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From community seed banks to community seed enterprises

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Origin and process

To restore farmers' habit of saving and using seeds from their own crops and to increase access to good-quality seeds, the Centre for Sustainable Agriculture has established community seed banks in 70 villages in the state of Andhra Pradesh and 20 villages in Maharashtra since 2004. Community seed banks are village-level institutions whose members are participating farmers. The community seed bank is managed by a committee of five volunteers (three women and two men) chosen by the villagers. In partnership with grassroots-level nongovernmental organizations (NGOs), the Centre for Sustainable Agriculture aims to:

- establish community managed seed banks at the village level;
- revive and conserve crop and genetic diversity with a special focus on food security;
- document the productivity of agro-diversity-based cropping systems;
- expand successful experiences over a larger area and into ongoing programmes;
- establish a state-level network of seed banks to share knowledge and resources.

As a first step, villages that wanted to initiate community-managed seed systems were selected with the help of a local NGO. Farmers met to discuss problems related to seeds, and they were briefed on alternative seed systems. Interested farmers were then chosen to participate in seed banks and assigned to groups to undertake planning, production and management. Some seed banks were registered as seed growers' associations (SGAs) under the civil societies act. Membership is open to all farmers, who meet periodically to discuss the plan of work. The process is illustrated in Figure 19.1.

The main functions of the community seed bank include:

- renewal of crop and genetic diversity in locations characterized by monoculture of commercial crops, exploitation of natural resources and extensive use of external inputs;



Figure 19.1 Steps in setting up and maintaining a community seed bank

- conservation of crop and genetic diversity in locations where diversity still exists but where farmers are facing the threat of chemicalization and monoculture;
- periodic mapping of diversity in the village and renewal of varieties that have lost their purity and vigour;
- participatory varietal selection and participatory plant breeding of specific crops, such as paddy cotton, groundnuts and vegetables, that are under threat due to erosion of diversity;
- selection of varieties suited to local conditions through participatory varietal selection; documentation of value for cultivation and use data for each variety and every agro-ecological situation;
- development, with innovative farmers and seed savers, of an inventory of available seed varieties along with information on their performance;
- organizing seed sharing and exchange, conservation of crop and genetic diversity and networking with similar bodies at the state and national levels;
- procuring breeder seeds from cooperatives and universities, mainly commercial crops, and multiplying and supplying them to farmers;
- assessment (by the seed bank committee) of village seed requirements and planning for seed production;
- encouraging farmers to produce/save/reuse seed carefully selected from their crops; helping farmers learn how to select and use farm-saved seed;
- holding enough stock to meet cropping requirements in case of crop failure or low rainfall, particularly in rainfed areas.

Currently, the community seed banks collectively hold 400 varieties of various crops. Their value for cultivation and use data are collected and published as a catalogue in Telugu and Marati for farmers to use as a reference.

The Centre for Sustainable Agriculture provides three types of support to the community seed banks:

- *Financial support:* For purchasing seed and storage structures, seed bank maintenance, etc. The amount is deposited in a bank account opened in the name of the seed committee.
- *Technical support:* The Centre for Sustainable Agriculture and NGOs train seed committee members to identify and map diversity, maintain diversity and produce seed according to standards specified for various crops. Farmers are also trained in seed selection and postharvest management.
- *Monitoring:* Seed banks are periodically monitored by a coordinator appointed to look after this programme.

Since 2007/08, the farmers have formed producer organizations to pool and market their crops. For some crops, such as paddy, soybeans, chickpeas, wheat and red grams, demand from farmers in neighbouring villages has been increasing and some of the community seed banks have entered into informal marketing arrangements. As the farmers were already marketing their grain, some formed SGAs at the village level to collectively plan and market their seeds.

Seed growers' associations

An SGA is made up of about 15 farmers, 50 per cent of whom are women. At the beginning of every crop season, the association prepares a plan and procures seed from various sources; multiplication is carried out by the members.

