# THE POWER TO EXERCISE CHOICE: IMPLEMENTING FARMERS' RIGHTS TO ERADICATE POVERTY AND ADAPT TO CLIMATE CHANGE

SD=HS BRIEFING NOTE NO. 3

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**COVER PICTURE:** Farmer Field School participants discussing the rainfall and agricultural calendar, Rushinga district, Zimbabwe. *Photo credit: Sacha de Boer / Oxfam Novib*



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*<< Diversity wheel exercise during a seed fair in UMP district, Zimbabwe*
*Photo credit: Anita Dohar / Oxfam Novib*

# EXECUTIVE SUMMARY

More than ever, smallholder farmers and indigenous communities require crop diversity to adapt to shifting climatic conditions, including increased drought, flooding and more irregular weather patterns in general. Farmers in the Sowing Diversity = Harvesting Security (SD=HS) programme communities consistently demand more crop diversity. Interesting traits may be available from various sources: varieties in other farming communities and community seed banks; breeding materials in breeding institutions; modern varieties sold by national or international seed companies; and gene banks across the globe. Despite their important contributions to plant breeding, public and private breeding institutions have often focussed on large-scale intensive farming systems for the production of commercial crops, and the resulting varieties in many cases do not respond to the diverse needs of small-scale farmers.

The SD=HS programme (see box 1) aims to realise Farmers' Rights by empowering indigenous peoples and smallholder farmers to uphold their role in contributing to food security and strengthening their adaptive capacities. This report describes the main tools and achievements so far. Farmer field schools (FFS) are one key tool. They facilitate farmers in accessing, adopting and creating a better-adapted portfolio of crops and varieties. FFS are about people, their development and their empowerment. They do not simply transfer technology or train farmers to produce seeds for distribution to other farmers: they develop *people's power to exercise choice* and their capacity to self-organise and learn, continuously innovate and update their practices, and engage in advocacy for policy changes. Other key tools include community seed banks and various participatory plant breeding approaches to maintain, enhance and create crop diversity. The report also presents the first results of the farmer seed enterprise *Champion Farmer Seeds,* established by the programme in Zimbabwe.

There are several options and conditions for scaling up community support in genetic diversity management. This report highlights the importance of cooperation between local and indigenous communities and public-sector institutions for the success and sustainability of such endeavours. It identifies, in particular, the necessary conditions for dramatically increasing the number of FFS:

1. the availability of well-established curricula for trainers as well as farmer-participants;
2. well-developed engendered tools, such as the "diversity wheel", that enable farmers to diagnose problems, find solutions and facilitate decision-making;
3. the involvement of extension service staff (at national and local levels) in facilitating the FFS;
4. the availability of new and adapted germplasm, both stable and segregating, from participating breeding institutions; and
5. an enabling policy environment, which allows farmers to produce and sell seed of their preferred varieties.

From the programme's various lessons and achievements, the report reflects on the policy implications for countries wishing to create a more enabling environment for farmers to maintain their contributions to conserving and improving plant genetic resources for food and agriculture, and to help farmers in improving their livelihoods and exercising their Farmers' Rights.

# INTRODUCTION



*<< Aomnoukhan Sum preparing a meal in her house in Thopapock village, Laos*
*Photo credit: Sacha de Boer / Oxfam Novib*

Farmers' Rights are a cornerstone of the International Treaty on Plant Genetic Resources for Food and Agriculture, and their implementation is a major condition for the conservation and sustainable use of these resources *in situ* and on-farm.[1] The Treaty recognises the enormous contributions made by farmers worldwide in conserving and developing plant genetic resources for food and agriculture.[2] According to Article 9, governments should protect and promote Farmers' Rights, but can develop the measures to do so according to their needs and priorities. Measures should address the protection of traditional knowledge, equitable benefit sharing, participation in decision-making, and the right to save, use, exchange and sell farm-saved seeds and propagating material "subject to national law and as appropriate".[3] Several other articles in the Treaty, in particular Articles 5 and 6 on sustainable use, are also important for the realisation of Farmers' Rights.[4]

Over the millennia, farmers' systems of selecting, saving, using, exchanging and selling seeds, and the resulting free movement of germplasm, have created the diversity that forms the basis of global agriculture today. Indigenous peoples and smallholder farmers, a large percentage of whom are women, provide about 80 percent of the food consumed in almost all of the developing world, contributing significantly to food and nutrition security and poverty reduction.[5] Farmers' Rights are not only the entitlement of farmers but are also needed by farmers in their efforts to alleviate poverty and to play their role in the management and conservation of plant genetic resources.

The implementation of Farmers' Rights is highly relevant to the commitments in the 2030 Agenda for Sustainable Development to end poverty, hunger and malnutrition, and halt and reverse the loss of biodiversity. The Sustainable Development Goals (SDGs) demand, by 2020, to 'maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species'.[6] The UN highlights that 'Since the 1900s, some 75 per cent of crop diversity has been lost from farmers' fields. Better use of agricultural biodiversity can contribute to more nutritious diets, enhanced livelihoods for farming communities and more resilient and sustainable farming systems.'[7] The 2030 Agenda is also clear on the important role of women farmers: 'If women farmers had the same access to resources as men, the number of hungry in the world could be reduced by up to 150 million.'[8]

Yet, in the 13 years since the Treaty came into force, the realisation of Farmers' Rights, which rest on national governments, has been very slow. And whereas these rights are essential they are not sufficient, since they depend on the power and capacity to exercise these rights. Nation states and those in power should take their responsibility to respect, protect and help fulfil these rights.

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1 *See: www.farmersrights.org*

2 *FAO, 2001, Article 9.*

3 *Ibid.*

4 *E.g. Resolution 6/2011 encourages each Contracting Party to closely relate the realisation of Farmers' Rights, as reflected in Article 9 with the implementation of Articles 5 and 6, which deal with the conservation and sustainable use of plant genetic resources.*

5 *IFAD and UNEP, 2013; FAO, 2014.*

6 *SDG target 2.5, https://sustainabledevelopment.un.org/sdg2*

7 *http://www.un.org/sustainabledevelopment/hunger/*

8 *Ibid.*

Despite slow implementation at the national level, hundreds of communities and programmes, including the SD=HS programme (see Box 1), show that Farmers' Rights can be actively pursued by men and women in local and indigenous farming communities worldwide. Some of these programmes link to government activities that support the implementation of Farmers' Rights at national and global levels. This report reflects on a number of key lessons and achievements in promoting the implementation of Farmers' Rights, derived from SD=HS and its preceding programmes.

Crop diversity is crucial to enhance smallholder farmers' resilience to climate change. This report describes how farmers are empowered to maintain, improve and increase the diversity in their fields, thereby safeguarding their food and nutrition security. After describing the key tools utilised in the SD=HS programme, the report provides options and conditions for scaling-up community support in genetic diversity management. In addition, it presents the early results of the establishment of a farmer seed enterprise, *Champion Farmer Seeds,* in Zimbabwe. On the basis of these lessons and achievements, the report reflects upon the policy implications for countries in creating an enabling environment for farmers to maintain their contributions to conserving and improving plant genetic resources for food and agriculture, and help farmers exercise their Farmers' Rights.

### BOX 1: THE SOWING DIVERSITY = HARVESTING SECURITY (SD=HS) PROGRAMME

Sowing Diversity = Harvesting Security (SD=HS) is a five-year global programme geared towards empowering indigenous peoples and smallholder farmers to uphold, strengthen and mainstream the rights and technical capacities to manage their biodiversity for food and nutrition security in the context of climate change adaptation. The programme also addresses the interconnectedness of food systems at global and local levels, as well as the active participation of the poor in achieving inclusive policy governance, and in exercising Farmers' Rights and the right to food. It sees the knowledge and experiences of indigenous peoples and smallholder farmers as decisive elements in the global response to climate change.

