Establishment and Current Status of Community Seed-Banks

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Abstract

Farmers were organized and trained on crop conservation and management, seed selection. Farmers were organized by District Cooperative office with collaboration to EBI for legal entities. The key supporter of CSB is District Agricultural office, District Administration office, District youth and women office, District trade office, District land administration office university, NGO and district cooperative office. The members of executive committee are elected every three year by members. Twenty four CSBs have been established, and crop conservation associations are organized and 6 CSBs were under establishment. Twenty one crop type were conserved.

Introduction

A community seed bank is defined as a locally governed and managed, mostly informal, institution whose core function is to maintain seeds for local use (Development Fund, 2011) beyond this core conservation function, community seed banks have a broad range of additional purposes and vary significantly in scope, size, governance and management models, infrastructure and technical aspects. There is considerable variability in the performance of community seed banks in terms of technical and operational capacities (e.g. technical rigour in monitoring germination and ensuring viability of stored seed), governance, and operational management. Technical and operational challenges are often compounded by lack of legal recognition and scarce financial resources. Past experience has shown that community seed bank initiatives are usually quite effective during their initial years, but with withdrawal of external support, many cut back on activities or stop altogether As in other organizational efforts, when community seed banks are established without proper foundations, long-term survival is difficult. Nonetheless, in many countries one can find well-functioning community seed banks (Vernooy et al., 2015). In recent years, the number of newly established community seed banks has been on the rise partly due to the growing support of national and state or provincial governments.

Ethiopia is a country of tremendous biological and cultural diversity. The country is particularly rich in crop genetic diversity as it is the center of diversity for several crop species. Esquinas-Alcázar, (2005) The centuries of selection by farmers and the natural environment, has led to the development of farmers’ varieties which are typically adapted to specific agro-ecological conditions. These farmers’ varieties are usually grown with very little inputs, such as fertilizers and pesticides. Most of farmers’ varieties of the different crops are still in the hands of the farmers, but a lot of them might also have been lost. One of the reasons for the loss of the farmers’ varieties was their replacement with improved varieties (Demissie, 1999; Takeshima & Salau, 2010; Giller et al., 2009).
The Ethiopian Experience / Major achievements

Establishing community seed banks

Generally, community seed banks began to establish at the end of the 1980s with the support from international and national nongovernmental organization (NGOs). Countries that pioneer various types of community seed banks include Ethiopia, Bangladesh, Brazil, India, Nepal, Nicaragua, the Philippines and Zimbabwe (BI, 2015). So, community seed banks have been around for about 30 years, and are found across the globe. Through difficult to pinpoint the origin of CSBs, but NGOs have played a key role and continue to do so in many countries (Vernooy et al., 2015). In recent years, in a number of countries, government agencies at the national level have become interested in establishing and supporting CSBs, often as part of a national on-farm ( in - situ ) conservation strategy. CSBs established by EBI are one of them. In Ethiopia, CSBs were begun to be established since 1997 after a technical cooperation agreement was signed with UNDP/GEF in 1994 with a $2.5 Million financial initiative.

Community level CSBs are managed by Crop conservatory and Seed producer Association. Crop conservatory and seed producer Associations are organized and established at district level (having several villages and communities) Farmers were organized and trained on Agro bio diversity conservation and management, seed selection. Farmers were organized by District Cooperative office with collaboration to Agricultural office for legal entities The key supporter of CSB is District Agricultural office, District Administration office, District youth and women office, District trade office, District land administration office university, NGO and district cooperative office. The members of executive committee are elected every three year by members. According to Table 1 below Twenty four CSBs have been established, and crop conservation associations are organized and 6 CSBs were under establishment.

