Climate Resilient Sustainable Agriculture Programme Guidance Briefing Series

Community Seed Banks

Open market in Kieni Region, Kenya.
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This programme guidance note is part of a series that aims to facilitate the understanding and engagement of ActionAid staff and its partners on community initiatives related to Climate Resilient Sustainable Agriculture.

The first note is built upon ActionAid and its partners' experience of working with seeds and seed banks in several countries in Africa, Asia and Latin America. It focuses on: a) defining community seed banks; b) introducing the process for designing them; and c) answering key questions related to seed banks and seed-related activities, including seed procurement.

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Introduction

Seeds are the fundamental part of any agricultural system. Farming communities have been developing, saving and exchanging seeds since the advent of agriculture. Nowadays many farmers organise this practice collectively in community seed banks. Community seed banks have emerged as an alternative to the mainstream corporate-led seed supply system due to their contribution not only to food and ecological security but also to the economic, political and social empowerment of communities.

Ecological security

Many of the world's poorest farmers live in areas with difficult growing conditions. With a heavy dependency on rain-fed rather than irrigated agriculture, their livelihoods are intimately linked to climate change; a problem they did not cause, but which they must now adapt to in order to survive.

Community seed banks are part of the answer to both the adaptation and mitigation of climate change. The biological diversity and traditional knowledge they embody places them at the heart of adaptation strategies. And if industrial agriculture is to end its role as a major contributor to climate change, it will have to grow different food, and in different ways, with far less dependence on fossil fuels.

The community seed banks offer genetic diversity, seeds tailored for local growing conditions, and the chance to exploit the generations of wisdom that successive farming generations carry in their practices and their memories. Neither government-run agencies nor the commercial firms have managed to supply the diversity or the seeds appropriate to local growing conditions as effectively as community seed banks.

For example, one of the main characteristics of the Paraíba seed banks in Brazil is the choice of local varieties. One of the banks, the São Tomé Bank in Alagoa Nova, started in 1974 with only two types of beans: carioca and what local farmers referred to as híbra, a hybrid seed. By 2009, the community seed bank had 15 varieties. The Semi-Arid Network of Brazil estimates that it has recovered (returned from near-extinction) approximately 300 varieties of cultivated species. These banks also keep written file records, detailing the plants' characteristics and where they grow.

> "*A group of experiences developed by family farmers themselves and their organisations, in different regions of the country, but especially in the semi-arid, have conserved, generated and increased the diversity of local seeds, also known as traditional seeds, seeds of resistance, our seeds, native seeds, seeds of life, landrace seeds, seeds of passion, among other denominations.*
>
> *We are already organised in 450 seed banks and/or community seed houses, and we have thousands of experiences in storing family seeds*".
>
> Political Charter: First Gathering of the Brazilian Semi-Arid Seed Network (February 18th, 2009)

Community seed banks can also provide a space for other sustainable practices. In the 1980s, post-harvest agrochemicals such as phosphine, a volatile gas used to disinfect stored seeds, began to arrive in Paraiba. Some farmers used these instead of natural products such as pepper, orange peel and native tree powder. Paraíba Federal University (UFPB) undertook research to evaluate storage times, the viability of stored seeds, the use of natural products and the impact of using different containers and confirmed that some of the farmers' local pest control 'recipes' were more effective than using certain agrochemicals[1]. This led to the community seed banks eliminating the use of agrochemicals.

The seed banks provide an alternative to the industrial model, which relies on farmers' ever-expanding production. By reducing outlays, farmers are not forced into production decisions that require either extensification (farming more acres) and/or intensification of production, which is associated with genetic erosion and, too often, environmental degradation.

Realising the right to food

Despite increasingly uncertain circumstances, countries need to carefully examine the implications of their agricultural policy, including their seed policy, on the most vulnerable population's ability to secure sufficient food to lead a healthy life. Economic turmoil, the failure of industrialised countries to acknowledge and respond to climate change and the limits of Green Revolution technology all point to the need for further innovation, additional experiments and a more diversified agricultural portfolio than has so far typified development cooperation or national policy in the global South.

Community seed banks, which start in the very communities where people grow their food, can provide the diversity of crops that communities in developing countries typically rely on for their food security. They can also ensure that the seeds they keep are developed with local growing conditions in mind.

The following paragraphs look at the economic, social and political empowerment dimensions of the right to food.

Economic empowerment

Studies in Brazil and elsewhere have shown that while hybrid seeds typically produce greater yields than traditional ones, farmers who rely on hybrid seeds often have lower net incomes than those who rely on traditional seeds. This is due to the higher associated costs of farming with hybrid seeds. Not only are hybrid seeds more expensive, but the inputs required to support their growth typically include larger quantities of water and the purchase of inorganic fertiliser and pesticides. This puts farmers using hybrid seeds at greater financial risk than those who use traditional seeds.

While farmers may obtain higher yields with hybrid seeds, this is never guaranteed, unlike

[1] GERMANO, M.L.A.R. The use of natural products in the treatment of seeds of macassar beans [Vigna unguiculata (L.) Walp] accommodated in tree packages in micro regions of Paraíba State. Master Degree Thesis. Federal University of Paraíba, Brazil.1997

the higher cost of farming, which is always guaranteed. If the harvest fails, the farmer may face debt, which can have a devastating impact on household finances.

Community-based seed banks are less likely to use seeds that rely on expensive inputs. The banks' rules of operation, including the terms for using and replacing seed, are agreed by the communities themselves. Most operate as non-profit businesses similar to buyers' cooperatives, typically allowing farmers to withdraw seeds from the bank on the promise that they replace them when the harvest is ready. Most banks (such as those in Paraiba, Brazil) require a surplus, which may be twice the amount borrowed, ensuring that the seed stock is regularly replenished, even during meagre harvests. These attributes make community seed banks well suited to supporting a model of family farms in diversified production. This has been demonstrated in Paraiba, where such agriculture still typifies the state. The banks provide farmers with an alternative to integrating into commercial production chains, and thus more power. It also helps ensure some of the benefits of competition; private firms faced with alternative suppliers are more likely to treat farmers fairly.

FoSHoL (Food Security for Sustainable Household Livelihoods) is a seed initiative that works with conventional/improved seeds in Bangladesh. They worked with the Central Farmers' Alliance to train farmers on how to produce seeds in community-run banks. One priority was to expand the farmers' skill base by giving them responsibility for the seeds. The project encountered a number of problems, such as poor transportation infrastructure, which made it hard for traders to reach more remote villages, and poor communications, which meant that farmers were unable to tell the farmers' alliance responsible for seed distribution exactly what they required.

