



Realizing farmers' rights through community-based agricultural biodiversity management

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A community-based approach to the management of agricultural biodiversity can empower and benefit smallholder men and women farmers and farming communities economically, environmentally and socially. This approach makes implementing farmers' rights at national level both practical and effective contributing to food and seed security, sustainable livelihoods and resilience. Examples of Bioversity International's research portfolio provide evidence.

Introduction

This brief has been prepared by Bioversity International for delegates to the 2016 Global Consultation on Farmers' Rights¹. The brief aims to raise awareness among delegates and Contracting Parties to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) of the crucial contribution that a community-based approach to the conservation and sustainable use of agricultural biodiversity can make to realizing farmers' rights and empowering men and women smallholder farmers. At the Sixth Session of the Governing Body, under Resolution 5/2015, the Secretariat was requested "to engage Contracting Parties and relevant organizations to take initiatives to gather information at national, regional and global levels for exchanging views, experiences and best practices on the implementation of Farmers' Rights"². This brief aims to contribute to that body of information.

The importance of community-based agricultural biodiversity management

Agricultural biodiversity –including farmers' crop varieties and related knowledge– can be a crucially important asset for farmers to deal with climate changes, pests and diseases, market irregularities and failures. However, much of this biodiversity continues to be lost (FAO 2010). This loss is due in part to the expansion of agricultural systems that promote replacement of a broader range of traditional or farmers' crop varieties with a small number of modern or improved crop varieties (Petit et al. 2001).

The positive impacts of such programmes on food security have been well documented. However, it is also true that in many places, introduced modern varieties have not responded well to farmers' interests and needs, because they lack farmer-preferred traits, and/or are not adapted to local conditions, and/or require costly and often unavailable inputs. Around the world, the loss of agrobiodiversity is contributing to major changes in agricultural livelihoods, agroecosystems and biocultural landscapes

1. The Global Consultation on Farmers' Rights, Bali, Indonesia, from 27-30 September 2016, is convened by the Secretariat of the International Treaty on Plant Genetic Resources for Food and Agriculture.

2. Notification on the Global Consultation on Farmers Rights is available at: http://www.planttreaty.org/sites/default/files/005_GB7_FR_consulta_anno_en.pdf (last accessed 5 September 2016).



A woman custodian farmer from Suriquina Community (Titicaca Lake) Bolivia, proudly showing the varietal potato catalogue she developed in 2013 in the framework of the IFAD-supported Project on neglected and underutilized species. Credit: Bioversity International/S. Padulosi

that have evolved over centuries. Although effective actions are required on a global scale to counter this trend, smallholder farmers and their communities are at the heart of any effective effort to safeguard and make better use of crop diversity at the local level. Smallholder farmers –with key roles played by women– have been selecting, exchanging and improving seeds and crop varieties for millennia. This is how varieties have adapted to changing agro-ecological systems as well as suiting cultural and personal preferences (Gruber et al. 2013; Fadda 2016).

Climate change has begun to put additional pressure on farmers' seed and food production systems and on the multiple functions that they fulfil. Although in many areas, farmers do their best to maintain crop diversity, a significant reduction in the number of crops as well as area planted is occurring. Findings from the field point to a decline in diversity of local varieties in many countries. In some areas this trend has been reversed through efforts that support the use of traditional crop varieties to benefit smallholder farmers (Jarvis et al. 2011). Future impacts of climate change are expected to become more pronounced in many parts of the world, forcing farmers to change

their practices and causing them to search for information about crops and varieties better adapted to new weather dynamics.

In many countries, seed laws and agricultural and economic policies are designed to promote commercial, export-oriented agricultural production systems, without much regard for the need to support the conservation and sustainable use of agricultural biodiversity (including traditional and improved varieties) by local communities. Smallholder farming and their seed systems receive little recognition and even less support (Vernooy 2016). For example, there are few instances of policies supporting farmer-led seed production and marketing of both traditional and improved varieties.