Table 1. Overview of members of selected community seed banks by EBI

| Name of CSB            | Male | Female | Total |
|------------------------|------|--------|-------|
| Ankober CSB            | 138  | 26     | 164   |
| Goro CSB               | 99   | 27     | 126   |
| Agarfa CSB             | 71   | 10     | 81    |
| Siyadebir CSB          | 66   | 21     | 87    |
| Decha CSB              | 45   | 12     | 57    |
| Chena CSB              | 26   | 5      | 31    |
| Hawzen CSB             | 51   | 7      | 58    |
| Ganta`afeshum CSB      | 55   | 6      | 61    |
| Andegna ekul CSB       | 35   | 15     | 50    |
| Ganfaro Chicho CSB     | 60   | 6      | 66    |
| Witta CSB              | 50   | 10     | 60    |
| Sigeda CSB             | 56   | 4      | 60    |
| Mino CSB               | 60   | 0      | 60    |
| Gozobo Masah CSB       | 39   | 7      | 46    |
| CSB Name                  | Population | Number of Shareholders | Total Shares |
|--------------------------|------------|------------------------|--------------|
| Shiamobaqeleni CSB       | 95         | 7                      | 102          |
| Beyda CSB                | 23         | 2                      | 26           |
| Ejere CSB *              | 391        | 109                    | 500          |
| Chefe Donsa CSB *        | 270        | 1230                   | 1500         |
| Kalu CSB *               | 905        | 439                    | 1344         |
| Wereilu CSB *            | 950        | 501                    | 1451         |
| M/ shenkora              | 64         | 136                    | 200          |
| Arada                    | 78         | 272                    | 350          |
| Leka Dulech              | 96         | 36                     | 132          |
| Meta                     | 24         | 79                     | 103          |
| **Total**                | **3,717.00** | **2,902.00**   | **6,620.00** |

*Figures in parentheses indicate estimates.*

**Figure 1. Overview of CSBs established**

**Restoration of displaced local maize**
Training and awareness creation to farmers and other stakeholders

Farmers were organized and trained on crop conservation and management, seed selection, CSB management, the role of stakeholders, farmers variety distribution, loan collection and the importance of traditional knowledge (TK) every year. Farmers were organized by District Cooperative office with collaboration to Ethiopia Biodiversity institution (EBI) for legal entities.

Restoration of “lost” varieties

Community seed banks continue to emerge in different parts of the world in response to concerns about the gradual loss of biological diversity in agricultural systems, the loss of seeds caused by natural disasters and the demands of farmers to participate in locally driven diversity management strategies. The expansion of improved seed, drought, development of infrastructure are some of the causes of loss of local (farmer) varieties.

According to IBC, (2012) annual report the restored crops includes bread wheat, maize, sorghums, Fenugreek, Emmer wheat, black cumin, teff, Faba bean, pea, haricot bean, cabbage seeds, barely, chickpea and phaseolus etc

Inventories and surveys on the status of farmer’s varieties

The majority of farmers in Ethiopia still depend on farmers' varieties of crop plants. The varied agro-ecologies and farming systems prevailing in the country have greatly influenced the types and diversity of crops maintained by farmers in different parts of the country is different. These days, changes can be seen in cropping patterns particularly in areas with market access where the market influences the crop types. This has an impact on the occurrence of diversity of crops on farms and also the diversity within crops (IBC, 2012).

CSBs survey and inventory is necessary to monitor the status of farmers varieties in a given time interval. The information could also use by gene bank managers or curators to take appropriate conservation decisions and strategies. This activity is conducted in CSBs, and it is often done in coordination with head office.

Conserving endangered and locally adapted farmers’ varieties

According to Altieri & Merrick (1987). There is no single way to run the technical side of a community seed bank. The bank’s management committee decides how to record seed-sample information (i.e., the “passport data” as it is called in formal ex situ institutions), which descriptors to use to distinguish accessions, what storage infrastructure to set up (keeping seeds genetically pure and healthy is an essential task) and how to manage seed distribution, evaluation and regeneration activities. In 24 CSBs 21 crop types were conserved in the year 2019.
Table 2. Overview of CSBs established and crop types preserved within