Nonetheless, the seed business proved financially sustainable, and provided the farmers involved with an important new skill. The project worked with individual farmers from the Central Farmers' Alliance to collect, package and sell seeds. It worked with the Union Farmers' Alliance in the district who managed the money, monitored the sales and provided a type of information clearing house for farmers and traders, and with the Central Farmers' Alliance office to procure seed from the Government, agree prices and store, package and transport seed to the traders.

The outcomes of the initiative indicated that there was both a huge demand for better quality seed delivered through a community-based mechanism, and that the business could be financially self-sustaining.

Social and political empowerment

In areas where women play a primary role in seed selection and preservation, community-based seed banks can be structured to reflect cultural roles. For instance, in a seed bank established in the Katakwi district of Uganda, women were allotted six of the nine seats on the management structure. All the managers were elected and served as volunteers.

In some cases, women's traditional role in agriculture and their access to land had suffered as the commercial crops, traditionally grown by men, took over land that had previously been farmed by women to produce crops for household consumption. The community seed bank in Katakwi contributed to increased food production, as the women involved had no access to seed in the commercial sector.

Seed banks also offer an important forum to bring communities together. In Paraiba, Brazil, where farmers and their families are organised into a variety of community associations and other groups, the Paraiba Semi-Arid Network (ASA-PB) brings together 350 civil society organisations, including unions, NGOs, churches and social movements. In 1998, it signed an agreement with the state government of Paraiba to establish community seed banks. It has a State Seed Commission, which works with the state government to ensure the community seed banks are supplied with seed. There are now 250 community seed banks in the area, serving 3,730 families across the state. In general, the seed banks operate according to rules agreed by the member farmers. These may provide for the possibility that a family cannot meet its obligations in a certain year due to drought or other adverse conditions. Not only do networks such as ASA-PB help groups share their experiences and ideas, they also increase the seeds banks' political power.

The Seed of Passion Festival in Paraiba is an example of state level cooperation. The festival takes place annually, with the first event being held in 2004. In 2009, 103 farmers and popular educators from a number of states representing 450 seed banks and/or community seed houses met to discuss semi-arid seeds, which resulted in a political charter committing them to work together. It also helped to facilitate discussions with decision-makers. For instance, it was influential in state and federal-level debates on seed policy and was active in securing the passage of a law to establish the State Programme for Community Seed Banks, which authorises the state to acquire local varieties of seed to supply and expand community seed bank stocks.

1. What are community seed banks?

Community Seed Banks, or Community Seeds Storage Facilities, are collective spaces where smallholder farmers store, preserve and manage their own seeds and other planting materials. The practice of seed exchange is based on a loan-and-return system; a family borrows a certain quantity of seeds, and returns the same amount of seeds plus some contribution (an additional percentage of seeds) after harvesting. At the outset, participating community members collectively define how the seed bank will operate – e.g. deciding the amount of seeds each farmer must put in, and the percentage of seeds that should be returned. This system allows farmers to produce their own seeds that can be used, shared, and preserved under the collective management of the community.

2. Why is ActionAid promoting community seed banks?

It is common practice for women and men farmers to select and store their own seeds at home, as a strategy to preserve genetic materials and agrobiodiversity, and to ensure that they will have enough seeds for the next planting season. Every plot of land has different characteristics of soil, vegetation, and moisture content, even when they are located in the same area. Due to this diversity, each farm requires different kinds of seeds, as there is no guarantee that a seed adapted to one agroecosystem will produce satisfactorily in another.

Traditional seeds derive from years of farmers' investment in the selection and adaptation of plants[2] to their local environmental, social, cultural, and economic conditions and needs (Box 1). However, the past several decades have put a tremendous amount of pressure on farmers trying to preserve their traditional seeds (Box 2). In many places around the world, the introduction of high-yielding varieties (HYV), hybrid plants, and other Green Revolution technologies have displaced traditional varieties; many of them are difficult to find nowadays or have already become extinct[3] (see Table 1 for the differences between various types of seeds).

The preservation of these diverse local varieties is important not only because seeds are one of the main inputs for smallholder production systems, but also because they hold essential genetic characteristics that can help smallholder farmers adapt to multiple climatic challenges they may face in the future. In this context, community seed banks are useful mechanisms for facilitating and enhancing the capacity of smallholder communities to collectively select, store and preserve their planting materials. They help to strengthen and scale up existing local initiatives on seeds – opening up collective possibilities which go far beyond individual farmers' home seed storage capacities, and encouraging the community to take common responsibility for taking care of their traditional seeds and collectively benefitting from them.

[2] Although our focus here is in plant varieties and races, the same process have been happening regarding animals. Several new animal races have been created by farmers, based on the selection and crossbreeding of animals at community level.
[3] Mooney, P. R., 1983. *Seeds of the Earth: A Private or Public Resource?.* Oakland, CA: Food First Books.

Box 1: What are traditional varieties?

Farmers have been producing new varieties and landraces for centuries, based on careful selection processes across different genetic materials. Usually, traditional varieties include materials that have originated at the local level, and genetic materials that have received contributions from exotic varieties and races. In many cases, traditional varieties also include some elements of modern (improved) seeds that have been actively or accidentally incorporated to the local materials; accidental inclusions of exogenous materials are more common in plants that can easily cross pollinate, like corn.

Since they are produced from a mix of several different plant varieties and based on different criteria and processes of selection, they are not homogeneous; there is a huge variation among traditional varieties. In fact, it is not common for plants of one specific variety to have genes and characteristics that are exactly the same, and for them to react in the same way to environmental change and external shocks. This diversity is one of the key merits of working with traditional varieties. For instance, some plants of the same variety can be more resistant to drought, pests, and diseases than others; hence, farmers can pick and choose based on their needs and their agroecosystems. Furthermore, farmers can create new varieties and add new plant genetic materials to their "menu of options" for the next planting season.

In Brazil, for example, one can find a myriad of corn varieties. In several areas of the country, smallholder farmers depend on corn production as their stable food, as cash crop, and as animal feed. They have been planting and selecting corn varieties for centuries. Since ancient times, it has been common practice for farmers to harvest, store, and preserve corn in its ears (covered with husk) as a way of protecting them against insects. During the planting period, farmers take out the corn ears from storage (those that have less signs of infestation) to use as seeds. By doing so year after year, farmers have been able to select and create seeds that are more resistant to unfavourable storage conditions. The second picture from Tamale District, Northern Region of Ghana also shows corn being stored in its ear (with the husk partially removed); the seeds that are more insect resistant will have high chances of survival until the next planting season, and will have a chance to pass this characteristics to the next generation.

Farmers select and preserve traditional varieties based on a wide range of characteristics and for several reasons. For instance, they seek seeds that have greater resistance to pests and diseases; require less external inputs; have better production capacity in multi-cropping or agroforestry systems; meet their water needs. Some traditional varieties are preserved because they are more tasteful, nutritious, and essential for cooking traditional dishes and preparing cultural rituals.

