



COMMUNITY BIODIVERSITY MANAGEMENT:

DIALOGUE BETWEEN
REPRESENTATIVES OF
COMMUNITY SEED BANKS
AND INTERNATIONAL
INSTITUTIONS

REPORT

FROM THE WORKSHOP
HELD ON THE
22 OF SEPTEMBER 2017
IN ROME AT FAO HQ

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SUMMARY

Community seed banks have been founded since the early 1980th in many parts of the world, with the main aims to address the loss of agricultural diversity and to enhance access to seeds adapted to local conditions that the market does not provide for adequately, often based on a participatory approach of community crop management and improvement.

DIVERSIFOOD put specific attention to understand the current functions and the future direction in the evolution of existing experiences of Community Seed Banks, using a global approach. It integrated the original work done by the project on European CSBs initiatives with the existing literature on seed savers in USA and Australia and on social movements in the Global South, moving to a global approach to the Community seed banks issue. A critical understanding of the forces that have shaped CSBs in different contexts allows to identifying those experiences as a movement that have a key role in contributing to a new approach to the seed issue based on the concept of Community Biodiversity Management.

The creation of synergies and interactions between ex-situ and on farm management can make conservation and sustainable use of plant genetic resources more effective, decentralized and dynamic. Community Seed Banks can play an important role in this process, facilitating the linkages between public genebanks and collective actions of farmers and citizens.

DIVERSIFOOD integrated the work done on European experiences with the work done in developing countries towards different activities. This report presents the discussion that took place during the workshop organized on the 22 of September 2017 at FAO Headquarters in Rome by **DIVERSIFOOD**, together with Bioversity International and the International Treaty on Plant Genetic Resources for Food and Agriculture. This workshop was part of a two-days meeting organised by DIVERSIFOOD, with the participation of CSBs from Europe and Global South. All the outcomes of the meeting can be downloaded from the project website www.diversifood.eu and the CSB website www.communityseedbanks.org.

This report is organised in three sessions. The first focuses on the concept of Community Biodiversity Management and on the visions of Community Seed Banks developed by the **DIVERSIFOOD** project, Bioversity International and the International Treaty on Plant Genetic Resources. The second session presents visions and experiences on Community Seed Banks from 8 different countries. Finally, a SWOT analysis developed by the participants to the stakeholder workshop done the day before the one at FAO is presented as a first attempt to develop a shared vision.

ACKNOWLEDGEMENTS

The workshop on which this report is based was organized by Rete Semi Rurali, Italy and Arche Noah, Austria on behalf of the European Union Horizon 2020 project Embedding crop diversity and networking for local high-quality food systems (DIVERSIFOOD). It was conducted in collaboration with Bioversity International and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA).

The event received financial support from the European Union's Horizon 2020 research and innovation programme under grant agreement No 633571, through **DIVERSIFOOD** as well as from Bioversity International. Thanks to Livia Ortolani and Tara Dourian for their assistance with the workshop organization and input to this report.

Finally, we wish to acknowledge the many people behind the community seed banks around the world and the organization supporting them, for their vital contributions to maintaining crop genetic diversity and making it available for present and future generations.



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INTRODUCTION



Community Seed Banks are diverse and dynamic experiences that share some common features. They are collective seed management experiences embedded in the so-called informal seed systems to counteract the loss of locally adapted crop types. Often they are well established local and grass root initiatives developed by networks of farmers, gardeners and citizens that have a technical, political and management capacity that is key to practice the sustainable use of agrobiodiversity. Community Seed Banks have the main aim of (I) enhancing access to seeds and pats adapted to local conditions, (II) provide training and awareness to local communities on the issue of agrobiodiversity loss and potential, (III) managing farmers, gardeners and citizens' networks around the issue of seeds, (IV) help to build more sustainable food systems and make the society more resilient. More than a specific definition, it is the combination of those features that define Community Seed Banks experiences that facilitate access to seeds. Different experiences can have diverse governance structures, areas of activities and stakeholders involved but they are all contributing to a process of innovation based on communities sovereignty on local resources. The CSBs initiatives work with a wide range of crops, varieties and management practices, on average several hundreds of accessions. Those accessions include local and farmers' varieties, old commercial varieties and populations. This type of activities requires financial resources, manpower and technical equipment that are not always available in CSBs initiatives. In addition often the legal environment represents an obstacle for the development of such initiatives. However, voluntary work and punctual funding opportunities have been used by existing experiences to carry on their activities and develop innovative seed systems, thanks also to cooperation and networking between initiatives with similar goals and values.

The **DIVERSIFOOD** project worked on the issue of Community Seed Banks with a global approach through different events. Firstly a survey on CSBs experiences in Europe was conducted an innovative contribution of the project to the specific issue, and then a workshop with the participants to the survey for discussion and validation of survey results was conducted on the 21 of September 2017 in Rome, Italy. The following day, on the 22 of September 2017 a workshop to discuss with International Institutions about the issue of Community Seed Banks was held at FAO HQ in Rome, Italy. In October 2017 a

side event on CSBs experiences from North and South was held in Kigali, Rwanda during the Governing Body of the ITPGRFA. In June 2018 a workshop took place in Florence to present the result of the survey conducted by the **DIVERSIFOOD** project together with the ECPGR on the linkages between public genebanks and direct users. Finally, on July 24th 2018 representatives of the **DIVERSIFOOD** project participated to the Informal Dialogue Building Linkages to Strengthen On-Farm management of Farmers' Varieties/Landraces: Community Seed Banks, organized by the Commission on Genetic Resources for Food and Agriculture (CGRFA) at FAO.

This report highlights the key contents of the workshop that took place at FAO HQ in September 2017. The workshop aims at stimulating and further sharing the perspectives around Community Seed Banks that emerged worldwide to achieve better recognition of CSBs as part of the sustainable seed systems in Europe and to strengthen CSBs and their positive impact. The workshop is planned as a dialogue forum with participation of CSB initiatives from all over the world, including European countries, with representatives from the International Treaty, Bioversity International and **DIVERSIFOOD** project, including the research sector and civil society.

Reports on the others event of the whole process can be found online on the DIVERSIFOOD website (www.diversifood.eu) and on the website www.communityseedbanks.org



PART I : DISCUSSION WITH INTERNATIONAL INSTITUTIONS

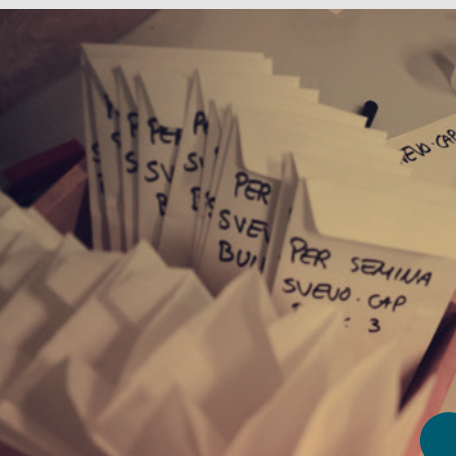


EMBEDDING CROP DIVERSITY AND NETWORKING FOR LOCAL HIGH QUALITY FOOD SYSTEMS -

DIVERSIFOOD, AN H2020 EUROPEAN PROJECT
VERONIQUE CHABLE, INRA, FRANCE

DIVERSIFOOD, an H2020 European project (2015-2019), is connecting networks across Europe engaged in cultivating agricultural diversity and accordingly, aims to revitalize the local food culture to achieve local highquality food systems. The project explores how underutilised and forgotten plant species can be more broadly used, with the objective to create more diverse cultivated plant populations, to increase the quality of crops and their products, and to contribute to sustainable food systems in the light of environmental and social challenges. Modern industrial agriculture has caused an important reduction of cultivated diversity, both at the genetic and at the species level. The organic sector needs diversity at the species level to increase the sustain-

nability of the agricultural systems from an ecological point of view, and at the intra- and inter-varietal levels to favour adaptation, co-evolution and health. By fostering cooperation between farmers, researchers, processors and consumers within the food chain, with 21 participating partners representing 12 countries, **DIVERSIFOOD** promotes a transdisciplinary and multi-actor research approach to increase the relevance of scientific activities mainly addressed to organic and low-input sectors. Then, the consortium includes research, technical or communication/management organisations and seed or farmers' organisations.



CONTEXT AND OVERALL OBJECTIVES

DIVERSIFOOD reconsiders research organisation, to better connect biological and social sciences in order to establish a “proven” concept for a multi-actor approach suited for participatory plant breeding and the maintenance of genetic diversity at various levels (genetic diversity in crops, farming systems and food chains). The overall challenge is the re-introduction in the food chain of untapped species or types of commonly cultivated plants, underutilised crop species and varieties, such as landraces or abandoned or neglected open-pollinated varieties for a wide range of different crop species (broccoli, tomato, wheat, maize, barley, fava bean, buckwheat, chestnut, carrot, lupin...). Then, the next challenge is to renew plant breeding approaches based on diversity to further create and adapt new diverse populations to local conditions, to farmers’ practices, specifically within organic farming systems, and to local, regional or specific markets, a panoply of breeding strategies is adapted to each crop species within decentralized selection involving several actors (farmers, breeders, processors, consumers...). One

final challenge is “resilience” of the food system with regards to diverse, healthy and tasty food products and their corresponding market valorisation. This objective calls for adaptive capacities of the food chain at the agro-ecological and socioeconomic level and to maintain its cohesion over time. The approach covers the whole supply chain and includes the needs and expectations of breeders, farmers and processors and their networks, including retailers and end-users.

DIVERSIFOOD ACTIVITIES

Connecting diversity to seed systems and civil society is sustaining a paradigm shift from pure conservation to the idea of dynamic management of cultivated diversity and genetic resources.

The basic activity is to identify and collect genetic resources of underutilised/neglected/forgotten crops; they could be either (1) novel, ‘outsider’ species, e.g. quinoa, (2) old, neglected species, e.g. rivet wheat, buckwheat (3) common species, neglected germplasms, e.g. OPVs, old cultivars for maize, tomato, and (4) common species in marginal areas, e.g. chickpeas in the UK. An overall framework is being developed for an efficient, decentralised network of crop and cultivar evaluation for cultivation, use and breeding. Additional goals include knowledge diffusion in order to drive further testing and breeding, as well as the promotion of the rediscovery, cultivation and use of underutilised crops among the broader public.

At the basis of plant breeding activities, these previously identified genetic resources are combined to generate a large number of new, diverse populations to boost intra-varietal diversity (dynamic population mixtures, composite cross-populations). To support the development of participatory research, methods for statistical analyses and data mining relevant for decentralized on-farm evaluation and breeding have been developed and adapted by the partners.



Then, the project investigates how communities organise themselves to foster autonomy for seed and identifies critical tools and bottlenecks in seed production. Therefore, by connecting networks, **DIVERSIFOOD** is comparing existing examples and learning from good practice within community seed banks and farmers' networks. In parallel, we are learning from several case studies of successful experiences in the marketing of diverse local food, bringing together local multi-actor groups, studying marketing strategies, methods and specific tools for the valorisation of biodiversity in food markets.

Across all **DIVERSIFOOD** activities, we reinforce the multi-actor research concept which needs time and space to allow the emergence of a common culture which favours true knowledge exchanges and progressively builds transdisciplinary practices, including scientific knowledge and relevant know-how to truly reflect the on-farm needs. An iterative process progressively helps to cope with the common objective embedded in the reality of the food chain. Researchers' and professionals' competencies are complementary and evolving concurrently.

CONCLUSION

The project aims for active involvement of a diversity of stakeholders and for concrete and sensible connections to food challenges on the ground. This helps to demonstrate how society at large can encourage sustainable agriculture, and can, therefore, contribute to broader societal sustainability. **DIVERSIFOOD** will provide policy recommendations: **(1)** to increase the community or network capacity to manage genetic resources, renewal of cultivated diversity and seed quality; **(2)** to promote multi-actor research organisation to sustain collaborative/participative and action research, based on transdisciplinary and coevolutionary processes; **(3)** to increase the awareness of policy makers on the dynamic management of agricultural diversity in order to boost food diversity for both consumers and producers.

