

Community Seed Banks in Nepal

2nd National Workshop Proceedings
3-5 May 2018, Kathmandu

Editors: Bal Krishna Joshi, Pitambar Shrestha,
Devendra Gauchan and Ronnie Vernooy



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Theme: Community seed banks for safeguarding agro-biodiversity and livelihoods

Editors

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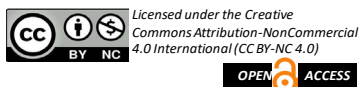
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NAGRC (Khumaltar, Lalitpur; <http://narc.gov.np>)

The National Agriculture Genetic Resources Center (NAGRC) was established in 2010 under NARC for the conservation and utilization of all agricultural genetic resources including domesticated plants, crop wild relatives and wild edible plants. Agricultural plant genetic resources are managed through ex-situ, on-farm and in-situ conservation and breeding strategies, through the establishment of seed banks, tissue banks, DNA banks, field genebanks and community genebanks, livestock farm genebanks, aqua pond genebanks and cryo banks.

LI-BIRD (Pokhara, Nepal; <http://www.libird.org>)

Local Initiatives for Biodiversity, Research and Development (LI-BIRD) is a non-profit, non-governmental organization established in 1995. LI-BIRD aims to contribute to reducing poverty by strengthening resilient livelihood systems, improving ecosystem health and services, and ensuring food, nutrition and income security of smallholder farmers, especially women and youths. LI-BIRD is committed to capitalizing on local initiatives, synergy, and partnerships for sustainable management of renewable natural resources.

Bioversity International (Rome, Italy; <https://www.bioversityinternational.org>)

Bioversity International, formerly known as the International Plant Genetic Resources Institute (IPGRI) is one of the 15 international agricultural research centres of the CGIAR. Headquartered in Rome, Italy, its vision is that agricultural biodiversity nourishes people and sustains the planet. Bioversity International produces scientific evidence and develops management practices and policy options to safeguard agricultural and tree biodiversity and attain sustainable global food and nutrition security.

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Cover photo credit: *Ronnie Vernooy (top left); Pitambar Shrestha (top right, bottom left and bottom right)*

Dedication page: *Late Dr. Bhuwon Ratna Sthapit in participatory plant breeding rice field in Begnas, Kaski, Nepal. Photo: Mahesh Shrestha.*

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Dedicated to

Dr. Bhuwon Ratna Sthapit for his remarkable contribution to agrobiodiversity and participatory plant breeding.



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Following the First National Workshop on Community Seed Banks held on 14-15 June 2012 in Pokhara, many farmers, stakeholders and relevant organizations have shown keen interest in community seed banks. An overview of their status in Nepal, complemented with some guidelines, was published in 2012 in the proceedings of the First National Community Seed Banks Workshop. This subsequently resulted in the organizations of the Farmers' Level First National Workshop on Community Seed Banks held at Kachorwa Community Seed Bank, Bara in 2013. The Kachorwa CSB and LI-BIRD were the key players in these two events, supported by Bioversity International and NAGRC. In Nepal, at present, there are 46 operational CSBs located in three agro-ecozones of the country, i.e. High Hill, Mid Hill and Tarai. We highly appreciate the efforts made by all the members of these 46 CSBs. Their initiatives are helping to conserve local crop landraces and provide easy access to diverse planting materials for farmers, researchers and students.

At present, some of the leading research and development agencies to practice and promote community seed banks in Nepal are LI-BIRD, NARC, Bioversity International, Oxfam, Action Aid, and the Department of Agriculture. Governmental organizations (namely, the Nepal Agricultural Research Council, Ministry of Agricultural Development, Crop Development Directorate and Department of Agriculture) annually allocate some budget for CSBs and organize some CSBs related activities. We acknowledge the presence and support from high officials from these organizations. We would like to extend our special thanks to Dr. Yubak Dhoj GC, Secretary, MoAD, Dr. Baidya Nath Mahto (then ED, NARC), Dr. Balaram Thapa ED, LI-BIRD and to participating institutional heads of various organizations to make the 2018 workshop a success. We gratefully acknowledge the presentations made by NAGRC, LI-BIRD, Bioversity International, DoA, MoAD, Action Aid Nepal and Oxfam, the participation of women and men farmers and CSB leaders, who shared their valuable insights and experiences.

We are pleased to report that the workshop was well timed and able to create a common platform for all key actors working in this field, including high-level policy makers and planners, to exchange experiences and lessons learned and disseminate them to a wider audience. We acknowledge the important contributions of workshop participants, in particular of the women and men farmer leaders of community seed banks and the members of the newly established Association of Community Seed Banks of Nepal (ACSBN), government officials and other stakeholders, including the organizing committee, workshop facilitators and rapporteurs. They provided valuable information and support for the publication of these proceedings. We recognize their hard work and strong team spirit.

The main funding sources for the organization of the workshop were RSF Social Finance/New Field Foundation, USA, through a grant to Bioversity International; the NORAD through the Development Fund, Norway; UNEP/GEF Local Crop project and the SDC Seed Project through Bioversity International. The organizers of the workshop, NAGRC, LI-BIRD and Bioversity International provided additional funding support for the workshop. We thank the Development Fund, Norway, for supporting the publication of these proceedings. We wish everybody good luck for the further advancement of CSBs in Nepal.

The Editors

Foreword

In recent years, community seed banks have become important local institutions to strengthen local seed systems, contribute to the conservation of agrobiodiversity and support livelihoods of smallholder farmers. The core functions of community seed banks are to safeguard seeds of crop landraces, provide access to quality seed and planting materials of diverse crop species and promote farmers' rights and food sovereignty. Well-functioning community seed banks integrate traditional and scientific knowledge and practices in the conservation and sustainable use of agrobiodiversity. Many community seed banks give priority to conservation, reintroduction, exchange and further improvement of local varieties, but some also produce and supply seed of improved varieties developed by research and development agencies. At present, some of the leading research and development agencies to practice and promote community seed banks in Nepal are LI-BIRD, NARC, Bioversity International, Oxfam, Action Aid and the Department of Agriculture.

As is evident from the papers included in this publication, community seed banks have strong roots in Nepal where several non-governmental organizations took the lead in establishing and supporting them. For more than two decades, the community seed bank "movement" in the country has accumulated many rich experiences and achievements. However, it also has confronted some challenges, such as maintaining community seed banks over time, the creation of opportunities for national networking and the mainstreaming of community seed banks in national policies, laws and programs.

During the first National Workshop on Community Seed Banks held on 14-15 June 2012 in Pokhara, some of the successes and challenges were documented and debated, and some suggested actions put forward. Six years later, in the Second National Workshop on Community Seed Banks held from 3 to 5 May 2018 in Kathmandu, participants once again discussed the key issues of sustainability, networking and mainstreaming in national policies and program. We are pleased to report that the workshop was perfectly timed and able to create a common platform for all key actors working in this field, including high-level policy makers and planners, to exchange experiences and lessons learned and disseminate them to a wider audience. We acknowledge the important contributions of workshop participants, in particular of the women and men farmer leaders of community seed banks and the members of the newly established Association of Community Seed Banks of Nepal (ACSBN), government officials and other stakeholders for valuable information and support and making the workshop successful.

We thank the editors, workshop organizing committee and all the contributors to this publication for their hard work and the strong team spirit they demonstrated. The efforts of the organizing committee and editors are noteworthy as they have been able to document the key outcomes of the workshop. Outcomes include a collective action plan and recommendations to the government of Nepal for supporting the community seed bank “movement” aiming to achieve sustainability and mainstreaming. We are enthusiastic that these outcomes are valuable for Nepal and other countries to scale up a strong and cohesive partnership among community, government, non-government and international organization for producing high quality results as demonstrated in Nepal.

Finally, we would like to thank the National Genebank, NARC, LI-BIRD and Bioversity International for their joint efforts to document the outputs of the workshop. We believe that these proceedings will be read widely and used as a valuable reference by researchers, development professionals and relevant stakeholders interested in establishing, strengthening and promoting community seed banks, local seed systems and conservation of agrobiodiversity.



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Uncommon Abbreviations

Uncommon abbreviations and abbreviations not spelled out in the text

AAN	Action Aid Nepal
ABD	Agrobiodiversity
ABS	Access and benefit sharing
ACSBN	Association of Community Seed Banks of Nepal
ADS	Agriculture Development Strategy
AEO	Agriculture Extension Officer
AFU	Agriculture and Forestry University
AI	Agrobiodiversity Index
APGR	Agricultural plant genetic resource
ARA	Agrobiodiversity rich area
ARF	Agrobiodiversity rich farmer
ASC	Agriculture Service Center
BS	Bikram Sambat
CAC	Collection Acceptance Committee
CAT	Climate Analogue Tool
CBM	Community biodiversity management
CBMSA	Community-based Biodiversity Management South Asia
CBR	Community biodiversity register
CBSP	Community-based seed production
CDABC	Crop Development and Agrobiodiversity Center
CF	Custodian farmer
CFGB	Community field genebank
CGB	Community genebank
CRSA	Climate resilient sustainable agriculture
CSB	Community seed bank
CSE	Community seed enterprise
CSPB	Climate smart plant breeding
cv.	Cultivar
CWR	Crop wild relative
DADO	District Agricultural Development Office
DADS	Diversifying Availability of Diverse Seeds
DFS	Diversity field school
DOI	Digital object identifier
EDP	Enterprise Development Program
f.	Filius, son
FCHV	Female community health volunteer
FGB	Field genebank
FGD	Focus group discussion
FR	Farmers' rights
GAC	Germplasm Authority Committee
GI	Geographical Indicator
HFGB	Household field genebank
HRC	Human Resource Center

HSB	Household seed bank
HYV	High yielding variety
IMISAP	ITPGRFA-MLS Implementation Strategy and Action Plan
IP	Intellectual property
LCP	Local Crop Project
LEC	Landrace enhancement and conservation
MAT	Mutually agreed term
MLS	Multilateral system
NA	Not available
NPRs	Nepali Rupees
OP	Open pollinated
ORCID	Open researcher and contributor identifier
PAN	Personal Account Number
PIC	Prior-informed consent
PVP	Plant variety protection
RISMFP	Raising Income for Small and Medium Farmers Project
sp.	Species (singular)
spp.	Species (plural)
ssp.	Subspecies
subsp.	Subspecies
Syn.	Synonym
UCW	Unpaid care work
var.	Variety
WEP	Wild edible plant
WTLCP	Western Tarai Landscape Complex Project
X	Placed after a genus name and before a specific epithet, indicating hybrid origin

Glossary

Working definition of some words used in this proceedings

Term	Definition
Access to genetic resources	The arrangement made to collect, acquire, or receive genetic materials, resources, or traditional knowledge from the owner, for the use of others.
Accession	A distinct uniquely identifiable sample of seeds representing a cultivar (variety or landrace), breeding line or a population, which is maintained in storage for conservation and use. Accessions of the same species or landraces may differ by collection sites, collection year, local name or donor.
Agricultural plant genetic resources	All cultivated plant landraces and varieties, wild edible plants, and wild relatives of crops.
Agro-biodiversity	Includes four components of agro-biodiversity (plant and crop genetic resources, animal genetic resources, aqua genetic resources and associated genetic resources) and four sub-components in each component, ie domesticated, semi-domesticated, wild edible and wild relative species.
Animal farm genebank	Rearing of domesticated local and indigenous animals as well as improved breeds on-farm, maintaining different species and breeds available around the command areas of a research station or public farm for conservation, use and research.
Benefit-sharing	Sharing monetary or non-monetary benefit acquired by accessing and using genetic material, resources, or traditional knowledge as per an agreement between provider and receiver.
Black box	A system for depositing samples that does not constitute a legal transfer of genetic resources; the repository gene bank does not claim ownership over the deposited samples. Ownership remains with the depositor, who has the sole right of access to the materials. The repository genebank is not entitled to the use or distribute the germplasm. It is the depositor's responsibility to ensure that the deposited material is of high quality, monitor seed viability over time, and use its own base collection to regenerate the collection when it begins to lose viability.
Catalog	A list or record of variety and landraces for identification, sharing knowledge and information, which is systematically arranged and often including descriptive material.
Clone	A genetically identical plant derived from a single mother plant by asexual propagation (cuttings or tissue culture).
Common	Found in relatively large numbers, the most widespread, grown in large areas and by many farmers; not rare.

Term	Definition
Community biodiversity register	A register maintained by a local community to record APGRs.
Community gene bank	A community storage facility for seeds of orthodox types and one or more fields where farmer communities grow recalcitrant types of crops and maintain them over time, managed and owned by a community for its members, giving due emphasis to local crops.
Community seed bank	Locally used seed storage structure and institution managed by a local community through collective action for strengthening the local seed system of orthodox crops and their conservation.
Conservation	Careful preservation and protection of APGRs on-farm, in-situ or ex-situ, for use of current and future generations.
Crop	Cultivated angiosperm plant species, either for sale or for subsistence.
Crop wild relative	A non cultivated species which is more or less closely related to a crop species (usually in the same genus) and occur in agro-ecosystems.
Cultivar	Any distinct genotype under cultivation, including both landraces and varieties.
Distribution	Fair and equitable distribution of acquired benefit from the access to genetic material, resources, or traditional knowledge between farmers and stakeholders.
Diversity field school	A community-based knowledge and action platform that facilitates the use and maintenance of diversity in the production system, as a way of risk minimization (from pest and disease damage or climate variability) and to provide farmers access to knowledge, planting materials, credit and networks. Crop diversity is major subject of discussion, in the same way as it is in the farmer's field school.
Domesticated or cultivated species	Species in which the evolutionary process has been influenced by humans to meet their needs. They are cultivated through human management interventions.
Ecosystem diversity	Comprises the variety of habitats, the dynamic complexes of plant, animal and microorganism communities and their nonliving environment. It is the result of interactions and changes over time.
Ecotype	A distinct form or race of a plant or animal species that occupies a particular habitat.
Elite line	Any genotype that possess at least one useful trait or a superior line with at least one trait. In the breeding process, an elite line can become a promising and pipeline variety.

Term	Definition
Endangered	A species or landrace which has been categorized as likely to become extinct. The population size of that species or landrace is decreasing, usually due to several factors.
Endemic species	Organisms found only in one particular geographical location and habitat.
Exotic	Of foreign origin; not native; introduced from abroad, but not fully naturalized or acclimatized.
Ex-situ conservation	Conservation off-site. Conservation of genetic resources outside of its original or natural habitat, eg in a genebank, botanical garden, field genebank.
Farmer	The people and communities who identify, conserve, preserve, develop, produce or use genetic material, resources, and traditional knowledge.
Farmers field school	A platform for learning and sharing agricultural practices in farmers' fields. Though it was originally used for implementation of integrated pest management, it is now used as an extension tool for holistic management of agricultural production systems covering soil, water and nutrients, and diversity.
Farmers' rights	The privilege of farmers and their right to protect varieties developed or conserved by them. A farmer can save, use, re-sow, exchange, share and sell farm produce of a protected variety, and be protected from innocent infringement.
Fodder	Any agricultural foodstuff used specifically to feed domesticated livestock.
Gene	The functional unit of heredity.
Genebank	Facility where germplasm is stored or maintained for research and use, for a long time.
Geneflow	The exchange of genetic materials between populations including introduction of new varieties.
Genepool	The total amount of genetic diversity present in a particular population.
Genetic diversity	The genetic variation present in a population or species. Refers to the variation of genes and/or genomes within living organisms, that is, the genetic differences between populations of a single species and between individuals within a population.
Genetic erosion	Loss of genetic diversity (specific trait, particular cultivar) between and within populations of the same species over time or reduction of the genetic base of a species.

Term	Definition
Genetic material	All or part of the functional units of heredity consisting of the genetic characteristics of domestic or wild animals, plants, microbial organisms, viruses, or of other origins. Germplasm of plants, animals or other organisms containing useful characters of actual or potential value.
Genotype	Genetic composition of a plant, comprised of heritable traits.
Germplasm	Living tissue (seed or another plant part – a leaf, a piece of stem, pollen or even just a few cells) from which new plants can be grown.
High yielding variety	Crop variety developed by educated plant breeders, designed to maximize yields at the expense of diversity and generally promoted by agricultural development organizations.
Home garden	A traditional land use practice carried out around a homestead consisting of several species of plants and animals that are grown and maintained by the family members with the primary objective of fulfilling the family's food and nutrition needs.
Image bank	Record of photos (printed or in electronic form) of each accession of crops with some information that is used for identification and reference samples, similar to a herbarium.
Indigenous	Native, developed or created naturally within country, all APGRs that existed before 1950.
In-situ conservation	On-site conservation. The conservation of genetic resources in their original ecosystem and natural habitat. Conservation of genetic resources in areas where they developed their distinctive properties, ie in the wild. Both active (growing) and dormancy (after seed matures) periods occur in the same place.
Introduced varieties/species	Exotic, brought from outside the country.
Inventory	A complete list of varieties, landraces or genotypes with some basic information.
Kitchen garden	A garden or area near to homestead, where vegetables, fruit, or herbs are grown for domestic or kitchen use.
Landrace	Genotype not altered by breeders, but grown continuously by farmers over years. It may be local or introduced.
Local landrace	Crop landraces available before 1950 in Nepal and grown continuously in particular location for at least 60 years.
Local variety	Crop variety grown continuously in a particular location for at least 60 years.
Major crops	Main food crops that form a major part of the daily diet in relatively large quantities as a source of energy, grown commonly and available widely.

Term	Definition
Management	Conservation and utilization of APGRs.
Minor crops	Refers to crops that may be high in value, but that are not widely grown and not commonly available.
Modern variety	Crop variety developed by educated plant breeders. Also known as high yielding variety.
Multilateral access	A common pool arrangement made under the provisions of the ITPGRFA to access and use plant genetic resources for food and agriculture by national governments and international organizations working in the area of agriculture and food security for the welfare of human kind.
Multilateral system	Under the ITPGRFA, the multilateral system (MLS) comprises a common pool of 64 selected crops that are made accessible under certain conditions. On ratifying the Plant Treaty, countries agree to make their genetic diversity and related information about the crops stored in their genebanks available to all through the MLS.
National crop gene pool	Agricultural plant genetic resources that are necessary to secure food and nutrition for human kind.
National list	List of notified crops' varieties that has been approved by the National Seed Board and published in the Nepal Gazette. There are two categories: released varieties and registered varieties, in the National list.
Native or indigenous	Having always been in a certain place rather than being brought there from somewhere else. Native and indigenous are similar meaning words that refer to naturally growing plants, living animals, and even original inhabitants of a particular region.
Nepal Annex 1 crops	List of accessions of crops from Nepal included in the MLS.
On-farm conservation	The conservation of agrobiodiversity in farmers' fields and/or in community gene banks (seed bank and field gene bank), where new traits or alleles have not originated, but have been cultivated over a period of time. Active life (growing period) remains in the field and dormancy period (after harvest) remains in the structure built by farmers nearby the field.
Organic farming	Organic agriculture is an ecological production management system that promotes and enhances biodiversity, biological cycles and soil biological activity and prohibits use of agrochemicals.
Origin of landrace	Area where farming communities have been growing a landrace for more than 60 years or the location where a landrace was collected.

Term	Definition
Origin of variety	Location where a distinct form of genotype is developed either by crossing or selection.
Pasture	Land covered with grass or herbage and grazed by or suitable for grazing by livestock.
Plant	Uncultivated and wild flowering (angiosperm) plant species.
Population	A group of individuals of the same group or species, which live in a particular geographical area, and have the capability of interbreeding.
Production systems	Includes the livestock, crop, fisheries and aquaculture and forest sectors.
Promising variety or line	Fixed genotypes that show the signs of future success.
Protected area	A geographically defined area that is regulated and managed to achieve specific conservation objectives.
Public domain	Space containing genetic materials that are not protected by intellectual property rights.
Rare	Not found in large numbers, grown by few farmers in small areas; localized landraces not commonly available; with a population size remaining constant.
Registered	Variety after testing one season or two seasons in a target environment and listed in the Nepal Gazette.
Released	Variety after testing in different breeding trials and at least in three multi-location yield trials and listed in the Nepal Gazette.
Repatriation	The return of crop landraces to their original site or country.
Rescue mission	Collection of rare and endangered landraces from particular areas to save them from danger, harm or loss.
Researchers' rights	Access to protected varieties for bona fide research purpose.
Safety backup	Safety duplication of accessions at one or more sites and/or using an alternative conservation method or strategy, such as in-vitro or cryopreservation or field gene bank. Both depositor and repository gene banks can use and distribute the germplasm.

Term	Definition
Safety duplication	The duplication of genetically identical subsamples of an accession to mitigate the risk of its partial or total loss caused by natural or man-made catastrophes. Safety duplicates are genetically identical to the accessions in the base collection and are referred to as the second-most original samples. Safety duplicates include both the duplicated material and its related information and are deposited in a base collection at a different location from the originals, usually in another country. Safety duplication is generally organized under a black-box agreement.
Selection	Any process, natural or artificial which permits an increase in the population of certain genotypes or groups of genotypes in succeeding generations.
Species	A taxon comprising one or more population of individuals capable of interbreeding to produce fertile offspring.
Species diversity	Refers to the frequency and variety of species (wild or domesticated) within a geographical area.
Subspecies	A category in biological classification that ranks immediately below a species and designates a population of a particular geographic region genetically distinguishable from other such populations of the same species and capable of interbreeding successfully with them where its range overlaps theirs.
Sui generis system	Of its own kind. Any unique form of a system designed to meet certain alternative legal requirements.
Sustainable use	The use of components of biological diversity in a way and at a rate that does not lead to the long-term decline of biological diversity, thereby maintaining its potential to meet the needs and aspirations of present and future generations.
Traditional knowledge	Knowledge, skills, technology, or practices used by farmers from generation to generation to identify, manage, conserve, develop, or use genetic material or resources.
Variety	Genotype developed by breeders. It may be under cultivation or in the process of development.

English-Nepali Translation

English to Nepali translation words used in this proceedings.

English	नेपाली	English	नेपाली
Agrobiodiversity	कृषि जैविक विविधता	Listing	सूचीकृत
Agrobiodiversity fair	कृषि जैविक विविधता मेला	Local seed	स्थानीय बीउ
Breeding	प्रजनन	Local variety	स्थानीय जात
Cereals	अन्नबाली	Management fund	व्यवस्थापन कोष
Certification	प्रमाणीकरण	Oilseed crop	तेलहनबाली
Collection	सङ्कलन	On-farm conservation	घरगोठ खेतीस्थलीय
Community seed bank	सामुदायिक बीउ बैंक	Organic farming	प्राङ्गारिक खेती
Conservation	संरक्षण	Passport	पासपोर्ट
Diversity block	विविधता प्रदर्शनी स्थल	Patent	स्वामित्व
Documentation	अभिलेखीकरण	Promotion	संवर्द्धन
Endangered	लोपोन्मुख	Quality seed	गुणस्तरीय बीउ
Exchange	साटासाट	Rare	दुर्लभ
Ex-situ conservation	पर स्थानीय	Registration	पञ्जीकरण
Field genebank	फिल्ड जीन बैंक	Released	उन्मोचन
Genetic material	आनुवंशिक पदार्थ	Root crop	जरे बाली
Genetic resource	आनुवंशिक स्रोत	Spcies	मसलाबाली
Home garden	घरबगैँचा	Storage	भण्डारण
Horticulture	बागवानी	Tradititonal knowledge	परम्परागत ज्ञान
In-situ conservation	स्व-स्थानीय	Vegetable	तरकारीबाली
Legume	कोसे बाली		

Workshop Background, Summary and Outcomes

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Background

Conservation of local agrobiodiversity is crucial to achieve global food security. Over centuries, farmers and local communities have played a vital role in the maintenance and utilization of local crop diversity and related (traditional) knowledge. In recent times, the concept and practice of community seed bank (CSB) have gained popularity as a valid approach for conserving and promoting the wise use of agro-ecological resources at community level. A community seed bank represents an approach to promote on-farm management of agricultural plant genetic resources governed and managed by a farmers' group, cooperative or organization, mostly in an informal way. Its core functions are to conserve seed of crop landraces for local use, providing access to quality seed and planting materials of diverse crops species and promote farmers' rights and food sovereignty. Community seed banks can also contribute to linking in-situ and ex-situ conservation. They can be a mechanism to generate agro-biodiversity based income for member farmers, for example, through the production and marketing of high quality seeds. Well-functioning community seed banks integrate traditional and scientific knowledge and practices. Many community seed banks give priority to conservation, reintroduction, exchange and further improvement of local varieties, but some also produce and supply seed of improved varieties developed by research and development agencies.

CSBs have strong roots in Nepal where several non-governmental organizations took the lead in establishing and supporting them. More recently, the government of Nepal also started to invest in CSBs. The first CSB in the country was established in 1994 at Dalchowki, Lalitpur, with the support of USC Canada-Nepal. Currently there are 46 operational CSBs of which 40 are well functioning; most of them are working on orthodox crops. The Nepal government (DoA) has piloted their own CSB approach in nine different mid-hill districts in order to increase seed replacement rate and obtain food security. Bioversity International, LI-BIRD, Oxfam and Action Aid are some of the leading research and development agencies to practice and promote community seed banks in Nepal. There are

currently about 10 organizations, including the Government of Nepal, that are actively supporting community seed/genebank activities in the country.

The first National Workshop on CSB was held on 14-15 June 2012 in Pokhara, to share the experiences and successes of the conservation and utilization of local crop diversity by CSBs. We have come a long way since the very beginning of CSBs in the country. Two decades of experience and learning in the field of CSBs witnessed many success stories, while also facing some challenges. Following the first national workshop, many CSBs evolved quite well with good achievements, but some encountered major problems. The networking among CSBs, one of the proposed follow up activities of the first national workshop, got off to a slow start. Among the problems encountered were: lack of coordination and mutual learning among key actors involved; the challenge of (long term) sustainability; mainstreaming of CSBs in national policy and law; and issues around ownership in the case of the CSBs established by the Government of Nepal. Another challenge has been to systematically (scientifically) map and analyze the impact of CSBs with regard to enhancing seed and food security.

The second national workshop was well timed to address these challenges. Its main objective was to create a common platform for all key actors working in this field to exchange experiences and lessons learned, and to document and disseminate them to a wider audience. A second important objective was to discuss and design a collective action plan for further development of CSBs (as a strong community-based and farmer focused institution) and to move towards sustainability of CSBs in the country. We envision that the emergent national network of CSBs has an important role to play to achieve this longer term objective.

Workshop Objectives

- Document status and progress made in conservation, access and availability, technical, governance and management, approaches and institutional aspects of community seed banking in Nepal
- Identify challenges, problems and issues and ways to overcome on it in the management of community seed banks
- Discuss ways to strengthen the technical, administrative and organizational capacities of community seed banks concerning conservation, access and availability, variety registration/listing and maintenance
- Identify options and mechanisms to mainstream and sustain community seed banks
- Discuss options for strengthening the community seed bank networking in Nepal

Program Highlights

The unique feature of the workshop was that the presentations, group discussions and information sharing were combined with a display of rare and valuable seeds of local crop diversity in the display stalls in the workshop room brought by nine active community seed banks from different parts of Nepal. There were on display 466 examples of different crop species from the east (Jhapa) to the far western parts (Doti and Kanchanpur) of the country, including high mountains (Humla) to mid hills and lowland of Tarai ([Annex III](#)).

The workshop started with a formal session chaired by Dr. Baidhya Nath Mahto, Executive Director of the Nepal Agricultural Research Council (NARC). Dr. Yubak Dhoj GC, Secretary to the MoALD was the chief guest of the event. The special guests of the program were Dr. Ronnie Vernooy, Policy Expert at Bioversity International; Mr. Lekhnaath Acharya, Joint Secretary, MoALD; Dr. Ananda K Gautam, Director of Planning and Coordination (NARC); Mr. Madan Thapa, Chief of Seed Quality Control Centre (SQCC) and Mr. Bimal Thapa Chhetri, Program Director, Crop Development Directorate of Department of Agriculture (DoA). Other high level participants were Chief of NAGRC (Genebank), Dr. Devendra Gauchan, National Project Manager (Bioversity International), Dr. Bal Krishna Joshi (Genebank), Mr. Bharat Bhandari of LI-BIRD and Mr. Pitambar Shrestha of LI-BIRD. They were key presenters as well as facilitators of technical sessions of the workshop.

Chief guest Dr. Yubak Dhoj GC emphasized the contribution of CSBs to cope with climate change impacts by securing seed availability, conservation of valuable and climate resilient genes and associated farmer's knowledge and their contribution to research and development. He admired the efforts of farmers, NARC-Genebank, Bioversity International and LI-BIRD in bringing the CSB approach to center stage. He committed to provide full support from the Ministry for the development and mainstreaming of CSBs in national plans and programmes in the days to come.

There were 63 participants representing diverse stakeholders including farmers, community seed banks and cooperative members, government agencies, international research organizations, non-government organizations and private seed entrepreneurs. The formal opening session was followed by a series of technical sessions organized around four themes: 1: Good practices, gaps and issues; 2: Capacity building and networking; 3: Sustainability and mainstreaming, and 4: Policy status, gaps and issues. A total of 10 presentations were made that revolved around specific programmes and efforts made by national and non-governmental organizations to establish and support CSBs and institutionalize them. Speakers presented approaches, methods and tools, achievements and lessons learned, policy issues, the role of the Government of Nepal, obstacles and challenges.

Devendra Gauchan of Bioversity International highlighted access and benefit sharing issues and farmers' rights on seeds while Mr. Anil Kumar Acharya shared the national legislation, guidelines and programmes with regard to CSBs and proposed ways for their institutionalization. Pitambar Shrestha presented the status and contribution of CSBs to national conservation and seed production based on LI-BIRD's work while Bharat Bhandari shared CSB experiences based on lessons learned by the UNEP/GEF Local Crop Project. He also proposed a novel way to work toward sustainability through the "Diversity Field School". Ronnie Vernooy, Bioversity International, shared some insights about the global status of CSBs while highlighting the major CSB achievements made in Nepal. He also praised the country for celebrating its Second National Workshop on Community Seed Banks and expressed gratitude for the willingness of governmental officials to participate in the event enabling all key actors to come together and discuss the further development of CSBs with the common goal of the conservation and promotion of plant genetic resources and traditional knowledge.

The highlight of the first and second days was the farmer to farmer sharing of experiences through thematic discussions. Women and men farmers came from 18 community seed banks and four cooperatives. Farmers, especially women, are the champions of implementing CSBs in different parts of Nepal. On the first day, farmers identified constraints related to CSB sustainability, such as the lack of an independent CSB registration mechanism/structure, uncertainty of funding sources for conservation work, inadequate policy and programming prioritization by local governments and the lack of coordination and market linkages for selling seed. Almost all the CSBs highlighted sustainability as a major issue. They emphasized to mainstream CSBs in local development programmes as a solution. Ramekwal Yadav, the chairperson of the ACSBN, discussed the low representation of farmers/CSBs in national level fora and planning processes. He stated that this is one of the reasons why conservation and promotion of local plant genetic resources do not receive much priority. He further highlighted the role of the ACSBN to have a voice at national policy level, coordinate advocacy efforts, organize technical capacity building and collaborate closely with the National Genebank.

Key Suggestions for the Network of Community Seed Banks

- The Department of Agriculture has released two guidelines for the functioning of CSBs. These guidelines should be revised and consolidated into a single document. The CSB network should be involved in doing this.
- Focus on formalizing the legal registration procedure of CSBs through policy advocacy.
- Develop capacity building activities for CSB members and the CSB association.

- Define a set of minimum norms and functions that characterize what a CSB is as a basis for becoming a member of the network. Functions should include at least the conservation and promotion of local crop genetic resources and the maintenance of crop diversity blocks; and could include, as an option, seed production of local crops.
- Develop guidelines (a format) for registration of a CSB in the CSB network.
- Define the structure of the network and how communication should flow.
- Maintain a CSB database (location, conservation status, seed production status etc), monitor and evaluate CSB activities.
- Conduct regular meetings, maybe yearly or half-yearly to share knowledge and experiences and organize meetings, workshops, seminars and exposure visits for CSB members and other relevant stakeholder so that the visibility of CSBs can be maintained. In addition, seed exchange activities can also be organized.
- Intervene to ensure seed quality, uniform seed pricing and profit margins across the country.
- Document good practices and approaches and share nationally.
- Facilitate linkages with national research organization, especially the National Genebank for long-term conservation and minimizing seed duplication and other technical support and with seed companies for commercialization of local crops.
- Policy advocacy for mainstreaming and integrating agriculture biodiversity conservation and community seed banks in national policy, plans and activities.

Proposed Incentives and Support Needed from the Government

- Community Biodiversity Management (CBM) fund allocation to CSBs
- Awarding/recognizing custodian farmers and CSBs in a national forum
- Seed crop insurance (simplifying process) for traditional crops and varieties
- Incentive and support to purchase agriculture equipments (processing equipment, tools, new technologies)
- Technical support from the National Genebank on seed conservation, characterization and use
- Support for conducting good CSB management practices (eg diversity block, seed exchanges)
- Provide incentives and support as per guideline and work done by CSBs
- Inclusion of farmers' rights, especially of custodian farmers, in national policy, notably in the (draft) Access and Benefit Sharing bill and draft Agrobiodiversity Conservation and Utilization bill

- Include “Community Seed bank” and its functions in the Agrobiodiversity draft bill including ABS draft bill as a mechanism for ensuring fair and equitable sharing of benefits arising from the use of crop genetic resources
- Develop a practical format to guarantee prior informed consent
- Establish technical linkages between CSBs and the National Genebank for local variety registration and maintenance at the regional research stations
- Supporting the process of local variety registration by simplifying the process and guidelines

Conclusion

Overall, the workshop was successful in achieving its objectives. Farmers from all over Nepal, from mountains and mid-hills to tarai, from west to east, shared experiences and knowledge and learned from each other. Farmers came together with other key stakeholders in a single forum to interact, share and learn about on the ground realities and plan together for the future. Women farmers and CSB representatives from far-western and mountain regions were happy to participate in the national level discussion forum. While sharing her experience, Ms. Goma Bhandari from Masuriya, Kailali said: *“I was not even able to speak in front of a few people, now I am being able to speak and share my views about our CSB work in front of so many people.”* Similarly, Rumfa Devi Upadhyaya from Chhipra, Humla said: *“In our place, no woman is allowed to take part and speak in a meeting like this, but I am very grateful to the organizer for giving me this chance to participate and to learn.”*

All issues, questions and answers, and experiences shared during workshop were documented by rapporteurs. All presentations and abstract were shared among the participants and are available at www.researchgate.net/publication/324976462. The brief highlight is available at <https://www.youtube.com/watch?v=O-nP-HTJIn4>.

Workshop Recommendations

- 1. Institutional provision for registration, renewal, listing and monitoring of community seed banks:** Until now, community seed banks in Nepal are operated by farmers’ groups, cooperatives and the farmers’ organizations registered as local NGOs. It is because the Government of Nepal (GoN) has not developed any institutional mechanism where community seed banks can be registered and renewed. Due to the operation of community seed banks by different types of farmers’ organizations, we do not have an exact database related to the number of community seed banks, their types and functions, scope of work and status of community seed banks in the country. Therefore, it is essential to have an institutional mechanism for registration,

renewal and monitoring of community seed banks at Provincial and Central levels. Similarly, the main objective of community seed banks is to promote on farm conservation and sustainable use of agricultural biodiversity. At the national level, this function has been mandated to the National Genebank. Hence, whatever institutional mechanism is created for registration, renewal and monitoring of community seed banks at Provincial and Federal levels, it is recommended to have a provision of listing, renewal and updating of relevant data and information of community seed banks in a certain interval in the National Genebank on a mandatory basis.

- 2. Defining minimum standard criteria and classification of community seed/gene banks:** There are many organizations facilitating and supporting the establishment and strengthening of community seed/gene banks in many districts of Nepal. They include USC Canada Asia, LI-BIRD, NARC, Department of Agriculture (DoA), Bioversity International, Oxfam, Action Aid, WWF and others. These organizations have their own way of implementing community seed banks. The question is if they are all promoting community seed banks as per its global definition and understanding. The first National Workshop on Community Seed Banks in Nepal held in June 2012 has defined that the goals of community seed banks should be to promote the conservation and sustainable use of agricultural biodiversity and provide easy access to diverse types of seeds and planting material for improving livelihoods of farmers. The workshop further elaborated that the term ‘community seed banks’ should not be used if there are no plant genetic resources conservation activities. However, there is no agreement on the minimum number of species and local varieties, including orthodox and non-orthodox seeds to be conserved and promoted by a community seed bank, criteria for CSB membership and number of community seed/gene banks to be established in the country. Community seed banks should obtain legal status. To realize this, a tailor-made mechanism should be developed. It is necessary to define the minimum standard for establishing a community seed/gene bank so that every organization can follow it.
- 3. Regular budget provision for community seed/gene banks:** Apart from some exceptions, such as the community seed bank programme of the former Crop Development Directorate under the Department of Agriculture (DoA), and apart from some support from local government upon request, there are no government organizations that allocate funding for the establishment and strengthening of community seed banks on a regular basis. Hence, it is recommended to allocate funds regularly to operate community seed banks and field gene banks, and to promote on farm management of agricultural biodiversity by the local, provincial and federal Governments.

- 4. Identification of areas for agrobiodiversity conservation and community seed banks establishment:** Nepal is globally known for its rich biodiversity and agricultural biodiversity. However, due to its diverse geography, not all areas of the country are equally rich in terms of agricultural biodiversity. However, it is considered not wise to promote agricultural biodiversity conservation activities in all the 753 local political units of Nepal. It is recommended to identify agricultural biodiversity rich areas and focus the promotion of conservation and sustainable use of agricultural biodiversity there. This should include the establishment of community seed banks as a major activity. These areas can become centers of agrobiodiversity where government, I/NGOs and farmers' organizations can work together to avoid duplications of activities and waste of resources.
- 5. Simplification of the process of local variety registration:** There are many farmers cultivating landraces or local varieties of crop species in Nepal. Many local varieties have good properties and functional traits. Some can easily compete with improved varieties from the perspective of adaptation, yield and income. However, there are difficulties in registering such varieties using the existing variety release and registration provisions. It is recommended to have a separate and simple provision and guidelines for registration and maintenance of landraces and locally improved varieties. It is also recommended to allow farmer groups and community seed banks to produce and market seeds of these varieties.
- 6. Amendments of agricultural biodiversity related bills for adding articles on community seed banks:** There are three draft bills which are related to agricultural biodiversity namely, i) Plant Variety Protection and Farmers' Rights, ii) Access to Genetic Resources and Benefit Sharing and iii) Agrobiodiversity Conservation and Utilization. None of these three bills has clearly included a provision on the roles of community seed banks in promoting conservation and sustainable use of agricultural biodiversity. Therefore, it is recommended to make necessary amendments in all these three draft bills and add a provision of establishment and promotion of community seed/gene banks in Nepal.
- 7. Awards for agricultural biodiversity conservation:** There are many awards for farmers and groups who are involved in promoting improved cultivation practices, cultivating improved varieties and rearing improved animal breeds both at provincial and federal levels. However, there is no award for the farmers and their organizations who are involved in management of community seed banks to conserve unique landraces and to promote conservation and sustainable use of valuable agricultural biodiversity, not at provincial level or the central level. Therefore, it is recommended to establish

at least one award to recognize individual custodian farmer and another for farmers' organizations maintaining community seed/gene banks, both at the provincial and national levels.

- 8. Inclusion of community seed/gene banks in the annual plan of local and provincial governments:** There is a rapid loss of agricultural biodiversity from farmers' fields and natural habitats. The federal government has realized this and has developed strategies, policies and drafted a few bills to do something about the loss. This should be trickled down to the provincial and local governments. To begin with this process, it is recommended to the federal government body responsible for promoting the conservation and use of agricultural biodiversity, to facilitate and provide guidelines to all provincial and local governments to include in their annual development plans and programmes for the promotion of community seed/gene banks for strengthening local seed systems, the conservation of agrobiodiversity and support of rural livelihoods.
- 9. Strengthening the Association of Community Seed Banks of Nepal:** The first meeting of the farmers' organizations involved in establishing and managing community seed banks was held from 13 to 15 March 2013 in the Kachorwa Community Seed Bank, Bara. The meeting formed an *ad hoc* committee named 'National Coordination Committee of Community Seed Banks of Nepal'. Since then, the members of the committee meet once a year, share and review progress made and exchange information and seeds. Given that the committee already exists, it is necessary to strengthen its capacity by allocating some resources and technical support from the responsible government body. This will allow the committee to play a larger role in promoting conservation and sustainable use of agricultural biodiversity. This can be done by mobilizing and encouraging its member community seed banks and by organizing seed and information exchange activities on a regular basis. Until now, 28 community seed banks of Nepal are a member of this committee. Very recently, the committee has been renamed as Association of Community Seed Banks of Nepal (ACSBN).
- 10. Use of Geographical Indication:** Specific and unique traits of local varieties can be identified and documented through research partnership with community seed/gene banks. This can be used to explore the possibility of using Geographical Indication (GI) for specific local products. Hence, it is necessary to allocate some resources for research and market promotion of unique local products. Support should be given to individuals and communities to develop nutritional and agro-morphological profiles of local landraces, traditional diverse food items and innovations for GI development.

Community Seed Banks in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International

30 + 6 Years of Community Seed Banking Around the World: A Good Start, but More to be Done and Learned

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Sharing seeds: symbolic opening of the 2nd National Workshop on CSB in Nepal. Photo: Ronnie Vernooy, Bioversity International

Abstract

Six years have passed since the first national meeting of community seed banks in Nepal. Since then, Bioversity International and partners around the world have expanded their capacity development, research and policy advocacy efforts to make community seed banks and the emerging networks of community seed banks more efficient and effective. A series of North-South exchange of experiences took place. New capacity development materials were developed. A number of young researchers researched sustainability and related (novel) issues of importance to community seed banks. In 2018, a proposal was finalized to establish a global community seed banks platform that will support existing community seed banks and national/regional community seed bank networks around the world, scale out their activities and achievements, and contribute to their sustainability

Keywords: Farmers' rights, global platform, networking, resilience, sustainability

Introduction: The Community Seed Banking Journey Continues

Six years have passed since the first National Community Seed Banks Workshop in Nepal took place (see for the workshop proceedings, Shrestha et al 2013). At the first workshop, I presented a literature review of mostly descriptive findings of the first 30 years of experiences with establishing and supporting community seed banks around the world. The review aimed to answer two questions: 1) What had been achieved and learned in these 30 years? What were the major challenges?, 2) In the light of more recent challenges related to the sustainable use of agricultural biodiversity, such as the commercialization of agriculture, genetic erosion and the impact of climate change, what roles could community seed banks play (Vernooy 2013)?

Following the workshop, Pitambar Shrestha, Bhuwon Sthapit and I embarked on a more systematic review of global community seed banking experiences from various parts of the world. This resulted in the book “Community seed banks: Origins, evolution and prospects” published in 2015 based on contributions from and interactions with the case study contributors over the years 2013-2014. The book includes 30 case studies of community seed banks, five case studies of organizations supporting community seed banks and five case studies of national policies in support of community seed banks. Insights from the book served to publish a journal article about the multiple functions and services of community seed banks (Vernooy et al 2014). Additional research about the roles of community seed banks in climate change adaptation led to another journal article (Vernooy et al 2017).

Not only have we been writing about community seed banking in the past six years. The practical work of establishing and supporting community seed banks (technically, organizationally, policy and legal wise) continued, intensified or started in countries including Bangladesh, Benin, Bhutan, China, Ethiopia, Guatemala, India, Madagascar, Nepal, South Africa, Sri Lanka and Uganda (for more information about Bioversity International’s work, <https://www.bioversityinternational.org/research-portfolio/conservation-of-crop-diversity/community-seedbanks/>). Three elements stand out in these recent practical efforts: 1) bringing more science to community seed banking both technically and organizationally; 2) adding value to the conservation function of community seed banks through participatory crop improvement and/or seed production and marketing; and 3) linking community seed banks to national genebanks to create synergies.

Without doubt, the journey of 30 + 6 years continues. In this chapter, I present some reflections on what the work done in recent years and some thoughts about promising directions for the coming period.

Renewed Interest

It appears that interest in establishing and supporting community seed banks and developing new approaches to strengthen them are on the rise. In a number of countries, government and non-government organizations (in some cases with the support of Bioversity International) have joined forces to set up new community seed banks as part of a national conservation and sustainable use strategy. This is happening, for example, in Benin, Ethiopia, India, Madagascar, Nepal, South Africa and Uganda. Proposals to do something similar have been written for other countries, such as Bangladesh, Mali, Tanzania and Zimbabwe. LI-BIRD in Nepal continues to expand the number of community seed banks supported by the organization. In China, the Farmers Seed Network is establishing new community seed banks and assisting other organizations to do the same. In India, government organizations and Bioversity International have set up a number of community seed banks as part of a climate change adaptation strategy. In South Africa, the Department of Agriculture, Forestry and Fisheries, and Bioversity International are working on a national network of community seed banks that connects the community seed banks to the national gene bank (under the National Plant Genetic Resources Centre).

Looking at the larger picture, there appear a number of factors that are directly or indirectly supporting this trend. They are:

- Farmers are getting better organized (with support from others) and see a community seed bank as a good way to support the empowerment process.
- Agro-ecology, organic agriculture, healthy food and diets movements have a strong interest in safeguarding traditional crops and varieties.
- Food safety in some countries has become a priority (eg China, Vietnam).
- Conservation and crop improvement researchers are joining forces which is giving traditional varieties more and in some cases, new recognition.
- Climate change related challenges and the need for novel diversity to adapt to changing farming conditions is becoming more urgent.
- International organizations have put community seed banks high on the agenda.

A Start of Sharing Experiences from North and South

In recent years, the many diverse community seed bank experiences from around the world have become better known, but in general, their achievements and challenges are not well documented and disseminated. Community seed banks go by various names: community gene banks, farmer seed houses, seed huts, seed wealth centers, community seed reserves and seed libraries. They all have a common objective, which is to support farmers and communities to

regain, maintain and increase their control over the seeds they use, in particular traditional varieties, but not solely.

Community seed banks go through different organizational phases and encounter a number of organizational challenges that are very similar to other grassroots organizations, such as farmer research groups, youth associations or women cooperatives. However, the cooperative movement has been around for more than a century and has undergone a high degree of professionalization. 30 years of community seed banking represent a relatively short time period in terms of institutional development; therefore, much remains much to be done and more to be learned (Vernooy et al 2015).

In the global north, community seed banks' practitioners and supporters have some opportunities to interact and exchange knowledge and experiences, for example, through the internet, meetings and workshops. Seed savers' organizations in countries such as Australia, Austria, Canada, France and Italy have maintained websites and publish regular newsletters to inform members and subscribers. They also organize events where practitioners can meet and interact. In Europe, through the European Union funded 'Diversifood' project (2015-2019), community seed bank practitioners and supporters from several countries have carried out a number of joint awareness raising, capacity development and research activities. The project aims to link experienced national or subnational networks working on the conservation and sustainable use of plant genetic resources to evaluate and enrich the diversity of cultivated plants within diverse agroecosystems (<http://www.diversifood.eu/project/>).

In September 2017, the 'Diversifood' project and Bioversity International, with the support of the Secretary of the International Treaty for Plant Genetic Resources for Food and Agriculture (ITPGRFA) organized an international workshop in Rome, Italy, with community seed bank practitioners and supporters from the global north and the global south to exchange experiences and lessons learned. It was most likely the first time such an event took place. 'Diversifood', Bioversity International and other organizations teamed up for another international event to draw attention to the roles of community seed banks (**Box 1**).

Box 1. Community seed banks at the International Treaty for Plant Genetic Resources for Food and Agriculture

The Fritjof Nansen Institute of Norway, the 'Diversifood' project, LI-BIRD of Nepal and Bioversity International joined forces to organize the side event "Community seed banks: Sharing experiences from North and South" during the 7th meeting of the Governing Body of the ITPGRFA held in Kigali, Rwanda (October 2017). The side event aimed to share experiences of community seed banks around the world, strengthen their functioning and obtain more support. Gloria Otieno (Bioversity International, Uganda) presented about the history and evolution of community seed banks in Uganda and the emergence of community seed banks in Kenya and Tanzania. Pitambar Shrestha of LI-BIRD presented the work on community seed banks in Nepal supported by LI-BIRD. He also gave a presentation about community seed banks globally highlighting the book *Community seed banks: Origins, evolution and prospects* (2015). Other presentations were made by the Community Technology Development Trust of Zimbabwe and Ryukoku University of Japan. A report is available (Andersen et al 2018).

Ultimately, the Governing Body adopted Resolution 7/2017: 'Implementation of Article 9: Farmers' Rights' to create an Ad Hoc Technical Expert (AHTEG) on Farmers' Rights and to develop voluntary guidelines for national implementation. The resolution reflects increasing awareness among the Contracting Parties of the value and importance of community seed banks in fulfilling the objectives of the Plant Treaty on the conservation and sustainable use of crop genetic diversity for food security. The Governing Body invites the countries that are Contracting Parties to promote sustainable biodiverse production systems and facilitate participatory approaches such as community seed banks, along with a range of other supportive measures.

However, in the global south, there is very limited space for networking. Nepal is likely the only country where community seed bank practitioners and supporters have had a chance to meet in two national workshops organized by national organizations with the support of Bioversity International (2012 and 2018). The objectives of the 2012 workshop were to share the successes of the conservation and utilization of local crop diversity by community seed banks in Nepal. Topics covered included the concept and practices of community seed banking, technical and organizational challenges, and sustainability (Shrestha et al 2013). There is therefore an opportunity to create a mechanism for global sharing.

New Capacity Development Materials

Research and capacity development activities with regard to community seed banks are becoming more robust with stronger support of scientific knowledge. Bioversity International, with technical and financial support of the Department of Agriculture, Forestry and Fisheries of the federal republic of South Africa, developed and published (in English, French and Spanish) a series of manuals for facilitators of community seed banking processes and for farmers managing

community seed banks. The manuals have been very well received and are in high demand (**Box 2**). Several organizations have started to use these manuals. The Farmer Seeds Network in China has planned to translate the farmers' manual to Chinese and disseminate it in the country.

Box 2. Manuals published by Bioversity International and the Department of Agriculture, Forestry and Fisheries of the federal republic of South Africa

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New Research: Community Seed Banks, Agroecology, Resilience and Sustainability

One of the major challenges that community seed banks face is sustainability –how to survive and thrive over a longer period of time and maintain their relevance, in particular with a solid resource base of people, money and infrastructure. From the comparative study of the strengths and weaknesses of community seed banks from around the world (Vernooy et al 2015), a number of important enabling factors were identified. Among them are:

- Farmers' interest and leadership
- Local facilitator and network builder
- Technical and financial support
- Combine conservation and crop improvement efforts
- Responsiveness to climate change stress
- Potential to evolve into broader local, rural development organization
- Policy and legal support

Having this sustainability 'framework' in mind is of great value when establishing new community seed banks and strengthen existing ones.

It is promising that in recent years young researchers have expressed strong interest in researching sustainability and related (novel) issues of importance to community seed banks. Two Master students, supported by Bioversity International, developed interesting MSc research proposals and went to Nepal and Guatemala respectively to investigate questions concerning community seed banks and agroecological functionality and community seed banks and socio-ecological resilience. They returned with important data and published stimulating briefs and MSc theses upon which practitioners and scholars alike can build to plan future activities in the field. The findings are also valuable for policy makers.

Research in Nepal

Monserrat Gómez César, a student of organic agriculture at Wageningen University and Research, the Netherlands, set out to find answers to three main and several minor questions:

1) *How successful have community seed banks been in conservation of local biodiversity?*

- What have been the changes in cultivars and crop varieties cultivated?
- What effect could these changes in diversity have in the farming system?
- Are these changes self-sustaining (positively supporting the farming systems, ie introduction of pulses for fertility, perennial crops, varietal diversity for pest resistance etc)?

2) *How successful have they been in acting as a platform for knowledge exchange and social change?*

- Has the community seed bank enabled the involvement of farmers in a research agenda?

- How has the community seed bank facilitated the establishment of networks for knowledge exchange?
- Has the community seed bank strengthened the community's organizational capacity?

3) *How successful have they been in improving farmers' access to diversity seed?*

- What are farmers' perceptions of their seed security?
- How do they relate this to future climatic changes and current provisioning of resources?
- What are benefits that they have experienced in terms of favorable crop trait(s) that they now can access?
- How do they now perceive their availability and access to seed?

Based on a review of literature she produced a comprehensive framework based on insights from agroecology to evaluate the performance of community seed banks. The framework has three 'pillars': farm management, private livelihoods and social cohesion (see **Box 3**; Gómez César 2017, adapted from **Table 3** on page 17). Farmers of three community seed banks in the country tested the framework.

Field research findings suggest that community seed banks play important roles in rural livelihoods. Improved access to seed encouraged farmers to experiment with different varieties and their alternation over time. Greater household-level income and access to loan mechanisms appear to have provided an economic incentive to maintain local crop diversity. The tasks inherent to planning, forming and running a community seed bank creates a space for the intensification of local social cooperation and mutual learning. Aggregate social benefits and greater autonomy from both input pressures and market dynamics appear to be an emergent property of this cooperation (Gómez César 2017). With regards to the evaluation framework she concluded that it holds clear advantages for facilitators of community seed banks and farmers themselves to potentially optimize agroecology and on-farm conservation goals through future information sharing, project planning and the creation of shared strategic concepts (ibid: 37).

Box 3. Community seed bank performance assessment framework

Farm Management

- Crop varietal diversity: Changes that have taken place in respect to the amount of crop varieties and crop types now grown on-farm
- Use of diversity for pest management: Impact on pest and disease suppression due to the use of more diversity
- Change in resilience of farming system: The farm's strength and ability to sustain sudden changes in rainfall, temperature, or sudden climatic events
- Skills and knowledge on management of diversity: The knowledge gained over how to manage different crop types and varieties
- Use of diversity for soil fertility management: The observed effect a greater use of diversity has had on soil fertility

Private-Livelihoods

- Change in farm revenue: Observed change in revenue from farm production
- Change in productivity: Observed change in the total harvest, overall stability in production
- Market access: An increased ease in accessing markets and selling farm products
- Product diversification: A greater availability of products to sell or used for home consumption
- Reduced cost of inputs: Changes in the cost of seed, and other inputs such as machinery, labor, inorganic fertilizers, and pesticides

Social Cohesion

- Organizational skills and capacity building: Perceived competency in retaining and improving skills and knowledge in respect to the organization of large groups of community members, but also the governance, structure, and management of the community seed bank
- Knowledge sharing: Perceived ease and frequency and common happening of knowledge exchange amongst community members
- Community empowerment: Autonomy in decision making
- Sovereign food systems: The 'control' over farmers' choices of what and how to cultivate food
- Collective action: The level of collaboration and action taken within the community

Research in Guatemala

Anna Porcuna Ferrer, a student in organic agriculture at the University of Natural Resources and Life Sciences (BOKU), Vienna, Austria, explored if and how community seed banks are supporting change towards a more resilient socio-ecological system at community-level. Her specific objectives were to: (i) explore how the community seed bank concept has been implemented in the local context and what roles community seed banks play in the local seed system; (ii) explore the change that has taken place due to the establishment of

the community seed banks and identify the main driving factors of this change; (iii) identify and analyze the possible connections between this change and the socio-ecological resilience of the community.

Her findings from Guatemala indicate that the relationship between community seed banks and resilience is not so straightforward although they do produce important benefits for their members at household and community levels. The farmer communities and the community seed banks she researched in the Sierra de los Cuchumatanes are affected by important changes that occur in the region, such as the abandonment of maize cultivation and farming in general, a shift towards a more market-oriented agriculture and migration of young people to the USA (Porcuna Ferrer 2018). Farmers' seed and production systems are changing as a result. Traditional factors shaping the socio-ecological resilience of the local communities, such as being self-sufficient in maize production, are losing ground. She concluded that community seed banks can contribute to newly emerging forms of resilience through the strengthening of crop diversity management, technical and organizational capacities, and more dynamic and effective networking. At the same time, community seed banks face challenges, such as weak involvement of youth and realizing untapped potential, such as broadening the crop base (ibid).

A Multi-functional Global Community Seed Bank Platform

It becomes clear that since 2012 many positive developments have been taking place. Encouraged by this, early 2015 a small team of Bioversity International staff began to think about something that could further strengthen community seed banks around the world and bring them to a higher performance level. The idea for the establishment of a global platform for community seed banks was born. The idea for such a platform was endorsed at a workshop about community seed banks and farmers' rights held in New Delhi, India (October 2015), where community seed bank researchers from around the world called on Bioversity International to take the lead in creating a global platform of/for community seed banks. They argued that such a global platform could serve as a virtual node of convergence and synergy to build more supportive policy and legal environments, internationally and nationally; and to further strengthen community seed banks technically and organizationally at regional and local levels.

Over time, by the middle of 2018, this idea evolved into a proposal. The proposal aims to establish a global community seed banks platform that will support existing community seed banks and national/regional community seed bank networks around the world, scale out their activities and achievements, and contribute to their sustainability. The global platform will:

- Document, analyze and share practical experiences, successes and challenges;

- Provide technical, organizational and policy/legal expertise;
- Coordinate and support action research;
- Support national/regional networking.

Through its multiple activities at local, national and international levels, the global platform will strengthen farmers' seed systems, diversify income sources and livelihoods, and contribute to increased seed security of local communities and countries. Furthermore, through the establishment of linkages between (inter) national genebanks and community seed banks, farmers and their communities will have better access to more crop diversity –much needed to be able to adapt to climate change and build up resilience. Women seed custodians and community seed bank leaders will play a central role in platform activities.

Getting the platform up and running is the present challenge on our continuing community seed banking journey.

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Government Implemented Community Seed Banks: Approach and Progress

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Pokhara Community Seed Bank in Dadeldhura District. Photo: DoA

Abstract

The Government of Nepal started implementing Community Seed Banks (CSBs) in the fiscal year 2008/09. The program covered nine Districts with one CSB in each. Most of the CSBs produced improved seed of major crops; they also conserved local landraces. Two CSBs became nonfunctional, in Sindhupalchowk due to the mega earthquake and in Jumla, due to inefficient leadership. Some of the challenges faced by the CSBs are proper legal provision for registration, misuse of seed money, inefficient leadership and lack of long-term strategic plan. Each CSB requires a sound sustainability plan to address these challenges. A CSB can achieve sustainability through promoting linkages between the national genebank, regional and international genebanks and community seed banks for the exchange of seeds and related information about biodiversity conservation. Other factors that contribute to sustainability include strong social networks, an effective institutional mechanism, dedicated leadership, social inclusion and a strategic long-term work plan.

Keywords: Approaches, germplasm conservation, sustainability

Introduction

Seed is one of the few resources available for smallholder farmers to ensure a sustainable livelihood, food and nutritional security. Conservation of agrobiodiversity in farmer's fields is very important to minimize its loss. Equally important are the conservation (protection) and seed multiplication of neglected and underutilized crops. Although many farmers are shifting towards the production of a handful of productive crops to meet growing food needs, it is now recognized by many that sustainable agriculture cannot be achieved without the conservation of agrobiodiversity (Mercer and Perales 2010, Carvalho et al 2011, Ebert 2011, Vigouroux et al 2011). In many countries, farmers are actively exchanging planting materials with neighbors, relatives and even distant strangers, thereby moving crop genetic diversity across farming units and agroecological systems (Chambers and Brush 2010, Coomes 2010).

In order to increase the awareness about the importance of agro-biodiversity conservation, the government of Nepal started implementing community seed banks in the fiscal year 2008/09. The implementation of community seed banks was announced in the budget speech of the same year. On 25 January 2009, the prime minister's speech highlighted the establishment of community seed banks throughout the country in order to develop a national sustainable seed system. In the same year, the Government of Nepal, Ministry of Agricultural Development (MoAD) approved the Community Seed Bank Program Implementation Guidelines. As defined in the guidelines, "community seed banks (CSBs) are the community led and owned initiatives for conservation and maintenance of local and improved seeds which ultimately support ensuring seed, food and livelihood security (Shrestha et al 2012, Joshi 2013). The main objective of the establishment of a community seed bank is to improve the access to quality seed through collection, storage, exchange and distribution. A second objective is the conservation of local varieties. Seed security at the local level can be achieved through conservation and increasing the availability and accessibility of seed through seed vendors. Community seed banks can be promoted as an essential instrument for conserving local varieties, restoring 'lost' varieties and sharing knowledge and experiences among farmers (Lewis and Mulvany 1997, Shrestha et al 2012).

Review of Community Seed Banks Implemented by the Government of Nepal

Initially, the program was designed to implement community seed banks covering districts of all five development regions. It was planned to establish community seed banks in 17 districts of Nepal (Table 1). However, actual implementation took place in nine districts, namely Sankhuwasawa, Okhaldhunga, Sindhupalchowk, Dhading, Gulmi, Jumla, Jajarkot, Doti and Dadeldhura.

Table 1. Proposed districts for implementing community seed banks

Development Region	Ecological Belt and Districts		
	High Hill	Mid Hill	Tarai
Eastern region	Sankhuwasawa	Terathum, Okhaldhunga	Siraha
Mid region	Sindhupalchowk	Dhading	Rautahat
Western region	Mustang	Gulmi	Nawalparasi
Mid-west region	Jumla	Jajarkot	Banke
Far-west region	Bajhang	Doti, Dadeldhura	Kanchanpur
Total	5	7	5

Source: Community Seed Bank Implementation Guideline 2009.

Strengths, Weaknesses, Opportunities and Threats (SWOT) Analysis

SWOT analysis was carried out to evaluate the implemented program and services delivered with the intent of maximizing organizational performance in the future. This analysis was carried out based on discussion with the focal person of each of the program districts. The focal persons were Agriculture Extension Officers (AEOs) of District Agriculture Development Office (DADO) and the analysis was conducted on December 2017. A synthesis of the findings is presented in **Table 2**.

Table 2. SWOT analyses

Strength	Weakness
<ul style="list-style-type: none"> • Participation and ownership of farmers • Seed money 	<ul style="list-style-type: none"> • Inadequate market linkages • Lack of technical knowhow • Inadequate manpower • Overdependence on subsidy
Opportunity	Threat
<ul style="list-style-type: none"> • Seed supply to neighbor districts • Quality seed production • Enhancement of seed replacement rate 	<ul style="list-style-type: none"> • Misuse of seed money • Sustainability in absence of subsidy

Operational Status

According to the CSB Implementation Guideline 2009, nine CSBs were formed and they are involved in conservation of local varieties and production and distribution of improved varieties seed (**Table 3**). Currently, the Thakurjyu Community Seed Bank of Jumla and the Sindhutuki Community Seed Bank are no longer operational. The latter collapsed due to mega earthquake of 2015.

Table 3. Current status of community seed banks in different districts

SN	Name of District	Name of CSB	Address	Current situation/ Institute involved in seed business
1	Dadeldhura	Pokhara CSB	Amargadhi	Pokhara Agriculture Cooperative
2	Dhading	Ranadevi CSB	Nilkantha	Ranadevi Agriculture Cooperative
3	Doti*	Ghanteshwor CSB	Joraeel	Jaibik Bibidhata Agriculture Cooperative
4	Gulmi	Malika CSB	Simichaur	Malika Agriculture Cooperative
5	Jajarkot	Kalika CSB	Khalanga	Kalika Agriculture Cooperative
6	Jumla	Thakurjyu CSB	Mahatgaun	Not in operation
7	Okhaldhunga	Sindhu CSB	Kuntadevei	Milanchowk and Maachandeshowari Agriculture Cooperative
8	Shankhusawa	Krishi CSB	Dharmadevi	Krishi CSB
9	Sindhupalchowk	SindhuTuki CSB	Thumpakhaer	Not working due to 2015 earthquake

*In collaboration with LI-BIRD. **Source:** Records from community seed banks kept in Districts Agriculture Development Offices.

CSBs as Means to Increase Seed Accessibility and Availability

CSBs have increased overall abundance, diversity and accessibility of landraces to the farmers in Nepal (Shrestha et al 2012). Nowadays, functional CSBs have become a source center for seed production and conservation (Table 4). They make available to farmers seed of otherwise rarely available crops. This enhances the accessibility to seed and contributes to improving the livelihoods of remotely living farmers. Pokhrel et al (2012) further confirmed that CSBs have improved the availability of seed and associated knowledge. This has contributed to strengthened livelihood security over the years. While monitoring the status of the Pokhara Community Seed Bank at Dadeldhura, it was observed that the CSB is selling their seeds in neighboring districts; sometimes they even send their seed to the eastern districts of Nepal. In Dhading district the Ranadevi CSB supplies most of the maize seed demanded inside the district.

Table 4. Target of seed distribution, area expansion and budget allocation

SN	District	Seed Distribution, t	Area Expansion, ha	Allocated Budget (NPR, 000)
		17	300	2130
1	Dadeldhura	2	32	195
2	Dhading	2	38	215
3	Doti	2	43	420
4	Gulmi	2	16	204
5	Jajarkot	2	30	214
6	Jumla	2	37	225
7	Okhaldhunga	2	45	223
8	Shankhusawa	2	32	217
9	Sindhupalchowk	2	27	217

Source: CDD, Annual Report, 2016/2017.

Challenges

The community seed banks of these nine districts mostly focus on seed business of rice, wheat, maize and soybean, and second, on the conservation of neglected and underutilized crops (Table 5). However, CSBs face challenges to do this kind of conservation given the low demand for seed in the communities for these types of crops. Given that there is still no legal provision to register a CSB, the CSBs do their seed business registered as a cooperative. Strong leadership is one of the most important factors for running a sound CSB.

Table 5. Summary of seed produced (tons) by community seed banks (2016/2017)

SN	Name of CSB	Rice	Wheat	Maize	Soybean	Total
1	Sindhutuki CSB, Sindhupalchowk (Nonfunctional due to earthquake)					
2	Sindhu CSB, Okhaldhunga			13		13
3	Pokhara CSB, Dadeldhura			37		37
4	Ranadevi CSB, Dhading	30	20	10		60
5	KalikaCSB, Jajarkot			35	1.5	36.5
6	Ghanteshwor CSB, Doti	5		12		17
7	Malika CSB, Gulmi			26.85		26.85
8	Krishi CSB, Shankhusawa			25		25
Total amount of seed produced						215.35

Source: Records of Community Seed Banks from Districts Agriculture Development Offices.

In the recent past, the agricultural budget was significantly increased in each district but, unfortunately, the community seed bank was not in the priority list. No one paid attention to the monitoring and evaluation of the community seed bank program. Lack of public support for CSBs is considered one of the key issues affecting CSBs (Khanal and Maharjan 2015). Another problem that emerged was that some of the CSBs used the seed money that was given as a revolving fund for other purposes. CSBs do not have a sustainability plan, but mostly depend on government subsidy. For example, the Thakurjyu CSB of Jumla was established based on demand of local farmers and a building was built early on. After the second year of operations, the chairperson changed and the newly formed management committee did not have a proper understanding of the functions of the community seed bank, its roles and responsibility. They also lacked a long-term strategic plan for the sustainability of the organization.

Sustainability of Community Seed Banks

There are about 125 CSB established in Nepal, but most of them are not operating properly (Joshi 2013). Monitoring and evaluation of CSBs could help to improve the performance, for example, to develop a proper seed inventory. Another task is the annual budgeting and marketing of produced seeds. The monitoring and evaluation of CSBs should be linked to the operations of the local government and other institutions working at local level. The provincial government should take a lead role in policy planning and facilitation of CSBs, for example, by making a roadmap for the establishment and support of CSBs. The major roles of CSBs should be germplasm collection, conservation and delivery of landraces. For their sustainability, the registration of minor and neglected crops and their seed production could be explored and supported. CSB can be a resource center to supply landraces to seed companies and cooperatives for commercial production. Produced seed should be included in the national seed balance sheet. It is positive that the Department of Agriculture (DoA) has realized the importance of landrace conservation and the roles that CSBs can play. Formal linkages between CSBs and the national genebank, regional and international genebanks and the formal seed system are very crucial for their sustainability (SQCC 2013). Farmers have limited access to seed related information even when sufficient quantities of seed are available (Badstue 2006). To deal with this challenge, strong social networks (Siart 2008), effective institutional mechanisms, dedicated leadership and social inclusion are important factors to take into account (Momsen et al 2013). Their survival could also benefit from awareness campaigns, such as the organization of diversity fairs.

Conclusion

Government established CSB are located in the mid-hill and high-hill regions where farmers are marginalized and cultivate less productive land with a focus on major crops. CSBs support farmers to acquire source seed, although the return rate is usually small. Seed quality is sometimes a challenge. It would be good to have a better functioning seed quality control system in place. Unfortunately, for these regions farmers do not have access to a seed laboratory, which are all located in the Tarai region. Farmers have the right to protect their landraces, which is one of the functions a CSB can fulfil. They have low purchasing power so some kind of support is needed to establish the CSB infrastructure including a conservation facility and processing equipment. Most of the newly elected local leaders do not know the importance of agro-biodiversity conservation. Awareness raising and capacity building of local leaders are needed to attract investment in CSBs and make them sustainable.

