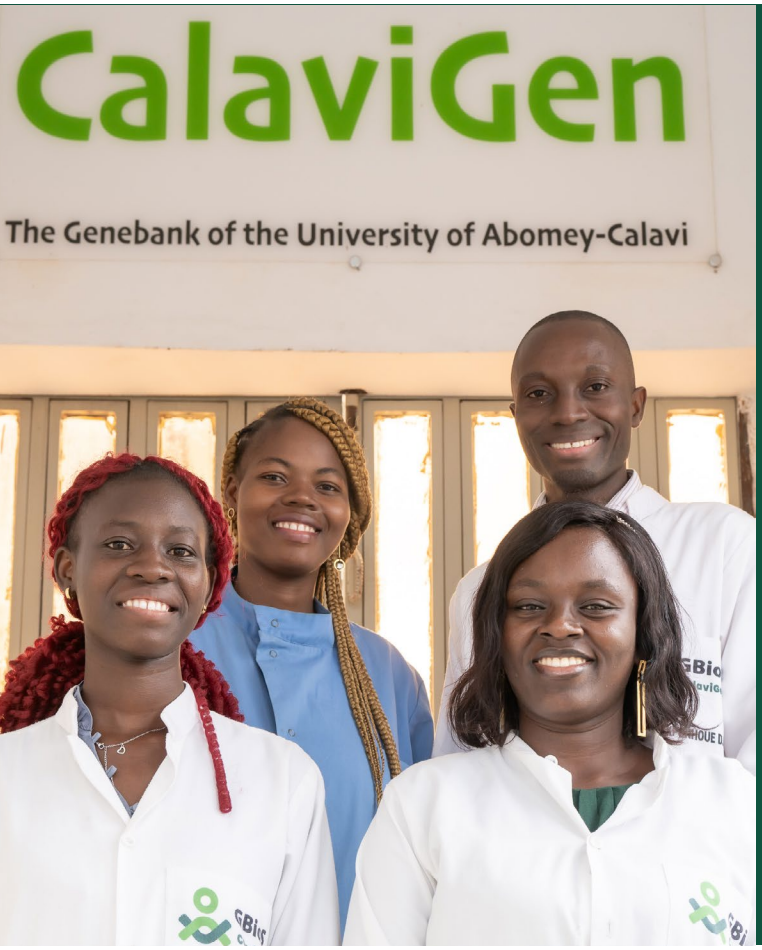
From Benin to Svalbard: How a Non-Traditional Genebank Safeguarded Its Seeds



Summary

Forty-two BOLD partners successfully safeguarded their seed collections in the Svalbard Global Seed Vault (SGSV). For 28 of these partners, it was their first-ever deposit, marking a major milestone in global conservation. Many of these partners faced barriers such as concerns about biopiracy, limited resources and funding for seed regeneration, long-term storage and back-up. With critical funding and technical support from the BOLD Project, partners were able to regenerate, transport and safely duplicate their plant genetic resources in Svalbard. One notable example is the non-traditional genebank at the Genetics Biotechnology & Seed Science Laboratory of the University of Abomey-Calavi (GBioS) in Benin. A dedicated research team regenerated and deposited nearly 3,000 accessions, including culturally and nutritionally important crops. By supporting both traditional and non-traditional genebanks, BOLD has set a secure foundation for future food and nutrition supply.

Background & Challenges

The Svalbard Global Seed Vault (SGSV) is often known as a modern-day "Noah's Ark" for seeds. It provides secure, long-term storage and hope for the world's food supply in the face of catastrophes such as natural disasters, conflict or genebank failures.

Safe, free and long-term storage at the SGSV is open to genebanks worldwide. Seeds stored in the SGSV can be returned to the country of origin if original collections are lost due to unforeseen events. In practice, however, concerns about biopiracy and a limited understanding of how the SGSV operates have discouraged many genebanks from depositing seeds in the SGSV.

Logistics and costs to deposit in SGSV present additional barriers. Regenerating enough seed for duplication and transporting it safely to such a remote location is time-consuming and expensive, often far beyond the reach of many institutions.

This challenge is shared by non-traditional genebanks in research institutions, such as the Genetics Biotechnology & Seed Science Laboratory (GBioS) in Benin. GBioS is supported by a team of passionate plant researchers and breeders committed to safeguarding plant genetic resources but lacked the resources to carry out large-scale seed regeneration. It also had limited funds and support for shipping plant material internationally. Prior to 2022, GBioS was constrained to store limited quantities of seed in laboratory freezers, which are too small to hold Benin's rich plant diversity.

