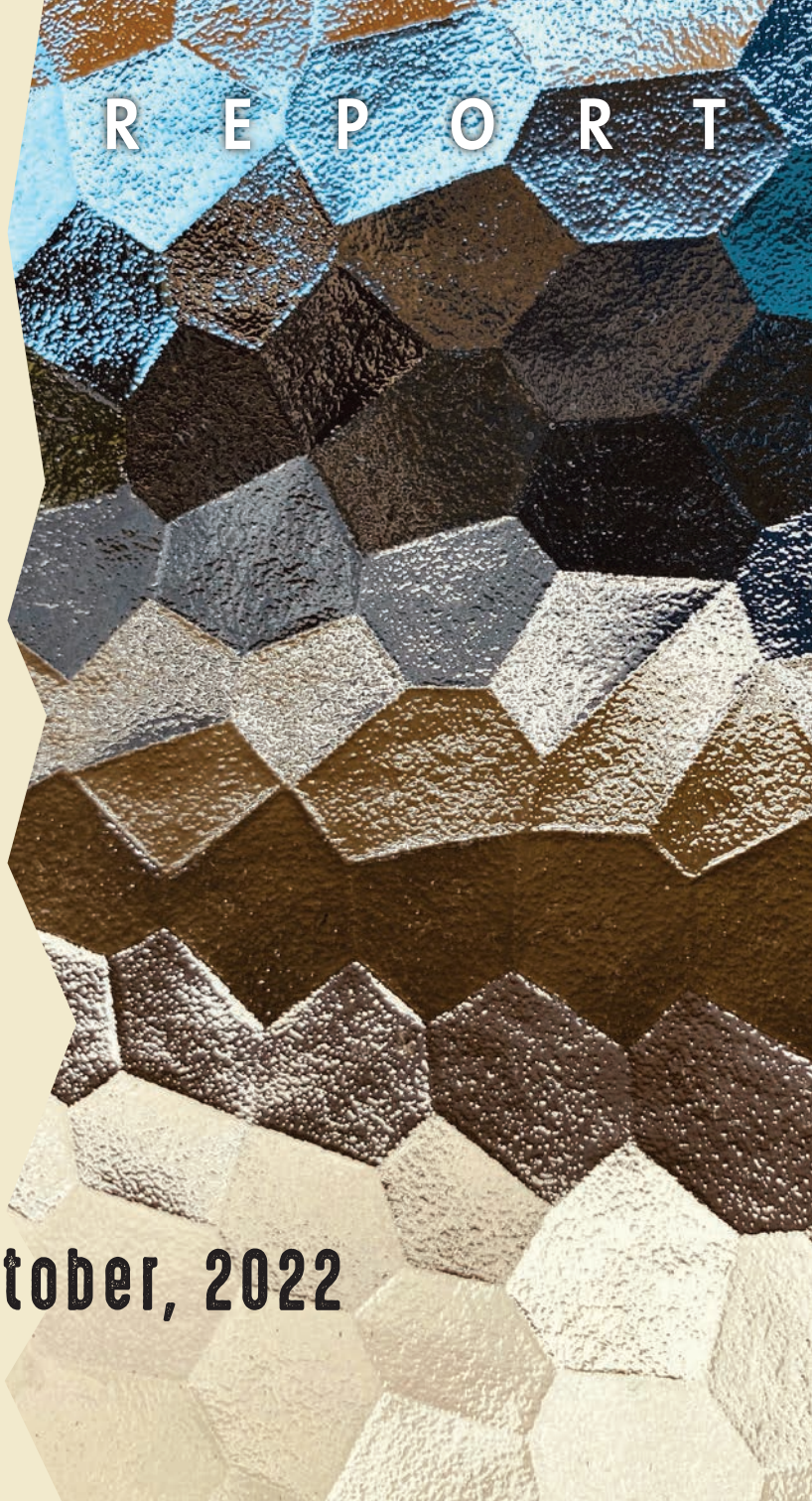
AFRICAN CENTRE
FOR BIODIVERSITY

REPORT

Farmer to Farmer Exchange, Knowledge Sharing and Training

Zimbabwe, 10-16 October, 2022



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AFRICAN CENTRE FOR BIODIVERSITY

The African Centre for Biodiversity (ACB) is committed to dismantling inequalities and resisting corporate industrial expansion in Africa's food and agriculture systems.