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Community Seed Banks in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International

The National Genebank's Promotion of Community Seed Banks: Status and Strategy

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Participatory seed exchange in Jungu, Dolakha District. Photo: Niranjan Pudasaini, LI-BIRD

Abstract

Since 2003, the Nepal Agricultural Research Council has considered community seed bank (CSB) as one of the on-farm conservation approaches. The National Genebank (NAGRC) has supported nine CSBs namely Dalchoki CSB, Kachorwa, Gadaria, Rainas, Simariya, Chhipra, Haku, Ganpokhara and Jugu CSB. Supports were technical, in-kinds and cash. A total of 1263 collections of 81 crops from 24 CSBs have been preserved in NAGRC. Only 65% of the stored accessions from CSBs met the Genebank Standard. Minimum requirements are enough seeds with >80% germination and passport data for conserving collections in the NAGRC. NAGRC defines Community Genebank (CGB) as a system of conservation and use of local crops and plant genetic resources (both orthodox and non-orthodox crops), managed by community covering certain range of areas. CGB consists of a community seed bank with conservation focus which deals with orthodox types of crops (eg rice, pea, etc) as well as community field genebank that deals with non-orthodox crops (eg potato, banana, etc). CGB may not be able to conserve all local crops and plants diversity. Database and display of all the diversity should be

maintained in CGB along with traditional knowledge and storage system, phenomages (phenotype+image), traditional agri-tools, related publications, etc National Genebank has collaborated with CGB for collections, regeneration and has planned to collaborate with CGB for characterization and regeneration of already collected and conserved materials in the Genebank and to create and maintain databases. Community genebanks should promote village level field genebank, school field genebank, crop specific parks, religious site based field genebank, rejuvenation of old public and community orchards, distribution of diversity kits, organization of diversity fairs, maintenance of diversity block, etc.

Keywords: Collaboration, community seed bank, community genebank, conservation, diversity, on-farm conservation

Introduction

Nepal possesses 484 indigenous cultivated species with an estimated number of 30,000 landraces (Joshi et al 2017a). Agriculture is practiced from 60 m to 4700 m altitude (Joshi et al 2017a), favoring a large number of plant diversity. Almost 50% of this diversity has been lost from the fields. Conservation initiatives were first started in 1984 in Nepal (Joshi 2017a), however, with poor facilities in the earlier period, conservation could not cover most of the crop diversity and could not conserve effectively for a longer term. In 2010, a well-equipped genebank was constructed and conservation gained momentum with the development of 26 different conservation methods/options and the preparation of 20 action plans (Joshi et al 2016, Genebank 2017). A concept of conservation ladder has been promoted with three layers of different conservation methods (Figure 1). These three layers are local, national and international with the concept of two types of gene pools: national crop gene pool and global gene pool. Equal efforts are necessary at all levels for effective conservation of all types of agricultural plant genetic resources (APGRs).

At local level, conservation is possible only through utilization of plants and by mobilizing communities. This is generally termed on-farm conservation. Many national documents (eg IMISAP 2018-2025, NBSAP 2014-2020, Agrobiodiversity Policy 2014, Road Map of MoALMaC 2018, National Seed Vision 2013-2025, ADS 2015, National Agricultural Policy 2004, Community Seed Bank Guidelines 2008, etc) have recognized and some of them promoted on-farm conservation. Under the national strategy, community seed bank (CSB) is a very effective method for management of local crop diversity. CSB is an approach of promoting on-farm management of APGRs governed and managed by a farmer group, cooperative or organization, mostly in an informal way. Its core functions are to preserve seeds of crop landraces for use, providing easy access to seed and planting materials of diverse crops species and to promote farmers' rights and food sovereignty (Vernooy et al 2014). CSB can enhance the resilience of farmers in the context of climate change (Vernooy et al 2017).

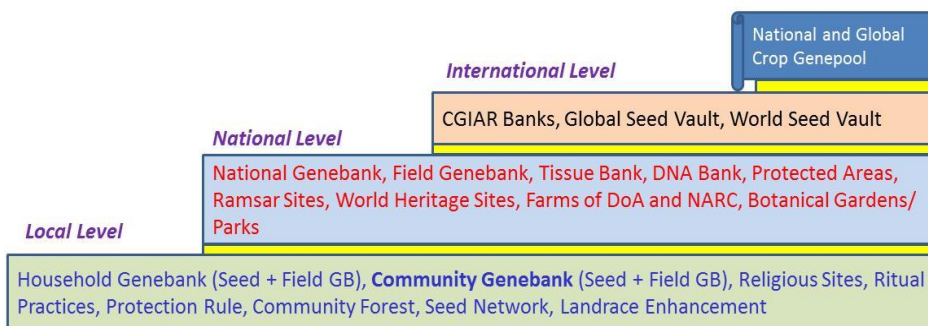


Figure 1. Conservation ladder for sustainable conservation and utilization of APGRs.

Source: Joshi et al 2017a.

CSBs have strong roots in Nepal where several non-government organizations took the lead in establishing and supporting them. More recently, the government of Nepal has started to invest in CSBs. The first CSB in the country was established in 1994 in Dalchoki, Lalitpur, with support of USC Canada-Nepal (Joshi 2013, Bhandari et al 2017). NAGRC has taken due consideration of CSBs as main partners for conservation and utilization of APGRs (Bhatta et al 2013). Landrace enhancement and repatriation are among the successful activities implemented by NAGRC in collaboration with CSBs. This paper highlights the current status of CSBs and strategies of the National Genebank to work with Community Seed/Genebanks (CGBs).

Conservation Strategy and Method

Conservation may be static or dynamic (**Figure 2**). Each type has its merits and demerits and both are necessary to conserve APGRs for longer term at national level. At local level, generally, a dynamic system exists and some examples are given in **Figure 2**. Among the four strategies (ie ex-situ, in-situ, on-farm and breeding) at national level, three strategies are being adopted at local level in Nepal (**Figure 3**). They are on-farm, in-situ and breeding. Under the on-farm strategy, there are a number of methods implemented by NAGRC in different locations (**Figure 3**). Community Genebank is one of the most effective and widely established methods at local level for conservation of APGRs. Within CGB, there are different forms eg community seed bank, community field genebank, community aqua pond genebank, community livestock farm genebank and community orchard.

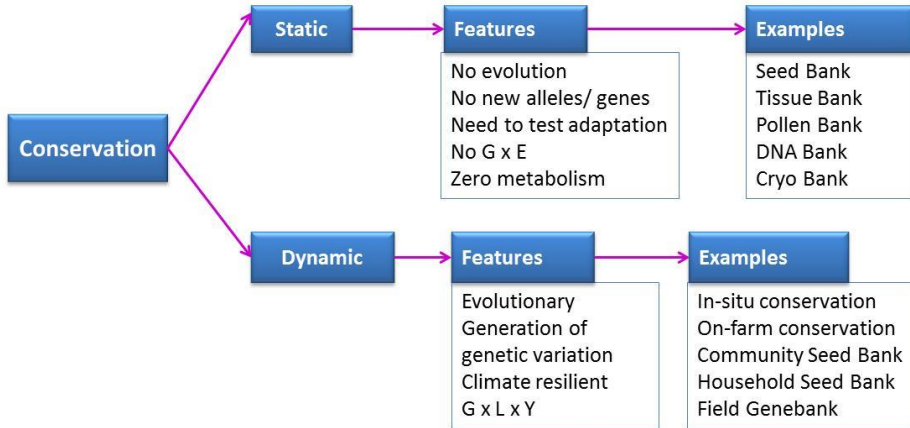


Figure 2. Features of two broad conservation types of agrobiodiversity.
G, Genotype; E, Environment; Y, Year; L, Location.

Concepts of Community Seed Bank and Community Genebank

Conservation of both orthodox and non-orthodox by the community is called Community Genebank which consists of both community seed bank and community field genebank. CSB deals only with orthodox crops and CFGB handles only non-orthodox crops. The concept of community seed bank is known in different ways around the globe, eg community gene bank, farmer seed house, seed hut, seed wealth center, seed savers group, association, or network, community seed reserve, seed library (Vernooy et al 2015). There are many variants of Community Field Gene Bank, such as village level FGB, religious site-based FGB, community based crop specific park and community managed orchard (Figure 4).

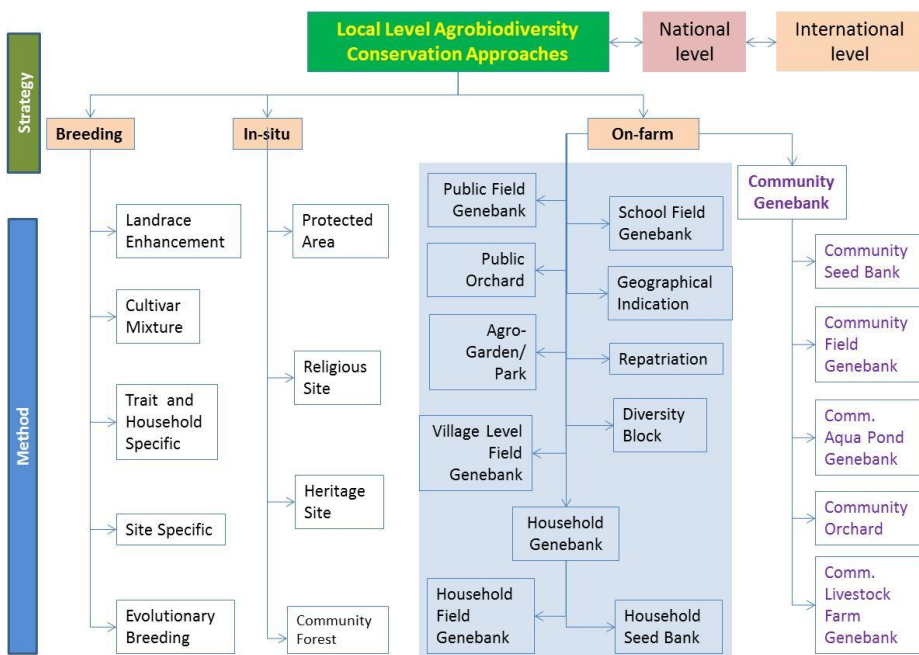


Figure 3. Conservation strategies and methods at local level for management of APGRs.

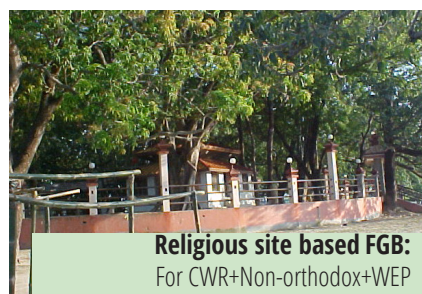


Figure 4. Different components within a Community Genebank.
CFGB, Community field genebank; CWR, Crop wild relative; WEP, Wild edible plant.

Community Genebank Standard and Activities

NAGRC has developed a conceptual framework of a community genebank (Figure 5). It expected to run the activities and establish components by CGB as given in this Figure.

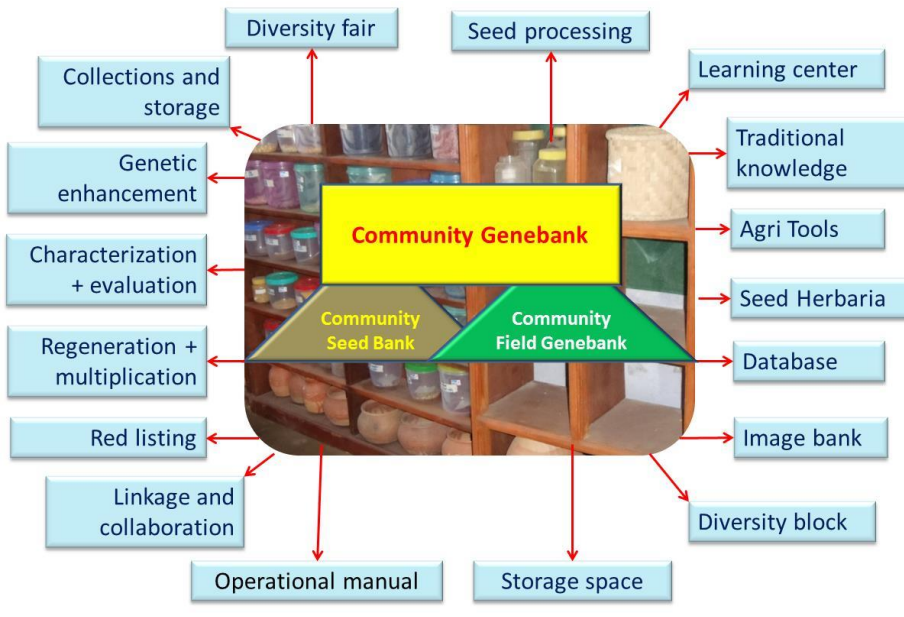


Figure 5. Components and activities of community genebank.

Community Genebank and Sub Banks

Community Seed Banks were established in Nepal to handle orthodox crops eg cereals, grain legumes and vegetables. The seeds of these crops are relatively easy to collect, dry, store, pack and handle. They are the main crops in most of the communities, therefore, CSBs were established targeting such seeds. About 40% of total APGRs in Nepal are non-orthodox. They should be given priority for conservation and use. NAGRC therefore promotes conservation of both orthodox and non-orthodox crops. Nowadays, many communities realize to consider all locally available APGRs for conservation. NAGRC has formulated and started working on different approaches for conservation of all types of APGRs. These approaches relate to the types of APGRs based on the conservation modules needed to store them. Generally, CSB and CGB are named with the prefix of location name, eg Dalchoki CSB, which means Dalchoki is the location or village name. To be a CSB or CGB, there should be conservation and utilization of local crop diversity; when farmers only dealing with modern varieties, then the concept of CSB does not apply.

The first CFGB was established by Gadharua Community in Kailali district in 2010 by growing local mangoes on 5.5 ha of land. In Nepal, religious sites are automatically protected and such locations can be considered effective for conservation of cultivated crops in addition to crop wild relatives and wild edible plants. Such sites should be managed by the nearby community. In a village level FGB, diversity is managed by growing different landraces by each village member so that the total diversity is conserved at village level. Some communities have established crop specific diversity parks, eg banana park in Sripur Chhatiwan, Makawanpur. Both village level FGB and crop specific park were first established by Parivartan Nepal in 2012 in Sudha Chhatiwan, and Sripur Chhatiwan, Makawanpur. Parivartan Nepal has also established School Field Genebank in Phaparbari, Makawanpur and Pattharkot, Sarlahi in 2012. More than 100 public mango orchards can be found mainly in Lamjung, Kaski, Gorkha and Tanahu districts (Upadhya et al 2017). Most of them are very old, but nobody is taking care of them. Due to the very old age of the trees, they are almost at the stage of extinction. Since 2016 NAGRC has worked on rejuvenating such orchards. Rainas Community in Lamjung has managed an old mango orchard which was initially public, but now it is managed by the community (and called community managed mango park or community field genebank) following the management system of community forest.

The main purpose of a CSB is to provide easy access of local crop diversity to the farmers so that local crop diversity can be conserved through continuous crop production. It is the community that actively manages local crop diversity. To make CSB effective, certain management principles should be followed. There are two broad principles called banking and housing (Figure 6). For example, banking implies the standard mechanisms of sale, exchange, loan etc and housing implies standard practices of keeping reference samples, distribution samples etc. Within a CGB, there could be many Household Genebanks (Household Seed Bank and Household Field Genebank). A household genebank is the agrobiodiversity maintained by a custodian farmer who plays significant roles in maintaining crop diversity and germplasm flows. NAGRC supports farmers who are conservation minded and grow a number of different types of crops species and landraces.

Status of CSBs and CGBs in the Country

Nepal is unique in using CSB and CGB approaches for conservation and sustainable utilization of APGRs. The first CSB was established in 1994 in Dalchoki, Lalitpur (Joshi 2013). In subsequent years there were many national events related to CSBs (Shrestha et al 2012). A timeline of such events is presented in Figure 7. NAGRC has played a key role in most of them. NARC annually allocates a budget for on-farm conservation activities. This contributes to successful on-farm conservation efforts.

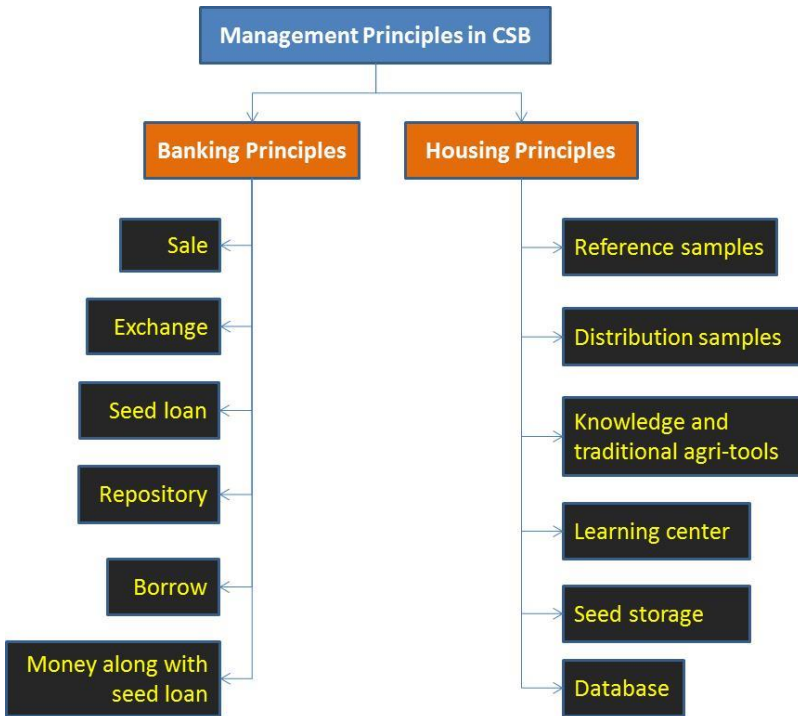


Figure 6. Working principles for managing a community seed bank

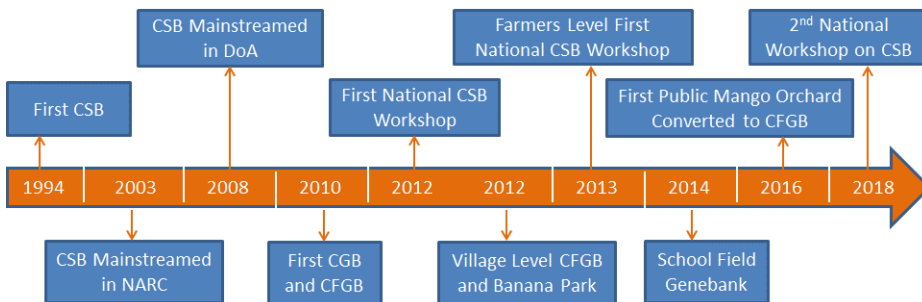


Figure 7. Major events related to Community Seed Bank (CSB) and community Genebank (CGB) in Nepal

DoA, Department of Agriculture; NARC, Nepal Agricultural Research Council; CFGB, Community Field Genebank.

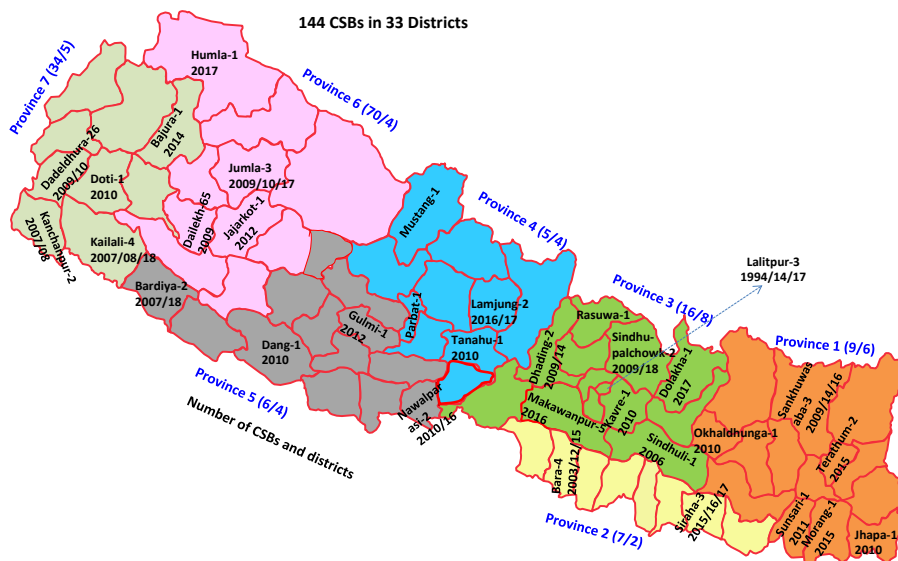


Figure 8. Established year and distribution of 134 CSBs in Nepal (10 CSBs are excluded in the map)
Figure within parenthesis is total number of CSBs and number of districts within that Province.
Figure after the district name is number of CSBs in that district.

Based on the current status, CSBs in Nepal can be grouped into active CSB, passive (dormant) CSB, collapsed CSB and transformed (transmuted) CSB. Active CSBs are those which are functional and working actively to conserve and utilize local crop landraces. Passive CSBs are those that were functional in the past, but for one reason or another, are not active anymore, eg there is no seed collection and exchange, the management committee is not holding any meetings and not promoting any activities. The building and materials are still in place and the CSB could be revived in the near future. Collapsed CSBs are no more in existence although they were functional for some time. Transformed CSBs are those that used to focus on local crop diversity, but then completely moved away from it to focus on different activities. In Nepal, there are 40 active CSBs, 6 passive CSBs, 3 collapsed and 95 transformed CSBs. These CSBs are located across the country (**Figure 8**).

Figure 9 shows the number of CSBs established over the years. The largest number of CSBs was established in 2009. However, most of the CSBs that were established in 2009 have been transformed. There are several reasons why the status of a CSB can change. It will be good to document these to guide other CSBs toward sustainability. Political conflict caused a change from active to passive in one CSB. An earthquake was the major reason for the collapse of a CSB in another area. Transformation of CSBs happened due to the challenge of sustainability. Farmers find it hard to only focus on conservation without

any economic incentive or benefit. Both governmental and non-governmental organizations have been actively involved in establishing CSBs in the country. CDD (now CDABC) and NAGRC are the main governmental agencies and LIBIRD and Action Aid are among the main non-governmental organizations (Table 1). Bioversity International is the main international (CGIAR) organization supporting operationalization of some community seed banks in Nepal. About 9 organizations are directly involved in establishing and running the CSBs. The largest number of CSBs was established by Oxfam, but later they were transformed. Active CSBs are being established and maintained by LIBIRD.

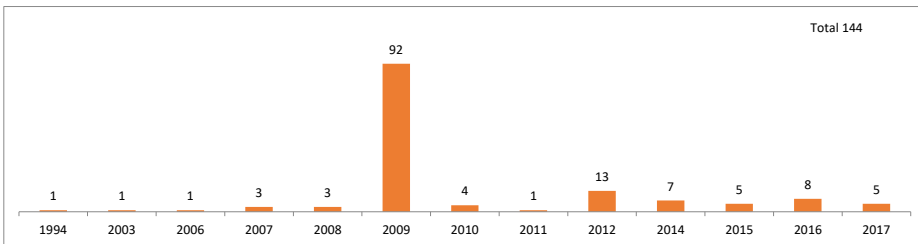


Figure 9. Number of community seed bank established over the years (1994-2017).

Table 1. Institutions working on CSB

SN	Organization	CSBs established/ supported, n
1	Oxfam	90
2	LI-BIRD	23
3	Action Aid	13
4	NAGRC	9
5	DoA	9
6	FORWARD Nepal	5
7	SAHAS Nepal	2
8	USC-Canada Nepal	1
9	Parivartan Nepal	1
10	Community themselves	0

Some organizations are jointly supporting some of these CSBs

National Genebank's Supported CSBs and Success Cases

NAGRC is technically and financially supporting nine CSBs (Table 2). Three CSBs have started working on both orthodox and non-orthodox crops: they are therefore named a community genebank. A community genebank has a community seed bank and a community field genebank. NAGRC regularly organizes meetings and maintains communication with the CGBs. It supports to strengthen the management of agro-biodiversity and sustain operations. The CGBs all are very successful in conserving local crop diversity and making landraces easy accessible to farmers. In Lamjung, excellent work is done to

rejuvenate the old public mango orchard which has more than 20 different very old landraces. The local community acquired this public orchard and then started rejuvenating and managing it as a community forest management system. The National Genebank provided training on grafting and managing mango trees. Now this orchard is well managed with proper labeling and a catalogue of the mango landraces available in this orchard has been drafted. These CSBs are involved in different regular activities of the National Genebank, eg collections, regeneration, exploration, characterization, repatriation, germplasm rescue, red listing, etc. The National Genebank requested Agyuli CSB to regenerate 100 accessions of rice in 2016 and provided seed samples and other items and covering costs. After harvesting, the National Genebank collected the required amount of seeds for storage in the National Genebank. The farmers kept and the rest of the seeds. This regeneration activity provided an opportunity to farmers to select six landraces of the 100 set to grow in their own fields. This collaboration between a CSB and the National Genebank is exemplary resulting in mutual benefits and promoting conservation efforts.

Table 2. List of CSBs supported by NAGRC

SN	CSB	Address	Established year	Initial supporting organization
1	Dalchoki CSB	Dalchoki, Lalitpur	1994	USC Canada Nepal
2	Kachorwa CSB*	Kachorwa, Bara	2003	NAGRC and LI-BIRD
3	Gadariya CSB*	Gadariya, Kailali	2007	NAGRC and LI-BIRD
4	Simariya CSB	Simariya, Sunsari	2011	NAGRC
5	Chhipra CSB	Chipra, Humla	2016	NAGRC and LI-BIRD
6	Haku CSB	Haku, Jumla	2016	NAGRC and LI-BIRD
7	Rainas CSB*	Rainas, Lamjung	2016	COPADES and NAGRC
8	Ghanpokhara CSB	Ghanpokhara, Lamjung	2016	NAGRC and LI-BIRD
9	Jugu CSB	Jugu, Dolakha	2016	NAGRC and LI-BIRD

* Handling orthodox and non-orthodox crops.

Germplasm from CSBs and Genebank Standard

Seed samples received by the National Genebank from different CSBs are listed in [Annex 1](#) and total amount of crops and collections are given in [Figure 10](#). On 29 December 2014, a seed transfer event was held at the Agyauli Community Seed Bank in the Nawalparasi district, where 15 community seed banks from 12 districts transferred seeds to the National Genebank. NAGRC has received a total of 1263 collections of 81 crops from 24 CSBs. 1200 collections had passport data, however majority of the passport had not complete information. 65 and 60% of these collections had met the two Genebank Standards ie germination

capacity and seed amount respectively. Three major Genebank standards are enough seed quantity, complete passport data and >80% germination rate. Those samples that meet these standards are directly stored in the Medium and Long Term Storage facilities. Those that do not meet the standards are sent for seed multiplication, regeneration or research.

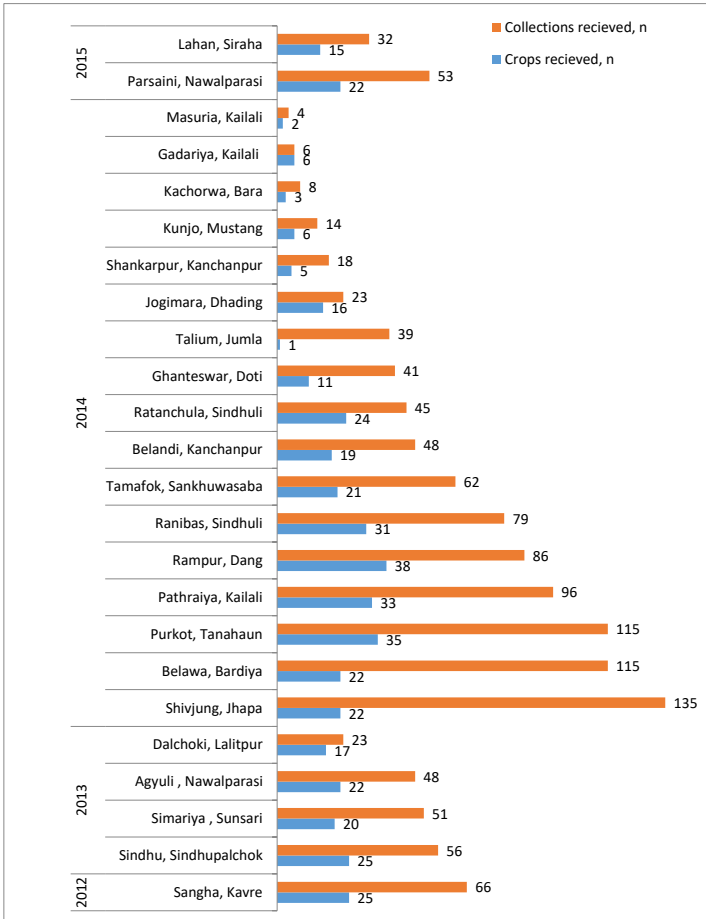


Figure 10. Total crops and collections received from CSB over the years to conserve in NAGRC.

Strategies to Promote and Support CGBs

The National Genebank has the following working strategies with CSBs for agrobiodiversity management.

Strengthening Linkages with Community Seed Banks/Community Gene banks

- Involvement of CSBs in regular activities of the National Genebank to support on-farm conservation. One of the important activities will be to regenerate local landraces in collaboration with local CSBs. There is

a need to select CSBs based on representative agro-climate and agro-biodiversity status. If landraces are not popular among farmers, CSBs are requested to send such landraces along with passport data to the National Genebank and to maintain a sample for display in their own CSB.

- Common landraces and farmers' preferred landraces should be conserved through continuous cultivation. Commercialization should be explored to add value. The national genebank need to facilitate existing CSBs to be converted to CGBs and work on all types of agricultural genetic resources.
- Samples of all available genetic resources should be kept for display in the CSB with proper labeling.

Linkage of CSBs with Research Stations and Agricultural Farms

- Every CGB should develop a link with a nearby research stations and DoA farms and offer support to establish a field genebank and start germplasm exchange. Local landraces are very poorly used in research and study (Joshi 2017b). Therefore, utilization should be the main goal of CSB and CGB by linking with research centers and private entrepreneurs.
- Based on identification of crop specific hot spot areas of diversity, a conservation village should be established and replacement of landraces from such areas should be prohibited. Endangered landraces conserved in such areas should then be classified as vulnerable or common.
- Programs should be designed to accelerate seed exchanges among communities by linking with national genebank to strengthen the local crop diversity (Gauchan et al 2016).

Identification of Analogue sites for Germplasm Collection and Repatriation

- Analogue sites of every CSB should be identified using the climate Analogue tool (Joshi et al 2017c) to define suitable areas for collections, growing diversity block, regeneration and distribution. When a CSB operates as such, it will be a Climate Smart Community Seed Bank. As an example, the Analogue site of Kachorwa Community See Bank is presented in **Figure 11**.

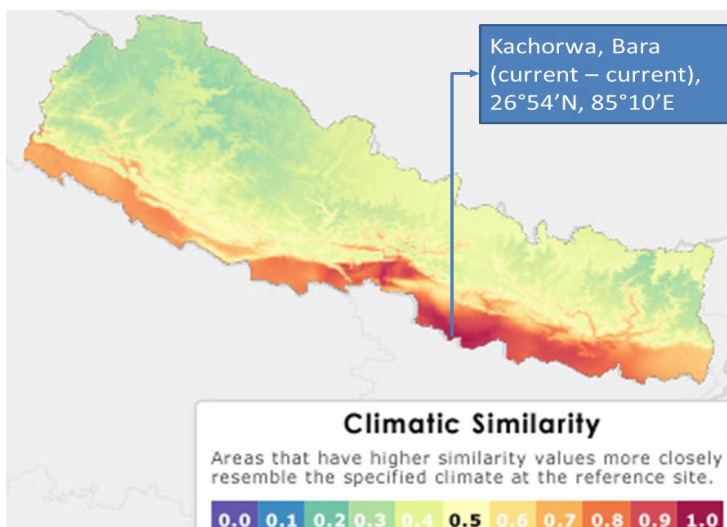


Figure 11. Analogue sites of Kachorwa CSB based on the climate Analogue tool.

Survey and Exploration of Germplasm

Farmers are not only seed providers, but the sources of information about a large number of genetic resources. Collectors can learn much from farmers and should communicate with them at the initial stage of sample exploration and collecting. NAGRC has already started collaborating with CSBs in survey and exploration of agro-biodiversity and will continue.

Collection and Red Listing

Collecting is the major activity of NAGRC. The NBSAP (National Biodiversity Strategy and Action Plan) has targeted to cover the conservation of 75% of the commonly cultivated crops and horticultural crops by 2020 (NBSAP 2014). NAGRC alone will not be able to meet this target. CSBs are collaborating with NAGRC to carry out collections and to identify priority landraces for red listing. NAGRC applies a red zoning system to identify endangered landraces (the methodology is described in Joshi and Gauchan 2017). Red zones should receive priority for collection missions. In other zones, population size and preferential status (Figure 12), and trait distribution criteria (Figure 13) are used to identify vulnerable, rare, endangered and unique landraces. This system of classifying crop landraces has been in practice in Nepal since 2004 (Joshi et al 2004). It builds on a system used for forest genetic resources. For forest genetic resources, IUCN criteria and the CITES system are used. Annex 2 gives an overview of the rare, endangered and endemic species in the country. NAGRC encourages all CSBs to use the list (Annex 2) to collect and conserve species in the community or to collect and send them to the National Genebank.

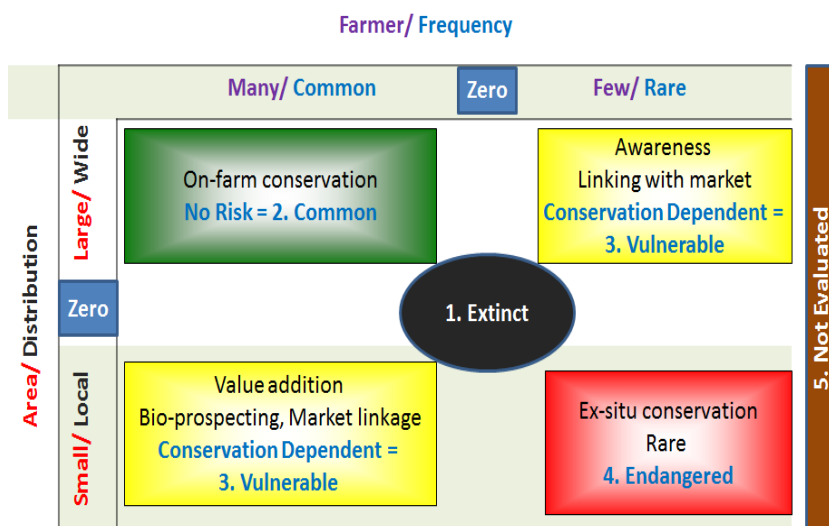


Figure 12. Red listing method (grouping) of landraces for priority conservation

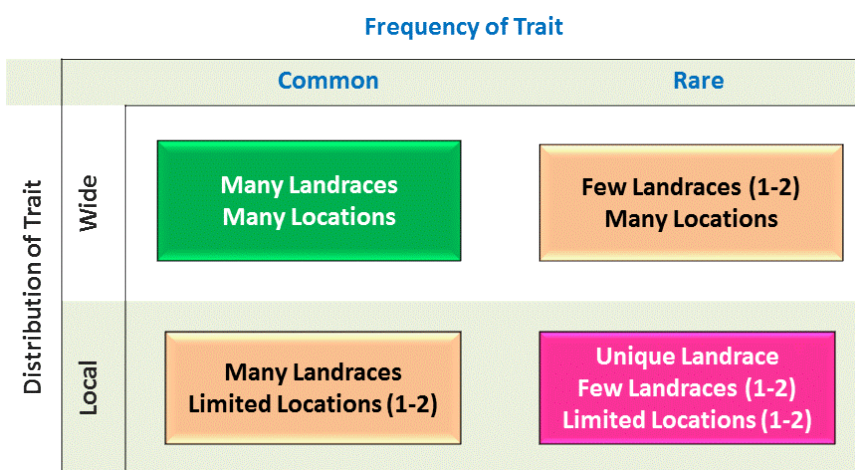


Figure 13. Technique of identifying unique landraces for priority conservation

Genebank Related Regular Activities

The National Genebank has a regular program of conservation related activities, some of which are seasonal and location specific. NAGRC aims to identify at least 9 CSBs located in different environments across the three major agro-ecozones in the country (Figure 14). NAGRC has a good linkage with many CSBs and will carry out joint missions. The activities that NAGRC has identified to be done by CSBs are depicted in Figure 14. Some of the collaborative activities already underway are training, participatory varietal selection (landrace enhancement and

conservation), diversity kits distribution, maintaining diversity blocks, organizing diversity fairs and food fairs, regeneration, collecting, seed multiplication, characterization, red listing and database management.

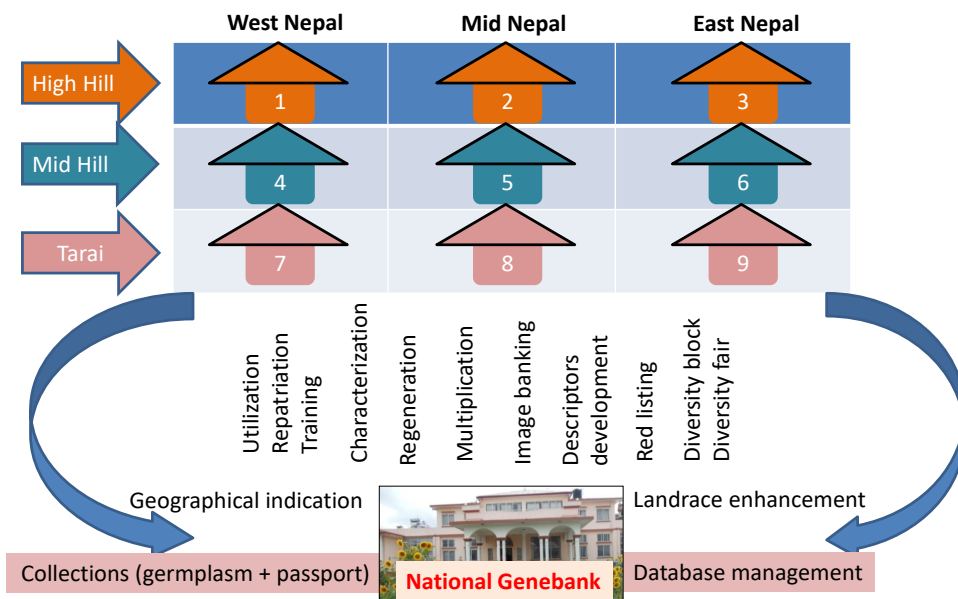


Figure 14. Collaborative activities of NAGRC, CSBs, CGBs and CFBGs.

Landrace Enhancement and Conservation (LEC)

Conservation through use is very effective however, due to poor performance of many landraces, farmers prefer to grow modern varieties. The National Genebank has therefore given priority to improve farmers' landraces in collaboration with CSBs, farmers and their communities (the approach is described in Joshi 2017a). NAGRC has focused on developing site specific as well as household specific varieties of local landraces. Some improved landraces have been registered by the National Seed Board. Enhanced landraces developed in collaboration with CSB /communities and farmers are Jethobudo Dhan, Gujmuje Rayo, Dude Rayo, Kachorwa-4 Dhan, Dude Chino, Rato Kodo, Paheli Simi, Jumli Simi, Kalo Kaguno, Sunale Latte, Borang Dhan, etc. NAGRC will further intensify this work in diverse crops with different CSBs located across the country.

Development of Ownership Documents of Landraces

It is common to find the same landraces in many areas and CSBs. It also happens that although they are named the same in in different CSBs, they actually are genetically different. Nepali crop landraces are very poorly documented. To have ownership right of a landrace, a community should have seven different documents: i. Historical information and archeological evidence (for an

example, see [Figure 15](#)); ii. Phenotypic database including location, landrace or cultural/ religious specific traits; iii. Genotypic database including fingerprint; iv. Associated traditional knowledge and use values; v. Multimedia descriptors; vi. Unique and distinguishable traits and information about the site where its distinct form has been developed; vii. Information related to germplasm flow (trace forward and trace backward. The National Genebank has started to collect the required documents for a number of crop landraces with the involvement of farmers. Relevant stakeholders should work together to compile all the required information. For example, a CSB can contribute information contained in its register of landraces while the National Genebank has genotypic data and germplasm flow information.



Figure 15. Stamp of Jumli Marshi rice issued by the Postal Services Department.

Geographical Indication

Due to the varied agro-climate in the country, there are many geographically linked traits in many crop landraces (Joshi 2017b). Geographically typical landraces should be identified in collaboration with CSBs and CSBs should try to obtain a Geographical Indication right on the local products derived from these landraces. GI labeled products can be sold at premium price. Consumers have shown willingness to pay a higher price for such products. It is recommended that CSBs advance and apply the GI system in their areas. Some of the unique landraces are mapped in [Figure 16](#).

Problems and Issues

Many CSBs face a major challenge: the limited diversity within their collection. It is not easy to design and carry out a proper sampling strategy; the sample size may be too small or the sampling does not adequately cover all the different areas. Sometimes, farmers give different names to the same landrace. Sometimes they use the same name for two or more different landraces. Many farmers call modern varieties local, which makes it difficult to distinguish modern varieties from local landraces during collections. It is likely that in the National Genebank and in CSBs there are many duplicate accessions. Not only limited knowledge about collection methods is a cause. Sometimes different organizations and collectors duplicate each other's efforts. A second problem is that local landraces sometimes perform worse than modern varieties. Improving landraces is

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Annex 1. Details of seeds received from some community seed banks for conservation in the National Genebank

SN	CSB	Address	Year Handed	Agronomic Crops	Horticultural Crops
1	Agyuli CSB	Nawalparasi	2013	Rice (15), Maize (20), Barley (1), Buckwheat (1), Wheat (1), Lentil (1), Linseed (1), Sesame (4), Perilla (1)	Mustard (2), Bottle Gourd (1), Sponge Gourd (1), Pumpkin (1), Broad Leaf Mustard (1), Garlic (1), Turmeric (1), Zinger (1), Taro (1), Cowpea (4), Pigeon Pea (2), Rice Bean (2), Horse Gram (1)
2	Belandi CSB	Kanchanpur	2014	Barley (1), Finger Millet (1), Rice (5), Wheat (2)	Bitter Gourd (1), Chilly (1), Cowpea (1), Pea (1), Lady's Finger (1), Lentil (1), Mustard (1), Pigeon Pea (1), Pumpkin (1), Ricebean (10), Sesame (2), Soybean (1), Sponge Gourd (1)
3	Belawa CSB	Bardiya	2014	Rice (1), Maize (1)	Ricebean (1), Black Gram (1), BLM (1), Sesame (1)
4	Ghanteswar CSB	Doti	2014	Wheat (2), Buckwheat (1), Lentil (2), Amaranth ((1), FM (2), Maize (2), Rice (7), Wheat (2), Hemp (1)	Leafy Vegetable (1), Bean (13), BG (1), Chilly (1), Pea (1), Ginger (1), HG (1), Linseed (1), Perilla (1), Radish (1), Ricebean (2), Sarson (2), Sesame (1), Soybean (3), Spinach (1), Taro (3), Turmeric (1)
5	Jogimara CSB	Dhading	2014	Barley (1), Barnyard Millet (2), Buckwheat (2), Rice (15), Maize (5)	Lentil (1), Mustard (1), Onion (1), Soybean (2), Taro (3), Ricebean (1), HG (2), Black Gram (2), Cowpea (1), Garlic (1), Fenugreek (1), FM (4), Perilla (1)
6	Kachowra CSB	Bara	2014	Amaranth (1), Oat (1), Barley (1), Rice (86), Sorghum (2)	Bean (1), Black Gram (1), Chickpea (1), HG (1), Lentil (1), Linseed (1), Mustard (1), Pea (4), Pigeon Pea (1), Pumpkin (1), Sesame (1), SG (5), Ash Gourd (1), Green Gram (1)
7	Kunjo CSB	Mustang	2014	Maize (1), Barley (2), Amaranth (2),	Mustard (1), Bean (7), Chilly (1), Coriander (1), Pea (1), Radish (1), Rapeseed (1), Soybean (1), Swiss Chad (1), Tomato (1), Cumin (1), Radish (1), Bitter Gourd (1), Cumin (1),
8	Lahan CSB	Siraha	2015	Rice (6)	Rapeseed (1), Pea (1), Bean (7), Pigeon Pea (1), Lentil (1)
9	Masuria CSB	Kailali	2014	Rice (7), FM (1),	Bitter Gourd (1), Chilly (1), Black Gram (2), Cowpea (2), Mustard (1), Soybean (1)

SN	CSB	Address	Year Handed	Agronomic Crops	Horticultural Crops
10	Parsaini CSB	Nawalparasi	2015	Rice (3), Maize (1)	
11	Patharaiya CSB	Kailali	2014	Aaarsi (1), Rice (2), Barley (2), Foxtail Millet (2), Finger Millet (2), Rice (28), Maize (1),	Leafy Vegetable (2), Mustard (1), Cowpea (2), Brinjal (1), Bottle Gourd (1), BLM (2), Capsicum (1), Carrot (1), Chickpea (1), Chilly (2), Colocasia (15), Cowpea (1), Fennel (1), Fenugreek (1), FB (3), Larcha (3), Lentil (1), Field Pea (3), Elephant Foot Yam (1), Potato (3), Ricebean (2), Sarson (1), Sesame (2), Soybean (2), SG (1), Torai (1), Turmeric (2), Yam (5), Githa (2), Pea (1)
12	Purkot CSB	Tanahu	2014	Barley (1), Bhang (11), Maize (6), Buckwheat (1), Wheat (1), Colocasia (8), Perilla (2), Rice (18), Elephant Yam (1) FM (11), Foxtail Millet (1), Garden Cress (1)	Leafy Vegetable (1), Bhyakur (1), Sesame (4), Yellow Sesame (1), Bitter Gourd (1), Black Gram (6), Mustard (2), Soybean (8), Bottle Gourd (2), Okra (2), SG (3), Chilly (5), Pea (2), Turmeric (2), Cowpea (6), Fennel (1), Pigeon Pea (2), Rice Bean (7), Field Bean (1), Garlic (1), Linseed (1), Radish (1), Yam (1), Sponge Gourd (3)
13	Rampur CSB	Dang	2014	Ash Gourd (1), Barley (1), FM (1), Wheat (1), Linseed (1), Maize (3), Perilla (2), Rice (28), Sesame (1), Wheat (3),	Pea (1), Bitter Gourd (1), BG (1), BLM (1), Chickpea (2), Chilly (2), Cowpea (4), Cucumber (1), Fennel (1), Fenugreek (1), Field Bean (1), Horse Gram (1), Lady Finger (1), Lorcha (2), Lentil (1), Mustard (1), Niger (1), Pea (1), Potato (1), Pumpkin (1), Radish (1), Soybean (2), SG (3), Turmeric (3), Yam (2), Jhilingo (1), Garden Cress (1)
14	Ratanchura	Sindhuli	2014	Rice (1), Finger Millet (1), Amaranth (2), Barley (2), Buckwheat (4), Foxtail (2), FM (12), Maize (3), Rice (10), Sorghum (1)	Soybean (2), Black Gram (5), Bottle Gourd (1), BLM (1), Chickpea (1), Chilly (1), Coriander (2), Cowpea (2), Fennel (2), HG (1), Lentil (2), Mustard (1), Niger (1) Pea (3), Perilla (3), Pumpkin (1), Ricebean (4), Sesame (2), Soybean (5), Sunflower (1), Pointed Gourd (1), Lovage (2), Bethe (1)

SN	CSB	Address	Year Handed	Agronomic Crops	Horticultural Crops
15	Shankarpur CSB	Kanchanpur	2014	Rice (5), FM (1),	Sesame (1), Soybean (2), Mustard (1)
16	Shivjung CSB	Jhapa	2014	Rice (59), Barley (1), Maize (3), Finger Millet (3), Buck Wheat (2), Lentil (1), Sesame (1), Perilla (2)	Leafy Vegetable (5), Bottle Gourd (2), Sponge Gourd (6), Mustard (1), Taro (10), Soybean (2), Bean (9), Black Gram (3), Pea (1), Broad Bean (1), Cowpea (10), Horse Gram (10), Pigeon Pea (2), Pea (1)
17	Talium CSB	Jumla	2014	Maize (2), Barley (2), Lentil (1)	Leafy Vegetable (8), Bottle Gourd (1), FB (11), Black Gram (2)
18	Tamafok CSB	Sankhuwasaba	2014	Rice (14), Finger Millet (2), Foxtail Millet (2), Proso Millet (1), Rice (2)	HG (1), Soybean (2), Pumpkin (2), Black Gram (1), Cowpea (1), Tartary BW (1)

Annex 2. Rare, endangered and protected species in Nepal

SN	Nepali name	English name	Scientific name
Nepal's rare, endangered and endemic APGRs			
1	Dhan (Marshi, Yanseere, Guture)	Rice	<i>Oryza sativa</i> L.
2	Gahau	Wheat	<i>Triticum aestivum</i> L.
3	Jau	Barley	<i>Hordeum vulgare</i> L.
4	Jimbu	Wild Onion, Aromatic Leaf Garlic	<i>Allium hypsistum</i> Stearn
5	Jimbu	Wild Onion	<i>Allium przewalskianum</i> Regel
6	Kaghuno	Foxtail Millet	<i>Setaria italica</i> (L.) P.Beauv.
7	Kakro (Seto, Hariyo)	Cucumber	<i>Cucumis sativus</i> L.
8	Karanke ghans		
9	Kharuki		
10	Khursani (Dalle, Thande, Pire)	Chili Pepper	<i>Capsicum frutescens</i> L.
11	Kodo (Bhojpure, Fyakure)	Finger Millet	<i>Eleusine coracana</i> (L.) Gaertn.
12	Kurilo, Satavari	Asparagus	<i>Asparagus racemosus</i> Willd.
13	Lamche khursani	Chili Pepper	<i>Capsicum annuum</i> L.
14	Makai (Yangrupe, Thulo seti, Phalendo)	Maize	<i>Zea mays</i> L.
15	Paheli Makai	Maize	<i>Zea mays</i> L.
16	Phaper	Buckwheat	<i>Fagopyrum tataricum</i> (L.) Gaertn. <i>Fagopyrum esculentum</i> Moench
17	Pipla	Long Pepper	<i>Piper longum</i> L.
18	Rudrakhya	Utrasum Bead Tree	<i>Elaeocarpus sphaericus</i> (Gaertn.) K. Schum.
19	Siplikan, Simligan	Garlic Pear	<i>Crateva unilocularis</i> Buch.-Ham.

SN	Nepali name	English name	Scientific name
20	Uwa	Naked barley	Hordeum vulgare var. nudum (L.) Hook. f.
APGRs listed in CITES			
1	Rukh Unyu, Chatre Unyu	Tree fern	Cyathea spinulosa Wall.ex Hook
2	Vyakur	Potato yam, wild yam	Dioscorea deltoidea Wall. ex Griseb
Nepal's protected APGRs			
1	Okhar	Walnut	Juglans regia L.
2	Vyakur	Potato yam, wild yam	Dioscorea deltoidea Wall. ex Griseb
3	Yarsa Gumba, Jeevan Buti	Cordyceps Mushroom	Ophiocordyceps sinensis (Berk.) Sung et al

Sources: IUCN/Nepal 1995, Shrestha and Joshi 1996, Chaudhary 1998, Siwakoti 2002, 2006

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Community Seed Banks in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International

Community Seed Banks in Nepal: Safeguarding Agricultural Biodiversity and Strengthening Local Seed Systems

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Purkot Community Seed Bank in Tanahu District. Photo: Pitambar Shrestha, LI-BIRD

Abstract

This paper presents LI-BIRD's approach to promoting community seed banks in Nepal with a focus on their role in on-farm management of agricultural biodiversity, improving access to and availability of diverse types of seeds and planting materials and enhancing the local seed systems. Other dimensions of community seed banks, such as internal management, technical aspects, and issues and challenges will also be discussed. In collaboration with national and international organizations, LI-BIRD has supported the establishment of 20 community seed banks across seven provinces of Nepal. These community seed banks have conserved 1,066 local varieties of 62 crop species. Some of these local varieties would have been lost from farmer's fields in the absence of these community seed banks. The 20 community seed banks produce and distribute over 150 tons of seed of both local and improved varieties of different crop species. More than 5,000 smallholder farmers access this seed annually. Several of the crop varieties distributed through the community seed banks are high yielding and others are resilient to climate-induced and other risks, such as drought, insects, and diseases. Evidence suggests that the community seed bank approach is not only appropriate for conserving agricultural biodiversity on-farm, but also important for strengthening local seed systems, improving food security and contributing to resilience of smallholder farmers.

Keywords: Agricultural biodiversity, community seed banks, conservation, local seed system, local varieties

National Context and Initiatives

Nepal's agriculture is in transition. The general scenario is that farmers are gradually shifting to cultivate improved varieties, using imported hybrid seed and adopting improved technologies and practices, particularly in the accessible areas, such as the tarai and mid-hills. In order to meet the growing demand of food to feed the ever-growing population, reduce poverty, increase food and nutrition security and reduce the trade deficit, the Government of Nepal has focused on developing strategies, policies, plans and programs towards commercialization of agriculture through engagement of private sector and cooperatives and through connectivity development (ADS 2015).

Government of Nepal has developed the Agrobiodiversity Policy for promoting conservation and use of agricultural biodiversity in 2004 and has made the first Amendment to the policy in 2014 (MoAD 2004), but implementation in terms of on-farm management of agricultural biodiversity is limited. The first guideline of implementation of community seed banks was approved by the cabinet and implemented in Okhaldhunga, Sindhupalchok and Dadeldhura districts of Nepal as a pilot programme. It focused on increasing the seed replacement rate through production and distribution of quality seed of improved varieties at community level instead of promoting on-farm management of agricultural biodiversity (CDD 2009, Pokhrel & Joshi 2013).

In general, the majority of farmers are not aware of the importance of conservation of local crop diversity for current and future food and nutrition security. Moreover, Nepal's extension system is oriented towards promoting the dissemination of high input responsive agricultural practices and technologies. As the cumulative effect of various factors, local varieties cultivated by farmers during generations are being lost from farmer's fields and their natural habitat. The number of households, the number of local varieties and the area covered by local varieties are shrinking (Shrestha et al 2003, Chaudhary et al 2004).

Initiated in Nepal in 1994, the community seed bank approach gained momentum after almost a decade as a successful method for the conservation and promotion of the use of local varieties of various crops at community level; and as a means to provide easy access to quality seed and planting material of diverse crop species (Shrestha et al 2013). Although detailed empirical research has not yet been conducted, there is some evidence that community seed banks in Nepal are also contributing to improve food security, income and livelihoods. Besides, the community seed bank approach is developed as an effective mechanism to realize farmers' rights on seeds as outlined by the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA 2004), to promote food sovereignty (Development Fund, 2011; Vernooij et al 2014; Vernooij et al 2017). Experiences have shown that the community seed banks in Nepal are playing

important roles to strengthen farmers' seed systems and address the issues of climate change adaptation in agriculture. This approach is equally applicable in other developing countries with similar agricultural systems where the informal or farmers' seed system provides about 90% of the total seed requirement.

LI-BIRD has been involved in promoting community seed banks in Nepal and South Asia since 2003 (Shrestha et al 2004). In the past fifteen years, LI-BIRD has supported the establishment and management of 20 community seed banks in 16 districts of the country. Through its Community-based Biodiversity Management South Asia (CBMSA) programme, five community seed banks in Sri Lanka, 13 in Bangladesh and three in India were established. In order to keep the momentum going and further strengthen community seed banks work in Nepal, LI-BIRD facilitated the establishment of an Association of Community Seed Banks of Nepal (ACSBN) together with the National Genebank and Bioversity International. This paper analyses the various aspects of community seed banks in Nepal, such as their roles in safeguarding agricultural biodiversity; increasing access and availability of seed and planting materials; technical, governance and management aspects; improvement in farmers' income; development of a mechanism to sustain community seed banks, and ways to link community seed banks to the National Genebank. Some issues, challenges and a way forward will also be discussed.

Community Seed Banks and the Informal Seed System

The majority of farmers in Nepal save some portion of the harvest as seed for the next planting season or obtain seed from neighbors, relatives and friends through exchange, purchase or gift (Subedi et al 2003). As it is a dynamic process, the practice of saving, using and exchanging farm saved seed has undergone some change. The exchange takes place if the farm saved seed is not enough, or if farmers want to replace the seed lot of the same variety, or if something goes wrong with the seed stored at home. While saving seed for the next planting season, some farmers do careful selection in the field (before the crop is harvested) to identify the best quality seed. Other farmers select seed after harvesting. Farmers who do careful selection do not necessarily follow scientific quality standards, but instead are guided by their own technical and traditional knowledge and practice. However, it is not known how many farmers do careful seed selection in the field. This means that, despite the various positive aspects of farmer seed saving, there is no clarity about the overall quality of the seed supplied by the informal or farmers' seed system. Our experience in Nepal shows that poor quality of farm saved seed is one of the reasons of low crop production and low productivity leading to food insecurity.

To address this problem, (formal) seed sector development strategies have targeted to increase the seed replacement rate (SSR) and increase the share of the formal seed system (CDD, 2009; MoAD, 2014; SQCC, 2013). Strengthening and improving the farmers' seed system through adopting a community-based approach such as community seed banks, could play an important role to improve the access to quality seed where the formal seed supply system is not present. Better quality seed will lead to improved crop production and productivity. A systematic study is yet to be conducted, but many farmers who use seed from community banks have reported increased crop yield.

Smallholder Farmers, Farmers' Seed Systems and Agricultural Biodiversity

Conservation of agricultural biodiversity is still a new subject for many organizations and professionals working in the agricultural sector and for hundreds of thousands of farmers across the globe. Maximizing the benefits from the small piece of land to meet the family requirement of food and income is a major challenge for smallholder farmers in developing countries. To achieve this goal, they constantly look for better options to grow and produce more from the same piece of land. In this process, previously grown varieties including local varieties are replaced by new ones. In recent times, this process has been accelerated by the push of the private sector to use improved varieties and imported hybrid seed. As a result, many local varieties of major food crops and vegetables are either being lost from farmer's fields and communities or pushed towards the endangered zone. This is a process of loss of agricultural biodiversity. Community-based approaches, such as community seed banks, can be promoted to halt the loss of local varieties and offer new diversity to smallholder farmers.

LI-BIRD's Approach to Promote Community Seed Banks

Since 2003, LI-BIRD has been involved in promoting community seed banks in Nepal and in South Asia as an effective approach for on-farm management of agricultural biodiversity and to provide easy access to diverse types of quality seed and planting materials (Shrestha et al 2013). A community seed banks is governed and managed by a farmers' group, cooperative or organization, mostly in an informal way. Based on more than 20 years of work on community seed banks in Nepal, LI-BIRD has demonstrated that community seed banking is a successful approach. Community seed banks can also promote food sovereignty given that they provide options to farmers to choose from different types of seed and planting material depending on the types of land they have and crop varieties they would like to grow in their home garden and farm. To a certain extent, community seed banks promoted by LI-BIRD are contributing to enhancing food and nutrition security, generating local employment, strengthening local seed systems and improving income and livelihoods of local people. The drivers of success of LI-BIRD's approach to community seed banking in Nepal

are empowerment of farmers and their organization and the introduction of innovative sustainability mechanisms.

In order to establish a well-functioning and self-sustained community seed bank, LI-BIRD follows a ten steps process (Figure 1). The site selection of community seed bank establishment is very much driven by the nature of the project. The lessons LI-BIRD has learned is that community seed banks can either be established in a diversity rich area or in a marginal and vulnerable community. Diversity rich areas are prioritized for the establishment of community seed banks to maintain the available diversity of the community and area. Marginal and vulnerable communities are selected to supply the community with better and more diverse quality seed and planting material. In order to initiate a community seed bank, an in-depth discussion is conducted with the community about its functions and potential. Before making a decision to establish a community seed bank, both the community and the organization facilitating the establishment of a community seed bank should realize that a community seed bank is not just a “simple” project activity, but the creation of a local institution. Since the goal is to maintain this institution for the long term, sufficient resources and time should be allocated by both sides. A legally registered farmer group, cooperative or similar organization is considered a must for initiating a sustainable community seed bank. Without legal status, obtaining support from local government and external agencies becomes difficult.

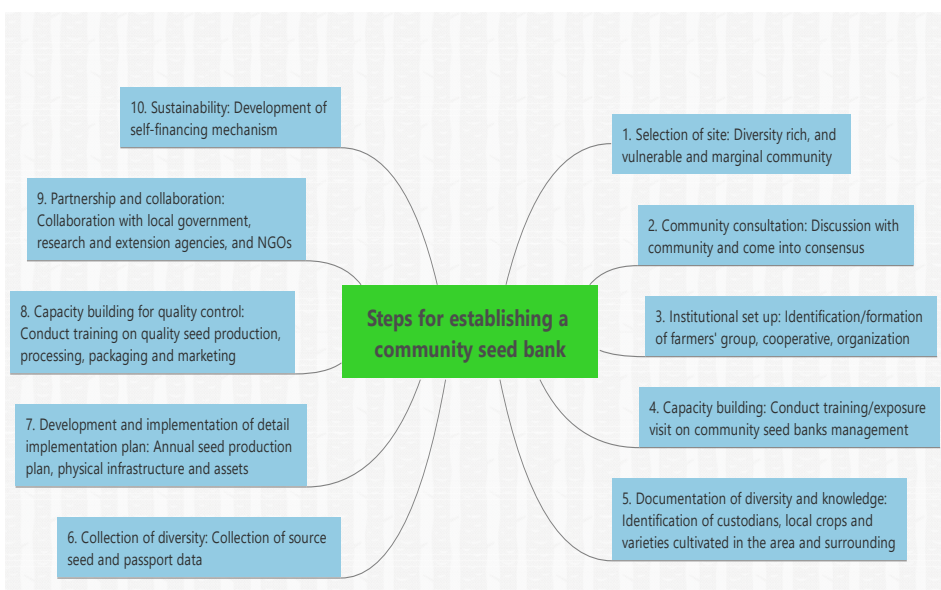


Figure 1. Steps for establishment and management of community seed banks.

Capacity building activities such as training, visits and discussions are organized for members with regard to community seed bank management, quality seed production and storage, technical, management, governance and sustainability aspects. Normally, during the first training, an action plan, implementation timeline and division of tasks are prepared to move ahead. Implementation of the action plan prepared during the training gradually leads to the establishment of the community seed bank. Following the identification and documentation of the local varieties available in the community with basic information and traditional knowledge through group discussion, a seed collection plan is prepared and collection of seeds begins including passport data. Based on this collection and as per the demand of the local community, an annual seed production plan is prepared and implemented. At the same time, physical infrastructure development work is carried out in collaboration with the local government and other relevant stakeholders. At this stage, on-site training in quality seed production for community seed bank members is conducted. The final step is the establishment of a seed fund and a community biodiversity management fund as self-financing mechanisms. These funds will be described in more detail in the following pages.

Community Seed Banks Supported by LI-BIRD

In collaboration with local, national and international organizations (government and non-government), LI-BIRD has supported the establishment of 20 community seed banks in 16 districts of Nepal from 2003 to 2017 (**Table 1**). In 2018, LI-BIRD planned to initiate an additional three community seed banks (one each in Bardiya, Kailali and Sindhupalchok districts) and strengthen the capacity of two existing community seed banks (one each in Bardiya and Kailali districts). Not all the community seed banks supported by LI-BIRD are in “good shape” - some are functioning well, some are in process of establishment and some became dormant after the project was phased out from the area. Five of twenty are dormant, five are in process and ten are functioning well even after the projects supporting them were phased out. Our experiences show that community seed banks with a legal registration led by a strong and a committed leader have higher levels of ownership by the community. This contributes to their sustainability. Community seed banks that provide members with economic benefits are functioning well (**Table 2**). A self-financing mechanism plays an important role to sustain a community seed bank.

Table 1. List of community seed banks supported by LI-BIRD

Year of establishment	Name and location of community seed bank	Collaborating partners of LI-BIRD for initiating and strengthening the CSB
2003	Kachorwa CSB, Bara ² (1)	NARC, Bioersity International, IDRC, SANFEC/USC Canada, SGP/UNDP/GEF, SDC, IFAD
2007	Shankarpur CSB, Kanchanpur ⁷ ; Gadariya CSB, Kailali ⁷ ; Belawa CSB, Bardiya ⁵ (3)	WTLCP (MoFSC, UNEP/GEF/UNDP, NARC, Bioersity International)
2008	Masuriya CSB, Kailali ⁷ ; Pathraiya CSB, Kailali ⁷ ; Beldandi CSB, Kanchanpur ⁷ (3)	WTLCP (MoFSC, UNEP/GEF/UNDP, NARC, Bioersity International)
2009	Tamaphok CSB, Sankhuwasabha ¹ ; Jogimara CSB, Dhading ³ (2)	IDRC, Canada; The Development Fund/NORAD, Norway
2010	Shivagunj CSB, Jhapa ¹ ; Purkot CSB, Tanahun ⁴ ; Agyauli CSB, Nawalparasi ⁴ ; Sunaulo CSB, Rampur, Dang ⁵ ; Ghanteshwor CSB, Doti ⁷ ; Talium CSB, Jumla ⁶ (6)	The Development Fund/NORAD, Norway
2016	Lahan CSB, Siraha ² (1)	CARE Nepal
2017	Jugu CSB, Dolakha ³ ; Ghanpokhara CSB, Lamjung ⁴ ; Hanku CSB, Jumla ⁶ ; Chhipra CSB, Humla ⁶ (4)	Local Crop Project (UNEP/GEF, NARC/Genebank, Bioersity International)
2018	Piskar CSB, Sindhupalchok ³ ; Mohammadpur CSB, Bardiya ⁵ ; Joshipur CSB, Kailali ⁷ (3)	The Development Fund/NORAD, Norway

Note: The number in superscript denotes the Province number. Number of community seed banks supported by LI-BIRD by Province: Province 1: 2, Province 2: 2, Province 3: 3, Province 4: 3, Province 5: 3, Province 6: 3 and Province 7: 7.

Table 2. Status of community seed banks supported by LI-BIRD

Status	Name and location of CSB	Key drivers of success/failure
Well-functioning community seed banks	Kachorwa CSB, Bara; Tamaphok CSB, Sankhuwasabha; Shivagunj CSB, Jhapa; Agyauli CSB, Nawalparasi; Purkot CSB, Tanahun; Sunaulo CSB, Rampur, Dang; Ghanteshwor CSB, Doti, Belawa CSB, Bardiya; Masuriya CSB, Kailali; Shankarpur CSB, Kanchanpur (10)	<ul style="list-style-type: none"> Committed leadership and strong ownership feeling of community CSB members receiving economic benefits from CSB activity Developed functional collaboration with public, private and CSOs Producing seeds in volume and developed marketing linkages Higher level of exposure and capacity building support Development of sustaining mechanism
Community seed banks in progress	Chhipra CSB, Humla; Hanku CSB, Jumla; Ghanpokhara CSB, Lamjung; Jugu CSB, Dolakha, Lahan CSB, Siraha (5)	<ul style="list-style-type: none"> Applied diversity field school (DFS) approach except in Siraha.
Dormant community seed banks	Jogimara CSB, Dhading; Pathraiya CSB, Kailali; Gadariya CSB, Kailali; Beldandi CSB, Kanchanpur; Taliun CSB, Jumla (5)	<ul style="list-style-type: none"> Weak leadership and poor ownership of community No initiation of seed production for marketing Poor social capital - low level of cooperation Low/no support other than limited project funding
Just started	Piskar CSB, Sindhupalchok; Mohammadpur CSB, Bardiya; Joshipur CSB, Kailali (3)	None

Safeguarding Agricultural Biodiversity

Among the many activities being carried out by the community seed banks, conservation of agricultural biodiversity is a core function (Vernooy et al 2014). Based on available data, 14 community seed banks supported by LI-BIRD have conserved 1066 local varieties of 62 crop species (Table 3). These community seed banks have adopted various methods for regenerating seed annually. While some community seed banks establish and manage collectively diversity blocks of major crops such as rice and finger millet, the responsibility to produce seeds of other crop varieties is given to an individual farmers associated with the community seed bank. Seed producer farmers are selected carefully based on the interest in and suitability of varieties on their land. At least two to three farmers are identified for each variety to assure that the return of seed to the community seed bank after the crop is harvested every year is sufficient.