DIVERSIFOOD has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 633571



THE ROLE OF COMMUNITY SEED BANKS IN INNOVATIVE SEED SYSTEMS

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INTRODUCTION

DIVERSIFOOD devoted one work-package to the study of seed systems, with a special focus on the so-called informal seed systems and their different components. This WP – Innovative Biodiversity Management – is studying and promoting the development of new approaches to “on farm management of PGRFA (plant genetic resources for food and agriculture)”, replacing the concept of “in situ/on farm conservation”. It appeared evident that “on farm management” better accommodates the dynamic utilization of PGRFA within farmers’ communities, as stated also by the First Report of the State of the World’s PGRFA. **DIVERSIFOOD** analysed the potential and the bottlenecks of on farm management in Europe, clarifying the links between formal and informal seed systems, identifying the key elements to reinforce the capacity of networks or communities, analysing the impact of Community seed banks in Europe and increasing the awareness of the society on the value and non-use value of plant genetic resources. A specific task has been dedicated to analyse the legal aspects of on farm management, with the aim to promote an enabling environment.

COMMUNITY BIODIVERSITY MANAGEMENT

In this framework, **DIVERSIFOOD** focussed on the word “community” as a key element of on farm management strategies. Communities, and in general social aspects and norms, play an important role in establishing and shaping seed systems at local level and this role should be recognised also by policy makers and scientists. For this reason, we suggested to include S (social aspects) in the classical formula Genotype*Environment interaction: diversity is not only the result of one genotype in one environment but also of their interactions with social aspects, considered in a wide sense (e.g. social organisation of the community, social preferences regarding food). At this regard scholars developed the concept of Community Biodiversity Management (CBM), putting farming communities at the centre of the sustainable use of agrobiodiversity (De Boef et al, 2013). The main aim of this approach is to show how supporting community institutions and strengthening their capabilities is paramount for the sustainable use of Plant Genetic Resources. **DIVERSIFOOD** project looked at the application of the Community Biodiversity Management approach in Europe, learning from existing experiences of multi actor networks working at local level, and understanding how the policy and legal environment can impact on the local systems. As shown by the following figure this approach can include different activities and ways of managing diversity:

community seed banks, participatory plant breeding projects, seed companies and cooperatives, landraces conservation, seed exchanges and fairs.

COMMUNITY SEED BANKS WITHIN SEED SYSTEMS

DIVERSIFOOD looked at seed breeding and production with a wide perspective that includes the whole seed system, integrating different activities: from the searching for new varieties to the seed marketing, from the participatory research to the possible relationships that can be developed with the private sector and the market to valorise the production derived from agrobiodiversity. Modelling the different actors covering diffe-

rent roles allows describing seed systems as shown in [figure 2](#). All the activities described in figure 2 can be considered part of the so-called informal and formal seed systems. In between farmers and gene banks **DIVERSIFOOD** considers a new role for Community seed banks, as collective actors that can facilitate access to plant genetic resources, multiply seeds, promote seed exchange and maintenance.

DIVERSIFOOD delivered policy recommendations promoting and sustaining innovative seed systems. These recommendations took into consideration also the work done during the project final Congress in Rennes (10-12 December 2018).

Figure 1: **Community Biodiversity Management** and the policy environment

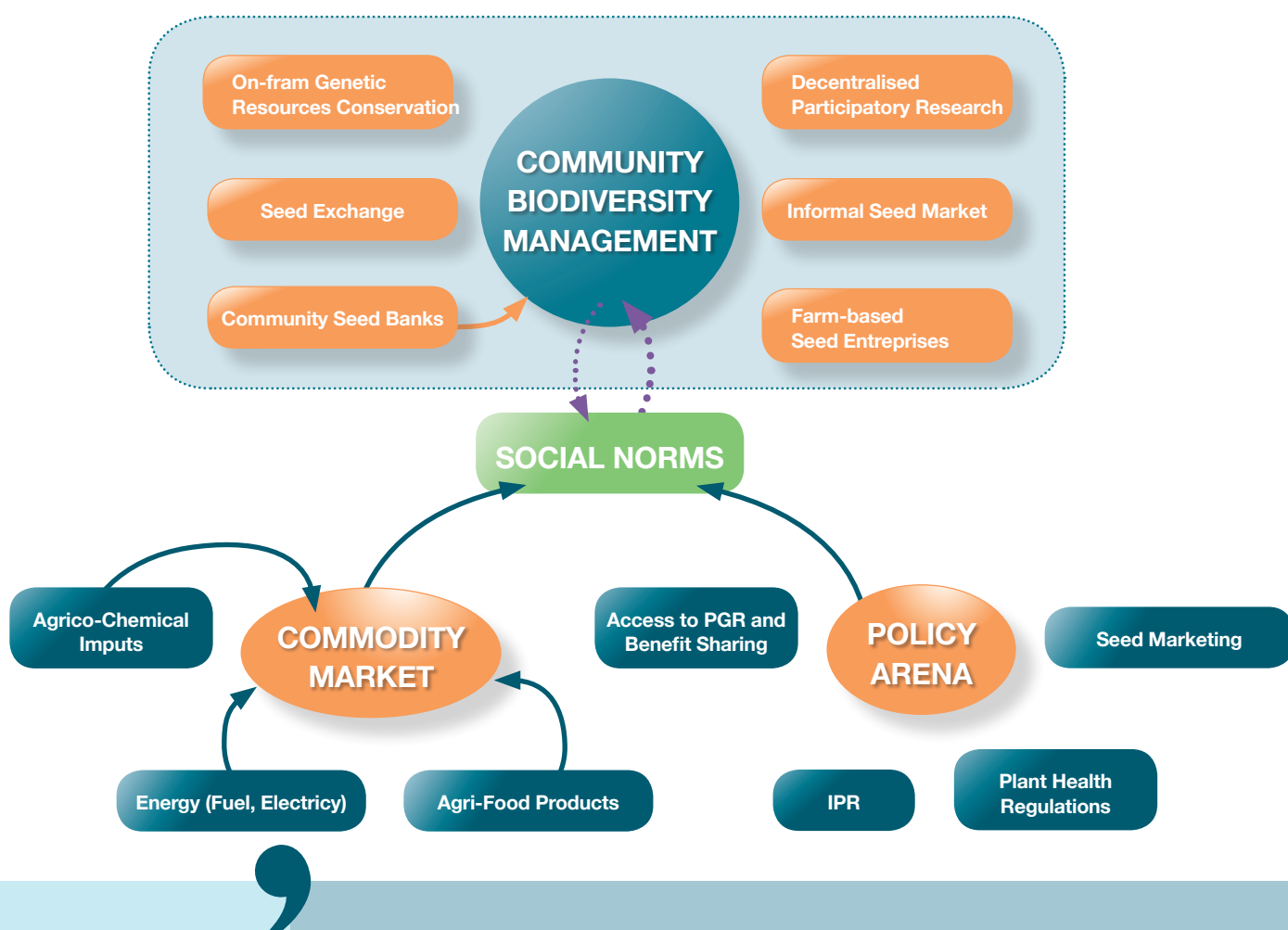
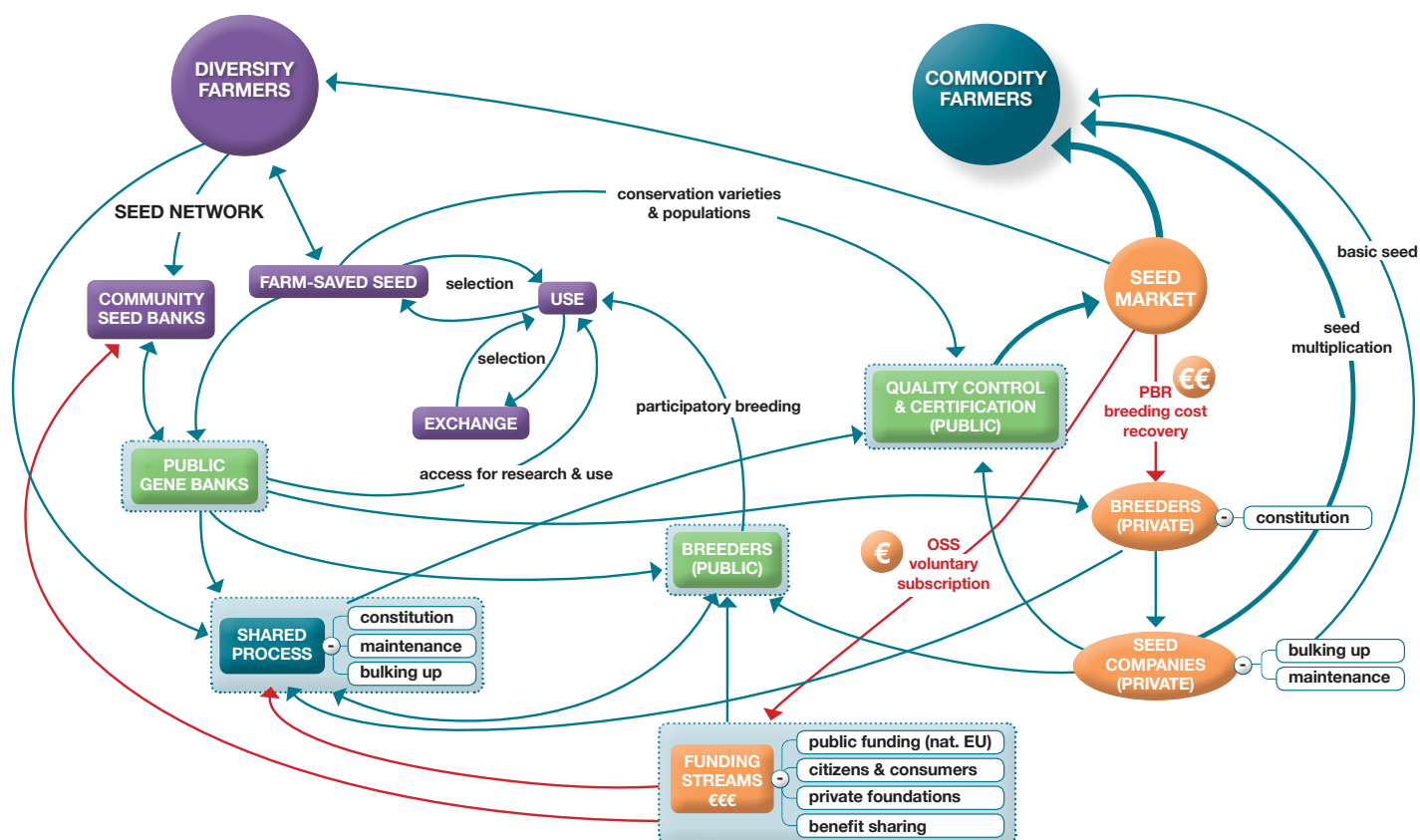


Figure 2: **Sustainable** Seed Systems



COMMUNITY SEED BANKS AROUND THE WORLD: ACHIEVEMENTS, CHALLENGES, AND A WAY FORWARD

RONNIE VERNOOY, BIOVERSITY INTERNATIONAL

A community seed bank is a locally governed and managed, mostly informal, institution whose core function is to maintain seeds for local use. 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, governance and operational management

In many countries around the world, community seed banks lack legal recognition and have to operate with 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. When community seed banks are established without proper foundations, long-term survival is difficult. In recent years the number of newly established community seed banks is on the rise partly due to the growing support of national and state/provincial governments. Examples include Bhutan, Brazil, Mexico, Nepal, South Africa, India and Timor Leste.

Community seed banks have three key functions:

I) conservation of plant genetic resources; **II)** access and availability of diverse seeds and planting materials according to farmers' needs and interests; **III)** seed and food sovereignty. Some community seed banks are strictly focused on conservation of agricultural biodiversity including reviving lost local varieties, while others give priority to both conservation and access and availability of diverse types of seeds and planting materials suitable to various agro-ecological domains. Conservation activities of community seed banks can be enhanced by participatory plant breeding activities, selection of farmer-preferred varieties and seed production on a commercial scale. Community seed banks can play an important role in adaptation to climate change.

Community seed banks function on the principles of participation, collective decision-making, and shared responsibility for resources, risks, and benefits. Women and men farmers, working together and participating in activities, strengthen their capacity for collective action and build human and social capital. The technical aspects of community seed bank management are a crucial part of this process. The effective operation and survival of seed banks depend on their ability to provide access to quality seeds. This can only be realized with committed, trained, and capable people.

