

Agro-biodiversity Stewardship Award: An analysis of lessons learned

1.0 Context

The agrobiodiversity@knowledge Knowledge programme sought to break through the barriers that limit the scaling up, institution embedding and horizontal extension of practices that build on agricultural biodiversity for improved livelihoods and resilient food systems. Community Technology Development Trust (CTDT) is part of a global knowledge and experience sharing community (agricultural biodiversity community-abc) of organizations working on agricultural biodiversity with millions of farmers worldwide to gather, generate, test and share evidence and insights on the conservation and sustainable use of this important resource. The knowledge programme aims to synthesize knowledge from a local to global scale, conduct research on approaches and analytical frameworks that produce new perspectives on agricultural biodiversity and its roles in resilient socio-ecological food systems and improve horizontal and vertical knowledge flows towards positive change and transformation.

2.0 Background

There has been great concern raised over the increasing loss of plant genetic resources for food and agriculture in Zimbabwe and worldwide which has led to irretrievable loss of options to ensure food and nutrition security. This agricultural biodiversity has since time immemorial being conserved, managed and utilized by smallholder farmers; the majority of whom live in the low rainfall-low,poor soil fertility agro-ecological regions of the country. During the last few years concern has been raised by traditional leaders and other agricultural conservationists and smallholder farmers in Zimbabwe over the increasing loss of local agricultural biodiversity and the traditional knowledge related to processing, storage and utilization. These concerns have been raised after realizing that these losses are causing serious challenges to household food and nutrition security and the traditional knowledge related to conservation, management and sustainable use of the agricultural biodiversity. Despite the pressures and challenges of conserving the local crops and varieties, there are a few individuals, communities and institutions in the country that have directly and/or indirectly contributed to the conservation and management of the country's agricultural

biodiversity over the years. Concern has been raised that these individuals, communities and institutions should be recognized and rewarded to motivate them to continue conserving and managing the country's rich agricultural biodiversity including the related traditional knowledge which is closely linked with the practices. It has been noted that such recognition will facilitate sustainable access, utilization and inter-generational transfer of knowledge, technologies and capacities required to innovatively manage the country's genetic resource base. A mechanism to provide incentives and recognition to enhance agricultural biodiversity conservation strategies has been developed and operationalized. During the recently held agricultural biodiversity stewardship award ceremony such recognition was given to individuals, communities and institutions that have contributed to agricultural biodiversity conservation at local and national levels. Others at the regional and continental levels can adapt and adopt some of the practices to conserve their plant genetic resources from the genetic to crop and ecosystem levels. To enable them to adopt such practices, there is need to share the lessons learned and experiences gained during the implementation of this project.

1.0 Lessons learned

The activities undertaken under the Agrobiodiversity@knowledge Knowledge programme provide a good basis for the development of best practices which directly contribute to sustainable conservation of plant genetic resources at the local and national levels. During the 6 months of project implementation, the team that implemented the project learned a few lessons at the (i) economic, (ii) social and (iii) technical levels. Activities such as seed fairs, awareness-raising meetings, farmer training on conservation and sustainable use practices, holding of field days, setting up of crop diversity plots and community seed banking proved to be valuable strategies which can contribute to the conservation and sustainable utilization of agricultural biodiversity at local and national levels. The holding of crop diversity fairs in a community gives farmers an appreciation of the levels of agricultural diversity available in their area, the rate at which some of the diversity is being lost. It also contributes to the development of strategies to facilitate seed and knowledge exchanges so that such agricultural diversity is conserved hence strengthening the local knowledge and seed supply systems. This summary report details on some of the key lessons learnt.

2.0 Economic lessons

The agrobiodiversity@knowledge Knowledge programme managed to empower smallholder farmers to own and control local varieties of seed that are adaptable to their agro-ecological regions. Farmers are seed secure such that at the beginning of every planting season they do not need to go to the shops to buy seed of crop varieties such as sorghum, cowpeas, groundnuts and pearl millets thereby reducing their expenditures on agricultural inputs. They were able to use the money saved by using their farm saved seed to buy other household requirements

More than 200 different local crop varieties within the six project sites were recognized by farmers as key in maintaining food and nutrition security at household level. Conserving and managing this range of crop diversity creates a wide gene pool which gives small holder farmers the opportunity to select more climate change adaptive seeds through participatory plant breeding. In addition to the seeds of different crop varieties that farmers were able to exchange at seed fairs, field days and agricultural shows, they also exchanged knowledge on crop storage, processing and utilization at household levels thereby contributing to improved seed and nutrition security. It is important to note that programmes do not only result in facilitating access to affordable seeds but also enhances the local distribution processes. Other farmers around the project site also access this seed coming from the multiplication program at affordable price and through farmer-farmer exchange.

Participatory plant breeding, participatory varietal selection and on-farm seed production initiatives contributed to ownership and control of seed by communities hence enabling the smallholder farmers to build and strengthen their local seed networks. Such local seed networks enhanced farmers' technical capacities to maintain crop diversity, enhance seed distribution within the communities was improved. This resulted in a robust local seed supply system hence ensuring seed and food sovereignty among the participating farmers.

