



BOLD

Biodiversity for Opportunities, Livelihoods and Development

Ana Dulnuan-Habbiling is an Ifugaon leader with extensive knowledge of rice in the area where she lives in the highlands of the Philippines.

Photo: Brent Stirton/Reportage by Getty Images for the Crop Trust.

Harnessing Crop Diversity to Adapt to the Effects of the Climate Crisis

Funded by the Government of Norway, led by the Global Crop Diversity Trust

Crop diversity is the biological foundation of agriculture, a treasure trove of useful traits in plants that we can harness to build climate-resilient crops that have a long-term impact in farmers' fields and sustain productivity, income, resilience, and ultimately food and nutritional security. Conserving and using our crop diversity is the foundation for developing crops and diversifying farming systems that are resilient to the devastating effects of a rapidly changing climate, ensuring food security and nutrition for all in a sustainable way.

Climate change is the most urgent crisis of our time. The livelihoods, health and wellbeing of millions are at stake.



BOLD (Biodiversity for Opportunities, Livelihoods and Development)

is a groundbreaking 10-year project to strengthen food and nutrition security worldwide by supporting the conservation and use of crop diversity. Funded with USD 58 million from the Government of Norway and launched in 2021, it builds on the work and achievements of the decade-long Crop Wild Relatives (CWR) Project (2011- 2021).

We need crop diversity to develop climate-resilient seeds that have a long-term impact in farmers' fields, and that sustain productivity, income, resilience, and ultimately food and nutritional security. To do this, crop diversity needs to be available for use. Genebanks, plant breeders, seed systems actors of all types, and farmers are all equal stakeholders in the process of diversity uptake and management. BOLD will support 15 national genebanks worldwide to mobilize both existing genetic resources and new crop diversity developed by pre-breeding partnerships and facilitate the use of that diversity by breeders and farmers, contributing to the diversification and resilience of agriculture.

Diversity for Long-term Impact

The project directly contributes to the United Nations Sustainable Development Goal (SDG) 2SDG 2, End Hunger, and Target 2.5, to "maintain the genetic diversity of seeds, cultivated plants and farmed and domesticated animals and their related wild species, including through soundly managed and diversified seed and plant banks at the national, regional and international levels, and promote access to and fair and equitable sharing of benefits arising from the utilization of genetic resources and associated traditional knowledge."

In addition to contributing directly to SDG 2, BOLD addresses multiple priority areas of the Second Global Plan of Action on Plant Genetic Resources for Food and Agriculture and articles of the International Plant Treaty, as well as the recommendations of the external review of the CWR Project commissioned by the Norwegian Agency for Development Cooperation (Norad) in 2019.

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Thiago Mendes and Mariela Aponte of CIP check trials of crop wild relative-derived potatoes for late blight resistance at Oxapampa, Peru.

Photo: Crop Trust/Michael Major.

Think BOLD: Scaling-up Success

BOLD expands on the CWR Project, a global initiative to collect important species of crop wild relatives, ensure their long-term conservation, and facilitate their use in breeding new, improved seeds. The pioneering initiative enhanced the capacity of genebanks in 25 countries to collect and conserve the diversity found in crop wild relatives. In a seven-year effort, more than 4,500 seed samples of more than 300 different species or subspecies of crop wild relatives were collected and conserved in genebanks. The project also developed pre-breeding and evaluation partnerships spanning 50 countries to use wild relatives in developing new varieties of 19 crops that can better withstand pests, heat and drought—an essential step in securing global food security in the face of climate change.

Emergency Relief for Crop Diversity

Under BOLD, supported by the Global Crop Diversity Trust and the International Plant Treaty, a unique **Emergency Reserve Fund** provides qualifying genebanks with emergency relief and urgent upgrades to ensure their collections are safe and they can continue operations. It will target long-term collections in developing countries of regional and international significance and special value for food security, including field collections.

BOLD is designed to overcome constraints to crop diversity reaching breeders and farmers. Springboarding from the CWR Project it will:

- > Support better management of national collections for the long-term, including the safe back-up of materials in the Svalbard Global Seed Vault.
- > Develop new crop diversity and deploy it in production systems through effective partnerships with seed system actors and farmers.
- > Advocate for crop diversity, and genebanks in particular, at global and national levels.



A farmer tends to rice paddies at the Maname experimental farm in Tolima, Colombia where different varieties of rice destined are tested under local conditions.

Photo: Juan Arredondo/Reportage by Getty Images for the Crop Trust.

Coordinated: Addressing Challenges, Together

BOLD is organized in five major work packages, or elements.



In Rwanda, the 10th largest producer of dry beans globally, people say “a meal without beans is no meal”.

Photo: Crop Trust/Luis Salazar.

