercialisation? If smallholders can only be limited to a certain volume with exemption, but they will be penalised should they jump this, this goes against the grain. We cannot put the trust of seed integrity in the commercial sector.

- We are discussing an important aspect of life. We need to take unnecessary elements out of the discussions. We mustn't take the assumption that anything done outside public space is not good. For example, when we do breeding, we start off with farmer seed as people have said. But anything we take from farmers, we give back to farmers. PBRs are 15 or 18 years down the line. ARC does not seek royalties. The law doesn't apply to everyone. We are a state institution with the right and obligation to protect smallholder farmers, to safeguard what belongs to the people. We have national collections which we protect from being contaminated by foreign material. We don't want genetic degradation. If you have important genetic resources that you want to protect, we can assist. The gene banks are national assets.
- We have been using the same seed since 1968. No one can claim ownership of seed. Everyone should be obliged to share seed. There is no reason to see seeds licenced.

### Commercial and farmer seed systems

- What I am hearing from ARC and DAFF is that we have this binary of thinking about seed. On one side are corporations and government and on the other side is everything else. They are coming from a neoliberal political centre to protect farmers with large scale land if the seed doesn't work. What happens to farmers who don't have access, whose systems are replaced by commercial seed which also don't work? Most people cannot afford to spend any money on breeding improved seed. This is a different angle. Seed is food and life but in a system which enforces private rights.
- There are documentaries of farmers in the US complaining about their situation regarding multinationals and genetic

dictatorship. Apparently the genes can be transferred to indigenous plants through pollen. By default if you have those genetics, you are killing your seeds. We must think seriously about selfgovernance based on collective strength and unity of purpose.

- Colonisation is also happening with seed.
- How to protect small farmers? DAFF is saying we must continue to farm with indigenous seed and not worry about commercial companies. But even if you do try to stay away, because of cross pollination, you lose your seed. Also now it is only maize and soya but later it will extend to other crops and then contamination will be there too. It is easy to say let us coexist, but you can't do that with seed, it is practically impossible.



Participants engaged in group discussion

### Plant improvement

- On quality, you say they need to regulate the seed system. There is a question: what was wrong with existing seed by then? Have they achieved that?
- On SPS, we know that lately we have experienced new plant diseases as well as pests, for example very recently there was the outbreak of army worm. Is it because of farmer seed?
- You gave reasons why seed must be improved for climate change. Are these reasons real? Those seeds are being called improved seed. In some cases those seeds don't even germinate.

### Seed bills

- I am disappointed that the law that speaks to plant breeders and improvement does not recognise farmers despite their key role. New varieties are completely out of the frame for farmers we work with. If the law goes ahead as it is, what will government do to protect smallholder farmers from corporate seed coming into their systems? It comes in as grain which then gets planted and exchanged, it moves. Government is intentionally handing out hybrid and GM seed to farmers and then criminalises smallholder farmers who are planting these. How to protect against the criminalisation of farmers?
- What kind of law protects the few at the expense of the majority? We must look amongst ourselves, how to position ourselves in relation to some of these questions?
- During the time when we had public hearings, we noticed that some officials are not serious. They are just doing it to say they had public hearings. We need meetings to share information with farmers, we do not know the details. Officials are not being serious.
- There is no one who can make the law without involving those who the law is to be made for. We are still operating in the same system. As smallholder farmers let us continue with what works for us. If we are side-tracked to believe things have changed, it will not work.

### Indigenous crops

 On indigenous crops and landraces farmers should not accept that extension provides GM seed. For organisations to support these farmers to assist to continue with indigenous crops it is important that the crops are maintained. This is the work of the gene bank to ensure genetic resources are not lost. Farmers must not surrender as quickly, we must stand up for indigenous crops. There are markets to be developed for indigenous crops. These need to be explored. Don't look at commercial volumes, focus on unique varieties.

### Farm input supply programmes

• When farmers are given seed, why are they being given GM or hybrid seed? We can't

say 'just tell the farmers not to accept the seed'. Some people have nothing and are given seed. Farmers are not informed. The onus should be on those giving out the seed to people who may not know about them. They could be given different kind of support.



The presenters who gave inputs at the start were given an opportunity to say any closing words:

Busi issued a call: Smallholder farmers, wake up, the seed has been captured!

Linzi said there are lots of questions and things to think about. Ideas about trade, exchange and sale is a big issue. It is not being dealt with in a way that we can understand. There is the issue of commercial/ non-commercial scale. Also smallholders want quality so there is no point that only certain crops are regulated. We need diversity of major food crops, not only marginal indigenous crops. It can't be up to NGOs to educate farmers that they should not accept seed from government. It is government's responsibility. People will accept what they are given. We can't expect farmers to take the role of government. Landraces can't enter into the system, they can't be given out in government programmes. If they are not included, they will get completely neglected. We will need all the resources available in the future. On farm activity, coevolution, in situ enhancement does happen, it needs support. The Bills will be passed and regulations will be developed. How can CSOs and farmers ensure that the voices of farmers are heard

and that public hearings are being done properly?

DAFF said they have realised the importance of getting as many smallholder farmers and communities involved as possible and not only big farmers and companies. CSOs can provide support to make input into the regulations. We urge stakeholders to make follow ups on public consultations.

### Seed, knowledge and culture

The last dialogue on the first day was on seed, knowledge and culture, facilitated by Method Gundidza from Earthlore. Systems of production and exchange include knowledge systems. In farmer seed systems, this knowledge resides in farmers in their everyday practices, and in elders with a store of indigenous knowledge about seed production and reproduction. Seed goes beyond yields and food, and plays a central role in cultural reproduction itself. This session explored some of these links in contemporary South and Southern Africa in small groups with sharing in plenary.

Method from Earthlore opened by saying there is the politics of food and the politics of taste. Taste is something that can be tapped. The way it has been tapped for us in this dispensation is that it feeds capitalism. You must buy food which has sugar and salt and oil. The more we talk about registering and patenting seeds, and as the law excludes types of food that are not patented and these get eliminated from our diets. The main crops become our staples, that is what we eat every day and nothing else. Some foods are propagated, some grow by themselves. These are foods that are gradually finding their way out of our menus. We are talking about staples such as rice, maize, spinach etc. Much of the talk centres on seed as a thing, the physical properties of the seed and what it does to the body of the human. But another side we do not talk about, where seed is at the centre of spirituality, at the centre of the social fabric. We can't talk convincingly on seed, knowledge and culture if we don't have leadership of the elders.

Participants went into provincial **group discussions**, starting with elders talking about a particular seed variety from their area. Discussion was shared in plenary.