Box 2: Protecting traditional varieties against modern varieties

Despite the growing pressure on preserving traditional varieties, some farmers around the world are striving to protect them against extinction. In Kurigram District in Bangladesh, for example, farmers are preserving a combination of high-yielding *and* traditional rice varieties as a strategy to ensure food security for their families and to generate income from seed sales.

There are many reasons why these smallholder farmers are protecting and preserving their traditional seeds[4]. Although they have regular access to improved seeds with reasonable prices (thanks to a collective seed production and distribution system[5]), other inputs are too expensive for them to afford. Due to the high costs of production of modern varieties, farmers face the risk of losing money if they do not manage to reap good harvests. Moreover, improved seeds require specific soil conditions and extensive irrigation systems; not all soil in Kurigram District is suitable for HYVs. On the other hand, traditional varieties can survive and be produced in various types of soils, under variable water availability (and less ideal environmental conditions), with less external inputs. Although they produce much less crop than modern varieties, they require far less investment and are better fit for the local agroecosystem.

However, despite their efforts to preserve traditional varieties up until now, there is no guarantee that they will be able to do so in the future. This is because their capacity to store seeds is limited and can be affected by small and large changes to their living conditions (e.g. from floods, hurricanes, droughts, etc.). Therefore, in order to prevent the traditional seeds and the associated local knowledge from being lost, the community needs to proactively identify, collect, and preserve traditional varieties in safe places.

3. What are the objectives of community seed banks?

Community seed banks are multifunctional structures that can contribute to enhancing the sustainability, resilience, food security, and food sovereignty of smallholder communities. This is done by:

- Ensuring that farmers have access to and control over planting materials that are adapted to their local conditions, at the right time and with the quantity they need;
- Preserving and protecting rare and local varieties of crops from being lost or becoming extinct;
- Ensuring that farmers have secure access to seeds in crisis situations – e.g. during floods, droughts, and after hurricanes;

[4] Based on short interviews held with farmers during a field visit, as part of the Sustainable Agriculture Workshop of ActionAid, in September 2011.

[5] FoSHoL (Food Security for Sustainable Household Livelihoods) Project in Bangladesh has supported the farmers' alliance in Kurigram District to develop a community seed enterprise in 2008. The members of the alliance were split into three groups according to their interests as seed growers, seed traders, and seed processors; and they were trained in their respective functions by the Bangladesh Rice Research Institute (BRRI). In 2009, farmers produced around 30 metric tonnes of high quality foundation rice seeds on 42 acres of land. The seed growers were allowed to keep 10 per cent of the harvested seed for their own use or for local exchange or sale to contribute to the seed security of seed growers. FoSHoL seeds are cheaper than private seeds because there is no surplus profit to be made by commercial actors within the value chain. For more information about the project contact: Aftab Alam Khan (Aftab.Alam@actionaid.org) or Amirul Islam (Amirul.Islam@actionaid.org)

- Preserving the autonomy of farmers and reducing their dependence on external inputs;
- Reducing production costs through the use of local seeds, and eliminating the need to purchase costly private seeds;
- Protecting the farmers from private companies and other market forces that exploit them through monopoly power, patent over genetic resources, exorbitant seed prices, and loans with high interest rates; and
- Providing a platform to farmers for their social and political empowerment by coming together in networks to resist agricultural policies that use seeds as a tool for political populism in crisis situations

4. How do community seed banks work?

There are many different forms of seed banks, with each community or region having its own design, management system, and structure. In a typical community seed bank, seeds remain **stored in a communal structure only for a short period of time, usually less than six to eight months** (Box 3). On the other hand, some community seed banks have **commercial** objectives, whereby a community stores seeds to be used by its members and to be sold to other farmers (Box 4). Some community seed banks go beyond the storing of seeds for immediate use to protect their **cultural heritage** by preserving the traditional seeds that have been developed by the community over time. Such seed banks may involve not only commercial varieties and cash crop seeds, but also local traditional species that are closely related to the cultural practices, dietary habits, and the history of the community (Box 6).

In some cases, community seed banks are associated with a **Gene Bank**, which is organised and controlled by regional farmers' movements and non-governmental organisations (NGOs). Gene banks are regional-level structures that can store seeds of several community seed banks. Usually, they have better infrastructure and storage facilities compared to community seed banks; they work as a safe biorepository to preserve smallholder farmers' seeds and the knowledge associated with them for a longer period of time, reducing the risk of extinction of traditional varieties. They can also facilitate the exchange of planting materials among farming communities, thereby reducing their dependence on conventional seeds. Some examples of gene banks associated with community seed banks include: the Regional Germplasm Bank of the Centro de Agricultura Alternativa do Norte de Minas Gerais (Centre for Alternative Agriculture of North of Minas Gerais State) - CAA-NM in Brazil (Box 4), and the Gene Campaign in India[6].

There are also several gene banks that are **operated by national governments, multilateral institutions, and private companies**. These banks are well-equipped physically, and designed to preserve seeds for longer

[6] See http://www.genecampaign.org/ for further details.

periods (several years depending on the species). They are not only able to conduct frequent tests to gauge the seeds' vigour, germination, and moisture content with higher precision, but can also store seeds in hermetic containers, free of moisture and in a very low and constant temperature (several degrees below zero). For example, the Governmental Seed Bank of Myanmar[7] has been collecting and storing many different species and varieties of plants that are important for the country's food security since 1990.

Box 3: Wheat Seed Bank – Ndiongone Community, Senegal

The Wheat Seed Bank of Ndiongone Community in Senegal has been operating for more than four years, and is managed by a committee of farmers, most of them women. The Seed Bank was created to store wheat seeds, the main cash crop of the community, and to ensure access to good quality seeds for all families during the planting period. Although Ndiongone farmers have been storing primarily conventional seeds which are produced and distributed by national research centres, there are opportunities for them to build upon this experience and start preserving their own traditional varieties.

Initially, farmers could engage in a participatory identification of traditional seeds that they are currently using and/or have used in the past. The preservation of these seeds are important as they are very adapted to local agroecological conditions and have close linkages to local cultural practices (e.g. for use in traditional dishes, rituals, and etc). In addition, once preserved, they can serve as a basis for producing new materials to meet the community demands in the future. Subsequently, by bringing small structural improvements to the current storage facility (e.g. improving ventilation and protection against rodents and insects), the Wheat Seed Bank of Ndiongone Community could go a long way in ensuring food security and preserving cultural heritage.