During the growing season, members organize visits to seed plots to monitor management quality. At the end of the season, based on requirements, seed is procured by the SGA and stored in seed banks or retained by farmers. Seed is documented and catalogued; then, at the beginning of the growing season, it is distributed to farmers. The SGAs in Chowdarpally and Enebavi have become famous for the paddy and other varieties they produce.

Evolving into a seed enterprise

Community seed enterprises are extensions of the SGAs. Representatives of the SGAs make up the general body and executive of such enterprises, which may be producer companies or cooperatives. While the SGAs are non-registered informal groups of farmers, producer companies are registered and have all the requisite licenses and permits to breed varieties, produce seeds and brand and sell them. The main functions of seed producer companies are:

- developing seed production plans based on the demand projections of community seed banks and SGAs;
- procuring and multiplying breeder seed in bulk and supplying it to community seed banks and SGAs;

- identifying farmer breeders and following participatory plant breeding processes to select crop varieties that are stable and can withstand climate variation;
- owning and operating a central seed bank and processing unit. The role of the seed processing unit is to facilitate postharvest management of the seeds: harvesting, threshing, cleaning, grading and checking for viability and germination rate. As the seeds will not be used until the next season, they must be carefully stored at the central processing unit to maintain viability.

In 2012, a federation of seed growers was established as a seed producer organization: Naisargik Sheti Beej Producer Company Ltd, Wardha, Maharashtra. It has 35 members and is involved in producing and marketing soybean, wheat, chickpea, red gram, green gram and black gram seeds. In 2012/13, it produced about 50t of these seeds, and for 2013/14 the production plan was for 150t. Similarly, the six farmers' cooperatives in Andhra Pradesh are also involved in seed production and marketing.

Harvest, storage and treatment methods adopted by seed banks

For effective storage of seeds, locally available containers made with local materials (bamboo, earthen pots, gunny bags and iron boxes) are used.

Groundnut: Healthy pods are selected at the winnowing stage and stored in gunny bags treated with neem solution. Some farmers hang the gunny bags from the roof. At sowing time, this seed is treated with cow urine and ash.

Pulses (red, green and black gram): For seeds saved on farm, pods of healthy plants are selected before harvest. They are winnowed and then either treated with 1 per cent neem oil or mixed with ash and neem leaves. The treated seeds are stored in earthen pots covered with cow dung. Stored this way, the seeds remain viable and free of pests for a year.

Millets: Healthy seed heads are selected at harvest time, threshed manually and stored in gunny bags. If they become infested with pests, the seeds are sun dried between 11 am and 3 pm.

Cereals (maize/paddy): Maize farmers first identify healthy plants with a cob at the fifth node. These cobs are harvested separately and stored by hanging them from the roof at the entrance to the house. Seed for sowing is selected from the mid-portion of the cob.

Vegetables: To prevent cross-fertilization, farmers cover the flower with a paper bag. At maturity, the self-fertilized vegetables are harvested separately, seeds are separated from fruits that have been dried in the sun, ash is added and the seeds are stored in cotton bags.

Building links and networking

Individual community seed banks are mainly confined to a geographic area, based on local food needs, cropping patterns and specific agro-climatic

conditions including soil types and rainfall. Most seed production is planned to meet local requirements. For example, groundnut seed produced in Anantapur district is intended mainly to fulfill local needs. However, some seeds might be shared with other network partners. Local NGOs, community biodiversity organizations and self-help groups facilitate such initiatives. The Centre for Sustainable Agriculture organizes state- and national-level seed fairs where all stakeholders are invited to share seeds and information. In a few cases, the National Bureau of Plant Genetic Resources and the state biodiversity board have links with seed banks.

In the states of Telengana, Andhra Pradesh and Maharashtra, about 70 seed banks have formed two networks with the support of the Centre for Sustainable Agriculture. Twenty seed banks have joined to form seed cooperatives. Two cooperatives own a mobile seed processing unit and have a marketing license. A network of seed banks is equipped with cold storage for germplasm. Various institutions have direct or indirect links with community seed banks to exchange knowledge and seeds.