KZN selected izindlubu which has many varieties. The black one helps with kidneys. It is good for blood pressure and sugar diabetes. It has magical properties. When a young man has left KZN for eGoli and has left the young wife back home, when he returns home, he does not sleep in his home but in the mother's home. He sleeps there and the mother prepares a dish of izindlubu and gives it to the youngster. He tells the story of what he has done in Johannesburg. The mother will ask how he is, whether there is anywhere he feels sore or uneasy. If there is anywhere he feels uncomfortable including the sexual organs. If they say there is somewhere they are hurting, the mother will ask where exactly. There is no way of hiding for the young man. Indlubu goes to those organs and the glands will become inflamed, so he must just confess. The parents have to step in and he can't proceed to see his wife. He must cleanse the organs before he can continue.

A group looking at Zimbabwe identified a number of seeds and chose groundnut. In Zimbabwe there are two major languages though there are 16 altogether. In Shona groundnut is nzungu and in Ndebele it is amazambane. Five different varieties were identified with different characteristics such as fast growing, upright, tender and tasty, produces sweet nuts, or is used for peanut butter or pure meal. It has multiple uses including meal, peanuts for porridge relish, oil, snuff, cattle feed and as an energiser. Its significance is that it is multipurpose crop that can be likened to a woman, multitasking. We want to bring dignity to women in our country. To be dignified you need to have a granary with groundnuts. It is nourishing for children, and is a convenient love potion in raw and processed state.



Jephrey Tambara from FACHIG Trust and Roseline Mukonoweshuro from Tsuro shared Zimbabwean experiences with participants

Eastern Cape chose rainbow maize as a seed. There are different names for the same variety in isiXhosa in different areas. It is our tradition, even though maize is not indigenous. It is now a staple food, even roasting and milling the seed when one is taking a journey. If someone is being buried, we first throw maize as a symbol. We even make beer. The other seed we looked at was sunflower. There are different varieties including giant, dwarf and different colours (yellow, orange). We use for cooking oil, livestock feed (cattle and chickens). Sunflower is used where a man feels weak. It is believed to bring good luck. It is said if you want the truth to be told, sleep with a sunflower under the pillow, the next day the person will bring the truth.

In Limpopo the group considered melon, known as riwa in Shangaan. It is multipurpose. It looks like a watermelon but with red seeds, and yellowish inside. It is used to make jam. We cook and mash and eat with rice. We brew beer but the boys are not allowed to take it. You cut it into small pieces and cook, add sugar, collect the juice and ferment for 3 or 4 days. You must only have a small amount because it is very strong. We also looked at sesame. You can roast it, then crush it and add to any kind of seshebo. It can be used to make sesame butter to decorate baking. Another group from mixed areas talked about cowpea, known as nyemba in Zimbabwe. Sometimes the elders would say when you cook the cowpea, some do not get cooked as well as the others. If a child is naughty or stubborn, the parents will say you are that kind of a cowpea. In Namibia there are different types of beans which are high in nutrition. Namibia is very dry. Beans are drought resilient. Because of Afrikaans colonisation these are known as *boontjies* in Namibia. The coffee bean is a child of East Africa. I was raised collecting coffee beans. There is a role of coffee in African society. It originated in Cafa, Ethiopia. Brazil is a big producer but started with a single plant coming to Brazil from Portuguese traders. There is arrabica and robusta, which are crossed in the field. It was all produced by smallholder farmers. Many farmers had coffee trees as a cash crop. It is culturally significant, a sign of respect.

Often we name varieties by their colour. We need to go back to elders to retrieve the knowledge. I noticed that mostly these seeds or the food that is cultural is mostly correcting the male problems, as if women don't have problems e.g. menopause, which is a source of divorce in many households. We must seek indigenous knowledge about this too.

It is this kind of knowledge and connection at the centre of society, held and shared commonly that when we talk patenting, trademarks, intellectual property, it is this side of seed we do not talk about, this important side that we leave, that which keeps communities and families together not only food but in so many different ways. When seeds evolve with wild relatives, they become more resilient to climate change.

It was a battle to identify local names and varieties. We are only using colour description. But there are real traditional names for these varieties, often how seed relates to ecology and social systems. If you have elders in your family and community, these people are big libraries from whom we can learn so much. People don't know, we need the knowledge, we need the elders. In the evening the participants listened to the music and lyricism of Bantu Continua Uhuru Consciousness. Using percussion instruments, tambourines, whistles and flutes, male and female vocals, BCUC tap into their ancestral spirits to make music that is highly political and reflects their own identity, pride and resilience. The dialogues continued on the second day.

# Day 2: Saturday 9 December 2017

### Seed banks

Farmers and practitioners doing practical seed bank work shared their experiences with participants in small groups, including a description of their work, successes, challenges and lessons so far. Concurrent small groups discussed the role of the national gene banks in repatriating seed varieties to smallholder farmers for production and exchange. Key issues were shared in plenary followed by open discussion.

The following is an example of one of the **small group discussions**. This one looked at smallholder farmers and seed from the national gene bank:

### Use of seed and genetic resources from the national gene banks

 Repatriation is if you need your material back. We also talk about restoration. It is repatriation if you had the material and now want it back. It may be better to talk about use of material from gene banks. Bioversity (a CGIAR institution) gave an example of housing banana materials. They share the materials with gene banks at national level for work in the field. They also work in countries to bring seeds at national gene banks that have been there for many years back to farmers. It is not only returning the seed but also use and testing, and comparing in the field. Conservation is different from protection. You need to use the materials. The challenge now is climate change.

- In Malawi the BCI project works with FAO. Farmers in the area used to grow sorghum, pigeon pea, cow pea, pearl millet, finger millet but now only beans are being planted. We are bringing back the previous crops that have a better response in climate change. We must emphasise use. This is quite a new approach to gene banks. The work is still new but things are moving in this direction. In the past material was only given to breeders, but now they are also providing directly to farmers, although in South Africa it is still a bit of an issue. In Malawi, we work with farmers in their fields.
- In South Africa DAFF has on-farm conservation projects in the Free State and Northern Cape. When you talk about use and restoration and working with farmers, are you talking about in-field work with farmers, or also post-harvest and in the kitchen? When we do participatory variety selection (PVS), taste is very important. If you do it well, organoleptic traits (e.g. taste, aroma, colour) and storage are important. We sit down with farmers to identify varieties. Farmers choose what varieties to multiply based on priority criteria and quality. We plant out the material, look at the plant in the field, then harvest, and then have field days for sharing seed and food. We plant out materials and bring it to show. Farmers and consumers participate in assessing. These are experimental processes.