Table 3. Conservation of agricultural genetic resources in community seed banks

SN	Name of community seed banks	Province #	Major crop species	No. of local crop species	No. of local varieties
1	Tamaphok CSB, Sankhuwasabha	1	Rice, finger millet, bean	24	101
2	Shivagunj CSB, Jhapa	1	Rice, perennial bean, cow pea, pulses, cucurbits, oil seed	26	149
3	Kachorwa CSB, Bara	2	Rice, sponge gourd, pigeon pea	23	115
4	Lahan CSB, Siraha	2	Rice	17	55
5	Jugu CSB, Dolakha	3	Rice, finger millet, bean	10	42
6	Ghanpokhara CSB, Lamjung	4	Rice, finger millet, fox tail millet, soy bean	15	74
7	Purkot CSB, Tanahun	4	Rice, finger millet, maize, rice bean, taro	42	116
8	Agyauli CSB, Nawalparasi	4	Rice, perennial bean, cow pea	24	63
9	Sunaulo CSB, Rampur, Dang	5	Rice, perennial bean, cow pea	40	84
10	Chhipra CSB, Humla	6	Rice, proso millet, foxtail millet, bean, finger millet	11	51
11	Hanku CSB, Jumla	6	Rice, beans, finger millet, buck wheat	20	65
12	Ghanteshwor CSB, Doti	7	Rice, bean, maize, wheat, taro	32	69
13	Masuriya CSB, Kailali	7	Rice, perennial bean, cow pea, taro	26	64
14	Shankarpur CSB, Kanchanpur	7	Rice	8	18
Total					1066

Source: Quarterly and annual progress reports. Registers of community seed banks.

Improving Access and Availability of Seeds and Planting Materials

Improving access and availability of farmer preferred diverse seed and planting material is the second important function of community seed banks. To meet this objective, community seed banks produce seeds of local varieties conserved in community seed banks and some improved varieties that have higher demand in the community. Quantity of seed and the number of crops and varieties to be included in the seed production depend on local demand and/or the ability of the community seed bank to market the seed.

Community seed banks employ different strategies to produce seeds. While the seed of some rare local varieties is produced in a diversity block managed by community seed bank members or a group of farmers collectively, common local varieties having higher seed demand in the community are produced in farmer's fields. In the case of improved varieties, community seed banks normally collaborate with the district extension office and private seed companies to obtain source seed. They receive some technical and financial support from the extension office and company and sell seed to them. Some district extension offices procure seed from community seed banks for their regular programme. For instance, the District Agriculture Development Office (DADO) Dang regularly uses seed produced by the Rampur community seed bank. The DADO Dang then distributes this seed in the form of minikits (small quantities of seeds of different crops/varieties). **Table 4** shows the quantity of local and improved varieties seed produced by the community seed banks supported by the CBMSA programme in Nepal in the last five years.

Table 4. Quantity of seed produced by six community seed banks practicing CBM (2012-2016)

Year	Quantity of seed produced (Ton)		
	Local varieties	Improved Varieties	Total quantity
2012	0.2	4.3	4.49
2013	4.4	11.3	15.71
2014	11.1	83.9	95.03
2015	10.0	124.8	134.79
2016	21.7	118.9	140.56

Source: Quarterly and annual progress reports. The data include community seed banks from Shivagunj, Jhapa; Purkot, Tanahun; Agyauli, Nawalparasi; Rampur, Dang; Ghanteshwor, Doti and Talium, Jumla.

The quantity of seed produced by community seed banks has increased significantly in the last five years from 4.49 tons in 2012 to 140.56 tons in 2016. This increase is due to: i) over the years, community seed banks gain confidence in seed production, handling and marketing; ii) development of physical infrastructure, such as seed storage, threshing and drying floor, procurement of small machinery; iii) increased seed demand due to better quality and lower price compared to other sources and; iv) expansion of the market due to demands from district extension offices, private seed entrepreneurs and companies, and NGOs.

The six CBM supported community seed banks have developed a mechanism to make seed available to local farmers. They normally distribute rare local variety seed free of cost with the aim to turn them into common varieties. Seed of the common local varieties and improved varieties is sold. The price of seed sold by

a community seed banks always remains below the market price. It is possible for a community seed bank to sell seed at a lower price compared to other sources because: i) they are service oriented; ii) the physical infrastructure is built with external support; iii) operational costs are low given that members are volunteers and only a few local staff are contracted. These favorable conditions explain the increase in the number of farmers accessing seed from community seed banks (Table 5). The decrease in 2016, according to community members, was due to an increase of seed saving by farmers from their harvest instead of procuring new seed from the community seed banks. The numbers fluctuate, because farmers normally do not replace the seed lot every year. They may do so once every 3-4 years for the self-pollinated crops most of these CSBs coconserve.

Table 5. Number of households obtaining seed from CSBs

Name of community seed bank	Number of households obtaining seed from CSB by year*					
	2011	2012	2013	2014	2015	2016
Shivagunj CSB, Jhapa	470		855	1410	1814	1322
Agyauli CSB, Nawalparasi	98		634	692	1640	1238
Purkot CSB, Tanahun	23		380	434	1305	717
Sunaulo CSB, Rampur, Dang	36		277	1089	1735	1449
Ghanteshwor CSB, Doti	54		244	388	554	558
Talium CSB, Jumla	-	-	54	293	118	183
Total	681		2444	4306	7166	5467

*Note: * This includes seed taken on payment basis and free of cost. Source: Quarterly and annual progress reports.*

A community seed bank is an organization of local farmers that regularly produces, safely stores and distributes seed (the latter includes selling). It contributes to the enhancement of income generation by seed producer farmers. Adding value to community seed bank operations is an important mechanism to support the conservation and access and availability functions of a community seed bank. Community seed banks in Nepal produce seeds of local and improved varieties for which each community seed bank has identified and trained a number of seed producer farmers. Tables 6 and 7 respectively present the number of farmers involved in seed production and the amount of income they earned by selling seed to community seed banks.

Table 6. Number of households involved in seed production for community seed banks (2012-201)

Name of CSB site	Number of farmers involved in seed production by year				
	2012	2013	2014	2015	2016
Shivagunj, Jhapa	13	39	63	82	118
Rampur, Dang	18	35	71	53	70
Ghanteshwor, Doti	-	27	106	95	71
Talium, Jumla	10	11	15	18	20
Purkot, Tanahun	-	-	74	58	
Agyauli, Nawalparasi	-	-	-	61	47
Total	41	112	329	306	279

Table 7. Summary of the amount of income earned by farmers through seed production for CSBs (2012-2016)

Name of CSB site	Amount of income (NPR) by year				
	2012	2013	2014	2015	2016
Shivagunj, Jhapa	39,275	97,220	758,342	975,860	950,278
Purkot, Tanahun	NA	NA	41,807	251,608	482,936
Rampur, Dang	109,100	476,105	603,059	764,419	1,533,741
Ghanteshwor, Doti	NA	68,484	563,270	533,145	1,870,711
Talium, Jumla	36,300	40,000	65,500	84,000	301,500
Agyauli, Nawalparasi	NA	NA	NA	NA	1,171,939
Total (NPR)	184,675	681,809	2,031,978	2,609,031	6,311,105
Total (USD)	1,846.75	6,818.09	20,319.78	26,090.31	63,111.05

Note: 1 USD= NPR 100

The Clients of Seed Produced by Community Seed Banks

Community seed banks primarily produce seeds to meet the local need. However, there are opportunities to produce and market larger quantities beyond the community. Some of the community seed banks supported by LI-BIRD have developed good collaboration with some seed companies, district extension offices and private seed entrepreneurs. They all reap benefits. While some seed companies and district extension offices provide source seed for seed production, they also buy back the seed produced by community seed banks. Out of 10 well-functioning community seed banks, five community seed banks, namely Shivagunj, Agyauli, Purkot, Rampur and Ghanteshwor, are involved in seed business beyond the community. Of the total quantity of seed sold by these five community seed banks in 2017, 38% was procured by individual farmers, 40% by seed companies and private seed entrepreneurs, 19% by district extension agencies and 3% by I/NGOs (Table 8).

Table 8. Users of seed produced by community seed banks in 2017

Buyers/ Clients	Quantity of seed sold by CSB (Kg)					Total
	Rampur CSB, Dang	Shivagunj CSB, Jhapa	Agyauli CSB, Nawalparasi	Ghanteshwor CSB, Doti	Purkot CSB, Tanahun	
Individual farmers	3,650	23,937	3,755	3,080	56	34,478 (38%)
Private seed companies	8,048	14,345	10,000	3,331	-	35,724 (40%)
DADO	7,835	560	-	1,513	7,035	16,943 (19%)
I/NGOS	2,289	-	4	560	-	2,853 (3%)
Total (Kg)	21,822	38,842	13,759	8,483	7,091	89,997 (100%)

Strengthening Farmers' Seed Systems

The contribution of farmers' seed systems accounts for more than 80% of the total seed requirement in Nepal (SQCC 2018). Some interventions of Government of Nepal, such as the District Seed Self Sufficiency Programme (DISPRO) implemented by the DoA and the Community-based Seed Production programme (CBSP) and Community Seed Enterprises (CSE) programme supported by I/NGOs, have played significant roles in promoting and supporting farmers' seed systems. Research stations managed by NARC and farms under DoA also contribute in a positive way by providing local farmers direct access to seed although in limited quantity. These programmes produce mainly seed of

improved varieties. Community seed banks offer seed of locally adapted diverse types of improved and local varieties and planting material to farmers. Seed of local varieties is not available from government farms and seed companies.

Experience indicates that the community seed bank approach is evolving as a mechanism to bridge the formal and farmer's seed supply systems. Community seed banks not only identify, document and promote conservation activities of local genetic resources, but also work closely with district extension offices to obtain source seed of improved varieties and technical and financial support for seed production activities. Community seed banks conduct their seed production and conservation activities in farmer's fields. Because of this feature, promising farmer preferred varieties can easily be disseminated from a few farmers to many within a few years. The easy access mechanism of a community seed bank and related promotional activities with regard to conservation further accelerates farmer to farmer dissemination.

Seed Quality Control Mechanism and Technologies in Use

Community seed banks are managed by a legitimate farmer organization registered at the District Administration Office (DAO) or as a cooperative at the Divisional Cooperative Office. The farmer organization that operates a community seed bank has obtained permission for seed production and sales from DADO as per the government policy. In addition, they obtained a Personal Account Number (PAN) from the Inland Revenue Department in the respective district head offices. These are some of the legal requirements that need to be fulfilled to operate a seed business. In the last six years, LI-BIRD has trained a few capable local resource persons in each site. The farmer organizations have recruited them as regular staff to look after the community seed bank management and other day-to-day activities.

Seed quality determines the success and failure of any seed business including community seed banks. In order to maintain the seed quality produced and distributed by the community seed banks supported by the CBMSA programme in Nepal, a number of mechanisms were developed and modern seed storage technologies introduced.

The production of quality seed depends on good quality source seed, good field management practices and safe handling of threshing, cleaning and drying. While the source seed of local varieties is carefully selected in a diversity block or in a farmer's field, source seed of improved varieties is obtained from Regional Agriculture Research Station (RARS) farms through DADO or directly from the Stations. Seed production activities of both local and improved varieties are conducted mainly by the trained farmers or custodians of local varieties. Each year, a few hours of practical training are conducted before providing source seed

to the seed producer farmers covering agronomic practices, roughing and other issues related to maintaining good quality. Mistakes made in the past season or year are reviewed as well. In the case of high volume seed production, a community seed bank develops a seed business plan that includes a calculation of the cost of seed production, including storage, handling, packaging and marketing. It also includes a market assessment. In some cases, a community seed bank signs a contract with a large volume buyer or buyers. This preparatory process helps to produce what is in demand and prevents selling seed as grain at a lower price.

Proper seed storage technology is equally important to maintain good seed quality. Initially, traditional seed storage practices were used for storing seed in the community seed banks (Shrestha et al 2006), but later it was realized that there are important differences between the indoor environment of a farmhouse and a community seed bank facility. Traditionally, farmers hang maize cobs for seed above the fireplace and put other seed storage structures on the first floor. Because of the fire and smoke development inside the farmhouse, the in-house environment becomes dry and less humid. Seed stored in this traditional way remains safe for a season or longer. Farmers usually check, clean and re-dry seeds at home on a regular basis. This practice cannot be used in the same way in a community seed bank. Learning from some initial mistakes, LI-BIRD explored and identified the latest seed storage technologies, such as airtight plastic pots, Perdue Improved Crop Storage (PICS) bags for storing seeds, the use of zeolite beads that absorb excess seed moisture, and hydriant or humidicator paper which indicates if seed is dried enough or not (Figure 2). Use of these technologies has become very handy for seed curation of community seed banks.



Figure 2. Hydriant paper (left) and PICS bag (right).

Knowledge Documentation and Information Management

Community seed banks supported by the CBMSA programme have maintained a number of registers related to knowledge and information of local varieties and seed transactions. Such types of documentation, including through a community biodiversity register (CBR), which is an inventory of crop species and varieties and associated information and traditional knowledge (Subedi et al 2006), were already introduced before decisions were made to establish the community seed banks. The community biodiversity registers were actually used to make this decision and were useful to identify/locate custodians to collect source seed. All the community seed banks have maintained crop passport data registered in a standard format of all local varieties conserved. This helps to trace back the source material when required. In addition, the community seed banks keep records of seed production, maintain a seed stock book and a seed distribution and sales book using a standard format.

The Self-Financing Model

The most important challenge that community seed banks around the world face is probably their sustainability. In most cases, community seed banks have been established or are established with the financial and technical support from a non-government organization (NGO) that in turn often depends on funding support from one or more donor agencies. Community seed banks usually function well until their support dries up. This happens because to a large extent community seed banks are set up as a regular project activity. However, a well-functioning community seed bank is not a time and resources bound projects. Establishment of a community seed bank implies creating a community institution or system that operates for a long time. Time, effort and resources should be allocated accordingly.

LI-BIRD has addressed the sustainability challenge of community seed banks under the CBMSA programme by creating a self-financing model (**Figure 3; Table 9**). In this model, a strong farmer organization with a solid membership base and registered as a legal entity, is the foundation of a community seed bank. To make a community seed bank self-financing two financial mechanisms are used: i) community biodiversity management (CBM) fund and ii) seed fund. The community biodiversity management fund is mobilized as a collateral free loan, but with a lower interest rate compared to other sources. This fund is used among the members of the organization to conduct household level economic activities, such as vegetable farming, seed production, cattle and small animal raising, operating a small grocery shop etc (Shrestha et al 2012). This mechanism enhances access of smallholder farmers to financial resources in support of their livelihoods. This fund generates some income in the form of interest on a regular basis, which is used to cover the administrative costs of the farmer organization. At least 20% of the total amount of interest generated is used for

purchasing local seed produced by the seed producer members or custodians of the community seed banks. Some portion of interest gained is added to the total of the CBM fund (Table 9).

Table 9. The amount of CBM fund in some CSBs during its initiation and at the end of 2018

Name of CSB	Amount of CBM fund (USD)		Amount of seed fund (USD)	
	Initial amount	As of Dec. 2018	Initial amount	As of Dec. 2018
Kachorwa CSB, Bara	750	12,339	5,000	3,087
Shivagunj CSB, Jhapa	400	14,870	5,000	13,800
Agyauli CSB, Nawalparasi	400	9,314	5,000	6,957
Purkot CSB, Tanahun	400	18,652	3000	3,913
Sunaulo CSB, Rampur, Dang	400	11,304	5,000	7,391
Ghanteshwor CSB, Doti	400	6,956	3,000	5,652

Note: 1 USD=NPR 100 and 115 has been used for conversion of the initial amount and the amount as of December 2018 respectively.

The objective of establishing the second funding mechanism, the seed fund, is to provide community seed banks with the means to deal with a large volume of seed, run a business and earn some income. Community seed banks use this fund to purchase seed from the seed producer farmers immediately after the crop is harvested. Seed is then dried and stored until the next planting season. After seed is sold, the money goes back into the account. Some portion of the profit is used for paying salary of staff and to cover other operating costs of the farmer organization and to maintain diversity block and community seed bank. Unspent money is added to the seed fund so it continues increasing every year.

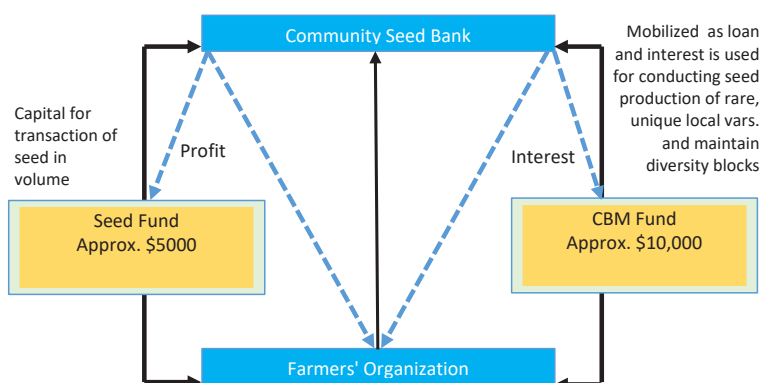


Figure 3. A self-financing mode of community seed banks practiced in Nepal

Table 10. Some other steps taken to empower farmers’ organizations operating community seed banks for their sustainability

Name of CSB	Indicative sustainability parameters		
	Legal entity obtained	Membership base	Partnership and collaboration
Shivagunj CSB, Jhapa	Registered at DAO	1087 households organized in 23 groups	Funding from DADO for rice diversity block available regularly
Purkot CSB, Tanahun	Registered at DAO	992 households organized in 23 groups	Funding from DADO for diversity block of various crops available regularly
Agyauli CSB, Nawalparasi	Registered at DAO	879 households organized in 38 groups	At the preliminary stage of establishing relationship with DADO and the Municipality
Rampur CSB, Dang	Registered as a cooperative	604 households organized in 26 groups	Closely working with DADO and private seed entrepreneurs
Ghanteshwor CSB, Doti	Registered as a cooperative	396 households organized in 17 groups	Closely working with DADO, a private seed company and seed entrepreneurs

DAO= District Administration Office

In the last fifteen years, one of the main lessons learned by LI-BIRD to operate a community seed bank successfully is the need for empowerment of the farmer organization operating the community seed banks in legal, social and economic terms. Other key components of sustainability include human capital development (awareness raising, educational development, self-realization) and physical capital development.

Community Seed Banks in Times of Crisis

A community seed bank is not only a living repository of agricultural genetic resources, but also a back-up of seeds and planting materials for the community. If something goes wrong with the seed kept in a household, people can easily access seed from the community seed bank. Community seed banks have great potential to supply seed in times of crisis, such as when drought, flood, hurricane, fire or earthquake hit an area. One recent example of such a crisis was when Nepal was severely hit by a series of earthquakes in 2015. Three community seed banks stepped in to supply seeds to the earthquake affected area in a unique humanitarian manner. Community seed banks of Agyauli, Nawalparasi; Rampur, Dang and Purkot, Tanahun were able to provide 9875 kg rice seeds of different varieties to three earthquake affected districts, namely Gorkha, Lamjung and Tanahun. This seed was distributed to 1807 earthquake affected households who had lost their seed due to the earthquake. One important lesson learned from this case is that community seed bank structures should be disaster proof and have a mechanism to keep some quantity of seed in reserve for use in times of crisis.

Linking Community Seed Banks with the National Genebank

It is generally believed that *in-situ*/on farm conservation and *ex-situ* conservation should complement each other. However, only a hand full of references can be found regarding the effective collaboration between these two conservation strategies (Shrestha & Sthapit, 2014). The CBMSA programme made an attempt to bridge this gap in Nepal by facilitating and organizing an event in which 17 community seed banks from 12 districts handed over 916 accessions of 62 crop species to the National Genebank located in Khumaltar, Lalitpur, for long term storage. The then chief of the National Gene Bank, Mr. Madan Raj Bhatta, received seed samples along with passport data from the representatives of the 17 community seed banks on 29 December 2014 in the Agyauli community seed bank, Nawalparasi. An additional 105 accessions were sent in 2015 for the same purpose (Table 11). In return, the National Genebank provided 101 rice accessions to the Agyauli community seed bank for regeneration in 2015. The National Genebank reported that they received back a very good amount of regenerated seed from the community seed bank compared to other seed sources. National Genebank expertise was used to train members of community seed banks in the community and at the National Genebank facilities.

Table 11. Summary of crop species and varieties sent to the National Genebank for *ex-situ* conservation in 2014 and 2015

SN	Name of CSBs or community	Number of species and varieties sent to the National Genebank	
		Species	Varieties/ accessions
1	Shivagunj CSB, Jhapa	21	147
2	Purkot CSB, Tanahun	34	120
3	Kachorwa CSB, Bara	23	115
4	Pathraiya CSB, Kailali	30	108
5	Sunaulo CSB, Rampur, Dang	40	89
6	Tamaphok CSB, Sankhuwasabha	24	77
7	Agyauli CSB, Nawalparasi	25	60
8	Ghanteshwor CSB, Doti	19	54
9	Ratanchura, Sindhuli	24	49
10	Jogimara CSB, Dhading	19	48
11	Ranibas CSB, Sindhuli	21	34
12	Talium CSB, Jumla	16	32
13	Kunjo, Mustang	16	23
14	Shankarpur CSB, Kanchanpur	8	23
15	Beldandi CSB, Kanchanpur	17	22
16	Masiruya CSB, Kailali	6	14
17	Belawa CSB, Bardiya	6	6
	Total		1021

Tailor Made Training/Capacity Building

LI-BIRD is not only facilitating the establishment of community seed banks in its working area, but also providing technical and training facilitation support to other organizations in Nepal and in South Asia. LI-BIRD considers this an opportunity to disseminate the community seed banks approach in the country and in the region. From 2014 to 2018, LI-BIRD facilitated twelve training events on community seed banks of one to five days duration (Table 12) in which 277 farmers and NGO staff participated.

Table 12. Summary of training on community seed banks facilitated by LI-BIRD

SN	Year/ Month	Organization/programme organizing training	No. of participants	Duration	Participants
1	Dec 2018	SAHAS Nepal	26	4 days	Staff and community members
2	Nov 2018	NESFAS, Meghalaya, India	38	4 days	Staff, partners and community members
3	Nov 2018	Peace Corp Nepal	38	half a day	Peace Corp volunteers and Extension officers from GoN
4	Nov 2017	HomeNet Nepal	25	3 days	Farmers and staff
5	Oct 2016	BBP Pariwar, Kavrepalanchok	25	3 days	Farmers and staff
6	May 2016	LCP project (LI-BIRD/ NARC/Bioversity)	20	3 days	Farmers and staff
7	Feb 2016	NFGF, Sindhupalchok, Kavrepalanchok and Dolakha	20	3 days	Farmers and staff
8	Jan 2016	RtF Project (LI-BIRD, SAHAS Nepal, CARE Nepal)	20	3 days	Farmers and staff
9	Apr 2015	Action Aid Nepal, Nepalgunj	20	5 days	Farmers and staff
10	Jun 2015	Action Aid Nepal, Biratnagar	20	5 days	Farmers and staff
11	Aug 2014	Peace Corp Nepal	5	1 day	Cooperative members
12	Nov 2017	HomeNet Nepal	25	2	Staff and community members
Total participants			277		

The duration of the training depends on the demand made by the partner organization. Following the training, most of the participants became involved in establishing in managing community seed banks. Some example includes participants from Action Aid Nepal, HomeNet Nepal and the NESFAS.

Some Issues and Challenges

Community seed banks in Nepal are making progress. The number of community seed banks in Nepal is growing and innovations, knowledge generation and quality improvement are taking place. As a result of the continuous involvement of a number of organizations to promote community seed banks, including the government of Nepal and the National Genebank, community seed banks are known to many international organizations and represented in many forums. These are some of the positive developments, but there are also a number of issues and challenges that need to be addressed by the organizations working on this agenda.

Despite more than 20 years of implementation of community seed banks in Nepal, in-depth scientific study of the impact of community seed banks on conservation, food security, income and livelihood improvement, is lacking. Official registration and recognition of community seed banks remain on the agenda. The claim made that community seed banks in Nepal have conserved more than 1000 local varieties of 62 crops species needs further explanation. More detailed characterization, assessment and evaluation are needed. Capacity to carry out these tasks is limited. More than 1000 seed samples conserved by community seed banks that were sent to the National Genebank for *ex situ* conservation have yet to receive their permanent accession number (PAN). Some community seed banks have stopped regenerating seed every year thinking that they can bring back the seed from the National Genebank at any time if something goes wrong in the community seed bank. This may or may not be the case.

In general, due to lack of incentives, smallholder farmers are not very interested in using and conserving landraces. This is a reality. Government mechanism must support conservation work so that farmers can continue growing landraces. Community seed banks have a conservation interest and are maintaining diversity blocks. However, some community seed banks lack resources to do this work properly. A technical issue that community seed banks have to deal with is to maintain genetic purity of seed of cross-pollinated crops. Right now, they are not in the stage of applying netting or other isolation technologies. An increasingly important challenge is to link local food made of local varieties to the market so that farmers and custodians will be able to generate some income and be motivated to cultivate local varieties promoted by community seed banks. Another task on the agenda is the creation and maintenance of a central database with information about all the community seed banks.

Conclusion and Way Forward

Community seed banks are not only about seed conservation, but they equally contribute to improve food security, income and employment at local level. It is a successful approach for promoting conservation and sustainable utilization of plant genetic resources for food and agriculture, providing access to quality seed at local level and strengthening local seed systems. A community seed bank is a reservoir for climate stress tolerant crops and varieties, but a thorough assessment of the local varieties conserved by community seed banks with such characteristics is essential. Community seed banks are a platform for social learning and sharing and have enormous potential to scale activities and benefits to a large number of farming households. They can be very effective in times of crisis, such as when earthquake, flooding, drought or famine happens. A strong supportive policy environment and more focused research and funding support are needed to fully realize their potential. Organizations and individuals interested in community seed banks should be aware that managing a community seed bank is more than a project activity. It requires adequate attention by its actors and stakeholders and adequate resource allocation (time, effort, money). A short-term involvement of I/NGOs and communities is not enough to maintain valuable agrobiodiversity on-farm and in its natural habitat. A regular programme and strong support from the formal sector are a must.

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A Novel Approach for Implementing Community Seed Banks in the Mountain Area of Nepal

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Jugu Community Seed Bank in Dolakha District, Photo: Niranjan Pudasaini, LI-BIRD

Abstract

Community seed bank (CSB) is one of the approaches successfully applied in Nepal and globally for conservation and use of local crop diversity for food and agriculture. However, there are only a few success examples of CSBs in high mountain areas of Nepal, particularly focusing on traditional underutilized crops. This chapter aims to present the modality and experiences of implementing community seed banks in mountain districts, namely, Humla, Jumla, Lamjung and Dolakha, by the UNEP GEF Local Crop Project (LCP) jointly implemented by Bioversity International, NAGRC, DoA and LI-BIRD. The project was implemented in 2014 in Nepal for providing diversity rich solutions and mainstreaming the conservation and use of local agricultural biodiversity in the mountain agricultural production landscapes. The LCP adopted Diversity Field School (DFS) approach to sensitize and mobilize communities about the importance of local crop genetic resources,

paving way in realizing the need of CSB and its institutionalization. DFS approach has been found effective to identify and mobilize custodians of agrobiodiversity, promote good practices such as participatory variety selection, grass-roots breeding, food fairs and promote farmer- to-farmer learning and sharing as a part of local capacity building processes. DFS approach has empowered women farmers to take leadership roles in managing community seed banks. The project engaged local governments (*Palikas*) from the beginning to make them realize the vital need of CSBs, strengthen local seed systems as a mechanism to increase access to quality seeds of traditional and underutilized crop species. It has resulted a positive outcome to develop ownership on institutionalizing CSB in local agriculture development plans and providing significant amount of financial resources and material support to establish and sustain CSBs in LCP sites. In remote high mountain areas, where seed business opportunity is limited; engagement of and ownership of local government is crucial to sustain CSBs.

Keywords: Conservation, diversity field school, high mountains, local government, traditional underutilized crops

Introduction

The world's food basket today is shrinking at an alarming rate and what is most concerning is the reduction in the number of crop species and varieties used by humankind for food and nutrition security. This has become a serious issue for the food diversity and sustainability of food systems of the world today and in the future. Genetic erosion of traditional crop varieties is taking place in many communities due to lack of awareness and knowledge about their food and non-food values, technological interventions promoting mono-cultures and mechanization, easy access to hybrids seed, loss of traditional culture and food systems and frequent natural disasters like floods and drought.

Various participatory approaches, methodologies and tools have been developed to promote on-farm conservation of plant genetic resources and increase local seed security in various parts of the world. Community seed bank (CSB) is one of the concepts developed and promoted globally for on-farm conservation and utilization of local plant genetic resources and associated traditional knowledge, and to halt the process of rapid loss of genetic resources from the local production systems. CSB approach is in practice since the early 1990s and continue to emerge in different parts of the world in response to concerns about the gradual loss of biological diversity in agricultural systems, the loss of seeds by natural disasters and the demands of farmers to participate in locally driven diversity management strategies (Vernooy 2013). It is operated at local level, managed by a community and involves the processes of production, collection, storage, distribution (exchange, loan, grant) and marketing of locally important plant genetic resources (Joshi 2013). It aims to strengthen seed security through improving access to seeds, empowering farming communities to increase their stakes over seeds and planting materials and facilitate access and benefit

sharing of plant genetic resources (Shrestha et al 2013; Gauchan et al 2018). CSB therefore is a holistic and community-led approach in which farmers and their local institutions are involved in collection, storage, exchange, distribution and maintenance of local crop seeds and manage information system locally.

In recent years, CSBs have been portrayed as an effective mechanism to realize farmers' rights on seeds by conservation scientists, supporting the implementation of provisions of the International Treaty on Plant Genetic Resources for Food and Agriculture. CSBs can promote food sovereignty and help adapting agriculture to climate change (Development Fund 2011, Vernoooy et al 2014). CSBs offer diverse and locally adapted seeds and planting materials to farmers and therefore play important roles in strengthening farmer's seed systems at the local level in developing countries like Nepal.

CSB is one of the community-based approaches successfully applied In Nepal and globally for conservation and promotion of crop diversity for food and agriculture. However, there are only a few successful examples of CSBs in high mountain areas of Nepal that conserve and promote the utilization of traditional and underutilized crop varieties. In this context, this chapter aims to propose a specific strategy and approach adopted by the Nepal UNEP GEF Local Crop Project (LCP) to establish and sustain CSBs that promote conservation and utilization of traditional underutilized crops in remote high mountain areas. In these areas there are limited income opportunities for CSBs as seed enterprises compared to market accessible hills and Tarai landscapes. The chapters also highlights the benefits of the Diversity Field School (DFS) approach and the Community based Biodiversity Management (CBM) fund for operationalizing and sustaining CSBs and paving the way to satisfy the needs of CSBs and their institutionalization.

Importance of Community Seed Banks in the Mountain Areas

In the mountain areas of Nepal, traditional crop varieties are an important source of food and nutrition as they are rich in nutrition, resistant to disease-pest and better adapted to climate stresses, such as drought and cold. However, the area and production of underutilized traditional crops are declining due to multiple factors, such as increased road connectivity, access to improved crop varieties, youth out-migration, change in food habits and climate change. Despite unique adaptive traits and qualities, most of the traditional crop varieties have been neglected or underutilized by the national agricultural research and extension systems. In remote mountain districts of western Nepal, frequent drought has been reported that causes severe food shortage due to lack of sufficient and timely rainfall to grow and harvest crops. This has also resulted in shortage of locally adapted seeds and planting material for the next season, since farm saved seed is the only source of seed in such risk-prone mountain regions for most of the traditional crops. Therefore, the need of timely access to locally adapted seeds is

important in the inaccessible risk-prone mountain areas where the informal seed system fulfills more than 95% of seed requirement. In this scenario, community seed bank has been considered a sound approach for conserving and utilizing local plant genetic resources of traditional crop varieties for the benefits of local communities, while strengthening farmer seed systems and creating awareness about the importance of agricultural plant genetic resources (APGRs) for making our farming system resilience and sustainable.

The Local Crop Project (LCP) was implemented to fulfill the gaps in research and development of important traditional underutilized mountain crops aiming to provide diversity rich solutions and mainstream the conservation and use of local agricultural biodiversity in the mountain agricultural production landscapes. The project included eight traditional underutilized crops that are nutrient dense, climate resilient and indigenous to the Nepal mountains. These crops are amaranth (*Amaranthus hypochondriacus*, *A. caudatus* and *A. cruentus*), barley and naked barley (*Hordeum vulgare* and *H. vulgare* var. *nudum*), common bean (*Phaseolus vulgaris*), buckwheat (*Fagopyrum esculentum* and *F. tataricum*), finger millet (*Eleusine coracana*), foxtail millet (*Setaria italica*), proso millet (*Panicum miliaceum*) and cold tolerant rice (*Oryza sativa*). The project has implemented CSB as one of the key interventions to build local capacity of farmers and community-based organizations (CBOs) for strengthening farmers seed systems, conserving traditional crops and supporting livelihoods of smallholder farmers.

Community Seed Banks Implementation Modality of the Local Crop Project

There are a number of steps suggested to follow while establishing and operationalizing CSB in Nepal. In most cases, CSBs are planned to be established as part of project activities to be accomplished within a limited period. Often, there is inadequate understanding of the community context and their willingness to run a CSB. This might be the reason of the poor functioning of some CSBs. CSBs established in more accessible areas of Nepal have income opportunities to sustain CSBs from seed enterprising, but CSBs in high mountain areas have limitations to generate significant income from seed business, mainly due to poor infrastructure and weak market opportunities. However, there is greater need of CSBs to conserve and make availability of locally adapted nutrient rich traditional crops to increase production and productivity in mountain areas, where there are limited alternatives for access to quality seeds from external sources.

The project adopted a different strategy to establish and sustain CSBs in remote mountain areas focusing on awareness raising and mobilization of communities and local government and non-government stakeholders about the need of a

CSB for sustainable food systems and livelihoods. Diversity Field School (DFS) has been identified as a first step to discuss about a CSB among farmers and make them realize the importance of a CSB. This then paves the way to prepare communities for CSB establishment, management and institutionalization in LCP sites as illustrated in **Figure 1**.

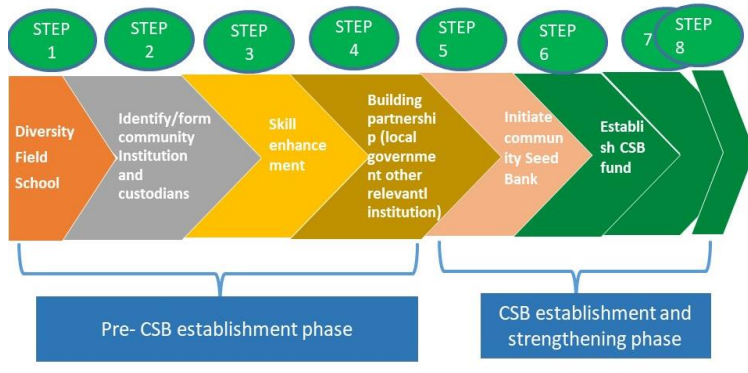


Figure 1. Community seed bank implementation steps adopted by LCP.

This is followed by identification and mobilization of community-based institutions and agrobiodiversity custodians, development of their skills and knowledge in agrobiodiversity conservation, promotion of good practices, such as participatory variety selection, grass-roots breeding, diversity cum food fairs and the promotion of participatory seed exchanges and farmer-to-farmer learning and sharing as part of community seed bank operations. These activities are vital for continued conservation and increased local access to quality seeds of traditional underutilized crops. The project has also established and implemented a Community Biodiversity Management (CBM) fund as a self-financing model by linking with group credits and saving schemes for sustainability of the community seed banks. In addition, the project emphasized to build a functional partnership between project team members, communities and the local governments from the very beginning of the CSB process with the aim to develop strong sense of ownership of the local government and integrate CSB in the local agricultural development plans. This facilitated generation of resources and strengthened the operationalization of CSBs. It can sustain CSBs in remote mountain areas where limited alternative income and business opportunities exist to sustain on its own mechanism.

Diversity Field School

Diversity field school is one of the evolving concepts applied in the LCP for the first time in Nepal building on insights of Farmers Field School (FFS), Diversity Field Flora (DFF) and Community based Biodiversity Management (CBM) approaches. DFS is defined as a community centered learning and action platform where

farmers participate to understand the value of biodiversity, manage agriculture plant genetic resources (APGR) by practicing various diversity management methods and tools and sustain successful initiatives through collective community actions. It is based on four key elements: a) participatory and holistic approach on managing agricultural biodiversity for food and nutrition security; b) valuing farmer’s knowledge, experience and their involvement in decision making process; c) promoting farmer- to-farmer learning and sharing as a part of local capacity building process; and d) customization of the actions as per the local context. DFS has suggested a framework curriculum which is based on the concepts of To Know, To Do and To Sustain, as illustrated in Figure 2.



Figure 2. Diversity field school modules, themes and expected outcomes.

It is recommended to complete module 1 of the DFS curricula before establishing a CSB, which will be the integral part of module 2. DFS module 3 focuses on empowering CSBs and communities by building technical, financial capacity, leaderships, networks and partnerships with public and private sector stakeholders including local governments.

The project used DFS as an effective tool to sensitize communities, particularly women, identify custodian farmers (agrobiodiversity rich farmers) and bring them together for planning, implementation and management of CSBs with a strong sense of conservation and promotion of locally grown important traditional crops varieties. Besides these, DFS forum is used to test and transfer farmer friendly tools and technologies and to document farmer’s knowledge for research purposes. From July 2015 until 30 June 2018, a total of 84 DFS classes were held in four project sites involving about 100 farmers (20-25 farmers per site). Among regular DFS participants, 65% were women members in LCP sites, indicating that DFS is effective to motivate women farmers to carry out local crop conservation, take on CSB management roles and diversify home gardens. As feminization in rural agriculture systems is a major issue in the context of

male outmigration (Gartaula et al 2010, Devkota et al 2016), DFS can be a useful approach to mobilize and train female farmers in a changed socio-economic context.

Partnership and Collaboration

Conservation, utilization and promotion of APGR are of great significance to local food and nutrition security and income opportunities. This implies that each and every concerned agency has an important role to play in this process. Engagement of key stakeholders in the process of CSB establishment and defining its operational modality is critical for ownership. The Local Crop Project itself is a result of joint collaboration between international, national non-governmental, government research institutions and extension agency as well as community-based organizations of the local area. The sphere of collaboration of community seed bank developed in the LCP sites is presented in **Figure 3**.



Figure 3. Sphere of collaboration of community seed bank developed in the LCP sites.

The project has invested in bringing key stakeholders, especially local government, district line agencies and organizations working in agriculture on board from the very beginning by ensuring their participation in key processes of CSB establishment, eg organizing seed fairs and seed production. In addition, the project has been engaging local seed shops, private seed companies and seed dealers through discussion, exposure visits and linkages to CSBs for sale of seeds of potential local landraces. Lately, CSBs have been coordinating with respective local governments (Rural Municipalities) for integrating CSB plans for promoting traditional crop into local policy, plans and programs. Local governments now

have significant power and authority to make policies, plans and allocate resources. During the process, CSBs have gained recognition. This is helpful to mainstream the project initiative in the local government system.

The project has initiated work towards establishing a seed value chain by developing CSBs as local resource centers for accessing quality seeds and locally developed local crop products, in coordination with local agro-entrepreneurs (eg Humla), organic shops and concerned rural municipalities. Apart from this, the project has supported CSBs to connect to the Association of Community Seed Banks in Nepal (ACSBN), the network that was established for collective learning, sharing of experiences and bringing the CSBs agenda into policy discussions. This can facilitate the recognition and participation of CSBs in decision making processes, to discuss issues of farmers' rights and access and benefit sharing of local genetic resources conserved and maintained by local community seed banks (Gauchan et al 2018).

Operations and Management

CSBs in LCP sites are managed and operated by community institutions established as a cooperative or farmer group. A large number of farming households (with significant numbers of women farmers involved) implements a community biodiversity management (CBM) trust fund (Table 1). These local institutions have formed a separate CSB management committee consisting of custodian farmers, both men and women. DFS is an integral part of the functioning of CSBs. Most of the DFS members are engaged in production, exchange and management of seeds of traditional crops. The role of community institutions is to provide overall leadership of CSB operations and fund management, building linkages, coordinating partnerships with public and private sectors to enhance local capacity, leverage resources, and sell seeds. The project is promoting women leadership given that women are the de-facto managers of seeds and planting materials in households and are playing a crucial role in sustaining family farming in the current context of increasing out-migration of men to foreign countries (Gartaula et al 2010).

These CSBs have established and manage a community biodiversity management (CBM) trust fund of NPR 1.2 million for supporting seed production, collection, management and other regular CSB activities. The CBM trust fund also provides small credit support to the most needy and vulnerable farm households for conducting income generating activities and for the conservation of rare and unique local crop genetic resources.

Table 1. Summary of members and the trust fund managed by CSB in LCP sites.

Site	Name of local institution operating CSB	Members			CBM trust fund (NPR)
		Female	Male	Total	
Chhipra, Humla	Karnali Agriculture Cooperative Limited	68	66	134	350,000
Hanku, Jumla	Shree Dhauligaad Agriculture Biodiversity Conservation Group	57	19	76	300,000
Ghanpokhara, Lamjung	Ghanpokhara Seed Production and Conservation Farmers Group	15	40	55	315,000
Jungu, Dolakha	Himchuli Multipurpose Cooperative Limited	45	41	86	300,000
Total		185	166	351	1,215,000

CSB activities, such as seed production and fund mobilization, have provided direct incentives to CSB members through increasing access to quality seeds and small financial capital locally and giving additional earning opportunities for growers from the sale of seeds. In 2017, four CSBs in LCP sites produced 4.8 tons seeds of 32 varieties of 10 crops species involving 166 farmers in total (Figure 4). Some sites produced a relatively large number of crop varieties of more crop species, such as Dolakha and Humla as compared to Jumla and Dolakha. These CSBs are emphasizing the production and supply of seeds of a large number of traditional crop varieties rather than supplying a large quantity seeds of few crop varieties.

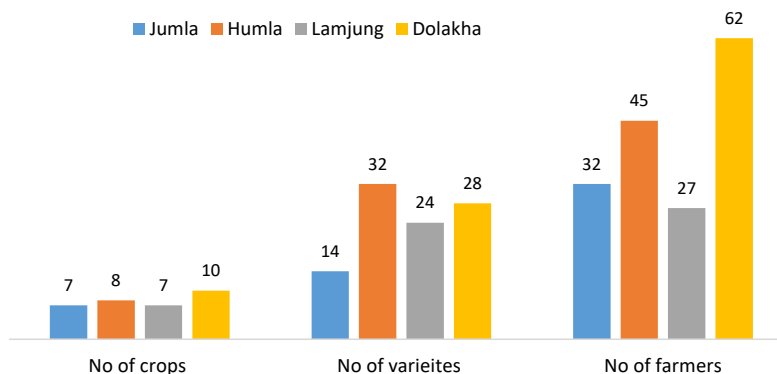


Figure 4. Number of crop varieties and farmers engaged in seed production activity in LCP site in 2017.

Sustainability Mechanisms of CSBs

Most of the CSBs in Nepal are established as a project activity supported by non-government agencies. Some of the community seed banks are facing challenges to sustain their operation after phasing out of the projects. Organizations sometimes start CSBs without adequate groundwork that prepares communities to lead the process. Often, they lack mechanisms to provide follow up support. Due to its nature, establishment of a functional CSB requires a bottom up planning process and social mobilization to engage local leaders, communities and stakeholders. This need is often poorly understood and therefore not prioritized by organizations. Social mobilization increases interest and engages communities in the participation of decision making processes necessary to build local ownership. CSB management therefore needs to be planned from the very beginning of its establishment. Establishment of a vibrant local institution, developing active and young agrobiodiversity custodians (men and women), building financial and physical assets as well as networking and partnerships with government and non-government stakeholders including private actors are key for sustaining CSBs managed by the communities. The LCP project has emphasized these aspects from the beginning. The project has also implemented Community Biodiversity Management (CBM) fund as an integral part of CSBs since the beginning of 2018 as a self-financing model for sustainability.

Capacity Building of Local Institutions and Communities

LCP utilized the DFS platform to discuss about CSB, raise awareness and prepare farmer leaders to mobilize communities for CSB establishment, operations and management. Custodian farmers and community leaders received CSB Management training and exposure opportunities to observe and interact with the CSB community in Nawalparasi in May 2016. It motivated them to lead the process of establishing CSBs in LCP sites. They discussed with existing farmer's groups and cooperatives and relevant government agencies about the legal provisions and support mechanisms for production and marketing of seeds as a function of CSB. They received training and material supports for seed storage from the project and government extension agencies. The local institution responsible for the management of the CSB has mobilized trained men and women custodians and seed producer farmers to produce seed for the CSB. Local institutions are trained in CSB management, financial and fund management, seed business planning and leadership with priority given to women and youth. CSBs were established at the end of 2016 and became operational by the middle of 2017.

Establishment and Management of Community Trust Funds

Building financial assets is one of the important aspects for the continuity and sustainability of CSB activities after the project support is over. Our experience

shows that a community fund generates interest, binds communities and promotes collective action in achieving CSB goals because it directly supports production, collection and distribution of seed and planting materials. LCP promoted CSBs have established a CSB Fund of about NPR 300 thousand in each project site managed by the local institutions. A partial amount of this fund is made available to seed producers and custodians as credit to increase production of quality seeds. Each CSB has developed and implemented a fund mobilization guideline. It is mobilized as a revolving fund and the interest is used for covering operational cost of the CSB, which is important for sustaining the CSB. CSB fund is now reintegrated with the community biodiversity management (CBM) trust fund and linked to local group credit and saving schemes as a self-financing model for CSB for conservation, livelihood improvement and a benefit sharing mechanism for poor and vulnerable farmers.

Seed Value Chain Development of Local Crops

Communities often undervalue their existing APGR, which hinders their optimal utilization. This affects in particular the traditional minor crops in the mountain region. DFS approach combined with CSB processes and mechanism is found to be quite effective to raise awareness and engage communities to address this issue. Linking production to improved processing with the use of women friendly machinery and adding value through diversifying products contributed significantly to better valuing traditional crops and increasing their utilization. Selection and improvement of varieties through grassroots breeding has been ongoing in *Dudhe Chino* (proso millet) in Humla, *Rato Kodo* (finger millet) in Jumla, *Bariyo Kaguno* (foxtail millet) in Lamjung and *Pahenlo* and *Khairo Simi* (common bean) in Dolakha. Dolakha beans have been proposed for formal registration in the national seed system, which will enable CSB communities to benefit from seed production and connect to the private sector. CSBs have an important stake in the seed value chain to produce, sell and maintain seeds and provide direct benefits to farmers and sustain CSB functions. Product diversification and marketing of proso-millet, foxtail millet and finger millet by training local farmers via the DFS forum have created synergetic effects to strengthen the seed value chain. The participation in the national level food fair of 2018, the varietal registration of Dolakha beans and the making of proso-millet bakery products linked to local tourism in Humla are some of the efforts that are adding value to local crops, ultimately contributing to diversify the biodiversity-based income sources of smallholder farmers. Efficient processing and guaranteeing quality are crucial for establishing marketable products.

The introduction of a finger millet thresher cum dehusker and proso-millet dehusker were instrumental in reducing human labor, drudgery of women and improving the quality of the processed products. CSBs are becoming local resource centers and are managing these processing machines by applying a

“Payment for Service” scheme. Dolakha has generated about 15,000 NPR from operating a millet thresher under this scheme in two seasons. Revenue generated through the operating processing machines is utilized for the management of the CSBs .

LCP introduced CSBs have started making income from the sale of seed in the local market. With project support, the CSBs produced 6.7 tons of seed of a large number of crop varieties, which were distributed to more than 6000 households in 2018 (Table 2). They also earned NPR 99,100 (USD 950) by selling seed to governmental service centers, seed companies and local agro-vets.

Table 2. Details of crop varieties, seed quantity and number of beneficiaries by year

Name of CSB	No. of crops			No. of varieties			Total seed (Kg)			No. of seed receivers (HHs)		
	Y1	Y2	Y3	Y1	Y2	Y3	Y1	Y2	Y3	Y1	Y2	Y3
Chhipra CSB, Humla	2	5	11	6	15	25	583	1605	1920	624	886	1997
Hanku CSB, Jumla	5	8	6	16	18	14	394	928	2315	496	2315	2162
Ghanpokhara, CSB Lamjung	5	7	8	11	14	20	213	640	631	360	573	468
Jugu CSB, Dolakha	4	4	24	7	18	41	140	1191	1857	431	562	1381
Total							1330	4364	6723	1911	4336	6008

Note: Y1 = 2016, Y2 = 2017, Y3 = 2018. **Source:** CSB records

Recently, the potential of community seed banks to deal with the effects of climate change has become evident. Increasing crop and varietal diversity is adapted by mountain smallholders to cope with climate change as a risk reduction strategy. As traditional mountain crops are well adapted and hold large genepoolw to cope with climate stresses, CSBs directly contribute to adaptation. At the same time, income generation from seed sales and social capital building help to build climate resilient livelihood systems of mountain farmers.

Integrating Community Seed Banks in Local Development Plans

After the recent restructuring of the state in Nepal, the local government is independent to develop and implement local policies and plans. In this context, it is crucial for the project and community institutions to collaborate with local government while establishing CSBs. To collaborate and build partnership, LCP organized a two day orientation and interaction workshop with the local government authorities of the project sites on 16-17 February 2018. The participants were the chair persons and vice-chair persons of Rural Municipalities (RMs), Ward Chairpersons of project implemented RMC, Chairs of CSB committees, Cooperatives and Members of Farmers Groups from project rural municipalities (*Palikas*). The interactive workshop identified the areas of joint work to promote local crops through CSBs, the testing and promotion of

processing technologies of traditional crops and the need to build capacity of local institutions and communities. Local government leaders were instructed to implement the Local Government Act 2017 (2074), which explicitly outlines the production, promotion and conservation of local crops and agrobiodiversity. Local government leaders of LCP are now engaging CSB managers in the local agricultural planning process and start allocating resources for organizing seed fairs, distributing CSB seeds and providing grants for building CSB storage facilities, supporting processing machines and providing seed production training in all sites. Local governments of LCP sites have realized that CSBs are a local mechanism to increase access to quality seed and promote the use of local and underutilized crops.

Karnali Provincial government has integrated CSB in its policies and plans with the statement to “establish CSBs in all local government units in partnership with farmer’s cooperatives for the conservation and promotion of local crops” and has allocated resources in the coming fiscal year. Local governments of LCP sites Kharpunath RMC Humla, Tatopani RMC Jumla, Marsyangdi RMC Lamjung and Gaurishankar RMC Dolakha included CSBs in their local policies and programs and started supporting strengthening CSBs supported by LCP. To date (mid 2018), CSBs have leveraged a total of NPR 3.78 million (USD 37,000) from local governments in four project sites to strengthen community seed banks and support conservation and local development initiatives (Table 3). Project site Humla has leveraged the largest amount of resources of NPR 1.65 million.

Table 3. Status of resources leveraged from local government from 2016-2018

Name of CSB	Total NPR	Purpose of the support
Chippra, Humla	1,650,000	CSB building structure & land purchase, seed storage, and processing equipment, seed production and distribution, value chain development
Hanku, Jumla	800,000	CSB storage structure, seed production, cash (apple) crop production, purchase of processing equipment, generator for electricity
Ghanpokhara, Lamjung	202,500	Seed storage materials, seed purchase, production and distribution,
Jungu, Dolakha	1,130,000	CSB building structure & land purchase, purchase of tillage, irrigation & processing equipment, micro irrigation canal for vegetable & fruit nursery development and agricultural inputs
Grand Total	3,782,500	

Most of the resources leveraged are for infrastructure and institutional strengthening of CSB through support in seed storage, processing equipment, seed production and distribution. This indicates that local governments in project sites have strong interest in CSB development.

Conclusion, Lessons Learned and Way Forward

The community seed bank approach promotes collective local action for conservation and sustainable use of traditional crop genetic diversity. The LCP project has piloted the diversity field school (DFS) approach and developed close coordination with key stakeholder, especially local government, for the establishment of Community Seed Banks in project sites. The project team has learned that there is a need for continuous efforts to maintain CSBs well-functioning and diversify their functions from seed value chain development to local product promotion. Capacity development is therefore very important. The DFS approach is very effective to promote capacity development. There is also a need to integrate CBM fund in CSB operations to enhance access to financial credit for the needy and vulnerable farmers and communities and generate livelihood options in addition to conserving rare and endangered landraces. CBM fund is an option to develop incentive and benefit sharing mechanisms for CSB members and local farmers. A CBM fund is also a viable self-financing model for the sustainability of community seed banks in the remote high mountain regions of Nepal where easy access to credit and financial resources from external sources is limited.

Based on the experiences and lessons learned by the LCP, we suggest five core elements to support CSBs: (i) identification, mobilization and capacity building of communities and custodian farmers; (ii) implementation of DFS; (iii) development of a functional partnership with local government for the development of ownership and integration in local government programs and plans; (iv) seed and product value chain development, and (v) CBM trust fund as a self-finance model. The first and foremost task is to identify and sensitize custodian farmers and community institutions about the vital need of a CSB, its multiple functions and benefits for smallholders. DFS as an integral component of CSB is effective to raise awareness, build capacities and mobilize the community. DFS also provides a platform for collective learning and sharing, often a missing component in most of the CSBs established in Nepal and elsewhere. The roles of custodian farmers and local leaders to motivate fellow farmers and establish and run community institutions has to be planned ahead of CSB establishment. It is recommended to identify active farmer cooperatives or groups, custodians of agrobiodiversity and lead farmers in the process of DFS implementation. It is important to first motivate, dialogue with and engage local government in the process to establish a CSB before coming to a partnership agreement. After the state restructuring, local governments have authority and mandate to make local policies and plans and allocate resources. The project recommends communities to approach local governments to share ideas about a CSB, its multiple benefits and the potential to become a local resource center for conservation and livelihood improvement. For sustainability, engagement, ownership and integration of CSB with local government plans and programs is indispensable. Generation of some economic benefits from the operation of CSB is imperative at both individual and

community levels. This can be achieved by diversifying its services as a locally active resource center for farmers. One important reason why community seed banks become less functional when external support is withdrawn is the lack of economic activities to support livelihoods of member families (Vernooy et al 2014). The CBM trust fund is an important part to be integrated in CSB operations to enhance access to financial resources, in particular for needy and vulnerable farmers and communities. It is crucial to develop incentive mechanisms for CSB members through establishing seed enterprise and community trust fund for easy access to small credit facilities. CSBs can benefit from linkages with academic and research institution for development of human resources by blending community knowledge with science. Mountain areas have a unique advantage due to agro-climatic suitability to grow traditional vegetable crops. CSBs can integrate seed production and seed enterprise development of high value-low volume traditional vegetable and other mountain crops.

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Making a Community Seed Bank Functional and Sustainable: An Experience from Bajura

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Local food items produced using local crops. Photo: Bal Krishna Joshi, NAGRC

Abstract

Over the years, there has been a marked trend of growing fewer landraces and indigenous cultivars in Bajura with some of them on the verge of extinction. This is threatening the food and nutrition security of local people. Some of the main reasons for this trend are mono-cropping of modern varieties of staple crops, changes in food preferences mainly towards rice, shortage of farm labor, high costs of production and the stigma attached to landraces/indigenous cultivars as 'poor men's food/crop' that leads to undervaluation and negligence. To counter this trend, it was considered crucial to conserve and utilize the landraces for food security and livelihoods of local people. The community seed bank (CSB) is playing an instrumental role to achieve this. In Bajura, CSB was a new intervention. Some of the major achievements of the CSBs in Bajura include the conservation of landraces, contribution to seed replacement rate, increase in farm income and improvement in livelihood of local people and social capital building. Various success factors contributed to the good performance: seed production and marketing of modern varieties, various incentives and benefits from the government for

conserving landraces, and investment in building social capital in the local community and among the members. The study found that commercial seed production and product diversification of landraces were critical for the sustainability of the community seed bank in Bajura. It is argued that a special federal policy is urgently needed for the conservation and promotion of landraces in the context of the loss of these important plant genetic resources.

Keywords: Indigenous cultivars, landraces, product diversification, seed production

Introduction

The importance of agriculture plant genetic resources (APGRs) for the wellbeing of mankind cannot be overemphasized. However, there is a rapid loss of APGRs worldwide with some of them on the verge of extinction. This situation has threatened the food and nutrition security nationally and globally. The main reasons for this situation are the mono-cropping of modern varieties and poor utilization of landraces and indigenous cultivars in modern farming practices. The negative impact of climate change has only aggravated the situation. Therefore, it is crucial to conserve and utilize the landraces and local cultivars for food and nutrition security and sustainable livelihoods of local populations. A community seed bank (CSB) could play an instrumental role to this end. There is a variation in understanding and use of a CSB. However, in general, a CSB is a grassroots institution of farming communities that strives for the conservation and utilization of local agro-biodiversity (Shrestha 2012, Joshi 2013, Vernoooy et al 2015).

Community Seed Bank Initiatives and Present Status

Bajura is one of the most remote districts located in far-western region with the lowest HDI (36.8) and highest percentage (64%) of people living below the poverty line in Nepal (NPC 2014). The district has only 12% cultivable land. The state of food security is very poor as it is one of the chronic food deficit districts. As per the latest human development report (NPC 2014), 41.17% of children under five years are malnourished and 17% of the population does not live beyond 40 years. Not long ago, landraces and indigenous cultivars were the major sources of food and nutrition security in Bajura. However, the trend of growing such landraces has been on the decline over the years with some of them being on the verge of extinction. Some of the main reasons are mono-cropping of modern varieties; changes in food preferences mainly towards rice; shortage of farm labor; high costs of production; the stigma attached to landraces/indigenous cultivars as 'poor men's food/crop' leading to undervaluation and negligence. This has threatened food and nutrition security of local people. Therefore, it is important to conserve and utilize the landraces and indigenous varieties for better food security and livelihoods of local population. A community seed bank (CSB) can be instrumental to achieve this.

The popularity of CSBs has been growing in recent years among the rural folks of Nepal. In Bajura, however, it is a new intervention. Three CSBs, one Community Grain cum Seed Bank and one Community Seed Processing and Storage Center are operating in the district in 2018 with varying scales of operation and degrees of activeness among them. The first ever CSB was established in 2014 in Jera village, Wai (now a part of Swami Kartik Rural Municipality) under the management of Hariyali Krishak Samuha and the joint initiation of the DADO, Bajura, Action Aid Nepal and the Human Resource Center (HRC), a local NGO.

Status of Community Seed Banks in Bajura

Table 1 presents an overview of the CSBs operating in Bajura. CSBs in Bajura do not have a long history: all of them are less than five years old. All the CSBs were established by outside initiative and support; they were not established by the self-initiation of the respective community. There is a wide variation in the way the CSBs are operating. Two CSBs are managed by cooperatives whereas the others are managed by farmers group. Three are operating by the true name of CSB. One was initially set up as community grain bank, but was later converted to a community grain cum seed bank. Another is operating as a community seed processing and storage center. The major activities undertaken by the most of the CSBs are collection and marketing of seeds of modern varieties of cereals. Only two CSBs are involved in preservation and utilization of landraces.

Table 1. Community seed banks operating in Bajura district

CSB	Location	Year established	Initial supporter	Main activities
CSB managed by Hariyali Krishak Samuha	Swami Kartik Rural Municipality-5, Jera	2014	DADO, Bajura Action Aid Nepal and Human Resource Centre	Collection, preservation and utilization of landraces, collection, processing and marketing of seeds of improved varieties of cereals and local cultivars of buckwheat
Community Grain cum Seed Bank managed by Srijanshil Krishak Samuha	Budhiganga Municipality-2, Khetkot	2016	DADO, Bajura	Commercial production of improved seeds of wheat and paddy by the members and supply to nearby Community Seed Processing and Storage Centre managed by Hatemalo Sana Kishan Krishi Sahakari Sanstha
CSB managed by Badimalika Mahila Krishak Samuha	Budhinanda Municipality-5, Birsen	2017	DADO, Bajura	Collection, processing and marketing of seeds of improved varieties of cereals

CSB	Location	Year established	Initial supporter	Main activities
CSB managed by Yekata Sana Kishan Krishi Sahakari Sanstha, (small farmers agriculture cooperatives)	Badimalika Municipality-9, Martadi	2017	DADO, Bajura	Collection, and preservation of landraces, collection, processing and marketing of seeds of improved varieties of cereals and local cultivars of buckwheat, retailing of grains and flour of local beans, cereals and millets
Community Seed Processing and Storage Centre managed by Hatemalo Sana Kishan Krishi Sahakari Sanstha	Budhiganga Municipality-2, Taprishera	2017	DADO, Bajura	Collection, processing and marketing of seeds of improved varieties of cereals and local cultivars of buckwheat

Conservation and Utilization of Landraces

With the support and facilitation from DADO, Bajura, Action Aid Nepal and the Human Resource Centre, two of the five CSBs are actively involved in collection, preservation and utilization of landraces. For example, the CSB managed by Hariyali Krishak Samuha, Jera, has maintained four dozen entries of landraces of paddy, maize, wheat, finger millet, buckwheat, proso millet, foxtail millet, amaranth, sorghum, sesame, cotton, collected and conserved in the seed bank until now. It has also conserved in the seed bank the landraces collected from nearby villages and districts. The CSB managed by Hamro Yekata Sana Kishan Krishi Sahakari has maintained altogether 10 entries of landraces of paddy, foxtail millet, proso millet, finger millet, sorghum in the seed bank. Other CSBs are not involved in preserving landraces, but have a plan to do so in the future.

The Jera CSB has collected seeds of landraces of various crops and preserved them in earthen pots and plastic containers. The Secretary of the local Hariyali farmers group, also the manager of the CSB, maintains the written records of landraces and local cultivars collected from members and other local villagers. Local farmers receive seeds of landraces and indigenous cultivars before the cropping season from the seed bank on the condition that they will return the seeds after the crop harvest, usually adding 10% of the borrowed amount. Farmers from nearby villages and districts visit the seed bank to buy seed. The seed bank also provides seed free of cost for destitute people.

Governance of Community Seed Banks

Executives and members of most of the CSBs do not have a very good understanding about the function(s) and importance of the CSB. Initially, CSBs

simply followed what their promoters asked them to do. Systematic collection and maintenance of landraces and other works pertinent to agro-biodiversity conservation are yet to be institutionalized in the CSBs. No separate committee was formed by the CSBs to manage seed bank affairs systematically. Members have not discussed much yet about the rules and regulations for setting up of a seed bank and managing its affairs. Generally, a low level of social capital was observed across the CSBs. One of the challenges is the general lack of trust among members. In most cases, DADO Bajura is keeping the CSBs alive by purchasing source seeds and improved seeds produced by the seed bank, using the original source seeds provided by the DADO. In other words, the main activity and business of most of the CSBs in Bajura has been seed collection of commercial varieties and selling seed to DADOs and other institutional buyers.

Roles of DADO and Community Seed Banks

In 2016, DADO Bajura initiated a campaign to promote the conservation and utilization of landraces and local cultivars with a long-term goal of improving food and nutrition security in the district. The campaign essentially consisted of five components (**Figure 1**). Local CSBs have played a crucial role in the implementation of four components; but they have not implemented the product diversification component. Below is a brief account of the implementation of the campaign and role played by the CSBs.

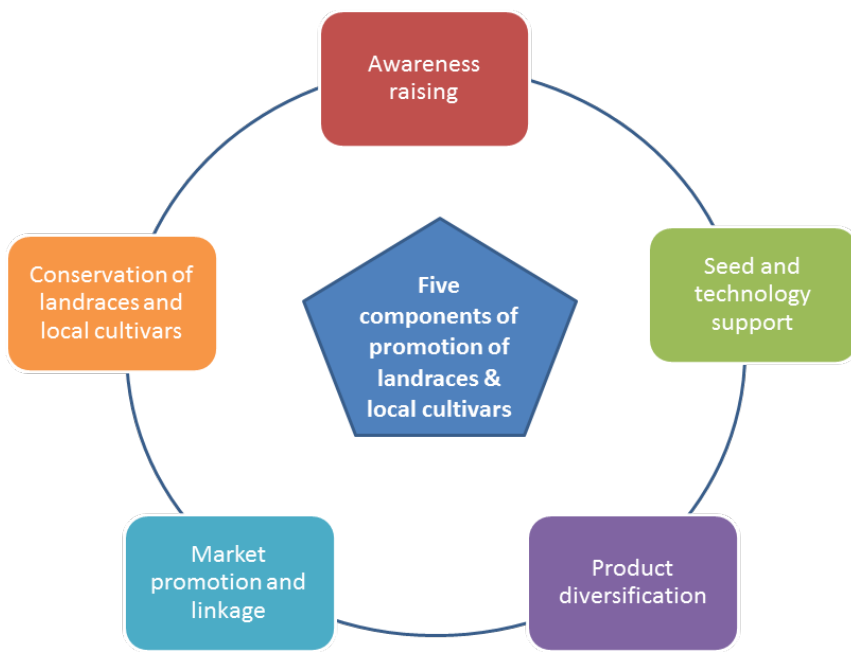


Figure 1. Five components of promotion of landraces and local cultivars in Bajura.

Awareness Raising

Under this component, awareness raising activities were conducted in the district using various means and methods. A message about health benefits and economic importance of landraces and local cultivars of cereals, pseudo cereals and other crops was designed and broadcasted by local FM radios and published in local newspapers on a regular basis. Wall paintings with short messages were used across the districts and hoarding boards were placed in major locations where there was a high flow of movement of local people (Figure 2). Stakeholder workshops in district headquarters and in various parts of the districts were organized to discuss the issues of promoting landraces and local cultivars. DADO utilized forums such as mass meetings and people’s gatherings to talk about and spread the message on the importance of such crops. Several meetings with CSB related persons or executives and members of the farmer groups and cooperatives were also conducted. In such meetings, CSBs were requested to spread the message about conserving landraces in their respective villages.



Figure 2. Poster and wall text to promote the conservation of local crop diversity.

Seed and Technology Support

As a result of the awareness raising program more farmers became interested in growing landraces and local cultivars. Farmers who did not have seed were supplied seed free of cost collected locally. Mainly seeds of foxtail millet, proso millet, buckwheat barley and beans were freely distributed. In addition, seeds of improved varieties of finger millet and buckwheat developed by the Nepal Agricultural Research Council (NARC) was distributed freely. Farmer trainings were organized to impart improved cultivation practices of these crops at the district headquarters and in production pocket locations. One booklet about the importance, distribution, and general cultivation practice of landraces was published and a few copies were made available to field agriculture technicians and leader farmers. Furthermore, several field demonstrations were conducted in some production pocket locations to demonstrate the production potential and facilitate participatory variety selection process.

Product Diversification

A total of 28 local hoteliers and restaurant owners/chefs and Female Community Health Volunteers (FCHVs) were trained in cooking and preparing eight dishes utilizing grains and flour of landraces and local cultivars such as finger millet, buckwheat, foxtail millet and amaranths (Figure 3.) During initial field visits to the communities, DADO found that one of the main reasons for local people not liking foods prepared from grains and flour of these landraces and local cultivars was the lack of product diversification. Farmers did not have ideas about making modern products, such as cake and other popular Nepali dishes including *momo*, *namkin*, *paratha*, *laddu* and *halwa*.



Figure 3. Glimpse of new dishes prepared with local varieties

Hoteliers and restaurant owners/chefs were trained with the idea that they can offer these dishes to visitors coming from outside the district as local specialties. This can help in creating demand for the raw materials and ultimately contribute to the conservation of local landraces. Trained FCHVs, on the other hand, can impart the knowledge and skills of product diversification to the fellow women villagers who usually meet once a month to discuss the health and nutrition of mothers, babies and the family. After these dishes became popular in the district headquarters there was a time when serving these dishes was a norm in most of the formal meetings, workshops, trainings and other types of public gatherings. DADO facilitated replicating the product diversification endeavors in newly established municipalities and rural municipalities in the district. This has had some success. Only a few hoteliers have continued offering above mentioned dishes to outsiders and government offices and local NGOs. By the end of 2018, only a couple of restaurants in district headquarters were offering above mentioned dishes.



Figure 4. Local seed and food fairs and community seed bank

Market Promotion and Market Linkages

Market promotion of products from landraces and local cultivars was necessary to motivate local farmers to conserve and cultivate landraces and local cultivars. Another strategic objective was to help farmers realize the nutritional and economic importance. The strategy developed was to find markets in cities and linking the local producers to these distant markets. DADO played a crucial role

in the decision of the Nepal Food Corporation (NFC) to buy local produce, mainly buckwheat, through its local outlet. One CSB and a farmer group were financially and technically supported to establish a retail outlet of raw product of landraces and local cultivars in the district headquarters. The first year 2016/17 met with failure with no purchase at all by the NFC outlet due to lack of sufficient volume of production. The following year local farmers were able to sell some buckwheat. CSBs helped some local producers to sell their products to the local NFC outlet.

Two food fairs were organized in the district headquarters (**Figure 4**). One district headquarter based restaurant was sponsored and supported to participate in the tenth National Organic Fair organized in Mahendranagar, Kanchanpur in 2017. The supported restaurant prepared and sold various dishes made from the raw materials of landraces and local cultivars and won the first prize of NRS 10,000.00 in the recipe competition. The same dishes were displayed in Kathmandu on the occasion of 37th World Food Day. Grains and flours of various landraces and local cultivars of cereals, millets and pulses were displayed on the occasion.