For more information, contact: Aissata Dia, Programme Coordinator, ActionAid Senegal (Aissata.Dia@actionaid.org)

PHOTOS: Wheat Seed Bank of Ndiongone Community © Celso Marcatto

[7] Operated by the Department of Agricultural Research, and based in Yezin

Box 4: Women's Vegetable Seeds Bank – Ulipur Upazila, Kurigram District, Bangladesh

Some community seed banks have commercial objectives, whereby a community stores seeds to be used by its members *and to be sold to other farmers*. A good example of this type of seed bank is the Women's Vegetable Seed Bank in Ulipur Upazila under Kurigram District, Bangladesh, supported by the Sustainable Agriculture for Monga Mitigation (SAMM) Project of ActionAid Bangladesh.

The seed bank involves 15 women smallholder farmers who store and sell seeds of traditional varieties, including: bitter gourd, snake gourd, ash gourd, ridge gourd, bottle gourd, sweet gourd, pointed gourd, lady finger (okra), yard long bean, cucumber, red amaranth, eggplant, country bean, papaya, and many other vegetables grown in small plots of their homestead land.

Profit from the community seed bank has not only enabled the women stallholders to engage in other income generating activities (e.g. selling puffed-rice) and increase their self-esteem, but also allowed the community to become self-dependent.

For more information, contact: Amirul Islam, Deputy Manager, ActionAid Bangladesh (Amirul.Islam@actionaid.org)

PHOTOS: Women's Vegetable Seed Bank in Ulipur Upazila © Youjin B. Chung

Box 5: Seed Banks for Neglected and Under-Utilised Species - Jumla District, Nepal

Thanks to its environment, landscape characteristics, and history, Nepal is home to a large number of plant species. Smallholder farmers in Nepal are responsible not only for producing the majority of the country´s food supply, but also for the preserving local species and landraces of millets, rice, wheat, maize, Amaranthus herbs, *Urtica dioica* (stinging nettle), *Diplazium* ferns, and *Bauhinia purpure*a or *Diosecreta alata* (purple yam).

Villagers describe how these crops complement each other in terms of taste, and how some are prized because they fill the gap in the "hungry months" when no other food stuffs are available. They are also well adapted to local agro-ecological conditions and can tolerate local pests and diseases. Moreover, these local crops are produced with low input, requiring no irrigation and fertilisers and allowing farmers to make productive use of marginal lands.

Despite these advantages, most of these local crops are seen as "poor people's food". They receive little attention from public research centres and low investment from the government. Most of these crops are described as either neglected or underutilised species.

There are, however, many organisations that recognise the potential of these neglected crops and have been able to develop several initiatives aiming to preserve these species and landraces. One of these initiatives started in 2007 in Jumla District by Sustainable and Equitable Development Academy (SEDA), with the support of ActionAid Nepal. Since then, more than 60 local varieties of cereals and legumes have been preserved by local seed banks.

For more information, see: ActionAid International. 2011. 'Climate Resilient Sustainable Agriculture: Experiences from ActionAid and its Partners'. Available at: http://bit.ly/JsFC5p

PHOTO: © ActionAid International Nepal

Box 6: Regional Germplasm Bank of CAA-NM – Minas Gerais State, Brazil

The Regional Germplasm Bank of the Centre for Alternative Agriculture North of Minas Gerais (CAA-NM) stores and preserves traditional seed varieties at the state-level. The Bank started its operation in June 2011, and is located inside the Training and Experimentation in Agroecology Area of CAA-NM, in the city of Montes Claros, northern Minas Gerais State, Brazil.

The bank is an initiative of several unions of smallholder farmers, community associations, NGOs, research institutions, and the CAA-NM. It collects and preserves seeds and landraces from a network of 20 community seed banks spread all over the semi-arid area of Minas Gerais State. In the latter half of 2012, 12 more community seed banks will be added to this network.

Compared to community seed banks, the Regional Germplasm Bank is more complex with better physical infrastructure and storage facilities. For instance, it allows for humidity and temperature control which enables the preservation of seeds for a longer period of time - in some cases for more than five years. Furthermore, all seeds stored in this facility are frequently tested for their vigour, germination, and moisture content. When the percentage of germination starts to decline, the Regional Germplasm Bank sends the seeds back to the community seed banks to be reproduced. This process ensures that the seeds stored at the regional level are of the best quality.

Although community seed banks are independent and function according to their own rules, they have some characteristics in common. For example, members can borrow seeds from their respective banks during the planting period, and return the full amount plus 50% interest after harvesting. However, since all communities in the semi-arid area of Minas Gerais State suffer from cyclic drought, a regional gene bank serves as a strategic reserve for them to avoid problems related to crop failures.

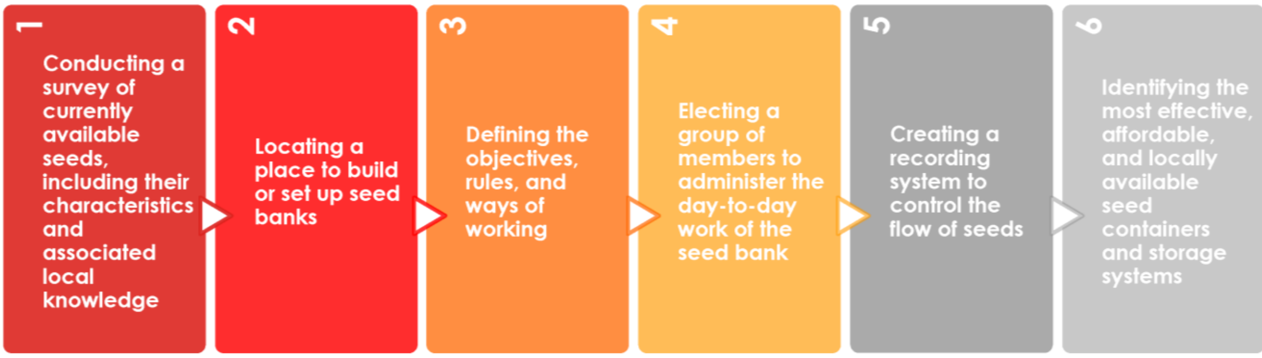
As of 2012, the Regional Germplasm Bank has more than 110 different genetic materials stored. The Bank´s current priority is to collect seeds of maize, beans, lima beans, soybeans, peanuts, and rice.

For more information, contact: Nilton Fábio Lopes, CAA-NM, Brazil – caa@caa.org.br
PHOTOS: © CAA-NM

5. How do we start a community seed bank?

A good way to start a community seed bank is by sharing and reflecting on existing experiences and conducting exchange visits to other communities' seed banks. Exchange visits help farmers to understand the costs and benefits associated with community seed banks, and incentivise them to set up their own. Following the visit, the community needs to adapt their observations to their own reality and needs. It is important to keep the design simple, in a way that the bank can be self-managed. It is also important for the seed bank to reflect the demands and capacity of various community members in order for it to be sustainable.