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Introduction

Across Africa, smallholder farmers produce most of their own seed requirements from season to season. Despite this, farmer seed systems receive scant recognition with limited support for the diverse farmer practices of reproduction, adaptation, and use that underpin agricultural biodiversity. Policies tend to favour commercialisation, economies of scale, and integration into global markets. However, amid generalised ecological and social crises, there is growing recognition and a renewed appreciation of the multiple roles of smallholder producers in landscape and biodiversity maintenance and use, and in ecologically diverse and sustainable food production systems.

In October 2022, the African Centre for Biodiversity (ACB) and Participatory Ecological Land Use Management (PELUM) Zimbabwe, in collaboration with Towards Sustainable Use of Resources Organisation (TSURO) and Community Technology Development Organisation (CTDO), hosted a pan-African farmer exchange in Eastern Zimbabwe.

The objectives of the exchange were to allow participants to learn and share on farmer seed systems, to strengthen and link them with political work on recognising and protecting these systems, and recognition and implementation of farmers' rights. Farmers showcased their experiences and knowledge in plant genetic resource management and multiplication to increase seed and crop diversity.

There were thirty five participants from 10 countries in sub-Saharan Africa (see Annex 1 participant list), including farmers, non-government organisations (NGOs) and government officials.

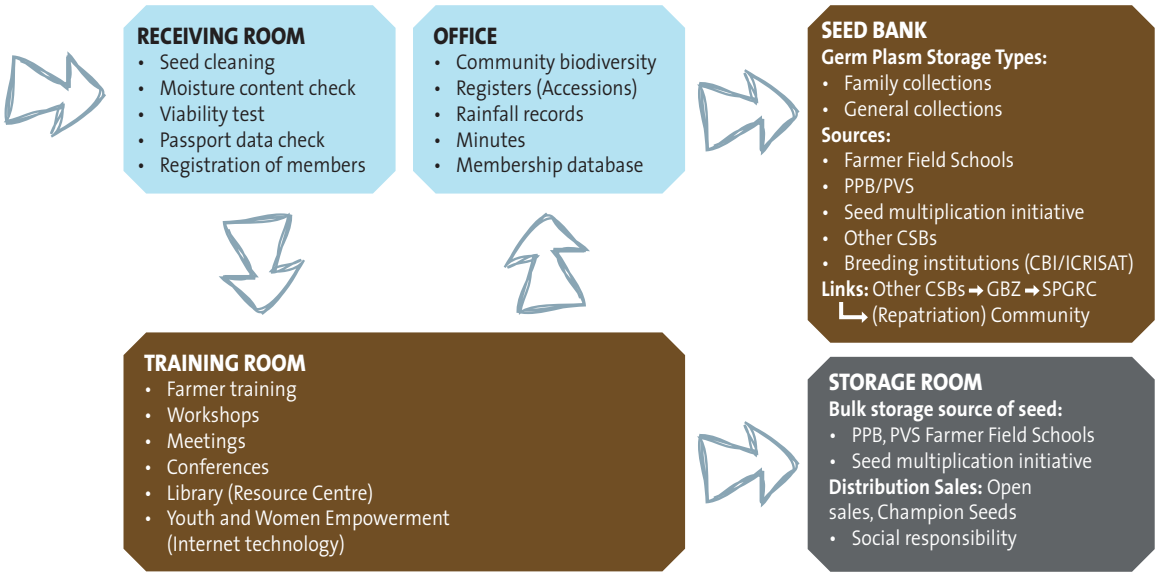
Day 1: Monday 10 October, Mudzi

Participants travelled from Harare to Mudzi in Mashonaland East. CTDO provided an overview of the situation facing farmers. In general, environmental conditions are harsh, especially for smallholders who farm mainly on marginal land far from big city markets. Laws restrict farmers from selling their seeds, and this needs to change, especially where commercial seeds do not perform well.

CTDO shared on their work on community seed banks (CSBs). CTDO currently works with 22 CSBs nationally in partnership with farmers and the government. The CSBs are being constructed as centres of excellence, to include training and demonstration, especially through farmer field schools (FFS). FFS have 25-30 members each and are linked to the CSBs and government extension services.

The CSBs include collections for the general community, household backups, and FFS collections. The CSBs may also include materials from breeders and national and regional gene banks for local testing or reintroduction. Farmers are involved in participatory variety selection (PVS) and participatory plant breeding (PPB). Bulk seed is stored for sale and distribution to those in need in the local community. FFS attached to each CSB are contracted to multiply seed for Champion Seeds, a farmer-owned national seed enterprise.