The Solutions & Impacts

In 2021, the Crop Trust, in coordination with its partners at NordGen and the Norwegian Ministry of Food and Agriculture, as well as the International Treaty on Plant Genetic Resources for Food and Agriculture, launched a competitive grant scheme to support the backing up of crop diversity in Svalbard. The BOLD Project (Biodiversity for Opportunities, Livelihoods and Development) administered the grants (Box 1).

Building trust and addressing biopiracy concerns

First, the BOLD team clarified the SGSV's role and deposit process with partners. That step increased transparency and helped build trust among candidate partners. This outreach helped address concerns about biopiracy and benefit sharing and gave genebanks the confidence to propose regeneration projects and store seed duplicates internationally. By aligning partners around a shared goal for long-term conservation, BOLD motivated regeneration efforts and encouraged safety duplication at a global scale.

Navigating each seed's journey to Svalbard

In 2021, Enoch G. Achigan-Dako, director of the laboratory and Dèdéou A. Tchokponhoué, genetic resources management lead at the Genetics Biotechnology & Seed Science Laboratory (GBioS) in Benin, were awarded a grant to regenerate and deposit 1,000 accessions, which represent at least 18 plant species. By the end of 2024, the team far exceeded this target. They regenerated 3,043 accessions and deposited 2,954 accessions from 27 species in Svalbard, which is nearly 10% of all accessions contributed through this BOLD initiative (Table 1).

Through partnerships with non-traditional genebanks, including universities and non-governmental organizations (NGOs), BOLD enabled the backup of opportunity crops such as jute mallow (*Corchorus olitorius*), fonio (*Digitaria exilis*) and Sisrè berry, also known as miracle berry (*Synsepalum dulcificum*). These crops hold strong cultural importance and potential for food, nutrition, climate resilience, and medical applications. For example, Sisrè berry has the unique ability to turn sour flavors sweet, with potential uses in food, beverage, and medical industries.

The BOLD Project

BOLD (Biodiversity for Opportunities, Livelihoods and Development) is a 10-year initiative to strengthen global food and nutrition security through the conservation and use of crop diversity. Funded by the Government of Norway since 2021, BOLD supports national genebanks in Africa, Asia and Latin America to better conserve, manage and share their collections with farmers, breeders and others for resilient, productive food systems.

Table 1. BOLD partners and details on number of accessions regenerated and duplicated in Svalbard through BOLD project (as of 2025 October 20). Full names of BOLD partners see Table 2.

Number	Country	BOLD partner acronym	Partner type	Number of accessions regenerated through BOLD	Number of accessions duplicated in Svalbard through BOLD
1	Albania	IPGRA	University	1900	1900
2	Armenia	SCA	University	1934	1865
3	Armenia	SCVIC	Public	234	234
4	Bangladesh	BRAC	NGO	815	725
5	Benin	GBioS	University	3043	2954
7	Benin	GRIGADEB	NGO	2039	1203
6	Benin	INRAB	Public	574	381
8	Bolivia	IASA	University	598	500
9	Bosnia and Herzegovina	University of Sarajevo	University	414	252
10	Brazil	Embrapa – Maize & Sorghum	Public	229	245
11	Brazil	Embrapa – Rice & Bean	Public	2832	2758
12	Burkina Faso	INERA	Public	1040	1040
13	Burundi	ISABU	Public	1330	1104
14	Cameroon	Eco Germ Farmers	NGO	990	990
15	Chad	ITRAD	Public	1206	1145
17	Costa Rica	CATIE	University	1040	1100
18	Costa Rica	UCR	University	130	130
16	DR Congo	INERA	Public	384	384
19	Ghana	UCC	University	100	100
20	Indonesia	BIT	NGO	377	294
22	Kazakhstan	KSRIAPG	Public	522	522
23	Kenya	SSN	NGO	1240	1000
24	Madagascar	FOFIFIA	Public	1126	1045
25	Malawi	MPGRC	Public	1198	813
26	Malaysia	MARDI	Public	725	725
27	Mali	IER	Public	3835	3378
29	Nigeria	ABU	University	508	406
28	Nigeria	BERC	NGO	362	362
30	Nigeria	NIHORT	Public	400	200
31	Nigeria	OAU/UNIOSUN	University	560	560
32	North Marcedonia	Fabia CSB Bogdanci	NGO	380	341
34	Papua New Guinea	NARI	Public	865	520
33	Philippines	NPGRL	University	1816	1207
35	Suriname	ADRON	Public	577	577
36	Tanzania	NMAIST	University	241	0
21	Tanzania	TARI – Kahinga Center	Public	1111	0
37	Tanzania	TARI – Uyole	Public	512	0
38	Vietnam	CTU	University	1039	1000
39	Zambia	ZARI	Public	1450	787
40	Zimbabwe	CTDT	NGO	1110	263
41	Zimbabwe	GRBI	Public	536	191
42	Zimbabwe	LSU	University	3284	0
	Total			**44,606**	**33,201**

