

Chapter VI : Linking farmers to the multilateral system to increase the exchange of plant genetic resources

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Key messages

- Problems faced by community seed banks (CSBs) include lack of clarity about concepts, objectives, and sustainability; lack of awareness of policy support for CSBs; inadequate seed and fund management; weak leadership, management, and coordination; inadequate facilities and infrastructure; and poor links and coordination with the National Agricultural Genetic Resources Centre (the national genebank).
- Farmers have become aware of international policies and are ready to share their genetic materials with the national genebank. However, they have mixed feelings about sharing material with people outside the country.
- No national policy documents have explicitly mentioned the need and strategies for linking in-situ/on-farm resources with ex-situ resources or linking CSBs with the national genebank.
- A CSB cannot survive without the support of strong, well-governed local institutions that are aware of day-to-day activities and committed to avoiding unnecessary mishandling of seeds and conflict among members and with non-members.
- Implementation of the ITPGRFA could be carried out efficiently if overall responsibility for monitoring and coordinating the exchange of PGRs through the multilateral system (MLS) is given to the national genebank.
- A “one window” system for exchanging PGRs through the MLS would be most appropriate for Nepal.
- Farmers must be made aware of the benefits they may receive through use of the MLS.
- CSBs must be established and strengthened in strategic locations.
- CSBs and the national genebank must work together and have a common understanding on their roles.
- Farmers' consent must be obtained before listing in-situ/on-farm material in Nepal's Annex I.
- In the case of in-situ and on-farm materials, benefit-sharing mechanisms must be established and monitored to properly acknowledge and reward custodian farmers who are maintaining or preserving such rare resources.

Conserving and using agricultural plant genetic resources (PGRs) that are maintained on-farm by farmers is key to securing food and livelihoods and improving community resilience to climate change (Frankel et al. 1995, Jarvis et al. 1998, FAO 2010). Conservation, management, and sustainable use of PGRs has become possible because of gene flow from one location to another or from one farmer's field to another (Hardon 1997, Subedi et al. 2003), either naturally or through informal and formal seed supply systems that have evolved over generations.

In informal seed systems, farmer-to-farmer seed exchange plays a pivotal role in the maintenance of agrobiodiversity, mainly in smallholder settings in remote, isolated, and inaccessible geographic regions (Jarvis et al. 1998, Sthapit and Jarvis 1999, Sperling and Cooper 2003). However, farmer-to-farmer exchange of PGRs is being replaced by formal seed supply systems that often emphasize modern varieties. This is threatening PGRs that have evolved under the traditional system. For example, in 2014, the contribution of formal systems to the global distribution of rice seeds was four times what it was in 1999 (Hodgkin et al. 2007, SQCC 2014). Thus, it is important to further strengthen farmers' relations with other farmers and with the formal systems, so that a continuous flow of high-quality genetic materials can take place — at both the national and international levels.

In response to the diminishing role of farmers' seed systems, the concept of community seed banks (CSBs) emerged and evolved as a way to empower communities and to protect, maintain, and make available locally valuable PGRs to needy farmers (Joshi 2013, Vernooy 2013). CSBs aim to improve access to seeds, conserve agricultural biodiversity and associated traditional knowledge, facilitate adaptation to climate change, and protect farmers' rights (Shrestha et al. 2012). CSBs are also recognized as a reservoir of seeds that rescues farmers during times of seed scarcity resulting from various social, economic, political, and environmental factors. In addition, they can be a platform for social learning, as farmers exchange knowledge and skills with each other.

The role of CSBs is also important in the exchange of PGRs and associated knowledge with national genebanks and international organizations (FAO 2014) through the multilateral system (MLS) provisioned under the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). CSBs are also expected to be effective in implementing the access and benefit sharing agreement proposed by the Nagoya Protocol to promote one of the goals of Convention on Biological Diversity: "the fair and equitable sharing of the benefits arising out of the utilization of genetic resources" (CBD 1992, Article 1).

In Nepal, farmers' groups that manage the more than 100 CSBs are becoming empowered and increasingly self-sustaining in maintaining, supplying, and conserving important genetic materials within certain geographic regions. However, in the changing national and international policy contexts, there is still lack of clarity regarding the roles CSBs can play, how they can function most effectively, and what policy support is needed and from whom (scientists, extension workers, civil society organizations, and policymakers). There are no clear-cut policies or guidelines to aid and strengthen links between CSBs and the national genebank, the Seed Quality Control Centre (SQCC), and other government bodies performing similar roles, nor with relevant international agencies. This, despite the fact that Nepal's agrobiodiversity policy clearly emphasizes these issues (MoAD 2014).