Implementing farmers' rights: evidence from the field

Article 9 of the ITPGRFA addresses, as examples, four farmers' rights: the protection of farmers' traditional knowledge; benefit-sharing; participation in decision-making; and the rights of farmers to save, sell and

exchange seed (Moore and Tymowski 2005; Andersen and Winge 2013). Bioversity International's vision is that agricultural biodiversity nourishes people and sustains the planet. In collaboration with partners from around the world, we deliver scientific evidence, management practices and policy options to use and safeguard agricultural and tree biodiversity to attain sustainable global food and nutrition security. Examples of Bioversity International's research through which the four farmers' rights highlighted in the ITPGRFA are effectively implemented and farmers and farming communities are empowered include:

- developing good practices, incentive mechanisms and policy/legal measures to recognize, reward and support custodian farmers and community seed banks;
- identifying and promoting the nutritional value of neglected and underutilized species; developing new methods to improve access, availability, quality and diversity of seeds; strengthening the technical and business knowhow of smallholder farmer seed producers; assessing the feasibility of payments for agrobiodiversity conservation services;
- identifying effective crop diversity mixes for pest and disease management;
- promoting biodiversity in terms of food and nutrition; and
- designing new mechanisms for involving farmers in policy processes.

The table on pages 4-5 gives a summary of a number of projects of Bioversity International's research portfolio and how the multiple activities contribute to practical implementation of each of the four key farmers' rights.

PROTECTION OF TRADITIONAL KNOWLEDGE

Article 9.2 (a) addresses the protection of traditional knowledge relevant to plant genetic resources for food and agriculture (PGRFA). Smallholder farmers have been the custodians, stewards and guardians of agricultural biodiversity, landraces and related traditional knowledge and cultural use of food for millennia (Halewood 2016). Yet crops, crop varieties and traditional knowledge are lost at an alarming rate. In farmers' fields, in home gardens and through community seedbanks, the promotion, innovation and conservation of local and traditional farmers' varieties and related knowledge is documented and supported. Through understanding the nutritional value of 'sociobiodiversity' and through community biodiversity registers and diversity catalogues, information and knowledge on genetic traits, traditional food use, food and seed storage and food recipes, safeguards food culture and identity in addition to biodiversity. The benefits (both monetary and cultural) of local varieties are recognized and local seed systems are strengthened. Farmers are incentivized to conserve agricultural biodiversity and communities are rewarded for their efforts.

Protection of traditional knowledge Examples:

- In Bolivia, India, Mali, Nepal, Peru and South Africa, farmers are trained to document traditional knowledge of neglected and underutilized species in biodiversity registers and diversity catalogues.
- In Brazil, based on evidence provided by the Biodiversity for Food and Nutrition project, 64 native food species of nutritional importance are now formally recognized in the 2016 Ordinance No.163, "Brazilian Native Sociobiodiversity Species of nutritional value". The ordinance, jointly signed by the Ministries of the Environment and Social Development and Fight Against Hunger, recognizes for the first time native species of economic and cultural importance for traditional communities such as quilombolas, extractivists, local fisher folk and family farmers, among others.
- In Uganda, based on an analysis of seed policies and through policy dialogues with government institutions, under the Improving Seed Systems for Smallholder Farmers' Food Security project, the new seed policy now officially recognizes the informal seed system.
- Farming communities receive in-kind payments for growing different varieties of quinoa, an Andean grain (in Bolivia and Peru) and maize varieties (in Ecuador), under the Payments for Agrobiodiversity Conservation Services project.

BENEFIT SHARING

Article 9.2 (b) addresses the right to equitably participate in sharing benefits arising from the utilization of PGRFA. Such benefits can be monetary or non-monetary. Participatory plant breeding with farming communities; ecological agriculture which leads to more nutritious crops, a healthy environment and food safety; improving access to and availability of diverse seed of good quality; seed and agricultural product development and marketing; and strengthening smallholder farmers' capacity to interact with the formal research and extension sector all create and promote benefit-sharing (Ruiz and Vernooy 2012). To make biodiversity conservation commercially attractive, in-kind rewards and incentives are provided to farmers. Policies and legal frameworks are amended to recognize the importance of agricultural biodiversity, smallholder farmers' seed sector and local seed systems. Novel technologies are used in community seedbanks to improve seed quality and longevity and increase farmers' incomes. Farmers' unique materials are formally recognized and registered, just as breeders' materials are, so that benefits can be shared. Registration of traditional varieties or those resulting from participatory breeding in national catalogues of commercial varieties impacts positively on the use of traditional crops and raises income from marketing.