Community Seed Bank Structure



A clause in Zimbabwe's Seed Law says farmers can only sell or exchange "non-commercial" seed within a 40km radius. Farmer varieties are not defined as seed in the law and may only be sold as food/grain, unless they fully comply with commercial regulations. Efforts are being made to remove these restrictions to enable farmers to sell their own seed nationally or regionally. This includes efforts to find mechanisms to register farmer varieties with their own specified standards so that they are recognised, as well as to recognise FFS as seed producers.

Although CTDO has mainly followed conventional farming practices, growing concerns about soil fertility are leading farmers to adopt more agroecological techniques. A key response to climate change is adoption of small grains such as millet and sorghum, as these are drought tolerant, hardy, and early maturing.

Day 2: Tuesday 11 October, Mudzi and Chimukoko CSB

CTDO led a discussion on **accessing plant genetic resources (PGR)** for food and agriculture, followed by a visit to the Chimukoko CSB, which is supported by CTDO and local extension services, with 170 FFS in Mudzi District.

Zimbabwe, and the African continent more generally, is experiencing a loss of genetic diversity within and between crops. Narrow uniformity with the rise of the formal sector is leading to more uniform diets. Diversity in farmers' fields has always been the basis for the selection of new diversity and as in-field diversity is lost, so is food diversity and traditional knowledge lost.

Multiple actors are involved in accessing PGR, including farmer organisations, NGOs, academics, government at various levels, the gene bank, the national Crop Breeding Institute (CBI), and private companies. In three seasons, the FFS have facilitated the exchange of over 400 varieties.

Genetic materials come into a local area from multiple sources to supplement what farmers already use. These include the national gene bank, which may request farmers to regenerate seed, especially those with low germination; breeding institutions, which provide materials for testing and experimentation; and seed fairs, where farmers display and exchange seed.

Participants from various countries indicated similarities with their own situations. In some countries, breeding institutions claim intellectual property rights on seed tested by farmers, resulting in this seed not being readily available for use. A benefit of FFS and PVS is that participating farmers can keep any of the varieties they prefer from the testing, even if these are not released nationally.

In most places, CSBs are used as a backup store but farmers also keep their own household collections. Generally, farmers can draw from the CSB store if needed, but should later return double what they borrowed, to maintain and increase the reserves, and to benefit other users.

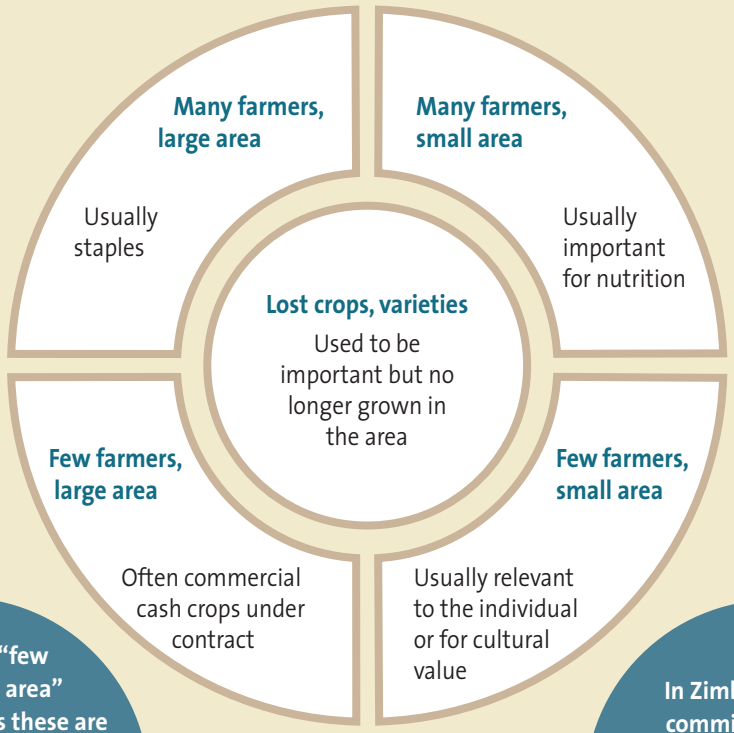
In Benin, seed breeding is integrated at farm level and is not a separate process. In this "living seed bank", seeds are constantly under production and adapting to the environmental conditions.

CTDO shared information on **seed selection and quality assurance**. Quality is determined on genetic, physical, physiological and pathological measures (Table 1).