The designing of seed banks will usually involve the following six steps:



1. Organising a survey to identify: a) the seeds the farmers are currently using; b) the traditional varieties that are still available in the community; and c) the characteristics and local knowledge associated with these plants. The survey will provide a basic mapping of the materials that are currently available at the local level and help the community in deciding which seeds will be rescued, stored, multiplied, and distributed;

2. Locating a place to build or set up the seed bank. Storage facilities must be safe[8], ventilated, and protected against rodents and other animals;

3. Defining of the objectives, rules, and ways of working (see Climate Resilient Sustainable Agriculture space on Hive for an example of real seed bank objectives, rules, etc.);

4. Electing of a group of members who will administer the day-to-day work of the seed bank';

5. Creating a simple spreadsheet, or a recording system to control the flow of seeds (see Annex 1 for an example). A complex table with a long list of information on each seed should be avoided, as it may be time-consuming and bring little practical results;

6. Identifying the most effective, affordable and locally available seed containers and storage systems (see Section 6.2 for further guidance).

6. Other key questions

[8] Since the seeds stored in the banks have commercial value, it is important to protect them against robbery

6.1. What are the differences among various types of seeds?

Table 1 below summarises the characteristics of six different types of seeds.

Table 1:

Seed Type	Description
Breeder Seeds	Produced and directly controlled by the original plant breeder, sponsoring institution, or seed company which supplies the initial source of seeds for multiplication.
Foundation Seeds	Progenies of breeder seeds, whose origin can be clearly traced. Used by seed producers for multiplication and production of certified seeds that will be distributed to farmers. Must fulfil some quality requirements regarding the level of purity, moisture content, germination, and inert matter.
Certified Seeds	Progenies of foundation seeds, which farmers buy and plant. Their production is usually supervised and approved by certification agencies, and the seeds need to comply with some quality requirements regarding purity, moisture content, and germination.
Hybrid Seeds	First generation of seeds resulting from a crossing of two varieties or parents. The improved or increased function of any biological quality in a hybrid plant is called "hybrid vigour" or heterosis. Thanks to the hybrid vigour, hybrids may grow faster and may produce more than non-hybrid plants. Unlike traditional varieties, hybrid seeds are uniform – i.e. all seeds have exactly the same genes – meaning that they cannot be used in new selection processes. Moreover, as the hybrid vigour may only be manifest in the first generation seeds, farmers may not get the same result if they replant the seeds harvested. In fact, there may be a decrease in production and a huge differentiation among plants in the field (causing seed segregation). If farmers want to plant hybrid seeds, they have to purchase them year by year. This is why hybrid seeds work like a living patent, guaranteeing profits and monopoly power for private seed

	companies while adding financial burden on farmers. In addition, although it is possible to design hybrid seeds that are fit for specific local needs and conditions (e.g. hybrid corn in Brazil which can produce more in soils with high presence of aluminium – a toxic element for plant root systems, common in poor soils), most of the hybrids on the market are designed *just to produce more*. Indispensable accompaniment to this design is the external inputs, such as chemical fertilisers and pesticides, soil acidity correction, and irrigation. As a result, the use of hybrid seeds increases farmers' dependency on external inputs and puts additional financial pressure on farmers.
High-Yielding Varieties (HYVs) / Improved Varieties	Product of formal plant breeding system, which involves agricultural research centres, universities, and private companies. As one of the main bases of the Green Revolution technologies, these varieties are uniform (plant characteristics are homogenous within the variety), and stable (plant characteristics are genetically fixed and remain the same from generation to generation). The process of designing a HYV involves a) identifying promising progenies; b) introducing "dwarfing genes" (those that produce shorter, stronger stalks) to these progenies by crossing them with plants that possess these genes; c) selecting the best plants; and d) stabilising, testing, and multiplying the new variety. Through this process, the whole structure of the plant (e.g. size of the plant, size and capacity of the root system, size and design of leaves, etc.) may be changed in such a way that allows it to concentrate its energy on production. Similar to hybrids, although it is possible to use the same process and technologies to design plants that are adapted to various local needs and conditions, most of the HYVs on the market are designed only to produce more when used in conjunction with a package of external inputs. By asking farmers to adapt to HYVs before adapting the HYVs to the farmers' needs and local conditions in the first place, modern plant breeders are putting the cart before the horse. Therefore, the consequences of using HYVs are clear: increased dependency on expensive external inputs; contamination of soil and water from agrochemicals; farmer poisoning from chemical pesticides; and reduced biodiversity and agro-biodiversity among many others.

Genetically Modified Organisms (GMOs)	Organisms whose genetic materials have been artificially altered using genetic engineering techniques. It may also involve the insertion of genes which belong to a complete different species or the deletion of one or more genes that were originally present in that organism. GMO techniques are patent-protected, and they are in the hands of a few large transnational corporations, and some universities and research centres in developed countries. There are many examples of genetically modified plants produced by private seed companies. The most commonly known ones are herbicide-tolerant soybeans, maize, cotton, and many others, which are also known as Roundup Ready crops, since the plant is resistant to the commercial herbicide called Roundup (Glyphosate), manufactured by Monsanto. Other examples include insect-resistant Bt corn – a corn that produces Bt toxin, a protein originally found in a microorganism (*Bacillus thuringiensis*). The production of GMOs has turned out to be more complex, time-consuming, and expensive than what the scientists and supporters of the technology initially expected. The results of the technology have also been highly questionable. The designing and releasing of transgenic plants to nature has serious biological implications and concerns for bio-safety, biodiversity, and agro-biodiversity. In fact, the International Assessment of Agricultural Knowledge, Science, and Technology Development (IAASTD) – a UN-led assessment conducted by more than 400 scientists from around the world to identify policies, research and investment options that can help the transition to a more sustainable food and agriculture system – observed that the evidence regarding the yield impacts of GMO is sparse, highly variable and mostly anecdotal. IAASTD also found that there is little evidence to support a conclusion that modern biotechnologies are well-suited to meet the needs of small-scale and subsistence farmers.

6.2. What is the best system for storing seeds?

If the seed bank simply aims to store seeds that were harvested in one year to be used during the next planting period, complex storage systems and specific containers may not be necessary; a safe place – protected against rodents, other animals, insects, and also against rain, floods, and humidity – will be more than adequate for this purpose.

However, if the objective of the seed bank is to store seeds for more than one planting season, as in the case where farmers want to protect and preserve their traditional heritage and genetic materials, additional consideration must be paid to storage systems. The containers need to both: a) protect the seeds against animals, insects, and microorganisms, and b) to preserve the quality, the moisture content, and the germination capacity of the seeds.

ActionAid and its partners have been using a wide range of containers to store seeds (see Table 2). Deciding on which containers to use will depend on what is available locally and at what cost, the storage period (long or short), and the amount of seeds that need to be stored. For example, the Gene Campaign, a partner of ActionAid in India, is using **glass bottles** and **straw baskets** to preserve seeds in community seed banks, and glass bottles at the regional Gene Bank.