### National gene bank

- In Malawi some crops disappeared for some time. When germplasm collection was done, the state of seed may be different in terms of environmental and climatic changes. Seed undergoes dynamic changes in the field. How does the seed compare if seeds have been sitting in the bank? A good gene bank should plant out, but often this is not in the ecological zone where it will be planted. Nowadays information is more systematically collected – 'passport data' e.g. seeds are collected in a dry area, and now can be used for other areas that are now dry. If there is no data, then we don't know, we have to put it in the field and see.
- Seed is not just collected from a vacuum, it is collected from a particular farmer. If the same person wants to get that

seed again what can they do? They must inform extension officers to get materials. However, it is hard for farmers to travel to the national gene bank. They can go direct but for convenience. If the seeds are not yours, the gene bank must get consent from the original donor and there must be access and benefit sharing (ABS) if a variety based on this material is commercialised. Farmers are free to get material but they must work hand in hand with extension on benefit sharing, procedures etc.

We should note that the national gene bank is not a seed bank. A gene bank stores small amounts whereas a seed bank is for the reproduction of seed for sharing with farmers.



### Community and household seed banks

- Farmers have been keeping seed for many years. Each family kept their own seeds and women were instrumental to this. Mixed farming was practiced. With climate change and the introduction of hybrids, materials are being lost. It is clear that we are losing plant germplasm. At national and local levels, we could not maintain germplasm. Passport data is very important.
- It is ideal to keep seed at household level, but we want a backup and scale as well at national level. Communities are not talking to each other. We need storage at household and community level.
   Community members can combine their product for sale as a coop. This should not stop storage at household level as well.
   We should aim to connect seed banks

nationally, community and at household so they operate on all levels.

- In Zimbabwe, community seed banks relate to the national gene bank. The national gene bank advises farmers on training and storage systems. Seed available at community level is not even at national level. We are negotiating to feed this seed into the national gene bank to share into other regions. Farmers are saying we must have a right to seed before sharing it at national level. There is need to integrate storage. Some varieties are being lost. If seed is labelled with passport data, later on people can make reference. It indicates what is available in different regions/provinces and where varieties can be sourced. At household level seed saving is only for next season with selection in the field and exchange. We encourage that to happen but also to establish community banks. In the 2015/16 drought crops failed in some areas, and farmers then turned to the community seed bank. We must link them together.
- I wouldn't agree with seed coming in internationally and nationally. We had an experience where farmers did their indigenous seed. It was taken away from people for the seed banks and then the markets filled with GM seed. We should rather concentrate on community and household level.
- Consultation is a big issue but we must start somewhere. South Africa is a signatory of CBD. There it says there must be in situ and ex situ conservation. There are safety issues and some materials are restricted. There were negotiations at SADC level but poor communication. Dialogue has started now, on how to move from national to community. Household saving is already there but we must encourage them. We must refer to ITPGRFA Article 9 on farmer rights.
- Seeds are stories. What is of national interest? Is it when systems are designed as centralised, or community, locally based, ever evolving? This shifts the boundaries on what is the national interest. How is the national level different to the local level? Our relationship with seed and ourselves redefines the nation. Is nation central? We need to appreciate whether people have seed banks or decentralised seed saving. It should be an effort of

establishing two-way relationships. How does DAFF work in KZN, for example, connect to other banks elsewhere? Who established the gene banks, what consultations were there? It is clear that people want some protection around germplasm. It is a two-way process, with interaction and replication at provincial, local and district levels. We require institutions where people can have access closer to them. This needs a rethink about relationships.

 Passport data includes Geographical Positioning System (GPS) data. But it is centralised data collection with the risk of dispossession. We need a mix of central and decentralised controls. This is a reason to establish community seed banks.

Discussions in other small groups included the following:

### National gene bank

 In the gene banks there are viability checks every 5 years and stored material is scaled. There are 8 priority crops for collection, such as maize, beans, etc.

### Quality assurance

• With indigenous seed we are sure of quality, it has always germinated.

### Community and household seed banks

- Household seed banks are encouraged to upscale to community seed banks. They must work together. For example, in Brazil the community seed bank is not a physical area but is at a designated household, with one portion for the national seed bank and one for the household seed bank.
- We need community and household seed banks, and in NGOs. It is convenient to save seeds at household level because you can be sure of what you are saving. Whenever you have saved your seed you can access it. Then you have a community seed bank in a village where there are seed guardians who have been selected to ensure the bank has seed. Then you have an NGO with a learning garden and saving of seed from the garden. However there are challenges. For example with some seed guardians, people sometimes want a stipend. The consciousness of having your own thing as farmers sometimes gets lost. We also have individual seed saving and sharing

for indigenous varieties from Zimbabwe which are not found in South Africa.

- A community seed bank was introduced by NGOs and it has helped to have a central seed bank where farmers all bring their harvest together. Giving away seed to people who do not know how to use it is not good. We must give seeds with knowledge.
- In Limpopo farmers have a community seed bank. Villagers buy seed from the seed bank, and others preserve their own seed.
- We need to link urban and rural seed banks.

#### Smallholder farmer support and seed

- Other farmers said they are using GM and hybrid and have not heard of another form of farming. They are in a township with lots of land but no historical knowledge, so they learn from what is being taught currently. They are given seeds or buy them. The plants are not adapting to the environment. Many people know nothing about seed saving. Once people have that information and realise they can save seed, a lot can change.
- Farmers need training on the issues of seed rescue, multiplication and saving. There are benefits of saving seeds. It creates social cohesion, saves money, contributes to food sovereignty, boosts the local economy, and enables skills and knowledge transfer.
- There is need for training, including on quality control and testing.
- In Limpopo there was a government programme to give seed but the seed did not germinate.
- Farmers are experiencing drought from climate change. There is a question about how to work in these conditions. We need door to door awareness raising on seed saving, and also need to diversify economic activity. The question was again raised with the realisation that some farmers use GM seed and how to prevent cross pollination.



Group discussions

### Farmer seed systems and indigenous knowledge

- If you put seed in a bowl of water, if it is good it sinks, if it floats it is dead.
- Farmers said in their areas everyone is saving seed and storing using ash, orange peels and others on both large and small scales. They use clay pots and glass for storage. Farmers place paper bags over the heads of plants, prick tiny holes into the bag, put ash, then dry and then open at planting time and share. On a larger scale, they have a building and seed is collected in clay and glass pots, again with ash. Maize is put into hessian bags to dry and then hit with a stick to get the kernels off the cobs.
- We used to do the traditional way of hanging up grains in a dry, cool place and to smoke it to prevent pests. With introduction of new methods, are able to have good, quick varieties. The selection process is key to crop production.
- In KZN one person has 55 years in preserving seed, using wood smoke. In one year, she was the only one to have seed and shared with others.
- Diverse age groups ensure knowledge transfer. Monitoring is very important, twice a month to see that seeds are not rotten or with pests. We realised we are using the same methods in different parts of Africa. The ritual aspects are important, as is proper management on the seed plot.