Table 1: Dimensions of seed quality

Dimension	Measures
Genetic	True to type, long-lived
Physical	Remove foreign matter, moisture content 13%-15%, uniform appearance, e.g. colour, size
Physiological	Germination capacity, viability, vigour, dormancy
Pathological	Health, fungus

Farmers use a **diversity wheel** to prioritise crops and varieties for production and saving. This starts with a group discussion to list all the crops in the community and to identify which are the most important to farmers and consumers. The discussion can include quality assessments of seed from different sources. A timeline analysis can be done to identify which crops have been in the area over a longer period. This can allow farmers to identify crops that have been lost. The involvement of elders is critical for this assessment, as they have the historical knowledge of production in the area. Once key crops have been



Crops in the "few farmers, small area" quadrant indicates these are under threat. If communities identify lost crops to bring back, they can work with the gene bank or other communities to get materials for multiplication.

There is a close link between local knowledge and local diversity. Crops where there is no memory left means these crops will be lost.

In Zimbabwe, farmer committees manage production and quality control, with technical support from NGOs, the private sector, and government breeding and extension services.

Figure 1: Seed Diversity Wheel

identified, locally used varieties of these crops are listed. Diversity assessments should be ongoing, as diversity may shift over time.

The diversity wheel is divided into five zones (Figure 1). Crops and varieties are then placed in each zone as relevant.

Documenting seed traits

Documenting the details of varieties is important for registration so that farmer seeds can legally be sold. But documentation is also important as evidence of ownership of varieties that farmers have developed over time. Information should be relevant for farmers who receive the seed as well as for integration into the multilateral system. Information can appear on a label, as well as more detail on an information sheet.

Information can include:
Name / variety
Where the seed comes from / history
When the seed was produced
Seed size
Germination rate
Key traits
Expected yield
Production and storage guidelines
Ecological parameters
Life cycle, including days to germination, flowering, and maturity
Nutritional, medicinal and other relevant information

There was some discussion about whether formal certification and marketing does not take us in the wrong direction by commodifying seed. Commercialising seed does not necessarily work for farmers, and farmers can end up duplicating what multinationals are doing. It may be better to have two separate and parallel quality assurance systems so there is not a constant battle. For example, in Kenya, farmers have developed a participatory guarantee system (PGS) for seed certification through peer-to-peer assurance. Such seed should be allowed to be sold on the market. In parallel, farmers who want to produce for formal markets should be supported to build their knowledge on production and quality controls through the formal system.

Climate change

Climate change impacts are evident in the areas we visited. These include changing weather patterns, e.g. shorter growing seasons or shifting rainfall periods. In Mudzi, 60 to 90 days of rainfall have been lost, with rains starting later and ending earlier. Maize can no longer be grown and has thus been replaced by small grains. There are also other crops and varieties that can no longer be grown, extreme events are becoming more frequent, and new pests and diseases are emerging. Changes are fast, and crops cannot adapt quickly.

Traditional seed is more resilient than hybrids, which in a drought year is likely to fail and then people will go hungry. In the previous season hybrids did not work well, while in contrast small grains have performed well, and are linked to tradition and culture.

Day 3: Wednesday 12 October, Mudzi

Participants reflected on the CSB visit and had further discussion on **seed storage**. General seed storage principles are: dry and cool conditions, sanitation, effective pest control, and moisture content. Temperature and moisture are dependent on crop and variety.

Participants from different countries shared methods used for storing seed. A number of techniques are common across countries, including hanging seed over smoke to prevent pests, and storing with various natural preservation agents (e.g. ash, bay leaves, dried orange peels, neem, powdered chilli, tephrosia, diatomaceous earth and sand). Farmers variously store seed in bags, calabashes, plastic or glass containers, clay pots, wood or plastic barrels, heavy cloth, underground, and in small huts or granaries. Some seed may be stored *in situ* (e.g. cassava and okra).

Ideally, seed should be regenerated every season, especially if the seeds are old. Oil seeds with high moisture generally don't store for long. Cereals have longer viability and can be stored for 10 years or more under good conditions. There is research showing *rapoko* (finger millet) germinating after 16 years in Zimbabwe. Germination should be above 85%, and germination tests should be done before planting to make sure the seeds will grow.