SD=HS was launched in 2014, building on Oxfam's 10 years of experience in global programmes on sustainable livelihoods and the Biodiversity Fund, the three-year IFAD-Oxfam programme, as well as the diverse experiences of its partners in supporting farmers' seed systems worldwide. The design of the SD=HS programme also includes lessons drawn from the review of the rich and diverse experiences of agro-biodiversity programmes worldwide. Currently, the SD=HS programme is active in five countries (Lao P.D.R., Myanmar, Peru, Vietnam and Zimbabwe) targeting 150,000 households of indigenous peoples and smallholder farmers, of which at least 50 percent are women.





Florence Mutukaveyo (1966) is married and has 1 son and 3 daughters. She's happy to be part of the farmer field school because it teaches her about the effects of climate change and she learns which seed varieties are most productive. Her biggest dream for the future is more rain in Zimbabwe. At the moment only 25% of her villagers can survive from the yearly harvest. Florence is in the picture with cowpeas.
*"I prefer crop varieties that grow fast and can be harvested soon."*
*Photo credit: Sacha de Boer / Oxfam Novib*

# THE IMPORTANCE OF CROP DIVERSITY FOR FARMERS TO COPE WITH CLIMATE CHANGE



*<< Farmer field school participants conducting a weekly agro-ecosystem analysis (AESA), Saravanh province, Laos. Photo credit: Sacha de Boer / Oxfam Novib*

Never before have farmers been confronted with changes in weather patterns and risks at such a vast scale and speed as in recent years. Increasingly, farmers face unpredictable and unforgiving climate conditions that result in lower yields or total crop failure. Crop failures devastate farmers in two ways: firstly, losing their harvest means hunger and loss of income; secondly, losing their seeds means losing a major asset for their livelihoods.

Climate is changing fast, and scientific studies are indicating that enormous changes will be required in global cropping systems.[1] Countries and farmer communities need to be prepared to grow new crops and varieties and they need to start doing so now. Addressing the climate change challenges that face farmers now and in the near future will require major investments in new forms of institutional collaboration.

In Zimbabwe, like in other countries in the Southern African region, increased climate variability is already a reality. Rainfall patterns have shifted, the growing period has shortened, and the distribution of rainfall has changed. After the drought-stricken harvests in the 2015/2016 agricultural season, which coincided with one of the strongest El Niño years on record, in the latest growing season 2016/2017 farmers were confronted with heavy rains and flooding, which destroyed harvests in areas with sandy topsoils while boosting yields in those with heavy, fertile soils.

Farmers in Zimbabwe apply manifold coping strategies: they are adopting a combination of other varieties, or even other crops, which are better adapted to the new weather conditions, thereby challenging the country's dependency on maize. Many are planting more crops and varieties per crop to spread the risk. In one of the farmer field schools in Goromonzi district, for example, a farmer reported having planted seven maize varieties, seven bean varieties, seven Bambara groundnut varieties, nine cowpea varieties and eight groundnut varieties in a single season.[2] For such coping mechanisms to work, access to locally-adapted seed at the right time and at an affordable price is critical. The level of farmers' seed security greatly influences their resilience. But reaching seed security may pose serious challenges, as during years with major droughts, farmers can be forced to replant as many as four times.

In reality, farmers' options are often limited: the diversity of good quality seeds needed under the new weather conditions may be available only partially or not at all. Modern agriculture and plant breeding have focussed increasingly on a very limited set of crops and varieties, thereby endangering food and nutrition security. Modern varieties encompassing the latest and best traits are only available for a small number of crops. Yet, food and nutrition security depend on a wide and varied supply of food sources throughout the farming seasons and across agro-ecosystems. Whereas commercial maize hybrids are widely available in Africa, the formal sector hardly provides varieties of other nutritious cereals that perform better in drought-prone conditions, such as sorghum and millets. For example, in Zimbabwe, only three varieties of sorghum were released between 2011 to 2013;[3] at the time of writing, the main seed company in Zimbabwe, SeedCo, stocks only three varieties of small grains, three of groundnuts and one of cowpea.[4] Government monitoring showed that, in practice, no

1 *Alexandratos and Bruinsma, 2012.*

2 *Oxfam and CTDT, 2016.*

3 *See: http://tasai.org/wp-content/uploads/Zimbabwe-brief-final.pdf*

4 *See: http://seeds.seedco.co/sorghum*

small-grain seed was available from agro-dealers in any of the five regional centres surveyed, and seeds of groundnuts and cowpeas were available in one location only.[5]

Farmer seed systems play a crucial role in maintaining crop diversity and providing seed security for small-scale farmers in developing countries, in particular for less commercially attractive crops. Crop diversity is maintained in farmer's fields and through traditional practices of smallholder farmers and indigenous communities. For example, in the low- to high-altitude community of Lares, Peru, markets for the barter and sale of seeds are an integral part of community strategies to secure their traditional diet and access the diversity of seeds needed. The barter markets are a source of much greater crop diversity than commercial markets: more than 80 percent of the crops grown in the middle 'keshua' zone and 100 percent of those grown in the upper 'puna' zone are bartered in the markets, whereas on average of only 30 and 60 percent respectively of produce from these zones makes its way into commercial markets. Up to 60 percent of the region's estimated 240 potato varieties are found in the barter markets, whereas less than 25 percent of potato varieties are for sale in commercial markets.[6] It has also been reported that when farmers lost native potato varieties to late blight in one community, they were able to recover those varieties from a neighbouring community through seed exchange.[7]

However, these traditional safety nets are under threat or no longer adequate given the rapid environmental and socio-economic changes. The SD=HS baseline surveys in Vietnam, for example, revealed that the practice of saving and re-using rice seeds for the next planting season has almost disappeared in some areas in Vietnam.[8] More than 90% of farmers in Hoa Binh, Yen Bai and Thanh Hoa provinces depend heavily on purchasing rice seeds, particularly of hybrid or other modern varieties.[9] This change has contributed to the loss of diversity in the rice fields of Vietnam.[10] The SD=HS baseline survey in three major rice-producing provinces in the Mekong Delta (An Giang, Hau Giang and Soc Trang) revealed that in the past four decades, the number of local rice varieties cultivated declined by approximately 80%.[11] Consequences were felt during the recent El Niño-induced extreme weather events, which resulted in a decrease in groundwater levels and the most extensive salinity intrusion in the last 90 years.[12] Such weather conditions require farmers to access new crop diversity to adapt to these changes, which may come from farmers themselves but also from the public and private sectors.

5 *Agricultural Marketing Authority (2016) Agro-Input Monitor. Available at: http://www.ama.co.zw/wp-content/uploads/2016/10/Agro-input-bulletin-issue-8-of-year-2016-.pdf*

6 *ANDES, 2017.*

7 *Oxfam Novib et al. 2016.*

8 *Oxfam Novib et al. 2014.*

9 *SEARICE, 2013.*

10 *Oxfam Novib et al. 2015.*

11 *Mekong Delta Institute of Can Tho University and SEARICE. 2016.*

12 *DWRM, 2016.*



The importance of crop diversity for farmers to cope with climate change

Loungaphai Soukdakhone is 29 years and participates since three years in the farmer field school (FFS) in Hom Village, Attapeu province, Laos. She does not own land but grows rice, watermelon and long beans on her parents' land: *"I have learned to recognize good quality seeds and distinguish them from poor quality seeds. Not every soil is suitable for any kind of seed. In the region where I live, there is a lot of poverty and the quality of the seeds is not very strong. By looking carefully and learning which seeds are suitable for the type of soil in my parents' land, I got a better harvest. Before the FFS we did not have enough food. Participating in the FFS has improved my life and income. I can now harvest two times a year and I have 140 bags of rice per harvest."*
*Photo credit: Sacha de Boer / Oxfam Novib*

# EMPOWERING FARMERS TO MAINTAIN, IMPROVE AND INCREASE THEIR CROP DIVERSITY



*<< Members of the Potato Park, Peru, depositing their community seeds in the Svalbard Seed Vault, Norway. Photo credit: ANDES*

In the SD=HS programme communities, farmers consistently demand more diverse crops with better resistance against pests and diseases and other traits that help to cope with harsh climate conditions and respond to market opportunities. Such traits may be available from varieties in other farmer communities and community seed banks, from breeding materials in breeding institutions, from modern varieties sold by national or international seed companies, and from gene banks across the globe. Below, we describe some key tools through which the SD=HS programme empowers indigenous peoples and smallholder farmers to uphold, strengthen and mainstream their rights and technical capacities to manage their biodiversity for food and nutrition security.