### Seed saving practical

Tim Abaa and Peter Silinda (Izindaba Zokudla) offered participants practical tips on saving seed in an interactive process.

The discussion started with defining agroecology. It is a type of agriculture that is taking care of the environment, farming that mimics nature and the way plants naturally grow, and is also a social movement. Agroecology is thus an art, a science and a movement. Agroecology is practiced all around the world. It sustains the health of the soil, plants, animals, people and the whole ecosystem. It relies on ecological processes, with cycles adapted to local conditions, and a focus on biodiversity rather than use of inputs with adverse environmental effects. Agroecology combines tradition, science and innovation to benefit a shared environment and promote a fair relationship for all involved.

Seed banks, whether community or household, are the foundation for smallholder farmers to achieve agroecology and food sovereignty, which is the right, freedom, and choice that each one has access to the type of food they choose to have. At the supermarkets, community members are labelled as consumers. We take whatever is given there. The question is how to create an alternative. The best teacher is your next door neighbour, we must build each other.

In traditional seed saving, to produce seed there must be a distance between your plot and nearby plots. For maize, select from the centre of the cob for seeds to plant in the next season. Pests will first attack from the ends of the cob. This grain is given to chickens. Then you hang the cobs, with smoke from below. Take wood ash and sprinkle it on the maize seed. This creates a coating to prevent pests from attacking the maize. You can use dried orange peels at the bottom of the seed container, then put the seeds, then dried peels on top as well. Use worm tea and microorganisms, or you can use effective microorganisms (EM). It contains yeast, photosynthetic bacteria, lactic acid bacteria, and fermenting fungi. Soak the seeds in worm tea/EM overnight. Remove from the liquid, dry in the sun for 4 hours, and store.

Aloe can be used to preserve seed: crush it, put the liquid on a plate, expose it to direct sun until it crystalises, then mix the crystals with the bag of seeds. Imfonyana (?), artemesia, African wormwood can be soaked in water, fermented for 2 weeks in a tightly sealed container, then the seeds can be soaked in the liquid and dried in the sun. Or you can dry the leaves and mix with seeds. Green banana leaves can be placed at the bottom of the seed container, put in seeds, then seal.

### Smallholder farmers and plant breeding/crop improvement

The next dialogue was on smallholder farmers and crop improvement. Smallholder farmer involvement in partnerships with formal sector breeders to improve crops and varieties based on their own priorities is still rare in South and Southern Africa. However, the role of smallholder farmers in maintaining agricultural biodiversity is becoming more recognised. Part of the maintenance and reproduction of agricultural biodiversity is adapting seed to changing ecological conditions. Drought, nutrient limits in the soil and pests and diseases can threaten production if seeds are not adapted. The session discussed the potential roles of smallholder farmers in these processes.

This is a new area of work in South Africa and the dialogue was just to open the topic. This doesn't mean farmers don't do crop improvement, every time you replant seed from the previous season you are doing this work. But how is the formal sector working with farmers to do this work?

Inputs were made by Michael Bairu (ARC Vegetables and Ornamental Plants); Jephrey Tambara (Farmers' Association of Community Self-Help Groups (FACHIG) Zimbabwe) and Ronnie Vernooy (Bioversity International).

**Michael** from **ARC** talked about sharing the role of breeding in our seed system. Breeding is a broad subject, so I am specifically talking about participatory plant breeding (PPB), where farmers are actively involved, and leaving researcher-based breeding. Without discussing breeding, it is technically impossible to discuss seed saving. At the end of the day every seed is a product of breeding. When we do seed production we use the isolation method, so we don't have unwanted material. Therefore breeding is at the centre.

PPB involves farmers, at any stage of the process, beginning, middle or end. Farmers are involved in the decision-making process about behaviour of the crop, and the understanding of farmers of that species. The benefits of PPB are multi-fold. It facilitates need-driven breeding. Up to now breeding was done separately, sciencebased breeding. For example, breeders learned about a disease from the literature, and then breeding was done to produce a disease-resistant cultivar. But often when the breeder takes that to the market nobody wants it. PPB overrides this. It is demand-led breeding to focus on an existing problem for specific farmers. The benefits of PPB are that it improves quality assessment; it improves cultivar adoption; it decentralises breeding from laboratories to the farmers' field; it promotes the informal/farmer seed system, and is not sector driven; and it promotes genetic diversity.

The role of farmers is to define breeding agendas, assist in selection of varieties and what criteria should we use for this selection. This comes from the farmers. At ARC we focus on novel crops, newly domesticated. We do a screening process across the whole value chain. The aim is to expand available food. In ARC, farmers are involved in the early stages, e.g. in Mabulu, with amadumbi (traditional potato) PPB, we collected local varieties in the area with a long history of cultivating amadumbi. We were assisting, but also learning from farmers on these cultivation systems. We collected different cultivars, then did a sensory selection process, did a tasting, identified preferences, e.g. wet/dry/fluffy etc., and then finally short-listed cultivars.

Challenges are a lack of consistent investment, with cutting of budgets etc. and when you are working with farmers, they don't have money for this. We need to engage with government to get and secure funding. Provincial government departments are needed to be able to support these programmes. PPB is not fully supported in the government policy system. We need a policy that acknowledges the benefit of PPB. It is not clear how it should be done, the values, and timeframes.

We need to pursue policy, and the issues around formal, regulated systems. There is a lot of access restriction in terms of who gets what. We need to push and put pressure on government for suitable polices.

Jephrey from FACHIG in Zimbabwe provided an overview of work they are doing with smallholder farmers on PPB. They are working in a consortium. Smallholder farmers are very important and have the ability. We are shifting the mind set of those who control breeding in the country to also value the contribution of smallholders. Sometimes we don't have the confidence. As others have said, smallholders need to have a collective voice, we need to own our seed.

The basis of PPB is stakeholder engagement, a collective effort between researchers and farmers, for a sustainable way of developing valuable varieties. There are the people that come into our communities, set out experiments and leave. We need to say what we want to get from the process and work with them. We have smallholder farmers working in groups, with their own leadership, for advocacy purposes. PPB is happening in farmer field schools (FFS) where farmers and researchers can come and learn, with various villages coming together. We ask what is it we want to learn about this variety. We do capacity-building so farmers understand, and have confidence in owning, developing and retaining the seed.

We used a diversity wheel as a way of developing the research agenda and setting the objectives of we are supposed to do. Farmers bring their seed. We put this wheel on the ground, and then they use this wheel. At the centre of the wheel we have "lost diversity", crops that used to perform well, but are no longer available. Then other crops cultivated by many farmers, on very small pieces of land, these crops used to be there, but now are few. Next there are crops growing on large areas. This diversity wheel is used to set the objectives and joint interests.