Table 2. Full name of all BOLD partners listed in Table 1.

BOLD Partner Acronym	BOLD Partner Full Name
ABU	Ahmadu Bello University, Nigeria
ADRON	Anne van Dijk Rice Research Centre, Suriname
BERC	Biodiversity Education and Resource Centre, Nigeria
BIT	The Borneo Institute, Indonesia
BRAC	Bangladesh Rural Advancement Committee
CATIE	Tropical Agronomic Research and High Education Center, Costa Rica
CTDT	Community Technology Development Trust, Zimbabwe
CTU	Can Tho University, Vietnam
FOFIFIA	The National Center for Applied Research on Rural Development, Madagascar
GBioS	Genetics, Biotechnology & Seed Sciences Laboratory, Benin
GRBI	Genetic Resources and Biotechnology Institute, Zimbabwe
GRIGADEB	Group of Research, Agricultural Innovation, Biodiversity Management and Action for Sustainable and Equitable Local Development, Benin
IASA	Instituto de Agroecología y Seguridad Alimentaria, Bolivia
IER	Institut d'Economie Rurale, Mali
INERA	Institute of Environment and Agricultural Research, Burkina Faso
INERA	Institut National pour l'Etude et la Recherche Agronomiques, DR Congo
INRAB	Institut National des Recherches Agricoles du Bénin
IPGRA	Institute of Plant Genetic Resources of Albania
ISABU	Institut des Sciences Agronomiques du Burundi
ITRAD	Institut Tchadiende Recherche Agronomique pour le Développement, Chad
KSRIAPG	Kazakhstan Research Institute of Agriculture and Plant Growing
LSU	Lupane State University, Zimbabwe
MARDI	Malaysian Agricultural Research and Development Institute
MPGRC	Malawi Plant Genetic Resources Centre
NARI	National Agricultural Research Institute, Papua New Guinea
NIHORT	National Horticultural Research Institute, Nigeria
NMAIST	The Nelson Mandela African Institute of Science and Technology, Tanzania
NPGRL	National Plant Genetic Resources Lab, University of the Philippines
OAU/UNIOSUN	Obafemi Awolowo University with Osun State University, Nigeria
SCA	Scientific Center of Agrobiotechnology, Armenia
SCVIC	The Scientific Center of Vegetable and Industrial Crops, Armenia
SSN	Seed Savers Network, Kenya
TARI	Tanzania Agricultural Research Institute, Tanzania
UCC	University of Cape Coast, Ghana
UCR	Universidad de Costa Rica
ZARI	Zambia Agriculture Research Institute

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"I would like to express my personal gratitude and that of the whole GBioS team to Crop Trust for their tremendous support. Their support has been instrumental for what we have become today."

Dèdéou A. Tchokponhoué
Genetic Resources Management Lead at GBioS

Without BOLD, many partners might never have taken the step to safeguard their collections in the SGSV. BOLD provided both funding and technical support to regenerate plant materials, demystify the deposit process and prepare seed duplicates for long-term safety duplication. For several non-traditional genebanks like GBioS, BOLD created a first-ever pathway to engage in global conservation safety backup.

Today, the SGSV safeguards more than 1.3 million seed samples from genebanks worldwide. By supporting both traditional and non-traditional genebank partners, BOLD ensured that seeds from local fields, each with unique genetic value, are securely backed up in the Arctic, to secure the foundation of our future food and nutrition supply.

Additional details can be found at https://bold.croptrust.org/.

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