## FARMER FIELD SCHOOLS

Farmer field schools (FFS) on the management of plant genetic resources for food and nutrition security can contribute in a major way to realising Farmers' Rights by empowering small-scale farmers and indigenous communities and increasing their access to, conservation and utilisation of plant genetic resources for food and agriculture. Within the SD=HS programme, FFS have been established to facilitate farmers in accessing, adopting and creating a better-adapted portfolio of crops and varieties. FFS are about people, their development and their empowerment. Rather than simply transferring technology, or training farmers to produce seeds for distribution to other farmers, the FFS focus on people's capacity to self-organise and learn, to continuously innovate and update their practices, and to engage in advocacy for corresponding policy changes. The FFS help rural folks learn and develop the skills required for informed decision-making in complex domains: based on accurate problem analysis in local contexts, effective decisions can build on local knowledge, understanding of the local agro-ecosystem, and existing capacities.[1] In the first three years, 518 FFS have been established in the SD=HS programme countries (Laos, Myanmar, Peru, Vietnam and Zimbabwe).

An example from Zimbabwe showcases the important role of FFS in facilitating farmers' access to PGRFA and increasing their resilience and food security. Dependence on heavily government-subsidised hybrid maize has resulted in a reduced level of genetic diversity on-farm in the four districts of the SD=HS programme in Zimbabwe. The SD=HS baseline conducted in 2012/13 showed that 60 percent of interviewed households in these districts (Goromonzi, UMP, Tsholotsho and Chiredzi) reported a decline in maize varieties over the past 15 years (see Figure 1).[2] Between 10 and 30 percent of these households also identified a decline in the number of varieties of small grains and legumes.

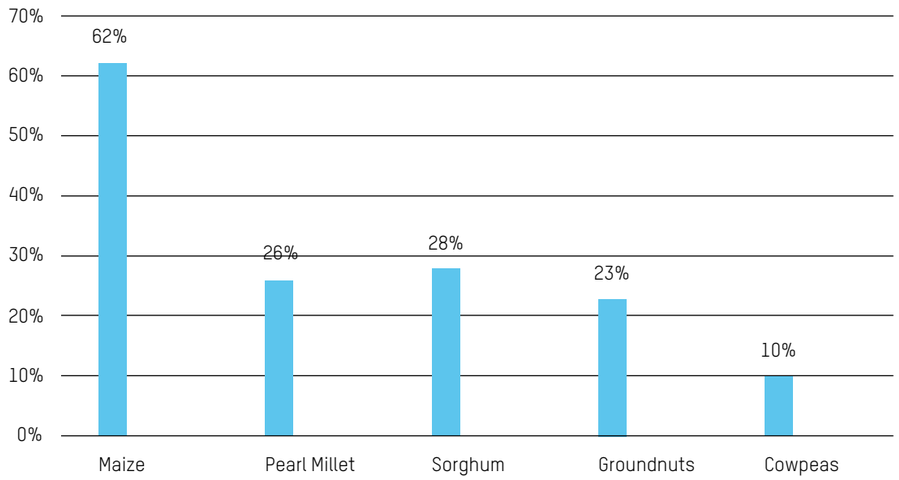
Recent drastic changes in weather patterns showed that there is a limit to local adaptation because of lack of seed of appropriate local varieties. The FFS have been indispensable in facilitating access to novel crops and varieties with new resistances and traits for farmers to select from. Based on an assessment of farmers' needs and preferred traits—including those of women—to date, approximately 70 breeding lines and populations of maize, pearl millet, sorghum, groundnut and cowpeas have been provided by CIMMYT, the National Crop Breeding Institute, community seed banks, and the national gene bank to the FFS participants for crop variety selection and improvement (see Figure 2).

SD=HS results show that, despite the worst drought in decades during the 2015/16 growing season, farmers in

1 *FAO, 2016.*

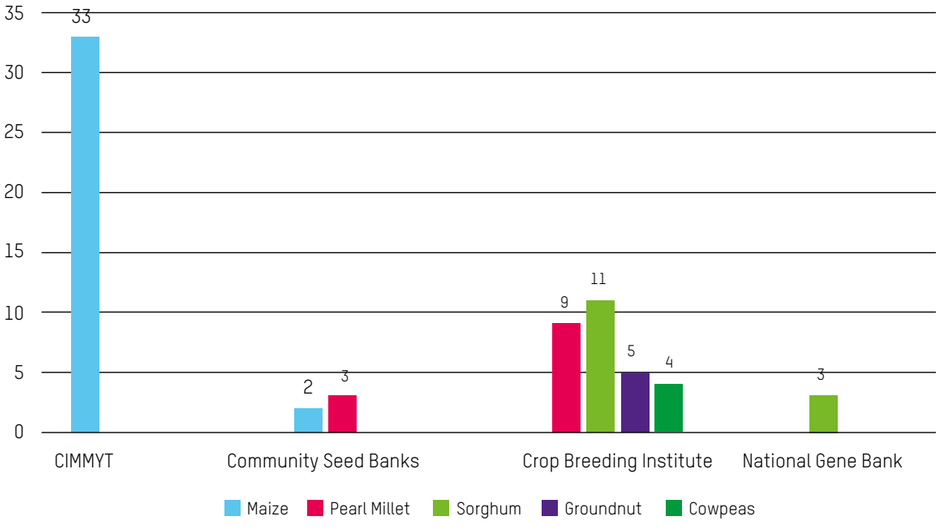
2 *Oxfam Novib et al. 2013.*

**FIGURE 1: AVERAGE NUMBER OF HOUSEHOLDS REPORTING LOST VARIETIES OVER THE PAST 15 YEARS PER CROP**




Data from the districts of Goromonzi, UMP, Tsholotsho and Chiredzi, Zimbabwe

**FIGURE 2: SOURCE AND NUMBER OF LINES OR POPULATIONS PROVIDED FOR FARMERS' SELECTION AND/OR IMPROVEMENT PER CROP**








the FFS communities cultivated an average of 75 percent more crops (from four to seven crops per household), coinciding with a one-third reduction in the length of the 'period of scarcity' (from four to 2.5 months per year; see Box 2).[3]

## BOX 2: THE PERIOD OF SCARCITY

According to baseline studies[4] among SD=HS communities, 93% of interviewed households in Vietnam, 41% in Zimbabwe and all households interviewed in Peru faced at least one food scarcity period in the past year. During this period of scarcity, or 'hunger season', household food stocks from the last harvest have dwindled; it is expensive to buy in food, because the widespread nature of scarcity leads to inflated prices; and it is difficult to find work to earn more money, as labour markets tend to be flooded during this part of the agricultural season. Households experiencing food scarcity or hunger are forced to resort to coping mechanisms such as reducing the diversity and quantity of their meals, which increases the risk of macro- and micronutrient deficiencies and related physical weakness and susceptibility to disease; or mortgaging or selling their land and other assets, which results in further spiralling into poverty. The psychological effects of these challenges are intense: family members often experience elevated levels of anxiety and stress in the hunger season.[5]

Women are especially affected, as their responsibilities often comprise both food production and procurement, as well as other income-generating activities and care for other household members.[6] This is confirmed by findings from the baseline survey in Peru,[7] which also showed that collecting of wild foods is a commonly used coping strategy, reported by 80-85% of households. Many collected food plants can be identified as Neglected and Underutilized Species (NUS).[8] People living in the middle 'keshua' zone collected food from 47 species during the food scarcity period, while those living in the upper 'puna' zona collected 25 species. Many NUS are appreciated by communities for their nutritional and medicinal value. It was found that elderly women are often guardians of NUS knowledge: they tend to collect NUS on walks around the communities in which they undertake specific rituals.