Smallholder farmers have also displayed capacities in the production of quality seed on farm. Low productivity at small holder farms has been attributed to use of poor quality seed among other factors. However, crop yields in the project sites have significantly increased with the

use of improved seed most of which was produced on-farm by the smallholder farmers. This has resulted in increased yields hence household food security in the project sites. Farmers highlighted during the stewardship award ceremony that they are saving significant amounts of money by planting on-farm produced and saved seeds and were using the savings to buy household groceries, paying fees for their children and building better houses.

It has been demonstrated in the project that it is not only access to food which is important, but a wider crop diversity level is also important in ensuring household food and nutrition security. Increased crop diversity results in improved nutrition diversity. Households with a wide diversity of food crops have better access to nutrition diversity. In Zimbabwe, over 33% of children less than 2 years old are stunted and are fed mostly on micro-nutrient deficient food. Small grains and other neglected and underutilized crop species (NUS) are rich in most of these micro-nutrients. Small grains therefore play an important role to close up this gap. It is a fact that households with access to good nutrition live a healthy life with fewer incidences of disease and malnutrition problems. This is important because the households can save money on medication and invest it in other important activities.

In most communities women are the keepers of crop diversity. Participation at seed fairs is dominated by women who constitute over 65% of exhibitors. The crops that are available in the project sites are gender related. Women keep most of the small grains (sorghums, pearl millet, Bambara, cowpeas) which are normally looked down upon by men because they are regarded to be of less economic value. Men's interest is mostly in the commercial crops which are more valued.

Social and cultural benefits of the agricultural biodiversity @knowledge programme

Culture also plays an important role in the management of plant genetic resources. Some varieties are kept in certain areas because they are traditionally important in that particular community. For example, sorghum varieties diversity is highest in UzumbaMarambaPfungwe district mainly because of the crop has a multiple use in that community. The communities in the area use the crop to brew traditional beer and it is also used for other traditional

functions. In Tsholotsho, pearl millet varieties are more than any other crop varieties because the crop is used to prepare thick porridge and to make local beer.

Another key lesson learnt is environment-related. High levels of crop genetic diversity occur most commonly in areas where production is particularly difficult due to harsh conditions. For example, in Murehwa and Goromonzi districts had the least diversity because of their ecological location (natural ecological zone 2b which is receives an average of 650mm rainfall per annum)and UMP which receives an average of 450mm per annum has the highest diversity. High levels of diversity are also characteristic of agro-ecosystems such as home gardens. Therefore, these communities can be targeted and preserved as sources of diversity for research and national seed improvement programs.

At community level, not all farmers play the same role in maintaining a diversity of crop varieties. It emerged as a lesson that farmers with a high resource base including higher incomes tend to grow fewer crop varieties than farmers with lower incomes. Decision on the number of crop varieties grown by farmers in the more margin areas is done more as mitigation measure against vagaries of weather. Crop diversification is used a risk aversion measure in case drought occurs.

3.0 Technological lessons

Crop improvement programs like Participatory Plant Breeding (PPB) and Participatory Variety selection (PVS)) rely on the availability of a wide gene pool. Conservation and management of agricultural biodiversity therefore facilitates such activities. During project implementation, farmers were organized into groups where they exchanged technical knowledge through the Farmer Field School approach.. In collaboration with government researchers and academics, farmers are using the skills and knowledge to select seeds of their choice. The skills and knowledge acquired are going to help them to further improve the agricultural biodiversity within their communities.

Community seed bankingproved to be a key method of building local capacity for thestorage of traditional (local) crop varieties. Improving on-farm seed storage is also a key function of

the community seed banks. Community seed banks contribute both to agro-biodiversity management and seed security for smallholder farmers. In addition, farmers use household level seed preservation technologies such as calabashes, clay pots, granaries and to some extent duty-bags. Seed treatment technologies include ash from finger-millet, ash from burnt maize cobs, cow-dung, and smoke from the traditional kitchen and herbs from specific tree species.

4.0 Policy-related lessons

Participation of influential people like traditional leaders, politicians and other technocrats in project activities such as seed fairs, field days and agricultural field days expose them to efforts that are being carried out by communities to manage the agricultural biodiversity within the country. During the agricultural biodiversity stewardship award ceremony the members of parliament and senators noted with great appreciation the role of local crop varieties in promoting ownership and control of seed which was contributing to increased food production. The knowledge gained during the award ceremony has helped the policy makers to develop a keen interest on putting in place policies that support the country's informal seed systems.

Officials within the Ministry of Agriculture are now very supportive of the proposed Farmers' Rights legislation after some of them attended seed fairs and the stewardship award ceremony and witnessed what the communities are doing to conserve their plant genetic resources. Involvement of policy makers helps in soliciting buy-in and support in terms of changing and crafting policies that are supportive of agricultural biodiversity management.

5.0 Institutional collaboration

Collaboration and establishing linkages with other institutions working on agricultural biodiversity conservation and management such as National Gene Bank of Zimbabwe, international research centres such as International Crops Research Institute for Semi-arid Tropics (ICRISAT) and universities allows for cross-learning between and among the different

institutions. Such collaboration provides a learning platform for both stakeholders and communities also benefit when they are working closely with policy makers, local authorities, extension staff and civil society. They get support from these institutions to properly manage their crop genetic resources. This multidisciplinary collaboration with farmers and communities also creates the optimum environment in which to promote better agricultural biodiversity practices and to enhance productivity and capacity to sustain livelihoods.