



Annual Progress Report 2018



NordGen report on the agreement on the funding, management and operation of the Svalbard Global Seed Vault.

Contents

2018 at a glance	3
Foreword	4
1. Introduction.....	5
2. Seed deposits and depositors in 2018.....	5
3. Celebration of the 10 year anniversary	9
4. The International Advisory Panel	11
5. Public awareness activities.....	12
6. Additional comments related to budget and work plan platforms	13
6.1. Platform 1: Overall Administration	13
6.2. Platform 2: Information management	14
6.3. Platform 3: Practical Seed Administration	15
6.4. Platform 4: PR.....	15
6.5. Long term storage of seeds in permafrost	15
7. Financial result	16
Annex 1. List of depositors to the Svalbard Global Seed Vault	17
Annex 2. Budget and spending 2018.....	22
Annex 3. Lectures and presentations 2018	23
Annex 4. Publications 2018	25

Front page photo: Ramni Jamnadass and Alice Muchugi depositing seeds from the World Agroforestry Centre, ICRAF in Kenya at the Svalbard Global Seed Vault at the celebration of the 10 year anniversary on the 26th of February 2018. (Photo Sara Landqvist)

2018 at a glance

- In total 92,638 safety duplicates from 30 depositors were added to the Seed Vault collection in 2018. By the end of the year the total holding of seed accessions in the Seed Vault was 983,524 samples.
- Six new institutions signed the Deposit Agreement in 2018, from Slovakia, Portugal, Chile, Thailand, the United Kingdom and Latvia. Two of these were results of merging and reorganisation of institutes that already had deposited seeds. Besides these, three gene banks deposited seeds for the first time in 2018, located in Estonia, Thailand and the United Kingdom.
- The Seed Vault 10 year anniversary was celebrated at the end of February in the presence of about 110 regular participants and significant media attendance. The events were hosted by the Norwegian Minister for Agriculture and Food Jon Georg Dale. In addition to a major seed deposit by 23 gene banks, the celebration program included a Seed Vault Summit, a reception and cultural program in the Longyearbyen Cultural Center.
- After a comprehensive planning and preparation process, the upgrade of the Seed Vault facility started in March 2018. The former so called Svalbard tube has been replaced by a watertight concrete tunnel, in addition to other security and technical improvements.
- The Seed Vault International Advisory Panel (IAP) gathered for the first time in Longyearbyen back to back with the 10 year anniversary.

Foreword

NordGen is responsible for the operation and management of the Svalbard Global Seed Vault according to the Three Party Agreement with the Norwegian Ministry of Agriculture and Food (MAF) and the Global Crop Diversity Trust (Crop Trust). 2018 was the first full year in the second ten year three party agreement that is valid from 1st of July 2017.

The objective of the Seed Vault is to provide a safety net for the international conservation system of plant genetic resources, and to contribute to securing the maximum amount of plant genetic diversity of importance to humanity for the long term. The success of the Seed Vault has continued this year both measured in terms of participation from the global gene bank community and in terms of public interest and awareness about the purpose of the Seed Vault. By the end of 2018, the Seed Vault holds 983,524 safety duplicates representing wide inter- and intra-specific crop diversity deposited by 76 genebanks from around the world.

The Svalbard Global Seed Vault is a flagship project for NordGen, and 2018 was the eleventh year of operation. We take great pride in the role we play in this project and I take this opportunity to thank our partners MAF and the Crop Trust for the good collaboration.

I would also like to thank Statsbygg for the excellent working relationship we have at Svalbard, and this year in particular for high quality management of the Seed Vault technical upgrade project. Thanks also to all partners for good cooperation during the amazing 10 year anniversary that was celebrated in Longyearbyen in February. The event gave all partners a lot of positive credit and significantly enhanced public awareness about the Seed Vault and its mission.

Lise Lykke Steffensen
Director NordGen

1. Introduction

This annual progress report for the Svalbard Global Seed Vault gives an overview of the NordGen operation and activities related to the Seed Vault in 2018. NordGens' responsibilities are stated in the Three Party Agreement providing for the long term funding, management and operation of the Svalbard Global Seed Vault. The annual progress report is prepared by NordGen in accordance with obligations in the Three Party Agreement Article 3.19.a).

The overall guidelines for the NordGen mission is to fulfil the objectives for the Svalbard Global Seed Vault as they are expressed in the standard Depositor agreement between depositors and the Royal Norwegian Ministry of Agriculture and Food, saying that the Seed Vault was established with the *“objective to provide a safety net for the international conservation system of plant genetic resources, and to contribute to the securing of the maximum amount of plant genetic diversity of importance to humanity for the long term in accordance with the latest scientific knowledge and most appropriate technique”*.