Impact of seed banks

- Seed banks have increased crop diversity and access to seed by small and marginal farmers.
- Most small and marginal farmers are using their own seed or procuring it from a community seed bank.
- All farmers are cultivating a variety of crops: food, fibres, vegetables and oils seeds. They sow high-yielding varieties of local and traditional seeds. Hybrids (e.g. cotton) are used to some extent.
- Twenty-two traditional varieties of paddy, millets, sesame and brinjal are in use. Most millets grown by farmers are local types.
- In rainfed areas, such as Anantapur, which experience regular crop failures because of erratic rains, farmers are highly dependent on the seed banks for contingency crops.
- Networking of community seed banks has helped farmers learn from each other and exchange seeds.
- Documentation of characteristics and performance of plant varieties has helped farmers make better and more informed choices.

Challenges

A one-time investment and short-term involvement of farmers in community seed banks is not sufficient to conserve traditional varieties in the long term. Collection, regeneration, multiplication and distribution of seeds must be carried out continuously. Varieties must be improved and attention must be paid to rare endemic and endangered crop varieties that are more vulnerable than the common, widely used ones. Sociocultural changes and access to electronic media, coupled with the excitement created by the formal seed

sector with its false promises, has resulted in a shift from food crops to commercial crops. Crop failure resulting from abiotic factors is also a challenge.

Support is needed from the public sector on several fronts to strengthen the seed banks:

- restructure the subsidy fund for direct farmer payment to encourage farmers to use their own seed;
- assist in revival of some of the traditional varieties whose use has been eroded over time;
- create a seed policy to favour locally valuable farmers' varieties;
- evaluate traditional seed and its suitability for various areas by generating data on its value for cultivation and use;
- government agencies can provide informal assistance in many ways, such as allowing seed producers timely access to certified seed and guiding farmers in multiplication processes;
- help small-scale entrepreneurs by establishing a legal framework for marketing truthfully labeled seed and quality declared seed;
- establish forward and backward links with government;
- make registration of farmers' varieties simple and accessible so that farmers can claim rights and benefits under the Plant Variety Protection and Farmers' Rights Act;
- educate farmers on reuse instead of focussing on seed replacement.

Moving forward

In ten years of working with community seed banks, we have learned that such banks are successful in tribal areas where subsistence farming is predominant and traditional varieties of food crops are grown. Although exchange and sharing is easier within community seed banks, when it comes to exchanges between seed banks, the issue of quality arises. In areas where commercial crops and monoculture are common, the utility of community seed banks is minimal. The Centre for Sustainable Agriculture tried to scale up the lessons from community seed banks and SGAs to deal with the seed crisis faced by farmers. However, two critical issues were quality assurance and financial support, either from the government in the form of subsidies or from markets in the form of profit margins. Both issues require more formal systems for planning, production, processing and quality management.

To strengthen the system, a discussion on creating an open-source seed network has been initiated to establish a new set of institutions and a legal framework that protects farmers' interests and ensures free and open access to the germplasm needed for crop improvement. Such a network would have to include:

- people engaged in conservation and revival of traditional varieties and their characterization who are willing to share with others;

- farmers and organizations who can develop value for cultivation and use data for existing traditional and improved varieties in various agro-climatic and growing conditions using participatory varietal selection;
- farmers and breeders engaged in selection and development of newer varieties using participatory plant breeding principles;
- farmers' institutions involved in production and marketing of seed to other farmers.

To implement such a model, there must be an independent organization that can bring together all the players, build confidence in each other, coordinate activities and act as a nodal agency. This agency can also bring together breeders and farmers and guide farmers on aspects of conservation, data generation, participatory breeding, registration and licensing as open source. Farmers could contribute their seeds to a common pool and obtain samples from it. This common pool of germplasm could also be used to exchange materials with others under material transfer agreements that have open-source clauses.