Community seed banks usually follow traditional knowledge-based practices that are relatively simple and low cost. Some use modern equipment and the latest tech-



nologies, but this is not a requirement for good functioning. In addition to the physical facilities of the seed banks, the technical knowledge acquired and used by members plays a significant role in maintaining the quality of seeds. When members are fully equipped with the technical knowledge to conserve good-quality seed, chances of longterm functioning of the community seed bank are good. However, building capacities take time and effort.

Viability and sustainability of a community seed bank are influenced by multiple variables. They are:

Farmers' interests
Farmers' leadership
Responsiveness to a decline in crop diversity as a result of shrinking area under local varieties and/or a reduction in the number of farmers growing local varieties
Potential to build on existing seed exchange practices
Accessibility of seeds
Availability of seeds (i.e., the amount of local seeds available is insufficient to meet local demand)
Number of beneficiaries
Dietary diversity (e.g., wish to increase number and types of crops)
Agricultural diversity in the local market (e.g., potential to increase diversity)
Possibility of linking community seed bank activities with crop improvement efforts
Potential to respond to the impact of climate change on local farming systems
Potential to evolve into a broader community development institution
Availability of sound technical support
Availability of a local resource person to mobilize people and facilitate initial steps
Feasibility of building a functional facility with low-cost maintenance
Enabling policy and legal environment (incentives, rewards, recognition)
Possibility of connecting with national gene bank and research agencies (exchange of seeds, cooperation)

Bioversity International and a number of national partner organizations are developing a proposal to establish a global community seedbanks platform that will support existing community seedbanks and national/regional community seedbank networks around the world, scale out their activities and achievements, and contribute to their sustainability.

The global platform is envisioned to have four key functions:

1. Documenting and analyzing practical experiences, successes and challenges;
2. Facilitating the provision of technical, organizational and policy/legal expertise;
3. Coordinating and carrying out an action research agenda; and
4. Digitalizing, systematizing and storing data, and channeling of knowledge.

For more information

<https://www.biodiversityinternational.org/research-portfolio/conservation-of-crop-diversity/community-seedbanks/>



CONSERVATION AND SUSTAINABLE USE OF PLANT GENETIC RESOURCES FOR FOOD AND AGRICULTURE:

THE ROLE OF THE COMMUNITY SEED BANKS IN THE PROJECTS FINANCED BY THE ITPGRFA

MARIO MARINO/RODICA LEAHU, SECRETARIAT OF THE ITPGRFA

I. INTRODUCTION

The International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA—the Treaty) is a legally binding instrument with the objectives of facilitating conservation and sustainable use of PGRFA and the fair and equitable sharing of benefits derived from their use, in harmony with the Convention on Biological Diversity (CBD). The Treaty defines PGRFA as “any genetic material of plant origin of actual or potential value for

food and agriculture”, genetic material being “any material of plant origin, including reproductive and vegetative propagating material, containing functional units of heredity”. PGRFA include cultivated varieties of plant species (landraces and modern cultivars), wild plant species with potential as trait donors to crops (crop wild relatives— CWR), wild-harvested species used for human and animal food, and plant breeders’ material— advanced lines, elite varieties and DNA.

2. THE SUSTAINABLE USE OF PGRFA

The Governing Body of the Treaty has recognized the pivotal role of sustainable use of PGRFA in addressing global challenges, including climate change adaptation, food security, poverty alleviation and biodiversity loss. The implementation of Article 6 of the Treaty, “Sustainable Use of Plant Genetic Resources” is a standing priority item on the agenda of the Governing Body with the aim of promoting an integrated approach to the sustainable use of PGRFA among Contracting Parties. Under Article 6.1, Contracting



Parties are required to “develop and maintain appropriate policy and legal measures that promote the sustainable use of plant genetic resources for food and agriculture”, while Article 6.2 lists examples of measures for the sustainable use of PGRFA:

- (a)** Pursuing fair agricultural policies that promote, as appropriate, the development and maintenance of diverse farming systems that enhance the sustainable use of agricultural biological diversity and other natural resources;
- (b)** Strengthening research which enhances and conserves biological diversity by maximizing intra- and inter-specific variation for the benefit of farmers, especially those who generate and use their own varieties and apply ecological principles in maintaining soil fertility and in combating diseases, weeds and pests;
- (c)** Promoting, as appropriate, plant breeding efforts which, with the participation of farmers, particularly in developing countries, strengthen the capacity to develop varieties particularly adapted to social, economic and ecological conditions, including in marginal areas;
- (d)** Broadening the genetic base of crops and increasing the range of genetic diversity available to farmers;

e) Promoting, as appropriate, the expanded use of local and locally adapted crops, varieties and underutilized species;

(f) Supporting, as appropriate, the wider use of diversity of varieties and species in on-farm management, conservation and sustainable use of crops and creating strong links to plant breeding and agricultural development in order to reduce crop vulnerability and genetic erosion, and promote increased world food production compatible with sustainable development; and

(g) Reviewing, and, as appropriate, adjusting breeding strategies and regulations concerning variety release and seed distribution.

Recognizing that in many Regions the implementation of Article 6 is lagging behind in comparison with other elements of the Treaty, the Governing Body adopted on 2015 a Programme of Work on Sustainable Use of PGRFA (2016-2019) to:

1. Collect and share experiences on the national implementation
2. Develop a Toolbox and a Platform for the co-development and transfer of technologies
3. Make training and capacity building on Farmers’ Rights and Sustainable Use
4. Raise awareness of the actual and potential value of crop wild relatives, landraces and underutilized species.

Between April and June 2015, the Secretariat of the Treaty conducted an online stakeholder consultation, the results of which helped to foster a better understanding of the needs of a wide range of interest groups, organizations and individuals regarding the provision of support for their activities on sustainable use of PGRFA. These findings have also helped to identify bottlenecks in the PGRFA use system, including the critical need to address policy limitations in support of sustainable use activities. Other urgent requirements are capacity-building and access to plant genetic material and associated information.



The consultation also confirmed that it is important to offer a wide range of resources to support the activities of stakeholders. It showed why specific types of resources are useful and practical, and identified additional resources that would be needed. In particular, stakeholders should be supported in their work on the sustainable use of PGRFA – including through extra budgetary resources – by providing training and capacity-building on sustainable use of PGRFA and Farmers' Rights.

3. THE ROLE OF THE BENEFIT-SHARING FUND (BSF)

The BSF is funding activities for the conservation and sustainable use of PGRFA with the overall objective of enhancing farmers' resilience in the face of climate change and improve their food security situation, thus contributing to the SDG Target 2.5.

Taking the rolling Global Plan of Action as a framework, the Governing Body has used available funds in the Benefit-sharing Fund strategically, to play a catalytic role in international cooperation in the following areas:

1. Information exchange, technology transfer and capacity-building
2. Managing and conserving plant genetic resources on-farm
3. The sustainable use of plant genetic resources

Since its inception in 2009, the BSF invested more than 20 million USD in three project cycles for a total of 61 funded projects in 55 developing countries. Sponsored activities focused on enabling farmers to face climate change and food insecurity through, inter alia, the individuation of crop varieties that present resistances to biotic and abiotic stresses and present good agronomic characteristics, establishment of community seed banks, participatory plant breeding, development, testing and use of climate ready crop varieties, development and transfer of relevant technologies, training and capacity building.

Over 29,000 researchers and local partners have been trained through the Treaty's Benefit-sharing Fund projects and over 300 accessions which either exhibit high yields, resistances to climate stresses, tolerances to crop diseases or a combination thereof have been identified.

More than 1,000,000 people have benefited from activities directly or indirectly, most of whom are small-holder farmers and more than 50 community seed banks established conserving a total of 1120 crop varieties. Throughout the BSF projects, more than 8000 accessions have been characterized and evaluated as to evince resistances in the face of climate change and increase the relevance of germplasm held ex situ and on farm for breeding purposes.

4. THE IMPORTANCE OF THE COMMUNITY SEED BANKS FOR THE CONSERVATION, SUSTAINABLE USE OF PFRA AND FOOD SECURITY

The establishment and maintenance of community seed banks is seen as a virtuous practice in order to improve farmers' access to greater agrobiodiversity and guarantee stable availability of seeds, as well as to share and exchange identified climate-resilient varieties within and between farmers' communities.

Throughout the BSF projects, around 50 community seed banks have been established in Brazil, India, Guatemala, Nepal and Ethiopia and that are storing more than 1200 varieties of rice, wheat, maize, faba bean and potatoes. The underlying characteristics of the community seed banks established as part of the BSF projects are:

- **Participatory and inclusive:** farmers are actively engaged in participatory varietal characterization and selection !
- **Responsive to local needs:** farmers jointly elaborate upon the local needs, individuate germplasm with preferable/adaptive traits of local importance and conserve them in seed banks



- **Empowering:** farmers capacities are enhanced to manage community seed banks and the coping strategies for climate change adaptation and food insecurity are broadened

- **Community based:** Projects work directly with target rural communities as to ensure that community seed banks are established according to community needs, collective strengths and shared resources

In India, 11 community seed banks have been set up conserving traditional varieties of rice, millet, maize, wheat, barley and pulses. The Community Seed Banks are owned by the community. Farmers traditional knowledge is extensively used by scientists.

In Guatemala 5 seed banks established in Chiquimula, Zacapa, Alta Verapaz, So-lolá that contain varieties of maize and beans. Gene banks are managed by ad-hoc established Committees in each community. A manual for seed handling in

Communal Seed Banks and a document to acknowledge farmer's contribution to agrobiodiversity have been elaborated. Stored varieties have been characterized, and their genetic features documented.

In Brazil the state of Minas Gerais, 27 Community Seed Banks have been strengthened and expanded using joint management systems developed by the communities in tandem with domestic seed storage, that will benefit around 2500 families.

In Nepal, Community Seed Banks and Participatory Plant Breeding (PPB) tools have been promoted and included in future strategies and action plans for the sustainable conservation and management of PGRFA in 12 countries. Linkages between gene banks and farmers have been strengthened.

Some illustrations of community gene banks established as part of the BSF funded projects



Figures 1 and 2: Community seed banks in Uttarakhand (India)

Figures 3 and 4: Community seed banks in Bihar (India)

Figures 5 and 6: Community seed banks in Himachal Pradesh

Figures 7 and 8: Community seed banks in Bihar (India)

COMMUNITY SEED BANKS IN EUROPE RESULTS OF A SURVEY IN THE FRAMEWORK OF THE DIVERSIFOOD PROJECT

BEATE KOLLER, ARCHE NOAH, AUSTRIA

Community seed banks (CSBs) have been founded as part of the so-called “*informal seed systems*” since the 1970s in many parts of the world, with various forms and functions. Their main aims are to address the loss of agricultural diversity and to enhance access to seeds adapted to local conditions that the market does not adequately provide for, based on a participatory approach of community crop management and crop improvement.

In recent years, several case studies and analyses on CSBs worldwide have been published, notably the book *Community Seed Banks – Origin, Evolution and Prospects* from Bioversity International, focussing on examples from the Global South, where community seed banks emerged first and can look back on rich experiences stemming from decades of agricultural and social practices. However, very little has been published on initiatives in European countries.

The EU Horizon 2020 project DIVERSIFOOD therefore aimed to shed light on the situation and development of CSB initiatives in Europe. The interest was not purely academic. In fact, the research results were to feed in a process of self-reflection within the CSB community:

How similar, how diverse are we? What makes the CSB initiatives different from those in other parts of the world, and what can we learn from each other? What roles did CSBs play in the last decades in the European societies, what do we envision for the future? Furthermore, the documentation of European CSB initiatives aimed at raising awareness on a political level. Therefore, a

mapping and a survey on community seed banks in Europe were carried out, comparing their history, objectives and structures. 84 European initiatives contributed to the survey (*figure 1*).

The results show that in Europe, the number of CSBs has grown rapidly in the last 15 years (*figure 2*). Most initiatives do not use the term “*community seed banks*” themselves; they identify themselves as networks, houses, libraries or archives for seeds and other plant propagation material. This diversity of synonyms reflects the general diversity within the CSB movement in Europe, also in terms of age, size, goals, stakeholder groups, areas and activities, as well as governance structures. This can be explained by the fact that most CSBs in Europe have emerged locally from grassroots initiatives. Different role models like older CSBs in Europe, the seed savers in the USA and Australia, or social movements in the global South were adapted and developed by CSBs according to their local conditions. Roles and concepts of European CSBs can be roughly described by keywords such as “*diversity*”, “*conservation*”, “*exchange*”, “*community*” and “*sovereignty*”, though their exact meaning has not been collectively defined and might differ between initiatives.