It is important to understand what plant material farmers hold, their knowledge, and their management practices to determine how these resources can be conserved sustainably. Strong links must be created between governmental and nongovernmental organizations, between farmers growing crops in-situ and the national genebank, and between farmers and the MLS. Last, the issue of CSBs and farmers' rights requires attention.

We made an attempt to document two case studies of CSBs in two locations: terai and hills. We identified the challenges they faced and opportunities available in relation to their operation and management. We also examined possible modes of collaboration and agreement between CSBs and the national genebank with respect to the MLS and identified options concerning in-situ materials under Article 12.3.h of the ITPGRFA (FAO 2004).

For this study, we chose the CSBs operated by the Biodiversity Conservation and Development Centres at Kachorwa, Bara (see Yadav 2013), and Tamaphok, Sankhuwasabha (see Jimi et al. 2015). Study methods included direct observation, review of existing records, and interviews with CSB members, curators, and staff. Some information was also collected through interactive discussions during meetings and a CSB workshop jointly organized by GRPI-II and Community-based Biodiversity Management (CBM)-Nepal projects run by the Nepal Agricultural Research Council (NARC), Local Initiatives for Biodiversity, Research and Development (LI-BIRD), and the Ministry of Agricultural Development. CSB members from various parts of the country participated in the workshop and provided their input.

Challenges in operating CSBs

Although the concept of CSBs is gaining ground in various parts of the country, communities maintaining them continuously face a multitude of problems. Challenges include lack of clarity about concepts, objectives, and sustainability; lack of awareness of policy support for CSBs; poor integration of goals, themes, and disciplines; insufficient knowledge of the science of PGRs, especially plant breeding; inadequate seed and fund management; weak leadership, management and coordination; inadequate facilities and infrastructure; and poor links and coordination with the National Agricultural Genetic Resources Centre (the national genebank).

CSB groups, practitioners, policymakers, conservationists, and development workers all lack clarity about the core concept and objectives of a CSB and knowledge of how to operate them effectively and sustainably. As a result, CSBs receive poor policy support, and integration into government systems is not occurring at the desired pace.

CSB groups and practitioners do not have adequate knowledge of advanced breeding science (e.g., genetics, molecular techniques) and, thus, technical integrity in the management and maintenance of CSBs is poor. This has led to a high level of dependence on government agencies and a handful of NGOs for technical support. For certain crops, especially cross-pollinated ones, farmers have difficulty maintaining pure lines of seeds.

CSB groups find it difficult to manage seeds and funds efficiently and to ensure equity in terms of sharing both the burden of responsibilities and benefits among members. Youth are

losing interest in farming in general and in maintaining local varieties in particular; their lack of involvement in agriculture is seldom addressed by many CSBs. There is a need to train dynamic leaders with a long-term vision and good management and leadership skills. Linking CSBs with research and extension services offered by the government and NGOs has also not received enough attention.

Opportunities for promoting CSBs within the existing policy framework

Agricultural research in Nepal dates back to the early 1920s when the Department of Agriculture was established. In early 1970, the National Rice Improvement Program was founded. Later, in late 1980s, the Seed Act (1988) was passed (and revised in 2008) to facilitate certification of “distinct, uniform, and stable” seeds. Two representatives of seed entrepreneurs and two representing seed producers and farmers can be invited to be members of the national-level seed committee, a body responsible for providing advice on the formulation and implementation of seed-related policies.

The Seed Regulation (1997, revised in 2013) was developed to effectively implement the Seed Act. It allows for the promotion of local landraces and varieties improved by farmers or jointly by farmers and scientists. CSBs can play an important role in identifying promising landraces and do the necessary work to register them in the name of farmers or their representative groups (Chaudhary et al. 2015).

The Seed Policy (1999) emphasizes the organization and management of programs related to the formation of farmers’ groups; revolving fund support; and management, technical service, and transportation subsidies for seeds with a focus on remote areas of the country. As CSBs manage such groups and provide revolving funds to sustain their work, there are opportunities to create synergy between the various policies and leverage resources. However, the mechanism for revolving fund management is not well described in the Seed Policy, and misunderstandings may lead to CSB failure.

The Plant Variety Protection Act (2004) recognizes plant breeders’ efforts and farmers’ knowledge and resources (e.g., farmers’ own varieties) used in developing new varieties. It allows farmers to register, control, reproduce, and market their varieties if they meet the distinct, uniform, and stable criteria. The act also promotes the export and import of farmer-released seed varieties and allows farmers to receive remuneration from sales. There is room for CSB members to test promising local varieties and release them in their own name. For instance, the CSB in Kachorwa, Bara, has played a pioneer role in developing and releasing new varieties.