Seed production

Participants discussed principles and techniques for quality seed production. These include rotating crops seasonally to prevent diseases and nutrient depletion, physical or temporal isolation to prevent cross-pollination, soil fertility through adding organic matter to the soil, ongoing field monitoring, harvesting at full maturity, not mixing seed from different production cycles, and seed groups for learning and sharing.

Participants shared information about their organisations and practices, including on: land rights and economic justice; climate justice and resilience; organisational overview; gender; promoting food sovereignty; agroecology and farmer seed systems; marketing; and seed banks and seed fairs.

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We are The Best
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Day 4: Thursday 13 October, travel from Mudzi to Chimanimani

Chimanimani is still recovering from the effects of Cyclone Idai in 2019. They experienced mudslides from the mountains and 150-180 km/h winds. They have tropical storms every rainy season, but these have become more regular. This has resulted in loss of lives, livelihoods and agricultural land, with infrastructure such as schools and bridges destroyed. Terraced farms have been less affected. Many open pollinated varieties (OPVs) and traditional seeds have been lost. Chimanimani is a timber area, with pine and gum plantations since the colonial days. The area has five privately-owned sawmills. Trees proved helpful as wind breaks and for carbon sequestration, although indigenous trees are preferable to exotics.

Farmers had become dependent on the government farm input subsidy, leading to monocropping. Ploughed fields were abandoned because there was no seed, or it arrived late. Farmers were planting crops or varieties not of their choice or not appropriate for the area. Organisations launched a seed project linked to agroecology and climate change adaptation. Farmers got information on good practices for seed production, and farmer-led seed study groups were established. Seed banks for local seed access were set up, and small grains were promoted.

Participatory Organic Research and Extension Trust (Poret), the Tsuro Trust and Chikukwe Ecological Land Use Community Trust (Celuct) are working together with households and traditional authorities on developing a climate resilient area based on agroecology. This includes agroforestry, reintroducing indigenous forests, holistic livestock management, return of land to the local population, water harvesting, mulching, gabions using stones, green manure/cover crops, etc.

Of the food in the area, 60%-70% comes from farmer varieties, and farmers also produce grains for the Grain Marketing Board.

Day 5: Fri 14 October, Chimanimani district seed market day

Exchange participants attended a district seed fair in Mhakwe, Chimanimani. They were joined by farmers and various government representatives and traditional authorities. An entry fee of US$1 per participant goes to sponsoring prizes for sellers. Buyers purchase vouchers in different denominations and pay sellers with vouchers. At the end of the fair, sellers take the vouchers for exchange into cash. This allows for accurate recording of sales. Farmers are encouraged to record sales at their tables, with details of the buyer, type of seed purchased, quantities, and how much the seed was sold for.

Farmers have established a seed marketing committee. Prices are set by farmers beforehand in discussion, and prices are announced before the start of sales. Prices ranged from US$0.50/ tablespoon for some horticultural seeds to US$1/cup for some grains. Some exchange participants reflected that the prices were too low, thereby undermining the value of farmer seed. However, low prices also benefit local farmers as they can reduce their input costs. Sellers have some flexibility for setting their own prices, especially for buyers from outside.

Government seed inspectors participated in the seed fair, and offered the following comments to sellers on seed quality:

- Sellers should keep uniform seed sizes in one pack, with grading by size.
- Legumes are more susceptible to pest damage, especially cowpeas.
- Sellers should aim for quantity otherwise there will not be enough to share. There should be minimum standards for selling of at least 5kg, and 10kg for maize.
- Sellers should work with officials to identify varieties. These have different names in different areas and sellers should try to synchronise across areas to standardise names. Some crops are from the formal system, and farmers should keep using the original name.
- Good preservation is encouraged, including effective pest controls, temperature etc.

The seed fairs start at household seed bank level, with seed exchanges at ward level overseen by Agritex (extension services). Currently 21 wards in the district have local seed exchanges. A number of wards are then clustered for further exchanges, with the top sellers identified for the district fair. This process selects for good quality sellers. The fairs do intersect with the annual national seed and food festival,

although this takes place earlier in the year than the district. The Tsuro Trust initiated the fair but invited partner organisations from the Zimbabwe Seed Sovereignty Programme (ZSSP) and Seed and Knowledge Initiative (SKI). At the lower levels, each organisation does the exchanges themselves but with coordination from the district.

Day 6: Saturday 15 October, Mhakwe CSB and household seed banks

Participants visited household seed banks and the Mhakwe CSB, and engaged in some discussions. The Mhakwe CSB has more than 500 samples of different varieties, with 95% coming from within Chimanimani. Discussions highlighted the importance of household seed banks, as conservation starts at household level. As reserves are built up, seed is sent to the CSB as backup.