Conservation of Landraces and Local Cultivars

DADO initiated various activities aiming at conserving landraces and local cultivars. DAO supported the CSBs to this end. For example, DADO gave financial and technical support to two CSBs to prepare an inventory of the landraces and local cultivars conserved in the CSB. Information about the name of the crop, variety, characteristic features, economic potential, sowing and harvesting times were recorded in a register. DADO offered capacity building to two CSBs to enhance their competency in running and managing a CSB. In addition, DADO provided some financial and capacity building support to four CSBs to set up and manage a diversity block. Moreover, a matching grant of NRS 50,000.0 was provided to one CSB to set up an agro-biodiversity management fund. DADO and Agriculture Service Centers (ASCs) organized biodiversity fairs at district headquarters and other towns and villages. DADO and ASCs collected seed of endangered species which was kept on display in their respective offices.

Despite all these efforts, a field observation of November 2018 revealed that, except two CSBs, the others had discontinued the conservation activities. Some of the major reasons found were members' tendency towards seeking immediate economic benefits from the CSB, weak commitment to the CSB by the leadership and low level of social capital developed in the CSB. Another important reason was the absence of regular follow up support and monitoring of progress. This was mainly due to the termination of DADO support by government decision. The roles played by DADO are summarized in **Table 2**.

Sustainability of Community Seed Banks in Bajura

Figure 5 summarizes the sustainability path of CSBs operating in Bajura. It emphasizes the fact that besides the core activity of conserving and utilizing landraces and local cultivars, CSB need to diversify their business mainly through involvement in seed production and marketing of modern varieties. This can provide more incentives for local farmer producers to be involved in conservation of their landraces and local cultivars and help ensure sustainable livelihoods in remote hilly villages of the district.

Table 2. Roles played by DADO Bajura in initiating and making CSBs functional

Areas of support	Description
Awareness and capacity building	<ul style="list-style-type: none"> Workshop, meeting, visiting the site of CSB and meeting with community members, biodiversity fair
Financial support	<ul style="list-style-type: none"> Cash support of NRs29,00,000 for construction of three CSBs and one community seed processing and storage building Agrobiodiversity management fund of NRs50,000 to set up <ul style="list-style-type: none"> Financial support of NRs60,000 to renovate local small irrigation scheme
Material support	<ul style="list-style-type: none"> 50% subsidy on metal seed bins and weighing machine, printed plastic sacks, sack sewing machine <ul style="list-style-type: none"> 85% subsidy on hermetic bags
Seed purchase from CSB	About 15 tons of improved seeds of wheat, maize and paddy purchased from local CSBs during FY 2016/17 and 2017/18
Networking	Local Municipalities and Rural Municipalities approached and mediated to purchase seeds from CSBs
Networking	CSBs linked with other seed marketing cooperatives, farmers group and DADOs outside the district

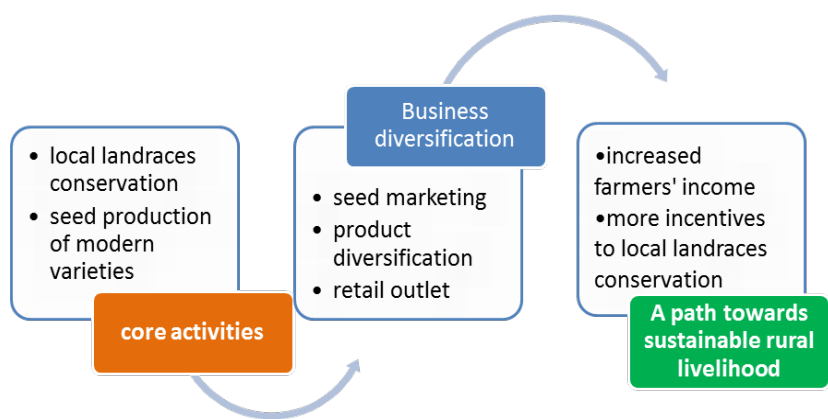


Figure 5. Sustainability path of CSBs operating in Bajura.

Conclusion and Recommendations

CSB is a new phenomenon in Bajura. Awareness of the need and importance of CSB is growing among the local people and stakeholders. Of the five CSBs, only two are functioning well in the spirit and objectives of a standard CSB. A CSB can be instrumental in conserving landraces and local cultivars and enhance food and nutrition security in Bajura. However, to make the CSBs in Bajura function more sustainably, the following factors need to be considered:

- Seed production and marketing of modern varieties
- Business diversification encompassing various value chain stages
- Networking with seed cooperatives, private companies and other possible buyers of improved seed
- Various incentives and benefits from the government for conserving landraces
- Training and capacity building of CSB executives and members
- Investment in building social capital in the local community and among the members of the CSB
- Accessibility and a good working transport network

Based on the findings of the study of CSBs in Bajura, the following recommendations can be made to strengthen and institutionalize the community based conservation and utilization of landraces and local cultivars:

- The government should develop and implement a separate policy on promoting landraces and endangered species
- Registration of landraces for commercial seed production should be simplified
- Output-based incentives/subsidy should be given to CSBs for conserving and growing landraces or, alternatively, NFC should guarantee their purchase
- Local level government should be sensitized and taken on board in landraces conservation and utilization efforts
- Varietal improvement should be set up through adaptive trials, Participatory Varietal Selection or other methods
- Research should be done to reduce cost of production of landraces
- Development and circulation of training materials should be promoted; for example, a colored handbook on food preparation and preservation
- Cooperative farming/lease farming/contract farming should be promoted
- Mobilize support for organic group certification
- Facilitate linkages between local producers/collectors an urban based traders/wholesalers/retailers
- School curricula on nutrition, dietary diversity, utilization of landraces,

- and food preparation should be developed
- Product diversification (noodles, bread, cookies etc) and cooking training for local restaurants and Female Community Health Volunteers (FCHV) should be stimulated
- The government should begin massive training of FCHVs, local resource persons and social mobilizers in food preparation and utilization
- Behavioral change communication materials should be produced about nutrition, food diversity, food preparation and utilization

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Community Seed Bank Implementation Approach of Action Aid Nepal

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Maa Bhagawati Community Bank, Goalgunj-Amarpur in Bara District. Photo: Action Aid, Nepal

Abstract

Since 2012, Action Aid Nepal (AAN) has facilitated the establishment of community seed banks in Lalitpur, Bara, Siraha, Morang, Therhathum, Shankhuwasabha, Nawalparasi and Bajura districts of Nepal. The objective of providing support for the establishment of community seed banks is to contribute to the sustainability and resilience of smallholder production systems. Such systems are key to achieve food security and food sovereignty, one of Nepal's development goals (CSP IV). This approach allows small-scale farmers and local communities take control over their agriculture and food system. AAN uses a nine steps approach to establish community seed banks, including conceptual clarity, identification of local partner, orientation, selection of farmers' groups or

cooperatives, formation of community seed bank management committee, capacity building, preparation of the community seed bank management guideline, creation of a record keeping system, development of a strategy for the sustainability and long-term management, and development of necessary infrastructure. Through this process, AAN has been able to facilitate the establishment of 13 successfully operating community seed banks in eight districts of Nepal. Altogether, 208 local varieties of 14 crops species have been conserved and utilized by these 13 community seed banks with an involvement of 800 households. These community seed banks are involved in conserving local varieties, production and distribution of seeds of local as well as improved varieties to the local communities and facilitation of farmers' easy access to planting materials. Most of the community seed banks are being managed by a well-organized group of women.

Keywords: Conservation, community seed bank, market, utilization

Introduction

In small-scale agricultural production systems, farmers select their own seeds, store them at home and share them with their neighbors and relatives. This is a common strategy for the conservation of local genetic resources and agrobiodiversity ensuring that sufficient seeds are made available for the next planting season. Traditional seeds are the result of years of farmers' investment in the selection and adaptation of plants to their local environmental, social, cultural, and economic conditions and needs. However, the past several decades have observed a strong pressure on farmers and their efforts to conserve their traditional seeds. In many places around the world, the introduction of high-yielding varieties (HYVs), hybrids and other Green Revolution technologies has displaced traditional varieties; many of them are difficult to find nowadays or have already become extinct.

The conservation of diverse local varieties is important not only because seeds are one of the main inputs for smallholder production systems, but also because they hold essential genetic characteristics that can help smallholder farmers adapt to multiple climatic challenges they may face, now and in the future. In this context, community seed banks are useful mechanisms to facilitate and enhance the capacity of smallholder communities to collectively identify, select, store and preserve their planting materials (Shrestha et al 2012, Joshi 2013, Bhandari et al 2017). They help to strengthen and scale up existing local initiatives on seeds – opening collective possibilities, which go far beyond individual farmers' home-based seed storage capacities and encourage the community to take common responsibility to take care of their traditional seeds and collective benefits.

Action Aid Nepal's Approach to Community Seed Banks

ActionAid Nepal (AAN), is a non-governmental, non-denominational, non-partisan and national social justice organization, rooted and working locally in different parts and regions of Nepal (<https://hive.actionaid.org/Nepal/SitePages/Home>).

aspx). AAN is a member of the Action Aid International federation and also a part of national and global social justice movements and other civil society networks, alliances and coalitions.

AAN believes in human rights and embraces a Human Rights Based Approach (HRBA) to fight against the symptoms and the structural causes of poverty, injustice and inequality. Discriminated, excluded and exploited people – particularly women and girls - living in poverty and facing injustice, whose rights are denied or violated, are our primary stakeholders.

AAN calls itself a feminist organization and practices feminist principles and approaches in all its operations. AAN always put women central, from the *Kamalari/Kamaiya* movement in the past decades to the free women from bonded labor campaign, to the Safe City Campaign at present to create awareness and fight against sexual violence and harassment of women in public spaces.

For most women, time spent on unpaid care work (UCW) is disproportionately high compared to men. Girls and women spend hours fetching water, collecting firewood, doing laundry, preparing food, caring for children and elderly, nurturing their families and doing other household chores, besides carrying out agricultural duties. These duties are a burden for women and have a strong impact on poverty. AAN has been working to break this stereotype role and advocate for recognition, reduction and redistribution of UCW to ensure women's meaningful representation at all levels.

For AAN, agroecology and climate resilient sustainable agriculture are priority areas. Smallholder farmers have limited access to support systems and services resulting in increased land abandonment and food insecurity. Their situation is worsened by the fact that local and improved seeds are being replaced by hybrid seeds which do not contribute to sustainability. AAN Nepal is promoting Climate Resilient Sustainable Agriculture (CRSA), which has seven pillars: gender equity and women's rights, soil conservation, sustainable water management, agro-biodiversity preservation, livelihood diversification, processing and market access and support farmer's organizations. The conservation of agro-biodiversity is one of the components of CRSA and the promotion of community seed banks a way to implement it.

Women have assumed a leadership role in AAN's work on agrobiodiversity. Farmers' groups led by women have been the most successful in terms of sharing indigenous knowledge and skills. Women farmers have vast knowledge of indigenous farming practices, methods and tools with regard to seed preservation. AAN has recognized this contribution of women to agrobiodiversity. Community seed banks are among AAN's best examples of working towards sustainability

and resilience of smallholder production systems and maintaining control over their agriculture and food system.

Establishment and Management of a Community Seed Bank

AAN initiates the process of establishing a community seed bank by sharing and reflecting on existing experiences and conducting exchange visits to already established community seed banks. Exchange visits help farmers to understand pros and cons, the costs and the current and future benefits associated with community seed banks. This gives participants encouragement and confidence to set up their own community seed bank in their community. Following the exchange visit, the community needs to adapt their observations to their own reality and needs. It is important to keep the design simple in a way that the community seed bank can be easily managed by the community.

AAN uses the following six steps to set up a community seed bank:

1. Conducting a survey of currently available seeds and documentation of characteristics and associated local knowledge;
2. Locating a place to set up a community seed bank;
3. Defining objectives, rules and working modality;
4. Formation of a group of members to take forward the day to day activities;
5. Creating a record keeping system to document the flow of seeds;
6. Identifying the most effective, affordable, and locally available seed storage system.

The following activities are carried out to promote community seed banks. Some of them (from number six onward) can take place simultaneously:

1. Organize a forum to discuss and bring conceptual clarity among partners about the basics and importance of a community seed bank;
2. Identify potential and interested partners in the promotion of the community seed banks in their program area;
3. Community level orientation and awareness raising about the roles of a community seed bank;
4. Selection of a group or cooperative to establish and promoting a community seed bank;
5. Formation of a community seed bank management committee;
6. Capacity building of the selected leader farmers through training and exposure visits;
7. Development of a community seed bank management guideline to define the functions and objectives of the community seed bank;
8. Development a strategy for the sustainability and long-term management of the community seed bank

9. Development of necessary infrastructure, such as storage facilities (building, storage bins, etc)

Status of Community Seed Banks Supported by AAN

Since 2012, AAN has supported the establishment of 13 community seed banks in Nepal (Table 1) in Bajura, Bara, Lalitpur, Morang, Nawalparasi, Shankhuwasabha, Siraha and Terhathum districts. The overall goal of establishing a community seed bank is to contribute to the sustainability and resilience of smallholder production systems necessary to achieve food security and food sovereignty. The 13 community seed banks conserve 208 varieties of 14 crop species (Table 2). A total of about 800 households are directly associated to these community seed banks. Besides the conservation of local varieties, the community seed banks are also involved in seed production and distribution of seeds of local as well as improved varieties to the local communities. This facilitates farmer's easy access to planting materials.

Table 1. Community seed banks in Nepal supported by AAN

SN	Name of CSB	Municipality/Rural Municipality and district	Year of establishment	Total Members
1	Srijanshil Seed Production Committee	Godawari Municipality- 4, Badikhel, Lalitpur	2017	41
2	Shree Karmanasha tarkari utpadak Krishi Samuha	Godawari Municipality-10 Ghyampedada Chapagaun, Lalitpur	2014	33
3	Hariyali community seed Bank	Swami Kartik-Khapar Rural Municipality-5 Zera, Bajura	2014	60
4	Sirjanshil Community Seed Bank	Bardaghat municipality-15 Prithbibasti, Nawalparasi	2016	350
5	Puthak Saving and Credit Coop Ltd	Baragadhi Rural Municipality, Pipra Basatpur -1, Bara	2012	40
6	Janalaknyan Multipropose cooperative Ltd.	Fedap Rural Municipality 2 Oyakjung, Terhathum	2015	100
7	Kalyankari Women Livestuck Agriculture Co-operative	Chhatar Rural Municipality Ward No. 5, Terhathum	2015	15
8	Dihiwar Aricultural Group	Lahan Municipality ward no 22, Jahadi, Siraha	2017	25
9	Gobindapur Agriculture Group	Lahan Municipality ward no 24 Malahanama, Siraha	2015	25

SN	Name of CSB	Municipality/Rural Municipality and district	Year of establishment	Total Members
10	Kharang Community Seed bank	Kharang, Chainpur Municipality-10 Kharang, Sannkhuwasabha	2016	57
11	Ma Bhagawati Community Bank	Golagunj- Amarpur Bara	2015	51
12	Gadhimaee Community Seedbank	Baragadhi Rural Municipality, Pipra Basatpur -1, Bara	2015	-
13	Charpate community Seedbank	Gramthan rural municipality-1, Morang	2013	-

In Terhathum district, smallholder farmers are organized in a cooperative and engaged in conserving local varieties of different crop species. They initiated a community seed bank and conducted a series of orientations about the importance of local seeds, their conservation, utilization and use in the community. Janakalyan Cooperative Limited is the first cooperative in Terhathum district involved in conservation of local seeds. This cooperative initially allocated U\$410 to purchase and distribute seed in the community and to set up a mechanism for regenerating seeds.

In Sankhuwasabha district, 40 smallholder farmers are organized in a Sana Kisana agriculture cooperative Kharang and they manage a community seed bank. After organizing a capacity building training workshop, they became involved in collecting, processing and distributing seeds in the communities. AAN provided the basic infrastructure support (eg plastic bins, plastic bags, bottles) and a revolving fund to operate the community seed bank.

Community seed banks have been established and are in operation in Bajura and Nawalparasi, one in each district. For institutional development and strengthening the community seed banks, AAN provided a token support like seed money, logistics, infrastructure and technical assistance.

Women farmers are at the center of the conservation, utilization and marketing of seeds to their neighbors and at nearby markets. They sell their seeds on demand. Due to male migration, the major agricultural functions are performed by women. Agriculture contributes about one third of the nation's GDP mainly through the efforts of women.

Table 2. Summary of local crop diversity conserved and promoted by community seed banks supported by AAN

SN	Name of community seed bank	No. of local varieties by crop						Total
		C1	C2	C3	C4	C5	C6	
1	Srijanshil Seed Production Committee Badikhel, Lalitpur	7			2	3	1	13
2	Shree Karmanasha tarkari utpadak Krishi Samuha, Chapagaun, Lalitpur	5			3		3	11
3	Hariyali community seed Bank, Swami Kartik, Zera, Bajura	15			2			17
4	Sirjanshil Community Seed Bank, Prithibasti, Nawalparasi	5			2			7
5	Puthak Saving and Credit Coop Ltd, Pipra Basatpu, Bara	1				2	3	6
6	Janalaknyan Multipropose cooperative Ltd., Oyakjung, Terhathum	1	3			4	1	9
7	Kalyankari Women Livestuck Agriculture Co-operative, Chhatar, Terhathum	6	14		3	2	6	31
8	Dihiwar Aricultural Group, Lahan, Jahadi, Siraha	9	1				5	15
9	Gobindapur Agriculture Group, Lahan, Malahanama, Siraha	3	7			1	3	14
10	Community Seed bank, Kharang, Sannkhuwasabha	6	1		4	1	2	14
11	Ma Bhagawati Community Bank, Golagunj, Amarpur Bara	18	2		5	5	8	38
12	Gadhimai Community Seedbank, Pipra Basatpur, Bara	4	5		2	1	4	16
13	Charpate community Seedbank, Gramthan, Morang	8		1	2	2	4	17
Total		88	88	1	13	10	36	208

Note: C1=Cereal, C2=Vegetables, C3=Roots/tubers, C4=Oil seed, C5=Spices, C6=Others

Support and Sustainability

Some sustainability approaches and examples have already been initiated in some of the working districts. Baragadimai Rural Municipality Bara has provided around US\$5,000 to community seed banks for further strengthening. Chhathar Rural Municipality Terhathum has acknowledged the attempt of establishing a community seed bank and decided to scale up the initiative through a policy provision. The Janakalyan Cooperative, Terhathum, has been allocated US\$410 to manage a community seed bank. The cooperative has developed a mechanism for renewing and conserving crops by local farmers.

In Nawalparasi, the seed management committee received US\$8500 from Daunnedevi Municipality for storage construction. In Bajura, DADO has supported the purchase of boxes for seed collection and US\$800 was collected from the sale of seeds. In Lalitpur, a seed storage building is under construction in collaboration with the local government. Garmthan Rural Municipality has allocated US\$2000 for the Charpate Community Seed Bank, Morang, to purchase a seed grading machine, moister testing machine and germination testing machine to sustain the community seed bank.

For sustaining community seed banks, policy engagement and formulation are required by every level of government (from to national). The government should address issues such as farmers' seed right, farmers' indigenous knowledge right, access to natural resources right and the defense of the public common good. The National Gene bank could play a vital role to take over some community seed banks for improved management and utilization.

Constraints and Limitations

One of the major constraints that AAN has been facing are the limited financial resources to respond to the demands of the communities. This hampers the proper equipment and institutionalization of community seed banks and their sustainability. Another constraint is that the local governments have many priorities and often agriculture is not high on the list. There is no legal provision yet in place to register community as legal entity. Most of the existing community seed banks are functioning under the management of a farmer's group or a cooperative, which hampers their development as a community seed bank. Last, there are many seeds that enter the country freely from India without permission and registration, contributing to the replacement of local seeds.

Conclusion

Agroecology and climate resilient sustainable agriculture are priority areas to support marginalized people living in poverty. Community seed banks are excellent initiatives to build sustainability and resilience of smallholder's production systems and contribute to food security and food sovereignty. They allow local communities to maintain control over their agriculture and food system.

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Annex 1. Community Seed Banks and their details (all are functional)

SN	Name of Group/Cooperative/Seed Bank	Address	Crop	Variety
1	Srijanshil Seed Production committee (Srijansil Biu Utpadak Samuha)	Godawari Municipality, Ward-4, Badikhel, Lalitpur	Maize (Seto, Pahelo, Murali), Wheat (Local Masino), Rice (Taichung, Khumal-10), Rapeseed (Bal tori, Kalo Tori), Barley, Ginger (Nase), Turmeric, Coriander, Soybean (Seto, Khairo, Kalo), Linseed	
2	Shree Karmanasha tarkari utpadak Krishi Samuha	Godawari Municipality, ward no 10, Ghyampedada Chapagaun, Lalitpur	Maize (Seto, Rato, Golo), Soyabean (Seto, Kalo, Khairo), Barley, Cowpea (Khairo), Bean (Local, lahare)	
3	Hariyali community seed Bank	Swami Kartik-Khapar Rural Municipality-5 Zera, Bajura	Buckwheat, Rice (Jauli, Thap chini, Charan Basmati, Jaran, Rato dhan), Wheat (Bugali, Thulo Mudhe, Sano kane), Peanut, Foxtail Millet, Chino	
4	Sirjanshil Community Seed Bank	Bardaghat municipality-15 Prithibasti, Nawalparasi		Lentil, Rapeseed
5	Puthak Saving and Credit Coop Ltd	Baragadhi Rural Municipality, Pipra Basatpur -1, Bara	Shallot (Chhyapi), Lentil, Black Gram, Horse Gram, Maize, Chili (Akbare)	
6	Janakalyan Multipropose cooperative Ltd.	Fedap Rural Municipality 2 Oyakjung, Terhathum	Pea (Hariyo), Garlic, Shallot (Chhyapi), Radish, Belchan Local, Beans (Winter Season), Chilli (Akbare), Maize (Yellow), Turmeric	
7	Kalyankari Women Livestuck Agriculture Co-operative	Chhatar Rural Municipality Ward No. 5, Terhathum	Maize (Manakamana, Seto thulo, sano seto, pahelo, murali), Soybean, (Nepale, Kalo, Seto), Pulse (Rato Ghore, seto Ghore), Bean (Jare Simi, ghee simi, Pothre), Cowpea, Chilli (Akbare), Shallot (Chhyapi), Pea (Sikkime), Brinjal (Dalle, Lamche), Bitter Gourd (White, Green, Dalle), Cucumber (Seto, hariyo), Pumpkin, Broad Leaf Mustard, (Marpha Chauuda, Teliya), Raddish, Tokinase, Horse Gram, Sorghum	
8	Dihiwar Aricultural Group	Lahan Municipality ward no 22, Jahadi, Siraha	Rice (Basmati, Kale basmati, Khemati, Hardinath, Lalsair, Bhola, Rambilash) Lentil, Finger millet, Horse Gram, Green gram, Lathyrus, Bean, Pea	

SN	Name of Group/Cooperative/Seed Bank	Address	Crop	Variety
9	Gobindapur Agriculture Group	Lahan Municipality ward no 24 Malahanama, Siraha	Rice Rambilash, Meghdut, Chandani)	Broad Leaf Mustard, Asparagus, Sponge Gourd, Pumpkin, Bottle Gourd, Okra, Chili, Lentil, Gram, Pigeon Pea, Red Gram
10	Communcity Seed bank, Kharang	Chainpur Municipality-10 Kharang, Sannkhuwasabha	Lentil, Horse Gram, Black Gram, Wheat, Barley, Broad Leaf Mustard, Rapeseed, Yellow mustard, Sesame, Niger, Maize, Rice, Cardamom, Sorghum, Buckwheat	
11	Ma Bhagawati Community Bank	Golagunj- Amarapur Bara	Rice (Seto Basmati, Rato basmati, kalo basmati, Sabitri, Sathi, Anadi, Rato Kheda, Seto Kheda, Budhiya, Katarni) Maize (Maize bhadai, Janera, Ganga kaberi), Lentil, Pigeon Pea, Horse Gram, Black Gram, Lathyrus, Pea (Sugiya, Seto), Broad Bean (Seto, Kalo), Linseed, Kalo tori, Yellow mustard, Sesame (Badhaiya, Baisakha), Coriander, Chili, Garlic, Turmeric, Zinger	
12	Gadhima Community Seedbank	Baragadhi Rural Municipality, Pipra Basatpur -1, Bara	Rice (Anadi), Sponge Gourd, Bottle Gourd, Bitter Guard, Okra, Lentil, Broad Bean, Pigeon Pea, Lathyrus, Rapeseed	Yellow mustard, Broad Leaf Mustard, Coriander
13	Charpate community Seedbank	Gramthan rural municipality-1, Morang	Rice (Basmati, Anadi, kariyakamodh, Birenphul, Jira-4, Satraj, Chananchur) Finger millet, Local Lentil, Horse Gram, Black Gram, Arhar, Sesame, Rapeseed	Termeric, Garlic, Potato

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Promoting Cooperative-based Seed Enterprises in Surkhet and Dadeldhura Districts of Nepal

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Pavitra Seed Enterprise in Surkhet District. Photo: Swikriti Sharma, Oxfam Nepal

Abstract

Nepal's seed sector faces some major problems such as insufficient production, questionable seed quality, unavailability of foundation seeds, unorganized and low-skill farmers, inappropriate farming practices, lack of assured market, flexible import policy for hybrid seed and existence of non-viable community seed enterprises. To address these problems, Oxfam in Nepal adopted its own model for promoting community seed enterprises to make them economically viable and sustainable. Oxfam's seven years of experience of working in two seed cooperatives, namely Pavitra Janakalyan Agriculture Cooperative Ltd (Pavitra) in Surkhet and Dadeldhura Agriculture Farmer's Cooperative Limited (DAFACOS), have shown that seed enterprises can play a crucial role in conserving different varieties of open-pollinated seeds, generating revenues for sustaining cooperative enterprises and improving income and livelihoods of smallholder farmers. This chapter discusses various components of the Oxfam approach and the impacts made to make cooperative enterprises sustainable.

Keywords: Access to finance, cooperative-based seed enterprise, enterprise development, market guarantee, sustainable

Introduction

Nepal has diverse geographic and agro-climatic conditions, which are suitable for producing varieties of cereal and vegetable seeds. This provides high potential for commercial seed production in all climatic zones, contributing to fulfill the national seed demand. According to the government owned National Seed Company Ltd., annual demand for cereal crop seed is about 194,000 tons and for vegetable crop seed about 1,200 tons (SQCC 2018). Majority of this demand is for open-pollinated seed given that the price compared to hybrid seed is much lower and better affordable for farmers. Eighty percent of the demand for cereal crop seed and 60% for vegetable crop seed is supplied by producers within the country and the rest is imported, mainly from India (MoAD 2015). Owing to increasing agriculture commercialization in Nepal, especially in vegetable farming, the demand for good quality seed is increasing. There is a significant preference for seed produced in the hills of Nepal, within the country and also outside the country (in India and Bangladesh in particular) due to the high quality. The size of the market is large enough to sustain several community seed enterprises.

A good crop starts with good seed. Insufficient production, questionable seed quality, lack of enabling environment for seed enterprises, unavailability of foundation seed, unorganized and low-skilled farmers, inappropriate farming practices, lack of assured market, and a flexible import policy for hybrid seed are some of the issues affecting seed quality in Nepal. To address these problems related to seed Oxfam Nepal has supported communities in Dadeldhura and Dailekh districts to establish a community seed bank, which later evolved to a seed enterprise.

Oxfam has adopted its own model for promoting community seed enterprises to make them economically viable and sustainable. Oxfam Nepal started supporting community-based seed enterprises under its Enterprise Development Programme (EDP) since 2011 in partnership with an agriculture cooperative in Surkhet named Pavitra Janakalyan Agriculture Cooperative Ltd (Pavitra). Later in 2012, a similar model was started in Dadeldhura district with the Dadeldhura Agriculture Farmer's Cooperative Limited (DAFACOS).

Oxfam's seven years of experience have shown that seed enterprises can play a crucial role in conserving different varieties of open-pollinated crops, generating revenues for sustaining cooperative enterprises and improving income and livelihoods of smallholder farmers. The seed enterprises, operated by Pavitra and DAFACOS, involve 3450 seed producers who produce seeds of 38 varieties of 27 vegetable and cereal crops. Both Pavitra and DAFACOS provide inputs, extension services, training, access to finance and market guarantee to seed producers (Pavitra and DAFACOS 2017).

Oxfam has successfully demonstrated a viable business model of community-based seed enterprises through Pavitra and DAFACOS under the EDP. This chapter intends to share the good practices of a community based cooperative seed enterprise, the business model, impact and challenges. The chapter is based on desk reviews and the study of project documents, reports and consultations with cooperative seed enterprises and farmers. One of the main findings indicates that cooperative seed enterprises can be effective means to fulfil national seed demand and to create a ripple effect in the rural economy of Nepal.

Community-based Cooperative Seed Enterprises

Seed, being a high value non-perishable product, provides a quick income to rural farmers, especially in those areas where commercial fresh vegetable production is difficult due to high transportation costs. Cooperative-based seed enterprises involve smallholder women farmers in seed production and ensure availability of quality seed on the market. They also help to increase production and productivity of seed by providing different services and inputs, such as agriculture inputs, extension services, access to finance, market guarantee and opportunities for sustainable income generation. Furthermore, these enterprises create employment opportunities in remote rural areas.

Cooperative seed enterprises were started to assure the sustainability of Oxfam-supported community seed banks by establishing linkages between community seed banks and community seed enterprises. Oxfam supported community seed banks had the physical infrastructure built for seed storage, but they did not function as business units. To sustain community seed banks, the business model of community based cooperative seed enterprise was introduced. The business model for a community based cooperative seed enterprise supported by Oxfam is presented below. The community seed enterprise supports the community seed bank by providing market guarantee of seed produced and collected in the community seed bank. This helps the community seed bank to generate revenues and diversify seed production, and develop a good market. In addition, the community seed enterprise support the community seed bank in the technical aspect of seed production, ie providing foundation seed, cultivation techniques, harvesting, cleaning etc.

Oxfam's Interventions in Cooperative Seed Enterprises

Community based cooperative seed enterprises are being supported under Oxfam's Enterprise Development Programme (EDP), which is a business-based approach to development that identifies business opportunities to support entrepreneurs to develop and implement a viable business plan (Oxfam 2017). The EDP provides a mix of loans, grants and business mentoring to small and

medium enterprises. This mix creates a high social impact in terms of improved livelihoods, income and food security. In the following sections, we present the EDP components that support cooperative seed enterprises to grow and expand their business.

Loans to Business

Cooperative seed enterprises need investment to improve infrastructure, buy or adopt high quality and more efficient technologies and expand their business. Normally, large businesses obtain bank loans and small business access loan from micro-finance sources. In the middle of these two extremes are medium enterprises like cooperative seed enterprises, which do not have or have limited access to finance, mostly because of tedious procedures and requirements of high collateral.

Unlike conventional development programs that focus on providing grants to run businesses, EDP utilizes an innovative approach of providing a bank guarantee via a fixed deposit to enable the enterprise to receive a loan. The aim of EDP is to change the grant dependent mindset of the beneficiaries and enable them to establish a viable business through the culture of acquiring credit. The targeted cooperative based seed enterprises did not have linkages with banks and their businesses were not mature enough for the banks to invest without a guarantee. The loans provided to the enterprises by the bank against Oxfam's guarantee as fixed deposit, helped enterprises to meet their working and fixed capital requirements, provide credit to seed producers to buy foundation seed and necessary agro-inputs and to establish their own agro-vets that supply agro-inputs to farmers. In case of a business default by a cooperative seed enterprise to repay the loan to the bank, EDP has a provision to bear 10% to 50% of the loan default. The two cooperative seed enterprises repaid back the loans timely. This approach provided an opportunity for banks and financial institutions to safely invest in a deprived sector considering that agriculture lending was made mandatory by the Nepal Rastra Bank through its monetary policy.

Business Development Services

Many small and medium enterprises in Nepal do not receive abundant and good quality business development services. This is also the case for cooperative seed enterprises. The EDP provided these services to the management and operation team of seed enterprises to increase their productivity, enhance financial management and improve sales and marketing. These services were provided either by the EDP team or by business mentors at the district, regional or national levels.

EDP also supported cooperative seed enterprises with training and expertise to increase their capacity and skills to manage their business successfully. Training was provided in financial management skills, business planning, managerial and financial capacity building, business promotion, support in branding, packaging, access to finance and markets, and market promotion.

EDP Social Inclusion Grants

EDP supported community seed enterprises through its social inclusion grants to enable women to realise their right to earn a living, become producers of the enterprise and rightfully utilize its benefits for their personal growth. Due to lower levels of education, poor financial literacy, gender-based norms at the household and community level, rural women are either restricted to their caretaker role or are not empowered enough to claim individual ownership over their income or to make financial decisions. With this grant provided by EDP, women were provided leadership training and awareness raising on subjects related to their individual, social, political rights and responsibilities. These grants built better ties between enterprise and smallholder farmers. The women seed producers were also supported with women friendly-equipment and tools that saved their productive time. They received gender-sensitization training and took part in financial literacy classes to improve their basic knowledge and build their technical skills to increase the quality of production and productivity.

Business Operation Grants

Occasionally EDP provides small Business Operation Grants to struggling businesses to become profitable. This support is utilized in the enterprise to grow and to manage high costs during the initial phase of the operation. The aim is to make it a profitable business within a short period of time, after the start of its operations.

The two cooperative seed enterprises, Pavitra and DAFACOS, were supported under this grant during their initial phase of operations to cover their basic operation costs. The grant support decreased in descending order from 100%, 75%, 50% to 0% in four consecutive years.

Changes Then and Now

a. Ownership, Decision Making and Leadership Capability

Even before EDP interventions, the engagement of EDP experts in business planning and project appraisal was a transformative experience for Pavitra and DAFACOS officials as it motivated them to change their 'dependent mindset' and develop an outlook of an entrepreneur. It also required Pavitra and DAFACOS to change their leadership composition by increasing the proportion of women shareholders in the executive committee.

The enterprises and its leadership are unified in the purpose to specialize as the producer of quality seeds. The shareholders are also clear about this purpose and have given full trust and decision making authority. As a result, the leadership is more willing to take entrepreneurial risks. The integration of producer groups with the cooperative has proven to be critical in developing a sense of 'community ownership' in the seed producing business. The executive board of both DAFACOS and Pavitra has at least 50% women members, increasing their ability and authority to influence in decision making. Of 213 shareholders in Pavitra 30% were women before the EDP intervention, now of 1050 shareholders 60% are women. Of 601 there were 23% women shareholders in DAFACOS before the EDP intervention; now there are 997 shareholders of which 50% are women. These two community seed enterprises are benefitting 3448 seed producing farmers, 64% of whom are women seed producers.

b. Technical Capability

Before EDP interventions, the decision makers were well versed in community organization but they lacked managerial skills to run a business. As the business venture was new, there was very little knowledge about seed production and running the business. To deal with this shortcoming, the EDP engaged board members and staff to conduct a business appraisal, studying the market, preparing a viable business model and ways to implement it. This enabled board members to self-evaluate and enhance their technical managerial capability of running a seed company and their understanding of enterprise, ecosystem and economic dynamics. With enough commitment and motivation focused on the seed business the current teams of the community seed enterprises have enough technical capacity and decision making ability to run the seed enterprise successfully.

c. Strategy and Planning

Initially, Pavitra and DAFACOS made losses in purchase and sales agreements with farmers and buyers of seed due to poor estimates of seed production and demand. Both had worked to implement NGO projects, but lacked a strategic vision for business execution. The EDP engaged Pavitra's executive board in preparing a business plan, which required clearly stating its business model, business goals, activities and processes to attain its objectives. EDP supported the setting of annual social and business performance targets for both community seed enterprises. As a result of this focused business strategy guidance by EDP the community seed enterprises achieved significant progress in terms of increasing sales, the number of shareholder farmers, representation and leadership of women, improved technical skills of farmers for cultivating, sorting and grading of seed, improved provision of producer loans to farmers, stronger engagement of stakeholders and a broadening of their customer base.

The production capacity has increased from 2 to 116 tons (Pavitra) and from 12 to 140 tons (DAFACOS) annually with the gross margins of around 10-18%. In 2018, Pavitra and DAFACOS initiated a separate seed company in partnership named Pavitra Seed Industry, selling packaged seed under the brand name of Pavitra Seeds.

d. Innovation and Technology Use

Pavitra and DAFACOS lacked machinery for cleaning, grading and packaging of seed. They used to sell ungraded seeds in bulk at a much cheaper rate. Lack of appropriate machinery was hurting the revenue of Pavitra. The EDP supported the enterprises to acquire high quality equipment for seed cleaning, grading and packaging. Now, all seed is sold by the enterprises with its own brand name.

e. Human Resource Management

The enterprises did not have sufficient human resources and lacked sufficient financial resources to pay them. The EDP supported the enterprises to hire capable human resources to run day-to-day activities, train and provide extension services to seed producer farmers and manage the overall business. As a result, the enterprises now have a competent Manager, Finance Officers and Agriculture Technicians working full time.

f. Physical Resource Management

Pavitra and DAFACOS ran their office from small spaces and did not have separate land and buildings for storage and processing. With the support of EDP, Pavitra collaborated with district level stakeholders, such as District Agriculture Development Office and Village Development Office, to obtain additional funds to establish a separate unit for seed threshing, storage, processing and packaging. EDP supported DAFACOS to establish linkages with the Raising Income for Small and Medium Farmers Project (RISMFP), from which it received NPR 4.3 million for the construction of new seed storage, processing house, procuring, grading and packaging machines. Both enterprises managed to procure 0.1 hectare of land to establish e processing unit from their own business.

g. Financial Management

Both enterprises lacked financial resources to build up working capital. As a result, they were not able to adequately mobilize their farmer base to produce seed. The enterprises could not provide farmers with adequate financial support to buy foundation seed, fertilizer and technical support and to purchase the harvest. Until 2011, Pavitra's annual revenue was limited to less than Rs 0.5 million. The company was making a net loss of around 32% due to high operation costs and salaries. Until 2013, the DAFACOS annual revenue was NPR 1.3 million and the company was making a net loss of 14%. In both enterprises, the bookkeeping and

accounting was done in paper based account books. The finance management was not technically sound. Now, both enterprises have accessed a working capital loan from the Kumari Bank used to buy foundation seed and provide credit to the farmers (Pavitra obtained NPR 7 Million and DAFACOS NPR 4 Million) and to buy the harvested seeds from the farmers. These loans enabled the farmers to upscale their production while the enterprises upscaled their purchase and sales of seed. Pavitra sales revenue was 12,636,653 NPR with a net profit of 2.5% in 2017. DAFACOS sales revenue was 12,200,000 NPR with a net profit of 1% in 2017. Both enterprises now have a software based accounting system in place.

h. Quality Control

In the early days, both cooperatives lacked access to seed experts, regular monitoring and supervision, good storage facilities and proper seed packaging. With the support of Oxfam, the seed enterprises now have good linkages to the Regional Seed Quality Control Center, which conducts regular crop monitoring. In addition to this, both the cooperatives ensure that all batches of seed undergo tests of purity, germination, moisture and other requirements as per the standard required by Seed Quality Control Center. Oxfam also supported the improvement of the storage facilities of both cooperatives and the help of a seed expert who regularly inspects and monitors the quality.

i. Market Linkages

Before EDP, the seed production of the two cooperative seed enterprises was very low and their sales were limited to a few known vendors. Gradually, the production started to increase after EDP intervention. Pavitra sold loose seed in bulk to two seed companies of Kathmandu. It did not sell to retailers and agro-vets who sell directly to farmers. DAFACOS sold loose seed in bulk to a few seed companies in Dhangadi and Doti, local buyers in Dadeldhura and three agro-vets of Kathmandu. Oxfam supported both enterprises to prepare and implement a marketing strategy to increase their market share by directly accessing a greater range of buyers both locally and nationally for bulk sale and packaging sale. Oxfam supported Pavitra to design the packaging and take it to wholesalers and retailers.

Currently Pavitra sells to 16 bulk seed buyers and 26 packaged seed buyers all across the country. Pavitra's new packaging has received a good response at local and regional levels. DAFACOS sells to six established seed companies and nine agro-vets. For the bulk seed sales, it has a strong network of wholesalers.

Impact in Summary

The seed enterprises have a positive impact on the economy of the farmers as well as the enterprises. The interventions in the cooperative seed enterprises have significantly contributed to supply quality seeds to the Nepalese market and improved the income of smallholder farmers. The summary of the major achievements in the Pavitra seed enterprise and in DAFACOS is presented in Tables 1 and 2 respectively.

Table 1. Summary of achievements in Pavitra Seed Enterprise

SN	Particular	Before 2011	In 2017
1	Number of seed producer	213	1558
2	Share Capital / Equity (NPR)	21,300	1,224,000
3	Annual Seed Production Qty	4 tons	116 tons
4	Annual Seed Sales Revenue (NPR)	490,909	12,636,653
5	Saving/ Deposit (NPR)	45,000	2,191,060
6	Loan Investment to farmers (NPR)	0	7,120,993
7	Loan receiving farmers	0	577
8	Loan Borrowed from Bank (NPR)	0	7,000,000
9	Number of buyers	1	50+
10	Working Area	1 VDC	2 Municipalities & 1 Rural Municipality
11	Seeds	Radish, Pea 4 season beans	27 Crops/ 38 Varieties

Table 2. Summary of achievements in DAFACOS Seed Enterprise

SN	Particular	Before 2011	In 2017
1	Number of seed producer	601	1889
2	Share Capital / Equity (NPR)	60,100	353,100
3	Annual Seed Production Qty	12 tons	140 tons
4	Annual Seed Sales Revenue (NPR)	450,000	12,200,000
5	Loan Investment to farmers (NPR)	0	4,000,000
6	Loan receiving farmers	0	200
7	Loan from bank (NPR)	0	5,000,000
8	Number of buyers	1	15+
9	Working Area	4 VDCs and 1 Municipality	2 Municipalities & 5 Rural Municipalities
10	Farmers' Group	10	68
11	Seeds	Radish, Pea 4 season beans	27 Crops/ 38 Varieties

The farmers now receive good access to finance, have a guaranteed market, receive a fair price and have access to inputs and extension services without any hassle. The major impacts are:

- Increased access to finance to 2000 farmers, with a total loan portfolio of NPR 120 million.
- Both community seed enterprises are providing agriculture inputs obtained through their agrovets. They have the technical staff to provide extension services to 3448 farmers.
- Ensured seed market for 3,450 smallholder farmers.
- 256 tons of quality seed produced and sold on the Nepalese market. The major seed include radish (40 day, tokinasi and mino early), cress, pea (Sikkim Local) cow-pea (Prakash), brinjal, tomato (Srijana), chilly (akabare), okra (anamika), cucumber (Bhaktapur local), carrot, broad bean, broad leaf mustard, snake guard, bitter guard, sponge guard, bean(Chuamase) and maize (Arun, Rampur composite, Manakamana).
- 3,450 farmers are getting market guarantee for 256 tons of cereal (60%) and vegetable (40%) seed.
- Full time employment creation by the EDP interventions at enterprise level -13 and at farmer's level – 333.
- Multiplier effect at farmer's level by utilizing Access to Finance provided by the community seed enterprises for other business/livelihood opportunities by the rural farmers.

Challenges of the Community Seed Enterprises

The main challenges faced by the community based cooperative seed enterprises are:

- It is very hard to obtain quality foundation seeds for commercial seed production.
- Seed produced in other countries is abundantly available on the Nepalese market. It is very hard to compete with imported seeds.
- Long droughts, hailstones and heavy rainfall are the major challenges for seed production. Insurance companies are not very interested in insuring seed production, because of fragmented production and high administrative costs. Despite a series of dialogues with concerned stakeholders and insurance companies, the problems remain same.
- Maintaining forward linkages for community-owned enterprises is difficult due to the management structure, the system of changing leadership every three years and a complex decision making process.
- Community seed enterprises are facing the problem of high receivables and bad debts of their buyers due to weak business ethics among the value chain actors.
- Finding competent human resources to run a business in rural areas is hard.

Learnings and Recommendations

- Community seed banks can opt for the model of community seed enterprise to become a viable and sustainable business, creating positive impact for a large number of smallholder farmers.
- Seed enterprises have some competitive and comparative advantages to grow their business while at the same time increasing the income of rural communities and contribute to the conservation of local varieties. This approach could be promoted and replicated in other parts of the country.
- To meet the national demand of seed, production of foundation seed at cooperative level is crucial.
- Although the use of hybrid seed seems to be growing, there is an unmet demand in the market for open-pollinated seed. Cooperative seed enterprises should be promoted to fulfill the demand for quality seeds.
- Provision of crop insurance should be made easier and more farmer friendly.
- Local and provincial governments should support and encourage community seed enterprises.
- Integrated service/input delivery by government organizations and research and extension organizations is crucial for sustaining community seed enterprises.

Conclusion

Despite the high potential of commercial seed production, Nepal's dependency on imported seed is rapidly increasing. At the same time, there are a number of community seed banks promoted by the Government of Nepal and other development agencies which are struggling to become financially sustainable. To address this problem, Oxfam's EDP model could be appropriate as it has successfully demonstrated a sustainable business model for community seed enterprises. The business model benefits large number of farmers and value chain actors engaged in the seed sector by providing quality and reliable seed on the market. The experiences of Oxfam's Enterprise Development Programme can be leveraged and replicated in other community seed banks of Nepal.

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Farmers' Rights and Access and Benefit Sharing Mechanisms in Community Seed Banks in Nepal

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Ghanapokhara Community Seed Bank in Lamjung District. Photo: LI-BIRD Photo Bank

Abstract

Farmers' Rights and access and benefit sharing (ABS) are important and interlinked issues in the conservation and sustainable use of agrobiodiversity. This chapter aims to assess the current status and policy gaps of implementing farmers' rights and ABS mechanisms with regard to community seed banks and the conservation and sustainable use of agrobiodiversity in Nepal. It also explores potential options and strategies to promote community seed banks as local legitimate institutions for formalizing ABS mechanisms and realizing farmers' rights. The information for this study is generated and synthesized from a review of relevant policies and programs, key informant interviews and focus group discussions with community seed bank members and stakeholder consultation meetings. Recently, community seed banks (CSBs) are emerging as important community-based institutions for local level access and exchange of genetic resources, strengthening local seed system, realizing farmers' rights and safeguarding agrobiodiversity. They are also gradually emerging as a local grass-roots institution for crop improvement,

variety maintenance and registration of local varieties for increased benefit sharing with farmers and local communities. A well-functioning CSB adopts community biodiversity management (CBM) approaches and tools, such as community biodiversity register, diversity field school, diversity fair, community biodiversity management fund, participatory plant breeding, value addition and marketing to promote local access, exchange, use and conserve crop genetic resources using customary rules and practices. At present, however, there are no formal mechanisms, rules, guidelines and protocols for facilitating access, exchange and use of genetic resources from the CSBs in line with national and international policies and protocols. Considering this situation, we propose a model for developing a community seed bank as a legitimate institution (platform) for prior-informed consent (PIC) and ABS mechanisms and formalizing farmers' rights to genetic resources. This will, however, require creating incentive mechanisms for custodian farmers and communities and bringing support from formal sector agencies through relevant policies, legislation and programs to promote and sustain community seed banks.

Keywords: Access and benefit sharing, community seed banks, farmers' rights, policy

Introduction

Small farmers in developing countries have made unique, evolutionary and historical contributions to the conservation and development of genetic resources for food and agriculture. Over generations, farmers have selected, domesticated and nurtured crop varieties and their wild relatives by retaining seeds, recycling them for the next planting seasons and exchanging them with their neighbours and local communities to meet various household, social, economic and cultural needs (Gauchan 2011). It is estimated that 70-90 percent of the seeds required in developing countries is met through this type of informal seed system (Development Fund 2011), that promotes informal sharing, exchanges with local communities and local markets.

Recently, community seed banks (CSBs) have emerged in developing countries as important informal institutions for meeting local seed requirements, conserving agrobiodiversity and making seeds available of traditional varieties by promoting community exchanges, selection, sharing and improvement. The core functions of community seed banks are to preserve seeds of crop landraces for local use, providing access to quality seed and planting materials of diverse crops species and promote farmers' rights and food sovereignty (Shrestha et al 2013a, Vernooy et al 2014). Community seed banks give priority to the conservation and use through local saving, selection, reintroduction, improvement and facilitating local access and exchanges of local varieties through collective efforts. Such collective practices of selecting, sharing, saving and exchanging seeds are essential for preserving the dynamics of the seed system, conserving agrobiodiversity and facilitating access and availability of agricultural genetic resources to local communities. These vital roles that farmers play in selecting,

continuously improving, conserving and ensuring availability of agricultural genetic resources mean that promoting local level access and benefit sharing and preserving farmers' rights to traditional knowledge is essential (Gauchan 2016). Indeed, farmers' rights are closely linked to access and benefit sharing (ABS) in traditional farming systems, where farmers have control over their seed system through local selection, saving, exchange and improvement of seeds of traditional crops and varieties.

International convention and treaties and national policies are increasingly putting emphasis on developing provisions for ensuring farmers' rights and facilitate formal mechanisms for effective implementation of ABS. However, currently implementation of such provisions at the national level is limited and there are very few practical models for ensuring farmers' rights and facilitating formal mechanism for ABS at local level. In addition, due to the dominance of farmers' seed systems and prevailing informal access and benefit sharing practices, mechanisms to formalize ABS and ensure farmers' rights are not among the priority activities of community seed banks. In this context, there is a need of exploring options about the role of CSBs to facilitate local level formal ABS mechanisms and ensuring farmers' rights. This paper aims to explore this role. It argues that a community seed bank can be such a legitimate local institution in Nepal.

Methodology

The study used a combination of literature review, focus group discussion (FGD) with communities and custodian farmers in the UNEP GEF Local Crop project sites Dolakha, Humla, Jumla, and Lamjung. In addition, key informant interviews and interaction meetings were carried out in the last three years with key stakeholders in the project sites and other places including R&D professionals, private seed entrepreneurs and CSB leaders from Bara, Nawalparasi, Dalchowki. Using specific checklists, the information for this study was generated, compiled and synthesized. The concepts, rationale and feasibility of employing CSB as an institution to formalize ABS and farmers' rights were also discussed and presented in the UNEP GEF virtual workshop from December 15 2016 to January 15, 2017. Useful feedback was received from colleagues. A draft of the chapter was validated at the recently held consultation meeting with stakeholders and the national CSB Network in Kathmandu during the 2nd national CSB workshop 3-5 May, 2018.

Findings

International and National Policies on Farmers' Rights

The concept of farmers' rights was introduced in the Food and Agriculture Organization (FAO) of the United Nations Undertaking on Plant Genetic Resources

in 1979 and, later, in the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) in 2001, following a series of debates that started in the FAO about unequal distribution of benefits obtained from the sharing of germplasm (FAO 2001). The concept of farmers' rights, which is included in the ITPGRFA, emphasizes the need for promoting and protecting farmers' rights at both national and international levels. Article 9 of the Treaty recognizes the enormous contribution that farmers and local communities have made to the conservation and development of plant genetic resources for food and agriculture (PGRFA) and identifies measures to protect and promote farmers' rights (FAO 2004). It also recommends national governments to take national measures to realize farmers' rights. The Nagoya Protocol on Access to Genetic Resources and Benefit Sharing, under the Convention of Biological Diversity (CBD), supports and protects farmers' rights by seeking prior and informed consent (PIC) of related communities for obtaining access to genetic resources and traditional knowledge. It makes provisions for equitable sharing of benefits accruing from the use of genetic resources and associated traditional knowledge. The World Trade Organization (WTO)'s Trade Related Aspects of Intellectual Property Rights (TRIPS) agreement has direct relevance to crop improvement, conservation, exchange and ownership (Gauchan et al 2017). The Article 27.3(b) of the TRIPS agreement has a provision for the requirement of Plant Variety Protection (PVP) that can be met either through patents, an effective *sui generis* system or combination thereof.

Globally, the Indian Plant Variety Protection and Farmers' Rights Act (2001) is the first example of a national *sui generis* law that recognizes farmers' rights. The Agrobiodiversity Policy of Nepal (2007) revised in 2014, recognizes farmers' rights to agricultural genetic resources. The Intellectual Property Policy of Nepal (2017), Agricultural Development Strategy (2015), National Biodiversity Strategy and Action Plan (2014) and National Seed Vision (2013) also mention farmers' ownership rights for genetic resources and traditional knowledge. The currently proposed Plant Variety Protection and Farmers' Rights draft Act of Nepal (2008) envisages a set of balanced rights of farmers and plant breeders in line with the provisions of the ITPGRFA and in line with the Indian Plant Variety Protection and Farmers Rights Act, 2001 (Gauchan 2016). Farmers' rights are important components included in the draft Agrobiodiversity Conservation and Utilization Act (2016) which is currently being finalized. The draft Access and Benefit Sharing Act of Nepal (2016), awaiting final approval by the government of Nepal, has provisioned the ownership rights of local and indigenous communities to genetic resources and traditional knowledge in line with the Nagoya Protocol and Convention of Biological Diversity (Gauchan et al 2017).

Some authors have argued that the community seed bank approach is an effective mechanism to realize farmers' rights on seeds, promote food sovereignty and address the issues of climate change adaptation in agriculture (Development Fund 2011, Vernoooy et al 2017). Community seed banks function as a mechanism to implement farmers' or indigenous rights by way of recognition of the important roles of farmers as seed custodians, allowing farmers' participation in local benefit sharing and decision making and, to a lesser degree, in the development of a supportive policy and seed regulatory framework (Pistorius 2016). Farmers' rights to genetic resources are one of the fundamental rights to recognize the individual and collective contributions of farming communities. These rights should be complemented by incentives for their efforts in conservation and sustainable development of agriculture (Gauchan 2011, 2016). Another major accomplishment to advance farmers' rights in this way will be the legal recognition of community seed banks. This is still a challenge, including in Nepal.

International and National Policies on Access and Benefit Sharing

The major international policies with specific provisions of access and benefit sharing (ABS) of genetic resources are the Convention on Biological Diversity (CBD) and its Nagoya Protocol and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). Concerning genetic resources in general, the Nagoya Protocol (2010) of the CBD provides national ABS mechanisms through prior informed consent (PIC) and mutually agreed terms (MAT). Nepal has not yet ratified the Nagoya Protocol. With respect to plant genetic resources for food and agriculture, the ITPGRFA is the important international policy provision that provides a mechanism for facilitated access of crop genetic resources through the use of the multilateral system of access and benefit sharing. The Plant Treaty provides mechanisms of access and exchange of genetic resources for 64 crops (35 food crops and 29 forages: the so-called Annex-1 materials) (FAO 2004). It makes the point that the creation of the multilateral system will benefit all contracting parties. The Treaty (Article 13) provides for sharing the benefits of using plant genetic resources for food and agriculture through information exchange, access to and transfer of technology, capacity building and the sharing of benefits arising from commercialization (Gauchan and Upadhyay 2006).

Some of the national policies and legislation in Nepal that have a provision of ABS of genetic resources include: Agrobiodiversity Policy 2007 revised in (2014), National Biodiversity Strategy and Action Plan (2014), ITPGRFA Multilateral System (MLS) Implementation Strategy & Action Plan (IMISAP 2017); draft Access and Benefit Sharing (ABS) Act (2016) and draft Agrobiodiversity Conservation and Utilization Act (2016). In a recently developed Terms of Reference (ToR) of the Germplasm Access and Exchange Authority Committee (GAC) of the Ministry of Agriculture and Livestock Development (MoALD) some guidelines are included for formal access and exchange of crop genetic resources as per the provision

of ITPGRFA multilateral system. A similar provision is also included in the draft Agrobiodiversity Conservation and Utilization Act (2016), which is under revision and finalization (MoALD 2018).

Formal Mechanisms of Access and Benefit Sharing

The development and use of formal mechanisms of access and benefit sharing, through a legal contract, are not very common for agricultural genetic resources; though for medicinal herbs some examples exist. One example of an agreement concerning agricultural crops is the ABS agreement between a number of Andean communities growing traditional potato varieties in Peru and the International Potato Centre (CIP) about the repatriation of their traditional potato varieties (Argumedo 2011). In Nepal, a formal access and benefit sharing agreement exists for improved hybrid Srijana tomatoes, signed between NARC (developer) and private seed companies and agro entrepreneurs. In this case, a MoU between NARC Horticulture Research Division (HRD) and seed companies was agreed in November 2010 (NARC 2010) to provide access of superior parental inbred lines to the private sector. In return, the private sector agreed to share some benefits with NARC Horticulture Research Division (developer of the parental lines) through the payment of a royalty of commercial seed sales. According to the agreement, private seed companies and entrepreneurs need to pay 3% of the value of seed sales in dealer price to NARC.

Informal Mechanisms of Access and Benefit Sharing

At present, mechanisms to regulate access and benefit sharing are mostly informal, without any formal legal procedure. Community seed banks largely operate as part of the informal seed system and accordingly have developed mostly informal norms, rules and practices of access and exchange of genetic resources and sharing benefits arising from their use. Traditionally, there has always been free access to genetic resources and traditional knowledge in farmers' seed systems. Some localized/customary benefit sharing mechanisms can be found. Seed producer farmers involved in a CSB generate benefits from seed production and marketing of promising local varieties as well as improved varieties. This is usually done through coordinating the production, exchange and marketing of the seed of locally adapted seed varieties among farmers in the form of Truthful Labeled (TL) seeds. Community seed banks and other forms of seed exchange are effectively putting informal access and benefit-sharing into practice in a way that enhances the resilience and autonomy of food producers and their farming systems while preserving biodiversity (Pistorius 2016). Some of the other important informal mechanisms employed in Nepal for access and benefit sharing are supporting farmers and building their capacity to establish and operate community seed banks through collaboration with the national genebank, farmers' involvement in participatory grassroots breeding, seed selection, multiplication and registration, and value addition and marketing of local crop genetic resources.

Community Seed Banks as Emerging Institutions for ABS

Recently, community seed banks (CSBs) are emerging as collective informal community-based institutions for strengthening local seed system and safeguarding agrobiodiversity. Most of the community seed banks act as an extension of farmers' informal seed systems, in which the various stages of seed management—selection, conservation, exchange and improvement—take place without involvement of or control by research, development or government agencies (Pistorius 2016). According to De Jonge et al (2016), community seed banks can be seen as a collective framework and institutional platform for making decisions about crop cultivation, seed production and conservation of locally adaptive germplasm. As such, they are effective mechanisms to implement farmers' rights as defined by the Plant Treaty. CSBs are also becoming important intermediary institutions at the local level to provide access of genetic resources to farmers and outside agencies as well as obtain genetic resources from outside communities and external agencies (Figure 1).

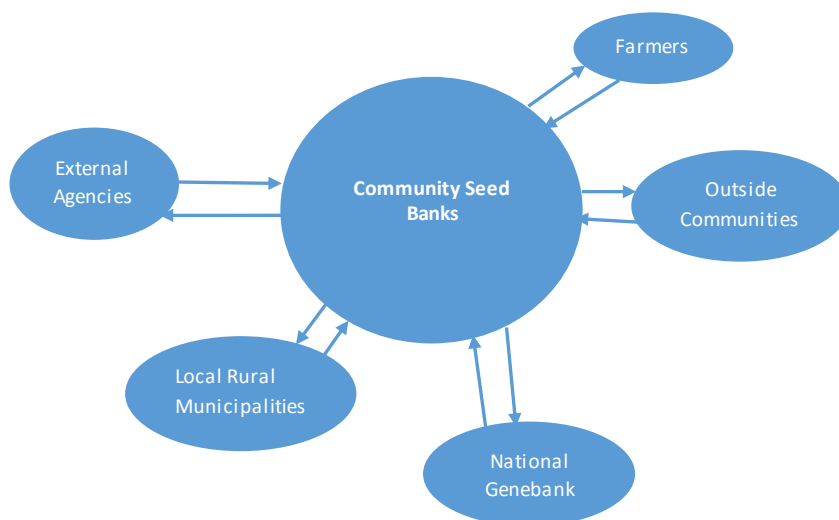


Figure 1. Community seed bank as a local institution for access and benefit sharing.

CSBs not only provide farmers' access to seed diversity, but also the ability to share in the benefits of the continuing cycle of seed conservation and development (De Jonge et al 2016). Previous studies have demonstrated that CSBs are effective for the exchange of traditional knowledge and genetic resources in communities (Shrestha et al 2013b). They have positive effects on increasing access to local seeds; development of new varieties; identification, conservation and promotion of local landraces as well as increased benefit sharing from marketing of local varieties (Paudel et al 2008). CSBs have the potential to expand the use of the multilateral system of exchange of genetic resources nationally and

internationally through linking CSBs with national and international genebanks (Bhatta et al 2013). CSBs that adopt tools and approaches of CBM, such as community biodiversity register, diversity fair, participatory seed exchanges and participatory plant breeding and that use the prior informed consent (PIC) mechanism effectively facilitate the regulated exchange of genetic resources and traditional knowledge.

Community seed banks can play an important role in providing access to seeds during a crisis, such as disasters, droughts, floods or cyclones. During Nepal's devastating 2015 earthquake, some community seed banks in the country (eg CSBs of Tanahun, Dang and Nawalparasi) provided access to locally adapted seeds through a seed relief program to farmers and communities in earthquake affected areas far away from their locations (Shrestha 2018). Recent evidence of the "Seeds for Needs" initiative of Bioversity International from India and Ethiopia indicate that CSBs can play a role in making local seed systems more cost effective and efficient, foster seed exchanges at local and supra-local levels, access novel diversity not conserved locally and access seeds from areas where plants have adapted to extreme weather conditions (Vernooy et al 2017). Therefore, CSBs are emerging as an important platform for accessing and sharing diverse sources of germplasm in a decentralized manner.

Case Study of UNEP GEF Project Managed Community Seed Banks

Community seed banks operating actively in Nepal managed by the UNEP GEF Local Crop Project (LCP) in the mountains of Nepal have implemented various community biodiversity management (CBM) tools and approaches: diversity fair, diversity field school, participatory plant/grass-roots breeding, community biodiversity register and community biodiversity management fund. Farmers and local communities access, exchange and share quality seeds of locally adapted crop varieties through these CBM tools and approaches often at a lower price than prevailing market rates. The project was initiated in 2014 in four remote mountain districts of Humla, Jumla, Lamjung and Dolakha representing western, central and eastern Nepal. The project focuses on eight target underutilized traditional mountain crops: amaranth, barley (both hulled and hull less), beans, buckwheat, foxtail millet, finger millet, proso millet and cold tolerant rice. The project is being implemented by Bioversity International jointly with NARC, LI-BIRD and Department of Agriculture (DoA) with funding support of the Global Environment Facility (GEF) through UN Environment.

The project supports CSBs to carry out seed collection, exchange and display through routine activities. It works with local social networks and organizes specific events, such as diversity fairs and food fairs, diversity field schools, participatory seed exchanges, participatory variety selection and grassroots breeding. It trains farmers to do on-farm characterisation and evaluation, and

crop and seed value chain development. The method used to train local custodian men and women farmers is the diversity field school (DFS), which also include exchange visits and exposure to national decision making and policy fora. These activities are important to realize farmers’ rights. The project has also supported the development of farmers’ variety catalogues and a varietal registry procedure that facilitate sharing of information and traditional knowledge resulting in better access and benefit sharing from the use of underutilized local farmers’ varieties. Another activity has been the use of diversity kits and IRD (Informal Research & Development) kits of target underutilized crops to a large number of farmers beyond the project sites and districts. **Table 1** presents the status of crop genetic resources that have been conserved and made available and that have produced benefits to farm households and communities in the project districts of Humla, Jumla, Dolakha and Lamjung of the remote mountains.

Table 1. Crop genetic resources conserved, made available and households benefited

SN	Community seed bank	Province	Major crop species	No. of local crops	No. of local varieties	No. of HHs benefited from CSB
1	Jungu, Dolakha	3	rice, beans, finger millet, buckwheat	24	42	2374
2	Ghanpokhara, Lamjung	Gandaki	rice, finger millet, foxtail millet, beans	15	74	1410
3	Chhipra, Humla	Karnali	rice, beans, finger millet, amaranth, proso millet, foxtail millet, buckwheat	29	51	6900
4	Hanku, Jumla	Karnali	rice, beans, finger millet, amaranth, foxtail millet	21	65	9400
Total				35	232	20,084*

Source: Bioversity International (2018); *Cumulative estimation 2014-2018.

In the last three years, the project, through the national genebank and other research centres, has deployed a total of 300 varieties of eight target underutilized mountain crops for on-farm testing in four project sites. 60 varieties of these eight under-utilized crops were made available to about 16,000 households until mid 2018 in remote mountainous project sites of Jumla, Humla, Lamjung and Dolakha (Bioversity International 2018). When major food crop varieties of lower altitude rice, wheat and maize including other non-target crops (eg legumes, oilseeds and vegetables) are considered, the project has provided access to diverse varieties and quality seeds of about 35 food crops covering over 20,000 households. This is resulting in better food security and livelihood of

smallholder farmers in the remote risk prone mountains of Nepal. Participation of local farmers and communities in on-farm germplasm evaluation is increasing their awareness and capacity to identify and recognise specific attributes and suitability of crop varieties. This is a more focussed approach to promote ABS, where the seeds managed and made available to the local communities in the community seed banks are managed through evolutionary adaptation. They are kept under the direct control of the farming community to strengthen their capacity to adapt and mitigate the risks related to climate change and natural disasters.

The CSBs manage a Community biodiversity management (CBM) fund that allow direct benefit sharing by local communities in the form of credit flow to needy, poor and vulnerable communities (poor, women and disadvantaged social groups). Stronger collaboration of the CSBs with the national genebank and NARC research centers such as Hill Crops Research Program (HCRP), Kavre, Dolakha and Agricultural Research Station, Jumla, has provided better access to and choice of germplasm from other parts of Nepal. Farmers are also reaping the benefits of technical information and scientific knowledge provided by these national research organizations. In conclusion, the CSBs managed in remote and risk prone high mountains of Nepal are providing easy and timely access of seed diversity of underutilized traditional crops to smallholder poor farmers in marginal farming systems. They do this in a context where access to seeds and support from formal sector agencies is either very much limited or absent.

Community Seed Banks for Participatory Crop Improvement and Variety Registration

CSBs are also gradually emerging as a local grass-roots institution for crop improvement, variety maintenance and registration of local farmers' varieties for increased benefit sharing with local communities. Their engagement in participatory plant/grassroots breeding and variety selection activities have strengthened access to and availability of improved seeds and increased diversity through collaboration between farmers, plant breeders and seed producers. For instance, the CSBs of Chippra, Humla and CSB Hanku, Jumla are engaged in improvement of local farmers' varieties, such as *Dudhe Chino* variety of proso millet and *Rato kodo* variety of finger millet respectively through grass-roots breeding. CSB Jungu, Dolakha is also engaged in selection and maintenance of seeds of two endangered varieties of bean (*Khairo Ghiu simi* and *Panhelo simi*) and is in the process of registration for marketing in collaboration with formal sector agencies. CSB Bara (Kachorwa) has engaged in development and improvement of Kachora-4 variety of rice through participatory plant breeding and maintaining seed quality, registration and marketing of this variety. Community seed banks practicing participatory plant/grassroots breeding activities build on the existing and mostly informal forms of access and benefit sharing while adding new

elements. They have control over management of seeds and planting materials to realize their rights to seeds.

Gaps in Implementation of ABS and Ensuring Farmers' Rights

Farmers and stakeholders lack awareness and knowledge about ABS issues including ownership rights of farmers and communities to genetic resources. In addition, farmers are not adequately represented in national level fora and decision-making bodies concerning the use and conservation of agricultural genetic resources. Community seed banks as a form of farmer organization, do not have formal legal status as such, hindering their organizational development. The country lacks legal means to protect farmers' rights and traditional knowledge on genetic resources (Gauchan 2008). Legislation on plant variety protection, farmers' rights and access and benefit sharing mechanisms is not formally in place, which hinders facilitated access and exchange of genetic resources and the creation of incentives for farmers, plant breeders and other actors to conserve and sustainable use the diverse agricultural genetic resources of the country (Gauchan et al 2017). The Seed Act 1988 (amended 2008) mentions breeders' rights (specific details are not outlined), but the provision for farmers' rights is not included. The Agriculture Development Strategy (2015) clearly emphasizes the broad rights of farmers related to agriculture, land and support services, but does not elaborate specific rights of farmers and local communities to agricultural genetic resources as per the provisions of the ITPGRFA.

As a party to WTO TRIPS and the CBD, Nepal has drafted a Plant Variety Protection and Farmers' Rights Bill (2005) and an Access and Benefit Sharing Bill (2016). Both have recently been revised, but are still in draft form. They need improvement and approval from government before they can be implemented to support ABS, farmers' rights and conservation of agrobiodiversity. The present draft Access and Benefit Sharing (ABS) legislation (2016), now in the process of final approval, focuses on access and benefit sharing of genetic resources with the provisions of Prior Informed Consent (PIC) and mutually agreed terms (MAT) as per the provision of the CBD and Nagoya Protocol (2010). However, the Bill has limited application to agricultural genetic resources (MoFE 2018). Since crop genetic resources in community seed banks are presently maintained and used through frequent and free exchange and sharing between and among the communities, an access legislation that restricts facilitated and free exchange of seeds among communities, will likely have negative effect on farmers' incentives to manage and promote local seed security and conservation of biodiversity. Other challenges include the current varietal registration and release formats, guidelines and procedures that are not farmer friendly. The varietal development and release/registration processes are dominated by the formal system providing no alternative, incentives and flexibility for farmers wishing to assess different cultivars, obtain access to seeds, increase the genetic diversity of their crops or add value to them (Gauchan et al 2005).