Some communities in other countries are using **small plastic containers** (available at the local market) to store seeds for a short period, as in the Women's Vegetable Seed Bank in Bangladesh. Plastic containers can protect the seeds against rodents, other animals, and insects and can keep the seed moisture under control. However, they may not be a suitable option for storing seeds for longer periods if they are not hermetic (i.e. if it is impossible to remove oxygen or to create a "vacuum" inside them).

Another option is using **plastic bottles that have hermetic features**. Many farmers in Latin America, Africa, and Asia are using recycled small plastic bottles (one to two litre water/soda bottles) to store seeds, as they are very light, efficient, and readily available at no cost. In some cases, farmers are using plastic bottles to protect their own stock of seeds at home and to store grains that they have reserved for family consumption. However, using small plastic bottles can be difficult when storing a large amount of seeds, as in community seed banks. In such cases, farmers may opt for bigger plastic bottles (carrying up to 200 litres) or metal containers.

As buying new containers can be expensive, a more affordable option would be to procure second-hand products (e.g. plastic bottles used for edible oil, olives, and other processed foods). These products can be cleaned and recycled to store seeds, without any problem related to contamination. Bottles that used to contain chemical products and pesticides should be avoided at all times as they have been exposed to hazardous materials. Some communities prefer using **metal containers** to store large quantity of seeds, which come in many different shapes and sizes.

Table 2:

Type	Picture / Example	Carrying Capacity	Pros	Cons
Straw Baskets	  *Community seed bank – Gene Campaign, India*	Variable, depending of the material available and local practices	• Available in almost every smallholder farming community • Farmers can produce the baskets themselves, with little or no cost • Easy to load, unload, transport, and distribute the seeds from • Good air circulation allows the seeds to dry and keeps the moisture under control (if stored in a dry place)	• Do not protect the seeds against rodents, other animals and insects, and may increase the dependency on dangerous pesticides to protect the seeds against infestation • Since they are not hermetic: – Seeds can absorb external moisture, if stored in a humid place; and – Thanks to the availability of oxygen, insects can reproduce themselves and attack the seeds

Type	Picture / Example	Carrying Capacity	Pros	Cons
Natural Fibre or Plastic Sacks	 *Ndiongone Community, Senegal, supported by ActionAid*  *Buseta Reflect Development Orgranisation (BUREDO) Community Seed Bank in Katiriyo village in eastern Uganda, supported by ActionAid PHOTO: © Yougin B. Chung*	Usually 60 Kg	• Available in almost every smallholder farming community • Easy to load, unload, transport, and distribute the seeds from • Since the air can circulate, moisture can be kept under control (if stored in a dry place)	• Do not protect the seeds against rodents, other animals and insects, and may increase the dependency on dangerous pesticides to protect the seeds against infestation • Since they are not hermetic: – Seeds can absorb external moisture, if stored in a humid place; and – Thanks to the availability of oxygen, insects can reproduce themselves and attack the seeds

Type	Picture / Example	Carrying Capacity	Pros	Cons
Glass Bottles	  *Community seed bank – Gene Campaign, India*	Variable, usually 2 to 5 litres of seeds	• Available in some local markets • Easy to load, unload, transport, and distribute the seeds from • Can protect the seeds against rodents and other animals • Where the bottles are hermetically sealed, they can : – Protect the seeds against the multiplication / attack of insects – Keep the moisture content of seeds under control • Easy to see the seeds inside the container, if transparent • Can be used for several years	• There are cost implications as farmers need to buy them • Glass is breakable • Some cannot be hermetically sealed. In this case: – Seeds can absorb external moisture, if stored in a humid place; and – Thanks to the availability of oxygen, insects can reproduce themselves and attack the seeds • Bottles with high moisture content can create a breeding ground for microorganisms, which can multiply, colonise, and destroy the seeds

Type	Picture / Example	Carrying Capacity	Pros	Cons
Small plastic containers without hermetic sealing lid	 *Women's Vegetable Seed Bank – Kurigram District, Bangladesh*	Variable, usually 2 to 4 litres of seeds	• Available in some local markets • Easy to load, unload, transport, and distribute the seeds from • Can protect the seeds against rodents and other animals • Can provide some protection against insects and can keep the moisture partially under control • They are almost unbreakable • Can be used for several years	• There are cost implications as farmers need to buy them • Cannot be hermetically sealed. In these cases: – Seeds can absorb external moisture, if stored in a humid place; and – Thanks to the availability of oxygen, insects can reproduce themselves and attack the seeds • Containers with high moisture content can create a breeding ground for microorganisms; they can multiply, colonise, and destroy the seeds

Type	Picture / Example	Carrying Capacity	Pros	Cons
Small Plastic Soda / Water Bottles with hermetic sealing cap	 *Community Seed Bank - Paraiba State, Brazil* *PHOTO: © Youjin B. Chung*  *Storage of seeds and grains at farmer house level – Minas Gerais State, Brazil* 	Variable, usually 0.5 to 2 litres	• Available almost everywhere around the world • Affordable, even free if recycled • Easy to transport and distribute the seeds from • Protect the seeds against rodents and other animals • Because the bottles can be hermetically sealed, they can: – Protect the seeds against the multiplication / attack of insects – Keep the moisture content of seeds under control • They are almost unbreakable • Easy to see the seeds inside the bottle, if transparent • Can be used for several years	• Not easy to load and unload • Bottles with high moisture content can create a breeding ground for microorganisms, which can multiply, colonise, and destroy the seeds

Type	Picture / Example	Carrying Capacity	Pros	Cons
Large Plastic Containers	 *Recycled 100 to 200 litre plastic bottles that used to contain olives* *PHOTO: © Youjin B. Chung*	Variable, usually 100 to 200 litres	• Found in many places around the world • Easy to load, unload, transport, and distribute the seeds from • Protect the seeds against rodents and other animals • Because the bottles can be hermetically sealed, they can : – Protect the seeds against the multiplication / attack of insects, rodents and other animals – Keep the moisture content of seeds under control • Can be used for several years • They are almost unbreakable	• There are cost implications as farmers need to buy them; recycled containers can be cheaper than buying new ones. However not all bottles can be recycled. Ones used to transport pesticides and other hazardous substances cannot be used to store seeds • Containers with high moisture content can create a breeding ground for microorganisms, which can multiply, colonise, and destroy the seeds

Type	Picture / Example	Carrying Capacity	Pros	Cons
Metal Containers	 *A community supported by PARMARTH, India*  *AS-PTA, Paraiba State, Brazil*	Variable, usually more than 500 litres	• Possible to find in some places • Easy to load and unload • Those that can be hermetically sealed can: – Protect the seeds against the multiplication / attack of insects, rodents and other animals – Keep the moisture content of seeds under control • Can be used for several years • Resistant to shocks and difficult to break	• Not available everywhere • There are cost implications as farmers need to buy them; the costs may be high and unaffordable for some smallholder farming communities • Containers with high moisture content can create a breeding ground for microorganisms, which can multiply, colonise, and destroy the seeds

6.3. How do we ensure the quality of the seeds stored in community seed banks?

a) Control infestation

Attacks by insects are one of the biggest challenges in maintaining seed banks. The control of insects by pesticides should be avoided at all times, even in cases where the seeds are stored in natural fibre sacks. Pesticides are very dangerous, and farmers are the first ones to be poisoned and suffer the negative consequences.