After that, the crop breeding institute who is leading breeding in Zimbabwe, goes to the FFS and outlines which varieties and what traits have been generated by farmers. Farmers set up the plants, with lines from the breeding site, along with the farmer varieties to see the performance. Breeders come and a breeding evaluation is done where farmers say which varieties they want.

Currently we are looking at about 4 sorghum varieties. At the end, when things start to take place [for example commercialisation/ release], there are issues about the rights of farmers and ownership issues. It is about the rights, which is a policy level, but at least there are initiatives taking place. Farmers play an important role, and it's good this is being recognised. Breeders know the value of the farmers.

### Ronnie Vernooy from Bioversity International

said PPB is quite revolutionary. It started around 25 years ago. There were many failures at the start, but now there is a strong group of breeders, social scientists, and agronomists working together and transforming conventional breeding. PPB is an approach to empower farmers, and put farmers in the driving seat of the breeding process.

Bioversity is working with many farmers. Previously it was with a few farmers, testing a few lines, but now we are working with hundreds and even thousands of farmers in a crowdsourcing model, where each farmer tests only a few varieties. This allows more farmers to participate, and more feedback. Each farm is a bit different, and when introducing new varieties the diverse performance is important.

Now we are introducing more new material to the farms, because with climate change farmers are saying that their crops and varieties don't do well anymore. So we need to speed up the delivery and access of farmers to new varieties. We need local, national and international collections of materials and are working with various seed banks for this purpose. Materials have been sitting in seed banks for a very long time, which may be able to be used in changing conditions, and making them available to many more farmers. We have many good results, good varieties combining farmer/ local knowledge with professional varieties. Seed bred with farmer participation is sometimes recognised in law and approved by the variety release institution. Then it can go to the seed producers. China, Ethiopia, Nepal, there are examples.

Before the discussion was mostly on productivity, although not necessarily yield. Now nutrition and health are looked at first, and only then do we look at productivity traits. This needs more attention.

General **discussion** included the following points:

 There is a clear connection between PPB and seed banks because you need a wide range of diversity at a local level. There are good reasons for PPB, where improvements are based on farmers' own interests rather than abstract ideas of what could be useful. Breeders offer knowledge and support in PPB. There is a question about the role of extension and NGOs. There is a question of possibilities for an advocacy coalition with farmers, CSOs, ARC and others to work together to lobby relevant arms of government for support.

### **Role of farmers**

- We should not forget who domesticated our crops. Formal breeding is 200 years old, but domestication was done by farmers.
- We are learning a lot as farmers. We can grow from our own banks, get the seeds that we need, and then also on ownership, to have an agreement.
- We can come as group of farmers, request seed, and we go back and plant the seed, we can't have dialogues forever, we need to implement.
- Many farmers are farming in schools.
   We need to partner, not in isolation. Can we make this work? Especially for urban farmers. Design the cities to be able to feed us, there are enough farmers.
- We need to feed people the right food from the right seeds.

### Source of germplasm and variety loss

 Focus should be on reviving or crop improvement on existing material farmers have. Are you bringing in material from what farmers have, and improving it with farmers, or are you bringing it in from other places? What happens to those who lose in this? Do we need then lose the genetic diverse crops? Who keeps this?

- Michael from ARC responded to this by saying varieties are selected for different traits. The winners are given to farmers, to get benefit. The rest goes into the gene bank system, and as a national asset.
- Ronnie from Bioversity said yes, there are losing varieties in the selection process. But there are also losing varieties in natural selection. We do need to bring new diversity to farmers. The adaptation process of traditional varieties, if farmers have the time, then let them do that. But the speed of the changes in food and farming systems, and the character of the change, requires bringing new varieties.



### **Character of improvements**

- Regarding improvements, are you including hybrids and GMOs? As a smallholder there is a level of trust being lost between government and small farmers. Government is testing seed in their farming systems. Plants are being bred for climate change, and plants adapted to their environments. These are the ones that cope better. And what about soil, and improving the soil?
- I have had my own varieties for many years. I am appealing to farmers that we need to work with extension officers. They really help, they are testing our soils, they suggest fertilisers, give inputs, and telling us when to plant the field. We plant in 2 portions, one is for planting the way from the extension, and we compare this to

local varieties. For example there is a maize hybrid with 18 lines, versus the local variety with 8 lines. Let's not be afraid to use these varieties.

 Another participant responded to this by saying we don't mix farming systems. We are here as agroecology farmers. We do not want industrial agriculture. We want to train you. We want to share seed with you, but not today, because your seed is no longer your seed.



### Partnerships with public sector

- At a broader policy level, what is the uptake of government of these approaches? Are these pilot projects out of the policy domain or is there an uptake in policy? Is it becoming part of what the research institutes are doing?
- Farmers have entitlement to access, and to form partnerships with institutions. Instead of public-private partnerships we should have public-farmer partnerships. When the breeding is done, is it done with the objective of bringing varieties into the formal system? This means following the DUS criteria, and scaled-up production to be part of the commercial sector. Is the intention then to commercialise that variety? Where does this partnership go? This links to the discussion on seed multiplication. The issue is that formal breeding leads us to IP/PVP and private ownership. We do want to build partnerships with farmers and ARC for example, but intellectual property rights is an important question.

### Intellectual property and PBRs

- Often the reason why intellectual property is being supported, is because research institutions want to get PBRs/IPR over new varieties. Whether or not farmers want to enter the formal sector, do they want breeders' rights? What other systems are there? We know Monsanto did selection and then registered for PBRs. So what about protection for farmer varieties, someone will want this for sure.
- Because of the different systems, we need to integrate the formal and informal seed, we who produce on farm varieties, we need protection. Some sort of integration is required.
- Open source seeds are a good idea, but it is quite far away. We have quite a far way to go, we need to do small steps.

### **Technical considerations**

• Certain varieties are easier to do PPB than others. These are crops that self-pollinate in the field. Open pollination can be difficult, like maize.

### Quality

 There is a shortage of high quality seed. How can ensure we develop high quality seed?

### Variety registration and release

- We need to understand the way to do registration in relation to policy. For example with ARIPO, all would have PBRs.
- The material needs to be provided to the community. There is an agreement, you cannot get any cent from consumers if the programme is rolled out through public funds. We run with twin agreements for smallholder and commercial producers.

In **closing comments**, Michael from ARC said government does have appreciation for this issue. There is recognition by government. In South Africa we have different systems. We have the smallholder and subsistence, and there is the commercial farming system. We work in both of these niches. I do agree, we have a lot of contentious and unknowns in our seed legislation we need to work on collectively. What if a PPB variety is used and then developed further by private firms? The current law allows for that to happen. How do we prevent this? What are the ways forward? The future security of biodiversity shouldn't be a concern. We do national asset conservation with a plan to collect crop wild relatives. It is being done with Bioversity International.