Community Seed Banks as Legitimate Institutions for Farmers' Rights and ABS Mechanisms

Many countries are in the process of developing (or some have developed) national policies and legislation in line with international conventions, treaties and protocols to implement farmers' rights and ABS mechanisms. These policies and legislation affect how national and local governments, public research organizations, private sectors and farmers conserve, protect, manage and make available and exchange genetic resources among different users and stakeholders and also ensure rights of farmers and local communities to these genetic resources. While the policy and legal frameworks are essential at the national level to recognize, protect facilitate and implement ABS and ensure the rights of farmers and communities, their practical implementation remain the major challenge in a least developed agro-based country like Nepal (Gauchan 2011).

In this context, a local level institutional mechanism is required to implement and facilitate effective ABS and ensure rights of farmers and local communities in line with national and international policies. Considering this, the community seed bank is proposed as a local legitimate institution or platform. A CSB facilitates local level collective sharing, exchange, conservation and use of local genetic resources. Many of the past and on-going projects and initiatives of Bioversity International jointly with LI-BIRD and NARC have developed and piloted some good practices, approaches and tools of community biodiversity management (CBM) in Nepal (Sthapit and Gauchan 2006, Shrestha et al 2013c). CSBs use these practices to enhance ABS at the local level and ensure rights of farmers to genetic resources (Paudel et al 2008). **Figure 2** illustrates this.

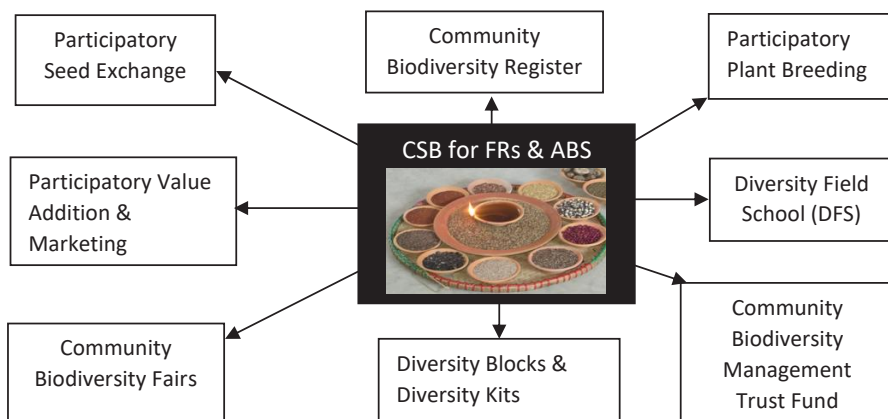


Figure 2. Mechanisms that realize farmer's rights and local level ABS in Nepal

A promising event is that the Association of community seed banks of Nepal (ACSBN) recently formed by a network of 27 functional CSBs has agreed to serve their member CSBs as the designated local institution for implementing and defending farmers' rights and ABS mechanism in respective parts of Nepal. According to Anderson et al (2018), community seed banks are relevant stakeholders and may thus be among those organizations that could be engaged in decision making at the national level. National institutions including agricultural extension services should provide the best institutional infrastructure to embark on a scaling up of such approaches.

Conclusions and Implications

Farmers' Rights and access and benefit sharing are important and interlinked issues in the conservation and sustainable use of agrobiodiversity. Key applicable approach based on existing rural realities are community seed banks and farmer seed systems, which serve as local points of access to genetic resources as well as ensuring equitable sharing of benefits. Community seed banks can enhance both informal and formal access and benefit sharing through strengthening farmers' seed system and promoting its linkages with formal sector agencies. They provide mechanisms that promote the availability and accessibility of seed diversity and quality seeds of preferred varieties (both traditional and modern). Community seed banks involved in participatory plant breeding and variety selection and maintaining quality source seeds of farmer varieties and their engagement in variety registration and release of locally adapted varieties promote improved access and benefit sharing to local community, particularly for traditional underutilized crops and landraces, where options for access to seeds from external sources is limited and absent.

The information presented above envisages that community seedbank can be an effective institution to implement farmers' rights and ABS through saving, exchanging, sharing and using farm-saved seeds and promoting prior informed consent to obtain access to plant genetic resources and traditional knowledge associated to local genetic resources. In addition, they can be used for enhancement of farmers' varieties, their registration, certification and marketing of quality seeds by strengthening organizational capacities of local institutions for promoting commercialization and wider sharing of benefits. Considering these, we propose a model for developing CSB as a legitimate local platform for prior-informed consent (PIC) and access and benefit sharing mechanisms that promote and ensue farmers rights to genetic resources. This will however, require legal recognition of community seed banks as farmer organization and creating incentive mechanisms for custodian farmers and communities by bringing support from formal sector agencies through relevant policies, legislations and guidelines. Furthermore, there is a need of programs and action plans to support, promote and sustain community seed banks by linking with

national genebank and other formal sector R &D agencies for formalizing farmers rights and promoting facilitated access and effective equitable benefit sharing. New national laws on access and benefit sharing, agrobiodiversity conservation and utilization and plant variety protection and farmers' rights that are under formulation should make appropriate provisions of recognizing community seed banks as local platform for facilitated ABS mechanisms and formalizing farmers rights. This is a best suggested option because, presently there are no other local level institutions that have knowledge, skills, experience, and expertise other than community seed banks. International policies and funding mechanisms such as Benefit sharing fund of ITPGRFA should make sure that sufficient funds for supporting community seed banks are in place as part of their obligations to implement Farmers' Rights and other provisions of the Plant Treaty, such as facilitating multilateral system of access, exchange and fair and equitable sharing of benefits arising from the use of genetic resources.

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सामुदायिक बीउ बैंकसम्बन्धी अवधारणा र नीतिगत व्यवस्था

अनिलकुमार आचार्य

कृषि जैविक विविधता शाखा, कृषि तथा पशुपन्छी विकास मन्त्रालय, काठमाडौं, नेपाल
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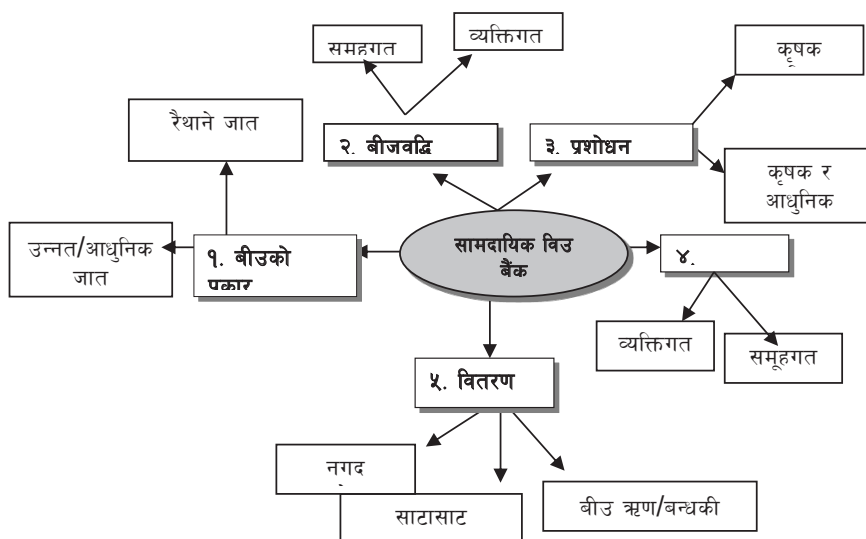
सार

नेपालमा कृषि जैविक विविधताको पहिचान, संरक्षण, संवर्द्धन र विकास तथा दिगो उपयोगका लागि सामुदायिक बीउ बैंक एक सशक्त पद्धतिका रूपमा विकास भइरहेको छ । सामुदायिक बीउ बैंकहरूको प्रवर्द्धनका लागि नेपाल सरकारले सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका (वि.सं. २०६५) र सामुदायिक बीउ बैंक स्थापना कार्यान्वयन कार्यविधि (वि.सं. २०७२) ल्याएको छ । यसको मुख्य उद्देश्य क) सामुदायिक बीउ बैंकको स्थापना एवं संस्थागत सुदृढीकरण गरी गुणस्तरीय बीउको सङ्कलन, भण्डारण र वितरणमा सहजता ल्याउने, ख) भौतिक पूर्वाधारहरू जनसमुदायद्वारा व्यवस्थित गर्ने, ग) बीउ गुणस्तर नियन्त्रण पद्धति (प्रमाणीकरण, गुणस्तर घोषित बीउ र यथार्थ सङ्केत-पत्र) को अवलम्बन गर्ने, घ) स्थानीय जातहरूको प्रयोग र संवर्द्धन गर्न प्रोत्साहन गर्ने र ङ) ग्रामीण क्षेत्रमा गुणस्तरीय बीउको उपलब्धता र पहुँचमा सुधार गर्ने रहेको छ । नेपालको संविधानको धारा ४२ तथा धारा ५१, राष्ट्रिय कृषिनीतिको बुँदा नं. ५२ र ५३, कृषि विकास रणनीति (वि.सं. २०१५-२०३५), दिगो विकासको लक्ष्य (सन् २०१६-२०३०) र कृषि जैविक विविधता नीति २०६३ (पहिलो संशोधन २०७१) ले कृषि जैविक विविधता संरक्षण तथा उपयोगसम्बन्धी कुराहरू समेटेको छ । त्यसै गरी सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका २०६५ र सामुदायिक बीउ बैंक स्थापना कार्यान्वयन कार्यविधि २०७२ ल्याई यसको कार्यान्वयन पनि भइरहेको छ । यस परिप्रेक्ष्यमा सामुदायिक बीउ बैंकसम्बन्धी एकीकृत नीति एवं निर्देशिका कार्यान्वयनमा ल्याई सामुदायिक बीउ बैंक विस्तार, सुदृढीकरण, मूल्य अभिवृद्धि, दिगो बजारीकरण गर्नाका साथै सामुदायिक बीउ बैंकको आत्मनिर्भरता र व्यवसायिकतामा जोड दिनुपर्ने देखिन्छ ।

मुख्य शब्द : कृषि जैविक विविधता नीति, सामुदायिक बीउ बैंक, स्थानीय बीउ संरक्षण

सामुदायिक बीउ बैंक : अवधारणा

सर्वप्रथम सामुदायिक बीउ बैंकको अवधारणा स्थानीय जातहरूको यथास्थानीय संरक्षण (In-situ conservation) का लागि शुरूवात भएको पाइन्छ । हाल यस सामुदायिक बीउ बैंकले बृहत् क्षेत्र समेटी समूहको नेतृत्वमा स्थापना र सञ्चालन भई स्थानीय बीउको संरक्षण तथा उन्नत जातहरूको अर्धव्यावसायिक कारोबार गरेको पाइन्छ । अर्थात् सामुदायिक बीउ बैंक भनेको समुदायले नेतृत्व गरी सञ्चालन भएको बीउको कारोवार गर्ने थलो हो । नेपालका सामुदायिक बीउ बैंकहरूले स्थानीय तथा उन्नत जातहरूको बीउ-उत्पादन, प्रशोधन, भण्डारण, स्थानीय स्तरमा साटासाट तथा जिल्लाबाहिर समेत बिक्रीवितरण गरिरहेका छन् । नेपालमा सन् १९९४ मा युएससी क्यानाडाको सहयोगमा साबिकको दलचोकी गाउँ विकास समितिमा स्थानीय जातहरूको सङ्कलन एवं भण्डारण गरी कृषकहरूमा आदानप्रदान गर्ने कार्य थालनी भएकाले यसलाई पहिलो सामुदायिक बीउ बैंकका रूपमा लिएको पाइन्छ (बाली विकास निर्देशनालय, २०६५) । पछि गएर ली-बर्ड, नेपाल कृषि अनुसन्धान परिषद् र बायोभर्सिटी इन्टरनेशनलले बारा जिल्लाको कचोर्वामा सामुदायिक बीउ बैंकको स्थापना गरेको पाइन्छ । सामुदायिक बीउ बैंकको अवधारणालाई चित्र नं. १ मा देखाइएको छ:



चित्र नं. १: सामुदायिक बीउ बैंकको अवधारणा

सामुदायिक बीउ बैंकको उद्देश्य कृषि आनुवंशिक स्रोतहरूको संरक्षण र संवर्द्धन गर्नाका साथै तिनको विकास र उचित उपयोगबाट कृषक एवं समुदायलाई आत्मनिर्भरतर्फ उन्मुख गराउनाका साथै आर्थिक लाभ पनि दिलाउन सक्नु हो । तसर्थ चित्र नं. १ मा देखाइएको अवधारणा अनुसार सामुदायिक बीउ बैंकमा रैथाने प्रजातिलाई प्राथमिकतामा राखी समुदायलाई आवश्यक पर्ने उन्नत बीउहरूको समेत संरक्षण गर्नुका साथै तिनको

विकास, प्रवर्द्धन र उपयोग गर्न बीजवृद्धि, बीउ प्रशोधन तथा भण्डारण गर्नु, कृषक-कृषक एवं समुदायबीच साटासाट गर्नु र विक्रीवितरण गर्नु पनि हो ।

सामुदायिक बीउ बैंकसँग सम्बन्धित नीतिगत व्यवस्था

नेपालको संविधान

नेपालको संविधानको धारा ४२ मा सामाजिक न्यायको हकमा स्थानीय बीउबिजन र प्रजातिका सम्बन्धमा भएको व्यवस्था : (४) प्रत्येक किसानलाई कानूनबमोजिम कृषिकार्यका लागि भूमिमा पहुँच, परम्परागत रूपमा प्रयोग र अवलम्बन गरिएका स्थानीय बीउबिजन र कृषि प्रजातिको छनोट र संरक्षणको हक हुनेछ ।

त्यसैगरी धारा ५१ मा राज्यका नीतिहरूमा देहाय अनुसारका प्रावधान रहेको पाइन्छ :

- प्राकृतिक स्रोतसाधनको संरक्षण, संवर्द्धन र उपयोगसम्बन्धी नीतिको बुँदा नं. ५ मा जनसाधारणमा वातावरणीय स्वच्छतासम्बन्धी चेतना बढाई औद्योगिक एवं भौतिक विकासबाट वातावरणमा पर्न सक्ने जोखिमलाई न्यूनीकरण गर्दै वन, वन्यजन्तु, पक्षी, वनस्पति तथा जैविक विविधताको संरक्षण, संवर्द्धन र दिगो उपयोग गर्ने,
- यसैगरी बुँदा नम्बर (७) मा प्रकृति, वातावरण वा जैविक विविधतामाथि नकारात्मक असर परेको वा पर्न सक्ने अवस्थामा नकारात्मक वातावरणीय प्रभाव निर्मूल वा न्यून गर्न उपयुक्त उपायहरू अवलम्बन गर्ने ।

राष्ट्रिय कृषिनीति २०६१

राष्ट्रिय कृषिनीतिका तीनवटा मुख्य उद्देश्यमध्ये तेस्रो उद्देश्यमा प्राकृतिक स्रोत, वातावरण र जैविक विविधताको संरक्षण, संवर्द्धन एवं सदुपयोग गर्ने व्यवस्था भएको र यो उद्देश्य प्राप्तिका लागि कृषिनीति नं. ५२ र ५३ मा देहाय अनुसार उल्लेख भएको:

- ५२ : जैविक विविधता संरक्षणका लागि जीन बैंकको व्यवस्था र स्वस्थानीय संरक्षण (*In-situ conservation*) लाई प्रोत्साहित गरिनेछ । सम्भावित क्षेत्रमा सहभागितात्मक जैविक विविधता संरक्षण क्षेत्र (*Participatory Biodiversity Park*) स्थापित गरिनेछ भन्ने प्रावधान रहेको पाइन्छ ।
- ५३ : हैसियत बिग्रेका वन तथा प्राकृतिक जलाशयको हैसियत सुधार गर्ने गरी जैविक विविधता संरक्षण, संवर्द्धन र सदुपयोग तथा कृषि वनप्रणालीको विकास गरिनेछ ।

कृषि जैविक विविधता नीति २०६३ (पहिलो संशोधन २०७१)

यस नीतिमा खाद्य एवं कृषिजन्य आनुवंशिक स्रोत, पदार्थ तथा स्थानीय ज्ञान, सीप आदिको संरक्षण, उपयोग र लाभको समन्यायिक (Equitable) एवं न्यायिक (fair) बाँडफाँड गरी वर्तमान र भावी पुस्ताको खाद्यसुरक्षा एवं गरिबी न्यूनीकरण गर्ने कुराको परिकल्पना (Vision) गरिएको छ । यस नीतिका उद्देश्यहरू देहाय अनुसारका छन् :

- कृषि जैविक विविधताको संरक्षण, संवर्द्धन र दिगो उपयोग गरी कृषिको समुचित विकास एवं खाद्य तथा पोषण सुरक्षा सुदृढ गर्ने;
- कृषकको परम्परागत ज्ञान, सीप, खोज, प्रविधि, उपयोग र अभ्यासहरूको हक र हितको संरक्षण एवं संवर्द्धन गर्ने;
- कृषि आनुवंशिक स्रोत तथा पदार्थको पहुँच र उपयोगबाट सृजित अवसर र लाभहरूको समन्यायिक एवं न्यायिक वितरणप्रणालीको व्यवस्था मिलाउने;
- दीर्घकालीन रूपमा कृषि जैविक विविधताको संरक्षण एवं संवर्द्धन गरी पर्यावरणीय सन्तुलन अभिवृद्धि गर्नमा योगदान पुऱ्याउने ।

कृषि जैविक विविधता नीतिका प्रमुख विशेषताहरू निम्नानुसार रहेका छन् :

- कृषि जैविक विविधताको संरक्षण, संवर्द्धन र बुद्धिमत्तापूर्ण उपयोगबाट खाद्य तथा पोषण सुरक्षा र गरिबी न्यूनीकरणमा जोड;
- परम्परागत ज्ञान सीप, खोज, प्रविधि उपयोग र अभ्यासहरूको संरक्षण;
- जैविक स्रोत र परम्परागत ज्ञानमा आधारित अध्ययन, अनुसन्धान र प्रसार;
- कृषक-कृषक बीच विनिमय सुदृढीकरण;
- कृषि जैविक विविधतामा आधारित कार्यक्रम, उद्योग व्यवसाय र बजार विकास;
- कृषि जैविक स्रोतको अभिलेखीकरण/पञ्जीकरण;
- कृषि जैविक स्रोत र जैविक सम्पतिबाट प्राप्त लाभको समन्यायिक बाँडफाँड;
- वातावरणीय प्रभाव मूल्याङ्कन गर्दा कृषि जैविक विविधतालाई महत्त्व;
- जोखिमयुक्त अनुवंश परिवर्तित जीव (GMO) को उत्पादन, आयात तथा प्रयोगलाई निरूत्साहन/नियन्त्रण;
- राष्ट्रिय कृषि जैविक विविधता संरक्षण समितिको व्यवस्था ।

यसका साथै कृषि जैविक विविधता तथा परम्परागत ज्ञानको पहिचान, संरक्षण, संवर्द्धन, विकास र दिगो उपयोगका लागि निम्न नीतिगत व्यवस्थाहरू छन् :

- अन्तर्राष्ट्रिय स्तरमा संरक्षित नेपालका आनुवंशिक पदार्थ र स्रोतहरूको स्वस्थानीय संरक्षण, पुनर्स्थापना (Restoration), अनुसन्धान र विकास कार्यहरूको प्रवर्द्धनका लागि राष्ट्रिय कृषि आनुवंशिक स्रोत केन्द्र, सिमेन बैंक, सामुदायिक बीउ बैंक, कृषि, बागवानी तथा पशु फार्म र अन्य अनुसन्धानका निकायहरूसँग सहकार्य;

- समुदायमा आधारित जैविक विविधता व्यवस्थापन पद्धतिलाई प्रवर्द्धन गर्न सामुदायिक जैविक विविधता अभिलेखीकरण, जैविक विविधता मेला, सामुदायिक बीउ बैंक, फिल्ड जीन बैंक, सिमेन बैंक र जैविक विविधता व्यवस्थापन कोषजस्ता कार्यक्रमहरू सञ्चालन र विस्तार;
- परस्थानीय र स्वस्थानीय संरक्षण कार्यक्रमहरूलाई प्रभावकारी बनाउन राष्ट्रिय कृषि आनुवंशिक स्रोत केन्द्र र सिमेन बैंक, सामुदायिक बीउ बैंकजस्ता स्थानीय कार्यक्रमहरूबीच समन्वय र सहकार्य बढाइनेछ ।

आनुवंशिक पदार्थ र स्रोत तथा परम्परागत ज्ञानमा कृषक अधिकारको संरक्षणका लागि देहायबमोजिमको नीतिगत व्यवस्था रहेको छ :

- कृषकले विकास गरी संरक्षण र उपयोग गर्दै आएका वनस्पति, पशुपक्षी र अन्य प्राणीका जात एवं प्रविधि उपयोग गरी उत्पादन र बिक्रीवितरण गर्न पाउने अधिकारमा कुनै हस्तक्षेप हुन नदिने व्यवस्था गरिनेछ । बीउबिजनको जगेर्ना, साटासाट र पुनःप्रयोग र उत्पादन गरी जोगाएको बीउबिजन (Farmer saved seed) बिक्रीवितरण गर्न पाउने कृषक अधिकारमा बाधा पर्ने गरी कुनै कानुन बनाइनेछैन ।

कृषि विकास रणनीति (वि.सं. २०१५-२०३५)

नेपालको २० वर्षे कृषि विकास रणनीतिले कृषिको उत्पादकत्व वृद्धि गर्ने, कृषि पेशाको व्यवसायीकरण गर्दै प्रतिस्पर्धी क्षमताद्वारा कृषि क्षेत्रको द्रुत विकास गर्ने परिकल्पना गरेको छ । यस रणनीतिले योजना तर्जुमा, कार्यक्रम कार्यान्वयन र रणनीतिको कार्यान्वयनमा किसानहरूको सहभागिता सुनिश्चित गर्न संस्थागत संयन्त्रको प्रावधानको व्यवस्था गरेको छ । किसानहरूका अधिकारहरूलाई सुनिश्चित गर्न र विभिन्न नीतिगत/संरचनागत संयन्त्रमा किसानको प्रतिनिधित्वका लागि एक उच्च स्तरीय अधिकार सम्पन्न र स्थायी प्रकृतिको किसान आयोग गठन गर्ने प्रावधान राखिएबमोजिम सो गठन भई कार्यान्वयनमा आइसकेको छ ।

कृषि विकास रणनीतिमा देहायका उच्चतम उत्पादकत्वसँग सम्बन्धित विषयवस्तुलाई सम्बोधन गरेको पाइन्छ :

- कृषक समूह र संस्थाहरूको बैंक तथा वित्तीय संस्थाहरूसँग सम्बन्ध स्थापना;
- जैविक विविधता नीतिको कार्यान्वयन;
- बीउ तथा दाना र घाँस सञ्चिति प्रणालीको सुदृढीकरण;
- जैविक विविधता संरक्षण तथा जलवायु परिवर्तन अनुकूलन ।

कृषि विकास रणनीतिले उक्त जैविक विविधता नीति कार्यान्वयन गर्नका लागि देहायका नीतिहरू लिएको पाइन्छ :

- कृषिसँग सम्बन्धित विविध जैविक संसाधनको सङ्कलन, वर्गीकरण र लेखाजोखालाई सबलीकरण गर्ने र वैज्ञानिक प्रतिवेदन/अभिलेखमा सहयोग गर्ने;
- कृषि-जैविक विविधताको दर्ताप्रणाली सुरु गर्ने;
- नेपाली जैविक विविधता र आनुवंशिक संसाधनको अनुसन्धान एवं प्रयोगका लागि नियम तर्जुमा गर्ने;
- जैविक विविधता, आनुवंशिक संसाधनको र मानव स्वास्थ्यमा पर्न सक्ने नकारात्मक प्रभावबाट बच्न अनुसन्धानका लागि बाहेक आनुवंशिक रूपमा परिवर्तित जीवको (Genetically Modified Organism) (बीउ, बालीहरू, पशुपन्छी) निर्यात, उत्पादन र प्रयोगमा रोक लगाउने ।

दिगो विकासको लक्ष्य (सन् २०१६-२०३०)

दिगो विकासको लक्ष्य नं. २ मा भोकमरीको अन्त्य गर्ने, खाद्यसुरक्षा तथा उन्नत पोषण हासिल गर्ने र दिगो कृषिको प्रवर्द्धन गर्ने (End hunger, achieve food security and improved nutrition and promote sustainable agriculture) लक्ष्य निर्धारण गरेको पाइन्छ । जसमा देहायका कृषि जैविक विविधतासँग सम्बन्धित उद्देश्यहरू राखिएको पाइन्छ :

- कृषि उत्पादकत्व क्षमता वृद्धि गर्न ग्रामीण पूर्वाधार, कृषि अनुसन्धान, प्रविधि विकास, वनस्पति तथा चौपायाको जीन बैंक स्थापनामा लगानी वृद्धि गर्ने;
- खाद्य मूल्यको चरम अस्थिरतालाई सीमित गर्नमा मद्दत पुऱ्याउन खाद्यवस्तु बजार र तत्सम्बन्धी कारोबारहरूको समुचित सञ्चालन हुने गरी उपायहरू अवलम्बन गर्ने;
- दिगो विकासको लक्ष्य नं. २ मा राखिएको शून्य भोकमरीका लागि यसको क्र.सं. २.५ मा सन् २०२० सम्म बीउ, खेती गरिने बोटबिस्वा, फार्म एवं पशुपालन र तिनका जङ्गली प्रजातिहरूको संरक्षणलाई प्राथमिकता दिई विभिन्न बीउ, बिस्वा एवं लोपोन्मुख पशुहरूको डिएनए (DNA) बैंक र सामुदायिक बीउ बैंकको विस्तार गर्न लक्ष्य निर्धारण गरेको पाइन्छ ।

दिगो विकासको लक्ष्य नं. २ पूरा गर्नका लागि नेपाल सरकारले कार्ययोजना विकास गरेको छ, जसलाई तालिका १ मा प्रस्तुत गरिएको छ:

तालिका १. बीउ/बोटबिरूवा/फार्म/पशुपालन र जङ्गली प्रजातिहरूको संरक्षणका लक्ष्य:

लक्ष्य र सूचक	अनुगमन ढाँचा		
	डाटा स्रोत	समय	जिम्मेवार निकाय
दिगो विकास लक्ष्य २.५: सन् २०२० सम्ममा बीउ-खेती गरिने बाली, पशुपालन र तिनका सम्बन्धित जङ्गली प्रजातिका आनुवंशिक विविधता संरक्षण एवं संवर्द्धन गर्ने			
दिगो विकास लक्ष्य २.५.१: खाद्य तथा कृषिको सुनिश्चितताका लागि बोटबिरूवा र पशुका आनुवंशिक स्रोतहरूका सङ्ख्याको मध्यम एवं दीर्घकालीन संरक्षणका कार्यहरू	MIS	Annual	MoAD, MoLD, MoFSC, NARC
दिगो विकास लक्ष्य २.५.२: लोप हुने जोखिममा रहेका, नरहेका र थाहा नभएका स्थानीय वंशहरूको अनुपात :	MIS	Annual	MoAD, MoFSC, NARC
१ बीउका प्रजातिहरूको डिएनए (DNA) बैंकको सङ्ख्या	MIS	Annual	MoAD, NARC
२ बिरूवाका प्रजातिहरूको डिएनए बैंकको सङ्ख्या	MIS	Annual	MoFSC, NARC
३ लोपोन्मुख पशुका प्रजातिहरूको डिएनए बैंकको सङ्ख्या	MIS	Annual	MoFSC, NARC

स्रोत : दिगो विकासको लक्ष्य, २०७३

अन्य नीतिगत व्यवस्थाहरू

कृषि जैविक विविधताको संरक्षण तथा सदुपयोग एवं सामुदायिक बीउ बैंकलाई टेवा पुऱ्याउन देहायका अन्य नीति, सोच एवं ढाँचाहरूले सम्बोधन गरेको पाइन्छ :

- राष्ट्रिय बीउबिजन नीति २०५६
- जलवायु परिवर्तन नीति २०६७
- विज्ञान तथा प्रविधि नीति २०६१
- जैविक प्रविधि नीति २०६३
- वन नीति २०७१
- बीउबिजनको दीर्घकालीन राष्ट्रिय सोच सन् २०१३-२०२५
- जलचर संरक्षण ऐन २०१७ (पहिलो संशोधन २०५५)
- राष्ट्रिय भू-उपयोग नीति २०६८
- राष्ट्रिय जैविक सुरक्षा ढाँचा-खाका २०६३ (National Bio-safety Framework)

सामुदायिक बीउ बैंक : निर्देशिका, कार्यविधि

कृषि जैविक विविधताको संरक्षण, खाद्यसुरक्षाको सुनिश्चितता तथा दिगो कृषि विकासका लागि गुणस्तरीय बीउको उपलब्धता एवं प्रयोगमा कृषक समुदायको ठूलो भूमिका हुने हुनाले सोको सहकार्य गर्न जरूरी देखिन्छ । विपन्न, गरिब, सीमान्तकृत तथा निर्वाहमुखी कृषकहरूको कृषि पद्धतिमा सुधार ल्याउने चुनौतीलाई सम्बोधन गर्न नेपाल सरकारले आ.व. २०६५।६६ को बजेट वक्तव्यमार्फत सामुदायिक बीउ बैंक (Community Seed Bank) स्थापना गर्ने घोषणा गर्‍यो । साथै सम्माननीय प्रधानमन्त्रीज्यूको मिति २०६५।१०।१२ को सम्बोधनमार्फत सामुदायिक बीउ बैंक स्थापना गर्ने थप प्रतिबद्धता जनाइयो । सोही अनुसार गुणस्तरीय बीउ-उत्पादन र प्रयोगमा व्यापकता ल्याउने चुनौतीलाई समाधान गर्न सामुदायिक बीउ बैंक स्थापना र सञ्चालन निर्देशिका र कार्यविधि तयार गरिएको पाइन्छ । यस क्रममा सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका (२०६५) र सामुदायिक बीउ बैंक स्थापना कार्यान्वयन कार्यविधि (२०७२) कार्यान्वयनमा रहेको छ ।

सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका २०६५

सामुदायिक बीउ बैंक भन्नाले बीउको उत्पादन, सङ्कलन र भण्डारण गरिने सामुदायिक गोदाम भन्ने बुझिन्छ । यस बैंकमा खास गरी विभिन्न व्यक्ति, अनौपचारिक समूह तथा गैरसरकारी संस्थाबाट बीउ सङ्कलन गर्नुका साथै आपसमा बाँडफाँड एवं बिक्रीवितरण गरिन्छ भन्नेजस्ता अवधारणागत विषय, परिभाषामा समेटिएका छन् । कृषकहरूको आवश्यकता र प्राथमिकताका आधारमा छनोट भएका स्थानीय तथा उन्नत जातका बीउ-उत्पादन, प्रशोधन र भण्डारण समुदायस्तरमै गरी गुणस्तरीय बीउमा पहुँच, उपलब्धता तथा व्यवस्थापनमा बढोत्तरी गरी सोबाट गरिब, विपन्न तथा सीमान्तकृत कृषकहरूको जीवनस्तरमा अभिवृद्धि गर्ने यस कार्यक्रमको मुख्य उद्देश्य रहेको छ । यसका विशिष्ट उद्देश्यहरू निम्नानुसार रहेका छन् :

- सामुदायिक बीउ बैंकको स्थापना एवं संस्थागत सुदृढीकरण गरी गुणस्तरीय बीउको सङ्कलन, भण्डारण र वितरणमा सहजता ल्याउने;
- भौतिक पूर्वाधारहरू जस्तै : गोदामघर, बीउ प्रशोधन उपकरण, खलियान आदिको विकास गरी समुदायद्वारा व्यवस्थित गर्ने;
- कृषक तथा क्षेत्रीय बीउबिजन प्रयोगशालाहरूको संयुक्त प्रयासमा औपचारिक बीउ गुणस्तर नियन्त्रण पद्धति (प्रमाणीकरण, गुणस्तर, घोषित बीउ र यथार्थ सङ्केतपत्र) को अवलम्बन गर्ने;
- स्थानीय जातहरूको प्रयोग र संवर्द्धन गर्न प्रोत्साहन गर्ने र
- गरिब, विपन्न, दलित, जनजाति तथा महिला र द्वन्द्वप्रभावित ग्रामीण क्षेत्रमा गुणस्तरीय बीउको उपलब्धता र पहुँचमा सुधार गर्ने ।

भौगोलिक कार्यक्षेत्र निर्धारण

सामुदायिक बीउ बैंक खास गरी उन्नत जातहरूको गुणस्तरीय बीउको पहुँच नपुगेका क्षेत्रका कृषकहरूलाई लक्षित गरिएको छ । प्रथम वर्ष तालिका २ मा दिइएका १७ जिल्ला यस कार्यक्रमका लागि पाइलट कार्यक्रमका रूपमा कार्यान्वयन गरिने र क्रमशः अन्य जिल्लाहरूमा विस्तार गर्दै लगिनेछ भन्ने प्रावधान राखिएको पाइन्छ ।

तालिका २. सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका २०६५ ले तोकेको भौगोलिक कार्य क्षेत्र

विकासक्षेत्र	भौगोलिक क्षेत्र तथा जिल्लाहरू		
	उच्च पहाड	पहाड	तराई
पूर्वाञ्चल विकासक्षेत्र	सङ्खुवासभा	तेह्रथुम, ओखलढुङ्गा	सिराहा
मध्यमाञ्चल विकासक्षेत्र	सिन्धुपाल्चोक	धादिङ	रौतहट
पश्चिमाञ्चल विकासक्षेत्र	मुस्ताङ	गुल्मी	नवलपरासी
मध्यपश्चिमाञ्चल विकासक्षेत्र	जुम्ला	जाजरकोट	बाँके
सुदूर पश्चिमाञ्चल विकासक्षेत्र	बझाङ	डोटी, डडेल्धुरा	कञ्चनपुर

स्रोत : सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका, २०६५

कार्यविधि तथा रणनीति

कार्यविधि रणनीतिमा देहायका विषयवस्तुहरू समेटिएका छन्:

- समुदायमा जनचेतना जगाउने कार्यक्रम सञ्चालन;
- सामुदायिक बीउ उत्पादक समूहहरूलाई नै बीउ बैंक सञ्चालन गर्ने जिम्मेवारी;
- सामुदायिक बीउ-उत्पादन समूह (CSP-G) गठन;
- १५ सदस्यीय एक सामुदायिक बीउ बैंक समिति (SCB-C) गठन;
- सीमान्तकृत, दलित, जनजाति तथा द्वन्द्वबाट प्रभावित क्षेत्रलाई प्राथमिकता;
- जात छनोटको आधार FVs र MVs दुवै प्रकारका जातहरूको बीजवृद्धि;
- बीउको गुणस्तर नियन्त्रणमा जिल्ला कृषि विकास कार्यालय तथा क्षेत्रीय बीउबिजन प्रयोगशालाको सहयोग;
- स्थानीय जातहरूको बृहत् अध्ययन, अनुसन्धान, छनोट, उत्पादन आदिका लागि राष्ट्रिय जीन बैंक (National Genebank) सँग समन्वय;
- केन्द्रीय स्तरमा सामुदायिक बीउ बैंक कार्यलाई प्रभावकारी रूपमा कार्यान्वयन गर्न एउटा कार्यदलको गठन ।

विभिन्न निकायहरूको भूमिका र जिम्मेवारी

सामुदायिक बीउ-उत्पादन समूह, सामुदायिक बीउ बैंक/सञ्चालक समिति, जिल्ला कृषि विकास कार्यालय, जिल्ला विकास समिति/गा.वि.स., एग्रो भेट/निजी स्तरका बीउ व्यवसायी, क्षेत्रीय कृषि निर्देशनालय, केन्द्रीय बीउबिजन परीक्षण प्रयोगशाला/क्षेत्रीय बीउबिजन परीक्षण प्रयोगशाला, बीउबिजन तथा गुणस्तर नियन्त्रण केन्द्र, गैरसरकारी संस्था, नेपाल कृषि अनुसन्धान परिषद्, कृषि विभाग/बाली विकास निर्देशनालय, पशु सेवा विभाग, राष्ट्रिय बीउबिजन समिति र तत्कालीन कृषि तथा सहकारी मन्त्रालयहरूको जिम्मेवारी किटान गरिएको पाइन्छ ।

कार्यान्वयनप्रक्रिया

सामुदायिक बीउ बैंक स्थापनाका लागि तपसीलबमोजिमको कार्यविधि अपनाउनुपर्ने प्रावधान राखिएको :

- सामुदायिक बीउ बैंक स्थापना विषयबारे अभिमुखीकरण तालिम;
- सामुदायिक बीउ बैंक स्थापना गरिने गा.वि.स. तथा समुदायको छनोट;
- सामुदायिक बीउ-उत्पादन समूह गठन;
- सामुदायिक बीउ बैंक समितिको गठन;
- क्षमता अभिवृद्धि तालिम र बीउको जातीय नक्सा तयार गर्ने र वीजवृद्धि कार्यक्रम कार्यान्वयन;
- सहभागितामूलक जातीय छनोटको कार्यान्वयन (PVS);
- बीउको गुणस्तर नियन्त्रण, बीउ खरिद तथा सङ्कलन;
- बीउ प्रशोधन भण्डारण तथा बीउ मेलाको आयोजना;
- बीउ साटासाट तथा वितरण, अनुगमन निरीक्षण र प्रतिवेदन ।

कार्यान्वयन तथा संस्थागत व्यवस्था

- सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका २०६५, कार्यान्वयनका लागि केन्द्रीय स्तरमा गठित कार्यदल जिम्मेवार रहने,
- यस निर्देशिकामा समय सापेक्ष परिमार्जन तथा सुधार केन्द्रीय स्तरमा गठित कार्यदलले गर्ने ।

सामुदायिक बीउ बैंकको कार्ययोजना

समुदायमा जनचेतना जागरण, स्थानीय संस्थाहरूको स्थापना तथा सुदृढीकरण, नीतिनियम बनाउने, सामुदायिक बीउ विकास बैंक संरचनाहरू (प्रशोधन तथा अन्य सुविधाहरू) को निर्माण, क्षमता अभिवृद्धि (तालिम, भ्रमण, प्रदर्शनी आदि), बीउ योजना/ बाली तथा

जातको छनोट, उत्पादित बीउको बजार व्यवस्था गरी आयस्तर बढाउने, सामुदायिक बीउ विकास बैंक तथा बीउको गुणस्तर निरीक्षण अनुगमन र प्रभाव मूल्याङ्कन जस्ता क्रियाकलापहरू राखी जिम्मेवारी किटान गरिएको पाइन्छ ।

अपेक्षित उपलब्धि

यस निर्देशिकामा राखिएका अपेक्षित उपलब्धिहरू :

- आवश्यकता अनुसारको गुणस्तरीय बीउ स्थानीय स्तरमा नै आपूर्ति हुने;
- गा.वि.स. स्तरमा नै गुणस्तर बीउमा आत्मनिर्भर हुने;
- प्रत्येक गा.वि.स.मा कम्तीमा एउटा सामुदायिक बडि बैंक स्थापना तथा सञ्चालन हुने;
- समुदायका सदस्यहरूले रोजगारीको अवसर पाउने;
- सामुदायिक बीउ बैंकलाई सहकारीमा परिणत गर्न सकिने;
- सामुदायिक बीउ बैंकबाट कम्तीमा १०० घर परिवार प्रत्यक्ष रूपले लाभान्वित हुने;
- स्थानीय जातको संरक्षण तथा उपयोग हुने ।

सामुदायिक बीउ बैंक स्थापना र सञ्चालनका लागि प्रस्तावित नर्स

- सामुदायिक बीउ बैंक स्थापना र सञ्चालन गर्न छुट्टै नर्स तयार गरिएको पाइन्छ ।

सामुदायिक बीउ बैंक स्थापना कार्यान्वयन कार्यविधि २०७२

कृषि इन्जिनियरिङ निर्देशनालयले सानादेखि ठूला कृषकहरूको समस्यालाई ध्यानमा राखी सामुदायिक रूपमा बीज भण्डारण, थ्रेसिङ, सिङ प्रोसेसिङ, प्याकेजिङ आदि कार्यमा संलग्न भई पोष्ट हार्भेष्ट क्षतिमा न्यूनीकरण गरी स्थानीय स्तरमा खाद्यसुरक्षाका लागि शुद्ध बीउ व्यवस्थापन गर्न सामुदायिक बीउ बैंक अति आवश्यक देखी भूकम्पपीडित जिल्लामा सामुदायिक बीउ बैंक स्थापना गर्ने सोच राखी यो कार्यविधि कार्यान्वयनमा आएको पाइन्छ । यस कार्यविधिमा विभिन्न परिभाषाहरू समेटी लाभग्राही संस्थाका रूपमा घटीमा ४०% भूकम्पपीडित भई प्रमाणपत्र प्राप्त कृषक समूह वा सहकारीलाई सम्बोधन गर्न खोजिएको छ भने यसका उद्देश्यहरू देहायबमोजिम रहेका छन्:

- भूकम्प प्रभावित जिल्लाका किसानहरूलाई सामूहिक बीउ भण्डारणमा सहयोग हुने;
- भूकम्प प्रभावित जिल्लाका किसानहरूलाई स्थानीय स्तरमा आवश्यक बीउ समयमा र सहज रूपमा उपलब्ध हुने;
- स्थानीय स्तरमा भूकम्प प्रतिरोधक भौतिक पूर्वाधारहरू निर्माण हुने;
- बीउ बैंक सञ्चालन र व्यवस्थापनबाट संस्थाको प्राविधिक तथा व्यवस्थापकीय क्षमताअभिवृद्धि हुने ।

कार्यक्रम सञ्चालनप्रक्रिया

कार्यक्रम सञ्चालनका लागि क्षेत्र छनोटका आधारमा २०७२ वैशाख १२ र २९ गते आएको विनाशकारी महाभूकम्पबाट प्रभावित २४ जिल्ला र आगामी आर्थिक वर्षमा अन्य उपयुक्त जिल्लाहरूमा सञ्चालन गरिने व्यवस्था भएको ।

कार्यक्रम तर्जुमा र कार्यान्वयन

कृषि इन्जिनियरिङ निर्देशनालयले प्रमुख रूपमा खाद्यान्न तथा तरकारीबालीमा बीजवृद्धि कार्यमा संलग्न संस्थाहरूमार्फत, भूकम्प प्रतिरोधक बीउ भण्डार ३० देखि १०० मे.टन क्षमताको र अन्य आवश्यक पर्ने भौतिक पूर्वाधार बीउ बैंकलाई ट्रान्जिट सेड, मेसिन सेड, थ्रेसिङ फ्लोर आदि र आवश्यक पर्ने बीउ ग्रेडिङ मेसिनरी आदिमा कार्यान्वयन हुने व्यवस्था रहेको ।

संस्थाको छनोटप्रक्रिया

कृषि इन्जिनियरिङ निर्देशनालयले भूकम्प प्रभावित २४ जिल्लामा प्रस्ताव सङ्कलन गर्न राष्ट्रिय दैनिक पत्रिकामा ३० दिने सूचना जारी गरी संस्था छनोट गर्ने प्रावधान राखेको छ भने आवश्यक कागजात सहित सूचनाको म्यादभित्र सम्बन्धित जि.कृ.वि.का.मा प्रस्ताव दर्ता गर्ने त्यहाँबाट निर्देशनालयमा पठाउने प्रक्रिया अपनाउने व्यवस्था भएको पाइन्छ । प्राप्त प्रस्तावहरूको छनोटका लागि प्रस्ताव छनोट समितिबाट निर्णय हुने व्यवस्था गरिएको देखिन्छ ।

कार्यान्वयन-प्रक्रिया

बीउ बैंक भवननिर्माण कार्यक्रमअन्तर्गत विभिन्न किसिमका भौतिक पूर्वाधारहरू र शुद्ध बीउ तयार गर्न मेसिनरी उपकरणको व्यवस्था गर्ने भएकाले ३ आ.व.मा कार्यक्रम सम्पन्न गर्ने व्यवस्था राखिएको छ । भौतिक पूर्वाधारहरूको निर्माण कार्यमा संस्थाले नगद सहभागिता १० प्रतिशत र मेसिन उपकरणहरू खरिदकार्यमा संस्थाले नगद सहभागिता ५० प्रतिशत ब्यहोर्नुपर्ने व्यवस्था गरिएको पाइन्छ । निर्माणकार्य गर्दा संस्थाले कुनै पनि ठेकेदारलाई ठेक्का नदिई आफ्नो रोहवरमा गराउनुपर्ने हुन्छ ।

कार्यक्रमको समन्वय, अनुगमन तथा मूल्याङ्कन व्यवस्था

सञ्चालित कार्यक्रमको केन्द्रीय स्तरबाट नियमित अनुगमन तथा मूल्याङ्कनको कार्य मन्त्रालय, कृषि विभाग, सम्बन्धित निर्देशनालय वा कार्यक्रमबाट हुने र जिल्लास्तरमा अनुगमन तथा मूल्याङ्कनको कार्य जिल्ला कृषि विकास कार्यालय र यसअन्तर्गतका सेवा केन्द्रबाट हुने व्यवस्था गरिएको पाइन्छ ।

मुख्य समस्या र चुनौतीहरू

- नीति, निर्देशिका एवं कार्यविधि कार्यान्वयनमा समयसापेक्ष सुधार;
- जनचेतना तथा क्षमता अभिवृद्धि;
- आनुवंशिक स्रोत र परम्परागत ज्ञानको लोपोन्मुख अवस्था (विशेष गरी गत ८) वर्षका अवधिमा विश्वमा ७५ प्रतिशतभन्दा बढी सबै बाली विविधताहरू स्थायी रूपले नै लोप भएका छन भनी विश्व खाद्य संगठनले २००९ मा उल्लेख गरेको पाइन्छ भने कृषि विकास मन्त्रालयको २०१७ को प्रकाशनमा जलबायु परिवर्तन एवं आधुनिकीकरणका कारण आउने दशकमा ठूलो परिमाणमा महत्त्वपूर्ण खाद्यान्न बालीका जङ्गली प्रजातिहरू लोप हुन सक्छन् भनिएको पाइन्छ) ।
- आनुवंशिक पदार्थ र स्रोतको चोरी (Biopiracy);
- आनुवंशिक स्रोत र परम्परागत ज्ञानमा पहुँच र सोबाट सिर्जित लाभको बाँडफाँड एवं निष्पक्ष र समन्यायिक वितरण;
- सामुदायिक बीउ बैंकको आत्मनिर्भरता र व्यावसायिकता;
- उपेक्षित (Neglected) तथा न्यून उपयोगमा रहेका (Underutilized) प्रजातिहरूको संरक्षण, संवर्द्धन, मूल्य अभिवृद्धि र उपयोग;
- अध्ययन, अनुसन्धान तथा अभिलेखीकरण;
- स्वामित्व र समन्वय;
- अन्तर्राष्ट्रिय महासन्धि/सन्धि/अभिसन्धिमा गरिएका प्रतिबद्धता;
- खाने बानी र परिकारमा परिवर्तन ।

सुधारका पक्षहरू

सामुदायिक बीउ बैंकलाई कृषि जैविक स्रोतहरूको संरक्षण, संवर्द्धन एवं सोको उपयोगबाट उत्पादनमा वृद्धि ल्याई अर्थोपार्जक आर्जनमा ठोस योगदान दिन सक्ने भएकाले विभिन्न सरकारी तथा गैरसरकारी निकाय एवं कृषक समूहहरूले स्थानीय र राष्ट्रिय स्तरमा कृषि जैविक विविधता र परम्परागत ज्ञानको अभिलेखीकरण गरी पञ्जीकरणको व्यवस्था, अन्तर्राष्ट्रिय स्तरमा संरक्षित नेपालका आनुवंशिक पदार्थ र स्रोतहरूको स्वस्थानीय संरक्षण, पुनर्स्थापना, अनुसन्धान र विकास कार्यहरूको प्रवर्द्धनका लागि राष्ट्रिय कृषि आनुवंशिक स्रोत केन्द्र, सिमेन बैंक, कृषि, बागवानी, पशु फार्म र अन्य अनुसन्धानका निकायहरूसँग सहकार्यका साथै जैविक विविधता मेला, सामुदायिक बीउ बैंकको विस्तार, जस्ता कार्यक्रमहरूलाई प्राथमिकता दिनुपर्ने देखिन्छ । साथै उपेक्षित तथा न्यून उपयोगमा रहेका प्रजातिहरूको संरक्षण, संवर्द्धन, विकास र उपयोगलाई विशेष प्राथमिकता दिई उक्त प्रजातिहरूको दिगो उपयोगका लागि व्यवस्थापन, प्रजनन एवं गुणस्तर तथा मूल्य

अभिवृद्धि गरी बजारीकरण प्रवर्द्धनका कार्यक्रमलाई विस्तार गर्नुपर्ने देखिन्छ । यस परिप्रेक्ष्यमा सामुदायिक बीउ बैंकसम्बन्धी एकीकृत नीति एवं निर्देशिका कार्यान्वयनमा ल्याई सामुदायिक बीउ बैंक विस्तार, सुदृढीकरण, मूल्य अभिवृद्धि, दिगो बजारीकरण गर्नाका साथै सामुदायिक बीउ बैंकको आत्मनिर्भरता र व्यावसायिकतामा जोड दिनुपर्ने देखिन्छ । अन्य केही सुझावहरू तल दिइएका छन्:

- जैविक विविधता मेला, सामुदायिक बीउ बैंकको विस्तार, एकीकृत खेतीप्रणालीमा आधारित प्राङ्गारिक खेती एवं पशुपालन, घर-बगैँचा, कृषि-वन, जैविक ग्राम (Bio-village), शहरी वन, कृषि पर्यापर्यटन (Agro-ecotourism) जस्ता कार्यक्रमलाई प्राथमिकता;
- उपेक्षित (Neglected) तथा न्यून उपयोगमा रहेका (Underutilized) प्रजातिहरूको संरक्षण, संवर्द्धन, विकास र उपयोगलाई विशेष प्राथमिकता;
- प्रजातिहरूको दिगो उपयोगका लागि व्यवस्थापन, प्रजनन एवं गुणस्तर तथा मूल्य अभिवृद्धि (Value addition) गरी बजारीकरण प्रवर्द्धनका कार्यक्रमलाई विस्तार;
- कृषि जैविक विविधता संरक्षण र दिगो उपयोगमा उल्लेखनीय योगदान पुऱ्याउने कृषक, कृषक समूह, सामुदायिक बैंक, वैज्ञानिक, प्राविधिक, सरोकारवालालाई पुरस्कारको व्यवस्था;
- आनुवंशिक पदार्थ र स्रोतको चोरी (Biopiracy) वा बीउबिजनको गैरकानुनी विक्रीवितरण र प्रयोग वा परम्परागत ज्ञानको दुरुपयोगका कारण कृषकलाई हानीनोक्सानी भएमा पीडकबाट क्षतिपूर्ति भराइदिने व्यवस्था;
- कृषि आनुवंशिक पदार्थ र स्रोत तथा सम्बन्धित परम्परागत ज्ञानमा पहुँच र सोबाट सिर्जित लाभको बाँडफाँड एवं निष्पक्ष र समन्यायिक वितरणका लागि कानूनी व्यवस्था;
- परम्परागत तथा स्थानीय कृषि आनुवंशिक स्रोत र ज्ञानको स्वामित्वको संरक्षण प्रदान;
- जनचेतना एवं क्षमता अभिवृद्धि अभियान सञ्चालन;
- शैक्षिक क्रियाकलापहरूमा विषयवस्तु समावेश;
- प्रतिबद्धता अनुरूप पक्ष राष्ट्रले पूरा गर्नुपर्ने कानूनी एवं संस्थागत दायित्व पूरा गर्नुपर्ने;
- सम्बन्धित निकायहरूबीच समन्वयात्मक अपनत्व;
- नियमित कार्यक्रममा आन्तरिकीकरण र यसका लागि स्रोतव्यवस्था;
- परम्परागत जैविक स्रोत तथा ज्ञानको अभिलेखीकरण तथा पञ्जीकरण;
- पूर्वाधार एवं संस्थागत सुदृढीकरण;

- सामुदायिक बीउ बैंक: एकीकृत नीति एवं निर्देशिका निर्माण;
- सामुदायिक बीउ बैंक विस्तार, सुदृढीकरण, मूल्य अभिवृद्धि र दिगो बजारीकरण;
- प्रभावकारी समन्वय, अनुगमन/मूल्याङ्कन र पृष्ठपोषण ।

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सामुदायिक बीउ बैंक सङ्घ नेपाल

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परिचय

जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) पोखराको संयोजनमा कृषि विकास तथा संरक्षण समाज, कचोर्वा, बाराले वि.सं. २०६९ फागुन २८ गते देखि ३० गतेसम्म सामुदायिक बीउ बैंक व्यवस्थापनमा संलग्न कृषक समूहहरूको प्रथम राष्ट्रिय कार्याशाला गोष्ठी सामुदायिक बीउ बैंक, कचोर्वा बारामा आयोजना गरेको थियो । यस गोष्ठीको मुख्य उद्देश्य नेपालका सामुदायिक बीउ बैंकहरूका बीचमा समन्वय, सहकार्य, बीउ सूचनाको आदानप्रदान गर्ने र राष्ट्रिय जीन बैंकसँग समन्वय गर्ने प्रक्रियाको थालनी गर्नु रहेको थियो । यी कामहरूलाई संस्थगतरूप दिई निरन्तर रूपमा सञ्चालनका लागि कार्यशाला गोष्ठीले नेपालका सामुदायिक बीउ बैंकहरूको राष्ट्रिय स्तरको सञ्जाल बनाउनुपर्ने निष्कर्ष निकालेको थियो । अतः सोही गोष्ठीले सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समिति गठन गर्ने निर्णय गर्दै कचोर्वा सामुदायिक बीउ बैंकका तत्कालीन अध्यक्ष श्री रामएकवाल प्रसाद यादवको अध्यक्षतामा ९ सदस्यीय तदर्थ समितिसमेत गठन गरेको थियो । उक्त गोष्ठीमा सामुदायिक बीउ बैंक सञ्चालन गरिरहेका २३ जिल्लाका कृषकहरू, कृषि विकास मन्त्रालय, राष्ट्रिय जीन बैंक र ली-बर्डका प्रतिनिधिहरू तथा सञ्चारकर्मीहरूको उपस्थिति रहेको थियो ।

उक्त गोष्ठीले नवगठित समितिका लागि निम्नानुसारका कार्यहरू गर्न पहल गर्नुपर्ने निर्णयहरू पनि गरेको थियो :

- सामुदायिक बीउ बैंकहरूका बीचमा बीउ, सूचना, तथा जानकारी र अनुभव आदानप्रदान गराउने;
- सामुदायिक बीउ बैंकसम्बन्धी नीतिगत पहल गर्ने;
- सामुदायिक बीउ बैंकसम्बन्धी साभ्ना अवधारण तयार पार्ने;
- कृषि जैविक विविधतासम्बन्धी राष्ट्रिय तहमा हुने छलफल, गोष्ठी तथा अन्य

कार्यहरूमा प्रतिनिधित्व गर्ने;

- राष्ट्रिय जीन बैंकसँग समन्वय गर्ने र
- सामुदायिक बीउ बैंकहरूको क्षमता अभिवृद्धि गराउने ।

हालसम्म सम्पन्न क्रियाकलापहरू

१. सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिले ली-बर्डको सहयोगमा विधान तयार गरी त्यसै अनुसार काम गर्दै आइरहेको छ । यस समितिको पहिलो साधारणसभा वि.सं. २०७१ कात्तिक २ र ३ गते नवलपरासीको गैँडाकोटको सम्पन्न भएको थियो । यस साधारणसभाले सामुदायिक बीउ बैंकहरूमा संरक्षण गरिएका स्थानीय जातहरूको बीउ परस्थानीय संरक्षणका लागि राष्ट्रिय जीन बैंकमा पठाउन पासपोर्ट डाटा अनिवार्य भएकाले सोसम्बन्धी छलफल र राष्ट्रिय जीन बैंकमा पठाउनका लागि आवश्यक बीउको परिमाणका बारेमा पनि निर्णय गरेको थियो ।

२. वि.सं. २०७१ पुस १४ गते अग्यौली सामुदायिक बीउ बैंक, नवलपरासीमा ली-बर्डको सहजीकरणमा आयोजना गरिएको एक कार्यक्रममा नेपालका विभिन्न सामुदायिक बीउ बैंकहरूले संरक्षण गरिरहेका विभिन्न बालीहरूका ९१६ जातहरूको बीउ पासपोर्ट डाटासहित तत्कालीन राष्ट्रिय जीन बैंकका प्रमुख श्री मदनराज भट्टलाई हस्तान्तरण गरिएको थियो ।

३. वि.सं. २०७३ पुस ७ गते राष्ट्रिय जीन बैंक खुमलटारको आयोजनामा सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिका सदस्यहरू र राष्ट्रिय जीन बैंकका बीचमा छलफल तथा तालिम सञ्चानल भएको थियो । यस तालिममा सहभागी २५ जना कृषकहरूले राष्ट्रिय जीन बैंकमा संरक्षण गरिएका बीउहरूको जानकारी, अवलोकन र अध्ययन गर्ने अवसर पाएका थिए ।

४. वि.सं. २०७५ वैशाख २० देखि २२ गतेसम्म ललितपुर जिल्लाको हिमालय होटलमा ली-बर्ड, राष्ट्रिय जीन बैंक र बायोभर्सिटी इन्टरनेशनलको सहयोगमा नेपालमा सामुदायिक बीउ बैंक सम्बन्धी दोस्रो राष्ट्रिय कार्यशाला गोष्ठी सम्पन्न भयो । गोष्ठीमा धेरै विषयहरूमा छलफल भए र सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिलाई वैधानिकता दिने विषयमा पनि निर्णय भयो र हाल त्यसका लागि प्रक्रिया अघि बढाइसकिएको छ ।

५. दोस्रो कार्यशाला गोष्ठीमा भएको निर्णयबमोजिम सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिलाई वैधानिकता दिने सन्दर्भमा प्रक्रिया अघि बढाउन लागि वि.सं. २०७५ श्रावण ३१ गते यस समितिको वार्षिक साधारणसभा नवलपरासी जिल्लाको अग्यौलीको सामुदायिक

बीउ बैंकमा सम्पन्न भयो । त्यस भेलाले गरेका निर्णयहरू निम्नानुसार रहेका छन् :

- सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिको नाम परिवर्तन गरी 'सामुदायिक बीउ बैंक सङ्घ नेपाल' राखियो ।
- सामुदायिक बीउ बैंक सङ्घ नेपालका उद्देश्य निम्नानुसार रहने निर्णय गरियो :
 - (क) नेपालमा कृषि जैविक विविधता संरक्षण कार्यमा संलग्न सामुदायिक बीउ बैंकहरूको समन्वय गर्ने;
 - (ख) सामुदायिक बीउ बैंकहरूको मूल प्रवाहीकरणका लागि स्थानीय, प्रादेशिक तथा सङ्घीय तहमा नीतिगत पैरवी गर्ने;
 - (ग) सामुदायिक बीउ बैंकहरूको क्षमता विकासका लागि काम गर्ने
 - (घ) सामुदायिक बीउ बैंकहरूले गरेका काम तथा विषयसँग सम्बन्धित सूचना एवं जानकारीको आदानप्रदान गर्ने र
 - (ङ) सामुदायिक बीउ बैंकहरूले गरेका गतिविधि तथा वार्षिक प्रगतिविवरण एकत्रितगरी वार्षिक रूपमा अद्यावधिक गर्ने ।
- यस सामुदायिक बीउ बैंक सङ्घ नेपाललाई दिनका लागि वैधानिकता दर्ताप्रक्रिया अगाडि बढाउन ७ वटै प्रदेशलाई समेट्ने गरी निम्नानुसारको तदर्थ समिति गठन गरियो :

अध्यक्ष :	रामएकवाल प्रसाद यादव, प्रदेश नं. २ प्रतिनिधि, बारा
उपाध्यक्ष :	पार्वती भण्डारी, गण्डकी प्रदेश प्रतिनिधि, नवलपरासी
सचिव :	नन्दकुमार दाहाल, प्रदेश नं. १, प्रतिनिधि, सुनसरी
कोषाध्यक्ष :	सुगाकुमारी डाँगी, प्रदेश नं. ५ प्रतिनिधि, दाङ
सदस्य :	चन्द्रकला गुरुङ, कर्णाली प्रदेश प्रतिनिधि, सुर्खेत
सदस्य :	आशाराम चौधरी, प्रदेश नं. ७ प्रतिनिधि, कञ्चनपुर
सदस्य :	सीताराम बजगाई, गण्डकी प्रदेश प्रतिनिधि, तनहुँ
सदस्य :	ध्रुवप्रसाद सापकोटा, प्रदेश नं. ३ प्रतिनिधि, ललितपुर
सदस्य :	नरमाया कार्की, प्रदेश नं. १ प्रतिनिधि, भापा

तालिका १: सामुदायिक बीउ बैंक सङ्घ नेपालको साधारण सदस्यता लिएका सामुदायिक बीउ बैंकहरू

क्र.सं.	सामुदायिक बीउ बैंक वा सामुदायिक बीउ बैंक सञ्चालन गर्ने संस्थाको नाम	ठेगाना	सम्पर्क नं.
१	कृषि विकास तथा संरक्षण समाज	कचोर्वा, बारा	९८५५०४८९९३
२	भवानी सामुदायिक बीउ बैंक	तलिउम, जुम्ला	९७४८९०८३०१
३	जैविक विविधता संरक्षण कृषि सहकारी संस्था लिमिटेड	घन्टेश्वर, डोटी	९८४८८९५२५३
४	जैविक विविधता कृषि सहकारी संस्था लिमिटेड	रामपुर, दाङ	९८५७८३२२४४
५	जैविक विविधता संरक्षण तथा विकास समिति	जोगीमारा, धादिङ	९८४९०७६४७२
६	कञ्चन जैविक विविधता संरक्षण तथा विकास समिति	शिवगञ्ज, भापा	९८०७९९८७०५
७	जैविक विविधता संरक्षण तथा विकास समिति	मसुरिया, कैलाली	९८४८४९२५८५
८	प्राङ्गारिक कृषि सहकारी संस्था लिमिटेड	रानीवास, सिन्धुली	९८९६८८५०२०
९	थारू कृषि जैविक विविधता संरक्षण समूह	सिमरिया, सुनसरी	९८४२०६९९७०
१०	कृषि विकास संरक्षण तथा कृषक समिति	अग्यौली, नवलपरासी	९८६७९८३९५०
११	दलचोकी सामुदायिक बीउ बैंक	दलचोकी, ललितपुर	९८६२२६७६७६
१२	चेतना कृषि सहकारी संस्था लिमिटेड	आलिताल, डडेलधुरा	९७४९५३३८३४
१३	जैविक विविधता संरक्षण तथा विकास समिति	बेलवा, बर्दिया	९८४८०७००४५
१४	जैविक विविधता संरक्षण तथा विकास समिति	तमाफोक, सङ्खुवासभा	९८४२९६२९९२
१५	जैविक विविधता संरक्षण तथा विकास समिति	शङ्करपुर, कञ्चनपुर	९७४९५३९५९५

क्र.सं.	सामुदायिक बीउ बैंक वा सामुदायिक बीउ बैंक सञ्चालन गर्ने संस्थाको नाम	ठेगाना	सम्पर्क नं.
१६	मिलनचोक महिला बीजवृद्धि कृषक समूह	कुन्तादेवी, ओखलढुङ्गा	९८४२९५३३२४
१७	जैविक विविधता संरक्षण समिति	पुर्कोट ३, तनहुँ	९८५६०६०८७८
१८	अमृतपान कृषि सहकारी संस्था लिमिटेड	लहान नगरपालिका १, सिरहा	९८०७७१७८३१
१९	हाम्रो सामुदायिक बीउ बैंक	कटारी नगरपालिका ८, उदयपुर	९८४९९६०८८३
२०	चरपाते सामुदायिक बीउ बैंक	लखन्तरी, मोरङ	९८४२०४५५०५
२१	कृषक समूह समन्वय समिति	पथरैया, कैलाली	९८४८४८९९४७
२२	जैविक विविधता संरक्षण तथा विकास समिति	गदरिया, कैलाली	९८६८८०५३२९
२३	श्री पवित्र जनकल्याण कृषक सहकारी संस्था लिमिटेड.	गुर्भाकोट, सुर्खेत	९८४८२०६५९८
२४	घनपोखरा सामुदायिक बीउ बैंक	घनपोखरा, लमजुङ	९८६४१२३६९९
२५	कर्णाली कृषि सहकारी संस्था लिमिटेड	खार्पुनाथ गाउँपालिका ४, छिप्रा, हुम्ला	९८४८३३०९९०८
२६	श्री हिमचुली बहुदेशीय सहकारी संस्था लिमिटेड	गौरीशङ्कर नगरपालिका १, जुगु, दोलखा	९८४३८१३३३३
२७	धौलीगाड जैविक विविधता संरक्षण समूह	तातोपानी गाउँपालिका ४, जुम्ला	९७४८०७९०७३
२८	श्री चेपेमर्स्याडदी सामुदायिक विकास बीउ बैंक	राइनास नगरपालिका ४, लमजुङ	९८६००२११०८

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernoooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

शिवगञ्ज सामुदायिक बीउ बैंक, भापा

डिल्ली पौडेल^१, जानुका मगर^१, नरमाया कार्की^१ र पूर्ण पौडेल^२

^१शिवशताक्षी नगरपालिका ७, शिवगञ्ज नगरपालिका, भापा, ^२ली-बर्ड, पोखरा

परिचय

शिवगञ्ज सामुदायिक बीउ बैंक वि.सं २०६५ देखि वि.सं. २०७३ सम्म जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) पोखराद्वारा सञ्चालित समुदायमा आधारित जैविक विविधता व्यवस्थापन कार्यक्रमको सहयोगमा शिवशताक्षी नगरपालिका वडा नं. ७, शिवगञ्ज भापामा स्थापना भएको हो । कार्यक्रमको शुर्वातमा साविकको शिवगञ्ज गाउँ विकास समितिका नौवटै वडालाई समेटेर प्रत्येक वडामा कम्तीमा एक कृषक समूह र सबै वडाका कृषक समूहहरूको प्रतिनिधित्वमा गा.वि.स. स्तरीय श्री कञ्चन जैविक विविधता संरक्षण तथा विकास समिति गठन गरी त्यसैमार्फत समुदायमा आधारित जैविक विविधता व्यवस्थापनसम्बन्धी क्रियाकलापहरू सञ्चालन गरिएका थिए । यसै समितिले वि.सं. २०६८ (सन् २०१०) मा सामुदायिक बीउ बैंकको थालनी गरेको हो । शुर्वातका केही वर्षसम्म यस बीउ बैंकले स्थानीय जातका बीउहरूको नमूनामात्र सङ्कलन गरीराख्ने गरेको र बीउ माग गर्ने कृषकहरूलाई सम्बन्धित कृषकसँग सम्पर्क गराइदिने व्यवस्था मिलाएको थियो ।

वि.सं. २०७१ वैशाखमा श्री कञ्चन जैविक विविधता संरक्षण तथा विकास समितिलाई जिल्ला प्रशासन कार्यालय, चन्द्रगढी भापामा कृषकहरूको संस्थाका रूपमा दर्ता गरिएको छ । यस समितिले शिवशताक्षी नगरपालिका वडा नं. ६ र ७ (साविकको शिवगञ्ज गा.वि.स.) लाई आफ्नो कार्यक्षेत्र बनाएर काम गरिरहेको छ । यसमा साविकको शिवगञ्ज गा.वि.स. का २३ वटा कृषक समूहहरूमा आबद्ध १०७० जना सदस्यहरू रहेका छन् । यी सदस्यहरूमध्ये ६९८ जना (६५ प्रतिशत) महिला र ३७२ जना (३५ प्रतिशत) पुरुष रहेका छन् । श्री कञ्चन जैविक विविधता संरक्षण तथा विकास कार्यसमितिमा ११ जना सदस्यहरू रहेका छन् । यो संस्था दर्ता भएपछि नियमित रूपमा वार्षिक साधारणसभा, लेखा परीक्षण र संस्था नवीकरण हुँदै आएको छ । दर्ता भएको वर्षदेखि नै यस समितिले

स्थानीय तथा उन्नत जातका बीउ-उत्पादन, विक्रीवितरण, सामुदायिक जैविक विविधता व्यवस्थापन कोष परिचालन कार्य गर्दै कृषि जैविक विविधताको संरक्षण, आयआर्जन र जीविकोपार्जन सुधारमा टेवा पुऱ्याउँदै आएको छ ।