Farmers are often the best source of information regarding pest control, and they use efficient techniques (without pesticides) to combat infestation. Some well-known techniques to preserve seeds that are *not* stored in hermetic containers include:

- Mixing seeds with dry sand;
- Mixing some grams of pepper powder with the seeds;
- Mixing seeds with dry neem (*Melia azadirachta Linn*) leaf dust; and
- Mixing seeds with several layers of dry eucalyptus leaves.

Controlling insects is easier in seed banks with hermetic containers, since air can be removed and insect populations can be kept under control. To remove air from the containers, farmers fill them with seeds, introduce a small piece of paper or tissue with ethanol or any other fuel, set it on fire, and close the container hermetically (making sure it is air-tight). The fire consumes part of the air particles inside the container, lowering the oxygen content, and making it difficult for insects to survive. In some cases, farmers also use beeswax, or any other safe wax, to create a seal to avoid the entrance of oxygen.

One thing to keep in mind, however, is that seeds are living organisms and they, too, need oxygen. The seeds will be safe inside the containers for some time (the amount of time depends on the species, among other things)[9], but after a while, it is vital to open them and check the viability of the seeds (to measure the percentage of germination).

b) Control the water content

One of the key determinants of a good quality seed is its moisture content – i.e. seeds need to be stored with the right amount of water. Every species, and even different varieties from the same species, requires different levels of moisture content. If seeds are kept with more humidity than needed, their germination capacity may be negatively affected, and they may attract fungi and bacteria which can destroy them. If seeds are stored at below optimum water content, they may die due to desiccation or their germination capacity may be impaired.

Farmers are usually knowledgeable about the ideal water content for different species and conduct empirical tests to measure them. Some tests are more efficient than others, hence it is important to organise a participatory discussion at the community level when deciding on which method to use. There are several seed moisture measuring devices available at the market, like the portable grain and seeds moisture tester. Some equipment, however, can be difficult to manage, unnecessarily complicated, and costly. Such complex equipment may not be needed at the community level, but be indispensable for regional gene banks. Since

[9] Our experiences indicate that seeds of maize and several other grains can be preserved in hermetic bottles for more than one year, if there is adequate moisture content.

gene banks aim to preserve seeds for a longer period of time, they need a more rigorous system for controlling the water content.

c) Control the germination capacity

There are many factors which affect the germination capacity of seeds. Some of these include: the temperature, the water content, incidence of pests and diseases, the age of seeds, and so on.

Different species (and varieties from the same species) have different levels of capacity for preserving their germination potential. For example, it is possible to store corn or rice for more than one year (in good storage conditions) without a huge decline in germination potential. In the case of beans, however, even in a good storage conditions, the seeds can lose more than 30 per cent of their germination capacity four to six months after harvesting.

In addition, it is important to remember that all seeds do not behave in the same way in storage (i.e. some varieties' germination potential may be more affected by storage conditions than others). Some species, known as **recalcitrant seeds**, do not tolerate low moisture and oxygen content, and are quite sensitive to low temperatures (and so cannot survive in the freezer). Some examples of recalcitrant seeds are: rubber, cocoa, mango, many timber trees, several tropical fruits, and aquatic plants. Others, known as **orthodox seeds**, can be preserved for several years, if stored with the right degree of moisture in controlled oxygen and very low temperature conditions[10]. Most of the cereals and grains that smallholder farmers produce belong to this category. Due to this variation, it is important to consult farmers, research institutions, technicians, and seed vendors about the specific behaviour of seeds under different storage conditions.

Reduced seed germination percentage is not a big issue in seed banks that store seeds for a short period of time (for a few months). It becomes a huge challenge, however, for seed banks that aim to preserve seeds for a long time. For such seed banks, regular germination tests are essential for determining the maximum germination potential of a seed lot. The timing of the test will depend on the species; species that are sensitive, such as beans and groundnuts, may need to be tested every two months, and others, such as corn, rice, and wheat, may need to be tested every three to five months.

Although there are many **methods for measuring the germination percentage** and many other features regarding seeds quality, we will focus here on one simple and efficient method (Box 5). This method indicates whether the seeds are in a good condition, or if they need to be replanted to produce new and "fresh" seeds to substitute the ones stored at the seed bank. Once the tests have been conducted, seed banks usually distribute the seeds with low germination percentage to farmers so they can be reproduced and returned to the seed bank, where they will be stored and preserved.

The germination test is a very useful tool, and farmers can incorporate it in their day-to-day activities. Farmers can test their own seeds before sowing, to get an idea about its germination potential. A low germination percentage can indicate that more seeds per area will be needed to compensate for the seeds that will not germinate. If the test indicates a percentage of germination at around 60 per cent, for example, farmers can use 30 to 40 per cent more seeds to make up for the losses. Farmers can also conduct germination tests on seeds that they are going to buy, in order to evaluate their potential, and to be sure that they will not have problems of low germination in the field.

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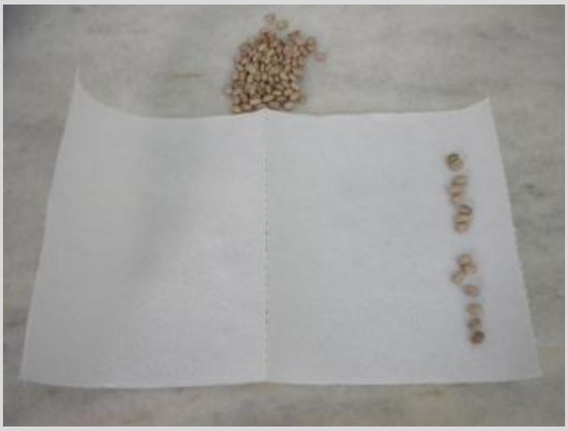
[10] http://www.kew.org/glossary/orthodox-recalcitrant-seeds/; International Plant Genetic Resources Institute (IPGRI). 2004. 'Bibliografía sobre Conservación Ex Situ (Technology and Strategies for Ex Situ Conservation)'. Rome, Italy: IPGRI. Available at: http://bit.ly/JzxLn7 (in Spanish.)