Integrated breeding is designed to bridge the gap between formal and informal breeding systems.

We cannot underestimate the speed at which the production system changes. Now for example, 30% of potato production land is no longer suitable, so do we not cultivate, or we bring in new varieties that are adapted. What about alternative starch/crops etc.? This is over and above resistance breeding. Within the scope of what we can do, we can diversify the production system, and bring in new varieties. Mother Nature is the best breeder, but we can support that.

Jephrey spoke about the role of extension, NGOs and farmer organisations. In Zimbabwe, we are saying it's a collective effort, and this has helped in the rollout of these programmes. Extension officers are the key people. We don't leave out important agencies of local authorities and traditional leadership. Our activities will be discarded if they are not included. Traditional leaders are saying they knew breeders would come back to the old way. This connection is very useful. We also work with social development and schools on nutrition. 65% of beneficiaries/ participants are women. We also integrate an economic development tool in the homes and support knowledge systems.

Ronnie said the next step of this work would be driven by consumers. In Brazil, we have been able to get government to procure local varieties, from smallholder farmers. I don't know of PPB using hybrids or GMOs. Farmers are interested in keeping the material from PPB. The only example of hybrid maize I know of was waxy maize, for example in China. PPB is pushing the policy issues.

### 'Walk through' of the seed management process in the gene bank

Thabo Tjikana from DAFF National Gene Bank shared information about the seed management process in the national gene bank. These are the steps that are followed to make sure the seed remains viable and is looked after properly.

The first step is getting the seed to the gene bank. We must decide on the species to be preserved, such as landraces, wild relatives, or wild species with economic value. The gene bank does long term storage or priority conservation and targeted storage if there is a gap. The gene bank can collect or institutes can send to them. For example, the global gene bank sent germplasm to the South African National Botanical Institute (SANBI) and then it came to the national gene bank.

Accession follows, where the material is assigned a number. There are 6,219 accessions currently in the South African national gene bank. Then we verify the material and check the sample. It is then treated with fumigate, by placing the material in a drum, and sealing with poison to kill insects. We then check moisture content which relates to temperature and relative humidity. For quality, moisture content should be 4-7%. If moisture is above 7% we need to dry the seed further. When the seed is dry enough, we clean it. We separate the samples and make sure the sample is pure (e.g. only maize, not mixed with other crops). We check viability, looking for more than 85% germination rate. After the seed meets these criteria, the other aspect is the total number of seeds. The minimum for crossing species is 1,500. For other seeds we retain 3,500 and place into storage. There are beads specifically made to absorb water inside the container. You can dry seed using the beads. But the beads are imported from India, we don't have the manufacturing capacity in South Africa.

South Africa is part of SADC. We have to put the material for safekeeping in the Plant Genetic Resources Centre (PGRC) in Lusaka. The base collection is long term. It is placed in a freezer at -18 degrees. The physiology of the seed is restarted above this level. Freezing prolongs the life of the seed. If there is an electrical failure we must check, otherwise the seed is closed for 5 years in the freezer without touching it. For the active collection, if there is a request, we open the freezer to take it out and give. Two descriptions are assigned to a sample. Some you can dry, others cannot be dried, for example sweet potato or cassava. These are maintained in the field. For vegetatively propagated crops we have tissue cultures in glass test tubes, where a part of the plant is cut and dropped into a culture (chemical/nutrient mix). We do characterisation which is a measure of the physical features of the plant, such as colour, length and width, and we record this.

Samples are divided into 4 packets for regeneration and a viability test after 5 years. If the seed falls below 85% germination then we must plant it out. But if germination is above 85% we can leave it for another 5 years. After 10 years, we must take the sample back and plant it where it was originally picked up so it can acclimatise.

If the seed is used, it must go to a bulk bag to make another 4 packets. CSIR, University of KwaZulu-Natal (UKZN) and Vaal University of Technology are doing research on sorghum and maize drought tolerance improvements.

We are currently moving to conservation and use. It is in process. There is active participation by farmers and community seed banks. We have developed a manual with Bioversity and work with them to establish seed banks. It started in 2014. The first step is to find out available diversity in the area. The first thing is to keep it as is and then to add to it. Then we discuss seed exchange practices and diversity analysis, do a seed fair, take the decision to set up a seed bank, elect a management team, decide which seeds to share, do the first selection of seeds, storing the seeds and recording, multiplying and sharing, and hold regular meetings. At the end of the process farmers will have a seed bank. Currently there are two seed banks, in Sterkspruit (Eastern Cape) and Gumbu (Limpopo). They still have rich diversity in these areas. It is best to start here to maintain existing diversity. We aim to have one community bank per province and are now involving North West, Free State and Northern Cape.



Thabo Tjikana from DAFF National Gene Bank walked participants through the seed management process

Points raised in **discussion** included the following:

### **Distinct varieties**

- How can we tell whether a seed is a new variety? There are many phenotypic expressions (visible characteristics) but it is not necessarily a new variety. How do we know if it is a stabilised variety? There are botanical and scientific names, and different names in different communities. We may be multiple counting the same variety.
- Response: There are guidelines on what features should be measured for characterisation. Only when we do the evaluation will we be able to differentiate whether it is a developed variety or is not developed. One way to identify is if the plant is more or less uniform in the field. Farmers know the origin of their seed. We get information from farmers on the history of the seed. There must be consent of the farmer to deposit material. The Department of Science and Technology (DST) indigenous knowledge system is to be followed. Bioversity has guidelines. But there are also mixes so we need to find a new way to characterise mixes.
- When collecting varieties, we get different types of maize. In Malawi there are varieties that were released, people have recycled them and they call them local. In many accession numbers, we may have many collections. We should rather use the accession numbers.

### Testing the seed

- A very important step that I can't see is trials or experimentation. If we rescue seed from Limpopo, we have to organise to do experiments and trials so we know the challenges and the way the seed will perform. It is not going to behave the same way in a different context. If you skip this, it won't be enough because you have to know how the seed performs.
- Response: We rely on farmer knowledge. We register the varieties with passport data. There is no need for testing. Farmers know the materials. After the first cycle of bringing the seed into the bank, farmers may decide to multiply seed. That is a moment when you can see how the seed performs. But sometimes seed comes from outside so we do need to do trials to test the material. We have to know how to treat it and what to apply in the field. It is good to test new materials coming into the field but the seed in the seed banks at the moment is not new material. Farmers have been growing it in the field.