Case studies/ Article 9 of the ITPGRFA – Farmers' Rights	Brazil: sociobiodiversity and nutrition under the “Biodiversity for Food and Nutrition” project ¹	IFAD-NUS Programme Neglected and underutilized species ²	Genetic Resources Policy Initiative (GRPI2) Community seedbanks ³	Custodian farmers in on-farm conservation (several countries)
Protection of traditional knowledge (TK) relevant to PGRFA [Article 9.2 (a)]	Building on the <i>Fome Zero</i> (Zero Hunger) programme, formal recognition of Brazil's native biodiversity from a nutritional perspective. Family farmers and indigenous groups receive incentives and legal rights to share benefits of conservation and sustainable use of agricultural biodiversity. TK of the preparation, storage and cultural use of native foods revived.	Farmers trained to document TK on PGRFA in community biodiversity registers, diversity catalogues and on video. Traditional food recipes documented to safeguard food culture and identity.	Community seedbanks maintain TK through collective action (seed saving and sharing) and the use of biodiversity registers. Recognition of women custodian farmers.	Recognition of custodian farmers, the men and women farmers who actively maintain, adapt and disseminate agricultural biodiversity and related knowledge over time and space at farm and community levels and are recognized by their community members for their efforts ⁹ . They are seen as conservers, innovator and promoter of biodiversity and TK.
The right to equitably participate in sharing benefits arising from the utilization of PGRFA [Article 9.2 (b)]	In 2016, based on evidence provided by the project, a new public policy, Ordinance No.163 “ <i>Brazilian Sociobiodiversity Native Food Species of Nutritional Value</i> ” formally recognizes, for the first time, 64 native species of economic and cultural importance for traditional communities and provides legally recognized incentives for them to be better integrated into food procurement and other initiatives.	Farmers assisted to register and certify native potato varieties for the first time in Bolivia. Registration of local varieties impacts on the use and raises income from marketing local varieties.	Use of collective seed storage facility and sharing of surplus seeds. Benefitting from participatory plant breeding. Development of fair community-level benefit- sharing mechanisms from the use of PGRFA.	Promotion of biodiversity at the community level and local seed systems strengthened through the sharing of custodians' knowledge, practices and germplasm. Efforts to formally register farmers' unique varieties and species.
The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA [Article 9.2 (c)]	<i>Fome Zero</i> is at the forefront of Brazil's fight against hunger and food insecurity while contributing to strengthening family farming, inclusive rural development and improving accessibility to food through various social protection options.	Multi-stakeholder platforms among farmers and other value chain actors established. Bolivian Government developed a National Bolivian Amaranth Development Plan.	Nepal: a national association gives farmers a stronger voice in policy making. South Africa: community seedbanks and national gene bank develop a national approach to safeguard traditional crops	India, Indonesia and Nepal have recognized custodian farmers by facilitating awards for outstanding custodians.
... rights that farmers have to save, use, exchange and sell farm- saved seed/ propagating material, subject to national law and as appropriate (Article 9.3)	The National School Meals Programme (PNAE) is now based on a school feeding law and ensures 30% of procurement from local family farmers. The Food Acquisition Programme (PAA) (public food procurement) pays 30% more for organic and agroecological food.	Farmer capacities in all steps of the seed management chain strengthened. Lobbying governments to recognize custodian farmers and include NUS in laws.	Community seedbanks improve access to and availability of diverse, locally adapted crops and well-organized community seedbanks operate as <i>bona fide</i> seed suppliers.	Community seedbanks could serve shared custodianship of local crop diversity without undermining the roles of custodian farmers, providing a platform between and among farmers and communities, with support from local governments, for example, through a Community Biodiversity Management fund.