कृषि जैविक विविधता संरक्षण

शिवगञ्ज सामुदायिक बीउ बैंकको मुख्य उद्देश्य नै शिवगञ्ज र यसको वरपरका गाँउहरूमा उपलब्ध तथा लोप हुन लागेका विभिन्न बालीहरूका स्थानीय जातहरूको सङ्कलन तथा संरक्षण गर्नु र कृषकहरूलाई सुलभ रूपमा ती जातहरूको बीउ उपलब्ध गराउनु रहेको छ । यो सामुदायिक बीउ बैंकले नियमित रूपमा २६ किसिमका बालीहरूको १४९ वटा स्थानीय जातहरूको बीउ-उत्पादन तथा संरक्षण गर्दै आएको छ । यीमध्ये धानका ७० वटा जातहरूको संरक्षणका लागि ३ कड्डा क्षेत्रफलमा प्रत्येक वर्ष विविधता प्रदर्शनी स्थल (Diversity Block) स्थापना गरी बीउ-उत्पादन गरिन्छ । अन्य बालीहरूका हकमा बीउ-उत्पादन कार्य कृषकहरूको खेततबारीमा नै गरिन्छ । शिवगञ्ज सामुदायिक बीउ बैंकले संरक्षण गरेका स्थानीय बाली तथा जातहरूको विवरण तालिका १ मा समावेश गरिएको छ :

तालिका १. शिवगञ्ज सामुदायिक बीउ बैंकले संरक्षण गरेका स्थानीय बाली तथा जातहरूको विवरण

क्र.स.	बाली	जात	जातसंख्या
१	धान	कालोनुनिया-१, कालोनुनिया-१०, कालोनुनिया, कतार खेरा, बासमती, रुद्राक्ष, कालो बासमती, नाजिर, रातो बच्छी, रातो हाप्सा चुल्हे, बेलगुठी, होडबच्छी, सेतो बासमती, हाडीफोर, भोटाडे, चम्पासरी, चनाचुर, अनदी, धनकुटे, लालबच्छी, बिरिडफूल, छोटी बासमती, रातो अनदी, गुडुरा, अमरध्वज, गोलो अनदी, डिरुवा, बदलधान, सेतो अनदी, भ्रहर, समल चौरी, कोमल, गौमा, कनकजिरा बासमती, कालो रातो बासमती, सानो रातो बासमती, जिरासरी, राँगा, अट्टे, दूधराज, रासधान, मासी, अण्डी, जोरपाल बासमती, हंसराज, रातो स्थानीय, तिल्की, रातोढुँडे बासमती, श्यामजिरा, घिउकुमारी, दोसरा, सिकीचन, ठूलो मन्सरा, रामबेला, आँपभुत्ते, छ्याग्रा, मगर अनदी, जर्नेली, घिउपुरी, भिनुवा, भिडियो अनदी, थापाचीनी बलिङ्टारे, सेते	६५
२	मकै	सठिया सेतो र मुरली मकै	२

क्र.स.	बाली	जात	जातसंख्या
३	फापर	सठिया र ठूलो फापर	२
४	कोदो	मुङ्के, पाङ्दुरे र मङ्सिरे	३
५	जौ	स्थानीय	१
६	जुनेलो	सेतो	१
७	बोडी	सेतो बोसे लामो, सेतो बोसे छोटो, सेतो हाडे, हरियो बोसे हरियो हाडे, रातो बोसे, रातो हाडे, रातो/सेतो कोसा र कालो कोसा	९
८	सिमी	सेतो लामो, सेतो छोटो, हरियो लामो, हरियो छोटो, हरियो सानो, रातो लामो, रातो छोटो, रातो टाटे, रातो चुलेसी, हरियो टाटे, पोथ्रे	११
९	बकुल्ला	स्थानीय	१
१०	केराउ	स्थानीय सानो	१
११	मास	कालो सठिया, कालो चिल्लो र पहेलो	३
१२	रहर	सानो दाना र ठूलो दाना	३
१३	गहत	कालो, कैलो र रातो	३
१४	मसुरो	कालो र कैलो	२
१५	भटमास	सेतो, कालो र कैलो	३
१६	लौका	सेतो लामो, सेतो डल्ले, हरियो लामो, हरियो डल्ले र बाह्रमासे	५
१७	करेला	सेतो लामो, हरियो लामो र हरियो सानो	३
१८	फर्सी	डल्ले, जाँते, मादले, छिर्को र कालोआँखे	५
१९	घिरौला	हरियो छोटो, हरियो लामो, सेतो छोटो, सेतो लामे, बासमती, भुत्ती सानो र भुत्ती ठूलो	७
२०	पिडालु	सेकेन कच्चु, लङ्के, पञ्चमुखे, सिता कच्चु, तेली पेसा, बास कच्चु, सेतो कच्चु, सेतो दूधमाने, कालो दूधमाने, दर्सने	१०
२१	पोइसाग	रातो डाँटे, हरियो डाँटे	२
२२	लाफा साग	सानो पाते र ठूलो पाते	२
२४	आलस	स्थानीय	१
२५	तोरी	ठूलो तोरी, सानो तोरी	२
२६	तिल	सेतो तिल, कालो तिल	२
	जम्मा		१४९

सामुदायिक जैविक विविधता कोष परिचालन

शिवगञ्ज सामुदायिक बीउ बैंक दिगो रूपमा सञ्चालनका लागि श्री कञ्चन जैविक विविधता संरक्षण समितिले सामुदायिक जैविक विविधता व्यवस्थापन कोष स्थापना गरी परिचालन गरिरहेको छ । पटक-पटक गरी ली-बर्डले उपलब्ध गराएको रु ९ लाख, समुदायको रु ५० हजार र हालसम्मको ब्याज गरी २०७५ असार मसान्तसम्म सामुदायिक जैविक विविधता व्यवस्थापन कोषमा रु १७,१०,०००/- रकम जम्मा भएको छ । यो रकम प्रत्येक वर्ष वार्षिक १८ प्रतिशत ब्याजदरमा सदस्यहरूमाभ आयमूलक कार्यक्रमहरू सञ्चालन गर्नका लागि परिचालन गरिन्छ । यस कोषबाट प्रत्येक ६/६ महिना गरी वर्षमा २२५ जनाले ऋण लिने गरेका छन् । यसरी प्राप्त हुने ब्याजबाट स्थानीय बीउ खरिद गर्ने र संस्थाका कर्मचारीको तलब र प्रशासनिक खर्च चलाउने गरिएको छ ।

बीउ-उत्पादन तथा विक्रीवितरण

वि.सं. २०७१ देखि शिवगञ्ज सामुदायिक बीउ बैंकले स्थानीय तथा उन्नत जातका बीउ-उत्पादन गरी प्रचलित बजारमूल्यभन्दा सुलभ रूपमा स्थानीय कृषकहरूलाई बीउ विक्री गर्दै आइरहेको छ । साथै भापाको सुरुङमा स्थित अनमोल बीउ कम्पनीसँग पनि समन्वय गरी मूल बीउ ल्याउने र उत्पादित बीउ कम्पनीलाई नै विक्री गर्ने कार्य पनि सञ्चालन गरिरहेको छ । सामुदायिक बीउ बैंकले सञ्चालन गरेको बीउ-उत्पादन कार्यबाट बीउ-उत्पादक कृषकहरूको उत्पादन, आम्दानी र जीविकोपार्जन सुधारमा मनग्गे टेवा पुगिरहेको छ । शिवगञ्ज सामुदायिक बीउ बैंकले उत्पादन गरेको उन्नत जातको बीउको परिमाण तालिका २ मा प्रस्तुत गरिएको छ:

तालिका २ : शिवगञ्ज सामुदायिक बीउ बैंकले उत्पादन गरेको बीउको विवरण

क्र.सं.	वर्ष (वि.सं.)	बीउ-उत्पादन परिमाण (के.जी.)		
		स्थानीय जात	उन्नत जात	जम्मा
१	२०७०	९१६	१,२९२	२,२०८
२	२०७१	२,१७६	१६,५१२	१८,६८८
३	२०७२	२,४३०	२५,५०६	२७,९३६
४	२०७३	२,७९७	३८,०५०	४०,८४७
५	२०७४	३,११७	४२,२२०	४५,३३७
६	२०७५ (उत्पादन लक्ष्य)	३,०००	४५,०००	४८,०००

साभेदारी सङ्घसंस्था

शिवगञ्ज सामुदायिक बीउ बैंकको मुख्य साभेदार वा सहयोगी संस्था ली-बर्ड, पोखरा हो । सामुदायिक बीउ बैंकलगायतका संस्थाका काममा स्थापना कालदेखि हालसम्म ली-बर्डको आर्थिक तथा प्राविधिक सहयोग रहँदै आएको छ । साबिकको शिवगञ्ज गा.वि.स.ले यस बीउ बैंकलाई लगभग २ कड्डा क्षेत्रफल बराबरको सार्वजनिक जग्गा उपलब्ध गराएर सामुदायिक बीउ बैंक स्थापना गर्ने कार्यमा ठूलो भूमिका निर्वाह गरेको छ भने हालसालै शिवशताक्षी नगरपालिकाबाट पनि स्रोत बीउ खरिद तथा अन्य कामका लागि आर्थिक सहयोग प्राप्त हुने गरेको छ । तत्कालीन जिल्ला कृषि विकास कार्यालय, क्षेत्रीय अनुसन्धान केन्द्र तरहरा र अनमोल बीउ कम्पनीबाट धानको मूल बीउ र अन्य प्राविधिक सहयोग उपलब्ध हुने गरेको छ । अनमोल बीउ र स्थानीय एग्रोभेटहरूले पनि यसले उत्पादन गरेको बीउ खरिद गरिदिएर महत्त्वपूर्ण भूमिका निर्वाह गरिरहेका छन् ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

कचोर्वा सामुदायिक बीउ बैंक, बारा

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परिचय

बारा जिल्लाको सिम्रौनगढ नगरपालिका वडा नं. ८ मा अवस्थित कचोर्वा सामुदायिक बीउ बैंक वि.सं. २०६० वैशाख ९ गते स्थापना भएको हो । यसको स्थापना जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड), नेपाल कृषि अनुसन्धान परिषद् (नार्क) र बायोभर्सिटी इन्टरनेशनलद्वारा साबिकको कचोर्वा गाउँ विकास समितिमा वि.सं. २०५५ देखि २०६२ सम्म सञ्चालन गरिएको यथास्थानीय कृषि जैविक विविधता संरक्षण कार्यक्रमको आर्थिक तथा प्राविधिक सहयोगमा भएको हो । कचोर्वा सामुदायिक बीउ बैंकको स्थापनाको उद्देश्य कचोर्वा तथा आसपासका गाउँहरूबाट लोप हुन लागिरहेका धानलगायतका अन्य बालीहरूका स्थानीय जातहरूको संरक्षण गर्नु रहेको छ । कचोर्वा गाउँमा यथास्थानीय कृषि जैविक विविधता संरक्षण कार्यक्रम सञ्चालन भइरहँदा पनि धानका स्थानीय जातहरूको सङ्ख्या ३३ बाट घटेर १४ वटा भएकाले सामुदायिक बीउ बैंकको आवश्यकता महसुस गरिएको हो । सामुदायिक बीउ बैंकको स्थापना गरिएपछि कचोर्वाबाट लोप भएका र बारा, पर्सा तथा रौतहट जिल्लामा खेती भइरहेका स्थानीय धानका जातहरू समेत सङ्कलन गरेपछि हाल यो सामुदायिक बीउ बैंकमा धानका ८५ वटा जातहरूको संरक्षण गरिएको छ ।

शुरूवाती दिनहरूमा कचोर्वा सामुदायिक बीउ बैंकको क्षमता विकासका लागि तत्कालीन कचोर्वा गाउँ विकास समिति र जिल्ला विकास समितिबाट पनि सार्वजनिक जग्गा र आर्थिक सहयोग प्राप्त भएको थियो । त्यसै गरी आई.डी.आर.सी. क्यान्डाको आर्थिक सहयोगमा यू.ए.स.सी. क्यान्डा नेपालद्वारा सञ्चालित सानफेक कार्यक्रम र यू.ए.न.डी.पी. काठमाडौंको साना अनुदान कार्यक्रमले सामुदायिक बीउ बैंक सुदृढीकरणका लागि सहयोग उपलब्ध गराएको थियो । यो सामुदायिक बीउ बैंक सफल रूपमा निरन्तर सञ्चालन भइरहेकाले हालसम्म पनि ली-बर्ड, नार्क र बायोभर्सिटी इन्टरनेशनलद्वारा सञ्चालित अन्य

परियोजनाहरूबाट केही आर्थिक र प्राविधिक सहयोग प्राप्त भइरहेको छ । यस बीउ बैंकको सञ्चालन कृषि विकास तथा संरक्षण समाज कचोर्वा, बाराले गर्दछ । सामुदायिक बीउ बैंक सञ्चालनका लागि नै यो संस्थाको स्थापना पनि वि.सं. २०६० वैशाख ९ गते नै भएको हो । यो संस्था जिल्ला प्रशासन कार्यालय बारा, कलैयामा दर्ता भएको छ र नियमित रूपमा नवीकरण पनि भइरहेको छ । यस संस्थाले सामुदायिक बीउ बैंकका अलावा सामुदायिक जैविक विविधता व्यवस्थापन कोषको परिचालन, बचत तथा ऋण सहकारीको स्थापना तथा सञ्चालन र अन्य सामुदायिक विकासका गतिविधिहरू पनि सञ्चालन गरिरहेको छ । यस संस्थासँग ११ वटा कृषक समूहहरू आबद्ध छन् । यी सबै समूहहरूको प्रतिनिधित्व हुने गरी ३९ जना कृषि विकास तथा संरक्षण समाजका साधारण सदस्य रहेका छन् । जम्मा सदस्यहरूमध्ये १४ जना महिला र २५ जना पुरुष रहेका छन् । यी साधारण सदस्यहरूको साधारणसभाले ९ सदस्यीय कार्यकारिणी समितिको गठन गर्दछ । प्रत्येक कार्यकारिणी समितिको अवधि तीन वर्षको हुन्छ ।

कृषि जैविक विविधता संरक्षण

कचोर्वा सामुदायिक बीउ बैंकको उद्देश्यबमोजिम यसले विभिन्न तौरतरिकाबाट यस क्षेत्रका कृषि जैविक विविधताको संरक्षणको काम गरिरहेको छ । सामुदायिक बीउ बैंक शुस्वात गर्दा कृषि जैविक विविधता मेला प्रदर्शनीको आयोजना र सामुदायिक जैविक विविधता अभिलेखलाई आधार मानेर स्थानीय जातका बीउहरूको सङ्कलन गरिएको थियो । त्यसपछि छिमकी गाउँ र पर्सा तथा रौतहट जिल्लाबाट पनि बाली पाक्ने बेलामा २/३ जना सदस्यको टोली बनाएर धानका बीउ सङ्कलन गरिए । कतिपय बीउहरू सामुदायिक बीउ बैंकका सदस्यहरूले आफ्ना नातेदारमार्फत पनि बीउ सङ्कलन गर्ने गरेका छन् । हाल यो सामुदायिक बीउ बैंकले धान, कोदो, रहर, धिरौलालगायत ११ प्रजातिका १०७ वटा स्थानीय जातहरूको संरक्षण गरिरहेको छ (तालिका १) । एकातिर सामुदायिक बीउ बैंकमा संरक्षण गरिएका बीउहरूलाई प्रत्येक वर्ष विविधता प्रदर्शनी स्थलमा लगाएर बीउ-उत्पादन गरिन्छ भने अर्कातिर सामुदायिक जैविक विविधता व्यवस्थापन कोषबाट ऋण लिएर आयआर्जन गर्ने सदस्यहरूलाई पनि उनीहरूको रूचि र खेतबारी सुहाउँदा बीउ रोप्न लगाएर संरक्षणको काम गरिन्छ । विविधता प्रदर्शनी स्थल पहिला जग्गा भाडामा लिएर सञ्चालन गरिन्थ्यो भने हाल साबिकको कचोर्वा गाउँ विकास समितिको कार्यालयले उपलब्ध गराएको ५ कट्टा सार्वजनिक जग्गामा लगाउने गरिएको छ । यस जग्गामा अन्य स्थानीय बालीहरू पनि लगाएर फिल्ड जीन बैंकका रूपमा विकास गर्दै जाने सोच रहेको छ । यसरी उत्पादन गरिएका बीउलाई प्रत्येक वर्ष बाला भुन्ड्याएर, परालको मोरमा बाँधेर, माटाको कोठी तथा छैठी, बासको कोठी, माटाको घँटा, प्लाष्टिकको हावा बन्द डिब्बा र बोतलहरूमा भण्डारण गरेर राखिन्छ । यसरी भण्डारण गरेर राखिएको बीउ रोप्ने समय शुरू हुनासाथ उमारशक्ति परीक्षण गरी बीउको माग अनुसार विक्रीवितरण गरिन्छ ।

तालिका १: सामुदायिक बीउ बैंकमा संरक्षण गरिएका बाली र स्थानीय जातहरूको विवरण

क्र.सं.	बाली	जात	जातसङ्ख्या
१	धान	नखिसारो, सोटवा, राङ्गो, सिकिचन, मुटमुट, गजरगौल, दुधिसारो, साठी, बगरी, भेलासारो, भरलाभी, कटौस, लल्का बासमती, करिया कमोध, रमनी, बरमभुसी, उजरका बासमती, बहानी, मालभोग, रमजवाइन, घिउकुमार, लाभी, बलमसार, महाजोगनी, भठी, जगरनथिया, सिलहट, लालटेङ्गर, रजला, मधुमाला, कर्मा, दूधराज, छतराज, हरिणकेर, मन्सारा, आमाघौंज, सेतो परेवाप्वाँख, करिया परेवाप्वाँख, सेतो खेहा, करिया खेहा, आँगा, पाखर, रातो गोला-१, लल्का जेसरिया, उजर्का जेसरिया, बत्सर, बूढीडाइन-१, बङ्गलिया, भाँडसर, अनदी, कान्हर, जागड, साखड, बूढीडाइन-२, घुथनिसारो, गोकुलचन, रातोटुँडे, कालोनुनिया, भापा बासमती, निमोइ, कन्किरबी, गहुमा, रातोअनदी चितवन, केसरबच्ची, चनन्चुर, कालोतुलसी, न्याउरी, मलाथे अटे, चिउरे, कस्तुरी, कुसुमकली, धुसरा, राटीन, काँफ, सेतो डल्ले, दुन्मुनिया सेतो, देवसार, बूढीडाइन-३, अन्जना, करङ्गी, सेतो साठी, कालो साठी (टुँडावाला), भदैया बासमती, रातोगोला-२	८५
२	धिरौला	गलफुलिया, तगवा, लम्का उजर्का, लम्का हरियर्का, बसमतिया	५
३	कोदो	मुना, भालरी	२
४	रहर	चनकी, पजावा	२
५	बकुला	कालो, उजरका, लल्का	३
६	आलस	स्थानीय	१
७	गहत	माघी	१
८	जौ	टुँडावाला, मुडला	२
९	कुबिन्डो	सेतो लामो, गोल्का	२
१०	फर्सी	हरियो गोलो, लम्का	२
११	ओल	स्थानीय	१
	जम्मा		१०६

सामुदायिक बीउ बैंकले संरक्षण गरेका स्थानीय जातका बीउहरू परस्थानीय संरक्षणका लागि राष्ट्रिय जीन बैंक, खुमलटार, ललितपुर पनि पठाइएको छ । यो सामुदायिक बीउ बैंकले यथास्थानीय कृषि जैविक विविधता संरक्षण परियोजना अवधिमा शुरू गरेको सहभागितामूलक बाली प्रजनन कार्यक्रमबाट विकास गरिएको कचोर्वा-४ धानको पनि

बीउ-उत्पादन तथा विक्रीवितरण गर्दै आइरहेको छ । यो जात स्थानीय दूधिसारो र उन्नत जातको हर्दीनाथ-१ लाई क्रस गराई कचोर्वामा नै विकास गरिएको हो । कचोर्वा-४ लाई राष्ट्रिय स्तरमा दर्ता गर्ने प्रयास पनि भइरहेको छ ।

सामुदायिक जैविक विविधता व्यवस्थापन कोष परिचालन

सामुदायिक बीउ बैंकलाई दिगो रूपमा सञ्चालन गर्न तथा सदस्य कृषकहरूलाई आयआर्जनमूलक क्रियाकलापहरू सञ्चालन गर्न सहयोग पुऱ्याउने उद्देश्यले कृषि विकास तथा संरक्षण समाज कचोर्वाले सामुदायिक जैविक विविधता व्यवस्थापन कोषको स्थापना गरेको छ । यस कोषबाट सदस्यहरूलाई आयमूलक क्रियाकलाप सञ्चालनका लागि वार्षिक १२ प्रतिशत ब्याजदरमा बिनाधितो ऋण दिइन्छ । यसरी ऋण लिने सदस्यले सामुदायिक बीउ बैंकमा रहेका स्थानीय जातहरूमध्ये अनिवार्य रूपमा एउटा जातको बीउ लिई आफ्नो खेतबारीमा लगाउनुपर्दछ । उदाहरणका लागि यदि कुनै कृषकले संरक्षणका लागि १ के.जी. बीउ लिएमा बाली पाकेपछि कम्तीमा १ के.जी. ५०० ग्राम शुद्ध बीउ सामुदायिक बीउ बैंकमा फर्काउनुपर्दछ । सामुदायिक जैविक विविधता व्यवस्थापन कोषको स्थापना पनि वि.सं. २०६० नै शुरू गरिएको हो । शुस्मा परियोजनाको रु ५० हजार, तीन वटा महिला समूहको रु १५,००० र कृषि विकास तथा संरक्षण समाजको रु. १०,००० गरी रु ७५ हजारबाट शुरू गरिएको हो । हाल यस कोषमा रु १,३०४,०००/- पुगेको छ । यस कोषबाट वार्षिक रूपमा ११० जना लाभान्वित भइरहेका छन् ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

पुर्कोट सामुदायिक बीउ बैंक, तनहुँ

सीताराम बजगाँई र लक्ष्मी कुमाल

श्री जैविक विविधता संरक्षण समिति, भानु नगरपालिका वडा नं. ८ पुर्कोट, तनहुँ

परिचय

पुर्कोट सामुदायिक बीउ बैंक तनहुँ जिल्लाको साबिकको पुर्कोट गाउँ विकास समितिमा स्थापना भएको हो । हाल यो भानु नगरपालिकाको वडा नं. ८, बाईसजङ्घारमा अवस्थित छ । समुद्री सतहबाट ४०४ मिटरदेखि १०८० मिटर उचाइमा फैलिएर रहेकाले पुर्कोट जैविक विविधतामा धनी छ । तर कैयौँ असल गुण भएका विभिन्न प्रजातिका बाली र जातहरू लोप हुँदै गइरहेका छन् । यिनै कुरालाई मनन गरी वि.सं. २०६२ मा तत्कालीन जिल्ला कृषि विकास कार्यालय तनहुँले पुर्कोटमा एक समिति गठन गरी उक्त समितिको अगुवाइमा सामुदायिक जैविक विविधता अभिलेखकीरण कार्यक्रम सम्पन्न गर्‍यो । यस क्रममा विभिन्न प्राणी र वनस्पतिहरू गरेर ६५० जातहरू अभिलेखीकरण गरिएका थिए ।

प्राप्त ६५० जातहरूलाई आधार बनाई वि.सं. २०६७ मा जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) ले पुर्कोटमा समुदायमा आधारित जैविक विविधता कार्यक्रम सञ्चालन गर्‍यो । यस कार्यक्रमअन्तर्गत वि.सं. २०६८ मा पुर्कोटमा सामुदायिक बीउ बैंकको थालनी गरिएको हो । यसको मुख्य उद्देश्य पुर्कोट तथा आसपासका गाउँहरूमा खेती गरिने विभिन्न रैथाने वा स्थानीय जातहरूको पहिचान, संरक्षण, नियमित बीउ-उत्पादन र कृषकहरूको माग अनुसार सुलभ रूपमा उपलब्धता गराउनु हो । यी क्रियाकलापहरू वैधानिक रूपमा सञ्चालनका लागि शुभ्रमा जैविक विविधता संरक्षण तथा विकास समिति गठन गरिएको र सोही संस्थालाई वि.सं. २०७१ श्रावण १६ गते जैविक विविधता संरक्षण समिति नामकरण गरी जिल्ला प्रशासन कार्यालय, तनहुँमा दर्ता गरिएको छ । यस यो संस्थामा हाल २२ वटा कृषक समूहहरूमा आबद्ध ७२८ महिला र ३१२ पुरुष गरी जम्मा १०४० घरका परिवार सदस्य छन् ।

पुर्कोटका बहुसङ्ख्यक कृषकहरू मूलतः कृषि पेशामा नै निर्भर रहेकाले कृषकहरूका लागि पशुपालन, अन्नबाली, तरकारीखेती, तेलहन, दलहन र नगदे बाली साथै स्थानीय तथा उन्नत जातको बीउबीजन उपलब्ध गराउनका लागि संस्थाले सामुदायिक जैविक विविधता कोषबाट कर्जा, तालिम र प्राविधिक सहयोग पनि दिइरहेको छ ।

कृषि जैविक विविधताको संरक्षण

पुर्कोट सामुदायिक बीउ बैंकले ४२ प्रजातिका बालीहरूका ११६ स्थानीय जातहरूको संरक्षण, नियमित बीउ-उत्पादन र कृषकहरूको आवश्यकता अनुसार वितरण गर्दै आइरहेको छ (तालिका १) । यी बालीहरूको विविधता प्रदर्शनी स्थल स्थापना गरी प्रत्येक वर्ष नयाँ बीउ-उत्पादन गरी संरक्षणको काम गरिन्छ । विविधता प्रदर्शनी स्थलका लागि यसअघि जिल्ला कृषि विकास कार्यालय र हाल वडा कार्यालयबाट आर्थिक स्रोत उपलब्ध हुने गरीएको छ । जैविक विविधता प्रदर्शनी स्थलका अलावा बीउ-उत्पादक र संरक्षक कृषकहरूबाट पनि स्थानीय बीउ-उत्पादन गराई खरिद गरिन्छ । यस बैंकले बाली प्रजाति र जात अनुसार प्रत्येक वर्ष २०० ग्राम देखि ५० के.जी. सम्म बीउ खरिद तथा उत्पादन गर्दछ । यसरी बीउ खरिद गर्दा बीउ-उत्पादक कृषकहरूका लागि प्रत्यक्ष आर्थिक फाइदा पनि पुगिरहेको छ ।

तालिका १: पुर्कोट सामुदायिक बीउ बैंकले संरक्षण गरिरहेका बाली र तिनका स्थानीय जातहरू

क्र.सं.	बाली	स्थानीय नाम	जातसङ्ख्या
१	धान	रातो अनदी, सेतो अनदी, घिउपुरी, आँपभुत्ते, चिनियाँ, जेठोबूढो, पहेंले, कालो डल्ले मसिनो, कालो मसिनो, पहेंलो मसिनो, मन्सरा, काठे, कालो पाल्ले, मासी, चोबो, देवकोटिनी, ठाँटर, पाखे फिनुवा	१८
२	कोदो	कात्तिके, लाफे, सानो मुडके, पाँउदुरे, दूधे, तनहुँ, ज्वाँ (सेतो), गोरखाली, चम्रे	९
३	मकै	पहेंलो, सेतो, रातो, मुरली सेतो, पहेंलो मुरली, कालो	६
४	जुनेलो	सेतो, रातो	२
५	गहुँ	रातो, सेतो	२
६	कागुनो	कागुनो	१
७	चिनो	चिनो (धान कोदो)	१
८	जौ	स्थानीय	१
९	फापर	मीठे फापर	१

क्र.सं.	बाली	स्थानीय नाम	जातसङ्ख्या
१०	बोडी	कालो, कालो गाजले, सेतो गाजले, तने, कात्तिके	५
११	भटमास	पुन्टे, ठूलो सेतो, कालो, खैरो	४
१२	मास	कालो फुस्रे, रदली, चिल्ली, मुड,	४
१३	गहत	खैरो	१
१४	मस्याङ	पहेँलो, ठूलो छिर्केमिर्के, सानो छिर्केमिर्के, ठूलो रातो, कालो	५
१५	रहर	सेतो, रातो	२
१६	सिमी	टाटे हरियो, टाटे रातो	२
१७	तिल	कालो, खैरो	२
१८	भुसे तिल, तिल	भुसे तिल, तिल	१
१९	तोरी	तोरी, तोरा, सस्यू	३
२०	आलस	आलस	१
२१	पिंडालु	दूधे, छाउरे, खरी, पञ्चमुखे, कालो मुखे, लउरे, रातो मुखे	७
२२	तरुल	जाँते, धोत्रे	२
२३	ओल	ओल	१
२४	फर्सी	डल्ले, पाटे, जाँते	३
२५	घिरौला	छोटो हरियो, बुदुने, वास्ना आउने	३
२६	लौका	लामो मादले, डल्ले	२
२७	चिचिण्डो	हरियो, सेतो	२
२८	कुभिण्डो	सेतो	१
२९	काँक्रो	मादले, हरियो सानो	२
३०	तिरई	हरियो धारे	१
३१	करेला	चुचे हरियो	१
३२	भिण्डी	हरियो असारे, सतो असोजे	२
३३	रायो	चिल्लो पाते, खस्रोपाते	२
३४	लुँडे/लट्टे	काँडे, चिल्लो पाते	२
३५	उखु	कालो, फुस्रे	२
३६	अदुवा	नसे, बोसे,	२
३७	हलेदो/बेसार	पहेँलो, रातो	२
३८	खुर्सानी	ठाडे, जिरे, अकबरे,	३
३९	सोप	सोप	१
४०	सिलाम	भाते, हाडे	२
४१	भाङ	भाङ	१
४२	लसुन	मसिनो केस्रे	१
जम्मा			११६

उन्नत जातको बीउ-उत्पादन तथा बजारीकरण

पुर्कोट सामुदायिक बीउ बैंकले ली-बर्ड, जिल्ला कृषि विकास कार्यालय र लमजुङ कृषि क्याम्पससँगको सहकार्यमा उन्नत जातको बीउ पनि उत्पादन र बिक्रीवितरण गर्दै आइरहेको छ । यसबाट स्थानीय कृषकहरूका लागि केही जातका धानको बीउ सुलभ रूपमा उपलब्ध भइरहेको छ भने बीउ उत्पादक कृषकले राम्रो आम्दानी पनि गरिरहेका छन् । उन्नत जातको बीउको कारोबारका लागि यो सामुदायिक बीउ बैंकसँग रु ४५०,०००/- को बीउ पुँजीकोष रहेको छ । बीउ बिक्रीबाट भएको नाफाको केही प्रतिशत संस्थाको कर्मचारीको तलब र सञ्चालन खर्चको रूपमा प्रयोग गरिन्छ ।

सामुदायिक जैविक विविधता व्यवस्थापन कोष

सामुदायिक बीउ बैंक दिगो रूपमा सञ्चालनका लागि जैविक विविधता संरक्षण समितिसँग रु २१,४५,०००/- को सामुदायिक जैविक विविधता व्यवस्थापन कोष रहेको छ । यो रकम ली-बर्ड, तत्कालीन जिल्ला कृषि विकास कार्यालय, जिल्ला पशुसेवा कार्यालय, गाउँ विकास समितिको कार्यालय र समुदायको आफ्नै योगदानबाट जुटाइएको हो । कोषबाट प्रत्येक वर्ष स्थानीय खरी बाख्रा प्रवर्धन, बीउ-उत्पादनलगायतका कृषिसँग सम्बन्धित कामका लागि यसका सदस्यहरूलाई वार्षिक १२% प्रतिशत ब्याजमा ऋणका रूपमा परिचालन गरिन्छ । ब्याजको केही प्रतिशत कर्मचारीको तलब र संस्थाको सञ्चालन खर्चका रूपमा प्रयोग गरिन्छ भने बाँकी ब्याज कोषमा नै जम्मा गरिन्छ ।

सामुदायिक बीउ बैंकमा रहेका सामाग्री तथा पूर्वाधारहरू

सामुदायिक बीउ बैंक सञ्चालन तथा अन्य कामका लागि जैविक विविधता संरक्षण समितिले विभिन्न भौतिक सम्पत्तिहरू जुटाइसकेको छ । तत्कालीन जिल्ला कृषि विकास कार्यालयमार्फत सामर्थ्य नेपालको सहयोगमा ५० टन क्षमताको भूकम्प प्रतिरोधी बीउ भण्डारण भवन पनि निर्माण गरिएको छ ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernoooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

अग्यौली सामुदायिक बीउ बैंक, नवलपरासी

पार्वती भण्डारी^१ र आस्था भुसाल^२

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परिचय

अग्यौली सामुदायिक बीउ बैंक वि.सं २०६५ (सन् २००८) देखि वि.सं. २०७३ (सन् २०१६) सम्म जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) पोखराद्वारा सञ्चालित समुदायमा आधारित जैविक विविधता व्यवस्थापन कार्यक्रमको सहयोगमा कावासोती नगरपालिका वडा नं. १४ अग्यौली, नवलपरासीमा स्थापना भएको हो । कार्यक्रमको शुर्वातमा साबिकको अग्यौली गाउँ विकास समितिका नौवटै वडालाई समेटेर प्रत्येक वडामा कम्तीमा एउटा कृषक समूह र नौवटै वडाका कृषक समूहहरूको प्रतिनिधित्वमा गा.वि.स. स्तरीय जैविक विविधता संरक्षण तथा विकास समिति गठन गरी त्यसैमार्फत समुदायमा आधारित जैविक विविधता व्यवस्थापनसम्बन्धी क्रियाकलापहरू सञ्चालन गरिएको थियो । यसै समितिले वि.स. २०६८ (सन् २०१०) मा अग्यौली सामुदायिक बीउ बैंकको थालनी गरेको हो । शुर्वातका केही वर्षसम्म यस बीउ बैंकले स्थानीय जातका बीउहरूको नमूनामात्र सङ्कलन गरी राख्ने गरेको र बीउ माग गर्ने कृषकहरूलाई सम्बन्धित कृषकसँग सम्पर्क गराइदिने व्यवस्था मिलाइएको थियो ।

वि.सं. २०७१ जेठमा जैविक विविधता संरक्षण तथा विकास समितिलाई कृषि विकास तथा संरक्षण समिति नामकरण गरी जिल्ला प्रशासन कार्यालय, नवलपरासीमा कृषकहरूको संस्थाका रूपमा दर्ता गरिएको छ । यस समितिमा कावासोती नगरपालिका वडा नं. १४, १५ र १६ (साबिकको अग्यौली गा.वि.स.) का ४१ वटा कृषक समूहहरूमा आबद्ध ९५३ जना सदस्यहरू छन् । जम्मा सदस्यहरूमध्ये ६८० जना (७१ प्रतिशत) महिला र २७३ जना (२९ प्रतिशत) पुरुषहरू रहेका छन् । कृषि विकास तथा संरक्षण कृषक समितिमा ११ कार्यकारी सदस्यहरू छन् । संस्था दर्ता भएपछि नियमित रूपमा वार्षिक साधारणसभा, लेखा परीक्षण र संस्था नवीकरण हुँदै आएको छ । दर्ता भएको वर्षदेखि नै यस समितिले स्थानीय तथा उन्नत जातको बीउ-उत्पादन, विक्रीवितरण, सामुदायिक जैविक विविधता

व्यवस्थापन कोष परिचालन आदि कार्य गर्दै कृषि जैविक विविधताको संरक्षण, आयआर्जन र जीविकोपार्जन सुधारमा टेवा पुऱ्याउँदै आएको छ ।

कृषि जैविक विविधतासंरक्षण

अग्यौली सामुदायिक बीउ बैंकको मुख्य उद्देश्य नै अग्यौली तथा वरपरका गाँउहरूमा उपलब्ध तथा लोप हुन लागेका विभिन्न बालीहरूका स्थानीय जातहरूको बीउ सङ्कलन तथा संरक्षण गर्नु र कृषकहरूलाई सुलभ रूपमा ती बीउहरू उपलब्ध गराउनु रहेको छ । यस बीउ बैंकले नियमित रूपमा २४ किसिमका बालीहरूका ६३ वटा स्थानीय जातहरूको बीउ-उत्पादन तथा संरक्षण गर्दै आएको छ । यीमध्ये धानका २१ वटा जातहरूको संरक्षणका लागि ५ कट्टा क्षेत्रफल जग्गामा प्रत्येक वर्ष विविधता प्रदर्शनी स्थल (Diversity Block) स्थापना गरी बीउ-उत्पादन गरिन्छ । अन्य बालीहरूको हकमा बीउ-उत्पादन कार्य कृषकहरूको खेततबारीमा नै गरिन्छ । अग्यौली सामुदायिक बीउ बैंकले संरक्षण गरेका स्थानीय बाली तथा जातहरूको विवरण तालिका १ मा समावेश गरिएको छ ।

तालिका १ : अग्यौली सामुदायिक बीउ बैंकले संरक्षण गरेका स्थानीय बाली तथा जातहरूको विवरण

क्र.स	बाली	जातको नाम तथा सङ्ख्या	जातसङ्ख्या
१	धान	घिउपुरी, भृष्पे, चमेली, छ्याङणा, रामबेला, भिडियो अनदी, थापाचिनी, फिनुवा, बुलिङ् टार, सेते धान, आँपभुत्ते, तिलकञ्चन, गौरिया, मिठाई, मधुकर, रातो अनदी, मगर अनदी, बाकुली अनदी, जर्नेली अनदी, सेतो बासमती, कालो बासमती	२१
२	मकै	सेतो मकै, पहेंली मकै	२
३	फापर	मिठे फापर	१
४	जौ	स्थानीय	१
५	बोडी	मकै बोडी, कात्तिके बोडी, बोसे बोडी	३
६	सिमी	सेतो लामो, हरियो लामो, हरियो छोटो, पाटे, टाटे	५
७	बकुल्ला	स्थानीय	१
८	केराउ	माइली केराउ, सेतो केराउ	२
९	खेसरी	लतरी	१
१०	लौका	लामो, डल्ले	२
११	फर्सी	मादले, जाँते, डल्ले	३
१२	घिरौला	हरियो, लामो	२
१३	तिराइ	तिराइ	१
१४	कुभिण्डो	स्थानीय	१
१५	चिचिन्डो	छोटो	१

क्र.स	बाली	जातको नाम तथा सङ्ख्या	जातसङ्ख्या
१६	आलस	स्थानीय	१
१७	तोरी	कालो तोरी	१
१८	तोरा	पहेलो	१
१९	तिल	कालो, खैरो, सेतो	३
२०	भुसे तिल	भुसे तिल	१
२१	भटमास	सेतो, कालो, खैरो	३
२२	मास	कालो मास, भटमासे मास, मुड मास	३
२३	रहर	मङ्सिरे, चैते	२
२४	मुसुरो	स्थानीय	१
जम्मा			६३

सामुदायिक जैविक विविधता कोष परिचालन

अग्यौली सामुदायिक बीउ बैंकको दिगो रूपमा सञ्चालनका लागि कृषि विकास तथा संरक्षण कृषक समितिले सामुदायिक जैविक विविधता कोष स्थापना गरी परिचालन गरिरहेको छ । पटक-पटक गरी ली-बर्डले उपलब्ध गराएको रु ७,२९,५९३।- र हालसम्मको ब्याज रु ३,४९,५९६।- गरी वि.सं. २०७५ असार मसान्तसम्म सामुदायिक जैविक विविधता व्यवस्थापन कोषमा रु १०,७९,१०९।- जम्मा भएको छ । यो रकम प्रत्येक वर्ष वार्षिक १२ प्रतिशत ब्याजदरमा सदस्यहरूमाभ आयमूलक कार्यक्रमहरू सञ्चालन गर्नका लागि ऋणका रूपमा परिचालन गरिन्छ । यस कोषबाट प्रत्येक वर्ष ३५ देखि ५० जनाले ऋण लिने गरेका छन् । यसरी प्राप्त हुने ब्याजबाट स्थानीय बीउ खरिद गर्ने र संस्थाको कर्मचारीको तलब र प्रशासनिक खर्च चलाउने गरिएको छ ।

बीउ-उत्पादन तथा विक्रीवितरण

वि.सं. २०७१ देखि अग्यौली सामुदायिक बीउ बैंकले स्थानीय तथा उन्नत जातका बीउ-उत्पादन गरी प्रचलित बजारमूल्य भन्दा सुलभ रूपमा स्थानीय कृषकहरूलाई बीउ विक्री गर्दै आइरहेको छ । साथै चितवनको भरतपुर स्थित अनमोल बीउ कम्पनीसँग पनि समन्वय गरी मूल बीउ ल्याउने र उत्पादित बीउ कम्पनीलाई नै विक्री गर्ने कार्य पनि सञ्चालन गरिरहेको छ । अग्यौली सामुदायिक बीउ बैंकले उत्पादन गरेको उन्नत जातको बीउको परिमाण तालिका २ मा प्रस्तुत गरिएको छ :

तालिका २ : अग्यौली सामुदायिक बीउ बैंकले उत्पादन गरेको बीउको विवरण

वर्ष (वि.सं.)	बीउ-उत्पादन परिमाण (के.जी.)		
	स्थानीय	उन्नत	जम्मा
२०७०	१,०३७	-	१,०३७
२०७१	१,१६८	२५,५७६	२६,७४४
२०७२	४२९	४७,३६३	४७,७९२
२०७३	८७	४६,६५९	४६,६५९
२०७४	१,३९३	१७,९९३	१९,३८६
२०७५ (उत्पादन लक्ष्य)	१,०००	४०,०००	४१,०००

साभेदार सङ्घसंस्था

अग्यौली सामुदायिक बीउ बैंकको मुख्य साभेदार वा सहयोगी संस्था जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) हो । स्थापना कालदेखि हालसम्म ली-बर्डको आर्थिक तथा प्राविधिक सहयोग रहँदै आएको छ । साबिकको अग्यौली गा.वि.स.ले यो सामुदायिक बीउ बैंकलाई लगभग ३ कट्टा क्षेत्रफल बराबरको सार्वजनिक जग्गा उपलब्ध गराएर सामुदायिक बीउ बैंक स्थापना कार्यमा ठूलो भूमिका निर्वाह गरेको छ भने हालसालै कावासोती नगरपालिकाबाट पनि मूल बीउ खरिद तथा अन्य कामका लागि आर्थिक सहयोग प्राप्त हुने गरेको छ । तत्कालीन जिल्ला कृषि विकास कार्यालय नवलपरासीबाट पनि धानको मूल बीउ र अन्य प्राविधिक सहयोग उपलब्ध हुने गरेको थियो । अनमोल बीउ र स्थानीय एग्रोभेटहरूले पनि यसले उत्पादन गरेको बीउ खरिद गरिदिएर महत्त्वपूर्ण भूमिका निर्वाह गरिरहेका छन् ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

मसुरिया सामुदायिक बीउ बैंक, कैलाली

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परिचय

मसुरिया सामुदायिक बीउ बैंकको स्थापना पश्चिमी तराई भू-परिधि विकास आयोजनाअन्तर्गत जैविक विविधता अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) ले सञ्चालन गरेको कृषि जैविक विविधता कार्यक्रमको पहलमा भएको हो । यो कार्यक्रम वि.सं. २०६४ देखि २०७० सालसम्म सञ्चालन भएको थियो । ली-बर्डले मसुरियामा कृषि जैविक विविधता कार्यक्रम सञ्चालनका लागि वि.सं. २०६४ माघ महिनामा साबिकको मसुरिया गा.वि.स. का नौवटै वडा समेटी प्रत्येक वडामा कृषकसमूहरू र ती समूहहरूको प्रतिनिधित्वमा गा.वि.स.स्तरमा एकता जैविक विविधता संरक्षण तथा विकास समिति स्थापना गर्न सहजीकरण गरेको थियो । यो समिति स्थापना गर्नाको मुख्य उद्देश्य मसुरिया तथा वरपरका कृषि जैविक विविधताको खोजी र त्यसको संरक्षणको माध्यमबाट कृषकहरूको जीविकोपार्जन सुधारमा टेवा पुऱ्याउनु रहेको थियो ।

मसुरिया सामुदायिक बीउ बैंक स्थापना गर्नुभन्दा पहिला मसुरियाको कृषि जैविक विविधताको अभिलेखीकरण, कृषि जैविक विविधता प्रदर्शनी मेला, कृषक भ्रमण आदि क्रियाकलापहरू सञ्चालन गरिएका थिए । यी क्रियाकलाप सञ्चालनपछि कृषि जैविक विविधताको महत्त्व र संरक्षणको आवश्यकता महसुस गरी वि.सं. २०६४ मा नै सामुदायिक बीउ बैंकको थालनी गरिएको हो । यसको मुख्य उद्देश्य कृषि जैविक विविधताको दिगो संरक्षण तथा उपयोग प्रवर्द्धन गर्ने, स्थानीय कृषकहरूका लागि आवश्यक थरीथरीका गुणस्तरीय बीउ सुलभ रूपमा उपलब्ध गराउने र मसुरियाका कृषकहरूको खाद्यान्न उत्पादन र जीविकोपार्जन सुधारमा टेवा पुऱ्याउनु रहेको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

एकता जैविक विविधता संरक्षण तथा विकास समितिलाई वि.सं. २०६४ मा नै तत्कालीन जिल्ला कृषि विकास कार्यालय, धानगढीमा कृषक समन्वय समितिका रूपमा दर्ता गरिएको थियो । यस समितिमा साबिकको मसुरिया गा.वि.स.मा रहेका २४ वटा कृषक समूहहरू आबद्ध थिए । ती २४ वटा कृषक समूहहरूमा ३६९ जना महिला र १५५ जना पुरुष गरी ४२६ जना सदस्य थिए । यिनै २४ वटा कृषक समूहबाट छनोट भइआएका प्रतिनिधि कृषकहरूको मूल समितिले सामुदायिक बीउ बैंक, सामुदायिक जैविक विविधता व्यवस्थापन कोष परिचालन, जिल्ला कृषि विकास कार्यालय, नेपाल कृषि अनुसन्धान परिषद्, राष्ट्रिय बीउबिजन कम्पनीलगायतका सङ्घसंस्थाहरूसँग समन्वय गरी कार्यक्रमहरू सञ्चालन गरिरहेको थियो । हाल यस समितिमा आबद्ध केही समूह तथा सदस्यहरू निष्क्रिय रहेकाले यस समितिलाई सहकारीका रूपमा दर्ता गरी सञ्चालन गर्ने कार्यको प्रारम्भ गरिएको छ । यसमा पुनः वि.सं. २०७४ असारबाट सञ्चालनमा आएको ली-बर्डको जीविकोपार्जन सुधार तथा समानुकूलन क्षमता अभिवृद्धि परियोजनाले सहजीकरण गरिरहेको छ ।

कृषि जैविक विविधताको संरक्षण

स्थापनाकालदेखि नै मसुरिया सामुदायिक बीउ बैंकले कृषि जैविक विविधता संरक्षण कार्यमा महत्त्वपूर्ण भूमिका निर्वाह गरेको छ । यस सामुदायिक बीउ बैंकले मूलतः कृषकहरूसँग समन्वय गरी स्थानीय बाली तथा जातहरूको बीउ-उत्पादन तथा संरक्षण कार्य गरिरहेको छ । पश्चिमी तराई भूपरिधि विकास आयोजनाको समाप्तिपछि कृषि जैविक विविधताको संरक्षण कार्यमा केही समूह तथा सदस्यहरू निष्क्रिय रहे पनि केही सदस्यहरूको निरन्तर प्रयासबाट आजसम्म यो बैंक सञ्चालन भई नै रहेको छ । वि.सं. २०७४ असारबाट ली-बर्डको पुनःआगमनले सामुदायिक बीउ बैंकसम्बन्धी कार्य थप प्रभावकारी बनाउने प्रयासको थालनी भइसकेको छ । हाल यस बैंकले २७ किसिमका बालीहरूको ६५ वटा स्थानीय जातहरू संरक्षण, बीउ-उत्पादन र वितरण गरिरहेको छ (तालिका १) ।

तालिका १. गौरीगङ्गा समुदायिक बीउ बैंकमा नमुना राखिएको बाली तथा जातको सङ्ख्या

क्र.स.	बाली	जातको नाम तथा सङ्ख्या	जातसङ्ख्या
१	धान	श्यामजिरा, अन्जना, रातो अनदी, सेतो अनदी, रातो बासनादार अनदी, फिनुवा, तिल्की, सेतो साठा, कालो साठा, मार्सी	१०
२	मकै	रातो स्थानीय	१
३	कोदो	डल्ले कोदो	१

क्र.स.	बाली	जताको नाम तथा सङ्ख्या	जातसङ्ख्या
४	तोरी	कालो तोरी, खौरो तोरी	२
५	सस्युँ	पहेलो सस्युँ	१
६	तिल	कालो तिल	१
७	सिलाम	सेतो	१
८	बकुल्ला	कालो	१
९	भटमास	कालो	१
१०	सिल्टुङ	कालो, छिर्के, सानो दाना, हरियो दाना	४
११	मास	पोथ्रे	१
१२	केराउ	स्थानीय	१
१३	हिउँदे सिमी	गुइँटि, हरियो बोसे, रातो, हरियो लामो, चेप्टे	६
१४	भण्टा	डल्लो, हरियो, कालो, सेतो	४
१५	लौका	डल्ले, मादले, चिन्ने	३
१६	फर्सी	बाह्रमासे, चकिया, जाँते, डल्ले, लामो	५
१७	बोडी	कार्तिके, तनेबोडी, मकैबोडी, स्थानीय रातो कालो बोडी, थाँक्रे बोडी	५
१८	घिरौला	हरियो	१
१९	तोरैया,	भुत्ती तोरैया, हरियो तोरैया	२
२०	बेलचन	अम्लिभिर्चा, चिल्लो लर्चा	२
२१	करेला	सदाफल	१
२२	खुर्सानी	आकासे कालो र सेतो	२
२४	तरुल	सेतो जाँते, रातो, पत्ताले	३
२५	पिंडालु	दूधे, कालो, नङ्ग्रे, पञ्चमुखी, गब्दा, सेले	६
२६	आलु	थारु आलु	१
	जम्मा		६४

बीउ-उत्पादन तथा बजारीकरण

मसुरिया सामुदायिक बीउ बैकले धान र गहुँ बालीहरूको उन्नत जातको बीउ निरन्तर उत्पादन तथा विक्रीवितरण गरिहरको छ । वर्ष अनुसार विक्री गरिएको बीउको परिमाण तालिका २ मा प्रस्तुत गरिएको छ:

तालिका २ : मसुरिया सामुदायिक बीउ बैंकले उत्पादन तथा विक्री गरेको बीउको परिमाण

वर्ष (वि.सं.)	बाली	मुख्य जातहरू	विक्री गरिएको बीउको परिमाण (के.जी.)	मुख्य बीउ खरिदकर्ता
२०७४	धान	राधा ४, सुक्खा ३, सुक्खा २, सुक्खा १, हर्दिनाथ १,	३५३६	राष्ट्रिय बीउबिजन कम्पनी
	गहुँ	एन. एल. ९७१, बिजय	४५५०	
२०७३	धान	सावा सब १, सावित्री, सुक्खा ३	७६०	जिल्ला कृषि विकास कार्यालय, एग्रोभेट, बीउबिजन कम्पनी
	गहुँ	डब्लु के. १२०४, विजय	२०४४	जिल्ला कृषि विकास कार्यालय, एग्रोभेट, बीउबिजन कम्पनी
२०७२	धान	राधा ४, सावित्री, सावा मन्सुली	१२०	जिल्ला कृषि विकास कार्यालय, एग्रोभेट, बीउबिजन कम्पनी
२०७१	धान	सावित्री, सावा मन्सुली, राधा ४	४०	कृषक
	गहुँ	आदित्य, विजय	९२००	राष्ट्रिय बीउबिजन कम्पनी
२०७०	धान	पन्त १२, राधा ४	६०१०	
	गहुँ	आदित्य, एन. एल. २९७, गौतम	१७८३	
२०६९	धान	पन्त १२, राधा ४	१६७०	
२०६९	गहुँ	एन. एल. १०५३, एन. एल. १०७३, गौतम	२५८५	
२०६८	धान	सावित्री, घिउपुरी, जानकी बी. एल. ३२६४, बि. एल.	५२६८	
२०६८	गहुँ	३०६३, एन. एल. २९७, गौतम	४६३१	
२०६७	धान	राधा ४, सावित्री, अन्जना, वर्षे २०१४, घैया, रामधान	४१८६	
२०६७	गहुँ	गौतम, बी. एल. २८००, एन. एल. २९७,	४८५०	
२०६६	धान	हर्दिनाथ १, राधा ४	१७००	
		जम्मा	५२,५१९	

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

घण्टेश्वर सामुदायिक बीउ बैंक, डोटी

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परिचय

घण्टेश्वर सामुदायिक बीउ बैंक डोटी जिल्लाको जोरायल गाउँपालिका वडा नं. १, गैरामा अवस्थित छ । यो बैंक वि.सं. २०६५ देखि २०७३ सम्म जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड) ले डोटी जिल्लाको घण्टेश्वरलगायत देशका विभिन्न भौगोलिक क्षेत्रमा सञ्चालन गरेको समुदायमा आधारित जैविक विविधता व्यवस्थापन कार्यक्रमको सहयोगमा स्थापना भएको हो । यस बैंकको शुर्वात भने वि.सं. २०६८ मा गरिएको हो । समुदायमा आधारित जैविक विविधता व्यवस्थापन कार्यक्रमका लागि आर्थिक सहयोग विकास कोष नर्वेमार्फत नोर्याडबाट प्राप्त भएको थियो । यो बैंक शुरु गर्दा एउटा कोठा भाडामा लिई कामको थालनी गरिएको थियो । तत्पश्चात ली-बर्ड, तत्कालीन गाउँ विकास समिति र जिल्ला कृषि विकास कार्यालयबाट भवन निर्माण र अन्य भौतिक सामग्रीहरूको व्यवस्थापनका लागि सहयोग प्राप्त भएको थियो । हाल यो सामुदायिक बीउ बैंक सञ्चालन र कार्यालय प्रयोजनका लागि स-साना ३ वटा भवन निर्माण गरिएको छ ।

घण्टेश्वर सामुदायिक बीउ बैंक डोटी जिल्लाको पहिलो र ७ नं. प्रदेशको नमुना सामुदायिक बीउ बैंकका रूपमा विकास भइरहेको छ । यसको स्थापना मूलतः घण्टेश्वर तथा आसपासमा खेती गरिने विभिन्न बालीहरूका स्थानीय जातहरूको संरक्षण र निरन्तर प्रवर्धन गर्नु रहेको छ । साथै स्थानीय तथा उन्नत जातका थरीथरीका बीउ-उत्पादन गरी बीउ-उत्पादक स्थानीय कृषकहरूको आम्दानी बढाउने र समग्र सुदूर पश्चिम क्षेत्रमा तरकारी तथा अन्नबालीहरूको स्थानीय र उन्नत जातको बीउको उपलब्धता बढाउनु रहेको छ । यो बीउ बैंक ७ नं. प्रदेशको पहाडी जिल्लाको प्रवेशद्वारमा रहेकाले वार्षिक रूपमा विभिन्न सङ्घसंस्थाका प्रतिनिधिहरूको भ्रमणलगायत ओ.जे.टी. विद्यार्थीहरूले सिकने थलोको रूपमा विकास भइरहेको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

घण्टेश्वर सामुदायिक बीउ बैंक कृषि जैविक विविधता संरक्षण तथा कृषि सहकारी संस्थाले सञ्चालन गरिरहेको छ । सहकारी दर्ता गर्नुपूर्व यसलाई जैविक विविधता संरक्षण तथा विकास समिति नामकरण गरिएको थियो । सहकारी दर्ता भएपछि नियमित रूपमा लेखा परीक्षण, साधारणसभा र नवीकरण भइरहेको छ । यो सहकारीमा जोरायल गाउँपालिका वार्ड नं.१ वा साबिकको घण्टेश्वर गाउँ विकास समितिका नौवटै वडामा तत्कालीन जिल्ला कृषि विकास कार्यालयमा दर्ता भएका १६ वटा कृषक समूहहरू प्रत्यक्ष आबद्ध भएका छन् । यी समूहहरूमा १६७ महिला र १४८ पुरुष गरी जम्मा ३१५ जना सदस्यहरू रहेका छन् । यी सदस्यहरू सहकारीका शेयर सदस्य पनि हुन् । यस जैविक विविधता संरक्षण तथा कृषि सहकारीको सञ्चालक समितिमा ११ जना र लेखा तथा सुपरीवेक्षण समितिमा ३ जना सदस्य रहेका छन् भने कर्मचारीहरू ४ जना रहेका छन् । सामुदायिक बीउ बैंक सञ्चालनका लागि ३ जना सदस्य रहेको छुट्टै सामुदायिक बीउ बैंक व्यवस्थापन समिति गठन गरिएको छ । यही समिति र कर्मचारीहरूले नियमित रूपमा स्थानीय बीउ-उत्पादन, सङ्कलन, वितरण र अनुगमनको काम गर्दछन् ।

संरक्षण

घण्टेश्वर सामुदायिक बीउ बैंकले अन्नबाली, दलहनबाली तरकारीबाली, मसलाबाली र तेलबाली गरी ३२ बाली प्रजातिहरूका ६९ वटा स्थानीय जातहरूको संरक्षण, नियमित बीउ-उत्पादन र विक्रीवितरण गर्दै आइरहेको छ तालिका (१) । यी जातहरूको बीउ परस्थानीय संरक्षणका लागि राष्ट्रिय जीन बैंक, खुमलटारमा पासपोर्ट डाटासहित पठाइएको छ ।

तालिका १ : घण्टेश्वर सामुदायिक बीउ बैंक, डोटीमा संरक्षण गरिएका बाली तथा जातहरू

क्र.सं.	बाली	जात	जातसङ्ख्या
१	धान	मासी, सेउडो, उज्जलो, मासी, हंसराज, पोखरेली, थापाचिनी, पाखे	८
२	मकै	काँडे सेतो, काँडे रातो, सेतो ठूलो, निस्कोटे, मुरली	५
३	कोदो	कालो डल्ले, मुङ्के	२
४	गहुँ	सेतो दाब्दी, भुसे रातो, दाब्दी	३
५	फापर	स्थानीय	१
६	जौ	स्थानीय भुसे	१
७	मस्याङ	सिल्टुङ गुरौंस	२
८	गहत	कालो, खैरो	२
९	मास	कालो मास	१
१०	भटमास	सेतो ठूलो, खैरो, सानो सेतो, कालो	४

क्र.सं.	बाली	जात	जातसङ्ख्या
११	सिमी	भोटे, किरमिरे, लाहुरे, दार्चुले, रातो छिर्केमिर्के, कपरा, रातो, कालो, मुस्ताङ पहेँलो, घिउसिमी, धर्के, सोस्ता, फुस्रो, कालो छिर्केमिर्के, बेनसे रातो	१५
१२	मुसुरो	कालो, खैरो	२
१३	केराउ	सानो केराउ	१
१४	मूला	चोतो	१
१५	पिंडालु	सेतो कुचाय, लौरे, घुइयाँ, बङ्गाली	४
१६	घिरौला	हरियो लामो	१
१७	काँका	स्थानीय	१
१८	लट्टे	सेतो माटे	१
१९	पालुङ्गो	स्थानीय काँडे	१
२०	प्याज	स्थानीय ठूलो प्याज	१
२१	अदुवा	स्थानीय	१
२२	हल्दी	स्थानीय	१
२३	खुर्साना	स्थानीय	१
२४	लसुन	स्थानीय	१
२५	धनियाँ	स्थानीय	१
२६	सस्युँ	पहेँलो	१
२७	भुसे तिल	भुसे तिल	१
२८	तिल	स्थानीय	१
२९	भाँगो	घरभाँगो	१
३०	सिलाम	सेतो सिलाम	१
३१	आलस	स्थानीय	१
३२	सस्युँ	कालो सस्युँ	१
	जम्मा		६९

उन्नत बीउ-उत्पादन तथा बजारीकरण

स्थानीय जातका बालीहरूको संरक्षणका अतिरिक्त यस बैंकले उन्नत जातका मकै (अरुण २, रामपुर कम्पोजिट, देउती, मनकामना ३), मूला (मिनुअर्ली, ४० दिने, टोकिनासे) रायो (मार्फा चौडापात, मनकामना, खुमल चौडापात, खुमल रातो), केराउ गाँजर, धनियाँ, ब्रोकाउली, काउली आदिका बीउ-उत्पादन गरी जिल्लाभिन्न र जिल्लाबाहिरका एग्रोभेट, बीउ कम्पनीहरूसँग समन्वय गरेर बिक्री गरिरहेको छ । यसबाट सामुदायिक बीउ बैंकमा आबद्ध भएका र नभएका कृषकहरूको आमदानी वृद्धि र जीविकोपार्जन सुधारमा उल्लेखनीय योगदान पुगिरहेको छ । बीउ-उत्पादन तथा बिक्रीवितरणबाट औसतमा वार्षिक कारोबार ५० लाख बराबरको हुने गरेको छ ।

नर्सरी

सामुदायिक बीउ बैंकले बीउका अतिरिक्त यसको दिगो आम्दानीको स्रोतको रूपमा र स्थानीय कृषकहरूलाई फलफूल तथा ढाले घाँसका बिस्वाहरूमा सुलभ पहुँच बढाउनका लागि विगत ७ वर्षदेखि नर्सरी पनि व्यवस्थापन गर्दै आइरहेको छ । यसबाट वार्षिक रूपमा लगभग १०,०००- बिस्वाहरू उत्पादन गरी विक्रीवितरण गरिन्छ ।

साभेदार तथा सहयोगी सङ्घसंस्थाहरू

घण्टेश्वर सामुदायिक बीउ बैंकको स्थापना तथा दिगो रूपमा सञ्चालनका लागि ली-बर्ड, पोखराको मुख्य भूमिका रहेको छ । यसका साथै ली-बर्डकै अग्रसरतामा तत्कालीन जिल्ला कृषि विकास कार्यालय, डोटीसँग समन्वय गरी विभिन्न समयमा आर्थिक तथा प्राविधिक सहयोग पाइरहेको छ । सामुदायिक बीउ बैंकको भवननिर्माण र जग्गा खरीद गर्न तत्कालीन घण्टेश्वर गा.वि.स बाट सहकारी विकास कोषको रकम सहयोग प्राप्त भएको थियो ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

तामाफोक सामुदायिक बीउ बैंक, सङ्खुवासभा

डिल्ली जिमी

धर्मदेवी नगरपालिका २, तामाफोक, सङ्खुवासभा

परिचय

वि.सं. २०६८ मा जैविक विविधता अनुसन्धान, तथा विकासका लागि स्थानीय पहल (ली-बर्ड) द्वारा साबिक तामाफोक गाउँ विकास समितिमा कृषि जैविक विविधता संरक्षणसँग सम्बन्धित कार्यक्रम सञ्चालन भएको थियो । यस कार्यक्रमले प्रत्येक वडामा कृषक समूह र ती वडामा भएका समूहका प्रतिनिधिहरूबाट गाउँ विकास समिति तहमा तामाफोक जैविक विविधता संरक्षण तथा विकास समितिको गठन गर्न सहजीकरण गरेको थियो । त्यसपछि यस समितिमाफत तामाफोकमा सामुदायिक जैविक विविधता अभिलेखीकरण, कृषि जैविक विविधता मेला प्रदर्शनी, नर्सरी स्थापना, सामुदायिक जैविक विविधता व्यवस्थापन कोष स्थापना र सामुदायिक बीउ बैंकजस्ता क्रियाकलापहरू सञ्चालन भएका थिए । तर समितिले शुरु गरेको सामुदायिक बीउ बैंक सञ्चालन गर्न केही असहज भएपछि साबिक वडा नं ५ को कृषक समूहले आफ्नै वडामा हाल सञ्चालन भइरहेको सामुदायिक बीउ बैंकको शुस्वात गरेको हो । त्यसपछि ली-बर्डबाट यही सामुदायिक बीउ बैंकलाई केही आर्थिक तथा प्राविधिक सहयोग प्राप्त भयो । ली-बर्डद्वारा सञ्चालित परियोजना तीन वर्षमा नै समाप्त भए पनि साबिक वडा नं ५ का कृषक समूहहरू मिलेर यस बैंकको सञ्चालन निरन्तर रूपमा गरिरहेका छन् ।

तामाफोक सामुदायिक बीउ बैंक सङ्खुवासभा जिल्लाको धर्मदेवी नगरपालिका वडा नं. २, तामाफोकमा रहेको छ । यसले तालिका १ मा उल्लिखित तामाफोकबाट लोप हुन लागेका खाद्यान्न, तरकारी र अन्य गरी ३६ किसिमका बालीहरूका ८४ वटा स्थानीय जातका बीउहरू नियमित उत्पादन, संरक्षण र वितरण गरिरहेको छ । यसको आफ्नै भवन पनि रहेको छ । भवनको तल्लो तला सामुदायिक बीउ बैंक र माथिल्लो तला सामुदायिक सभाहलका रूपमा सञ्चालन भइरहेको छ । यसको निर्माण गर्न ली-बर्डले चार लाख पचास हजार, जोरधारा किसान समूहले पैसट्टी हजार, उलाङ्तेन कृषक समूहले दश

हजार, सिंहदेवी खोलापारि किसान समूहले पाँच हजार बगाले टोल किसान समूहले दश हजार, जोरधारा महिला समूहले पाँच हजार, लेअलुङ्मा बहुदेशीय महिला समूहले पाँच हजार, विभिन्न व्यक्तिहरूको सहयोगबाट तीस हजार, जनश्रमदानबाट एक लाख पचपन्न हजार, साबिक तामाफोक गाउँ विकास समितिबाट एक लाख पैतीस हजार ऋण गरी जम्मा आठ लाख पैसङ्गी हजारको लागतमा निर्माण गरिएको हो ।

तालिका १. तामाफोक सामुदायिक बीउ बैंकले संरक्षण गरिरहेका बाली तथा स्थानीय जातहरूको विवरण

क्र.स.	बाली	जातको नाम तथा सङ्ख्या	जातसङ्ख्या
१	धान	पाथीभरा, कचिने, जुंगे, अट्टे, रातो नले, दरमाली, बागे, रातो अनादी, बेलकुटी, भिनुवा, गुदुरे, कालो बासमती	१२
२	जौ	मुडुले जौ, जुँगे जौ	२
३	फापर	तीते, मीठे	२
४	कोदो	डल्ले, लट्टे, सेतो, डाँडागाउँले, चुडवाड, पाउँदुर	६
५	उवा	स्थानीय उवा	१
६	गहुँ	मुडुले	१
७	सिमी	चेप्टे काले, चेप्टे रातो, छिरबिरे, रातो, खैरो, मंसिरे, कालो, घिउ सिमी, भदौरे पहेंलो	९
८	बकुल्ला	बकुल्ला	१
९	केराउ	स्थानीय केराउ, मटर	२
१०	मास	कालो मास	१
११	बकुल्ला सिमी	स्थानीय	१
१२	गहत	रातो गहत, खैरो गहत	२
१३	मस्याङ	सेतो, सानो, थाँक्रे, सेतो सानो	४
१४	भटमास	सेतो, नेपाले, कालो	३
१५	काँक्रो	हरियो, सेतो	२
१६	लौका	स्थानीय लौका	१
१७	फर्सी	जाँते, छिरबिरे	२
१८	घिरौला	स्थानीय घिरौला	१
१९	कुभिन्डो	स्थानीय कुभिन्डो	१
२०	तीते करेला	ठूलो, सानो	२
२१	चुच्चे करेला	चुच्चे करेला	१
२२	फिलुङ्गे	फिलुङ्गे	१
२३	तोरी	स्थानीय तोरी	१
२४	तिल	कालो, सेतो	२

क्र.स.	बाली	जातको नाम तथा सङ्ख्या	जातसङ्ख्या
२५	सस्यूँ	सस्यूँ	१
२६	सूर्यमुखी	सूर्यमुखी	१
२७	खुर्सानी	अकबरे, डल्ले, लाम्चे, आकासे, जिरे रातो, जिरे सेतो	६
२८	सोंप	स्थानीय सोंप	१
२९	धनियाँ	स्थानीय, काँडे	२
३०	छयापी	सानो, ठूलो	२
३१	लसुन	सानो, ठूलो	२
३२	अदुवा	सानो, ठूलो	२
३३	रायो	स्थानीय रायो	१
३४	आलु	खैरो आलु, कुसुमे आलु	२
३५	रुख गोलभेडा	रुख गोलभेडा	१
३६	बैगुन	लाम्चे, डल्ले	२
	जम्मा		८४