Most CSBs in southern and western European countries are mainly initiated and run by farmers; in many northern and central European countries, private gardeners played or play a central role. This, of course, is a gross simplification of a reality that is more diverse and dynamic. In terms of goals and activities, many initiatives have seen a shift from mainly conservative to more evolutio-

nary approaches - plant adaptation and participatory plant breeding are playing an increasing role in European CSBs.

The initiatives work with a wide range of crops and manage, on average, several hundreds of accessions - genetic resources consisting mainly of local and farmers' varieties and old commercial varieties as well as their own breeding material.

As their greatest achievements, CSBs in Europe consider the impact of their training and awareness raising activities. The lack of financial resources, leading to a shortage of manpower and technical equipment, as well as poor regulatory conditions, are the most frequently reported obstacles. Key strategies to overcome these barriers include networking and cooperation within the CSB movement in Europe and around the world, mutual support and learning, and cooperation with other stakeholders sharing similar goals and values. Furthermore,

the positive image and credibility that many initiatives have been able to build through their work is an opportunity that can be used in public campaigns for better outreach and to improve the funding base.

The survey shows that CSBs in Europe have succeeded in raising public awareness of the importance of plant and seed diversity, in protecting local varieties and adapting them to current needs. They have enriched society with innovations, such as newly adapted tools and methods and social forms. They help to build a more sustainable food system and to make society more resilient and better prepared for the challenges we are facing. The results of the survey have been published in the report *"Community Seed Banks in Europe"* and are available on www.communityseedbanks.org, where also an online map of European CSBs can be found.

Figure 1: **Initiatives participating in the survey by country**

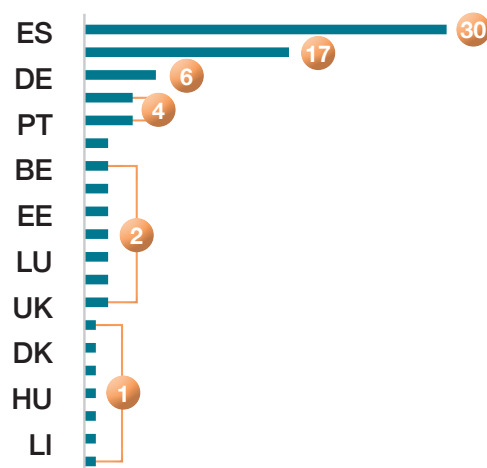
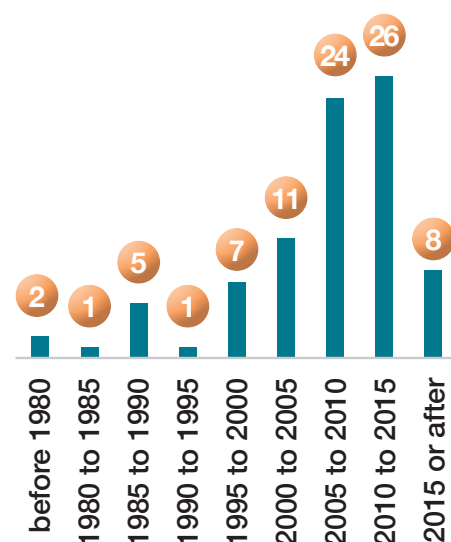


Figure 2: **Period of foundation and absolute numbers of reporting CSB initiatives**



PART II: CASE STUDIES OF COMMUNITY SEED BANKS AROUND THE WORLD



BOLIVIA

XIMENA CADIMA - FUENTES, FUNDACIÓN PROINPA

Farmers since ancient times have conserved and saved their seeds as part of their strategies for managing the diversity of their crops linked to family food security. These actions have usually been individual / family initiatives, however some 30 years ago (to date), non-governmental organizations have played a key role in boosting the community germplasm or seed banks as part of the development of in situ conservation strategies (Vernooy *et al.* 2016).

ORIGINS AND EVOLUTION OF COMMUNITY SEED BANKS (CSBS) IN BOLIVIA

The origins of community seed banks in Bolivia date back to the late 1990s and early 2000s. (Cadima *et al.* 2003), The formation of CSBs was driven by project initiatives with national and international funds.

The first CSBs were formed for individual crops (quinoa, cañahua, potato) as part of efforts to implement an ex situ-in

situ relationship strategy to promote local conservation. The purpose was to establish demonstration plots to promote the direct use of germplasm, and involve farmers in participatory selection processes and evaluation of varieties and seeds (Local agricultural research committee or CIALs in Spanish) (Rojas *et al.* 2010). The fundamental goal of these CSBs was to facilitate seed multiplication and distribution to interested members of the community.

After a few years, they evolved to become CSBs for the safeguard and promotion of agricultural biodiversity (various crops), with the following tasks: **I)** Monitor agrobiodiversity and traditional knowledge (documentation), **II)** Promote conservation of interspecific and intraspecific diversity of crops useful to people as food or medicine (including recovery of lost local varieties), **III)** Ensure availability of seed to interested farmers (mainly for individual consumption at home), and **IV)** Facilitate spaces for training and dissemination of good agricultural practices (seed and crop health, soil fertility management, etc.) (Rojas *et al.* 2015).

GOVERNANCE AND MANAGEMENT

In Bolivia, the implementation of CSBs was conducted without formal governance elements. This means that CSBs are still strongly encouraged by external actors (NGO, projects), are managed by custodian farmers, are recognized by local indigenous and municipal authorities (although some agricultural custodians are recognized by national authorities).

The management of CSBs is a role played by men and women in the community. Especially in the Altiplano (high plateau in the Andes), both men and women have complementary tasks in the management of agrobiodiversity, registration and documentation of traditional knowledge and implementation of CSB activities (seed selection, planting, cultural work, harvesting and storage). Currently, some NGOs, such as PROINPA, continue to supplement the operation of CSBs

TECHNICAL ASPECTS OF CSB

With the support of the institutions and available resources, some technical issues of the CSBs were established and adjusted. For example, the selection of crop species and varieties, were initially promoted by project researchers (PROINPA) focusing on local varieties and breeding types with potential production (e.g. quinoa and cañahua), then gradually the farmers included species and varieties according to their preferences. The seeds and planting material included in the CSBs were provided, in the case of Andean grains, by the National Germplasm Bank, and in the case of other crops, from custodian farmers. The documentation and dissemination of information were supported by institutions such as PROINPA, through catalogues with photographs and information of the local knowledge and agromorphological data of each variety (*Terrazas et*

al. 2008). CSBs were also encouraged to participate in seed fairs. Concerning the storage, regeneration and seed distribution in the CSBs, farmers typically store seed during a single crop cycle and regenerate seeds each year to distribute to community members. Traditional methods are used for storing seed and planting material, according to the crop species. Custodian and community farmers' fields are also used for seed regeneration and multiplication. Characterization and evaluation of materials are promoted by institutions, for example in the high areas of Cochabamba, PROINPA supported the identification of functional traits (pest resistances, drought and frost tolerance, culinary quality, and others) in the local potato collection (varietal garden) of Colomi, a center of high crop diversity. (*Cadiña et al. 2018*)

POLITICAL ENVIRONMENT

In Bolivia, the National Institute of Agricultural and Forestry Research (INIAF in Spanish) is the organizational body in charge of the implementation and administration of the National System of Genetic Resources. CSBs are strategic components of in-situ conservation, but are not yet officially recognized by INIAF. The political context in Bolivia is favorable to support the CSBs but nothing has yet been achieved. Additionally, the current seed policy does not allow the sale of seed varieties not registered in the national seed system. All local / native varieties belong to this non-recognized category.

LEARNED LESSONS

- CSBs are spaces that contribute to the recovery and restoration of the local diversity, although farmers prioritize the potato as the most important economic and food security crop.
- CSBs strengthen the relationship between ex-situ and in-situ conservation.



- CSBs also act as learning spaces to appreciate the importance of diversity conservation and the implementation of good practices for conservation and cultivation.
- After more than 10 years of work with CSBs in Bolivia, we have not yet solved issues relating to: I) governance (who should be in charge, only custodians farmers?, rotational charge?, a larger entity like the related germplasm banks?), II) long-term operation (what happens if the projects finish?, role of the related gene bank?, role of the National System of genetic resources?).
- Within the community, there is a relative acceptance of CSBs by age group. Typically, adults from 35 to 60 years old are more conscious about the importance of having a CSB that benefits the whole community and others. Young people are usually less interested.

GUATEMALA

COMMUNITY SEED BANKS IN THE SIERRA DE LOS CUCHUMATANES, GUATEMALA

SERGIO ROMEO ALONZO, TECHNICAL MANAGER, ASOCUCH

Guatemala is extended over a territory of 108,000 kilometres distributed over 22 departments in which 24 languages are spoken—21 are Mayan. It has a population of 15.4 million people, among which 53.7% live in poverty and 13.3% in extreme poverty. In indigenous areas, it is estimated that the level of poverty may exceed 74%. Agricultural production is based on coffee, bananas, basic grains, vegetables and livestock.

Guatemala is part of Mesoamerica, which is among regions with the highest levels of biodiversity in the world, particularly highlighting the diversity of corn, beans, chillies, cucurbits and tomatoes. Since 2005, Guatemala has been part of the ITPGRFA (Legislative Decree No. 86-2005) and since 2006, has adhered to the Convention of the International Union for the Protection of New Plant Varieties [UPOV] (Legislative Decree No. 19-2006).

The Association of Organizations of the Cuchumatanes (ASOCUCH) is a private second level, non-profit, apolitical and non-religious association dedicated to promoting social, economic and productive development, which is comprised of 9,000 peasant families of 8 cooperatives, 11 associations and 94 groups of micro-entrepreneurial women. Made up of 90% of the indigenous population, its main objective is to contribute to a sustainable, equitable and competitive rural development in the Sierra de los Cuchumatanes.

In the Guatemalan highlands (Altiplano), 90 to 98% of maize production is achieved with local materials, pertaining to the smallholder system, whereby surplus is low (Average ¼ Ha / family). Moreover, 37% of



farmers pertain to the under-subsistence agriculture category, 59% to subsistence and the remaining 4% to low tropical production (ICTA, 2012). The contribution of corn to daily energy and protein intake is high, considering that 1 lb of corn per day contributes to a 65% protein and 70% energy intake, with a per capita consumption of 115kg per person and between 30-40qq / family / year. However, between 60% and 70% of families only have grain available between 2 to 3 months per year.

Agrobiodiversity conservation in the Sierra de los Cuchumatanes is mainly carried out by family farms, women and the indigenous communities' elderly, within specific areas and climatic conditions, which have conserved genetic materials for several generations, sustaining the cultural heritage of entire village communities.

Community Seed Reserves are spaces destined for the safeguard of seeds in adequate conditions, administered collectively by the farmers, with the participation of communities vulnerable to extreme weather events. It is the peasants who hold seeds and want to preserve them through conservation efforts and protection of local seed reservation committees.

The importance of Community Seed Reserves lies in the following points: **a)** Rescue and access of seeds (corn, beans, cucurbits); **b)** Safe storage system under the custody of a local committee (protection of local germplasm); **c)** Exchange of seeds and local knowledge (promotes innovation); **d)** Use of local varieties; **e)** Cultural preservation; **f)** Seeds to support the local strategy for addressing nutritional food security; and **g)** Immediate availability of local varieties for emergency situations.

Currently, there is a network comprised of 12 Community Seed Reserves which directly involve 500 families with a shelter of more than 600 accessions of important crops for food security and is in the process of building 6 new ones; which provide the following services: **a)** Rescue and conservation of community agrobio-

diversity; **b)** Protection of farmers' seeds in black boxes; **c)** Seed reserve consisting of 2 to 3 varieties in case of emergency.

A Community Seed Reserve works under an operational regulation and a committee composed of the community's farmers who have the following minimum equipment: scales, hygrometer, thermometer, grain moisture evaluator, plastic containers, bookshelf, book records. At present, a strong effort is being made to ensure that the community reserves of the ASO-CUCH area of action have a direct link to the national germplasm banks, and in this way, safeguard each reserve's genetic diversity for a much longer period of time.