3 *CTDT, 2017.*

4 *Baseline was conducted in Zimbabwe and Vietnam in 2015, and in Peru in 2016, Oxfam Novib et al. 2016b.*

5 *Vaitla, Devereux and Swan, 2009.*

6 *Ibid.*

7 *ANDES, 2016.*

8 *The SD=HS working definition of NUS includes:*
- *Important to the food and nutrition security of indigenous peoples and smallholder farmers, particularly in relation to women's integrated biodiversity management strategies (in situ: both on-farm and in nature);*
- *Part of the cultural identity and embedded in social relations and traditional knowledge (e.g. folk taxonomy, collection management, processing); often having multiple uses for human well-being (food, medicinal, spiritual);*
- *Little or no research or commercial interests;*
- *Lack of widely available seeds and other plant parts for propagation and multiplication; Includes domesticated, semi-domesticated, and non-domesticated species;*
- *Adapted to local conditions (often in marginal areas), and may be sourced from diverse locations: on-farm (including in home gardens), grasslands, roadsides, farm margins and nature (forests, mangroves);*
- *Bound by time and space: an NUS now can be a commercial food crop in the future.*

## COMMUNITY SEED BANKS

The positive results of FFS observed in Zimbabwe also show that during the 2015/16 drought season, farmers relied on their community seed bank (CSB) as a source of planting material of OPV maize and pearl millet (see Figure 2). Farmers who had access to CSBs reported that they could replant up to two or three times. CSBs are a complementary tool implemented in the SD=HS countries to secure farmers' access to a wide range of quality seeds which have been improved over the years through farmer participatory variety selection. CSBs provide options for farming households to conserve, access and promote increased utilisation of seed of their local crop varieties. Most importantly, they can act as community-managed seed supply and replenishment centres to ensure food and seed security during disaster periods such as recurrent droughts, when the option for replanting is crucial. The seed banks play a crucial role in providing a collective framework and institutional platform for communities to make decisions on the crops and varieties they wish to cultivate and maintain.

Communities have been engaged from the very start to plan, build, manage and govern their own seed banks. In Zimbabwe, the CSBs supported by CTDT have the support of local authorities and relevant government agencies (Agritex and the National Gene Bank). Communities normally draft a constitution and elect a management committee to be responsible for the coordination and management of all seed bank activities. Most CSBs include separate facilities for family-owned seed collections, community collections, and bulked seed storage. The family collection allows participating members to bring germplasm from their households to store in small quantities. The community collection contains the source of seed for all members of the community seed bank and acts as a seed reserve in case of drought, flood or other catastrophes. Large volumes of seed from local seed multiplication efforts are stored in the bulk storage room. This seed is sold to farmers who are not members of the CSB, or designated for the most vulnerable groups of the community. Membership cards are distributed to CSB participants to monitor access to the various seed storage spaces.

Members of the CSBs are trained by the FFS to harvest and process their own seed. The trainees ensure that the seed is dry and well treated before depositing it in the seed bank to prevent disease and pest damage. All new entries are recorded in a community biodiversity register and backed up in CTDT's national database. The national gene bank also collects sub-samples of the accessions stored at the CSBs for safe-keeping at the national gene bank premises. The gene bank occasionally repatriates lost germplasm to farmers when requested and assists the CSB management committees to regenerate germplasm with lower-than-acceptable germination percentages.

## LINKING SEED BANKS AND GENE BANKS

In Peru, successful linkages between *ex situ* and *in situ* conservation of plant genetic resources for food and agriculture have been established – a crucial tool to increase local-to-global resilience to climate change. After the repatriation of hundreds of native potato varieties[9] from the International Potato Centre to the Potato Park[10] in the Peruvian Andes, the SD=HS programme supported the transfer of approximately 400 cultivars from the Potato Park to several communities in the Lares valley. This transfer was executed under an agreement between the Potato Park and the Lares communities, with support from the International Potato Center and the programme partner ANDES. These efforts are based on an indigenous landscape approach that contributes to a key objective of on-farm conservation: maintaining crop evolution in farmers' fields and landscapes. The approach supports farmers' efforts to adapt cultivars to their changing field conditions and socio-cultural preferences. The repatriated seeds have enriched Lares communities' traditional seed systems. Both women and men farmers have been able to experiment with and reintroduce the repatriated seeds, selecting some—especially those with climate-resilient traits—and discarding others.[11]

In August 2015, a collaborative effort between local farmers, ANDES and the International Potato Center (CIP), supported by IFAD, Oxfam Novib, Sida and the Treaty, has allowed seeds of 750 potato varieties from the Potato Park to be deposited in Svalbard Global Seed Vault.[12] As part of the programme, farmers from the Potato Park learned how to pollinate their potatoes and collect seeds for storage, as their potatoes are normally propagated vegetatively. Some of the seeds were also used to develop new varieties. The deposit of seeds from the Potato Park in the Global Seed Vault is an example of how *in situ* and *ex situ* conservation may complement each other, combining centuries-old traditions with modern facilities, to conserve the plant genetic heritage for future generations.[13] This seed deposit is one of the few contributions of non-state actors to Svalbard. The seed deposit ensures the long-time conservation of valuable genetic potato diversity, which could be crucial for future global food production.

## PLANT BREEDING APPROACHES TO MAINTAIN, ENHANCE AND CREATE CROP DIVERSITY

The facilitated access to PGRFA from other communities and (inter)national gene banks, as well as from breeding programmes, is a pre-condition for successful FFS in which farmers select and create a better-adapted portfolio of crops and varieties. FFS may focus on:

1. The establishment of diversity plots in which crops that are lost or new to the local farming system are grown and evaluated for their inclusion in the farming system;
2. Plant variety selection (PVS) between stable and finished varieties and lines of both OPVs and hybrids;
3. Plant variety enhancement (PVE) of highly preferred but deteriorated varieties of both farmers and locally adapted modern cultivars;
4. Participatory plant breeding (PPB) where farmers make their own diverse populations through cross-breeding, or farmers select from early-segregating populations received from plant breeding institutions or from other FFS that have created these early generation populations.

In PVE, for example, farmers may select specific characteristics over a few generations to recover local varieties with the preferred attributes. In North Vietnam, farmers have done this with traditional sticky rice varieties.

9 *See http://www.andes.org.pe/note-communities-of-the-potato-park-sign-a-new-repatriation-agreement-with-the-international-potato-cente*

10 *The Potato Park was established to conserve potato biodiversity in the Cusco region of Peru. For more information, visit the Potato Park website: http://www.parquedelapapa.org/eng/03parke_01.html*

11 *Oxfam et al. 2015.*

12 *A facility established 10 years ago in the permafrost far north of the Arctic Circle, funded by the Global Crop Diversity Trust and the Government of Norway. The Seed Vault currently holds over 860,000 food crop seeds from all over the world, to preserve important food crops for future generations.*

13 *Available at http://www.fao.org/news/story/en/item/326369/icode/*

Using the "diversity wheel" tool,[14] women farmers displayed a strong preference for growing traditional varieties of sticky rice, for example a variety called *Nep Lech*,[15] which is used to make rice wine and cakes, especially for traditional festivities such as the Tết holidays. Traditional varieties have been in their families for hundreds of years and are often valued for their cultural importance and taste, which can be aromatic with a soft, glutinous texture. Over time, however, productivity, taste, aroma, and tolerance to pests and diseases of many of these traditional varieties declined due to sub-optimal growing conditions. The FFS in Vietnam has been instrumental in re-establishing women's access to these preferred traditional varieties. Building on women's traditional knowledge of variety selection, the FFS provided the technical and scientific background to select the plants with the best properties from hererogeneous seed lots available in the community. The FFS helped women participants identify their preferred traits, and the traits they wanted to reduce or eliminate. After only three growing seasons of systematic selection, the quality, productivity and other positive traits of their *Nep Lech* variety was dramatically enhanced, with a reported increase in income compared to hybrid rice and higher concomitant resistance to pests and diseases.[16] Women often have a broader list of varietal selection criteria than men, as they look at selling price as well as other values (see Box 3).