तामाफोक सामुदायिक बीउ बैंकका चुनौतीहरू

तामाफोक सामुदायिक बीउ बैंकले हालसम्म बीउको व्यवसायिक उत्पादन र बजारीकरणमा ध्यान दिन सकेको छैन । यसको कारण यातायातको राम्रो व्यवस्था नभएर पनि हो । कतिपय अवस्थामा बीउलाई खाद्यन्नका रूपमा पनि विक्री गर्नु परिरहेको छ । तरकारीको बीउबाट भने केही मुनाफा पनि भइरहेको छ । यस सामुदायिक बीउ बैंकले मूलतः बीउहरू लोप हुनबाट जोगाउने काम मात्र गरिरहेको छ । सामुदायिक बीउ बैंकबाट बजार पनि टाढा छ भने गाउँमा वर्षेपिच्छे खेतबारी पनि बाँकिदै गएको अवस्था छ । धान, मकै र कोदो खेती गर्दा कतिपय अवस्थामा लगानी पनि नउठ्ने तथा युवाहरू पनि विदेश जाने भएकाले श्रमिक पाउन पनि कठिन हुँदै छ । तामाफोकका खेतबारी र पाखामा अलैचीखेती विस्तार भएकाले यस सामुदायिक बीउ बैंकले त्यति फाइदा लिन सकिरहेको छैन तापनि यस सामुदायिक बीउ बैंकको मुख्य उद्देश्य धेरै फाइदा लिनेभन्दा पनि खाद्यान्न, तरकारी, तेलहन, लहरे बाली तथा कोसे बालीहरूका स्थानीय जातहरू लोप हुनबाट जोगाउने भएकाले त्यसै अनुसार काम अघि बढिरहेको छ ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

घनपोखरा सामुदायिक बीउ बैंक, लमजुङ

खगेश्वरजंग गुरुङ^१ र श्रीराम सुवेदी^२

^१मर्स्याङ्दी गाउँपालिका २, घनपोखरा, लमजुङ; ^२ली-बर्ड, पोखरा

परिचय

घनपोखरा सामुदायिक बीउ बैंकको स्थापना वि. स. २०७३ (सन् २०१६) मा मर्स्याङ्दी गाउँपालिका वडा नं. २ (साबिकको घनपोखरा गा. वि. स. वडा नं. ५) लमजुङमा भएको हो । यस बैंकको स्थापना घनपोखरा बीउ-उत्पादक तथा संरक्षक कृषक समूह, जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड), कृषि विभाग, नेपाल कृषि अनुसन्धान परिषद्/जीन बैंक र बायोभार्सिटी इन्टरनेशनलको संयुक्त पहलमा सञ्चालित “स्थानीय बाली परियोजना” को सहयोगमा भएको हो । यसको मुख्य उद्देश्य विभिन्न बालीहरूका स्थानीय जातहरूको संरक्षण तथा उपयोग प्रवर्धन गर्दै, स्थानीय कृषकहरूको आवश्यकता अनुसारका गुणस्तरीय बीउबिजन सुलभ रूपमा उपलब्धता गराई कृषिमा आधारित आयमूलक क्रियाकलापहरू सञ्चालन गर्नु रहेको छ । यी उद्देश्यहरू पूरा गर्नका लागि यस बैंकले मर्स्याङ्दी गाउँपालिका वडा नं. १ र २ लाई कार्यक्षेत्र बनाई विभिन्न बालीहरूका स्थानीय जातको पहिचान, अभिलेखीकरण, संरक्षण, बीउ-उत्पादन र वितरणका क्रियाकलापहरू सञ्चालन गर्दै आइरहेको छ । आगामी दिनमा मर्स्याङ्दी गाउँपालिका अन्य वडा र छिमेकी गाउँपालिकाहरूमा पनि कार्यक्षेत्र विस्तार गर्ने लक्ष्य लिई स्थानीय सरकारी तथा सरोकारवाला निकायहरूसँग समन्वय गर्दै आएको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

घनपोखरा सामुदायिक बीउ बैंकको सञ्चालन तथा व्यवस्थापन घनपोखरा बीउ-उत्पादक तथा संरक्षक कृषक समूहले गर्दै आएको छ । यो कृषक समूह तत्कालीन जिल्ला कृषि विकास कार्यालय, लमजुङमा वि. सं. २०७३ मा दर्ता गरिएको थियो । यस समूहमा जम्मा ४० जना पुरुष र १५ जना महिला गरी ५५ सदस्यहरू छन् भने ४ महिलासहित ११ जना सदस्य रहेको एक कार्यकारिणी समिति पनि गठन गरीएको छ । घनपोखरा सामुदायिक बीउ बैंकको व्यवस्थापन यही कार्यकारिणी समितिले गर्दै आएको छ । प्रत्येक महिनाको

५ गते यस समितिको मासिक बैठक बस्छ । स्थानीय बाली परियोजनाको आर्थिक तथा प्राविधिक सहयोगमा यस बैंकले वार्षिक योजना बनाई त्यही अनुरूप बीउ-उत्पादन तथा वितरणको कार्यक्रम सञ्चालन गर्दै आएको छ । यो सामुदायिक बीउ बैंक स्थापनाको शुक्वाती चरणमै भएकाले अझ धेरै काम गर्न बाँकी नै छ । यसलाई दिगो रूपमा सञ्चालन गर्नका लागि जैविक विविधता व्यवस्थापन कोष पनि स्थापना गरी परिचालन गर्न थालिएको छ । हाल यस कोषमा स्थानीय बाली परियोजनाका तर्फबाट उपलब्ध गराइएको रु ३,१५,०००/- रकम रहेको छ ।

कृषि जैविक विविधता संरक्षण

घनपोखरा सामुदायिक बीउ बैंकले बीउ-उत्पादक तथा संरक्षक कृषकहरूको सहभागितामा जैविक विविधता प्रदर्शनी स्थल तथा बीउ-उत्पादन गरी १५ प्रजातिका बालीहरूको ७४ वटा स्थानीय जातहरू संरक्षण गरिरहेको छ (तालिका १) । यसै गरी कृषि जैविक विविधता मेला प्रदर्शनीको आयोजना गरी घनपोखरा गाउँमा खेती गरीने बाली तथा त्यसका स्थानीय जातहरू र परम्परागत ज्ञानको अभिलेखीकरण पनि गरिएको छ ।

तालिका १. घनपोखरा सामुदायिक बीउ बैंकमा संरक्षण गरीएका बाली तथा स्थानीय जातहरू

क्र.सं.	बाली	स्थानीय जातको नाम	जातसङ्ख्या
१	धान	गौरे, डल्ले, आँपभुत्ते, पियाँले, जौ धान, रातो दर्माली, कात्तिके, मनसरा, आँगा, रातो अनदी, कालो भिनुवा, गोर्खाली, गुर्दी, पमाली, लेकाली बासमती, बोराड, कालो धान, सेतो कात्तिके, जुँगे, सलेन, भोटे, कगेरी, एक्ले	२३
२	कोदो	डल्ले, नङ्ग्रे, बर्खे, मुलू, सँगले, पाउँदुरे, केग्रो, सेतो, छङ्ग्रे, लम्सरे	१०
३	जौ	स्थानीय जौ	१
४	कागुनो	बरियो, तीनमासे, रातो, कालो	४
५	मकै	स्थानीय सेतो, स्थानीय पहेँलो	२
६	उवा	मनाङ्गे स्थानीय	१
७	सिमी	हिउँदे सेतो, हिउँदे कालो, बर्खे (असोजे), तीनमासे, चौमासे, घिउ	६
८	बोडी	कात्तिके, सेतो बोसे, कालो बोसे, मकैबोडी	४
९	गहत	स्थानीय	१
१०	भटमास	खैरो, सानो कालो, ठूलो कालो, सेतो	४
११	घिरौला	हरियो, सेतो	२
१२	पिंडालु	लहरे सेतो, छाउरे, कालो लहरे	३

क्र.सं.	बाली	स्थानीय जातको नाम	जातसङ्ख्या
१३	खुर्सानी	अकबरे, सहलिया (लामो), जिरे सेतो, जिरे हरियो	४
१४	काँक्रा	मादले, हरियो, भक्तपुरे	३
१५	फर्सी	लाम्चे, डल्ले, फुस्रे जम्मा	३ ७४

बीउ-उत्पादन तथा बजारीकरण

घनपोखरा सामुदायिक बीउ बैंकले स्थापनाकालदेखि अहिलेसम्म आइपुग्दा ७ वटा बालीहरूका २४ जातहरूको ८५३ के.जी. बीउ-उत्पादन गरी ९४१ घरधुरीलाई वितरण गरेको छ । बीउ-उत्पादन तथा बजारीकरणका निम्ति यस सामुदायिक बीउ बैंकले विभिन्न सरकारी तथा निजी सङ्घसंस्थाहरूसँग साभेदारी तथा समन्वय गर्ने सोच बनाएको छ । सोही अनुरूप २०७४ सालमा बिरमफूल ३ को बीउ-उत्पादन गरी एग्रोभेटमार्फत बजारीकरणको शुर्वात गर्नु भने वि.सं. २०७५ देखि अनमोल बीउ प्रा.लि. सँग समन्वय गरी मालेपाटन १ जातको बोडी र चौमासे सिमीको बीउ-उत्पादन कार्य शुरू गरेको छ ।

घनपोखरा सामुदायिक बीउ बैंकले गरेका महत्त्वपूर्ण कार्यहरू :

- विभिन्न बालीहरूका स्थानीय जातको बीउको नमुना सङ्कलन गरी जानकारीसहित प्रदर्शनीमा राखिएको, जैविक विविधता प्रदर्शनी स्थल, बीउ-उत्पादक कृषक र संरक्षण कृषकहरूमार्फत स्थानीय जातहरूको संरक्षण कार्यको सुरुवात गरेको, स्थानीय जातको बीउ-उत्पादन गरी बीउको उपलब्धतामा सुधार ल्याएको;
- लोपोन्मुख बालीहरू जस्तै, कागुनो, उवा आदिको संरक्षण तथा यी बालीहरूका साथसाथै अन्य स्थानीय बाली जस्तै, कोदो, लट्टेबाट बन्ने खाद्य परिकारलाई खाद्य महोत्सवमा प्रदर्शन गरी प्रवर्धनको कार्यमा टेवा पुऱ्याएको;
- जैविक विविधता पाठशाला सञ्चालन गरी स्थानीय बीउ-उत्पादक कृषकहरूको क्षमता वृद्धि, कृषिका विभिन्न समसामयिक विषयहरूमा छलफल तथा तालिम सञ्चालन गरेर महिला तथा पुरुष कृषकहरूको सशक्तीकरण र
- उन्नत बीउ-उत्पादन कार्यको थालनी गरी स्थानीय स्तरमा आयआर्जनको अवसर सिर्जना गरेको ।

साभेदार सङ्घसंस्थाहरूः

स्थानीय बाली परियोजनाका साभेदार संस्थाहरूमा ली-बर्ड, राष्ट्रिय जीन बैंक, र बायोभर्सिटी इन्टरनेशनलबाट यस बैंकका लागि आवश्यक भौतिक, आर्थिक तथा प्राविधिक सहयोगहरू प्राप्त हुँदै आएका छन् । स्थानीय स्तरमा वडा कार्यालय, गाउँपालिकाको कार्यालय, संरक्षण क्षेत्र व्यवस्थापन समिति र अन्नपूर्ण संरक्षण क्षेत्र आयोजनाले पनि सहयोगीको भूमिका निर्वाह गर्दै आएका छन् । यसका अलावा, तत्कालीन कृषि सेवा केन्द्र र जिल्ला कृषि विकास कार्यालयले पनि समय-समयमा आ-आफ्नो क्षेत्रबाट सहयोग गरिरहेका थिए । यसै गरी उत्पादित बीउ बिक्रिवितरणका क्रममा स्थानीय शिशिर एग्रोभेट र अनमोल बीउ कम्पनीले साथ दिएका छन् ।

समस्या र चुनौतीहरू

घनपोखरा सामुदायिक बीउ बैंक स्थापनाको सुरुवाती चरणमै भएकाले धेरै कामहरू गर्न बाँकी नै छन् । तथापि यहाँसम्म आइपुग्दा यस बैंकले सामना गरेका केही समस्या तथा चुनौतीहरू निम्नानुसार रहेका छन्:

- समुदाय तथा समूहका सबै सदस्यहरूमा सामुदायिक बीउ बैंकको महत्त्व तथा कार्यशैली सम्बन्धि समान ज्ञान नहुन तथा जनचेतनाको पनि अभाव देखिनु;
- समुदायका साथसाथै स्थानीय सरकार तथा जनप्रतिनिधिमा यस विषयबस्तुप्रति ज्ञान तथा चासो कम भएकाले गर्दा यो क्षेत्र तथा कार्यक्रम स्थानीय सरकार को कार्यक्रमको प्राथमिकतामा पर्न नसक्नु;
- जनचेतनाको अभावका साथसाथै भौगोलिक विकटता, काम गर्ने क्षेत्र सबैतिर यातायात तथा सञ्चारको असुविधाले गर्दा घनपोखरा सामुदायिक बीउ बैंकले योजना अनुरूपको गति लिन नसक्नु;
- व्यावसायिक बीउ-उत्पादनका लागि खेतीयोग्य जमिन तथा बीउ-उत्पादक कृषकको अभाव हुनु, साथै यो असिना पर्ने क्षेत्र भएकाले बीउ-उत्पादन गर्दा नोक्सानी खेप्नुपर्ने जोखिम रहनु;
- बीउ व्यावसायीकरणका लागि पर्याप्त समन्वय तथा योजना बनाएर कार्यक्रम गर्न नसक्नु;
- सामुदायिक बीउ बैंकले स्थानीय स्तरमा आर्थिक स्रोत जुटाउन नसकी पूर्ण रूपले परियोजनामा नै निर्भर रहनु ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

जुंगु सामुदायिक बीउ बैंक, दोलखा

नेत्रबहादुर खड्का^१ र वृन्दा लिखा^२

^१गौरीशङ्कर गाउँपालिका १, जुंगु, दोलखा; ^२ली-बर्ड, पोखरा

परिचय

जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड), कृषि विभाग, नेपाल कृषि अनुसन्धान परिषद्/राष्ट्रिय जीन बैंक र बायोभर्सिटी इन्टरनेशनलको संयुक्त पहलमा सञ्चालित 'स्थानीय बाली परियोजना' र स्थानीय सहकारी 'श्री हिमचुली बहुदेशीय सहकारी लिमिटेड' को सहकार्यमा जुंगु सामुदायिक बीउ बैंकको स्थापना २०७४ साल जेठ २४ गते गौरीशङ्कर गाउँपालिका १ जुंगु दोलखामा भएको हो । वि. स. २०६० मा स्थापित यस सहकारीको एक कार्यक्रमका रूपमा यो सामुदायिक बीउ बैंक सञ्चालित छ । हाल यस सामुदायिक बीउ बैंकले गौरीशङ्कर गाउँपालिका वडा नं. १ र २ लाई कार्यक्षेत्र बनाएर कार्यक्रम सञ्चालन गरिरहेको भए तापनि भविष्यमा गाउँपालिकाका अन्य वडाहरूमा पनि यसको सेवा विस्तार गर्ने लक्ष्य लिएको छ । जुंगु तथा आसपासको क्षेत्रमा खेती गरिने विभिन्न बालीहरूका स्थानीय जातहरू र यी जातहरूसँग सम्बन्धित परम्परागत ज्ञानको संरक्षण र प्रयोग बढाउनु यसको मुख्य उद्देश्य रहेको छ । साथै स्थानीय कृषकहरूको आवश्यकता अनुसार उन्नत बीउहरूको उत्पादन र सहज उपलब्धता बढाउनु, बीउमा आधारित आयमूलक अवसरहरूको सिर्जना गर्नु पनि यस सामुदायिक बीउ बैंकका अन्य उद्देश्यहरू हुन् । हाल यस बैंकले विभिन्न बालीहरूको विविधता प्रदर्शनी स्थलको व्यवस्थापन र बीउ-उत्पादन कार्यक्रम सञ्चालन गरी स्थानीय बालिहरूको संरक्षण तथा प्रवर्धन गर्दै आएको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

जुंगु सामुदायिक बीउ बैंकको सञ्चालनका लागि श्री हिमचुली बहुदेशीय सहकारीअन्तर्गत चार जना महिला सहित ९ जना सदस्य रहेको सामुदायिक बीउ बैंक व्यवस्थापन समिति गठन गरिएको छ । सामुदायिक बीउ बैंकको काम सञ्चालनमा थप ३ जना पुरुष र १३ जना महिलाहरू पनि सक्रिय रूपमा लागि रहेका छन् । सामुदायिक बीउ बैंकले सञ्चालन

गर्ने बीउ-उत्पादन क्रियाकलापमा १४० घरधुरीहरू संलग्न हुँदै आएका छन् । सामुदायिक बीउ बैंक व्यवस्थापन समितिले मासिक रूपमा बैठक गरी सामुदायिक बीउ बैंकका नियमित क्रियाकलापहरू सञ्चालन गर्दै आइरहेको छ । बीउ-उत्पादन योजना निर्माण तथा कार्यान्वयन, बिक्रिवितरण र बीउ पुँजी कोषको परिचालन यस समितिले नै गर्दछ । सामुदायिक बीउ बैंक सञ्चालन तथा व्यवस्थापनका लागि सहकारी र स्थानीय बाली परियोजनाको भूमिका महत्त्वपूर्ण रहेको छ भने स्थानीय निकायहरूले पनि साथ र सहयोग दिइरहेका छन् । सामुदायिक बीउ बैंक स्थापना तथा सञ्चालनका लागि आवश्यक मुख्य भौतिक, आर्थिक एवम् प्राविधिक सहयोग परियोजनाका तर्फबाट गरिएको छ भने केही सहयोग सहकारी, गाउँपालिका र वडा कार्यालयहरूले पनि गरिरहेका छन् । सामुदायिक बीउ बैंकको दिगोपना र यसमा आबद्ध सदस्यहरूको आर्थिक स्रोतमा पहुँच बढाउने उद्देश्यले जैविक विविधता व्यवस्थापन कोष पनि स्थापना र सञ्चालन गरिँदै आइएको छ । हाल यस कोषमा रु ३,००,०००/- रकम रहेको छ । यस कोषको परिचालनबाट प्राप्त ब्याज सामुदायिक बीउ बैंकका नियमित क्रियाकलापहरू सञ्चालनका लागि खर्च गरिन्छ ।

कृषि जैविक विविधता संरक्षण

जुंगु सामुदायिक बीउ बैंकले विभिन्न बालहरूको विविधता प्रदर्शनी स्थल र बीउ-उत्पादन कार्यक्रम सञ्चालन गरी तालिका १ मा उल्लेख गरेबमोजिमका १० प्रजातिका बालीहरूका ४२ वटा स्थानीय जातहरू संरक्षण गर्दै आएको छ । सामुदायिक बीउ बैंकमा यी स्थानीय जातहरूको पासपोर्ट फाराममा त्यस जातसँग सम्बन्धित परम्परागत ज्ञानहरूको पनि अभिलेख राखिएको छ । हालसम्म सामुदायिक बीउ बैंक व्यवस्थापन समितिले ती जातहरूको संरक्षणको अवस्था र आर्थिक स्रोतको उपलब्धता अनुसार उत्पादन गरिएको बीउ निःशुल्क वितरण गर्ने गरेको छ । सामुदायिक बीउ बैंकले थप स्थानीय बाली तथा जातहरूको खोजी र संरक्षण गर्दै जाने सोच बनाएको छ ।

तालिका १ : जुंगु सामुदायिक बीउ बैंकले संरक्षण गरिरहेका बाली र तिनका स्थानीय जातहरू

क्र.सं.	बाली	जातका नामहरू	जातसङ्ख्या
१	धान	हिमाली रातो, हिमाली सेतो, फिन्गामली, गुडुले मार्सी, पहेँली मार्सी, मल्दुंगे मार्सी, मनसरा, कोइली, अनदी, तिल्पुंगे मार्सी	१०
२	कोदो	डल्ले, कालो, लडीबडी, पहेँली, भोटांगे, मुड्के, नङ्ग्रे, सेतो, च्याल्टे, लार्फाने, सैलुंगे, अगरे, ओख्ले	१३
३	फापर	तीते, मीठे	२
४	उवा	स्थानीय मुडुले	१
५	जौ	स्थानीय टुँडे	१

क्र.सं.	बाली	जातका नामहरू	जातसङ्ख्या
६	सिमी	पहेलो, खैरो, रातो छिर्के, कालो छिर्के, सेतो, ठूलो छिर्बिरे, कालो, सानो पहेलो	८
७	फर्सी	हरियो डल्ले, दार्जिलिङे	२
८	काँक्रो	स्थानीय हरियो	१
९	खुर्सानी	अकबरे	१
१०	लट्टे	कालो, रातो, सेतो	३
जम्मा			४२

बीउ-उत्पादन, वितरण तथा बजारीकरण

जुंगु सामुदायिक बीउ बैंकले स्थापनाकालदेखि २०७५ असारसम्म १६ किसिमका बालीहरूका ५० वटा जातहरूको २,२१४ के.जी. बीउ-उत्पादन गरी १,३०२ घरघुरीहरूलाई उपलब्ध गराएको छ । यस वर्ष करिब ४७० के.जी सिक्किम लोकल केराउको बीउ-उत्पादन गरी बिक्री गर्ने कार्यको थालनीसमेत गरेको छ । स्थानीय जातको पहेलो र खैरो सिमीको बीउ पनि उत्पादन र बजारीकरण गर्ने कार्य अघि बढाइरहेको छ । यस बैंकले बिक्रीका लागि केराउ, सिमी, रायो, लट्टे, बकुल्ला आदिको बीउ-उत्पादन गर्दै आएको छ भने बजारीकरणका लागि स्थानीय कृषि सहकारी, एग्रोभेट, अनमोल बीउ कम्पनी र ली-बर्डका विभिन्न परियोजनाहरूसँग सहकार्य गर्दै आएको छ ।

बीउ बैंकले गरेका महत्त्वपूर्ण कार्यहरू

- अन्नबाली, दलहनबाली, तरकारीबालीलगायतका बालीहरूको स्थानीय जातहरूको बीउ सङ्कलन, पुर्नस्थापना र संरक्षण;
- स्थानीय पहेलो र खैरो घिउसिमीको संरक्षण, प्रवर्धनका साथै जात दर्ताप्रक्रियाका लागि पहल;
- १०४ वटा स्थानीय जातका बीउहरूको नमुना र पासपोर्ट डाटा परस्थानीय संरक्षण लागि राष्ट्रिय जीन बैंकमा पठाइएको;
- सिक्किम लोकल केराउ, मार्फा रायो, रामेछाप हरियो लट्टे, स्थानीय पहेलो र खैरो घिउसिमीको बीउ-उत्पादन गरी स्थानीय स्तरमा आयआर्जनको अवसर सिर्जना गरिरहेको;
- स्थानीय साना कृषकहरू, विशेष गरी महिलाहरूको आर्थिक स्रोतमा पहुँच बढाउनका लागि सामुदायिक जैविक विविधता व्यवस्थापन कोषको स्थापना र परिचालन गरिरहेको;
- कृषि जैविक विविधता पाठशाला सञ्चालन गरी स्थानीय बीउ-उत्पादक कृषकहरूको क्षमता वृद्धि, कृषिसँग सम्बन्धित विभिन्न समसामयिक विषयहरूमा छलफल तथा तालिम सञ्चालन गरी महिला तथा पुरुष कृषकहरूको सशक्तीकरण ।

भौतिक सामग्री तथा पूर्वाधारहरूको अवस्था

जुंगु सामुदायिक बीउ बैंक सञ्चालनका लागि आवश्यक भौतिक पूर्वाधार एवम् सामग्रीहरू स्थानीय बाली परियोजना, सहकारी र स्थानीय निकायहरू (तत्कालीन जिल्ला कृषि विकास कार्यालय, गाउँपालिका र वडा कार्यालय) मार्फत उपलब्ध गराइएको छ ।

समस्या तथा चुनौतीहरू

जुंगु सामुदायिक बीउ बैंकका हालका समस्या तथा चुनौतीहरू निम्नानुसार रहेका छन्:

- स्थानीय लोपोन्मुख बाली तथा जातहरूको संरक्षणका क्रियाकलापका सञ्चालन गर्न पर्याप्त आर्थिक स्रोतको कमी;
- सामुदायिक बीउ बैंकमा स्थानीय युवा र दोस्रो पुस्ताहरूको कम चासो;
- स्थानीय निकायबाट साथ र सहयोगमा कम प्राथमिकता;
- व्यावसायिक बीउ-उत्पादनका लागि खेतीयोग्य जमिन र
- बजारमा पहुँच कम ।

यी चुनौतीहरूको सामना गर्न र सामुदायिक बीउ बैंकको अवधारणालाई स्थानीय निकायको विकास कार्यक्रममा मूल प्रवाहीकरण गर्न सामुदायिक बीउ बैंक व्यवस्थापन समिति र सहकारी लागिपरेको छ । सामुदायिक बीउ बैंकको दिगो रूपमा सञ्चालनका लागि स्थानीय विकास कार्यक्रममा समायोजन एवं युवा तथा उद्यमी कृषकहरूको संलग्नता गराउँदै आयआर्जनका अवसरहरूको सिर्जना गरी सामुदायिक बीउ बैंक सञ्चालन गर्ने सोच रहेको छ ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernoooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

हाँकु सामुदायिक बीउ बैंक, जुम्ला

धनकृष्ण पाण्डे र कविता जैसी

तातोपानी गाउँपालिका ५, ऐरेनी, जुम्ला

परिचय

जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड), कृषि विभाग, नेपाल कृषि अनुसन्धान परिषद्/राष्ट्रिय जीन बैंक र बायोभर्सिटी इन्टरनेशनलको संयुक्त पहलमा सञ्चालित 'स्थानीय बाली परियोजना' र श्री द्यौलीगाड कृषि जैविक विविधता संरक्षण समूहको सहकार्यमा हाँकु सामुदायिक बीउ बैंकको स्थापना २०७२ साल चैत्र १३ गते तातोपानी गाँउपालिका ४, हाँकु, जुम्लामा भएको हो । वि. स. २०७२ मा स्थापित श्री द्यौलीगाड विविधता संरक्षण कृषक समूहको एक कार्यक्रमका रूपमा यो सामुदायिक बीउ बैंक सञ्चालित छ र यसको सम्पर्क कार्यालय तातोपानी गाउँपालिका-५ ऐरेनी मा रहेको छ । हाल यस बैंकले तातोपानी गाउँपालिका वडा नं. ४ र ५ लाई कार्यक्षेत्र बनाएर कार्यक्रम सञ्चालन गरिरहेको भए तापनि भविष्यमा गाउँपालिकाका अन्य वडाहरूमा पनि यसको सेवा विस्तार गर्ने लक्ष्य लिएको छ । हाँकु तथा आसपासका क्षेत्रमा खेती गरिने विभिन्न बालीहरूका स्थानीय जातहरू र यी जातहरूसँग सम्बन्धित परम्परागत ज्ञानको संरक्षण र प्रयोग बढाउनु यसको मुख्य उद्देश्य रहेको छ । साथै स्थानीय कृषकहरूको आवश्यकता अनुसार उन्नत बीउहरूको उत्पादन र सहज उपलब्धता बढाउनु, बीउमा आधारित आयमूलक अवसरहरूको सिर्जना गर्नु पनि यस सामुदायिक बीउ बैंकका अन्य उद्देश्यहरू हुन् । हाल यसले विभिन्न बालीहरूको विविधता प्रदर्शनी स्थलको व्यवस्थापन र बीउ-उत्पादन कार्यक्रम सञ्चालन गरी स्थानीय बालीहरूको संरक्षण तथा प्रवर्धन गर्दै आएको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

हाँकु सामुदायिक बीउ बैंक सञ्चालनका लागि श्री द्यौलीगाड कृषि जैविक विविधता संरक्षण समूहअन्तर्गत पाँच जना महिलासहित ११ जना सदस्य रहेको सामुदायिक बीउ बैंक व्यवस्थापन समिति गठन गरिएको छ, जसलाई मूल समिति पनि भन्ने गरिन्छ । उक्त

मूल समिति तातोपानी गाउँपालिकाको वडा नं. ४ र ५ मा अवस्थित विभिन्न चार उपभोक्ता कृषक समूहबाट चुनिएका प्रतिनिधिहरूको समूह हो । तसर्थ यस द्यौलीगाड कृषि जैविक विविधता संरक्षण समूह आफैँ एक छुट्टै समूह नभई समूहहरूको प्रतिनिधि समूह अर्थात् माथि भनिए जस्तै मूल समिति हो । यसरी कार्य गर्दा हरेक समितिमा छुट्टाछुट्टै जान नपर्ने र सन्देश प्रवाहमा छरितो हुने हुन्छ । यसरी सरसरती हेर्दा सम्पूर्ण चार समूह गरी यस समूहमा ७८ (५७ महिला, २१ पुरुष) साधारण सदस्यहरू रहेका छन् भने हाल बीउ-उत्पादन क्रियाकलापमा ६३ घरधुरी संलग्न रहेका छन् । समितिको मासिक नियमित बैठक बसी सामुदायिक बीउ बैंकका गतिविधिहरू, बीउ-उत्पादन र बिक्रीवितरणसम्बन्धी निर्णयहरू गर्नाका साथै बीउ पुँजी कोषको परिचालन र व्यवस्थापन पनि यसै समितिमार्फत हुने गरेको छ । बीउ बैंक सञ्चालन र व्यवस्थापनका लागि परियोजनाको भूमिका पनि निकै महत्त्वपूर्ण रहेको छ साथै स्थानीय निकायहरूको पनि साथ र सहयोग प्राप्त भइरहेको छ । बीउ बैंक सञ्चालनका निमित्त चाहिने भौतिक, आर्थिक एवम् प्राविधिक आवश्यकता परियोजनाले पूर्ति गर्दै आइरहेको छ । केही सहयोग गाउँपालिकाबाट पनि प्राप्त भएको छ । बीउ बैंक सञ्चालनमा सहजता ल्याउन, कृषकहरूलाई व्यवसायी बनाउने र उनीहरूको आर्थिक पहुँच बढाउने हेतुले घुम्तीकोष (जैविक विविधता कोष/सी.बी.एम. कोष) सञ्चालन गरिएको छ जसको आम्दानीको केही प्रतिशत बीउ बैंक सञ्चालनमा खर्च गरी यसको दिगोपनलाई टेवा पुऱ्याउने लक्ष्य छ । हाल यस कोषमा स्थानीय बाली परियोजनाका तर्फबाट उपलब्ध गराइएको रु ३,२०,०००/- रकम रहेको छ ।

कृषि जैविक विविधता संरक्षण

हाँकु सामुदायिक बीउ बैंकले विभिन्न बालाहरूको विविधता प्रदर्शनी स्थल र बीउ-उत्पादन कार्यक्रम सञ्चालन गरी तालिका १ मा उल्लेख गरेबमोजिमका २० प्रजातिका बालीहरूका ६५ वटा स्थानीय जातहरू (१० वटा अन्नबालीका २३ जात, ७ वटा दलहनबालीका ३९ जात, १ वटा तेलहन बालीको १ जात र २ तरकारी बालीका २ जात) संरक्षण गर्दै आएको छ । सामुदायिक बीउ बैंकमा यी स्थानीय जातहरूको पासपोर्ट फाराम भरी त्यस जातसँग सम्बन्धित परम्परागत ज्ञानहरूको पनि अभिलेख राखिएको छ । हालसम्म सामुदायिक बीउ बैंक व्यवस्थापन मूल समितिले ती जातहरूको संरक्षणको अवस्था र आर्थिक स्रोतको उपलब्धता अनुसार उत्पादन गरिएको बीउ निःशुल्क वितरण गर्ने गरेको छ । सामुदायिक बीउ बैंकले थप स्थानीय बाली तथा जातहरूको खोजी र संरक्षण गर्दै जाने सौँच बनाएको छ ।

तालिका १ : हाँकु सामुदायिक बीउ बैंकले संरक्षण गरेका बाली र तिनका स्थानीय जातहरू

क्रस	बाली	जातहरू	जातसंख्या
१	धान	मेल्टे, लेकाली, जुम्ली मासी, काली मासी, पाखे धान, दारिमे	६
२	कोदो	रातो, कालो	२
३	फापर	तीते फापर, मीठे फापर	२
४	सिमी	पहेलो गोलो, सेतो सानो, कालो, कफी रङ, खराने, कलेजी, खैरो टूलो, खैरो थोप्ले, कालो छिर्के, फुस्रो छिर्के, खैरो छिर्के, रातो लामो, कलेजी छिर्के टूलो, रातो सानो, सेतो छिर्के, सेतो लामो, कालो लामो, सिन्दूरे छिर्के, पहेलो छिर्के, चिल्लो कालो, खैरो लामो, कलेजी छिर्के, कलेजी छिर्के लामो, रातो डल्लो, खरानी सादा, घ्यु रङ, रातो माले, पहेलो बेसारे, कालो सानो, कालो माले	३०
५	चिनो	दूधे, हाडे, कपाडे	३
६	कागुनो	रातो, पहेलो, औलेल/सेतो	३
७	गुराँस	स्थानीय सेतो, स्थानीय रातो	१
८	उवा	स्थानीय	१
९	जौ	स्थानीय	१
१०	लट्टे	लाल मासी,	१
११	गहुँ	दावली, ट्यासे	२
१२	मकै	मुरली, दावली/स्थानीय, ट्यासे	२
१३	भाँगो	स्थानीय	१
१४	भटमास	कालो, सेतो सानो, सेतो टूलो खैरो	३
१५	केराउ	हरियो सानो केराउ	२
१६	गहत	रातो स्थानीय	१
१७	मास	कालो स्थानीय	१
१८	काँक्रो	स्थानीय	१
१९	बरेला	करेला	१
२०	मुसुरो	स्थानीय	१
	जम्मा		६५

बीउ-उत्पादन, वितरण तथा बजारीकरण

हाँकु सामुदायिक बीउ बैंकले गत वर्षको आँकडा अनुसार विभिन्न बालीहरूको ९४३ के.जी. बीउ-उत्पादन गरी २१६२ घरधुरीलाई सुविधा प्रदान गरिरहेको छ । यस वर्ष भने बीउ-उत्पादनका लागि ६३ घरधुरीलाई संलग्न गराई २३४० के.जी. बीउ-उत्पादन गर्ने लक्ष्यका साथ अघि बढिरहेको छ । साथै यसै वर्ष आई.आर.डी. भनेर विभिन्न २७६६ घरधुरीलाई

सुविधा प्रदान गरिएको छ । स्थानीय बालीको प्रवर्धनका खातिर यस बीउ बैंकले आफ्नो छुट्टै सुपथ मूल्य पसल स्थापना गर्ने योजना बनाइरहेको छ । उक्त पसलमा स्थानीय बालीका प्रशोधित बस्तुहरू बिक्रीवितरण गर्ने लक्ष्य लिएको छ । साथै उत्पादित बीउ बिक्रीवितरण गर्नको लागि स्थानीय एग्रोभेट तथा विभिन्न परियोजनासँग सहकार्य पनि गर्दै आइरहेको छ ।

सामुदायिक बीउ बैंकले गरेका महत्त्वपूर्ण कार्यहरू

स्थानीय स्तरमा उपलब्ध भएसम्मका बीउहरूको नमूना सङ्कलन गरी विविधता प्रदर्शनी स्थल र बीउ-उत्पादन स्थालहरूको व्यवस्थापन गर्दै यस बीउ बैंकले संरक्षणको कामलाई प्राथमिकीकरण गरेको छ । साथै उत्पादित बीउ तथा उपजको बिक्रीवितरणमा सहजीकरणका लागि सुपथ मूल्य पसलको स्थापना गरिएको छ, जुन पसलमा उत्पादित विभिन्न बीउ तथा स्थानीय बालीको प्रशोधित रूप अर्थात् खानयोग्य बनाएर बिक्रीवितरण गर्ने गरिन्छ । यसका साथै जानकारीमूलक लेख तथा पुस्तिकाहरू समेत उपलब्ध गराएर स्थानीय बालीको संरक्षण गर्न किसानहरूलाई हौसला/प्रोत्साहन प्रदान गर्ने कार्यसमेत गरेको छ ।

साभेदार तथा सहयोगी सङ्घसंस्थाहरू

स्थानीय बाली परियोजनाका साभेदार संस्थाहरू ली-बर्ड, राष्ट्रिय जीन बैंक, र बायोभर्सिटी इन्टरनेशनलबाट यस बीउ बैंकका लागि आवश्यक भौतिक, आर्थिक तथा प्राविधिक सहयोगहरू प्राप्त हुँदै आएका छन् । स्थानीय स्तरमा वडा कार्यालय, गाउँपालिकाको कार्यालयले पनि सहयोगीको भूमिका निर्वाह गर्दै आएका छन् । यसका अलावा, तत्कालीन कृषि सेवा केन्द्र र जिल्ला कृषि विकास कार्यालयले पनि समय-समयमा आ-आफ्ना क्षेत्रबाट सहयोग गरिरहेका थिए ।

समस्या तथा चुनौतीहरू

सामुदायिक बीउ बैंकका हालका समस्या तथा चुनौतीहरू निम्नानुसार रहेका छन्:

- स्थानीय तथा लोपोन्मुख बालीहरूको संरक्षण क्रियापकलापका लागि स्रोतको कमी;
- कृषिक्षेत्रप्रति स्थानीय युवाहरूको वितृष्णा;
- स्थानीय निकायहरूबाट स्थानीय बाली प्रवर्धनमा कम ध्यान;
- व्यावसायिक बीउ-उत्पादनका लागि कृषिभूमिको कमी;
- कमजोर बजार पहुँचजस्ता चुनौतीहरूको सामना यस बीउ बैंकले गरिरहनु परेको छ ।

यी चुनौतीहरूको सामना गर्दै सामुदायिक बीउ बैंकको अवधारणालाई स्थानीय विकास कार्यक्रममा मूल प्रवाहीकरण गर्न सामुदायिक बीउ बैंक व्यवस्थापन मूल समिति र सम्पूर्ण कृषक समूह लागिपरेका छन् । सामुदायिक बीउ बैंक दिगो रूपमा सञ्चालनका लागि स्थानीय विकास कार्यक्रममा समायोजन एवं युवा तथा उद्यमी कृषकहरूको संलग्नता गराउँदै आयआर्जनका अवसरहरूको सिर्जना गरी सामुदायिक बीउ बैंक सञ्चालन गर्ने सोच रहेको छ ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

छिप्रा सामुदायिक बीउ बैंक, हुम्ला

नवराज भण्डारी^१ र सुन्दर राउत^२

^१खार्पुनाथ ४, छिप्रा, हुम्ला; ^२ली-बर्ड, पोखरा

परिचय

जैविक विविधता, अनुसन्धान तथा विकासका लागि स्थानीय पहल (लि-बर्ड), कृषि विभाग, कृषि अनुसन्धान परिषद् (नार्क) र बयोभर्सिटी इन्टरनेसनलको संयुक्त पहलमा सञ्चालित स्थानीय बाली परियोजना र स्थानीय सहकारी 'श्री कर्णाली कृषि सहकारी लिमिटेड' को सहकार्यमा छिप्रा सामुदायिक बीउ बैंकको स्थापना वि. सं. २०७४ असार १८ गते खार्पुनाथ गाउँपालिका ४ छिप्रा (साबिकको छिप्रा गा. वि. स.) हुम्लामा भएको हो । वि. सं. २०७० मा स्थापित यस कृषि सहकारीको मातहतमा रही यसैको एक अङ्गका रूपमा यो सामुदायिक बीउ बैंक सञ्चालनमा रहेको छ । यस बीउ बैंकले खार्पुनाथ गाउँपालिकाअन्तर्गत वार्ड न.४ लाई प्रमुख कार्यक्षेत्र बनाई छिमेकी गाउँपालिकाका वार्डहरूमा समेत सेवा विस्तार गरीरहेको छ । स्थानीय स्तरमा स्थानीय तथा उन्नत बीउहरूको उपलब्धता बढाउनु; स्थानीय बालीका जातहरू र यीसँग सम्बन्धित ज्ञानहरूको संरक्षण गर्नु र जैविक विविधतामा आधारित आयमूलक अवसरहरूको सिर्जना गर्नु यस बीउ बैंकका प्रमुख उद्देश्यहरू रहेका छन् । विभिन्न बालीका जैविक विविधता प्रदर्शनी स्थल र बीउ-उत्पादन स्थलहरूको व्यवस्थापन गरी यस बीउ बैंकले यथास्थान संरक्षणको काम प्राथमिकताका साथ गर्दै आएको छ भने स्थानीय बालिहरूको बीउ-उत्पादन र बिक्री गरी स्थानीय स्तरमा आयआर्जनका अवसरको पनि सिर्जना गर्दै आएको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

छिप्रा सामुदायिक बीउ बैंक श्री कर्णाली कृषि सहकारीको मातहतमा रही यसैको एक अङ्गका रूपमा सञ्चालनमा रहेको छ । यसलाई सर्वाधिकारसम्पन्न १२ सदस्यीय बीउ बैंक व्यवस्थापन समिति र सहकारीअन्तर्गतको बीउ बैंक सञ्चालन उपसमिति (५ महिला, ७ पुरुष) ले गर्दछ । यस बीउ बैंकमा २० जना साधारण सदस्यहरू (११ पुरुष, ९ महिला) छन् भने बीउ-उत्पादनका क्रियाकलापहरू १८० भन्दा बढी घरघुरीले गर्दै आएका

छन् । समितिको मासिक नियमित बैठक बसी बीउ बैंकका गतिविधिहरू, बीउ-उत्पादन, बिक्रीवितरणसम्बन्धी निर्णयहरू गर्नाका साथै बीउ पुँजी कोषको परिचालन र व्यवस्थापन पनि यसै समितिमार्फत हुने गरेको छ । बीउ बैंक सञ्चालन र व्यवस्थापनका लागि सहकारी र परियोजनाले महत्त्वपूर्ण भूमिका निर्वाह गर्दै आएको छ भने स्थानीय निकायहरू र सरकारले पनि साथ र सहयोग दिएका छन् । बीउ बैंक सञ्चालनका लागि आवश्यक पर्ने भौतिक, आर्थिक एवम् प्रविधिक स्रोत परियोजनामार्फत नै पूरा हुँदै आएको छ । यसमा सहकारी, गाउँपालिका र वडा कार्यालयहरूले पनि केही सहयोग गरेका छन् । बीउ बैंक सञ्चालनमा सहजता ल्याउन, कृषकहरूलाई व्यावसायिक र उनीहरूको आर्थिक स्रोतमा पहुँच बढाउने उद्देश्यले घुम्ती कोष (जैविक विविधता कोष) सञ्चालन गरीएको छ । यसको आम्दानीको केही प्रतिशत बीउ बैंक सञ्चालन खर्चमा उपयोग गरी यसको दिगोपनलाई टेवा पुऱ्याइएको छ । हाल यस कोषमा स्थानीय बाली परियोजनाका तर्फबाट उपलब्ध गराइएको रु ३,५०,०००/- रकम रहेको छ ।

कृषि जैविक विविधता संरक्षण

छिप्रा सामुदायिक बीउ बैंकले विभिन्न जैविक विविधता प्रदर्शनी स्थल तथा बीउ-उत्पादन स्थलहरूको व्यवस्थापन गरी ११ प्रकारका बालीहरूका ५१ थरी जातहरू संरक्षण गर्दै आएको छ । बीउ बैंकमार्फत स्थानीय बालीहरूको पासपोर्ट फाराम भर्ने काम सम्पन्न गरी यी बालीहरूसँग सम्बन्धित परम्परागत ज्ञानहरूको समेत अभिलेख राखिसकेको छ । सामुदायिक बीउ बैंक र व्यवस्थापन समितिले बालीहरूको अवस्था र आर्थिक स्रोतको उपलब्धता अनुसार संरक्षण गर्ने बाली र जातहरू आपसमा छलफल गरी छनोट गर्ने र उत्पादित बीउ निःशुल्क वितरण गर्ने गरेको छ । स्थानीय स्तरमा उपलब्ध भएसम्मका सबै स्थानीय बीउहरूको नमुना सङ्कलन गरी विविधता प्रदर्शनी गर्ने व्यवस्था मिलाइनाका साथै जानकारीमूलक लेख र पुस्तिकाहरूसमेत बीउ बैंकमा उपलब्ध गराइएका छन् ।

तालिका १ : छिप्रा सामुदायिक बीउ बैंकले संरक्षण गरिरहेका बाली र तिनका स्थानीय जातहरूको विवरण

क्र.सं.	बाली	जातका नामहरू	जातसंख्या
१	धान	काली मासी, जुडेरजौ धान ,धैनाले, कालो लुम्सेरो, रतनपुरे, थापाचिनी, खच्चे,नान धान	८
२	चिनो	दूधे ,कप्ताडे ,रातो ,कालो	४
३	कागुनो सिमी	कालो, पहेँलो , रातो , जुम्ली , लमजुडे	५
४		कालो (थाँक्रे), सेतो माले, कालो माले, डल्ले, पहेँलो, सेतो सानो , कालो लहरे ,घिउ सिमी , सेतो ठूलो	९
५	फापर	मीठे , तीते	२

क्र.सं.	बाली	जातका नामहरू	जातसंख्या
६	उवा	कुनालो , रातो , टाकुले, सोलु, मुडुले	५
७	गहुँ	पापै,भाब्री, पिप्लङ्गी	३
८	कोदो	कालो, तीनमासे, रातो, लाप्चे, रिउले, औले	६
९	मार्से	माल मार्से, ठाडो मार्से	२
१०	जौ	कालो, सेतो, लामरे	३
११	मकै	रातो, सेतो, मुरली, दूधे	४
	जम्मा		५१

बीउ-उत्पादन तथा बजारीकरण

छिप्रा सामुदायिक बीउ बैंकले आफ्नो स्थापनाकाल देखि २०७५ असारसम्ममा आइपुग्दा ३२४० के.जी बीउ (१२ बालिहरूका ६३ जातहरू) उत्पादन गरी १६०० घरधुरीहरू लाई बीउमार्फत सुविधा पुऱ्याइसकेको छ । स्थानीय जातलाई नै प्राथमिकतामा राख्दै यस बीउ बैंकले स्थानीय दूधे चिनोको बीउ-उत्पादन र बजारीकरणलाई विशेष ध्यान दिंदै आएको छ । मुख्य रूपमा यस बैंकमार्फत विक्रीका लागि सिमी, चिनो, लट्टे, कागुनो, फापर, कोदो, उवा आदिको बीउ-उत्पादन गर्दै आएको छ भने बजारीकरणका लागि स्थानीय कृषि सहकारी, एगो भेट लगायत ली-बर्डका विभिन्न परियोजनाहरूसँग सहकार्य गर्दै आएको छ ।

छिप्रा सामुदायिक बीउ बैंकले गरेका महत्त्वपूर्ण कार्यहरू :

- स्थानीय दूधे चिनोको संरक्षण, प्रवर्धनका साथै जात दर्ताप्रक्रियाका लागि पहल;
- कालो सिमी, दूधे चिनो, उवा, कागुनोको बीउ-उत्पादन गरी स्थानीय स्तरमा आयआर्जनको अवसरको सिर्जना;
- स्थानीय बालीहरूको संरक्षण र प्रवर्धनका लागि विभिन्न जनचेतनामूलक कार्यक्रमहरू सञ्चालन;
- स्थानीय बालीहरू जस्तै, लट्टे, उवा, सिमी, चिनो, फापर, कोदाका विभिन्न परिकारहरू बनाई खाद्य महोत्सवबाट स्थानीय बालीहरूको प्रवर्धनका साथै खाने बानीमा परिवर्तनको प्रयास;
- जैविक विविधता पाठशाला सञ्चालन गरी स्थानीय बीउ उत्पादक कृषकहरूको क्षमता वृद्धि, कृषिका विभिन्न समसामयिक विषयहरूमा छलफल तथा तालिम सञ्चालनका साथै महिला सशक्तीकरण ।

साभेदार सङ्घसंस्थाहरू

स्थानीय बाली परियोजनामार्फत बीउ बैंकका प्रमुख साभेदार संस्थाहरूमा ली-बर्ड, नार्क, बयोभर्सिटी इन्टरनेसनल तथा राष्ट्रिय जीन बैंक रहेका छन् । यी संस्थाहरूबाट भौतिक, आर्थिक तथा प्राविधिक सहयोगहरू प्राप्त हुँदै आएका छन् । स्थानीय स्तरमा स्थानीय सहकारीहरू, गाउँपालिका कार्यालय तथा वडा कार्यालयहरूले पनि सहयोगी भूमिका निर्वाह गर्दै आएका छन् । यसका अलावा, कृषि सेवा केन्द्र, जिल्ला कृषि कार्यालय आदिले समय-समयमा आ-आफ्नो क्षेत्रबाट सहयोग गरी साभेदार संस्थाको भूमिका निर्वाह गरेका छन् । यसै गरी, उत्पादित बीउ बिक्रीवितरणका क्रममा स्थानीय एग्रोभेट र अनमोल बीउ कम्पनीले पनि उल्लेख्य सहयोग र साथ दिएका छन् ।

समस्या र चुनौतीहरू

- व्यावसायिक बीउ-उत्पादनका लागि खेतीयोग्य जमिन कम, वर्षभरि नै खेती गर्नाका लागि अनुकूल वातावरण नहुनु र सडक सञ्जालसँग नजोडिएको जिल्ला भएकाले कम्जोर बजार पहुँच हुनु;
- स्थानीय लोपोन्मुख बाली र जातहरूको संरक्षणका क्रियाकलापका लागि पर्याप्त आर्थिक स्रोतको कमी हुनु;
- बीउ बैंकका सदस्यहरू र समुदायका मानिसहरूले पनि बीउ बैंकको दिगो सञ्चालनका लागि कम चासो दिनु;
- बीउ बैंकसम्बन्धी गतिविधिहरूमा स्थानीय सरकारले कम चासो दिनु र आफ्नो वार्षिक कार्यक्रममा समेत अरु कृषिका योजनाहरूभन्दा कम प्रथाकिमता राख्नु;
- व्यावसायिक बीउ-उत्पादनका लागि धेरै नै जोखिमयुक्त ठाउँ भएको र बाली बीमासम्बन्धी ज्ञान कम भएकाले कृषकहरूले जोखिम लिन नखोज्नु;
- बीउ बैंकको दिगो सञ्चालनका लागि प्राविधिक जनशक्तिको कमी हुनु ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

चारपाते सामुदायिक बीउ बैंक, मोरङ

छुमरु सरदार थारु

ग्रामथान गाउँपालिका १, लखन्तरी, मोरङ

परिचय

चारपाते सामुदायिक बीउ बैंक वि.सं. २०७२ (सन् २०१५) मा नारी विकास सङ्घमार्फत एक्सन एड नेपालको आर्थिक तथा प्राविधिक सहयोगमा ग्रामथान गाउँपालिका वडा नं. १, लखन्तरी, मोरङमा स्थापना भएको हो । यस बैंकले मोरङ जिल्लाको साबिकको लखन्तरी गा.वि.स. अर्न्तगतका वडाहरूबाट स्थानीय जातका बीउहरू सङ्कलन गरी संरक्षण गरिरहेको छ । यस बैंकले धान, कोदो, मकै आदि बालीहरूका स्थानीय जातहरू संरक्षणका अलावा सामुदायिक फिल्ड जीन बैंक स्थापना गरी तरुल, ओल र सखरखण्डजस्ता बालीहरूका पनि स्थानीय जातहरू संरक्षण गर्दै आएको छ । यस संस्थाले भविष्यमा अन्य स्थानीय जातका बालीहरूको खोज तथा सङ्कलन गरी फिल्ड जीन बैंकलाई थप व्यवस्थित र सुधार गर्दै जाने लक्ष्य लिएको छ । यहाँको हावापानी र भौगोलिक अवस्था अनुसारका थप बाली तथा स्थानीय जातहरूको बीउ संरक्षण र विकास गर्ने लक्ष्य यस संस्थाको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

चारपाते सामुदायिक बीउ बैंक चारपाते कृषि सहकारी संस्था लि. र शिवपार्वती कृषक समूहको पहलमा स्थापना भएको हो । यसको सञ्चालक समितिमा शिवपार्वती कृषक समूह र चारपाते कृषि सहकारी संस्थाले सिफारिस गरी पठाएका ११ जना प्रतिनिधि रहने व्यवस्था गरिएको छ । हाल यस समितिमा महिला ९ जना र पुरुष २ जना रहेका छन् । शिवपार्वती कृषक समूहमा महिला २० जना, पुरुष १० जना गरी ३० जना र चारपाते कृषि सहकारी संस्था लि. मा महिला ६० र पुरुष २५ जना गरी जम्मा ८५ जना सदस्य रहेका छन् । चारपाते सामुदायिक बीउ बैंक व्यवस्थापन समितिको बैठकको निर्णय अनुसार स्थानीय जातका बीउहरूको पहिचान, संरक्षण, संवर्धन र गुणस्तरीय बीउ-उत्पादनका लागि विभिन्न निकायहरूसँग परामर्श, सल्लाह र समन्वय गरी सामुदायिक बीउ बैंकको सञ्चालन गरिदै आइएको छ ।

संरक्षण

चारपाते सामुदायिक बीउ बैंकले धानका १२ जात र विभिन्न तरकारीबालीहरूका ३२ गरी ४४ वटा स्थानीय जातको बीउ संरक्षण गरेको छ (तालिका १) ।

तालिका १: चारपाते सामुदायिक बीउ बैंकले संरक्षण गरेका बाली तथा स्थानीय जातहरूको विवरण

क्र.सं.	बाली	जातको नाम तथा सङ्ख्या	जातसङ्ख्या
१	धान	मधुवा, करिया कमोध, चैगोल, जिरासारी, अनदी, बिरमफूल, छतराज, खैरो बासमती, रातो बासमती, कालो बासमती, कुजी चनाचुर, घिउपुरी	१२
२	मकै	सठिया	१
३	कोदो	मुठिया, औला, सेतो दाना	३
४	जौ	जौ	१
५	भटमास	भटमास	१
६	मास	मास	१
७	मुसुरो	खैरो मुसुरो, कालो मुसुरो	३
८	खेसरी	खेसरी	१
९	रहर	रहर	१
१०	गहत	कुर्थी	१
११	बोडी	बोडी	१
१२	सिमी	बटोरिया, हात्तीकाने, हात्तीदन्ते	३
१३	बकुलासिमी	बकुलासिमी	१
१४	भिङ्गनी	भिङ्गनी	१
१५	घिरौला	घिरौला	१
१६	तीतेकरेला	तीतेकरेला	१
१८	लौका	लौका	१
१९	भिण्डी	भिण्डी	१
२०	फर्सी	फर्सी	१
२१	पालुङ्गो	पालुङ्गो	१
२२	बैगन	बैगन	१
२३	आलु	सठिया	१
२४	ओल	ओल	१
२५	लसुन	लसुन	१
२६	तोरी	तोरी	१
२७	सस्यौँ	सस्यौँ	१
२८	तिल	तिल	१
	जम्मा		४४

बीउ-उत्पादन र बजारीकरण

स्थानीय जातका बीउको संरक्षणका अतिरिक्त चारपाते सामुदायिक बीउ बैंकले उन्नत जातका धानको पनि बीउ-उत्पादन कार्यको थालनी गरेको छ । यस आ.व. २०७५/७६ मा ग्रामथान गाउँपालिकाको आर्थिक सहयोगमा प्रधानमन्त्री कृषि आधुनिकीकरण परियोजनाअन्तर्गत १० हेक्टर जमिनमा बासमती र रन्जित धानको बीउ-उत्पादनका लागि खेती गरिएको छ ।

साभेदार सरकारी, सङ्घ-संस्थाहरू

चारपाते सामुदायिक बीउ बैंक स्थापना तथा व्यवस्थापनका लागि नारी विकास सङ्घ, वर्ल्ड भिजन, एक्सन एड इन्टरनेशनल नेपाल, एम.डी.एम.एस. नेपाल, ग्रामथान गाउँपालिका वडा कार्यालय १ नं. लखन्तरी, ग्रामथान गाउँपालिका तेतरिया मोरङको मुख्य सहयोग रहेको छ । साथै विभिन्न स्थानीय सहकारीहरू, तत्कालीन जिल्ला विकास समिति मोरङ, जिल्ला कृषि विकास कार्यालय मोरङ र सभासद क्षेत्र विकास कोष मोरङले पनि चारपाते सामुदायिक बीउ बैंकका लागि सहयोग गरेका छन् ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernoooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

चेपेमर्स्याङ्दी सामुदायिक बीउ बैंक तथा सामुदायिक फिल्ड जीन बैंक

मोहन हमाल

राईनास नगरपालिका ४, सातबिसे, लमजुङ

पृष्ठभूमि

राईनास नगरपालिका, सातबिसे, प्रदेश नं. ४ गण्डकी प्रदेश, लमजुङ जिल्लाको क्षेत्र नं. १ मा पर्ने पूर्वी लमजुङको दक्षिणमा गोरखा, पश्चिममा तनहुँ, चेपे र मर्स्याङ्दीको काखमा रहेको द्रव्य शाह र नरहरि शाहबीचको भगडा हुने तथा आमा वसन्तावतीले दाजुभाई भगडा नगरी बस्नका लागि चेपे नदीमा आफ्नो स्तन चोपली दूधको धारा बगाउने मिलन विन्दुका नामले प्रख्यात नेपाल एकीकरण अभियानका अभियन्ता सरदार भक्ति थापाको कर्मभूमि पनि हो ।

राईनास नगरपालिका वडा नं. ४, सातबिसे, लमजुङमा २०७२ साल पौष १८ गते चेपेमर्स्याङ्दी सामुदायिक बीउ बैंकको स्थापना भएको हो । यस जिल्लामा जनचेतना अभिवृद्धि र विकास अध्ययन समिति (COPPADES) ले विगत २५ वर्ष अगाडिदेखि स्थापना भएको लमजुङको अग्रणी संस्थालाई अन्तर्राष्ट्रिय गैरसरकारी संस्था लुथरन वर्ल्ड रिलिफ (LWR) ले विगत १० वर्षदेखि आर्थिक तथा प्राविधिक क्षेत्रमा सहयोग पुऱ्याउँदै आइरहेको छ । हाल उक्त संस्थाको सहयोगमा नगरपालिकाका १० वटा वडा र दूधपोखरी गाउँपालिकाका ६ वटा वडाहरूमा उक्त परियोजनाले जीवीकोपार्जन विपत व्यवस्थापन सरसफाइमा दूरदराजका समुदायसँग COPPADES/LWR छ र राईनास नगरपालिका र दूधपोखरी गाउँपालिकासँग एक आपसमा साभेदारी रूपमा कार्यक्रमहरू सञ्चालन गरिरहेको छ । यसै सिलसिलामा जनहित कफी तथा कृषि सहकारी संस्थासंग हातेमालो गर्दै काम गर्ने सिलसिलामा समुद्री सतहबाट ४०० मिटरदेखि २००० मिटर उच्चाइसम्म भएका सम्म टार बेसी खोंच ८ मध्यपहाडी क्षेत्रहरू पर्दछन् । उक्त क्षेत्रमा कृषि जैविक विविधताको प्रचुर सम्भावना भएर पनि क्रमिक रूपमा लोप भएर गइरहेको बिग्रँदो अवस्थामा यसलाई संरक्षण गर्ने प्रवर्द्धन गर्ने उद्देश्यले COPPADES/LWR र जनहित सहकारी संस्थाको पहलमा सबै

क्षेत्रलाई समेट्ने गरी बीउ मेलाको अयोजना गरिएको थियो । यस मेलामा ल्याइएका ४५ बालीका (धान, गहुँ, मकै, फापर, कोदो, कागुनो र विभिन्न तरकारीकाबाली) र तिनका ३५५ जातहरू बीउ बैंकमा अभिलेखीकरण गरी राखिएका छन् (तालिका १) । उक्त बीउ बैंक एक समिति बनाई सञ्चालन गरिएको छ । सामुदायिक बीउ बैंक कार्यकारी समितिमा जम्मा १७ सदस्य छन्, जसमा ४ जना महिला छन् । यस सामुदायिक बीउ बैंकले राष्ट्रिय समन्वय समितिको सदस्यता ग्रहण पनि गरिसकेकोछ ।

यसै सिलसिलामा यो बीउ बैंकलाई एकदिने अन्तरक्रिया कार्यक्रम राष्ट्रिय कृषि आनुवांशिक स्रोत केन्द्र (जीन बैंक) खुमलटार र बायोभरसिटि इन्टरनेशनलबाट सञ्चालन गरिएको थियो । उक्त कार्यक्रमबाट बीउबिजन सुरक्षित भण्डारणका लागि प्लाष्टिकका बट्टाहरू, बीउ-उत्पादनका लागि भुल नेट र स्टेशनरी प्राप्त भएका थिए । उक्त कार्यक्रमबाट सामुदायिक बीउ बैंक स्थापना र सञ्चालन गर्न निकै हौसला मिलेको थियो ।

तालिका १. सामुदायिक बीउ बैंकमा संरक्षित बाली र स्थानीय जातहरू

क्र.सं.	बाली	जातहरू	जातसङ्ख्या
१	धान	दरमाली, थकाली मार्सी, आँपभुत्ते, थकोली, अनदी, सोमरा, मर्सी धान, लेकाली अनदी, पहेलो फिनुवा, चिउरे धैया, गौरे, इन्द्रवेली, चार, लोकल, जेठो बूढो, विरल, चेतो, रातो अनदी, फिनुवा, रमनी, कन्चन, सावित्री स्थानीय, कालोवा, कुँडले, थकाली लहरे, ठूलो गेडे, गो ले, मसिनो उल्ले धान, मानुमुरे, ज्यामकके, सुनौलो सुंगन्ध, कातिके, आँगा, ठूलो फिनुवा, कृष्ण, पोखेसाली, एक्ले मार्सी, आइती मन्सुली, पुरानो मसिनो, जम्री, कालो मसिनो, वास आउने अनदी, जेठो बुढो, सेनो अनदी, कोइली, पुरानो लहरे, आँगा मसिनो बासमती	५२
२	मकै	पुरानो सेतो, सेतो, देउली पोपिलो, सानो सठिया तल्लो सुनौलो, पहेलो, ६० दिने, रातो मुरली, सठिया सानो माथिल्लो, सठिया पहेलो, पहेलो पुरानो मुरली पहेलो ठूलो सुनौलो, जुनेलो, थाप्ला कुच्चे, सेतो लोकल, सेतो सठिया, मुरली मसिनो, जुनेली, रातो जुनेलो, सठिया गरिडाँडे दिडे	२२
३	गहुँ	रातो, लोकल, सेतो, रैथाने, पहेलो रातो मुडुले	६
४	कोदो	पाउँदुरे, मसिरे, सानो, असार, मुडके, उल्ले, सेतो, मकवानपुर, लामो केसे, लला, नडग्रे, कालो, पुरानो पाउदुरे, कार्तिक, सेतो ज्वाई, चम्रे	१६

क्र.सं.	बाली	जातहरू	जातसङ्ख्या
५	फापर	तीते फापर मीठे फापर	२
६	जौ	टुँडे, कुँडे मोटे जौ	३
	भट्ट	कालो, सेतो, चिनियाँ, गोलो, सानो मसिना कार्तिक, ठूलो गेडे स्थानीय पहेलो पुरानो माईली खैरो, सानो स्थानीय कैलो मसाने, चिने	१४
८	बोडी	सेतो, कालोवाडी खैरो तने, रातो खेस्टे बोडी मकै, वोसे बोडी, बोडी (रातो) कार्तिके, लोककल सिनके, कोताङ, स्थानीय लोककल गाजले, लहरे, वरेव, लट्टे, लामो,कैलो वोसे (कालो)	१८
९	तिल	कालो, पहेलो, मिट्टे, भस्से, खैरो	५
१०	मस्याङ	ठूलो मस्याङ, लोकल मस्याङ, ठूलो रातो, ठूलो स्थानीय, खैरो ठूलो मस्याङ, पहेलो मस्याङ,सानो कालो मस्याङ, खैरो कालो मस्याङ, पहेलो ठूलो, जातथे मस्याङ, छिरविरे मस्याङ	११
११	भिन्डी	रामतोरिया ठूलो भिन्डी लोकल भिन्डी ठूलो सेतो लोककल, स्थानीय चिन्ले भिन्डी	५
१२	मास	कालो मास , चिली मास, कालो गेडी मास	३
१३	कपास	स्थानीय रैथाने लोकल	१
१४	सिलाम	कालो सिलाम खैरो सिलाम	२
१५	चिचिण्डे	स्थानीय	१
१६	रहर	स्थानीय सेतो	१
१७	काक्रो	हरियो काक्रो, सेतो धर्से, रिवर काक्रो	३
१८	गहत	खैरो कालो गहत, स्थानीय कालो गहत	२
१९	रायो	रायो हरियो, ठूलोपाते, सुर्तिपाते , हात्तीकाने	४
२०.	मुसुरो	स्थानीय साने	१
२१	तोरी	लोकल तोरी, काउली तोरी, कालो तोरी, ठूलो गेडी, रातो तोरी	५
२२	केराउ	ठूलो हरियो कोसे, केराउ सेतो, सानो केराउ, मसिनो केराउ	४
२३	पालुङगो	कोड पालुङगो	१
२४	सामा	सेतो , खैरो सामा, लोकल, स्थानीय	४
२५	वकुल्ला	कालो खैरो, वकुल्ला ठूलो, वकुल्ला सानो	३
२६	कागुनो	कालो कागुनो ,पहेलो कागुनो खैरो कागुनो ,स्थानीय	४
२७	फर्सी	स्थानीय लाम्बो डल्ले फर्सी ठूलो , उल्ले लोकल स्थानीय लोकल उल्ले मादले फर्सी लाम्बे मादले	७

क्र.सं.	बाली	जातहरू	जातसङ्ख्या
२८	सिमी	घिउ सिमी सरते सिमी, टाटे सीमी हिँउदे सिमी लहरे, पाटे सेतो सिमी मसिनो खैरो रातो वाख्रे सिमी	८
२९	लौका	मादले स्थानीय	१
३०	राजमा	रातो राजमा सेतो राजमा स्थानीय	२
३१	धनियौं	स्थानीय	१
३२	मूला	डोडे मूला ठूलो मूला, लोकल गाउले	३
३३	खुर्सानी	अकबरे, लोकल, अकबरे लामो, डल्ले खुर्सानी, कैलो खुर्सानी, जिरे खुर्सानी, तीखे खुर्सानी	६
३४	संर्स्यू	पहेलो स्थानीय, मसिनो, पहेलो लोकल संर्स्यू ठूलो संर्स्यू स्थानीय छोटो, स्थानीय चिल्लो, बुदुले कालो लोक्कल	६
३५	घिरौला	तिराही घिरौला, घिरौला छोटो, लहरे, वास आउने घिरौला	८

मुख्य क्रियाकलापहरू

- संरक्षक कृषक पहिचान गर्ने र पुरस्कृत गरी प्रतिकृषक १ सुपर ग्रेन ब्याग सहयोग गर्ने । कृषकले कम्तीमा ४५ रैथाने जातहरू संरक्षण गरेको;
- चार वर्ग विश्लेषण गर्ने र लोपोन्मुख बाली जात संरक्षण गर्ने काम गरेको, (जस्तै कोइली धान);
- ४९ जना कृषकलाई कागुनो बालीको बीउ वितरण र बीउ-उत्पादन गर्न प्रोत्साहित गरेको;
- ११ जातको कोदोबालीको विविधता किट १५ जना कृषकलाई वितरण गरिएको;
- १५ जातको सिमीबालीको विविधता किट १० जना कृषकलाई वितरण गरिएको;
- ६० जना कृषकलाई रायो, सिमी, मुसुरो, करु जातहरू वितरण गरिएको;
- ६० जना कृषकलाई जैविक विविधता सम्बन्धी अन्तरक्रिया सञ्चालन गरेको;
- तोरी बालीमा सहभागितामूलक बाली छनोट कार्यक्रम तीन ठाँउमा सञ्चालन गरेको;
- ली-वर्ड अन्तर्गत घनपोखरा लमजुडबाट धान र कोदाको बीउ साटासाट कार्यक्रम सञ्चालनबाट ८० जना कृषक लाभान्वित भएका;
- ४० जना कृषकहरूलाई १ दिने सामुदायिक बीउ बैंक अन्तरक्रिया तथा तालिमको कार्यक्रम सञ्चालन गरिएको ।

सहयोगी हातहरू

- जनचेतना अभिवृद्धि र विकास अध्ययन समिति लमजुडबाट रु १,००,०००।
घुम्ती कोषको रूपमा, बीउ न्याक स्थापनाको लागि रु ४०,०००।, बीउ राख्ने

वट्टा सामग्री सहयोग रु ५०,०००।, ५ वटा सिडबिनको लागि रु २०,०००।, २ वटा त्रिपालको लागि रु ३,००० र ३० थान सुपर ग्रेन ब्यागको लागि रु ३८००।

- राष्ट्रिय जीन बैंक, खुमलटार र बायोभरसिटी इन्टरनेशनलबाट रु ४०,०००। बराबरका बीउ रख्ने बट्टाहरू, विभिन्न ठाउँ र भूकम्प प्रभावित क्षेत्रहरूबाट स्थानीय जात सङ्कलनमा सहयोग, जीन बैंकमा संरक्षित विभिन्न बालीको बीउहरू । राष्ट्रिय जीन बैंक को सहयोगमा यी जातहरूलाई rootstock को रूपमा लिन सकिन्छ के भनेर अनुसन्धान पनि भइरहेको छ ।
- राष्ट्रिय जीन बैंकबाट रु ३०,०००। सहयोग प्राप्त भई फिल्ड जीन बैंकमा रहेको सबै बोटको गुणसहित लेबल गरिएको ।
- बीउ बैंकलाई अगाडि बढाउने क्रियाकलापमा विशेष गरी जनचेतना अभिवृद्धि र विकास अध्ययन समिति, लमजुङ जीन बैंक, खुमलटार र वायोभरसिटी इन्टरनेशनल को विशेष भूमिका रहेको छ । उक्त संस्थाहरूबाट यस बीउ बैंकको प्रगति तथा अनुगमनका सथै आर्थिक एवम् प्रविधिक सहयोग प्राप्त हुँदै आएको छ । सोका लागि समन्वयात्मक भूमिका बीउ बैंकका अध्यक्ष श्री मोहन हमालले पुऱ्याउँदै आउनुभएको छ ।

सामुदायिक फिल्ड जीन बैंक

पुर्खाहरूले स्थापना गरेका आँपका पुरानो बगैँचाहरू विभिन्न कारणले ह्रास हुँदै गइरहेकाले आनुवंशिक स्रोतहरू नष्ट भइरहेका अवस्थामा, सामुदायिक फिल्ड जीन बैंक तथा आँपको पुरानो बगैँचालाई जोगाउने काम डा. बालकृष्ण जोशीको सुझाउ र सौचबाट शुस्भएको हो । यसै सिलसिलामा डा. बालकृष्ण जोशीबाट बीउ नै उत्पादन नहुने र बीउ-उत्पादन भए पनि सुकाएर राख्न नसकिने बालीहरूलाई यथास्थान फिल्डमा नै संरक्षणका लागि फिल्ड जीन बैंक स्थापना गर्नुपर्दछ भन्ने सल्लाह अनुसार राईनास नगरपालिकाको वडा नं. ३ स्थित टिमुरेमा विशेष गरेर आँपको पुरानो बगैँचाको संरक्षण गरी विभिन्न जातका १८ वटा आँपहरूको चारित्रिक गुणहरूबारेमा छलफल गरी यथास्थानमा संरक्षण गर्ने कार्य समेत भएको छ (तालिका ३) । भविष्यमा यस फिल्ड जीन बैंकभित्र अन्य बीउ नहुने खालका बाली र जातलाई समेत समायोजन गरी संरक्षित गर्ने कार्यक्रम रहेको छ । यसमा सहयोग पुऱ्याउनुहुने अन्य विज्ञहरूमा डा. देवेन्द्र गौचन र कृष्णहरि घिमिरे हुनुहुन्छ । दीपा सिंह श्रेष्ठ र डा. टेकप्रसाद गोतामैले उक्त फिल्ड जीन बैंकको पुराना बूढा आँपका रूखबाट नयाँ बोट सृजना गर्ने र आनुवंशिक स्रोतलाई संरक्षण गर्न परवानीपुर कृषि अनुसन्धान केन्द्रमा आँपका पुराना बोटबाट हागाहरू छनोट गरी ग्राफिटड गरेर संरक्षण गर्ने कार्य पनि शुरू भएको छ ।

टिमुरे गाउँमाथि रहेको करिब ८ रोपनीमा फैलिएको र २०० बर्षभन्दा बढी पुरानो यो आँपको बगैचाले २०११ सालको बाढीपहिरोलाई रोकेर गाउँ बचाएकाले पनि यसको विशेष महत्त्व रहेको छ । साथै यही बगैचामा २०१५ सालको चुनाव पनि भएको थियो । यसको अर्को विशेषता भनेको एउटा बोटमा अर्को आँपको हाँगा भाँचिएर जोडिएको छ र उक्त बोटमा दुई थरीका आँप फल्छन् । यस्तो बूढो बोट पनि यसरी कलमी भएको अवस्था छ भने अर्को एकै ठाउँबाट दुईवटा भिन्न आँपका बोट देखिन्छन् ।

बीउ नै उत्पादन नहुने बालीहरू तथा बीउ-उत्पादन भए पनि सुकाएर धेरै राख्न नसकिने जस्तै, आलु, सुन्तला, तरुल, केरा, आँप, पिडालु, मेवा, इस्कुस आदि दीर्घकालीन रूपमा संरक्षण गर्नका लागि तिनीहरूलाई फिल्डमा नै लगाइरहनुपर्दछ । यस्ता किसिमका बालीहरूलाई कम लगानीमा समुदायले फिल्डमा लगाई संरक्षण गर्ने बैंक नै फिल्ड जीन बैंक हो ।

उद्देश्यहरू

- बीउ-उत्पादन नहुने वा भए पनि बीउलाई सुकाएर संरक्षण गर्न नसकिने स्थानीय जातको संरक्षण गर्नु;
- स्थानीय स्तरमा पाइने उक्त बालीका जातहरूको अध्ययन अनुसन्धान गर्ने;
- गुण अवगुणहरूको अवलोकन गरी अभिलेख राख्ने ।

सामुदायिक फिल्ड जीन बैंक सञ्चालनका लागि एक उपसमिति गठन गरिएको छ । उक्त समितिमा जम्मा १३ जना सदस्य छन्, जसमा ६ जना महिला रहेका छन् । यो समिति मिति २०७५/०४/१९ मा गठन भएको हो र यस समितिले टिमुरे बगैचा र टापू बगैचालाई व्यवस्थापन गर्ने लक्ष्य लिएको छ । टापू बगैचामा आँपको करिब १० जात २५ रोपनीमा फैलिएका छन् ।

तालिका ३. आँपको पुरानो बगैँचामा रहेका आँपका जात र तिनका विशेष गुणहरू

क्र.सं.	जात	गुणहरू
१	रातो टाउके	टाउको र भेटनुवरिपरि रातो हुने, फल मध्यम आकार, कीरा कम लाग्ने, फाल्गुनमा फुल्ने, असारमा पाक्ने, छिटो पाक्ने र दाना भर्ने
२	जुरेली	टाउकामा जुरो हुने, पाक्दा पहेंलो हुने, फोस्रो बढी, खाँदा दाँतमा अड्कने, खाँदा मीठो, बाक्लो फल्ने
३	कट्बिडे	लामो सानो चुचो फल, कोया ठूलो, गुदी कम, खाँदा मीठो, हँगामा भुप्य भई फल्ने र नभर्ने
४	मोही आँप	कीरा बढी लाग्ने, पातलो फल्ने, खाँदा मोही जस्तैवासना आउने, सानो फल्ने, हरियो रङ मा नै पाक्ने
५	तल्लो मिठाई	खाँदा अत्यन्त मीठो हुने, टाउकोमा मिठाई जस्तै हुने, कीरा बढी लाग्ने, काँचैमा बढी भर्ने
६	उपल्लो मिठाई	कीरा नलाग्ने, सर्लक्क परेको, पाक्दा हरियो हुने, धेरै गुलियो, अगौटे, जेठमा पाक्ने
७	कटहरे	कटहरका जस्तो दाना हुने, पाक्दा हरियो र पहेंलो हुने, खाँदा कटहर जस्तै स्वाद आउने, फल लामो समयसम्म रहने, कीरा कम लाग्ने
८	गन्हाउने	खाँदा गन्हाउने, परपराउने, कीरा नलाग्ने, फल भाद्र महिनासम्म रहने
९	बम्बे	ठूलो फल, फलको आकार फर्सी जस्तो, सबैभन्दा ठूलो फल, गुदी धेरै कोया सानो, खाँदा अमिलोपन आउने
१०	काली	लाम्बो र ठूलो फल, अमिलो हुने
११	सानो लहरे	पाक्दा पहेंलो हुने लहरा जस्तै भई फल्ने, रस बढी, कम गुलियो
१२	कर्कले	बढी भर्ने, भरेपछि फुटिहाल्ने, गुदी धेरै खाँदिलो हुने, स्वाद ठिक्क कर्कलो जस्तै
१३	सेती	दाना खरानी जस्तै सेतो हुने, बढी भर्ने, कीरा कम लाग्ने, मध्यम आकारको, स्वादिलो
१४	जगते	दाना सानो, पातलो फल्ने, खाँदा मीठो, पाक्दा हरियो हुने, रेसा बढी
१५	ठूलो काली	हरियैमा पाक्ने, बोक्रा बाक्लो, रसिलो, गुदी कम, खाँदा फ्रुटीको जस्तो स्वाद आउने, कीरा नलाग्ने, फल लामो समयसम्म रहने
१६	ठूलो लोहरे	लोहरो जस्तो फल फल्ने, ठूलो दाना, भेटनामा रातो, कीरा नलाग्ने, गुदी र गुलियो बढी हुने
१७	सुपारे	दाना सुपारीजस्तै हुने, भुप्य फल्ने, गुदीमा रेसा बढी हुने
१८	सिन्दूरे	टाउकोमा सिन्दूर जस्तै टीका हुने, हरियैमा पाक्ने, ठिक्क मीठो, बाक्लो भुप्य फल्ने, चाँडै पाक्ने

यो लेख डा. बालकृष्ण जोशीको सहयोगमा तयार गरिएको हो ।

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Community Seed Bank in Nepal (BK Joshi, P Shrestha, D Gauchan and R Vernoooy, eds). Proceedings of the 2nd National Workshop, Kathmandu. NAGRC, LI-BIRD and Bioversity International.