| Rf No | Name Of Community Seed-Bank | Location     | Number and types of crops conserved                                                                 |
|-------|-----------------------------|--------------|-----------------------------------------------------------------------------------------------------|
| 1     | Decha CSB                   | SNNPR Keffa  | 8 species (Zea mays, Eragrostis tef- tef, Triticum sp.- Wheat, Hordeum vulgare-Barely, Pisum sativum- Field pea, Vicia faba- Faba bean, Phaseoleus sp., Sorghum bicolor) |
| 2     | Chena CSB                   | SNNPR Keffa  | 3species (Eragrostis tef- tef, Hordeum vulgare-Barely, Vicia faba- Faba bean)                        |
| 3     | Siyadebir CSB               | Amhara North Shoa | 6 species (Triticum sp. - wheat, Vicia faba - Faba bean, Eragrostis tef - teff, Cicer arietinum - Chickpea, lens sp., Lathyrus sativus - Grass pea) |
| 4     | Ankober CSB                 | Amhara North Shoa | 8 species (Triticum sp4. - wheat, Vicia faba - Faba bean, Eragrostis tef - teff, Gra - Chickpea, lens, Hordeum vulgare - barley, Sorghum, - Field pea |
| 5     | Goro CSB                    | Oromia Bale  | 12 species (Hordeum vulgare- barley, Triticum aestivum, Triticum durum, Triticum dicoccum, Pisum sativum- Field pea, Pisum sp., Lepidium, Fenugreek, Faba bean, Linseed, Coriander, Black cumin, Cicer sp.) |
| 6     | Agarfa CSB                  | Oromia Bale  | 9 species (Hordeum vulgare- barley, Triticum aestivum, Triticum durum, Triticum dicoccum, Pisum sativum- Field pea, Fenugreek, Oat, Faba bean. |
| 7     | Ganta’afeshum CSB*          | Tigray East Tigray | 4 Species (Field pea, Lens, 3 Barely species, Teff)                                                |
| 8     | Hawzen CSB                  | Tigray East Tigray | 7 Species (Barely, Wheat, Teff, Millet, Chickpea, Grass pea, Sorghum)                             |
| 9     | Andegna ekul CSB*           | SNNPR Gedio/Bule-gedezo  | 5 species (Wheat, Barely, Linseed, Pea, bean)                                                     |
| 10    | Ganfaro Chicho CSB*         | SNNPR Sidama/Hage reselam  | 6 species (Bean, Pea, Barely, Oat, Wheat, Linseed)                                               |
Witta CSB*  SNNPR  Gurage/Butajira  Teff

Sigeda CSB*  SNNPR  Hadiya  5 species (Bean, Pea, Barely, Teff, Wheat)

Mino CSB*  SNNPR  Kambuta/ Kacha Bira  3 species (Teff, Wheat, Bean)

Gozobo masah CSB*  SNNPR  Dawro/Marqa Dawro  4 species (Wheat, Bean, Barely, Pea)

Shiamobaquele CSB*  SNNPR  Wolaya/ Damot-Sore  5 species (Barely, Wheat, Pea, teff, Phaseolus)

Beyda CSB*  SNNPR  Konso  2 species (Maize, Sorghum)

Menjar  Amahara  N Shewa  6 teff varaities

Arada CSB  Oromiya  E shewa  6 wheat varaities

Ieka CSB  Oromiya  E welega  5 species bean barely (2)teff (2) wheat pea

Meta CSB  Oromiya  E Harerge  5 species (Wheat, Barely, F. bean funugreek phaseolus

Ejere CSB  Oromiya  E Harerge  10species (bean pea barley tef wheat d wheat oat funugreek Phaseolus sorgum

Cheffe Donsa CSB  Oromiya  E Harerge  8 Species bean pea barley teff wheat D wheat oat funugreek

Kalu CSB  Amhara  S Wello  6 Species bean pea barley wheat teff llentils

Were eilu CSB  Amhara  S Wello  10 secies (Bean, Pea, Barely, Teff, wheat D wheat oat linseed phaseolus sorgum

SNNPR (Ethiopia Government budget)

21 Varieties of endangered and locally adapted farmers’ varieties have been conserved on the farm.

Conclusion

Community seed banks can serve as key local sources of germplasm allowing farming communities to exchange seeds in a decentralized manner through social networks and organized events, such as diversity fairs and participatory seed exchanges. As such, community seed banks can operate as a central node in the local seed system and as a bridge to the supralocal level and the formal seed system, e.g., through links with other community seed banks, the national gene bank or other plant genetic resource institutions. Farmers’ abilities to search for new forms of diversity, select new traits, cultivate and exchange selected materials with friends, relatives and community members are the basis for the processes that allow genetic materials to evolve and adapt.

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