Among the actions that should be strengthened in the Community Seed Reserves are the following:

- Create incentive mechanisms for communities who partake/organize efforts for the conservation of indigenous agrobiodiversity.
- Link the CSR to the national germplasm banks, so that they receive the technical and financial support for their operation.
- Strengthen the technical capacities of the CSR committees and producer organizations linked to this subject.
- Promote exchange of knowledge and seeds at the regional level and by consequence, contribute to the flow of germplasm.
- Promote the legislative approval of the national seed policy which recognizes local seed systems.
- Strengthen Participatory Plant Breeding processes, which contribute to the recognition of farmers' rights in the ITPGRFA framework.

This initiative in the Sierra de los Cuchumatanes has received financial and technical support from the Norwegian Development Fund, Good Milpa Project / CIMMYT / USAID, USC Canada, Benefit Distribution Fund of the ITPGRFA and HEIFER International.

CHINA

PPB AND CSB TO STRENGTHEN FARMERS' SEED SYSTEM FOR ADAPTATION AND SUSTAINABLE DEVELOPMENT IN CHINA

YICHING SONG, CENTRE FOR CHINESE AGRICULTURE POLICY (CCAP), CHINESE ACADEMY SCIENCE

BACKGROUND

China is a large agricultural country, home to 9% of the world's arable land and feeding 22% of the global population. It has over 4,000 years of farming history, and still has 240 million small farms with a national average agricultural landholding size of only 0.6 ha. About 700 million smallholder farmers, or 60% of its' population, rely on farming. Their experiences are heterogeneous, and they have undergone rapid changes and considerable differentiation in the last 30 years.

CHALLENGES

In general, China has experienced vast achievements in economic growth and increased income. While modern agriculture has generated substantial success in productivity since the 70s-80s, it has also caused a crisis and various associated problems, namely:

- **Environment degradation:** agriculture is the most significant contributor to pollution, affecting soil and water systems.
- **Loss of agro-biodiversity:** staple food crop varieties (rice, wheat, maize) are rapidly dwindling, and 90% of landrace varieties are dissolving (rice, 46,000 to 1000, wheat: 13,000 to 500, maize: 10,000 to 152).
- **Climate Change:** increasing temperatures and droughts, diminishing biodiversity and resilience for climate change adaptation, increasing presence of pests due to drought and mono-cropping practices. Opportunities and possible actions There is a need for the establishment of more supportive policies for small-holder farmers, i.e. transformation towards green agriculture, rural revitalization initiatives, etc. At the same time, among civil society, there are emerging and growing needs for healthy and quality foods, and a rising concern for the environment. Accordingly, there is an urgent need for supportive actions and policies oriented towards a diversified and alternative food system, using seeds as the foundational basis for developing such efforts.



GOOD PRACTICE: PARTICIPATORY PLANT BREEDING (PPB) CASE IN SOUTH WESTERN CHINA

PPB in SW China started since 2000, led by CCAP, intended to link two seed systems: exchange and collective learning for the recognition and support of small farmers in the Guangxi, Yunnan, and Guizhou provinces. It conserved more than 1,000 farmer preferred landraces (maize, rice, etc), bred out 12 PPB varieties including 1 hybrid. It achieved a yield increase of 15%-30%.

POLICY AND LEGAL SUPPORT TO STRENGTHEN FARMER'S SEED SYSTEMS

In China's Seed Law revision, the removed "article 27" (allowing farmers to save, exchange, produce and sell seeds on a smallscale) has been re-introduced through CCAP's joint efforts with farmers and other stakeholders. Without this legal and policy protection, all these previously mentioned dynamic seed conservation and utilization activities and processes by farmer seed systems would not be possible!

CONSERVATION AND UTILIZATION, SEEDS TO TABLE: VALUE ADDING NEED TRUST BUILDING VIA COMMUNITY SUPPORTED AGRICULTURE (CSA), PGS!

Community-based and women-led seed production had produced quality seeds for CSA ecologic farming, and had created a link with urban consumers through PGS for mutual trust building and collaboration. In PPB villages, a three-fold income increase was achieved.



ETHIOPIA

REGASSA FEYISSA, ETHIO-ORGANIC SEED ACTION (EOSA)

BACKGROUND

In addition to the political context of genetic resources which marked the 80s in Ethiopia, the 1984 drought which caused a high mortality rate, was the driving force for beginning to think about a community seed banking system. At the time, the small sample sizes of the national gene bank collections were not sufficient for saving lives. It took years for these samples to reach communities in need of seeds. On one hand, the formal public seed sector had a limited contribution due to its weak resource capacity and on the other hand, the private seed sector was marked with narrow objectives that could not help to address the challenges being faced. Community-based seed production and diffusion mechanisms then became perceived as a way to provide farmers with access to seeds of both traditional/farmers and modern/high input varieties in both times of prosperity and hardship.

This was the conceptual foundation for linking the national gene bank and other genetic resource development activities to

farms and farmers in Ethiopia. Nevertheless, lessons again showed that the capacity of traditional community-based seed diffusion mechanisms, through time, has become weaker to handle seeds of broader crop types in larger quantities and for diverse agro-ecological conditions. A number of factors, including genetic erosion, impacts of climate change and the declining capacity of households to grow different crop types due to farm land fragmentation caused by population pressure, have affected the sustainability of traditional practices. These are among the other factors that, through time, encouraged national agricultural and seed policies to consider the establishment and expansion of community seed banking systems in Ethiopia. In a way, this could be one of the approaches for addressing issues relating to Farmers' Rights.

COMMUNITY GENE BANK AND COMMUNITY SEED BANK

The terms “*community gene bank*” and “*community seed bank*” are sometimes used interchangeably and sometimes, as distinct concepts. In a very general technical sense, they may be applied as one and the same, but the discrepancies over their operational functions would remain unclear—particularly with regards to management, utilization or service provision. As an experience and for convenience, we regard community gene banking in a wider context as community-driven genetic resources management, development and utilization practices in Ethiopia. The management practices involve both on-site/on-farm/in situ management and off-site/off-farm/ex situ management. Resources in wilderness including those in communal



lands where edible wild plants, medicinal plants and relatives of cultivated crops/plants occur and are under communal customary management are resources included in on-site management.

Community seed banking is considered as an integral part of the community gene banking system representing community-driven crop diversity management and seed security strategies. It serves as community-based germplasm and seed reserve, maintaining seeds of a range of local crop diversity for utilization and development. The seeds maintained may include those of the enhanced local varieties/forms and of those developed through formal breeding. Facilities for community seed banking may include modern structures and farm-household small stores. When combined, these facilities represent a community-based or on-site ex situ conservation system that in an evolutionary sense is more dynamic.

WHY COMMUNITY SEED BANKING? AN ETHIOPIAN PERSPECTIVE

The community seed banking system is important for providing farmers with immediate access to seeds of the desired crops and their diverse varieties. The system provides them with a reliable access

to planting materials adapted to their local growing conditions. Through the system, farmers are supported to control the choice of crop types and cultivars draft version 22 July 2018 27 they want to grow in time and over space. It is a valuable mechanism to increase options for farmers to use diverse crop types and varieties, to decrease vulnerability to seed shortage and genetic erosion, and to ensure food security in cases of crop failure. Farmers can have access to seeds of both farmers' and formal varieties, in the quantities they require, in time for planting, in close proximity and also at an affordable cost. It can also provide farmers with access to sequential crops and varieties in case of the failure of first planted crops or varieties due to environmental factors such as frost, inadequate or excess rain, disease and pests.

HOW CSBS ARE ORGANIZED AND OPERATE IN ETHIOPIA

The CSBs are organized in a way that strengthens and ensure local self-sufficiency in seed supply and builds the capacity to manage and sustainably use crop plant diversity. Farming and production systems, local priorities and socio-economic needs as well as agro-ecological conditions determine the kind of strategy to be followed and the level of its complexity. CSBs are organized as a key component of the community seed network, representing a low-cost and low-technology system owned and managed by local communities. They operate as a community-based seed reserve and germplasm repository for the distribution, exchange, restoration and introduction back stopping the on-farm conservation practices.

The seed store represents a seed reserve system mainly consisting of local varieties, including those enhanced/ selected and multiplied on-farm, and locally adaptable introduced varieties obtained by way of exchange or from various other

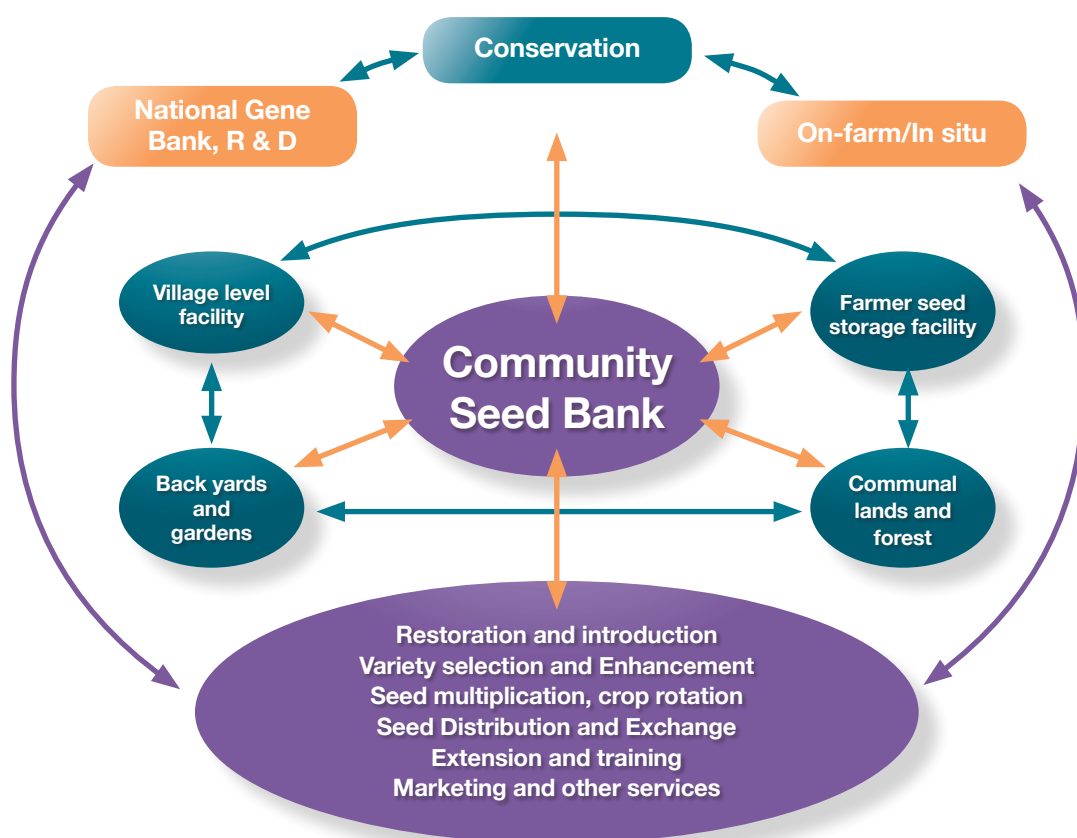


sources (national gene bank, research, donations, etc). Local farmers have access to these materials on a loan basis, or through other arrangements as deemed appropriate to their community. The seed reserve also provides a back-stop to the local (informal) market networks where farmers traditionally exchange seeds and information.

The components of the CSB system network include gardens and backyards, as well as seed/ plant micro-increase plots (germplasm repository). Major activities include exploration, collecting and characterization, restoration of genetic diversity, participatory variety development and seed production in collaboration with the national gene bank and agricultural research centers. As a strategy, CSB samples are copied into the collection of the national gene bank.