The process of establishing the seed bank starts from a farmer initiative. Farmers form a group and construct a structure or use existing structures. Samples are collected and materials registered (name of producing cooperative, year, date of collection, and traditional knowledge). Sharing and exchange is encouraged.

A farmer Seed Management Committee inspects seed from the different sources before packing. The committee works with farmers to identify demonstration plots to show new varieties. There is a link with government, especially the gene bank and Agritex.

CSBs can send material to the national gene bank as back up. "Passport data" is captured before the seed is stored in the national gene bank. Materials stored in the national and regional gene banks cannot be used without consent of those who sent it there. Some participants raised concerns about sharing sensitive indigenous knowledge with multinational corporations which could exploit this. However, other participants said they don't believe in hiding information. People should be allowed to use the knowledge but not to prevent others from doing so. This is an open source model. Documentation can also protect farmers' rights as it constitutes part of the evidence of "prior art" (historical use of the seed).

Discussion on the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA)

Participants gathered for a short discussion on developments in the ITPGRFA. The Treaty is pathbreaking in its support for farmers' rights and equitable access and benefit sharing. However, commercial seed interests are finding ways of subverting these agreements in their own interest.

The ITPGRFA Governing Body meets every two years to discuss progress. The latest meeting was in 2022 in Delhi. The Treaty indicates there should be payment for the use of resources in the multilateral system to contribute to a central fund to support biodiversity conservation and use activities. But most countries and multinationals are not contributing. With new technologies such as Digital Sequence Information (DSI), breeders do not need to physically get the materials from the farms anymore. Genetic information is scanned and sequenced on a computer and is available to anyone anywhere with the right software. Corporations are now staking ownership claims on digital information as if this is new information. They then patent sequences and traits and use this in an attempt to control any seeds with those traits. Africa and the South generally are saying DSI must be considered part of PGR and must be subject to the same terms of use. This is a contentious issue and the Governing Body meeting ended without consensus.

Farmers' rights in the Treaty acknowledge the efforts of farmers in managing PGR. In exchange, farmers should get some benefits, which include participatory research programmes, and rights to use, exchange and sell farmer seed. There is limited progress on farmers' rights in the Treaty process. A technical experts group was set up in 2017 and provided examples of countries supporting farmers' rights. However, corporations are trying to insist farmers' rights are voluntary, even though these are part of a

binding international treaty. Although the Governing Body agreed to host an international symposium to implement farmers' rights, even a process this soft was resisted by the US, Canada and others. A resolution on farmers' rights as human rights was blocked.

It is important for civil society to unite to guarantee farmers' rights, and defend them at international and national levels. This does not only pertain to "informal" seed, but the majority of seed. Farmer seed needs proper support alongside conventional seed.

Participants raised the importance of practical work to realise farmers' rights on the ground. In Zambia, for example, an Access and Benefit Sharing Act was completed in 2016, although it is not yet operationalised. This Act will contribute to implementing farmers' rights, and recognises communities and benefit sharing. However, farmers need to be better organised to participate effectively. There is a disjuncture between farmer representatives in national fora and farmers on the ground. In Mali, farmers have insisted on having their own local representatives in government projects they are involved in.

Day 7: Sunday 16 October

Participants travelled back to Harare to end the exchange, and evaluated the exchange on the way.

Things that went well included:
- Promotion of agroecology in relation to farmer seed
- Promotion of farmer seed by the Zimbabwean government
- Great interpretation
- Diversity of experiences visited
- Good opportunity to discuss important issues facing smallholder farmers in Africa
- Good to meet others working on the same issues

Overall, participants felt the exchange was worth the effort despite the long travel time required.

Things that could be improved include:
- More practical demonstration of techniques
- Timekeeping was a bit poor on some days
- Need for a strategy to close the gap between government and farmers
- More time for sharing between participants would be welcome

Participants indicated the importance of: regenerating traditional seeds, networking, increase efforts to work with governments, drawing from the lessons of the seed fair in particular, and coordinating continental farmers' voices for the ITPGRFA processes. Participants indicated interest in maintaining and deepening the connections with each other beyond the exchange.

Thanks are extended to the ACB, PELUM Zimbabwe, Tsuro Trust, and CTDO for facilitating the exchange, as well as to the interpreters and communications team.

Annex 1: Participant list

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