### Storage

- On storage you use aluminium in the gene bank and plastic in the seed banks.
   Plastic does give problems in some areas.
   We prefer glass or daka. Rats eat plastic bottles.
- On using poisons before storing, are there other methods as a pesticide? For example ash, orange peels, and smoke do work well.
- Response: The traditional system will not work in our case because we put all samples in a paper bag. We have to kill insects before bringing them into the system. At storage, no pesticides are applied. The seed is just treated once for destruction of insects. It is not treated in the community seed bank.

# Seed multiplication/farmer based quality controls

The final dialogue was on smallholder farmers in seed production and quality control. In South Africa, there is almost no smallholder farmer involvement in formal sector seed multiplication, and even small seed enterprises are few and far between. Farmers do produce their own seed for reproduction on a smaller scale. One obstacle to farmer involvement in commercial seed production is the rigid and standardised quality control system which is designed for large companies. Farmers' production of their own seed is restricted for exchange on the basis of the same quality control system. More flexibility is required to create space for smallholder farmers to multiply seed for distribution in their localities and beyond. The session discussed some of these questions.

Inputs were made by Mariam Mayet (ACB); Ronnie Vernooy (Bioversity International) and Godwin Mkamanga (Biodiversity Conservation Initiative).

**Mariam** from **ACB** said this is a topic that we are most scared of because it is quite controversial in many respects. ACB tried to do some scoping looking at what is available on systems developed by farmers speaking to quality control and multiplication of seed in farmer seed systems. There is little written about it, with few documented cases. We found only 2 so far, one in Burundi which is funded by the International Fertiliser Development Centre (IFDC) which is linked to the fertiliser industry, and another by Gates Foundation.

We acknowledge that farmers declare seed quality in their own systems and this has been going on. For commercial sale, seed must be certified. This is the same around the world. But we are talking about within farmer seed systems. We are not talking about seed from the formal system. Within farmer systems, what is the discourse and discussion with government about the ability of farmers to multiply seed in their systems in order for that seed to enter markets without going through the formal certification system? If you speak to farmers, they have been conserving seed, doing seed banking and multiplication. Farmers may well be interested in selling seed commercially. The question came up in the SADC technical agreement regulating seed trade. There is a clause that deals with the ability of farmers to register varieties. What SADC is looking at is different to what I am describing. SADC farmers register varieties but may need to follow DUS but also may be open to a short cut of quality declared seed (QDS). The intention is for seed being part of the formal commercial market whereas the discussion about farmer seed in their own systems is

not necessarily linked to the commercial market. The intention is not to link up with or compete in same corporate markets as Monsanto and Syngenta.

The reason why this topic is controversial is because farmers are concerned that such a discussion will end up where there is more regulation. Farmers don't want regulation, they want to be free to exchange and multiply seed, they want autonomy over the system of declaring quality. But this doesn't allow farmers to sell seed commercially. It is thus interpreted as a way to get government to recognise farmer seed by pushing them to accept a system that farmers themselves come up with to declare seed quality. We need to have a debate about this otherwise we cannot change any policy. Farmer seed systems will never go beyond village level, for small farmer seed enterprises. Government programmes are only accepting certified seed still. The seed law doesn't allow sale of uncertified seed. In the formal system when seed is multiplied it must be true to type to the registered seed. Farmers are seeking protection against biopiracy. This is not regulation but recognition, but also participation in markets.

**Ronnie** from **Bioversity** started by saying that yesterday someone said that what smallholders are doing is invisible. I will make the invisible visible by showing photos. There are good examples around the world of farmer groups who work collectively, sometimes formally in an association which gives recognition and legal protection. Sometimes there is support from NGOs, agricultural research institutes, Bioversity etc. The objective is decentralised production of seed. Decisions about crops and varieties are made in the producer group. Production is done on individual plots.

You still need to make sure you produce high quality seed. Important for maize is spacing if you want to produce a variety and varietal purity. Density of production is usually lower than when the plant is produced for grain. More space is given for each plant. You may want a variety of a certain crop. Farmers can work together on a single piece of land. An example is cassava for 'seed' (stems) in Cote d'Ivoire. Another example is in Gumbu in Limpopo. Women who manage the seed bank decided to produce seed of varieties in high demand. They used a piece of land belonging to the seed bank and produced seed of the particular variety. There are other examples of production of multiple varieties or crops including in Gumbu and Sterkspruit. Farmers produce seed of the most popular crops. In Gumbu there are 7 different varieties of 5 crops on small seed lots. In Sterkspruit there are 8 varieties of 5 or 6 crops. For now it is still just for sharing, but maybe some good varieties could also be produced for sale. Then you are immediately into policy issues in South Africa.

Seed production is done in a diversity block. Farmers can be very good seed producers. Potato, wheat, beans and rice seed is produced in different countries, using material mostly from seed banks. Up to 40 different varieties are planted in a block to produce seed. It is mostly shared but there are also examples of seed production for sale e.g. Uganda and Nepal. In practical ways it is already happening.

**Godwin** from **BCI** started by attempting to show that farmers can produce seed. Although the definition of seed by governments and farmers are different, botanically they are the same thing. In order to produce seed I will leave out maize because of isolation needs, but bean, cowpea etc. (legumes) are in-breeders and isolation requirements are not more than 10m. Isolation is needed to prevent mixing while harvesting. If you are growing a legume, you would not like to grow it after another legume. You need rotation and you need to know the history of the land.

Mostly legumes do not have diseases but you may need to spray. Seed may look the same but when you plant it out there may be some off types. The aim is for purity. Harvesting must be done on time, with a way of drying so there is no aflatoxin [a poisonous substance produced by mould]. If the seed is nice you dry it, then it is chilled and graded. It looks straightforward. If you are under the ITPGRFA then you have the right to save and exchange. Farmers who grow seed should make some money. For many farmers, their whole livelihood is agriculture. In QDS, 10% of the crop is inspected. Growers are registered. Fees are not high, you pay for inspection. In Malawi, some farmers produce groundnut seed on contract for the International Crop Research Institute for the Semi-Arid Tropics (ICRISAT, a CGIAR institute). The seed must be registered which includes characterising the varieties, evaluation on yield, disease etc., produce a report and provide samples working with the research institutes and extension. It is then compared with other varieties to see that it is not the same and is then registered. If it is QDS, the seed bank should have mother/breeder seed that can be used in the following season.

I have been working on this with the Centre for Environmental Policy and Advocacy (CEPA) [an NGO] in Malawi since 2003 but it has not gone into policy although there are promises. Government talks about participation but in practice it does not happen. Government has said only certified seed will be allowed at seed fairs. There were protests and government retreated and said it is ok for farmers to display their seed at the seed fairs. Farmers do produce their own seed for most crops.

In Zambia and Tanzania there are flexible QDS processes for farmers in formal production using seed from the public sector. We are talking about farmer seed. Right now there is no possibility for farmers to enter the commercial seed market unless it is certified.