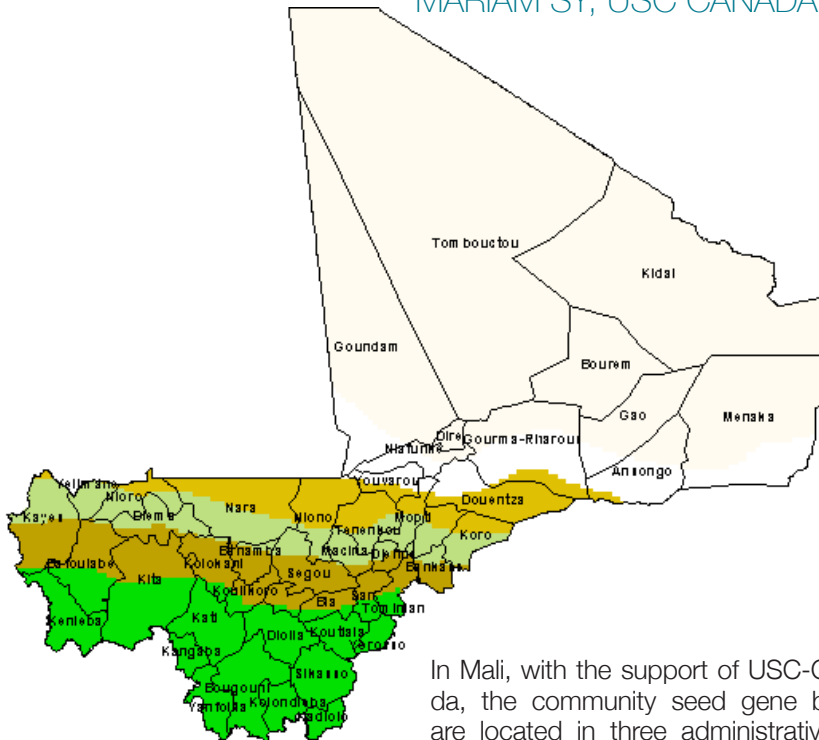
POLICY ENVIRONMENT

Community seed banking experiences gained over the years have enabled a policy environment that supports community seed banking as a national strategy for seed and food security. Accordingly, the government invests in establishing community seed banking in selected areas prone to seed security challenges. The process encourages developmental NGOs to expand community seed banking experiences and practices. At present, there are about 45 CSBs established by the government programs and NGOs that provide services to farmers.



MALI

MARIAM SY, USC CANADA



In Mali, with the support of USC-Canada, the community seed gene banks are located in three administrative regions (Koulikoro region in the Kati circle: a bank, Sikasso region in the Sikasso circle: a bank, a region of Mopti in the circles of Mopti: two banks and Douentza: six banks). All of these banks communicate and exchange peasant seeds and farmers' knowledge for the recovery and sustainable conservation of peasant seeds.

MOPTI REGION: KEY INFORMATION

The Mopti region is located in Northern Mali — the terrain is hilly (mountain, plain, and plateau). Communities' main activity is agriculture, typically practised by small-scale farmers who comprise 95% of the population. Due to the recurrent low rainfall and food insecurity (300-400 mm of rainfall per year), subsistence agriculture is dominant. The main crops are millet, sorghum and rice.



WHAT ARE COMMUNITY GENE/SEED BANKS?

Community gene/seed banks are places of conservation and valorisation of agricultural genetic resources based on the knowledge and way of life of small farmers.

They are born out of peasant communities' awareness of the need to preserve their genetic agricultural heritage, threatened by extinction due to climatic variations (effects of climate change) and bad governmental action (who sign agreements non-favourable for agricultural diversity), etc.

TYPES OF PEASANT SEED CONSERVATION

A few types of peasant seed conservation exists in Mali:

- Seed conservation in terms of grains in a suitable location called community gene and seed bank

This type of conservation holds the advantage of still maintaining the grain protected because it has not yet been extracted from its ear, and farmers prefer to plant them directly in this way, rather than removing the grains and planting them afterwards.

- Seed conservation in the form of planting on a protected community area called: living collection Living collection includes cultivated species whose seeds cannot be preserved such as banana, cassava, and potato. They are preserved in a suitable area either in monoculture or diversified (like the case represented in the photo above which is a living collection of a banana tree monoculture in the village of Koubewei Koundia) or in community gardens.

- In-soil seed conservation Although seed conservation can be done in soil in various ways, in the intervention area of the USC-Canada-Mali program, small-scale farmers prioritize two types of in-soil conservation:
- The first type is within community seed and gene banks, in seed boxes, in attics, or in their houses where a hole is dug-up and properly laid-out to be well sealed, in which the seeds are kept and well-closed in a way that only the manager knows.
- The second type is illustrated in the picture above—in-soil conservation of a green onion until the onset of winter. This means that when the bulbs reach their full maturity, the leaves should be cut and the bulbs should be left in the soil.

OBJECTIVES OF COMMUNITY SEED/GENE BANKS

The main objectives of community seed/gene banks are to

- To preserve the diversity of agricultural seeds reproducible by small-scale farmer
- To preserve traditional tools and products for sustainable agricultural seed conservation
- To be a school for the apprenticeship of peasant farmers' knowledge and way of life in the sustainable preservation of agricultural seeds, as such the programme organizes from time to time open-days with young peasant farmers with the aim to exchange ideas related to community gene/seed banks



- To preserve seeds of peasant farmers who don't have access to suitable locations for the conservation of their seeds post-harvest.
- Promote the supply of seeds for farmers experiencing difficulty with their seeds during sowing periods.
- Ensuring seed security through availability, accessibility, adaptability and choice
- Improving members' living conditions through reimbursable credit loans with an interest rate of 10% per year using funds issued from banks as a starting point.

FUNCTIONALITY OF COMMUNITY GENE/SEED BANKS

It focuses on the following key elements:

- Organic material (species and crop varieties)
- Measurement material (snitch, scale, 50-meter ribbon)
- Management material (inventory book, sales book, notebook for credit recoveries, payments book, member registration, procedural-verbal meeting registration, community biodiversity registration)
- Traditional seed conservation tools
- Traditions seed conservation products
- Community willingness and determination to preserve and use, justly, their genetic agricultural heritage.

Womens' role in seed conservation

- They participate in on-field seed multiplication efforts
- They participate in on-field seed selection
- They take care of banks' maintenance, sorting and seed stocking.
- They also ensure the maintenance of cultural diversity through the introduction of other peasant seed varieties discovered in seed fairs, in visits to other areas, etc.

Community seed/gene banks supply systems

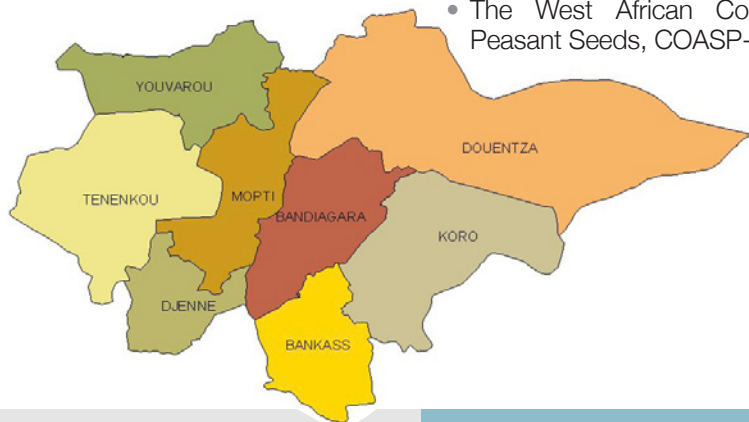
- On-site seed multiplication
- Seed exchange between households, villages, etc.
- Organisation of youth open-days
- Organization of seed exchanges during various social events (seed exchange, seed fairs, agricultural fairs, exchange visits, etc.),
- Network establishment and construction of an inter-bank exchange relation

Some achieved results

- Better conservation of agricultural genetic diversity for current and future generations
- Better conservation and dissemination of traditional knowledge tied to production, conservation and use of peasant seeds
- Community access at any time to preferred seeds (quality, adaptability, etc.)

The role of CSB and cooperation at the regional and global level

- Reflections were conducted in order to share the vision of peasant seeds within the Mali Farmer Agroecology Platform set up in Nyéléni in April 2017 (Nyéléni Farmer Agroecology Manifesto);
- Cross-border, sub-regional and international alliances have been created through:
 - The USC-Canada-Mali Community Gene-Seed Bank Network (Safo, Douentza, Mopti, Siramana);
 - The network of seed producers in the Senegal River Basin (Mali, Senegal, Mauritania)
 - The West African Committee of Peasant Seeds, COASP-Mali.



Altogether, these dynamics are supported by the CONP (National Coordination of Farmers Organizations of Mali), AOPP (Association of Farmers' Professional Organizations of Mali), USC-Canada, BEDE, GRDR, the Coalition for the Protection of Genetic Heritage African (COPAGEN), the Global Convergence of Water and Seed Farmland Struggles, the Planning Committee for Food Sovereignty (CIP), etc

PERSPECTIVES

They will focus on the following activities:

- Valorization of farmers' knowledge and seed autonomy rights,
- Defense of collective rights favoring peasant seeds and peasant agroecology,
- Inventory, multiplication, diffusion of peasant seeds and peasant knowledge to reproduce and preserve them in the peasant agro-ecological terroirs
- Establishment of community systems for the record of farmers' seeds,
- Development of alliances for defending and promoting peasant seeds.

CHALLENGES

- Women's low decision-making involvement in the choice of seeds to be grown in rural areas,
- Marginalization of the identification of peasant seeds and the rights of small farmers in countries' seed laws,
- Monopoly of the seed system by multinationals who oblige the States to sign agreements unfavorable to peasant seeds and farmers' rights,
- Peasants' weak involvement in consultations for the elaboration of laws, treaties, conventions, etc., in favor of food sovereignty,
- Poor dissemination of laws, treaties, conventions, etc. in favor of food sovereignty.

SPAIN

MARÍA CARRASCOSA-GARCÍA, JUAN JOSÉ SORIANO NIEBLA
AND MARTA GONZÁLEZ MUÑOZ, RED ANDALUZA DE SEMILLAS
“CULTIVANDO BIODIVERSIDAD”

1. INTRODUCTION

The present article summarizes the results obtained in Spain by the **DIVERSIFOOD** project.

The CSBs constitute platforms for community management of agricultural biodiversity, necessary for the development of sustainable and autonomous agri-food systems (Sthapit 2013). Although their operation and typology can be very different (Lewis and Mulvani 1997, Vernoooy 2015), they share common key elements. They are spaces that allow the access and exchange of locally produced seeds, managed by a community of civil society that pursues a common goal and that shares values and rules. The activity is not for profit and it is usually located in the informal sector. Some CSBs prioritize conservation and multiplication tasks and others are focused on developing seed sovereignty projects, participatory plant breeding or raising awareness and training (Andersen et al 2018).

2. MATERIALS AND METHOD

The analysis has been undertaken based on a methodology of key informants through a survey prepared by the Austrian organization Arche Noah, translated into five languages (English, German, Spanish, Italian and French).

The Andalusian Seed Network (Red Andaluza de Semillas-RAS), was in charge, primarily, of mapping the experiences of CSBs in Spain, listing entities that work on the community management of plant reproductive material of cultivated biodiversity. It considered organizations using that approach among its partner entities; those linked to the Spanish Seed Network (Red de Semillas “*Resembrando e Intercambiando*”-RdS), the national coordination of local seed networks of which the RAS is an active member since its foundation; as well as among other groups and isolated experiences. This initial mapping was broadened, slightly, through the snowball sampling method. Subsequently, RAS revised the translation into Spanish of the survey and coordinated its implementation in Spain.

3. RESULTS AND DISCUSSION

A total of 30 CSBs from 15 autonomous communities responded to the survey: 17 of them are local seed networks linked to the RdS, 12 initiatives are part of local networks (in this case, regional ones) and a surveyed CSB is not associated with other structures of a broader scope. Two autonomous communities (La Rioja and Navarre) are not represented in the survey.



3.1 CREATION AND FOUNDING MEMBERS OF CSBS

Although some CSBs began to emerge in the 1980s, their growth peaked in 2005. In fact, between 2005 and 2015 more than 70% of the participating initiatives were founded.

Spanish CSBs have been initiated by professional farmers but gardeners as well as technical experts advisors and professors, have played also an important role in the implementation of these initiatives.

3.2 NUMBER OF MEMBERS AND PARTICIPANTS IN THE CSBS

Among the included CSB initiatives, 57% have between 11 and 100 members, 20% between 101 and 500 and the rest have less than 11 members. These comprise people and groups linked directly to the initiatives, who develop some kind of responsibility tasks and have a commitment such as the payment of fees.

Farmers and gardeners are those who interact in a more diverse and balanced way with the CSBs, being involved in all its activities.