दलचोकी सामुदायिक बीउ बैंक, ललितपुर

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परिचय

दलचोकी सामुदायिक बीउ बैंक २०५२ (१९९४) सालमा यू.एस.सी. (USC). क्यानाडा नेपालको आर्थिक तथा प्राविधिक सहयोगमा ललितपुर जिल्लाको दलचोकीमा स्थापना भएको हो । यो नेपालको पहिलो सामुदायिक बीउ बैंक हो (Joshi 2012, Bhandari et al 2012). यसको शुर्वातमा नै १६ टन बीउ भण्डारण गर्न सकिने क्षमतासहितको अण्डर ग्राउण्ड कोठा, कार्यालय कोठा, आवास कोठा, तालिम हल, लगायतका संरचना तयार गरी सञ्चालन गरीएको थियो । यस बैंकले ललितपुर जिल्लाको साबिकको दलचोकी, नल्लु, भारदेउ, चौघरे, घुसेल, सङ्खु र इकुडोल गा.वि.स. हरूमा पाइने स्थानीय जातका बीउहरूको संरक्षण, संवर्धन र विकासका लागि तालिम, गोष्ठी, भ्रमण आदि कार्यक्रमहरू निरन्तर सञ्चालन गरिरहेको छ । साथै समय-समयमा स्थानीय जातका बीउ प्रदर्शन कार्यक्रम सञ्चालन गर्दै आएको छ । कृषक-कृषकबीच अनुभवको साटासाट, बीउको महत्त्व, सङ्कलन र वितरण हुने हुँदा समय-समयमा स्थानीय जातका बीउ प्रदर्शन कार्यक्रम सञ्चालन गर्दै आएको छ । यसले राष्ट्रिय जीन बैंक तथा साहस (SAHAS) नेपालको आर्थिक तथा प्राविधिक सहयोगमा स्थानीय जातको गुजुमुजे र डुडे रायो, राष्ट्रिय बीउबिजन समितिअन्तर्गत बीउबिजन गुणस्तर नियन्त्रण केन्द्रमा दर्ता पनि गरेको छ । यी जातहरू समुद्रसतहबाट १५०० देखि २३०० मिटर उचाइसम्मका भूभागहरूमा सफलतापूर्वक उत्पादन भइरहेका छन् । यो सामुदायिक बीउ बैंकले सामुदायिक फिल्ड जीन बैंकको अवधारणामा आधारित भएर तरुल, पिंडालु, सखरखण्ड, इस्कूस, भुईँँस्याउजस्ता बालीहरूको स्थानीय जातहरूको पनि संरक्षण गर्दै आएको छ । भविष्यमा अन्य बालीहरूका स्थानीय जातहरूको पनि खोजी तथा सङ्कलन गरी फिल्ड जीन बैंकलाई थप व्यवस्थित र सुधार गर्दै जाने लक्ष्य लिएको छ । भौगोलिक विविधतासहितको रमणीय स्थलमा यो बीउ बैंक भएकाले ललितपुर जिल्लाको दक्षिणी भेग दलचोकी केही वर्षदेखि कृषि पर्यटक र कलेजका विद्यार्थीहरूको गन्तव्य स्थल हुँदै आएको छ ।

सञ्चालन तथा व्यवस्थापनप्रक्रिया

दलचोकी सामुदायिक बीउ बैंक दलचोकी सामुदायिक विकास समितिको पहलमा जिल्ला कृषि विकास कार्यालय, ललितपुरमा विधिवत रूपमा दर्ता भएका कृषक समूहहरू र अन्य सामुदायिक सङ्घसंस्थाहरूको संयुक्त प्रयासबाट स्थापना भएको हो । यस बैंकको सञ्चालक समितिमा, मिलिजुली सामुदायिक कृषक समूह, लालुपाते कृषक समूह, चिसापानी सामुदायिक कृषक समूह, सुनगाभा सामुदायिक कृषक समूह, मनकामना महिला कृषक समूह, जनएकता सामुदायिक कृषक समूह, सिमलबोट सामुदायिक कृषक समूह, थानापति तोरी उत्पादक पकेट सञ्चालक समिति र डिभिजन सहकारी कार्यालय ललितपुरमा दर्ता भएका दलचोकी प्राङ्गारिक कृषि सहकारी र मखमली महिला कृषि सहकारी समेतले सिफारिस गरी पठाएका प्रतिनिधि र दलचोकी सामुदायिक विकास समितिका ३ जना प्रतिनिधिसमेत गरी १३ जना रहेका छन् । यी समूह तथा सहकारीहरूमा ४९२ जना महिला र १४१ जना पुरुष गरी ६३३ जना सदस्यहरूको आबद्धता रहेको छ भने १३ जनाको सामुदायिक बीउ बैंक व्यवस्थापन समितिमा ५ जना महिला र ८ पुरुष रहेका छन् ।

सामुदायिक बीउ बैंक सञ्चालक समितिले बैठकको छलफलबाट स्थानीय जातका बीउहरूको संरक्षण, संवर्धन, गुणस्तर सुधारका लागि सम्बन्धित निकायहरूमा परामर्श, सल्लाह, सुझाव र समन्वय गरी सामुदायिक बीउ बैंक सञ्चालन गर्दै आएको छ । साथै नयाँ अवधारणाको विकास गर्दै सामुदायिक बीउ बैंकलाई व्यवस्थित गर्दै जाने लक्ष्य लिएको छ ।

संरक्षण

दलचोकी सामुदायिक बीउ बैंकमा ६ वटा अन्नबालीका ४३ जात, ९ वटा दलहनबालीका ४९ जात, १५ किसिमका तरकारीबालीका ८० जात, मसलाबालीका ७ जात, ५ वटा तेलहनबालीका १६ जात र १७ जातका बीउहरूको नमुना राखिएका छन् (तालिका १) । यस बीउ बैंकले सिफारिस गरी दर्ता भएका जातहरू गुजमुजे, डुडे रायो, मनकामना ३, देउती ३ को सङ्कलन र वितरण गर्दछ । अन्य रैथाने जातका बीउहरू बैंकमा लामो समयसम्म संरक्षण गरिराख्न प्रविधिहरू नहुँदा यस क्षेत्रमा पाइने बालीहरूको नमुना बीउ बैंकमा पनि राखिन्छ । कृषकहरूसँग पनि त्यस जातका बीउहरू छन् भन्ने जानकारी दिनका लागि नमुना बीउ पनि राखिन्छ । साथै सामुदायिक फिल्ड जीन बैंकमा कफी, इस्कुस, तरुल र पिडालुजस्ता बालीहरूको संरक्षण गरीएको छ । तालिका १ मा उल्लेख भएका विभिन्न बालीहरूमध्ये १०० भन्दा बढी स्थानीय जातहरू राष्ट्रिय जीन बैंक, खुमलटारमा परस्थानीय संरक्षणका लागि पासपोर्ट डाटासमेत भरी पठाइसकिएको छ ।

बीउ-उत्पादन तथा बजारीकरण

स्थानीय जातका बालीहरूको संरक्षणका अतिरिक्त यस बैकमा मकैका मनकामना ३, देउती ३, गणेश १ र तोरीका प्रीति र विकास जातका नमुना बीउहरू पनि सुरक्षित रहेका छन् । यस बैकले अन्य सामुदायिक बीउ बैकहरूले जस्तै वर्णसङ्कर अर्थात् हाइब्रिड जातका बीउहरूको कारोवार गर्दैन ।

तालिका १. सामुदायिक बीउ बैकमा संरक्षित बाली र जातहरू

क.सं.	बाली	जातको नाम	जातसङ्ख्या
१	धान	बउटे, टाइचिन, मसिनो, पोखरेली, सुक्खा २, खुमल ४, कालो, भोजपुरे, खुमल ८	९
२	मकै	गोल्कु छेपारे, कालो, बजाडे, रातो, पुतली, पानी, गणेश १, मनकामना३, देउती ३, बेबरे, मुरली	१२
३	कोदो	काभ्रे, ज्वाइँ, बगने, नङ्ग्रे, केस्रे, धान, डल्ले पहेँले, स्थानीय सेतो, साउने रातो, कालो, दूधे,	११
४	गहुँ	मुडुले,आर २१	२
५	फापर	तीते, मीठे	२
६	जौ	सेतो, कालो	२
७	मस्याङ	रातो, सेतो	२
८	गुराँस	रातो, सेतो	२
९	मुसुरो	कालो, रातो	२
१०	भटमास	हरियो, सेतो, खैरो, सठिया, ठूलो खैरो, कालो, सेतो कान्छी	७
११	गहत	सेतो, कैलो	२
१२	बोडी	खैरो, तुने, कालो, ठूलो	४
१३	सिमी	नगरकोटे, सेतो, चौमासे कालो,असारे कैलो,कपलानी पहेँलो, चरीफूले, कात्तिके, रातो छिरबिरे, राजमा, घिउ	१०
१४	केराउ	आरकेल, गाजले, स्थानीय ठूलो, स्थानीय सानो, सिक्किमे, ठूलो, सानो फलामे,	७
१५	बकुल्ला	ठूलो, सानो	२
१६	रायो	गुजमुज्जे, डुडे, काँडे, मार्फा,	४
१७	घिरौला	हरियो लामो, फिक्का हरियो सेतो, छोटो	३
१८	गोलभेंडा	लप्सी गोलभेंडा, स्थानीय	२
१९	मूला	रातो, सेतो	२
२०	तीतेकरेला	सानो, ठूलो	२
२१	रामतोरिया	लामो, छोटो	२
२२	लौका	गोलो, लामो	२

क.सं.	बाली	जातको नाम	जातसङ्ख्या
२३	काँको	भक्तपुरे, दलचोकी स्थानीय	२
२४	फर्सी	लेकाली सेतो, हरियो, छिरबिरे लामो	३
२५	बरेला	स्थानीय, उन्नत	२
२६	लट्टे	रातो, कालो, सेतो	३
२७	भन्टा	मसिनो, लाम्चो	२
२८	काउली	गर्भे, ब्रोकाउली, उन्नत	३
२९	पालुङ्गो	स्थानीय	१
३०	जरिङ्गो	स्थानीय गाढा हरियो, फिक्का हरियो	२
३१	प्याज	स्थानीय	१
३२	खुर्सानी	अकबरे, पर्वते, नेपाले, जिरे	४
३३	धनियाँ	स्थानीय	१
३४	सुप	स्थानीय	१
३५	मेथी	स्थानीय	१
३६	चम्सुर	स्थानीय	१
३७	लसुन	स्थानीय	१
३८	तोरी	पहेलो, प्रगति, प्रीति, ठूलो तोरी, उन्नति, लुम्ले १, गोल्लतोरी, मोराङ, कालोतोरी, पहेलोतोरी, विकास, बाल तोरी	१२
३९	झुसे तिल	कालो स्थानीय	१
४०	सिलाम	स्थानीय सेतो	१
४१	सस्चूँ	स्थानीय पहेँलो	१
४२	आलस	स्थानीय	१
४३	आलु	लेकाली, कुफ्री ज्योति	२
४४	तरुल	घर, वन, पाताले,	३
४५	सखरखण्ड	रातो, सेतो	२
४६	पिंडालु	दूधे, कालो, तुने, सेतो फिक्का	४
४७	भुइँस्याउ	स्थानीय	१
	जम्मा		१४९

साभेदार सङ्घसंस्थाहरू

दलचोकी सामुदायिक बीउ बैंकको स्थापना यू.एस.सी. क्यानाडा-नेपालको आर्थिक तथा प्राविधिक सहयोगमा भएको हो । सामुदायिक बीउ बैंकका २ ओटा अन्डरग्राउण्ड बीउ भण्डारकक्ष, आवासकोठा र तालिमहलको निर्माण यू.एस.सी. क्यानाडा-नेपालको सहयोगबाट नै भएको हो । साहस नेपालको अर्थिक तथा प्राविधिक सहयोगमा दलचोकी, नल्लु, चौघरे, सङ्खु, बुखेल र इकुडोल समेतका कृषकहरूको सहभागितामा कृषि मेला प्रदर्शनी सञ्चालन भएको थियो । साहस नेपाल र राष्ट्रिय जीन बैंकको सहयोगमा नै गुजुमुजे र

डुडे जातका रायोको अनुसन्धान गरी बीउबिजन गुणस्तर नियन्त्रण केन्द्रबाट दर्ता गर्न सम्भव भएको हो ।

जिल्ला कृषि विकास कार्यलय ललितपुरबाट दलचोकी समुदायिक बीउ बैंक सञ्चालनका लागि बीउ उपचार मेसिन, सिडबिन, चिस्यान नाप्ने यन्त्र, बीउ सुकाउने खलो निर्माण, बीउबिजन सहयोगजस्ता भौतिक सामग्रीहरू र बीउ-उत्पादन पकेट विस्तार, प्राविधिक सल्लाह तथा सुभाउ प्राप्त भएको छ । राष्ट्रिय जीन बैंकबाट यस दलचोकी समुदायिक बीउ बैंकलाई निरन्तर सहयोग, सल्लाह र परामर्श उपलब्ध भइरहेको छ । यसरी दलचोकी सामुदायिक बीउ बैंक सञ्चालनका लागि विभिन्न सरकारी तथा गैरसरकारी सङ्घसंस्थाहरूबाट निरन्तर सहयोग, सल्लाह, सुभाउ र परामर्श प्राप्त भइरहेको छ ।

सामुदायिक बीउ बैंकले गरेका महत्त्वपूर्ण कार्यहरू

- अन्नबाली, दलहनबाली, तरकारीबालीलगायतका बालीहरूको स्थानीय जातहरूको बीउसङ्कलन, पुनर्स्थापना, संरक्षण र बीउ बैंकमा नमुना व्यवस्थापन;
- मनकामना ३, देउती, गणेश १ जातका मकै र प्रीति र विकास जातका तोरीका बीउ-उत्पादन तथा विक्रीवितरणमा व्यावसायिकतातर्फ उन्मुख, हुँदै आएको;
- प्राविधिकहरूको सल्लाह, सुभाउ र निरीक्षणमा स्थानीय गुजुमुजे र डुडे रायोको बीउ उत्पादन गरिएको;
- बीउ उत्पादक कृषकहरूका लागि गुणस्तरीय बीउ-उत्पादन तालिम नियमित रूपमा आयोजना गर्दै आएको;
- सामुदायिक फिल्ड जीन बैंकको स्थापना, व्यवस्थापन र विस्तार गरिदै आएको ।

समस्या र चुनौती

- सामुदायिक बीउ बैंक सञ्चालनका लागि पर्याप्त पुँजिकोष नहुनु;
- बीउबिजन उपयोग र कृषिकर्म गर्ने युवा जनशक्तिको अभाव हुनु;
- विद्यालयको आधारभूत कक्षादेखि नै पठ्यक्रममा सामुदायिक बीउ बैंकको महत्त्व समावेश हुन नसक्नु;
- संस्थामा सामान्य कृषि प्राविधिक समेतको व्यवस्था गर्न नसक्नु;
- विशेष गुण भएका स्थानीय बीउका जातहरूको दर्ताप्रक्रियामा लान क्षमता र समन्वयको कमी हुनु;

- सम्बन्धित कृषि निकाय एवं सङ्घसंस्थाहरूसँग पर्याप्त समन्वय, सम्पर्क र सहयोग प्राप्त हुन नसक्नु;
- बीउ बैंकमा भएका नमुना बीउहरू लामो समयसम्म टिकाइराख्न नसक्नु, पर्याप्त बीउ भण्डारणकक्षहरूको अभाव हुनाले पुरानो बीउ हटाई नयाँ बीउको तत्काल व्यवस्था गर्न नसक्नु;
- बीउको प्रचारप्रसारमा कमी भई बजारीकरणमा तीव्र गति लिन नसक्नु,
- स्थानीय तहमा जनप्रतिनिधिहरूलाई सामुदायिक बीउ बैंक नभई नहुने कुराको अवधारणा र महत्त्व बुझाउन नसक्नु;
- स्थानीय तहका संरचना पविर्तन हुनु ।

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सामुदायिक बीउ बैंकसम्बन्धी दोस्रो राष्ट्रिय कार्यशाला गोष्ठीका सुभाउ

पीताम्बर श्रेष्ठ^१, बालकृष्ण जोशी^२, कृष्णहरि घिमिरे^३ र देवेन्द्र गौचन^३

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पृष्ठभूमि

वि.सं. २०५० मा ललितपुर जिल्लाको दलचोकीबाट शुरु भएको सामुदायिक बीउ बैंकसम्बन्धी काम हाल नेपालका ३५ जिल्लाहरूमा फैलिइसकेको छ र यसको विकास र विस्तार निरन्तर भइरहेको छ । गैरसरकारी संस्थाको अगुवाइमा थालनी भएको यस कामलाई नेपाल कृषि अनुसन्धान परिषद्ले वि.सं. २०६० मा र कृषि, भूमि व्यवस्था तथा सहकारी मन्त्रालयले वि.सं. २०६५ देखि विभिन्न नीति तथा कार्यक्रमहरूमा समावेश गरी कार्यान्वयन गरिरहेको कुरा सर्वविदितै छ । नेपालमा हालसम्म स्थापना गरिएका सामुदायिक बीउ बैंकहरूले तीव्रगतिमा लोप भइरहेका कृषि जैविक विविधताको यथास्थानीय तथा घरखेत स्थलीय संरक्षण गर्न र कृषकहरूको खेतबारी र हावापानी सुहाउँदा थरीथरीका बीउहरू सर्वसुलभ रूपमा उपलब्ध गराउन अहम् भूमिका निर्वाह गरिरहेका छन् । यसलाई बीउमा कृषकअधिकार कायम गर्ने र खाद्यसम्प्रभुता सुनिश्चित गर्ने पद्धतिका रूपमा पनि विश्वव्यापी रूपमा प्रस्तुत गर्न थालिएको छ ।

विश्वका अन्य देशहरूमा जस्तै नेपालमा पनि विभिन्न स्वरूप र आकारप्रकारका सामुदायिक बीउ बैंकहरू स्थापना भई सञ्चालन भइरहेका छन् । यसले समुदायलाई दिने सेवा तथा सुविधाहरूमा पनि विविधता छ । नेपालमा सामुदायिक बीउ बैंकसम्बन्धी भएगरेका काम तथा नतिजाको आदान-प्रदान गर्ने र त्यसको अभिलेखीकरण गर्ने उद्देश्यले सामुदायिक बीउ बैंक स्थापना तथा व्यवस्थापनमा संलग्न सरकारी, गैरसरकारी तथा साभेदार सङ्घसंस्थाहरूको सहभागितामा वि.सं. २०६९ को जेठ महिनामा पोखरामा सामुदायिक बीउ बैंकसम्बन्धी पहिलो राष्ट्रिय कार्यशाला गोष्ठी सम्पन्न भएको थियो । उक्त गोष्ठीमा प्रस्तुत गरिएका कार्यपत्रहरू समावेश गरी प्रकाशन गरिएको पुस्तकले नेपालमा सामुदायिक बीउ बैंकका सम्बन्धमा भएका कामलाई बाहिरी संसारमा प्रचारप्रसार गर्न थप मद्दत पुऱ्याएको थियो ।

सामुदायिक बीउ बैंक कार्यक्रम कार्यान्वयन निर्देशिका (२०६५), कृषि जैविक विविधता नीति (२०६३ र यसको पहिलो संशोधन २०७१) र राष्ट्रिय बीउबिजन दूरदृष्टि (वि.सं. २०६९ देखि २०८१) मा सामुदायिक बीउ बैंक प्रवर्द्धन गर्ने कुरा समावेश गरिनुले नेपाल सरकारले सामुदायिक बीउ बैंकलाई महत्त्व दिएको कुरा स्पष्ट हुन्छ । सामुदायिक बीउ बैंक स्थापना तथा व्यवस्थापनका लागि तत्कालीन गाउँ विकास समिति, हालको गाउँपालिका तथा नगरपालिका र जिल्ला कृषि विकास कार्यालयहरूको भूमिका तथा सहयोग पनि सहाहनीय नै रहेको छ । तापनि माथि उल्लिखित नीति, निर्देशिका र कानूनमा उल्लिखित प्रावधानहरूको कार्यान्वयन स्थितिको समीक्षा गर्ने हो भने धेरै काम गर्न बाँकी नै रहेको देखिन्छ ।

नेपालमा सामुदायिक बीउ बैंकको थालनी भएको दुई दशक नाघिसकेको छ र यसको निरन्तर विकास र विस्तार पनि भइरहेको छ । नेपालमा भइरहेका सामुदायिक बीउ बैंकसम्बन्धी असल अभ्यासहरूले अन्तर्राष्ट्रिय स्तरमा पनि सकारात्मक प्रभाव पारिरहेका छन् । तर विभिन्न सरकारी निकाय, गैरसरकारी सङ्घसंस्था र कृषक समुदायहरूमा सामुदायिक बीउ बैंक बारेको बुझाइमा अझ पनि एकरूपता छैन । हालसम्म कृषक समूह, सहकारी संस्था वा स्थानीय गैरसरकारी संस्थाहरूले एउटा क्रियाकलापका रूपमा सामुदायिक बीउ बैंक सञ्चालन गरिरहेका छन् । हालसम्म नेपालका कुन-कुन संस्थाहरूले किन, कति र कसरी सामुदायिक बीउ बैंक स्थापना तथा सञ्चालन गरिरहेका छन् भन्ने कुराको सही तथ्याङ्क कुनै पनि निकायसँग छैन । अतः नेपालमा सामुदायिक बीउ बैंकका सम्बन्धमा भएका कामलाई एकत्रित, थप परिष्कृत र मूलप्रवाहीकरण गर्नु अपरिहार्य देखिन्छ ।

यी माथिका कुराहरूलाई मध्यनजर गरी नेपाल कृषि अनुसन्धान परिषद्, जैविक विविधता अनुसन्धान तथा विकासका लागि स्थानीय पहल (ली-बर्ड र बायोभर्सिटी इन्टरनेशनलको संयुक्त आयोजनामा वि.सं. २०७५ वैशाख २०, २१ र २२ गते ललितपुरमा सामुदायिक बीउ बैंकसम्बन्धी दोस्रो राष्ट्रिय कार्यशाला गोष्ठी सम्पन्न भएको थियो । कृषि, भूमि व्यवस्था तथा सहकारी मन्त्रालयका सचिव डा. युवकध्वज जि.सी., नेपाल कृषि अनुसन्धान परिषद्का कार्यकारी निर्देशक डा. वैद्यनाथ महतो, बीउबिजन गुणस्तर नियन्त्रण केन्द्रका प्रमुख, कृषि विभागअन्तर्गत बाली विकास निर्देशनालयका कार्यक्रम निर्देशक, राष्ट्रिय जीन बैंकका प्रमुख, बायोभर्सिटी इन्टरनेशनलका नीतिविश्लेषक, विभिन्न सरकारी तथा गैरसरकारी सङ्घसंस्थाका प्रमुख तथा प्रतिनिधिहरू, नेपालका विभिन्न भौगोलिक स्थानहरूमा स्थापना भएका सामुदायिक बीउ बैंकका प्रमुख तथा प्रतिनिधिहरू सहित ६२ जनाको उपस्थिति रहेको उक्त कार्यशाला गोष्ठीले कृषि, भूमि व्यवस्था तथा सहकारी मन्त्रालय र मातहतका निकायहरू, नेपाल कृषि अनुसन्धान परिषद् र यस विषयमा काम गर्ने तथा सरोकार

राख्ने अन्य सरकारी तथा गैरसरकारी सङ्घसंस्थाहरूले कार्यान्वयन गर्ने गरी नेपालमा सामुदायिक बीउ बैंकसम्बन्धी कार्यलाई अभि परिष्कृत, परिमार्जित, एकत्रित र प्रभावकारी रूपमा अघि बढाउनका लागि गोष्ठीका सहभागीहरूले निम्न सुझाउहरू तथा कार्ययोजना पेश गर्दछन्:

सुझाउहरू (Workshop Recommendation)

१. सामुदायिक बीउ बैंकको वैधानिकता, सूचीकृत, नियमन र नवीकरण गर्ने निकायको व्यवस्था : नेपालमा सामुदायिक बीउ बैंकहरू कृषक समूह, सहकारी वा स्थानीय गैरसरकारी संस्थाहरूले सञ्चालन गरिरहेका छन् । हालसम्म कुनै पनि कानुनले सामुदायिक बैंकको वैधानिकताका लागि दर्ता, सूचीकृत र नियमन गर्ने निकायको व्यवस्था गरेको छैन । फरक-फरक निकायमा दर्ता हुने र आ-आफ्नै तरिकाले सामुदायिक बीउ बैंकको स्थापना र सञ्चालन गर्दा नेपालमा के-कति सामुदायिक बीउ बैंक कुन अवस्थामा छन् र उनीहरूले के-कस्ता काम गरिरहेका छन् भन्ने कुराको जानकारी पाउन पनि कठिन छ । अतः सामुदायिक बीउ बैंकलाई यसैका नामबाट वा अन्य तरिकाबाट दर्ता, नवीकरण र नियमन गर्ने सङ्घीय वा प्रादेशिक निकाय तोकनु आवश्यक छ । साथै सामुदायिक बीउ बैंकको मुख्य उद्देश्य कृषि जैविक विविधताको यथास्थानीय तथा घरखेतीस्थलीय संरक्षण गर्नु रहेको र राष्ट्रिय जीन बैंकको क्षेत्राधिकारभित्र यो काम पनि समावेश भएकाले सामुदायिक बीउ बैंकहरू स्थानीय, प्रादेशिक वा सङ्घीय तहको जुनसुकै निकायमा दर्ता भए तापनि राष्ट्रिय जीन बैंकमा पनि सूचीकृत र निश्चित अवधिमा नवीकरण गर्ने र आवश्यक तथ्याङ्क अद्यावधिक गर्ने व्यवस्था गर्न अनुरोध गरिन्छ ।

२. सामुदायिक बीउ बैंकको वर्गीकरण तथा मापदण्ड निर्धारण : नेपालमा थुप्रै गैरसरकारी संस्थाहरू, दातृनिकायहरू, बाली विकास निर्देशनालय र राष्ट्रिय जीन बैंकले विभिन्न जिल्लाहरूमा सामुदायिक बीउ बैंक स्थापना र व्यवस्थापनमा सहजीकरण गरिरहेका छन् । सामुदायिक बीउ बैंक स्थापना गर्न सहयोग गर्ने निकाय अनुसार सामुदायिक बीउ बैंकको कामको दायरा, आकारप्रकार र काम गर्ने तौरतरिका पनि आ-आफ्नै किसिमका छन् । यी कुराहरूले हामीलाई के यी सबै सामुदायिक बीउ बैंक हुन् त भन्ने कुरा सोच्न बाध्य पार्दछन् । सामुदायिक बीउ बैंकको विश्वव्यापी मान्यता, परिभाषा र नेपालमा वि.सं. २०६९ जेठ महिनामा सम्पन्न सामुदायिक बीउ बैंकसम्बन्धी पहिलो राष्ट्रिय कार्यशाला गोष्ठीले सामुदायिक बीउ बैंक भन्नका लागि कृषि जैविक विविधताको यथास्थानीय संरक्षण र घरखेतीस्थलीय संरक्षणमा अनिवार्य संलग्न भएको हुनुपर्ने भनी परिभाषित गरेको छ । तर सामुदायिक बीउ बैंक हुनका लागि कम्तीमा के-कति कृषि जैविक विविधता संरक्षण

गर्नुपर्दछ, कति सदस्य हुनुपर्दछ, के-कस्ता व्यक्तिहरू सामुदायिक बीउ बैंकको सदस्य बन्न सक्दछन् भन्ने कुराहरू अझ पनि अनुत्तरित नै छन् । अतः यी कुराहरूलाई ध्यान दिई निश्चित मापदण्ड बनाई हाल सञ्चालनमा रहेका र भविष्यमा स्थापना हुने सामुदायिक बीउ बैंकहरूको वर्गीकरण गर्नु आवश्यक छ । राष्ट्रिय जीन बैंकले समेटेका अन्य संरक्षण विधिहरू जस्तै सामुदायिक जीन बैंक, सामुदायिक फिल्ड जीन बैंक, विद्यालय फिल्ड जीन बैंक, गाँउस्तरीय फिल्ड जीन बैंक, जलीय कुण्ड जीन बैंक आदिलाई स्थापना तथा व्यवस्थापनमा पनि आवश्यक पहल गर्नुपर्ने देखिन्छ ।

त्यसै गरी हाल जानकारीमा आएअनुसार तनहुँ, लमजुङ, गोर्खा र सिन्धुपाल्चोक जिल्लाहरूमा आँपका रैथाने जातहरूका पुराना बगैँचाहरू प्रशस्त रहेको पाइएको छ । तर बहुसङ्ख्यक बगैँचाहरू संरक्षणको अभावमा मासिने र महत्त्वपूर्ण रैथाने जातहरू लोप हुने खतरामा छन् । अतः ती बगैँचाहरूको पहिचान गरी सामुदायिक फिल्ड जीन बैंकको अवधारणा अनुसार समुदायलाई संरक्षण, उपयोग र व्यवस्थापनमा जिम्मेवार बनाउनका लागि आवश्यक कदम चाल्न अनुरोध गरिन्छ ।

३. सामुदायिक बीउ बैंकसम्बन्धी नियमित कार्यक्रम तथा बजेट विनियोजन : बाली विकास निर्देशनालयको सामुदायिक बीउ बैंक स्थापनासम्बन्धी कार्यक्रम र सामुदायिक बीउ बैंकहरूको अनुरोधमा जिल्ला कृषि विकास कार्यालय र गाउँपालिका तथा नगरपालिकाहरूले आकलभुकल विनियोजन गरिएकोबाहेक हालसम्म कुनै पनि सरकारी निकायबाट सामुदायिक बीउ बैंक स्थापना तथा व्यवस्थापनका लागि नियमित रूपमा बजेट विनियोजन तथा कार्यक्रम सञ्चालन भएको छैन । अतः कृषि जैविक विविधताको दिगो यथास्थानीय र घरखेतीस्थलीय संरक्षण तथा उपयोगका लागि सरकारी संयन्त्रबाट नियमित बजेट विनियोजन गर्नु आवश्यक छ ।

४. कृषि जैविक विविधता संरक्षण क्षेत्र तथा सामुदायिक बीउ बैंक स्थापना गर्ने स्थानको पहिचान : नेपाल कृषि जैविक विविधतामा धनी छ भनेर हामी भनिरहेका छौं । तापनी नेपालका सबै भौगोलिक क्षेत्रमा कृषि जैविक विविधताको स्थिति समान छैन । नेपालका सबै स्थानमा कृषि जैविक विविधता संरक्षण गर्न सम्भव नहुन पनि सक्छ । अतः कृषि जैविक विविधतामा धनी भएका क्षेत्रहरू पहिचान गरी कृषि जैविक विविधता संरक्षणसम्बन्धी विशेष कार्यक्रम सञ्चालन गर्नु आवश्यक छ । ती क्षेत्रमा सञ्चालन गरिने विविध कृषि जैविक विविधता संरक्षण तथा उपयोगका क्रियाकलापहरूमध्ये सामुदायिक बीउ बैंक एउटा मुख्य क्रियाकलापका रूपमा सञ्चालन गर्न सकिन्छ । कृषि जैविक विविधता संरक्षण क्षेत्रको पहिचान गरी सामुदायिक बीउ बैंकलगायतका क्रियाकलापहरू सञ्चालन गर्दा हालको जस्तो जहाँपायो त्यही र संस्था अनुकूलको सामुदायिक बीउ बैंक स्थापना गर्ने प्रचलन पनि घटेर जाने देखिन्छ ।

५. स्थानीय जातहरूको दर्ताप्रक्रियाको सहज व्यवस्था : नेपालमा अझ पनि धेरै कृषकहरूले थुप्रै बालीहरूका स्थानीय जातहरूको खेती गरिरहेका छन् । तीमध्ये धेरै जातहरू उपयोगी गुणहरूले भरिपूर्ण भएका र उत्पादन र आमदानीका पक्षबाट पनि उन्नत जातहरूसँग प्रतिस्पर्धा गर्न सक्ने किसिमका छन् । तर ती जातहरूलाई वर्तमान कानुनी प्रावधान, विधि र प्रक्रियाबाट दर्ता गर्न त्यति सहज छैन । तसर्थ स्थानीय जातहरूको दर्ताप्रक्रिया सरलीकरण गरी उपयोगी गुण भएका प्रतिस्पर्धी जातहरू सकेसम्म चाँडो दर्ता गर्ने व्यवस्था मिलाई ती जातहरूलाई व्यावसायिक तहमा बीउ-उत्पादन र प्रचारप्रसारमा टेवा पुऱ्याउनु आवश्यक छ ।

६. मस्यौदा कानूनहरूमा सामुदायिक बीउबैंकसम्बन्धी प्रावधानहरू थप गर्ने : हाल कृषि जैविक विविधता संरक्षणसँग सम्बन्धित तीनवटा कानूनहरू मस्यौदाका रूपमा छन् । ती हुन् क) बिस्वाको जातसंरक्षण तथा कृषक अधिकारसम्बन्धी मस्यौदा कानून, ख) आनुवंशिक स्रोतमा पहुँच तथा लाभको बाँडफाँडसम्बन्धी मस्यौदा कानून र ग) कृषि जैविक विविधता संरक्षण तथा उपयोगसम्बन्धी मस्यौदा कानून । तर यी तीनवटै मस्यौदा कानूनहरूमा कृषि जैविक विविधताको संरक्षण र उपयोगमा सामुदायिक बीउ बैंकको भूमिकाको चर्चा र त्यसको प्रवर्धन गरिने कुरा समावेश गरिएको छैन । अतः यी मस्यौदा कानूनहरू सङ्घीय संसदमा पेश हुनुअगावै सामुदायिक बीउ बैंकको भूमिका र महत्त्व समावेश गर्न पहल गर्नु आवश्यक छ ।

७. राष्ट्रिय कृषि जैविक विविधता संरक्षण पुरस्कारको व्यवस्था : नेपालमा कृषि विकास र उन्नत प्रविधि प्रसारमा उल्लेखनीय भूमिका निर्वाह गरिरहेका कृषक, कृषक समूह, व्यक्ति र संस्थाहरूलाई प्रोत्साहनका लागि जिल्ला र राष्ट्रिय स्तरमा पुरस्कारको व्यवस्था छ । तर हालसम्म कृषि जैविक विविधता संरक्षण र उपयोग प्रवर्धनमा लागेका कृषक, कृषक समूह, व्यक्ति र संस्थाहरूलाई प्रोत्साहन गर्ने किसिमको पुरस्कारको व्यवस्था भएको देखिदैन । त्यसैले कृषि जैविक विविधता संरक्षण र उपयोगको प्रवर्धनमा उल्लेखनीय योगदान पुऱ्याउनेलाई एउटा व्यक्तिगत र एउटा सामूहिक पुरस्कारको व्यवस्था गर्नु आवश्यक देखिन्छ ।

८. स्थानीय र प्रादेशिक सरकारको नीति तथा कार्यक्रममा सामुदायिक बीउ बैंकको समावेश : देशको परिवर्तित संरचना र अवस्था अनुसार तीव्रगतिमा लोप भइरहेका कृषि आनुवंशिक स्रोतहरूको पहिचान, संरक्षण र प्रवर्द्धनका लागि स्थानीय तथा प्रादेशिक सरकारले पनि कृषि जैविक विविधताको महत्त्व र त्यसको संरक्षणको आवश्यकता महसुस गरी स्थानीय एवं प्रादेशिक सरकारको नीति तथा कार्यक्रममा सामुदायिक बीउ बैंक स्थापना कार्यक्रम समावेश गर्न सङ्घीय सरकारले नीति, नियम, मार्गदर्शन र निर्देशन दिनु आवश्यक देखिन्छ ।

९. सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिको सबलीकरण : नेपालमा कृषि जैविक विविधताको संरक्षणकार्यमा संलग्न सामुदायिक बीउ बैंकहरूको प्रथम राष्ट्रिय भेला वि.सं. २०६९ फागुन २८ गते देखि ३० गतेसम्म कचोर्वा सामुदायिक बीउ बैंक बारामा सम्पन्न भएको थियो । उक्त भेलाका अन्त्यमा सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समिति गठन गरिएको थियो । उक्त समिति र समितिमा आबद्ध सदस्य सामुदायिक बीउ बैंकहरू वर्षमा एकपटक भेला भई आ-आफ्ना सामुदायिक बीउ बैंकहरूले वर्षभरि गरेका कामको प्रगति समीक्षा, बीउ र सूचनाको आदानप्रदान गर्ने गरिरहेका छन् । यसबाट सामुदायिक बीउ बैंकका सदस्यहरू र सामुदायिक बीउ बैंकको क्षमता विकासमा योगदान पुगिरहेको छ । तर हालसम्म भएगरेका क्रियाकलापहरू मूलतः गैरसरकारी संस्थाहरूले सञ्चालन गर्ने परियोजनाको सहयोगमा आधारित छन् जुन दिगो नहुन पनि सक्छन् । अतः केही खुट्किलो पार गरिसकेको सामुदायिक बीउ बैंक राष्ट्रिय समन्वय समितिको थप क्षमता विकास गरी दिगो र प्रभावकारी बनाउन सम्बन्धित निकायबाट नियमित रूपमा कार्यक्रम तथा बजेट विनियोजन गर्न सकिएमा कृषि जैविक विविधता संरक्षणका क्षेत्रमा भविष्यमा सकारात्मक भूमिका निर्वाह गर्न सक्ने देखिएकाले यसतर्फ पनि सम्बन्धित निकायको ध्यानाकर्षण गराउँदछौं ।

१०. भौगोलिक सङ्केतको प्रयोग : सामुदायिक बीउ बैंकमार्फत विभिन्न स्थानीय जातहरूका विशिष्ट गुणहरूको पहिचान र अध्ययन-अनुसन्धानमा जोड दिई स्थानविशेष अनुसारको मौलिक कृषि उपजहरूको उत्पादन र बजारीकरणमा भौगोलिक सङ्केतको प्रयोगका लागि आवश्यक रकम विनियोजन तथा प्राविधिक सहयोगमा जोड दिनु आवश्यक छ ।

Annex I. Community Seed Banks in Nepal: Factsheet

- The first community seed bank in Nepal was initiated by USC Canada Nepal at Dalchoki village of Lalitpur district in 1994.
- Conservation and genetic enhancement of crops landraces had already been started at Dalchoki, Lalitpur in late 1992.
- Dr. Bal Krishna Joshi visited Ethiopia for learning the concept of community seed banks and initiated the first community seed bank at Dalchoki, Lalitpur.
- Among 144 self-claimed community seed banks in Nepal, 40 are active, 6 are passive (dormant), 95 are transmuted (transformed) and 3 are collapsed as of December 2018.
- Started in 2003, Kachorwa community seed banks in Bara district of Nepal is actively involved in conservation of rice landrace of central tarai Nepal.
- The highest number of publications on community seed banks has been documented by Pitambar Shrestha. He has been continuously involved in supporting establishment and strengthening the community seed banks in Nepal.
- The National Genebank, Department of Agriculture, LI-BIRD, Bioversity International and Action Aid Nepal are actively involved in promoting community seed bank in Nepal.
- To be a community seed bank, it should be operated by a group of farmers and they must be involved in promoting conservation and sustainable use of agricultural plant genetic resources. Community seed banks without involvement in conservation and use of agricultural plant genetic resources cannot be considered as a community seed bank.
- Most of the community seed banks in Nepal produce and distribute seeds of both local and improved varieties.
- Most of the community seed banks in Nepal are handling orthodox types of crops but some are also involved in handling both orthodox and non-orthodox crops. Among 40 active community seed banks, 5 CSBs have also established community field genebank.
- NAGRC has started Community Field Genebank and Community Genebank concept for managing total agricultural biodiversity at community levels.
- First community field genebank of mango was established by Gadariya Community Seed Bank of Kailali in 2010.
- Chepe-Marsyangdi Community Seed Bank at Rainas, Lamjung has started rejuvenating old community mango orchard in 2016.
- Some communities are planning to start conservation of genetic resources in religiously protected areas, rejuvenation of old orchards, geographical indication, and establishing aqua pond genebank and livestock farm genebank, collectively called Community Genebank.
- Most of the community seed banks in Nepal are project based. There is no one completely evolved with the initiation of local community.
- Red zoning and red listing of APGRs are adopted by many CSBs.
- Some of the community seed banks have started registration of landraces in National Seed Board and maintaining source seeds of the registered landraces.
- 24 CSBs have sent a total of 1263 collections of 81 different crops in national genebank for ex-situ conservation.

Annex II. Inventory of Community Seed Banks in Nepal (as of Dec 2018)

SN	Name of CSB	District	Year established	Agro-eco-zone	Crop species conserved, n	Local varieties conserved, n	Lead Organization	Collaborating partners for initiating CSB	Status
1	Dalchoki CSB, Lalitpur	Lalitpur	1994	Mid hill	47	149	USC Canada	SAHAS Nepal, NAGRC	Functional
2	Kachorwa CSB	Bara	2003	Tarai	23	115	LI-BIRD/ NARC/ Bioversity Int'l	NARC, Bioversity, IDRC	Functional
3	Rainaas CSB	Sindhuli	2006		NA	NA	Parivartan Nepal	-	Not functional
4	Belawa CSB	Bardiya	2007	Tarai	24	64	LI-BIRD	WTLCF (MoFSC, UNEP/ GEF/JNDP, NARC, Bioversity)	Functional
5	Gadariya CSB	Kailali	2007	Tarai	NA	NA	LI-BIRD	WTLCF (MoFSC, UNEP/ GEF/JNDP, NARC, Bioversity)	Not functional
6	Shankarpur CSB	Kanchanpur	2007	Tarai	1	17	LI-BIRD	WTLCF (MoFSC, UNEP/ GEF/JNDP, NARC, Bioversity)	Functional
7	Beldandi CSB	Kanchanpur	2008	Tarai	NA	NA	LI-BIRD	WTLCF (MoFSC, UNEP/ GEF/JNDP, NARC, Bioversity)	Not functional
8	Masuriya CSB	Kailali	2008	Tarai	21	59	LI-BIRD	WTLCF (MoFSC, UNEP/ GEF/JNDP, NARC, Bioversity)	Functional
9	Pathraiya CSB	Kailali	2008	Tarai	NA	NA	LI-BIRD	WTLCF (MoFSC, UNEP/ GEF/JNDP, NARC, Bioversity)	Not functional
10	Jogimara CSB	Dhading	2009	Mid hill	NA	NA	LI-BIRD	IDRC, Canada	Not Functional

SN	Name of CSB	District	Year established	Agro-eco-zone	Crop species conserved, n	Local varieties conserved, n	Lead Organization	Collaborating partners for initiating CSB	Status
11	Tamaphok CSB	Sankhuwasabha	2009	Mid hill	24	101	LI-BIRD	IDRC, Canada	Functional
12	Agyauli CSB	Nawalparasi	2010	Tarai	25	54	LI-BIRD	The Development Fund, Norway	Functional
13	Ghanteshwor CSB	Ghanteshwor, Doti	2010	High hill	19	45	LI-BIRD	The Development Fund, Norway, DoA	Functional
14	Purkot CSB	Purkot, Tanahun	2010	Mid hills	34	113	LI-BIRD	The Development Fund, Norway	Functional
15	Sunaulo CSB	Rampur, Dang	2010	Tarai	40	84	LI-BIRD	The Development Fund, Norway	Functional
16	Shivagunj CSB	Shivagunj, Jhapa	2010	Tarai	21	107	LI-BIRD	The Development Fund, Norway	Functional
17	Taliun CSB	Taliun, Jumla	2010	High hill	-	-	LI-BIRD	The Development Fund, Norway	Not functional
18	Simariya CSB	Simariya, Sunsari	2011	Tarai	NA	NA	NARC	-	Functional
19	Sindhu CSB	Kuntadevi, Okhaldhunga	2010	Mid hill	NA	NA	CDD, DOA	-	Functional
20	Pokhara CSB	Amargadhi, Dadeidhura	2010	Mid hill	NA	NA	CDD, DOA	-	Functional
21	Puthak Saving and Credit Coop Ltd	Basatpur, Bara	2012	Tarai	6	6	Action Aid	-	Functional
22	Malika CSB	Simichour, Gulmi	2012	Mid hill	NA	NA	CDD, DOA	-	Functional
23	Kalika CSB	Khalanga, Jajarkot	2012	Mid hill	NA	NA	CDD, DOA	-	Functional

SN	Name of CSB	District	Year established	Agro-eco-zone	Crop species conserved, n	Local varieties conserved, n	Lead Organization	Collaborating partners for initiating CSB	Status
24	Krishi CSB	Dharmadevi, Sankhuwasabha	2014	Mid hill	NA	NA	CDD, DOA	-	Functional
25	Ranadevi CSB	Dhading	2014	Mid hill	NA	NA	CDD, DoA	-	Functional
26	Shree Karmanasha tarkari utpadak Krishi Samuha Hariyali	Godawari Municipality, Chapagaun, Lalitpur	2014	Mid hill	5	10	Action Aid	-	Functional
27	community seed Bank	Swami Kartik-Khapar, Zera, Bajura	2014	High hill	5	11	Action Aid	-	Functional
28	Charpate CSB	Gramthan 1, Morang	2015	Tarai	28	44	Action Aid	DADO	Functional
29	Janalaknyan Multipropose cooperative Ltd. Kalyankari	Oyakjung, Fedap, Terhathum	2015	Mid hill	9	9	Action Aid	-	Functional
30	Women Livestock Agriculture Co-operative Gadhimai	Chhathar Terhathum	2015	Mid hill	15	25	Action Aid	--	Functional
31	Community Seedbank	Basatpur, Bara	2015	Tarai	13	13	Action Aid	-	Functional
32	Ma Bhagawati Community Bank	Golagunji, Amarpur Bara	2015	Tarai	18	30	Action Aid	-	Functional
33	Gobindapur Agriculture Group	Malahanama, Lahan, Siraha	2015	Tarai	12	12	Action Aid	-	Functional
34	Lahan CSB	Siraha	2016	Tarai	17	55	LI-BIRD	CARE Nepal	Functional
35	Chepe Marysyangdi CSB	Rainas Municipality, Satbise, Lamjung	2016	Mid hill	36	235	COPPADES/LWS	National Genebank and Bioversity	Functional

SN	Name of CSB	District	Year established	Agro-eco-zone	Crop species conserved, n	Local varieties conserved, n	Lead Organization	Collaborating partners for initiating CSB	Status
36	Kharang Community Seed bank	Chainpur Municipality, Kharang, Sankhuwasabha Bardaghat	2016	Mid hill	15	15	Action Aid	-	Functional
37	Srijanshil Community Seed Bank	municipality-15 Prithibabasti, Nawalparasi	2016	Tarai	NA	NA	Action Aid	-	Functional
38	Chhipra CSB	Chhipra, Humla	2017	High hill	29	55	LI-BIRD	NARC, Bioversity I, UNEP/GEF	Functional
39	Ghanpokhara CSB	Ghanpokhara, Lamjung	2017	High hill	15	79	LI-BIRD	NARC, Bioversity, UNEP/GEF	Functional
40	Hanku CSB	Hanku, Jumla	2017	High hill	21	62	LI-BIRD	NARC, Bioversity, UNEP/GEF	Functional
41	Jungu CSB	Jungu, Dolakha	2017	High hill	10	35	LI-BIRD	NARC, Bioversity, UNEP/GEF	Functional
42	Srijanshil Seed Production committee	Godawari Municipality, Badikhel, Lalitpur	2017	Tarai	10	15	Action Aid	-	Functional
43	Dihihar Agricultural Group	Lahan Municipality, Jahadi, Siraha	2017	Tarai	8	12	Action Aid	-	Functional
44	Piskar CSB	Piskar, Sindhupalchok	2018	Mid hill	28	54	LI-BIRD	The Development Fund, Norway	Process of establishment
45	Mohammadpur CSB	Mohammadpur, Bardiya	2018	Tarai	18	30	LI-BIRD	The Development Fund, Norway	Process of establishment
46	Ramnagar CSB	Joshiapur, Kailali	2018	Tarai	20	45	LI-BIRD	The Development Fund, Norway	Process of establishment

NA, Not available.

Annex III. Number of Crop Species and Landraces Displayed in the Workshop

SN	Name and address of CSB	Number of species	Number of local varieties
1	Agyauli CSB, Kawasoti Municipality, Nawalparasi	20	28
2	Chhipra CSB, Kharpunath Rural Municipality, Humla	11	46
3	Ghanpokhara CSB, Marsyandi Municipality, Lamjung	7	22
4	Ghanteswar CSB, Joroyal Municipality, Doti	26	40
5	Hanku CSB, Tatopani Municipality, Jumla	8	26
6	Jungu CSB, Gaurishankar Rural Municipality, Dolakha	16	96
7	Masuriya CSB, Gauriganga Municipality, Kailali	38	62
8	Shivaganj CSB, Shivasatakshi Municipality, Jhapa	24	104
9	Tamaphok CSB, Dharmadevi Rural Municipality, Sankhuwasabha	19	42
Total			466

Annex IV. Workshop Participants

SN	Name	Designation	Organization
1	Aananda Gautam, PhD	Director, Planning & Coordination	NARC, Khumaltar, Lalitpur
2	Aasharam Chaudhary	Treasurer	Shankarpur CSB, Kanchanpur
3	Aithan Shahi	Vice-President	Chipra CSB, Humla
4	Anil Acharya	Senior Horticulture Development Officer	MoALD, Kathmandu
5	Baidya Nath Mahto, PhD	Executive Director	NARC, Khumaltar, Lalitpur
6	Bal Krishna Joshi, PhD	Senior Scientist	National Genebank, Khumaltar, Lalitpur
7	Bharat Bhandari	Programme Operations Director	LI-BIRD, Pokhara
8	Bikash Paudel, PhD	Programme Development Director	LI-BIRD, Pokhara
9	Bimal Thapa	Programme Director	CDD, DoA, Hariharbhawan, Lalitpur
10	Brinda Linkha	Technical Assistant	LI-BIRD, Dolakha
11	Chhumru Sardar Tharu	Chairperson	Charpate CSB, Gramthan Municipality, Morang
12	Deepa Sing Shrestha	Senior Scientist/DADS Focal point/Output Manager	National Genebank, Khumaltar, Lalitpur
13	Deependra Keshari Neupane	Plant Breeder	SEAN, Kathmandu
14	Devendra Gauchan, PhD	National Project Manager	Bioversity International, Nepal
15	Dhruba Prasad Sapkota	Chairperson	CSB, Dalchowki, Lalitpur
16	Dilli Jimi	Chairperson	Tamaphok CSB, Sankhuwasabha
17	Dilli Paudel	Chairperson	Shivagunj CSB, Jhapa
18	Dilliraman Subedi	Journalist	Krisi TV, Kathmandu
19	Goma Bhandari	Member	Masuriya CSB, Kailali
20	Hari Bahadur Rawat	Member	Hanku CSB, Tatopani, Jumla
21	Kabita Jaisi	Treasurer	Hanku CSB, Tatopani, Jumla
22	Khageshwar Jung Gurung	Chairperson	Ghanapokhara CSB, Lamjung

SN	Name	Designation	Organization
23	Krishna Hari Ghimire	Senior Scientist/Output Manger	National Genebank, Khumaltar, Lalitpur
24	Krishna Prasad Adhikari	Treasurer	Pragatishil Agriculture Cooperative, Maramche, Kaski
25	Kumari Krishna	Member	Kachorwa CSB, Bara
26	Lekhnath Acharya	Joint Secretary	Policy and Int. Coordination Div., MoALD
27	Lekhnath Pokhrel	Journalist	Himalayan Times, Kathmandu
28	Madan Thapa	Chief	SQCC, Hariharbhawan, Lalitpur
29	Maharayanan Yadav	Member	ADCS, Kachorwa, Bara
30	Mahesh Badal	Livelihood and Natural Resource Coordinator	Action Aid Nepal, Kathmandu
31	Meena Jirel	Member	Jungu CSB, Dolkaha
32	Mohan Hamal	Officer	COPPADES, Lamjung
33	Mukunda Bhusal	Senior Crop Development Officer	CDD, DoA, Hariharbhawan, Lalitpur
34	Narmaya Karki	Member	Shivagunj CSB, Jhapa
35	Nawalsing Khatri	Chairperson	Pavitra Seed Company, Surkhet
36	Netra Bahadur Khadka	Chairperson	Jungu CSB, Dolakha
37	Niranjan Pudasainin	Programme Officer	LI-BIRD, Dolakha
38	Parbati Bhandari	Chairperson	Agyauli CSB, Nawalparasi
39	Pitambar Shrestha	Team Leader	LI-BIRD, Pokhara
40	Pragati Babu Paneru	Project Officer	LI-BIRD, Jumla
41	Prakash Subedi	Programme Officer	OXFAM, Lalitpur
42	Rajeev Dhakal	Plant Breeder	LI-BIRD, Pokhara
43	Ram Krishna Shrestha, PhD	Senior Agri. Extension Officer	DoA, Hariharbhawan, Lalitpur
44	Ramekwal Yadav	Chairperson	ACSBN, Kachorwa, Bara, Nepal
45	Rammani Pandey	Chairperson	Rampur CSB, Dang
46	Ramsworup Chaudhari	Member	Gadariya CSB, Kailali
47	Ranjan KC	Journalist	Krisi TV, Kathmandu
48	Ratna Kumari Gurung	Member	Ghanapokhara CSB, Lamjung

SN	Name	Designation	Organization
49	Rishiram Adhikari		NARC, Khumaltar, Lalitpur
50	Rita Gurung	Programme Officer	LI-BIRD, Pokhara
51	Ritesh Yadav	Programme Officer	LI-BIRD, Pokhara
52	Ronnie Vernooy, PhD	Scientist, Policy Specialist	Bioversity International, Wageningen, Netherlands
53	Rumpha Upadhyay	Member	Chipra CSB, Humla
54	Safal Khatiwada	National Programme Assistant	Bioversity International, Nepal
55	Sanjay Karki	Technical Assistant	National Genebank, Khumaltar, Lalitpur
56	Saroj Panta	Project Officer	LI-BIRD, Humla
57	Shivnarayan Chaudhari	Programme Officer	Action Aid Nepal, Biratnagar
58	Shreeram Subedi	Technical Assistant	LI-BIRD, Lamjung
59	Sitaram Bajgain	Member	Purkot CSB, Tanahun
60	Surendra Shrestha	Database Management Officer	National Genebank, Khumaltar, Lalitpur
61	Tara Ghimire, PhD	Chief	SSTD, NARC, Khumaltar, Lalitpur
62	Yogendra Malla	Member	Ghanteshwor CSB, Doti
63	Yubak Dhoj GC, PhD	Secretary	MoALD, Kathmandu

Annex V. Workshop Program

Language: Mix (Nepali and English)

Day 1: Presentation from experts, practitioners and key actors of CSB in Nepal (15' presentation and 5' discussion)

Opening session

Chief Guest: Secretary, MoALMaC
MC and Timer: Krishna H. Ghimire
Gurung

Chair: ED, NARC

Rapporteurs: Niranjana Pudasaini, Rita

Time	Program	Facilitator
9.00	Registration and coffee	
9.30	National anthem	
9.31	Inauguration	Chief Guest
9.40	Welcome and objectives	Chief, Genebank, NAGRC
9.45	Few words	Ronnie Vernooij, Bioversity International
9.50	Few words	Joint Secretary, MoALD
9.55	Few words	Naramaya Karki, Farmer, CSB Network
10.00	Few words	ED, LI-BIRD
10.05	Few words	Chief Guest
10.10	Session closing	Session Chair
10.20	Photo session and stall visit	
11.00	Coffee break	

Technical session -1

Chair: Joint Secretary, MoALMaC
Ghimire

MC and Timer: Krishna H.

11.15	Global overview of CSB	Ronnie Vernooij; Bioversity International, Netherlands
11.35	Government implemented CSBs: Approaches and Progress	Bimal Thapa and Prakash Acharya; Crop Development Directorate, DoA
11.55	National Genebank for promoting CSBs: Status and Strategies	Bal K. Joshi, D Singh, KH Ghimire and MN Paudel, National Genebank, Khumaltar
12.15	Progress and Approach of CSBs: LI-BIRD's Experience	Pitambar Shrestha; LI-BIRD
12.35	Farmers Rights and ABS Issue in CSB	Devendra Gauchan; Bioversity International Nepal
12.55	Session closing	Session Chair
1.00	Lunch break	

Farmers' session -1

Chair: Program Director, CDD
Shrestha

MC and Timer: Pitambar

2.00	CSB sharing from DF CSB sites
2.10	CSB Sharing from GEF UNEP Sites
2.20	CSB Sharing from GoN implemented CSB
2.30	CSB Sharing from Dalchoki
2.40	CSB Sharing from WTLCP
2.50	CSB Sharing from Action Aid/Oxfam
3.00	CSB Sharing from Rainas, Lamjung
3.25	Coffee break

Technical session -2

Chair: Chief, SQCC
Shrestha

MC and Timer: Pitambar

3.45	Experiences of Action Aid on CSB	Action AID
4.00	Experiences of Oxfam on CSB	Oxfam International, Lalitpur
4.15	CSB Network Experiences and Issues in CSB Networking and Capacity building	Ram Ekwel Yadav, CSB Network
4.30	Recent Initiatives and Modality of CSBs implementation in High Mountains	Bharat Bhandrai and LCP Team
4.45	Approaches for making CSB functional and sustainable: Experiences from Bajura	Ram Krishna Shrestha, TDS, DoA
5.00	Vision, Strategy, Policy and Guidelines on CSBs	Anil K. Acharya; MoALMaC
5.10	General discussion	
5.30	Session closing	Session Chair
6.00	Social dinner	

Day 2: Group Discussion and Panel Presentations

MC and Timer: Rita Gurung

Rapporteurs: Ritesh Yadav, Niranjana Pudasaini

Time	Theme/Title	Facilitator
9.00	Coffee and informal discussion	
Farmers Session-2		
Chair: Ram Ekwel Yadav		
9.30	Farmers' experiences sharing	
Group Discussion		
Chair: ED, LI-BIRD		

	Four group formation and discussion	
	<ul style="list-style-type: none"> • Theme 1: Good practices and Gaps and Issues on CSBs 	Devendra Gauchan <i>Bal K. Joshi</i>
11.00	<ul style="list-style-type: none"> • Theme 2: Capacity building of CSB: Issues and Options 	<i>Bharat Bhandari</i> <i>Pitambar Shrestha</i>
	<ul style="list-style-type: none"> • Theme 3: Strengthening CSB Networks: Status and Recommendations 	<i>Devendra Gauchan/</i>
	<ul style="list-style-type: none"> • Theme 4: Policy, Mainstreaming and Sustainability 	<i>Deepa Singh</i>
1.00	Lunch break	
2.00	Theme 1 presentation and discussion	Group leader
2.30	Theme 2 presentation and discussion	Group leader
3.00	Theme 3 presentation and discussion	Group leader
3.30	Coffee break	
4.00	Theme 4 presentation and discussion	Group leader
4.30	Discussion	
4.15	Session closing	Chair
5.00	Workshop closing (participants and organizers views)	

Day 3: Interactive discussion with CSB networks and CSB farmers

Chair: Chair, CSB Network

Rapporteurs: Saroj Pant, Rita Gurung

Time	Theme/Title	Facilitator
9.00	Coffee and information discussion	
9.30	Interaction with farmers	Ronnie Vernooy
1.00	Lunch time	

Display

Stalls of seeds and materials from CSBs representative from Tarai, Hill and Mountain districts and of publications for three days.



Workshop participants. Photo: Rajeev Dhakal, LI-BIRD.

Glimpse of the Workshop



Dr. Yuvak Dhoj GC, Secretary to the MoALD. Photo: Pitambar Shrestha, LI-BIRD



Dr. Baidya Nath Mahto, Executive Director NARC, Photo: Pitambar Shrestha, LI-BIRD



Workshop participants. Photo: Pitambar Shrestha, LI-BIRD



Workshop participants. Photo: Pitambar Shrestha, LI-BIRD



Kumari Krishna, Kachorwa Community Seed Banks, Bara. Photo: Pitambar Shrestha, LI-BIRD



Workshop inaugural seed vessel. Photo: Pitambar Shrestha, LI-BIRD

कृषि मुलश्चः जीवनम्

