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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) eyond 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).

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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.

Table1. Overview of members of selected community seed banks by EBI

Name of CSB	**Members (#)**		
	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

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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**

Figure 1. Overview of CSBs established

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Figure 2. Training and awareness creation to farmers and other stakeholder

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 toEthiopia 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 et*c*

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

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Figure 3. Tradetional Seed Preservation and Conservation

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
		Region	Zone/Worede a	
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/Hagereselam	6 species (Bean, Pea, Barely, Oat, Wheat, Linseed)

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11	Witta CSB*	SNNPR	Gurage/Butaj ira	Teff
12	Sigeda CSB*	SNNPR	Hadiya	5 species (Bean, Pea, Barely, Teff, Wheat)
13	Mino CSB*	SNNPR	Kambata/ Kacha Bira	3 species (Teff, Wheat, Bean)
14	Gozobo masah CSB*	SNNPR	Dawro/Mare qa Dawro	4 species (Wheat, Bean, Barely, Pea)
15	Shiamobaqele ni CSB*	SNNPR	Wolayta/ Damot-Sore	5 species (Barely, Wheat, Pea, teff, Phaseolus)
16	Beyda CSB*	SNNPR	Konso	2 species (Maize, Sorghum)
17	Menjar	Amahara	N Shewa	6 teff varaities
18	Arada CSB	Oromiya	E shewa	6 wheat varaities
19	leka CSB	Oromiya	E welega	5 species bean barely (2)teff (2) wheat pea
20	meta CSB	Oromiya	E Harerge	5 species (Wheat, Barely, F . bean funugreek phaseolus
21	Ejere CSB	Oromiya	E Harerge	10species (bean pea barlly tef wheat d wheat oat funugreek Phaseolus sorgum
22	Cheffe Donsa CSB	Oromiya	E Harerge	8 Species bean pea barley teff wheat D wheat oat fenugreek
23	Kalu CSB	Amhara	S Wello	6 Species bean pea barley wheat teff llentils
24	Were eilu CSB	Amhara	S Wello	10 secies (Bean, Pea, Barely, Teff, wheat D wheat oat linseed phaseolus sorghum

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.

References

Altieri, M. A., & Merrick, L. (1987). In situ conservation of crop genetic resources through maintenance of traditional farming systems. *Economic Botany*, *41*(1), 86-96

Biodiversity International (BI). (2015). *Community seed banks: Origin, evolution and prospects*. Biodiversity Internasional.

Demissie, A. (1999). *In situ conservation: the Ethiopian experience*. ILEIA newsletter. http://www.agriculturesnetwork.org/magazines/global/agrobiodiversity/in-situ-

ISSN 2721-1304 (Print), ISSN 2721-1207 (online)

conservationthe-ethiopian-experience/at_download/article_pdf: Accessed on 29th march 2016.

Development Fund. (2011). Banking for the Future: Savings, Security and Seeds. Oslo: Development Fund. Accessed 29 January 2016. www.planttreaty.org/sites/default/files/banking_future.pdf

Esquinas-Alcázar, J. (2005). Protecting crop genetic diversity for food security: political, ethical and technical challenges. *Nature Reviews Genetics*, *6*(12), 946-953

Giller, K. E., Witter, E., Corbeels, M., & Tittonell, P. (2009). Conservation agriculture and smallholder farming in Africa: the heretics' view. *Field crops research*, *114*(1), 23-34.

IBC. (2012). *Ethiopia: third country report on the state of plant genetic resources for food and agriculture Pess*, pp. 196-202.

IUCN/UNEP/WWF. (1991). *Caring for the Earth: A Strategy for Sustainable Living*. Gland, Switzerland. World Conservation Union.

Takeshima, H., & Salau, S. (2010). Agricultural mechanization and the smallholder farmers in Nigeria. *South Asia*, *97*(99), 2030.

Vernooy, R., Shrestha, P., & Sthapit, B. (2015). *Community seed banks: Origins, evolution and prospects*. Routledge.

ISSN 2721-1304 (Print), ISSN 2721-1207 (online)