1. Capacity and Resource Development

Strengthening national genebanks

Project timeline:
2021 – 2030

This element of the project will strengthen the capacity of 15 partner national genebanks, and other partners, to manage, document, conserve, and duplicate crop diversity, and make it available to farmers and breeders.

This will be achieved by:

- > Upgrading facilities and equipment
- > Training staff on genebank operations and relevant policies
- > Implementing a quality management system
- > Identifying and making available useful diversity
- > Engaging in pre-breeding activities
- > Establishing and engaging user groups and involving (pre-) breeders, farmers, extension services, researchers and others

The **Emergency Reserve Fund** is managed as part of this work package.

2. Making New Diversity Available

Using crop diversity to combat the effects of climate change

Project timeline:
2021 – 2030

Grasspea, alfalfa, durum wheat, potato, rice, finger millet and barley are the focus of this element, which will facilitate the use of new diversity of these crops by breeders and farmers for climate change adaptation and food security in partner countries and continue the work with pre-breeding and collecting partners from the CWR Project.

BOLD will complement the strengthened capacity of national genebank partners to conserve crop diversity by extending and advancing selected existing pre-breeding and evaluation partnerships from the CWR Project. This will include on-farm trials and other participatory approaches to ensure a more effective flow of novel crop diversity to breeders and farmers in support of climate change adaptation and food and nutrition security.

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3. Genebanks and Seed Systems

Supporting national genebanks to share diversity

Project timeline:
2021 – 2030

This element of the project will include a major research component led by the Norwegian University of Life Science (NMBU), to explore different, complementary ways that crop diversity can be readily accessed by farmers, by developing models for strengthening the connection between genebanks and national seed systems. Innovative pilot efforts by national genebanks in four partner countries will then be supported to actively contribute diversity to national and regional seed systems as models for other national programs to follow.

The objective of the Genebanks and Seed Systems element is to establish sustainable options for increasing farmers' access to genetic diversity from genebanks. This requires context-specific technical and institutional innovations, which can range from establishing new collaborations for seed multiplication to re-examining mandates of genebanks vis a vis other actors.

4. Safety Duplication at Svalbard Global Seed Vault

Safeguarding crop diversity in the long term

Project timeline:
2021 – 2024

Backing up key crop diversity from low- and middle-income countries in the Svalbard Global Seed Vault will ensure its continued availability to farmers, breeders and researchers in the future, especially in case of disasters and extreme events.

The Svalbard Global Seed Vault is widely recognized, including by the UN's Food and Agriculture Organization (FAO) and the International Plant Treaty, as an ultimate insurance policy for the world's genebanks. It is an integral component of the global system of genebanks, providing a secure, low-cost safety back-up of collections.

This element of the project will establish agreements with 20 partners to provide technical and financial support for the regeneration and safety duplication of key collections at the Seed Vault.

5. Communications, Engagement and Outreach

Celebrating outcomes, creating connections

Project timeline:
2021 – 2030

Proactively communicating the results of BOLD to stakeholders to advocate for the necessary financial, legal, technical, and institutional support at national and international levels is essential. This element will highlight the vital role of genebanks and project partners on the global development agenda, including the Svalbard Global Seed Vault, in the conservation and use of crop diversity in support of climate change adaptation and food security.

It will also create and leverage a sustainable community of practice among partners to improve communication, outreach capacity, and knowledge exchange. National and global campaigns will target stakeholders, especially farmers, seed system actors, and policymakers.

BOLD Outcomes

- > Genebanks effectively manage crop diversity for long-term use by farmers, breeders and other users, including safety duplication
- > Genebanks facilitate the use of new crop diversity by breeders and farmers in the development of advanced lines with novel traits
- > Genebanks strengthen linkages with seed system actors through technical and institutional innovations which enhance access to crop diversity
- > Genebanks proactively engage with stakeholders to advocate for financial, legal, technical and institutional support for crop diversity conservation

As we grapple with the effects of the climate, health and biodiversity crises, BOLD paves the way for ensuring resilience to these crises and future food security. By working with partners around the world, it will harness our invaluable crop diversity for farmers, families and communities in the long term.

About the Global Crop Diversity Trust

The Global Crop Diversity Trust, known as the Crop Trust, is an international organization working to support conservation and use of plant genetic resources. It supports genebanks, the Svalbard Global Seed Vault and pre-breeding activities around the world. The Crop Trust is recognized as an essential component of the funding strategy of the International Treaty on Plant Genetic Resources for Food and Agriculture. For more information, see www.croptrust.org.

About the Government of Norway

The Norwegian Ministry of Foreign Affairs supports projects and programs around the world through Norway's development agency, Norad.



Fieldwork to regenerate fenugreek seeds from the Ethiopian Biodiversity Institute (EBI) at a plot in Bishoftu.

Photo: Crop Trust/Nora Castañeda-Alvarez.