### BOX 3: TESTIMONY OF WOMAN FARMER IN BAO AI COMMUNE, NORTH VIETNAM, 2015

"I have an area of 0.1 ha that was used exclusively to grow a Chinese hybrid rice variety, but after participating in the FFS, I was brave enough to grow only Nep Lech. The Chinese hybrid would usually yield a 500 kg harvest; Nep Lech yields only around 300 kg, but fetches a very good price in the market, so I earn more. With the income from Nep Lech, I can then buy two tonnes of hybrid rice! The Nep Lech harvest is sold as young sticky rice, and even the stalk can be used as straw, to produce brooms that are sold for USD 1.10 each. The stalk is much stronger than that of hybrid varieties. Also, I have more savings as a result of using fewer chemicals. It was a good decision to choose Nep Lech—my income has increased four-fold!"

14 *The diversity wheel aims to assess, in a participatory way, the amount of crop diversity available in a community, identify varieties at risk of disappearing, and account for varieties that have disappeared from the communities. The Local Initiatives for Biodiversity, Research and Development (Li-Bird), Bioversity International, and IFAD collaborated on the development of the tool.*

15 *Grown in Bao Ai commune in Yen Bai province.*

16 *Oxfam et al. 2015.*



Empowering farmers to maintain, improve and increase their crop diversity

*Farmer showing her maize varieties at a seed fair in Lares community, Peru*
*Photo credit: Jiska van der Heide / Oxfam Novib*


# OPTIONS FOR SCALING UP COMMUNITY SUPPORT IN GENETIC DIVERSITY MANAGEMENT



*<< Farmers displaying their seed at a seed fair in Goromonzi district, Zimbabwe*
*Photo credit: Shepherd Tozvireva / Oxfam Novib*

While FFS approaches can contribute in a major way to realising Farmers' Rights, one of their limitations has been the intensive capacity support these season-long efforts require, allowing direct support of only a limited number of FFS in a single season. The spread and adoption of FFS on integrated pest management has been well documented, but such scaling up has appeared more cumbersome in FFS on genetic diversity and plant breeding. The SD=HS experiences in Zimbabwe and South Vietnam have shown five conditions to dramatically increase the number of FFS running in parallel in a country in a single season. These conditions are:

1. the availability of well-established, season-long and flexible curricula for trainers as well as farmer-participants;[1]
2. engendered tools such as baseline surveys and the diversity wheel that enable farmers to diagnose problems, propose solutions and facilitate decision making;[2]
3. involvement of extension service staff (at national and local levels) in facilitating the FFS;
4. the availability of new and adapted germplasm, both stable and segregating, from participating breeding institutions; and
5. an enabling policy environment, which allows farmers to produce and sell seed of their preferred varieties.

In Zimbabwe, in the 2016/2017 growing season, 318 FFS were simultaneously managed: CTDT, with technical support from Oxfam, established and maintained multi-actor support for a national FFS network in plant breeding. The extension service Agritex, the CGIAR centres ICRISAT and CIMMYT, the national Crop Breeding Institute and like-minded NGOs have all been involved in FFS facilitation. CTDT and Oxfam invested heavily in the establishment of proper baselines allowing participatory diagnosis and planning, progress and impact to be measured, and FFS curriculums supporting trainers and farmers that are adapted to local farming systems. The FFS were led by 500 lead farmers and Agritex officers across four of the five agro-ecological zones in Zimbabwe, with annual rainfall ranging from <500 to >1000 mm per annum, and a growing season length from <105 to >165 days. A majority of the participating farmers were female, thereby ensuring attention for their specific needs and preferences.

Another major expansion of FFS activities took place in the Mekong Delta in Vietnam, which facilitated the establishment of more than 400 seed clubs in 19 provinces, providing high-quality rice seed to small-scale farmers across the Delta. The activities of these seed clubs are technically and financially supported by the SD=HS programme, through Searice and the Mekong Delta Development Institute of the University of Can Tho.[3] The seed clubs now provide over 30% of all seed supply, the formal sector providing only 17% of the seed in the market. In 2015, approximately 190,000 tonnes of seed were produced by the seed clubs, and sold at USD 300 to 400 per tonne, half the price of commercial seed. The Provincial Department of Agriculture and Rural Development provided free-of-charge testing of seed quality in the government's Seed Centres. The seed produced by the seed clubs represents both registered and unregistered varieties, and caters for divergent agro-ecological conditions in the Mekong Delta. Local and provincial

1 *This includes a) the availability of sufficiently trained FFS facilitators built by a strong core of master trainers (that train the FFS facilitators); and b) effective curricula for training FFS facilitators and practical FFS Field Guides to assist the season long FFS implementation.*

2 *This includes tools to facilitate the weekly and end of season data gathering and analysis, and tools to ensure participatory and empowering processes.*

3 *Tin et al. 2011.*

authorities support these activities through the provision of credit, facilities and equipment, in view of their major contribution to the total seed supply needs in the Mekong Delta. In the context of the FFS, farmers have selected their own new varieties, but registering those varieties still represents a major financial and organisational hurdle.

The FFS need to be attractive for farmers to subscribe and for breeders and authorities to support. Farmers select the crops to work with themselves, and also set the selection goals, thereby ensuring their interest and their willingness to allocate time and land for the experimental work. Farmers also appreciate that they can learn from each other in the FFS. Breeders in the public sector often lack opportunities to test their new products or to directly engage with farmers on how they perceive the qualities of the new breeding lines; the FFS provide this opportunity. Authorities value the increased yields of major food crops and the contribution of FFS to improved livelihoods.

Developing and supporting FFS on genetic diversity and participatory plant breeding requires major investments. The FFS often range over several years. Intensive stock-taking is needed at the start, and desirable plant materials need to be secured. Networking among all relevant players is a major condition for success. Scaling up FFS has so far, therefore, often presented a major challenge. But the above two cases show that it is possible to increase the number of activities – in the form of FFS, as in Zimbabwe, or seed clubs, as in Vietnam – through the close involvement of allied breeders and extensionists, and by securing the support of authorities, from community heads and breeding institutions to national management of the extension service. In Zimbabwe, Agritex has adopted the FFS model, and breeders of CIMMYT and ICRISAT are eager to participate and provide farmers with their latest breeding lines. CTDT has agreed on a Memorandum of Understanding with central government. In the Mekong Delta, seed clubs have gained major appreciation from farmers and authorities alike: scientists at the Field Crops Research Institute in Hanoi have been recognised for their work with farmers by the Ministry of Agriculture and Rural Development.

Opportunities for scaling up will exist in countries where similar coalitions of farmers, breeders, extensionists and authorities can also be built – resulting in more food security through better-adapted crops and varieties representing a wider genetic diversity, and improvement of farmers' livelihoods and empowerment.




# SETTING UP A FARMER SEED ENTERPRISE

*<< Launch of Champion Farmer Seed Co-Op, September 2017. Photo credit: Oxfam in Zimbabwe*

Farmer seed enterprises (FSE) are another novel initiative within the SD=HS programme. Building on the strong track record of FFS and skilled seed producers, the next step towards increasing livelihoods has been commercialising seed production by smallholder farmers in a sustainable, equitable and financially viable way. FSEs are established with the aim of ensuring the delivery of seeds of increased genetic diversity and good quality, affordable and manageable for smallholder farmers often living in agro-ecological zones neglected by the formal seed supply system.