However, breeders, researchers as well as companies of the food chain and public administration have very little interac-

tion with these initiatives. It highlights the dynamic relationship that the CSBs have with the education institutions due to the development of projects with students in different parts of the country.

Given the low availability of resources that the initiatives have, the participation of volunteers is essential for the CSBs because it allows them to organize activities that would otherwise be difficult to run.

3.3 CSB OBJECTIVES

Throughout their trajectory, the CSBs have been transforming and/or redefining their objectives. Currently, awareness has become one of their main motivations. As always, seed provision and crop conservation continue to be important activities. The generation of information about varieties is also important for CSBs, that develop numerous projects of characterization and evaluation of local cultivated varieties.

3.4 CROPS AND ENTRIES IN THE CSB

The CSBs make a notable effort to provide access to farmers and gardeners to seeds and plant material from a wide range of crops that have a great impact on human nutrition. Thus, at least 6 groups of important crops are present in more than half of the initiatives: pulses, leafy vegetables, fruit vegetables, corn, aromatic, culinary and condimental plants, and cereals. The CSBs retain a considerable number of entries (90% have up to 1,000) and 100% of the initiatives maintain local and farmers' varieties.



3.5 CSB INFRASTRUCTURE

The CSBs have a very simple infrastructure based on collaborating farms, databases and basic storage facilities. The databases used are of a varying complexity: some initiatives control the inventory and/or inputs and outputs on a sheet of paper, while others use an easily accessible IT support, such as a spreadsheet, and some have developed an online database. Just over half of the initiatives have specific facilities for seed storage and less than 40% have refrigeration systems.

In most cases, the CSBs does not propagate the seeds. It is rather the people collaborating with the initiative who do it, multiplying their varieties and/or the varieties that the CSBs requests.

3.6 CSB: FINANCIAL ASPECTS

In general, the annual costs of CSBs are very low. In fact, 62.50% of the initiatives work with less than 1,000 euros per year and three of them do not have any financial capital. This low use of economic resources highlights the immense workload conducted on a voluntary basis. Though the ways of financing CSBs are varied. It is noteworthy that almost half of the initiatives receive contributions from the people that run them through a system of fees

3.7 OBSTACLES

The three main obstacles that CSBs face in achieving their objectives are the lack of human and financial resources, and the restrictive legal environment. Other positions expressed are the lack of support from public administration, lack of professionalization and lack of public awareness.

4. CONCLUSIONS

CSBs contribute enormously to the free access of a large number of cultivated local varieties, functioning outside the formal intellectual property systems that manages protected varieties. In addition, they empower civil society and rebuild, maintain and generate community around the dynamic management of PGRFA, acting therefore as tools for improving social cohesion, values such as solidarity and participation and curbing cultural erosion. The CSBs collaborate in the development of fundamental rights such as Farmers' Rights, recognized in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) and the Spanish Law on seeds and seedling and plant genetic resources (Law 30/2006).

These initiatives are playing a fundamental role today and in the future, building sustainable tools for climate change adaptation and to halt genetic and cultural erosion, alternatives to the privatization of genetic resources and knowledge and supporting the restructuring of more autonomous communities. Given their importance, their impact must be recognized and their development should be supported.

This research shows that it is necessary to develop actions that have a positive impact on the capacities of the CSBs and their medium and long-term strategies. Firstly, actions should be taken for improving the technical capacities of the groups for the seed and varieties management. This can be done by supporting training activities for their members in seed production and CSB management, establishment of its own f and collaborating farms, acquisition of material for field trials and storage, development of



tools for the management of bank movements (such as databases), development of multiactor research projects and participatory plant breeding, and exchange of experiences between CSB and other key actors.

Improving storage conditions would help CSB to expand the types of plant material they maintain and to incorporate others such as trees, bushes, bulbs and tubers. Further, it would help to increase the number of seeds for some crop groups, such as cereals, which require larger storage equipment.

Secondly, it is necessary to influence the political impact capacities of the CSBs in the management of the cultivated biodiversity. CSBs require a regulatory framework that recognizes and fosters their existence and activity. Therefore, the implementation of public policies in PGRFA is not possible without taking into account their needs and viewpoints. It is necessary to open spaces for the participation of CSBs, seed networks, and producer and consumer organizations, for the development, monitoring and evaluation of public policies regarding the use and conservation of cultivated biodiversity (Carrascosa-García et al 2017).



The CSBs are open spaces with a high level of participation from civil society, built on a strong desire to work for a better world. Their capacity for promoting social cohesion and organization is high. Support for actions aimed at the creation of alliances with other sectors such as organic production, research, consumption, and education, can contribute positively to raising-awareness and building communities around the management of PGRFA.

Although at European level it is detected that the collaborations between the CSBs and researchers, breeders and managers of genebanks are growing, in the Spain these alliances are still to be developed. The survey shows the lack of participation of these sectors, which can play an important role in the access of the CSB to multi-actor, collaborative and comprehensive projects, such as DIVERSI-FOOD. However, this cooperation must be established on the basis of horizontal relationships, placing community interests those of individuals.

Finally, it is necessary to develop the CSBs financial capacity with the objective of improving and expanding their activities, in particular, bank management; prospecting activities; entry multiplication; maintenance of a database; infrastructural improvements and development of research and awarenessraising projects. This funding can be external, through for instance, the sub-measure on the support of the conservation and sustainable use and development of genetic resources in agriculture of the Rural Development Programs, if it's regionally developed. It can also be internal, through members' fees or other activities that may serve as a source of income (sale of materials, training, etc.).

FRANCE

PIERRE RIVIERE AND CHRISTIAN DALMASSO,
RÉSEAU SEMENCES PAYSANNES

During the last century, farmers' seeds have been replaced by industrially "improved" seeds, and locked away in refrigerated seed banks, where they are all progressively dying. Less and less diversity were grown in the field. In addition, no varieties adapted to agroecological practices are available for farmers. Moreover, GMO contamination can lead to varieties no longer suitable for organic production.

The French Farmers' Seed Network (Réseau Semences Paysannes - RSP), created in 2003, brings together a great diversity of collectives and people who preserve farmers' seeds in fields, orchards, vineyards and gardens. They are involved in supporting the consolidation of local initiatives to maintain and renew cultivated biodiversity (farmers' unions, artisanal seed multipliers, groups of organic and biodynamic farmers, gardeners' associations, environmental organisations, citizens and international solidarity organisations, national parks... cf members list). In France and Belgium, there are now more than 90 organisations that

have come together to promote and defend cultivated biodiversity and its associated spheres of knowledge.

RSP members are replanting farmers' varieties and developing them. The criteria for inclusion in the official national catalogue and the multiplication of industrial property rights on seeds (PBR, registered trade mark, patent) ban the commercialisation of farmers' seeds and threaten their use. RSP is working to gain legal recognition for farmers and artisanal seed multipliers to breed, reproduce, exchange and sell their seeds.

Farmers' seeds¹ are selected and reproduced by farmers on their farms and in their gardens, where they work as small-scale, organic or biodynamic farmers. Unlike the standardised industrial seed or GMO that cannot be reproduced, these seeds are diversified, they evolve and are a result of natural breeding methods that are non-transgressive and available to farmers. They can be reproduced and cannot be appropriated by property rights. They can be sown and re-sewn and voluntarily exchanged by the farmers and gardeners who grow them, according to the users' rights defined by the collectives that have bred and conserved them. Their characteristics are essential for enabling them to adapt to the diversity and variable nature of the areas, the micro-climate, and the local farming practice in which they are sown, as well as to human needs. Owing to their adaptability and natural characteristics, it is possible to use fewer chemical inputs, and meet the challenge of providing healthy food for humans, while respecting the environment.



1 - The term Seeds is used here to designate all plant reproductive organs such as seeds, runners, cuttings, grafts...

Since its foundation, RSP's key missions and activities are to:

Meet to collectively organise and develop field actions by

- Building a network, coordinating, moderating and consolidating initiatives that support the conservation and dynamic management of cultivated biodiversity on farms and in gardens.
- Organising training, exchange between farmers and practical field trials to facilitate the re-appropriation of knowledge associated with the reproduction of seeds, growing and evolution of heirloom varieties, in order to ensure that existing living collections are preserved, and to develop new ones.
- Introducing and promoting collective organisation in terms of Community Seed Systems; supporting the network and structure of these organisations.

Community Seed Systems are a way of collectively organising the management and the protection of farmers' seeds (particularly in terms of the risks of biopiracy and contamination by GMOs). Seed exchange and knowledge-sharing at the local level allow farmers, gardeners and citizens to organise and maintain control over farm seed development within a regulatory framework that tends to forbid this. Community Seed Houses² are part of these Community Seed Systems.



Each Community Seed House is unique - it can be a physical place or not. Some common activities include:

- Collection and protection of wheat landraces and breeding methods for peasant agriculture, organic and biodynamic farming, the production of stone-ground flour and breadmaking using natural yeast.
- Dynamic management of diversity, field trials of different traditional varieties of several species such as maize, cereals, vegetables, wine, and orchards, based on their interest for peasant agriculture and organic and biodynamic farming, their nutritional quality and local sales markets.
- Exchange of knowledge and know-how.
- Valorisation of farmers' seeds and products derived from them.
- Communication and public sensibility.
- Building a European and global network including study tours, inter-farmer exchanges, international meetings...

Communicate to gain recognition by

- Running communication and advocacy campaigns, organising and participating in conferences, seminars, and seed exchanges to increase the visibility of farmers' seeds developments, and to raise public and elected political representatives' awareness concerning issues linked to farmers' seeds and cultivated biodiversity.
- Requesting legal recognition for farmers' breeding and seed exchange practices.
- Publishing and disseminating technical documents that enable a greater understanding of seed-related issues.

2 - We prefer the term 'house' instead of bank!

Extend farmers' rights on seeds

- Follow the legal developments that affect seeds at national and international levels as well as issues of access, privatisation and management of genetic resources.
- Make key information on current regulations, as well as possible legislative solutions aimed at protecting cultivated biodiversity and farmers' rights available to farmers, civil society organisations, legal experts, scientists and elected representatives.
- Strengthen legal expertise and advocacy capacity with the motivation to impact political and legal decisions on cultivated biodiversity and farmers' rights.
- Conduct advocacy initiatives with the competent authorities.
- Create and strengthen international networks aimed at coordinating the development of farmers' seeds and advocacy actions.

Participate in the scientific recognition of farmers' seeds

- Showcase farmers' knowledge and participate in French and European scientific research programmes on organic and biodynamic participatory research and plant breeding, or methods of artisanal processing of farmers' seed varieties.
- Showcase research results demonstrating the irreplaceable genetic diversity of varieties and populations, as well as their adaptability and nutritional qualities.

Support the preservation and renewal of cultivated biodiversity

- Raise funding to support local initiatives in the dynamic management of cultivated biodiversity.
- Provide involved individuals and collectives with the means to protect, maintain and renew their living seed collections.



UNITED KINGDOM

CATRINA FENTON, GARDEN ORGANIC

We know that over the last 100 years, many hundreds of our vegetable varieties have disappeared, with serious implications for food security and environmental biodiversity. Garden Organic's Heritage Seed Library (HSL), was established in response to this critical situation, and the HSL now maintains a living library of around 800 heritage vegetable varieties.

The library itself was started in the 1970s with the aim to conserve vegetable varieties that are not widely or commercially available. We are the UK collection holder for heritage vegetable seed with Plant Heritage.

Our collection consists of mainly European, open-pollinated varieties. These can be divided into heritage, heirloom and ex-commercial which, while they are aren't 'official' definitions, have come over time to define the different accession types we maintain.

Heritage typically connotes a known historical variety. You can often read about it, see it in old catalogues etc. and it tends to be at least 60 years old and probably older in origin. Heirloom or local varieties – an unknown variety, and one that has been passed on through a family, group, village, allotment, etc, where the original variety

name may have been lost and is often given a name by those who saved it. Again, this is usually over 60 years old. Ex-commercial – a variety that pre-dates 1970 or has been on the National List but is no longer maintained as a commercial variety.

We are not a gene bank and all of our collection, once we have enough seed, will become available to grow and enjoy. We overcome the restrictions around seed sales by running a membership scheme. Members support the work we do through an annual subscription which entitles them to select six free packets of seeds from our annual seed list distributed every December. Each year, the list includes around 150 of our 800 varieties to choose from and we distribute 20,000 packets to members each year.