1. Under the Global Environment Facility-funded project, *Mainstreaming Biodiversity Conservation and Sustainable Use for Improved Human Nutrition and Well-being* (or Biodiversity for Food and Nutrition (BFN) project for short), coordinated by Bioversity International, Brazil has been focusing on biodiversity mainstreaming for improved nutrition into national food and livelihood security strategies formed or strengthened under the multi-sectoral and participatory *Fome Zero* (Zero Hunger) programme and its associated plans and public policies,

created in 2003. See <https://www.bioversityinternational.org/research-portfolio/diet-diversity/biodiversity-for-food-and-nutrition/>

2. The IFAD-NUS Programme, led by Bioversity International, focuses on neglected and underutilized species in Bolivia and Peru on Andean grains (quinoa, amaranth and canihua) (2011-2015) and India on minor millets (2001-2015). This work also relates to Article 6.2 (e) of the ITPGRFA on the promotion and use of local varieties and underutilized species.

3. Bioversity International has supported the establishment and/or development of community seedbanks in Bhutan, Burkina Faso, China, Ethiopia, Guatemala, India, Malaysia, Mali, Nepal, Rwanda, South Africa, Sri Lanka, Uganda and Vietnam.

Case studies/ Article 9 of the ITPGRFA – Farmers' Rights	PACS: Payments for Agrobiodiversity Conservation Services ⁴	Diversity against Damage (DiAD) (to manage pests and disease) ⁵	Improving Seed Systems for Smallholder Farmers' Food Security ⁶	Seeds for Needs ⁷
Protection of traditional knowledge (TK) relevant to PGRFA [Article 9.2 (a)]	Use of incentives for farmers to conserve agrobiodiversity and related knowledge, e.g. to grow different varieties of quinoa, an Andean grain, in Bolivia and Peru, maize varieties in Ecuador and preliminary work in Guatemala.	Farmers as promoters of the use of diversity and TK for improved management of production system (China, Ecuador, Morocco and Uganda)	Farmers' crop trait preferences are characterized. Catalogues, databases and portfolios of traditional, local and improved varieties (adapted to project sites) of various crops (apple, apricot, arracacha (<i>Arracacia xanthorrhiza</i>), banana, bean, carrot, cucumber, grape, onion, pomegranate, potato, rice and finger millet) are developed.	Recognition of farmers as knowledgeable and skillful citizen scientists.
The right to equitably participate in sharing benefits arising from the utilization of PGRFA [Article 9.2 (b)]	In-kind rewards to conserve agrobiodiversity and maintain related ecosystem services, determined by the farmers themselves and paid at the community level (e.g. seed, fertilizers, machinery, construction materials, school supplies) ensuring participatory justice.	Access and benefit sharing protocol developed by community seedbank (China). Crop biodiversity integrated into the agricultural extension curriculum and government policies amended (Morocco). PGRFA diversity included in the final draft seed policy (Uganda).	Sufficient crop genetic diversity made available to smallholders. Traditional varieties or varieties resulting from participatory breeding included in national catalogue of commercial varieties. Income of farmer-seed producers increased	Farmers' capacity for crop improvement, diversification and quality seed production strengthened through crowdsourcing approach and community seedbanks including the use of novel storage and conservation technologies.
The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA [Article 9.2 (c)]	Communities determine which high public good value crop species/varieties to cultivate, on which land area and what in-kind rewards to receive.	Farmers participate actively in multi-stakeholder policy meetings (Ecuador) Government awarded community genebank in Kabwohe for seed management excellence (Uganda).	Plant conservation and research strategies better connected to the realities of smallholders.	Farmer preferences detected through crowdsourcing of varieties. Farmer knowledge feeds back into genebanks, research organizations and breeding programmes. Awareness of and access to crop diversity increased.
... rights that farmers have to save, use, exchange and sell farm- saved seed/ propagating material, subject to national law and as appropriate (Article 9.3)	Farmers' access to seeds of prioritized genetic resources facilitated.	Community institutions offer access to good quality diverse seed, increase social cohesion, improve production and income	Community seedbanks established or enhanced and farmers' groups strengthened. Existing policies, legal frameworks and regulations affecting seed systems analyzed. Informal seed system recognized in new Uganda seed policy and ongoing dialogue in Bolivia.	India: about 15,000 farmers in four states of India involved. Results of farmer trials are fed back to farmers and shared with national research organizations, NGOs, seed companies and plant breeding programmes which feed back into subsequent trials and delivery of seeds to farmers which they want and need.