Box 7: How to conduct a germination test?

Equipment needed: Water absorbent material (e.g. toilet paper, kitchen towel or tissue), 100 seeds, water

Steps:

1. Obtain a sample of 100 seeds from the plant / variety that needs to be tested (beans are used in the picture below);



2. Distribute the seeds in several rows on a piece of water absorbent material (kitchen towel is used in the picture below);

3. Roll the paper tightly so that no seed will escape;

4. Carefully saturate the rolled up paper with some water and put it in a place away from direct sunlight and wind;

5. Check each day that the paper remains moist for a period of five to ten days, depending on the plant species you are using. Usually, five to eight days will be enough to allow all seeds to germinate.

6. After this period, count the total number of seeds that have germinated and calculate the percentage.

$$\text{Germination (\%)} = \frac{\text{Number of seeds germinated}}{\text{Number of seeds tested}} \times 100$$

In our test, out of 100 seeds, we had 84 that germinated and 16 that did not (i.e. 84 per cent rate of germination). This is not a bad percentage for beans, since they lose their germination capacity very fast. However, in general, it is recommended to use seeds that have more than 85 per cent of germination.

Some people recommend the test be repeated three times. One could take 300 seeds; divide them in three groups of 100; and roll each group in separate papers. At the end of the germination test, count the number of seeds that germinated in each roll. The percentage of germination is going to be the average of the germinated seeds of the three tests.

In general, if the percentage of germination is low (more or less below 60 per cent), the seeds should be planted again to be reproduced, and to replace the ones stored in the seed bank.

6.4. What are the challenges involved in seed procurement processes?

Very often, ActionAid and its partners are confronted by the unforeseen demands for seed procurement from local communities, particularly during emergency situations (e.g. floods, long periods of drought, hurricanes, etc.).

Community seed banks can help avoid such problems, as they can be built in safe places with minimal impacts from natural disasters. They can also work as an insurance against such shocks; in other words, seed banks can guarantee that farmers will have access to their local seeds in times of need and that they will not be lost during disasters. In fact, they play a particularly important role in drought-prone areas. There are many examples of where farmers are not able to harvest anything even after planting more than four times. In such situations, it is quite common for them to use up all their seed stocks. In fact, some traditional varieties have become extinct in many semi-arid areas of Brazil due to this problem.

However, in some emergency situations, it may be necessary to procure and distribute seeds to farmers through different means. Our experience shows that seed procurement can cause more problems than solutions, depending on the way it is carried out. Below are some of the issues that our staff and farming communities should take into account when engaging in seed procurement activities:

- Seeds are one of the main triggers for pests and diseases. Once introduced, some pests, diseases and nematodes (roundworms) can seriously affect the whole production system. In some cases, it will be not possible to grow the same plants for several years. However, the difficulty lies in that most pests and diseases are invisible to the naked eye.

- Plant varieties are dependent on local agroecosystems, which means that crop failure might occur if the wrong variety is introduced to the farm.

- Plant varieties also depend on local usages. Therefore, it is important to understand which varieties are being used by the communities, and how they are being used (e.g. commercialisation, local consumption, processing, etc) before introducing a new seed.

- External inputs and improved seeds are more likely to be introduced during times of crises. These new materials will not only affect what varieties can be grown in the present and in the future, but also the preservation of local and traditional varieties.

- There are many cases of failed seed procurement and distribution due to low germination rate (and the related crop failure).

Recommendations to communities planning to introduce new seeds:

- Seek support from local technicians with in-depth knowledge on smallholder farmers' production systems and the local genetic materials available;
- Conduct a quick survey of traditional varieties currently available before introducing new varieties, as any introduction of new genetic materials will interfere with their preservation. Following the survey, organise a process for rescuing and preserving traditional varieties in safe places (at farmers' hands). This may sound difficult to do in crisis situations where many farmers might have lost their seeds already. Nonetheless, our previous drought interventions show that it is very likely that even in a crises moment several farmers will have managed to save very important traditional varieties;
- Introduce seeds that farmers have already experimented with, or the ones that local technicians know of, as plant varieties are highly dependent on local agroecosystems and usages;
- Conduct a germination test before buying and distributing seeds. Usually, the percentage of germination should be around 85-99 per cent to be considered a good seed;
- Conduct a small field test of the new seeds (if time allows): Plant the new seeds in a small plot, far from the other cultivation areas, to see how they behave and if they present some signs of contamination by pests and diseases;
- Try to buy seeds at the local market from local people, if available. These seeds can be more adapted to local conditions, and the money will stay in the local economy.

Additional Resources

- AgriCultures Network. N.D. 'Underutilized Species: Where Are We?' Available at: http://www.agriculturesnetwork.org/resources/extra/underutilized-species-where-are-we

- International Plant Genetic Resources Institute (IPGRI). 2004. 'Bibliografía sobre Conservación Ex Situ (Technology and Strategies for Ex Situ Conservation)'. Rome, Italy: IPGRI. Available at: http://www.bioversityinternational.org/fileadmin/bioversity/documents/regions/americas/Varios/Bibliografia_conservacion_ex_situ.pdf. N.B. in Spanish.

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- The Development Fund Norway/ Utviklingsfondet2011. Banking for the Future: Savings, security and seeds. A short study of community seed banks in Bangladesh, Costa Rica, Ethiopia, Honduras, India, Nepal, Thailand, Zambia and Zimbabwe. Oslo, Norway: The Development Fund. Available at: http://www.twnside.org.sg/title2/susagri/2011/susagri160/DF_community_seed_banks.pdf

Annex 1:

Community Seed Bank
Seed Stock Control Table

Date: from dd/mm/yyyy to dd/mm/yyyy
Species: _______________ **Variety:** _______________
Storage Location: _______________

	Borrowed Seeds				Returned Seeds			
Name	**Community**	**Date**	**Amount**	**Administered by**	**Date**	**Quantity**	**Quality (*)**	**Administered by**

(*) Quality: G = Good A = Average R = Rejected

Seed Identification

Origin:					**Register Number:**				
Farmer's Name:					**Farmer's Address:**				
Seed Specifications									
Species	**Variety**	**Entry Date**	**Storage Location**	**Quantity**	**Date of Harvest**	**Germination Tests**			
						Test			
						Date			
						Result			
Characteristics of the seed variety:									
History and main uses of the seed variety:									
Person providing this information:									
Person filling this form:						**Date:**			

Individual Seed Label

Species	
Variety	
Community	
Farmer	
Date	
Quantity	
Register Number	

This programme guidance note is part of a series that aims to facilitate the understanding and engagement of ActionAid staff and its partners on community initiatives related to Climate Resilient Sustainable Agriculture.

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