Truthfully labelled seed is an alternative. This is practiced by farmer coops in Nepal and is recognised by government. They don't interfere but recognise it as an alternative quality control which gives a certain amount of protection. But it still needs a quality protocol. At lunchtime I saw some exchanges like this, so farmers are already doing it here. The seed quality is very good. We can train farmers in this and then get recognition in policy.

Issues raised in **discussion** included the following:

### Sanitary and phytosanitary issues

 On certification, seed remains the single most important factor in the dissemination of diseases and pests. This is the original reason for certification. It is now taken by money but it was originally designed to protect farmers from inheriting diseases which can wipe out ecosystems. When we bring new materials it first goes through checks to ensure it is 100% disease free. In the absence of that we will be open to disaster.

Sanitary and phytosanitary (SPS, seed health) issues are important. Seed is a disease carrier. We must consult farmers especially the elders, and legal minds. But SPS has also failed to protect at times e.g. fall army worm. It is not fool proof. It is hard to deal with the narrative that farmer seed is grain not seed and that farmers don't care about diseases or quality, that farmer seed is diseased.



### Farmer knowledge

- Systems are already there but what is missing is recognition of farmer systems.
- If look around me I see farmers speaking about caring for seeds. The way that farmers regulate themselves, the standards are high. It would be a mistake to overlook farmers' knowledge. A lot of care is taken. Farmers can self-regulate quality and the system can protect that. It is an insult in a way as if you need an external system telling you what is needed. Farmers know what they are doing with the seed, but they are being told all the time that they don't know what quality is.
- I must warn farmers before doing seed saving, they must do farmer to farmer research. Farmers may be illiterate but they do know what we are doing. You

go straight to the person to learn. The principles of agroecology will tell you of it is right.

I want to reinforce the idea that we ought not to undermine the vast knowledge passed on down generations and still being held with high regard by farmers. There is a question of the role of government, NGOs and other players in promoting or affirming knowledge and practice of farmers for generations. Maybe CSOs must engage with farmers in a way that does not undermine but respects and affirms. It is about how we acknowledge existing knowledge and practice. Who gives instructions for who, and to do what? If we document, who are we doing it for and for what purpose?

### Recognition of farmer seed in policy

- The discourse is always that we want an alternative to the existing system. Why not just have our own system that is recognised and protected in policy?
- In Brazil smallholder farmers always organised. When the political moment was right, even in a system dominated by a large scale corporate system, farmers

worked with government to produce and sell seed. Government bought seed as well as production and linked it to school food programmes. They came up with an alternative to the formal system, and even exported seed to the region. Farmers organised, and amended seed laws to allow for sale. This did allow a shift. We can look at the model more. Farmers must lead discussions. Otherwise what do we do about corporate control?

 There is tremendous potential out there. Farmers are already producing high quality seed but to become bigger producers and as a way to earn income. Seed banks that have added a seed marketing component are working very well. It is not only recognition but also reward in terms of the work farmers do and income. One area that has existed longer is participatory guarantee systems (PGS) though not on seed but we can learn from that. It started long ago, initially people said it is crazy but now it is in many places.

Kela Maswabi and Farai Machingambi closed the dialogue with a musical performance.

# Annex 1: Participant list

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# Annex 2: Event programme

### DAY 1: Friday 8 December

8.30-9.00:	Registration Mabule Mokhine (Greenhouse Project) – overall facilitator
9.00-9.45:	<b>Opening and welcome</b> Ritual opening - Simo Mpapa and Mojalifa Mofokeng (artists) Welcome – Mariam Mayet (ACBio)
9.45-11.15:	<b>Dialogue - Political framing/context</b> Zayaan Khan (Environmental Humanities, University of Cape Town) Vishwas Satgar (Cooperative and Policy Alternative Centre, COPAC) Mazibuko Jara (Ntinga Ntaba ka Ndoda) Stephen Greenberg (ACBio) Discussion Facilitator: Mabule Mokhine (Greenhouse Project)
11.15-11.45:	Break
11.45-13.15:	<b>Dialogue - Seed policy</b> Busi Mgangxela (Ntinga Ntaba ka Ndoda) Linzi Lewis (ACB) Joan Sadie (DAFF: Registrar of Plant Improvement) Thapelo Sekele (DAFF: Plant Genetic Resources} Discussion Facilitator: Mariam Mayet (ACB)
13.15-14.15:	Lunch
14.15-14.45:	Guided tour of Women's Jail
14.45-16.15:	<b>Dialogue - Seed, knowledge and culture</b> Facilitator: Method Gundidza (Earthlore)
16.15-18.00:	Break / Seeds of Freedom movie trilogy
18.00-19.00:	<b>Music and drinks</b> Bantu Continua Uhuru Consciousness (musicians)
19.00:	Dinner
21.00:	Transport to accommodation

### DAY 2: Saturday 9 December

8.00:	Transport leaves accommodation for Constitution Hill
9.00-9.30:	Opening ceremonial event
9.30-11.00:	<ul> <li>Dialogue - Seed banks</li> <li>Small groups followed by plenary discussion on:</li> <li>Seed bank experiences - 6 groups, led by farmers working with TCOE Zingisa, Bioversity, Biowatch and COPAC</li> <li>Role of national gene banks and seed repatriation - 2 groups, led by Thabo Tjikana (DAFF: National Gene Bank) and Godwin Mkamanga (Biodiversity Conservation Initiative (BCI) Malawi)</li> <li>Facilitator: Vanessa Black (Biowatch)</li> </ul>
11.00-11.30:	Break
11.30-12.15:	<b>Practical: Seed saving</b> Tim Abaa and Peter Silinda (Izindaba Zokudla)
12.15-13.15:	<b>Dialogue - Smallholder farmers and seed breeding/crop improvement</b> Michael Bairu (ARC Vegetables and Ornamental Plants) Ronnie Vernooy (Bioversity International) Jephrey Tambara (Farmers' Association of Community Self-Help Groups (FACHIG) Zimbabwe) Discussion Facilitator: Stephen Greenberg (ACBio)
13.15-14.15:	Lunch
14.15-14.45:	<b>'Walk through' of the seed management process, and new techniques</b> Department of Agriculture, Forestry and Fisheries (DAFF)
14.45-15.45:	<b>Dialogue - Seed multiplication/farmer based quality controls</b> Mariam Mayet (ACBio) Charles Nkoma (CTDT Zambia) Ronnie Vernooy (Bioversity International) Discussion Facilitator: Sthandiwe Yeni (Tshintsha Amakhaya)
15.45-16.15:	Closing performance – Kela Maswabi and Farai Machingambi (artists)
16.15-16.30:	Closing

Seed and reading materials were on display throughout the event.