4. The "Payments for Agrobiodiversity Conservation Services (PACS)" project has been explored in Peru, Bolivia, Ecuador, India and Nepal since 2009 and is currently being implemented in Peru and Ecuador. See <http://www.bioversityinternational.org/pacs/>

5. "Diversity against Damage (DiAD) project: contributions from the use of crop genetic diversity to manage pest and disease" (UNEP GEF/IFAD/SDC/FAO) is a global family of men and women from over 60 national research and academic institutions, national and local governmental and extension

agencies, NGOs and community and farmer associations from China, Ecuador, Morocco and Uganda, working together to integrate intra-specific crop diversity into integrated pest management (IPM), resistance breeding and other agronomic and land and water management practices to combat pest and disease and prevent pollution with reduced chemical inputs. See <http://agrobiodiversityplatform.org/cropbiodiversity/>

6. "Improving Seed Systems for Smallholder Farmers' Food Security", led by Bioversity International with

funding from the Swiss Development Cooperation, contributes to a future in which smallholder farmers and communities in Bolivia, Burkina Faso, Nepal, Uganda and Uzbekistan successfully use crop diversity to ensure their food security, to thrive in challenging conditions and to make their farms resilient.

7. Bioversity International's "Seeds for Needs" project began in Ethiopia in 2009 and now works in 13 countries. It promotes awareness of and gives access to farmers to a greater diversity of crops and crop varieties; strengthens farmers'

capacity for quality seed production and crop improvement including adaptation to local conditions and changing climate; and strengthens local seed systems. See <http://www.bioversityinternational.org/seeds-for-needs/>

8. Sthapit, B.R., Lamers H. and Ramanatha Rao, V. (2013) 'Custodian farmers of agricultural biodiversity: selected profiles from South and South East Asia'. Proceedings of the workshop on custodian farmers of agricultural biodiversity, 11-12 February 2013, New Delhi, India.

Benefit sharing Examples:

- In China, under the Diversity against Damage (DiAD) project to manage pest and disease through crop diversity, a protocol for benefit sharing and access to germplasm from the community seedbank has been set up.
- In South Africa, community seedbank members are producing seeds of priority varieties conserved in their community seedbanks to be shared locally.
- In India and elsewhere under the Seeds for Needs project, the innovative use of ceramic zeolite drying beads and hermetically sealed containers for seed storage improves seed quality and longevity, enabling the farmer to sell, for example, maize as seeds rather than as grain (due to maintaining seed quality) gaining higher earnings. This offers an opportunity to enhance seed quality in the current private unorganized seed sector which makes up 33% of the Indian seed system.

PARTICIPATION IN DECISION-MAKING

Article 9.2 (c) addresses the right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of PGRFA. Community biodiversity management empowers farmers and farming communities to participate in policy dialogues. National associations and systems which recognize and support the safeguarding of traditional crops and crop varieties give smallholder farmers a direct say in the implementation of national conservation strategies. Farmers as ‘citizen scientists’ provide valuable scientific information and their preferences are detected through crowdsourcing of variety testing, which feeds back into genebanks, research organizations and breeding programmes. Linkages between community seedbanks and national genebanks and strategic partnerships between farming communities and the private sector and other value chain actors are strengthened. Governments are now recognizing and awarding outstanding custodians. Incentives and rewards can promote agricultural biodiversity as a public good. Lobbying and advocacy work targets key policy- and decision-makers as well as the general public about the value, including nutritional, of native biodiversity. In Nepal, leaders of community seedbanks established a national association of community seedbanks to give stronger voice to the country’s thousands of custodians of biodiversity. Through facilitation of Bioversity and national partners the head of the association now takes part in national policy consultations on topics concerning agrobiodiversity.