As a signatory country of the Convention on Biological Diversity, Nepal is obliged to pass a law on access and benefit sharing to establish the rights of local communities to indigenous knowledge and PGRs and ensure fair and equitable sharing of benefits arising from their use. The first draft of such a law was prepared in 2002, but negotiations reached a stalemate over some of its provisions, mainly issues related to indigenous rights. The draft version states that indigenous knowledge of genetic resources belongs to the community and that prior

informed consent is necessary if such knowledge is to be used in variety development. CSBs from around the country have met to form a network and discuss a strategy for securing their rights as defined above. This network could play a vital role in presenting and defending their concerns before the access and benefit sharing law is passed.

Seed Vision 2025 is a policy document that has put forward a strong agenda regarding CSB development, genebanks, community-based seed production, and capacity-building of seed producers and producer groups to promote production of and access to quality seeds. The document also envisions identifying, mapping, and developing seed production pockets within the country and emphasizes investment by the private sector. If implemented properly, this policy can contribute greatly to the growth of CSBs in the country.

The Agro-biodiversity Policy, first developed in 2007 and revised in 2014, focuses on enhancing agricultural growth and food security by conserving, promoting, and sustainably using agrobiodiversity; securing and promoting farming communities' rights and welfare in terms of their indigenous knowledge, skills, and techniques; and developing appropriate options for fair and equitable sharing of benefits arising from access to and use of PGRs. The revised policy acknowledges community-based biodiversity management and approaches, such as community biodiversity documentation, biodiversity fairs, CSBs and biodiversity management funds. These community-led initiatives can contribute to the exchange of in-situ materials. The policy also aims to promote links among international ex-situ genetic resources, the national genebank, public and private national research institutions, seed multipliers, extension agents, and farmers engaged in in-situ conservation and use of PGRs. Emphasis is on strengthening the traditional seed production and distribution system to protect farmer-to-farmer seed exchange and improve access to genetic resources. To guard against false advertisement of the quality of seeds, fraudulent sales of spurious seeds, and theft of farmers' varieties, the policy provides penalties for such activities.

The CSB Guideline (2009) was developed to guide planning, implementation, and monitoring of CSB activities on a regular basis. It focuses on marginalized, subsistence, indigenous peoples and war-affected households that often have poor access to PGRs. The guideline presents a clear vision and outlines strategies to coordinate and collaborate with various governmental and nongovernmental institutions; describes the complementary roles communities need to play; and includes a plan for capacity building and community empowerment.

- The exchange of in-situ and on-farm materials can lead to the following benefits.
- Farmers can get access to PGRs originating and developed elsewhere in exchange for their own genetic materials.
- If farmers' materials are made available to scientists through the MLS, they will be improved by appropriate breeding techniques.
- In certain cases, royalties will be received.
- Farmers' varieties that are no longer cultivated locally or that have become threatened will be conserved on farm elsewhere.
- Genebanks can play a role as a safety reservoir for many PGRs that are under threat.
- Information and skills will be distributed globally along with PGRs.
- Networks of scientists and farmers will be strengthened.

Remedies for the challenges faced by CSBs

There is no cure-all or one-time solution to the challenges that CSBs are facing. To conserve their traditional varieties over the long term, farmers and CSB groups must continuously engage in the collection, regeneration, and multiplication of seeds, especially of rare, endemic, and endangered crop varieties that are more vulnerable than the common, more widespread ones. The participants at our national workshop discussed a variety of tools, techniques, methods, strategies, and policy issues related to sustainability.

To foster sustainability, it is important to address both conservation and livelihood goals and set clear objectives and pathways to reach them, taking into account the local production system, access to technologies and markets, and policy leverage. Although local varieties have priority, in regions where food security cannot be achieved by maintaining local varieties only, the adoption of modern varieties should not be excluded. In high production systems, some rare, endangered, and lost varieties might still be found around villages and could be collected or, if there is local interest in maintaining them, they could be borrowed from the national genebank.

A CSB can only be sustained with the support of strong, well-governed local institutions. Collective effort is a must. Transparency, accountability, and equitable sharing of burdens and benefits are important factors in managing CSBs efficiently. A community-based management fund can provide incentives for CSB groups to unite while they maintain or promote local varieties.

It is important that the government and its line agencies working in the districts accept, integrate, and institutionalize CSBs in their minds, programming, and practices. This requires appropriate policy and legal support at the central level. Proper incentives should also be developed to promote CSBs and encourage practitioners and CSB groups to continue operating. CSBs and farmers managing rich agrobiodiversity on-farm should be clearly recognized in policies and linked with ex-situ organizations or the national genebank. Current efforts are not linked to participatory breeding despite the potential of this approach for conserving local biodiversity and developing locally viable, economically beneficial, and ecologically resilient varieties. CSBs can be strengthened through links and coordination of farmers with national and international like-minded institutions, including private agencies, working in the field of agrobiodiversity conservation and food security.