Zimbabwe was selected because of prevalent poverty in the rural communities, smallholder farmers' lack of access to support services, and the absence of farmer participation in commercial seed production. Another major consideration was the ability to build on the favourable capacity and network of the national partner, CTDT, which has now gained experience with over 500 FFS across 12 districts of Zimbabwe. The participants of these FFS not only serve as a pool of experienced farmers and seed producers, but also as a strong potential market for FSE products.

In 2016, a multi-stakeholder meeting and numerous bilateral meetings in Harare enabled over 40 diverse stakeholders[1] active in Zimbabwe's seed sector to reflect on the feasibility of the intended FSE and inform a sustainable business plan. They included Zimbabwe Super Seeds,[2] a cooperative established in 2010. Some lessons learned from Zimbabwe Super Seeds were applied in setting up the new FSE, such as the type of legal entity to register as a cooperative company. The new FSE will have over 10,000 smallholder farmers as shareholders.

The FSE was officially registered as *Champion Farmer Seeds* cooperative company in October 2016 and formally launched in September 2017, when almost 140 tonnes of certified seeds were processed, packaged and provided for sale for the first time. Foundation seed was also produced, which will be used to produce more certified seed in the coming season (see Table 1).

The selection of crops for the product portfolio during the pilot period was based on both food security and financial considerations. Small grains such as sorghum, pearl millet, finger millet and grain legumes had been identified in the baseline survey and the multi-stakeholder consultations as important food sources for Zimbabwe and the sub-region. Maize, as the dominant staple crop, was determined to be important to include for reasons of financial sustainability and continuing demand. In particular, maize varieties (both hybrids and OPVs) appropriate for stressful agro-ecological zones (e.g. drought) were considered important to address a gap in the current market, and expected to be in demand by smallholder farmers. A number of hybrids, considered attractive by many farmers because of higher yields, were included in the cooperative's portfolio as their production has been guaranteed by the FSE's full control over the parental lines.

The seed producers selected were trained in the technical skills of seed production jointly by CTDT staff, the government Seed Services agency and local Agritex (extension) officers. The farmers involved were also trained in compliance with the stringent requirements of the national Seeds Act and accompanying enabling regulations contained in the Seed Regulations and Seed (Certification Scheme) Notice 2000, which requires any crop grown for purposes of being classified as seed to be inspected at least three times during the growing season before it can be certified for sale in Zimbabwe. In this first season, 99% of the farmers' seed passed the seed certification, an impressive result of the joint trainings and good collaboration between CTDT and government agencies.

**TABLE 1: TOTAL SEED PRODUCTION IN THE FIRST GROWING SEASON OF CHAMPION FARMER SEEDS**

| | CROP | VARIETY | TONNES |
|---|---|---|---|
| FOUNDATION SEED | SORGHUM | SV4 | 1.15 |
| | SORGHUM | MACIA | 2.40 |
| CERTIFIED SEED | SORGHUM | MACIA | 12.12 |
| | PEARL MILLET | OKASHANA | 14.71 |
| | OPV MAIZE | ZM309 | 9.90 |
| | OPV MAIZE | ZM521 | 62.92 |
| | HYBRID MAIZE | ZS265 | 31.05 |
| | GROUNDNUTS | ILANDA | 7.09 |
| | | | |
| TOTAL SEED RECEIPTS | | | **141.34** |

Now that production targets have largely been met, marketing and sales are the current focus. CTDT's efforts resulting in an expansive spread of FFS stakeholders, has ensured excellent visibility and promotion of *Champion Farmer Seeds* with demo plots and field days across the districts they operate in. Even with farmer-saved seed as the main practice, farmers need to regularly replenish the seed for OPVs, and farmers have been able to observe the strong performance of Champion varieties, providing good options for purchase. Zimbabwe's current restriction on imports also means domestic production of grain is substantial and guaranteed, and domestically produced seed will be needed for this.

Though it still has some way to go to meet its objectives of fulfilling social needs while reaching profitability, *Champion Farmer* Seeds is a promising pilot. It will be crucial for the FSE to maintain its ambition to empower smallholder farmers economically as shareholders, seed producers and grain producers, and to give farmers – particularly women farmers – an opportunity to own and control one of the key inputs for crop production. Towards the end of the project period, SD=HS will document the many lessons learned from this pilot and share them broadly, with a view to rolling out the FSE model to other regions and countries: it promises to help meet local needs and build champion farmers worldwide, as well as to motivate and substantiate policy reform.

1 *Ranging from commercial seed business representatives to government officials from the seed regulatory body, national extension services and crop breeding institute, and smallholder farmers.*

2 *See http://www.zimsuperseeds.co.zw/*

# POLICY IMPLICATIONS FOR THE IMPLEMENTATION OF FARMERS' RIGHTS



*<< Seed storage room at the Chibika community seed bank in Zimbabwe*
*Photo credit: Shepherd Tozvireva / Oxfam Novib*

On the basis of the lessons and achievements described above, this section will reflect on the policy implications for countries wishing to create a more enabling environment for farmers to maintain their contributions to conserving and improving plant genetic resources for food and agriculture, and to help farmers in improving their livelihoods and exercising their Farmers' Rights.

## RECOGNITION AND SUPPORT FOR FARMERS' SEED SYSTEMS

*It will be impossible to realise Farmers' Rights if the role of farmers' seed systems is not fully understood and supported by the requisite national policies and legislation.*

Seed systems in the developing world are predominantly farmer-managed, meaning that most seed is produced by farmers and circulated amongst them.[1] Informal markets (see Box 4) are the most important sources of seed for small farmers for most food crops, except often for maize and vegetables.[2] Field studies show diverse trends in the functioning of these informal markets, which have unrealised potential to deliver a wider range of higher-quality seed.[3] A better understanding of the functioning of informal markets is an important prerequisite to strengthening them.

### BOX 4: SOME DATA ON FARMERS' SEED SYSTEMS

In 2015, McGuire and Sperling documented the degree to which seed acquisition depends on 'informal channels', which they define as seed from farmers' own harvests, social networks or local markets. A data set covering 9,660 observations, across six countries and 40 crops, show that farmers access 90.2% of their seed from informal systems, with 50.9% of that from local markets. Further, 55% of seed is paid for in cash, indicating that smallholders are already making important investments in this arena.[4]

The authors argue that seed sector strategy has to become more smallholder-focused. For instance, absolute production gains require a strategy different from the aim of system resilience through offering a wide portfolio of crops and varieties. The data also show that impressive results, at scale, are not necessarily achieved by focusing on the more common metrics used to measure seed sector success, such as "tons of seed produced" (often a function only of how much financial assistance has been allotted) or "value of seed sector" (which looks only at money earned). The authors argue for broader measures of how "seed channels – formal, informal and integrated combinations – are actually working to reach smallholders with the seed products and information that such farmers want and need".

1 *Richards et al. 2009.*
2 *McGuire and Sperling, 2016.*
3 *Sperling and McGuire, 2010.*
4 *McGuire and Sperling, 2016.*

The balance between farmers' seed systems and the formal, largely commercial seed sector varies between and within countries and regions and between crops. Both farmers' seed systems and formal seed systems are important. As described in this report, farmers' seed systems offer seeds exhibiting high levels of diversity, well adapted to local conditions, which can help to cope with climate change, while formal seed systems offer seeds that may be of higher quality or have new and important traits relating to yield and resistance. "The availability of, and access to, quality seeds of a diverse range of adapted crop varieties is essential for achieving food and livelihood security and for eradicating hunger, especially in developing countries. Strengthening both formal and informal seed systems is therefore an integral part of the sustainable use of plant genetic resources for food and agriculture."[5]

Despite the Treaty's recognition of the enormous contributions of local and indigenous communities and farmers to the conservation and development of plant genetic resources, many national seed policies and laws do not yet recognise and support farmers' seed systems.[6] Seed policies provide objectives and frameworks for the seed sector, while the law provides legal force to certain key issues, notably those relating to seed quality.[7] Intellectual property rights, in turn, determine the conditions under which farmers can or cannot use varieties and the traits therein for their own purposes, whether household consumption, sales in local markets or breeding efforts. Traditionally, these pieces of legislation have exclusively focused on the production and trade of seed for commercial markets, without recognition of the strengths and needs of farmers' seed systems.