THE RIGHTS OF FARMERS TO SAVE, SELL AND EXCHANGE SEED

Article 9.3 addresses the “rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate”. Farmers’ smallholder seed systems (based on the use of own-saved

seeds, seed exchanges with family, friends and neighbours, and purchase or barter at local markets) continue to provide 60-90% of the seed used by smallholder farmers. Yet analyses of many agricultural, economic and seed policies demonstrate that current policies are not recognizing nor supporting smallholders’ seed systems and crop diversity. Community seedbanks can enhance the resilience of farmers and communities through securing improved access to and availability of diverse, locally adapted crops and varieties and through enhancing knowledge and skills in plant management including selection, storage, multiplication and dissemination of seeds. Farmers’ capacity in crop improvement (including in the context of adaptation to climate change), assessment of diversity, risk management, seed collecting and marketing is strengthened. Some community seedbanks are working to establish farmers’ seed sovereignty and selection of farmer-preferred varieties and seed production on a commercial scale. Crowdsourcing combines large-scale participatory evaluation of crop diversity with statistical analysis and the use of digital technology to record, store and share data. Results feed back into subsequent trials and delivery of seeds to farmers which they want and need. Farmers’ varieties are protected through policies that are sensitive to the cultural, taxonomic and legal complexities involved ensuring continued crop diversity and evolutionary processes.



The rights of farmers to save, sell and exchange seed

Examples:

- In Bara, Nepal, a new rice variety named Kachorwa 4 has been developed using participatory plant breeding which generates income for the community seedbank and demonstrates the potential for well-organized seedbanks to operate as *bona fide* seed suppliers.
- In Ecuador, productivity and pest and disease resistance in Maize and common bean is being studied in field experimentation sites.
- Through various projects including the Genetic Resources Policy Initiative, community seedbanks in Bhutan, Burkina Faso, China, Ethiopia, Guatemala, India, Malaysia, Mali, Nepal, Rwanda, South Africa, Sri Lanka, Uganda and Vietnam have been established, supported or enhanced.

The way forward

Smallholder farmers and communities have the right to participate meaningfully in all decision making related to their livelihoods and future, be empowered to uphold their rights and be rewarded for their roles as custodians of biodiversity. The varied examples from the field are evidence that this can be practically and effectively accomplished through a community-based biodiversity management approach. There is no longer ground to argue that things cannot be done or do not work. The conservation and sustainable use of agrobiodiversity presents an avenue to fully realize farmers' rights as envisaged by the ITPGRFA. With commitment from farming communities, research and development organizations and government institutions, farmers can continue to be the world's custodians of biodiversity and recognized and rewarded for their contributions to food and agriculture production, maintenance of crop diversity and global food security.

National and local governments should promote farmers' rights implementation through support to agrobiodiversity focused programmes and projects. This can be supported by revised agricultural and economic policies and seed laws and the development of specific agrobiodiversity policy and law. In 2014, Nepal adopted a revised Agrobiodiversity policy, which can serve as inspiration and example to build on.

National genebanks should reach out and connect to community seedbanks and set up a collaborative agreement that could include capacity development, knowledge and seed exchanges, and the strengthening of the national network of conservation actors. In Bhutan, the National Biodiversity Centre supports four pilot community seedbanks. In South Africa, the Plant Genetic Resource Centre supports two pilot community seedbanks.

Farming communities, agricultural extension services, NGOs, universities and research organizations should work together to design and implement programmes and projects that put into practice the approach and portfolio of actions described in this brief.



Credit: Bioversity International/R. Verhooy



Credit: Bioversity International/R. Vernooy

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Cover Photo: Farming communities attending rewards (in-kind and social recognition) handover ceremony for successful conservation of rare quinoa varieties. Huataquita, Cabanillas District, San Román Province, Puno Region, Peru. Credit: Bioversity International/A. Drucker.

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