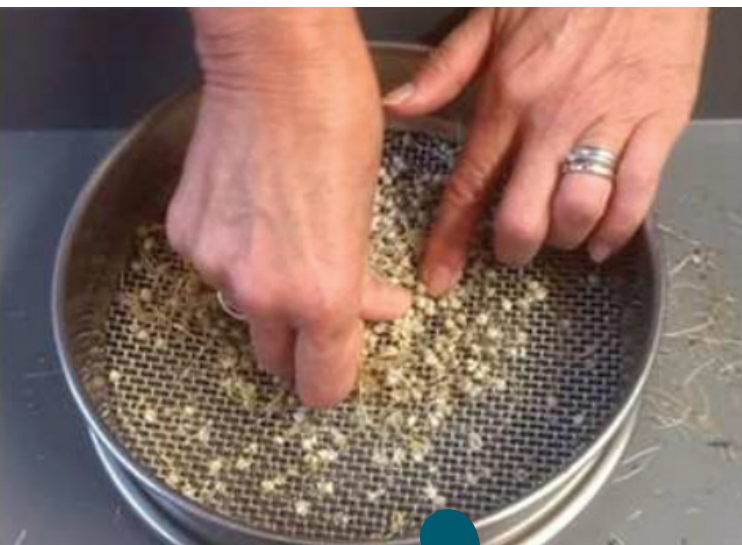
At least 100 varieties are grown organically at Garden Organic headquarters, near Coventry, each year. This annual harvest helps to conserve the collection, replenishing the core library sample, and any additional seed is made available to our members through our seed list. We have 9 polytunnels on rotation, as well as around half an acre of outdoor space.

We are a small team and depend heavily on our fantastic regular volunteers – around 8-10 in any given week - who support all our activities during the year from growing to seed distribution. Seed is processed onsite, mostly using basic methods and equipment (we handcleaned more than 3,000 tomatoes last year!) and packets of seeds are stamped, filled and sealed by hand.



We produce on-site around half the seed that appears in the seed list. The rest is grown off-site by volunteer Seed Guardians – 170 members of HSL that have taken on the extra responsibility of helping produce seed of varieties for the catalogue. Most of the varieties they save for us are annual, self-pollinating crops such as peas, tomatoes and French beans. They can be grown outside and they do not have to be isolated from other varieties, so can be easily grown in a patch of garden or on an allotment. We manage our trickier crops ourselves, as well as using experienced & contract growers to do this for us.

We maintain our varieties and assess new varieties using agronomic/phenotype information, i.e. visible characteristics and measurable features, and use standard measurements to conduct characterisations. This is useful information to get when we first grow and for comparison with other varieties. For some, such as heirlooms, this may be the first time these details are formally recorded and will become the standard description for future growing. For established or ex-commercial varieties, we may be comparing with known descriptions. Last year we were able to introduce 6 new varieties into our members' seed list. We currently have around 70 varieties awaiting assessment.



We also regularly conduct germination tests on our seeds to monitor viability, with 85% being the average minimum required for distribution. We encourage staff members to take part in taste tests which give an idea of how varieties taste and possible best uses.

None of our precious seed goes to waste and older seed, no longer distributed but still viable, is made available to seed swaps around the UK. We send seed and information to around 35 events each year. This helps raise the profile of our conservation work, attract new members and returned donations cover postage and other costs. Our presence at larger events, such as Brighton Seedy Sunday, is also a great way for us to meet some of our members face to face!

We are also involved in research opportunities to screen or conduct trials on varieties – this year we are providing heritage varieties of broad beans as part of a trial with Coventry University.

We work in partnership with independent display gardens providing regional and historic varieties to their display areas – either to save seed for us, but usually to highlight HSL varieties to their visitors.

We run a series of beginner and advanced seed-saving courses throughout the year, as well as supporting regional events as part of Garden Organic's charitable activities.

Our work is largely supported and funded by membership and donations. Our members have access to our Seed Saving Guidelines and other resources via the Garden Organic website, and are free to contact us directly at any time with their questions and queries regarding their HSL varieties.

We believe that keeping vegetable varieties growing and saving seed each year is the best way to ensure their preservation.

If you would like more information regarding the work of HSL, it can be found on the Garden Organic website at www.gardenorganic.org.uk/hsl.

PART III: OUTCOME OF THE STAKEHOLDER WORKSHOP



ANALYSING STRENGTHS, WEAKNESSES, OPPORTUNITIES AND THREATS OF COMMUNITY SEED BANKS

RESULTS FROM A PREPARATORY WORKSHOP IN ROME,
21 SEPTEMBER 2017 - REGINE ANDERSEN,
FRIDTJOF NANSEN INSTITUTE, NORWAY

The background of this presentation is that DIVERSIFOOD, led by Arche Noah, had recently carried out a comprehensive survey on the state of community seed banks (CSBs) in Europe. The survey showed a wide diversity in approaches among the CSBs and an impressive movement with great potentials. It was thus considered important to analyse systematically the possibilities for further development, as basis for future strategies. For that purpose, an analysis was carried out in a preparatory workshop in Rome on 21 September 2017, to identify strengths, weaknesses, opportunities and threats (SWOT) of CSBs. The participants of this SWOT-analysis were representatives from CSBs in Europe as well as other stakeholders and researchers involved in CSB research.

The starting point was the multiple objectives of CSBs that had been identified in the survey:

- Conservation
- Access and availability
- Sensibilisation
- Training and capacity building
- Sustainable use – experimentation, PPB, products
- Advocacy and legal advice

SWOT PROCESS – THE METHOD

In the SWOT analysis, the participants were working in groups, taking each of the above objectives as points of departure for their work. They first defined the objectives more precisely. Then they identified strengths, weaknesses, opportunities and threats for each of the objectives. On this background, they identified strategies to cope with challenges, take advantage of opportunities and strengths and to avoid threats. This process is illustrated below:



The presentation from the SWOT- analysis on 22 September 2017 highlighted some key findings from this process (and not all results) and drew some preliminary conclusions, as summarized below.

FIRST OBJECTIVE: CONSERVATION

The objective of ‘conservation’ was defined as **conserving genetic resources and knowledge for future generations in an integrative, dynamic, and evolutionary way**. An important strength of CSBs in this context is their ability to conserve a wider diversity of genetic resources than with individual or household seed collections. A central weakness of CSBs is their lack of technical means and support for this work. Among the most central opportunities is the rising demand for sustainable (and local) food, that may help generate attention to the work of CSBs. A major threat is the loss of human resources and knowledge in CSBs due to heavy work load for volunteers and/or age. Selected strategies comprise: **(1)** Include new stakeholders from the food chain to support the work of CSBs with different capacities and to act as multipliers of the idea; **(2)** Share knowledge and recognize those who do the work; **(3)** Implement Farmers’ Rights as set out in the International Treaty on Plant Genetic Resources for Food and Agriculture; and **(4)** Raise awareness about the importance of supporting CSBs financially at a long-term basis.



SECOND OBJECTIVE: ACCESS AND AVAILABILITY

The CSB objective ‘access and availability’ was defined as ***making genetic resources accessible and available is a core activity of CSBs.*** In our analysis we found that the collective action to make genetic resources accessible and available is the main strength of CSBs. A weakness is that there are no remunerations, and the work relies on voluntary engagement. This makes it vulnerable. An important opportunity is the increased international networking that provides opportunities for making more diversity accessible and available. A possible threat in this context is the demotivation of farmers to participate in making genetic resources accessible and available due to heavy work load and lacking support. Their contribution is core to the CSB system. Selected strategies comprise: **(1)** Develop new cooperation forms and strengthen ties with formal gene banks; **(2)** Engage in participatory research to strengthen the work of CSBs; **(3)** Work through existing networks and organizations to disseminate information and attract funding.

THIRD OBJECTIVE: SENSIBILISATION

The objective of ‘sensibilisation’ was defined as ***promoting a change of thinking and practices among farmers, consumers, civil society and policy makers that reflects the importance of crop genetic resources for food sovereignty and cultural identity.*** An important strength of CSBs in this regard is their ability to establish the links between genetic resources, cultural identity and food production. This is important for sensibilisation. A weakness is that there is little documentation of the knowledge related to crop varieties, and that communication skills are lacking. An opportunity is that massmedia provides opportunities of communication and mobilization, but a threat is that the action needed to bridge the gap between the weakness and the opportunities requires resources that are difficult to mobilise due to lacking support from political authorities. Selected strategies comprise: **(1)** Use good narratives to reach out to mass media, civil society and other groups to achieve credibility; **(2)** Create linkages between rural and urban groups and invite broadly, to attract support and work capacity; and **(3)** Create a common platform for sharing knowledge.



FOURTH OBJECTIVE: TRAINING AND CAPACITY BUILDING

The objective of training and capacity building was further detailed as ***facilitating training to important stakeholders (farmers, gardeners, researchers) to enhance the multiple functions of CSBs and capacities of their members.*** A strength of CSBs in this regard is that their actors hold very practical, hands-on relevant knowledge on the material they conserve. A weakness is the shortage of funds and human resources

to conduct training and capacity building. Important opportunities are that CSBs provide possibilities for the development and testing of new ways of learning and training and to act as bridges between formal and informal knowledge. The major threat is the weak institutionalization of CSBs, which may lead to uneven and not constant funding. As training and capacity building are long term strategies, the lack of steady funding provides a barrier. Selected strategies comprise: **(1)** Conduct multi-actor meetings to define learning goals; **(2)** Map existing training materials and resources to save funds by not duplicating efforts; **(3)** Map experts and farmers willing to become trainers; **(4)** Develop on-line training modules for wide outreach; and **(5)** Use creative selffinancing strategies.

FIFTH OBJECTIVE: SUSTAINABLE USE

This objective was further detailed to mean **supporting farmers, gardeners and smallscale breeders to utilize genetic resources in a sustainable manner**. Among the strengths of CSBs in this regard is the diversity of models among CSBs showing multiple ways of sustaining crop diversity. So far it is considered a weakness that participatory plant breeding is not sufficiently institutionalized to contribute according to its potentials. Climate change is changing the agricultural context, increasing the possibilities to communicate the importance of sustainable use of crop diversity, and in this context, it can be considered an opportunity. The most important threats are the loss of farmers and agricultural land, combined with the lack of policy support and financial resources. Selected strategies comprise: **(1)** Use the demand for food quality and local products as a leverage to increase public attention to the importance of sustainable use of crop diversity; and **(2)** Create platforms for and with farmers aimed at adding value to their production and reducing the risk of losing crop diversity as well as farmers.

SIXTH OBJECTIVE: ADVOCACY AND LEGAL ADVICE

This objective was refined to: **An objective for CSB's is to advocate for legal space to save, use, develop, exchange and sell their seeds**. A major strength in this regard is the fact that CSBs provide good examples of the need for legal space related to the use of seeds. A central weakness is the lack of economic resources and human capacity among CSBs to engage in advocacy work. The most important opportunity is that there potentially is massive support from the public in this regard. The major threat is considered that opponents of legal space for CSBs related to their seeds are strong and numerous. Selected strategies comprise: **(1)** Use public support for just demands of CSBs to put pressure on national authorities to comply with their commitments related to the Plant Treaty; **(2)** Demand representation of CSBs in relevant decision-making bodies; and **(3)** Pool human resources to provide advice to CSBs on regional and national policy processes.

SOME CONCLUSIONS

This presentation has highlighted some of the findings from the SWOT-analysis on CSBs. More work is needed to harvest the results from the workshop and further deepen the analysis.

The highlights already show the great potentials of the SWOT approach to analyse the potentials of CSBs and derive viable strategies. The SWOT-analysis showed that there are many opportunities to strengthen and scale up the work of CSBs. This would also contribute greatly to the implementation of the International Treaty on Plant Genetic Resources for Food and Agriculture. A key to making use of these opportunities is to develop joint strategies and collaboration among CSBs to promote action. Political support and financial resources are crucial to speed up action.



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Published by DIVERSIFOOD
with support from the European Union,
Horizon 2020, grant agreement No 633571,
and Rete Semi Rurali, Italy.

In collaboration with Bioversity International
and the International Treaty on Plant Genetic
Resources for Food and Agriculture
(ITPGRFA)

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www.diversifood.eu

www.communityseedbanks.org



The International Treaty
ON PLANT GENETIC RESOURCES
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