5 *FAO, 2015. p.1*

6 *Visser, 2017; Herpers et al. 2017.*

7 *FAO, 2015.*

The challenge for policy makers is to create policies and laws that support both formal and farmers' seed systems where they are most effective. This means not only attempting to avoid unintended impacts of seed laws on, for example, the production and exchange of seed by and amongst farmers, but using seed laws to create specific conditions that are supportive of the important role farmers' seed systems play. The rest of this section describes five implications.

## ESTABLISHING SEED POLICIES AND LAWS THAT PROMOTE FARMER SEED PRODUCTION AND TRADE

*Promoting instead of prohibiting the production and trade of quality seed of farmers' varieties adapted to local conditions is a short-cut to increase crop diversity in farmers' fields.*

The quality and the variety of seed cannot be reliably assessed by farmers at the time of purchase. Seed laws address this problem by establishing legal obligations for the seller to guarantee the quality of seed, often by means of standardised inspection and testing procedures, and registration and certification of sellers and seed. However, by determining who can produce and sell seeds under which conditions, seed laws can negatively impact the functioning of farmers' seed systems and hence the implementation of Farmers' Rights.[8] For example, when only certified seeds of registered varieties may be marketed by registered sellers, it may become effectively prohibited to barter or exchange seeds not only of protected commercial varieties but also of farmers' varieties. This appears to be the case in many developing country seed laws.[9]

8 *The Co-chairs of the second Global Consultation on Farmers' Rights, which was held in Bali, Indonesia from the 27th to 30th September 2016, include in their recommendations to the Governing Body to call on Contracting Parties "to revise, as necessary, seed laws, intellectual property laws and other legislation that may limit the legal space or create undue obstacles for the realization of Farmers Rights." See http://www.fao.org/3/a-bq812e.pdf*

In most SD=HS programme countries, legal requirements make it unrealistic for small-scale farmers to register new farmers' varieties. If farmers wish to register their own varieties to sell in the market, they are usually required to provide detailed information showing that the variety fulfils the requirement for "distinctness, uniformity and stability" and "value for cultivation and use". Usually, this needs to be done in different locations across the country, and for several growing seasons. These requirements impose transaction costs which small-scale farmer-seed producers simply cannot meet. In addition, the standard requirement for multi-location testing does not suit varieties that are adapted to the conditions and preferences of location-specific niche markets. Some countries have tried to solve this – in Vietnam, for example, by allowing farmers' seed clubs to sell quality seed of unregistered rice varieties, but at the provincial level only.[10]

In order to be formally allowed to sell seed in the market, registration of the seed producer and seller is usually required, as well as the certification of seed lots of registered varieties. To register as a seed grower and seller, one normally needs to demonstrate that one meets certain education standards, and to show proof of access to seed processing and storage facilities. This makes it difficult for small-scale farmers to register and limits their options to market seed outside their local communities. Instead, governments should establish legal structures that support and facilitate the involvement of farmers in quality seed production, in particular to market the seed of farmers' varieties that are maintained only in small-scale systems and that contribute to wider diversity in farmers' fields. Alternative quality assurance mechanisms, such as Quality Declared Seed,[11] can stimulate farmers' seed production while assuring high seed quality. Establishing legal frameworks that suit the needs and capacities of smallholder farmers can enhance the production of quality seed of both modern and traditional varieties most preferred by farmers.

9 *Visser, 2017; Herpers et al. 2017.*

10 *Decision No. 35 /2008/QĐ-BNN dated 15/ 02/ 2008 by Minister of Ministry of Agriculture and Rural Development, Vietnam.*

## BALANCING FARMERS' RIGHTS WITH BREEDERS' INTELLECTUAL PROPERTY RIGHTS

*The implementation of intellectual property rights requires careful consideration in order not to weaken the role of smallholder farmers in their management of plant genetic resources for food and agriculture.*

Intellectual property rights on plants or plant varieties have a direct impact on Article 9.3: The right that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate. Generally, if a country allows for the patenting of plants, farmers are no longer allowed to save, use, exchange and sell farm-saved seed of that plant, or use the patented material for further breeding. This is a major difference between plant breeder's rights (PBRs) and patent rights: PBRs contain a breeders' exemption, allowing protected varieties to be freely used for the purpose of breeding new varieties, which most country patent laws lack. Farmers and breeders alike depend on the continuous use of multiple existing crop varieties for

11 *See http://www.fao.org/docrep/009/a0503e/a0503e00.htm*

the creation of new varieties. By not allowing the free use of protected materials for further breeding, patents have a negative impact on innovation and the maintenance and development of crop biodiversity.

The main international convention regulating PBRs, the 1991 Convention of the International Union for the Protection of New Varieties of Plants (UPOV), contains a breeders' exemption; however, in its current form and interpretation it still constitutes a barrier to the full realisation of Farmers' Rights. Most importantly, the UPOV 1991 Convention does not allow smallholder farmers to freely save, exchange and sell farm-saved seed of a protected variety. This report has shown that smallholder farmers in developing countries strongly depend on the informal exchange of farm-saved seed for their seed security. They access new improved varieties from the formal sector mainly through the same informal channels of seed exchange and local trade, primarily because farmers have very limited access to retailers or cannot afford the price of commercial seed.[12] Furthermore, the quality and timeliness of supply of these seeds are often unreliable in more remote and marginal areas. When it is not allowed to freely save, exchange and sell farm-saved seed or propagating material with regard to varieties protected by PBRs, smallholder farmers can be criminalised and their main channel to access and utilise new varieties produced by the formal sector is blocked.[13]

Governments should explicitly establish a proper balance between Farmers' Rights and PBRs in order not to obstruct the practice of seed exchange and trade amongst smallholder farmers, to enhance seed and food security and continuous innovation of the plant genetic resources used by smallholder farmers. Countries may choose to establish a *sui generis* PBR system for that purpose.[14] Within the UPOV 1991 Convention, this can be done by providing a clear interpretation of the private and non-commercial use exemption, allowing smallholder farmers to freely save, exchange and sell farm-saved seed of protected crop varieties amongst themselves and in local markets. In addition, it is important to align intellectual property laws with Articles 9.2.a and b of the Treaty,[15] and other international obligations under the Convention on Biological Diversity and Nagoya Protocol, in order to prevent misappropriation of genetic resources and associated traditional knowledge. This can be done by ensuring that intellectual property rights are granted only to applicants who can document the origin of the plant material used in breeding programmes and show that the starting material was acquired lawfully and in full respect of (inter)national access and benefit sharing (ABS) obligations.

## ENSURING THE FAIR AND EQUITABLE SHARING OF BENEFITS ARISING FROM THE UTILISATION OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

*The enhancement of the Treaty's benefit-sharing component needs to target both the (commercial) use of germplasm and genomics sequence data.*

As mentioned above, Article 9.2.b recognises Farmers' Right to equitably participate in sharing benefits arising from the utilization of PGRFA. The Treaty also established a Multilateral System of Access and Benefit-Sharing that facilitates access to 64 of the most important crops that together account for 80 percent of all human consumption.[16] Those who access genetic materials through this system agree to freely share any new developments with others for further research; or, if patented, they are obliged to pay a small percentage of any commercial benefits they derive from their research into a Benefit-Sharing Fund that aims to support conservation and development of agriculture in the developing world.[17] However, since the Treaty entered into force in 2004, no user-based mandatory payments have yet been received under this mechanism. This has triggered demands from many Contracting Parties to enhance the functioning of the Multilateral System.