Mode of operation of CSBs in relation to the MLS

Recently, the SQCC was given responsibility for monitoring the import and export of genetic materials, but this has not been implemented strictly. Scientists have been collecting seeds from farmers and transporting them to research stations in the country and abroad without using any standard procedure. Inspection of imported and exported material at transaction points is poorly done. None of the policy documents we reviewed explicitly mentions the need or strategies for linking in-situ with ex-situ conservation or linking CSBs with the national genebank. The issue of securing farmers' rights is raised in some of the documents without practical recommendations for devolving rights.

Questions remain; How do farmers perceive the law that allows them to share all genetic materials that are in public domain and in genebanks? Do farmers want to share their material with the national genebank and under what conditions in a changing policy context? How do farmers want to share materials with fellow farmers living in their own locality and other regions? How do farmers understand the signing of material transfer agreements and having others sign them when materials are exchanged?

Farmers have become aware of international policies and are ready to share their genetic materials with the national genebank. However, they have mixed feelings about sharing materials with people outside the country. Several CSBs have already shared their PGRs with the national genebank and have shown interest in acquiring material from the genebank to test on their farms. So far, the National Agricultural Genetic Resources Centre has received more than 250 accessions from farmers, and about 100 more have been committed by a CSB.

Mechanisms of exchange of in-situ/on-farm materials with respect to the MLS and Article 12.3.h

Consultations with scientists, government officials, and NGO representatives indicate that a “one-window system” would be the most appropriate way to exchange PGRs through the MLS. This would allow for effective monitoring of the flow of PGRs and minimize theft and illegal supplies of PGRs. The most appropriate institution to take the lead and coordinate a one-window system would be the national genebank, given that it is the main institution dealing with farmers’ varieties. Most professionals working on PGRs fully support this idea.

However, the following prerequisites must be met before sharing in-situ and on-farm materials.

- Farmers must be made aware of policies and the benefits they might receive by using the MLS.
- CSBs must be established and strengthened at strategic locations in the country. CSB members should be educated about the MLS, the Standard Material Transfer Agreement, and other relevant issues. A network of CSB members is also necessary to ensure a collective voice and effort to protect their rights, preserve their PGRs, and acquire appropriate benefits from the use of such PGRs — nationally and internationally.
- CSBs and the national genebank must work together and have a common understanding of their roles. Their relationship must be strengthened. Support for the CSBs is necessary for preserving seeds and documenting knowledge and essential information about the accessions that are transferred to the genebank. Exchange of PGRs between CSBs and the national genebank must be promoted.
- National policies and legislation must be prepared and strictly enacted. A material transfer policy should be clearly outlined and strictly followed. A proper monitoring mechanism must be in place to ensure that regulations are followed and materials are not exchanged illegally or without proper documentation.

- NGO support may be necessary for documenting and regenerating material preserved in the CSBs. Thus, a tripartite relationship is essential for successful implementation of relevant policies and law.
- Article 11.2 of the ITPGRFA does not distinguish between materials maintained under ex-situ and in-situ conditions. Therefore, in-situ and on-farm materials are generally considered to be part of the MLS. However, in-situ materials should be treated separately from those in the public domain. It is clearly stipulated that in-situ material will be exchanged in compliance with national legislation, if available; otherwise, the rule of the governing body of the ITPGRFA may prevail.
- Those PGRs undergoing development/improvement, including material being developed by farmers, remain in the domain of the breeder during the period of development (Article 12.3.e). There is a clear need for national legislation in relation to the ITPGRFA and MLS to avoid confusion in this regard.
- Farmers' consent must be received when including in-situ/on-farm materials under the ITPGRFA and, subsequently, when exchanging them in and outside the country.
- In the case of in-situ material, benefit-sharing mechanisms must be established and monitored to properly acknowledge and reward custodian farmers who are maintaining or preserving such rare resources.

Because CSBs are the local-level institutions handling PGR exchange and dealing with individual farmers, strong, enduring links between them and genebanks must be established, so that information and materials may be continuously exchanged between the two institutions. CSB group members must be trained in effective handling of PGRs and in the legal issues pertaining to the exchange of material with other farmers and professionals at the national and international levels. Some support from the government will also be necessary to improve CSB initiatives in preserving important local germplasm. At the district level, agriculture development offices can be made responsible for the monitoring and preventing the illegal exchange of materials. There should be a mechanism to punish both natural and legal organizations if they violate the rules or fail to comply with national policies and laws.

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