Facilitated access to PGRFA is itself an important aspect of benefit-sharing, as discussed in the next section. Yet access to PGRFA, and the sharing of benefits arising from their use, needs to be fair and equitably balanced. The Treaty's benefit-sharing component needs to be strengthened to achieve this, and to stimulate farmers and countries to continue to share their crop diversity of wild, cultivated and newly developed varieties. This can be done only by ensuring user-based payments and contributions to the Benefit-Sharing Fund in a sustainable and predictable long-term manner. This should include the sharing of benefits derived from the commercial use of digital sequence data of the crops falling under the Multilateral System: any benefit-sharing mechanism that is triggered only by the transfer and subsequent (commercial) use of germplasm will soon be obsolete, considering the speed of advances in synthetic biology and the increasing production, analysis and use of sequence data.[18]

## FACILITATING FARMERS' ACCESS TO PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE

*It can be argued that benefit-sharing for indigenous communities and small-scale farmers starts with the steady flow of accessible genetic diversity which they need and prefer.*

The need for access to additional and novel diversity proved to be a consistent theme among all the SD=HS communities. Access to crop diversity, of both traditional and modern varieties, segregating and stable materials, and the information that comes with these materials, offers farmers the diverse resources and options to adapt to changing conditions. Farmers' access to and sustainable use of PGRFA is tightly linked to their capacities to make informed choices among a wide range of crops, varieties and breeding lines. This points to the need for countries and (inter)national agricultural research organisations to develop and maintain appropriate measures that support farmers' access to, and capacities to use, crop diversity.

Community-to-community exchanges offer one reliable gateway to access. This report has shown the important role community seed banks play in strengthening farmers' resilience and food security. Obviously, there are costs involved with setting up community seed banks, and governments can do much more to support these structures by supporting extension services, research and breeding. Seed banks, especially in the

12 *Louwaars and De Boef, 2012.*

13 *Oxfam, 2016.*

14 *See http://www.apbrebes.org/news/new-publication-plant-variety-protection-developing-countries-tool-designing-sui-generis-plant*

15 *Article 9.2.a: protection of traditional knowledge relevant to plant genetic resources for food and agriculture; Article 9.2.b: the right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture. Available at http://www.fao.org/docrep/011/i0510e/i0510e00.htm*

16 *The Annex-1 crops, see http://www.fao.org/3/a-bc084e.pdf*

17 *See http://www.fao.org/plant-treaty/areas-of-work/the-multilateral-system/overview/en/*

18 *This equally applies to the PGRFA falling under the scope of the Convention on Biological Diversity (CBD) and Nagoya Protocol.*

early years, need expert support to check the germination status of seeds and make sure they are rejuvenated when needed to maintain sufficiently high quality.

Efficient mechanisms for communities to access additional diversity need to be expanded, strengthened and mainstreamed. In particular, it is recommended that formal-sector breeding institutions and gene banks at national level should develop policies and promote practices to facilitate farmers' access to potentially useful PGRFA contained in their breeding materials and collections. Repatriation of traditional varieties from gene banks to farmers' fields can be expanded, and gene banks supported to regenerate and multiply the seed stocks of the varieties farmers prove to prefer.[19] Research institutions, extension services and CSOs have a role in realising farmers' access to these materials, including breeding lines and populations, and helping farmers to develop an informed selection and enhancement process.

## SECURING FARMER PARTICIPATION IN POLICY AND DECISION-MAKING RELEVANT TO THE USE AND CONSERVATION OF PGRFA

Inclusive decision-making processes, such as the participation of smallholder farmer representatives in national seed councils and the development of participatory variety release processes, are critical to strengthening farmers' seed systems and realising Farmers' Rights.

The Treaty's Article 9.2.c states the right of farmers to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture. Realising this important aspect of Farmers' Rights requires tools including the empowerment of farmers in FFS and policy space – that is, farmers' ability to participate in local, national and global policy fora. Technical empowerment includes demystifying plant breeding and equipping farmers to continuously adapt their PGR management in response to constantly changing environmental and market conditions. Political empowerment includes enabling farmers to demand appropriate policies, services and resources. In an agro-environment that is constantly changing, and with varieties continuously evolving, the only constant factor is the farmers' agency to continuously learn and adapt.[20]

Special attention should go to the inclusion of women farmers. Whilst the contribution of women's labour to food production is increasingly recognised, women's knowledge and key role as managers of biodiversity for food and nutrition security is often overlooked and underestimated. To support farmers' seed systems and realise Farmers' Rights, inclusive decision-making processes need to be established that ensure women's participation and capture and respond to women's roles in seed and biodiversity management. Farmer participation in policy-making processes involving seed laws needs to be strengthened on local, national and global levels. Only in a few countries are small-scale farmer representatives included in the national seed council or the variety registration and release committee.[21] Policymaking on, for example, plant breeders' rights often takes place behind closed doors, lacking transparency and without giving farmers a say in the decision-making process.[22] Inter-governmental organisations should support (and fund) the participation of indigenous communities and farmer representatives in

*19 Oxfam et al. 2015.*

*20 Oxfam et al. 2015.*

*21 Herpers et al. 2017.*

*22 Dutfield, 2011.*



Policy implications for the implementation of Farmers' Rights

Margret Chibururi (1996) has been a farmer in Zimbabwe for 3 years now and just got her first child. She noticed that older farmers were growing more different crops. To be able to grow more different crops herself she joined the Farmer Field Schools. Her biggest dream is to produce enough food so she can also sell part of it. The profits enable her to buy her own cattle. Margret is in the picture with sorghum. *"I would like to say to all the young farmers: join the 'Farmer Field Schools'. So you'll know the best way to store and make use of seeds."*
*Photo credit: Sacha de Boer / Oxfam Novib*

# RECOMMENDATIONS TO THE GOVERNING BODY OF THE TREATY



*<< Building a community seed bank in Lares community, Peru*
*Photo credit: Jiska van der Heide / Oxfam Novib*

Full implementation of Farmers' Rights is needed to attain global and national food and nutrition security; to conserve and utilise plant genetic resources for food and agriculture; and to improve the livelihoods of the men and women indigenous and local farmers who contribute to maintaining crop diversity. Since the Treaty entered into force, various consultations have been undertaken, and best practices and empirical evidence collected. This report contributes to that endeavour. The results of all these contributions allow progress towards next steps in the implementation of Farmers' Rights at the national level.

The Governing Body is requested to develop voluntary guidelines for national implementation of Farmers' Rights to assist countries, as appropriate and subject to their national legislation, to take measures to protect and promote Farmers' Rights in their territories. Such guidelines could draw from the experiences and lessons of many stakeholders who have been involved in implementing Farmers' Rights at local, national and global levels.

In full support of the suggestion of the two co-chairs of the second Global Consultation on Farmers' Rights held in Bali, Indonesia, in September 2016,[1] we specifically request the Governing Body to adopt the following decisions at its seventh session:

1. To develop voluntary guidelines for the national implementation of Farmers' Rights, in line with Article 9 of the Treaty; the key objective of such Voluntary Guide may be, where appropriate, to assist countries in formulating effective policy and legislation, taking Article 9 of the International Treaty as a basis, and to create enabling environments for farmers to maintain their contributions in conserving, improving and making available plant genetic resources for food and agriculture, and which will specifically intend to assist policy makers and other stakeholders in such endeavours.
2. To refer the development of such voluntary guidelines to an *Ad hoc* Working Group on Farmers' Rights, to guide and assist Contracting Parties in the implementation of Farmers' Rights, in line with the Co-chairs recommendations to the Governing Body reflecting their interpretation of the discussions at the second Global Consultation on Farmers' Rights in Bali, Indonesia, September 2016.
3. To request the Secretariat to provide organisational assistance to the *Ad Hoc* Working Group on Farmers' Rights, in particular to effectively involve in their work farmers' organisations and other relevant stakeholders from all regions.
4. To invite Contracting Parties to contribute to the work of the *Ad Hoc* Working Group on Farmers' Rights through organisational and financial support and facilitating the participation of farmers' organisations and other relevant stakeholders.

1 *FAO, 2016b.*

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