The operation of the Seed Vault is a collaborative endeavour at several levels. At the management level NordGen collaborates closely with MAF and the Crop Trust. At the facility operation level NordGen cooperates with Statsbygg in Longyearbyen. At the seed logistics level we cooperate with the institutions sending safety duplicates as well as the chain of logistics and security partners during shipment and transport to the Seed Vault. The partnerships at all levels have worked very well also in 2018.

2. Seed deposits and depositors in 2018

The number of deposited seed accessions and participating gene banks in 2018 was the highest since 2011, in terms of both deposited seed samples and participating institutes. One important reason for the high numbers was a specific invitation to gene banks to take part in a major seed deposit event during the celebration of the Seed Vault 10 year anniversary. The anniversary seed deposit event took place in the afternoon on the 26th of February, exactly 10 years after the opening in 2008.

At this occasion, representatives from 27 gene banks were present at the entrance of the Seed Vault and 77,671 seed samples from 23 gene banks were brought into the Vault. The seed deposit event was hosted by the Norwegian Minister for Agriculture and Food Jon Georg Dale.

In total three Seed Vault openings were organized in 2018. The second occasion for receiving seeds was organized in August comprising seed deposits from three regular gene banks and the last one took place in October comprising six gene banks. In total 92,638 new safety duplicates from 30 depositors were added to the Seed Vault collection in 2018. By the end of the year the total holding of seed accessions in the Seed Vault was 983,524 samples.

Table 1. Deposited and withdrawn seed accessions pr year and in total for the years 2008-2018. Figures showing status at the end of each year.

Year	Deposited pr year	Deposited in total	Withdrawals	Current holdings
2008	320549	320549		320549
2009	169505	490054		490054
2010	111101	601155		601155
2011	113364	714519		714519
2012	58078	772597		772597
2013	29155	801752		801752
2014	38052	839804	3 ¹⁾	839801
2015	36130	875934	38073 ²⁾	837858
2016	42979	918913		880837
2017	64403	983316	54354 ²⁾	890886
2018	92638	1075954		983524
Totals	1075954	1075954	92430	983524

¹⁾ Three *Hordeum* accession withdrawn by NordGen for regeneration

²⁾ ICARDA withdrawals

Two gene banks, CIP and ICARDA, deposited seeds at two occasions in 2018. ICARDA has deposited new seeds at four occasions since their first withdrawal of seeds in September 2015, in total 42,729 accessions while the total number of withdrawn ICARDA samples is 92,427.

In addition, the Myanmar Ministry of Natural Resources and Environmental Conservation deposited seeds of 230 different orchid species in August. This was their second deposit of threatened orchids from Myanmar rainforests, collected in a project supported by Norway. As not being species of importance for food and agriculture, the Myanmar orchid seeds are not included in the Seed Portal database.

Six new institutions signed the Deposit Agreement in 2018, located in Slovakia, Portugal, Chile, Thailand, the United Kingdom and Latvia. Two of these (INIAV in Portugal and INIA in Chile) were results of merging and reorganisation of institutes that already had deposited seeds in the Seed Vault.

By the end of 2018 NordGen has signed the Deposit Agreements (DA) with 85 institutions (Annex 1). Three of these are renewed agreements due to merging and reorganisation of institutes. In addition five signatories have not yet conducted deposits.

Twelve of the current 76 depositors are International Agricultural Research Institutes (IARCs), 52 are national gene banks, two are regional genebanks, six are university gene banks and three are NGO gene bank collections. One of the depositors is a private company that has deposited seeds in cooperation with the country's government (Singapore). It should be noted that the distinction between national

gene banks and universities is not clearly defined as universities in some countries have responsibilities as national gene banks.

Figure 1 shows the proportion and numbers of safety duplicates deposited by different categories of genebanks by the end of 2018. The largest share of the current holdings in the Seed Vault is deposited by IARCs represented by several institutes belonging to the Consultative Group of International Agricultural Research Centres (CGIAR), the Asian Vegetable Research Centre (AVRDC) and the Tropical Agricultural Research and Higher Education Centre (CATIE), all holding collections of PGRFA in trust for the UN Food and Agriculture Organisation (FAO).

Considering the national and subnational collections, a significant number of the depositors are located in developing regions; however the numbers of safety duplicates sent from institutes in developing regions are smaller than the numbers sent from institutes in developed regions.

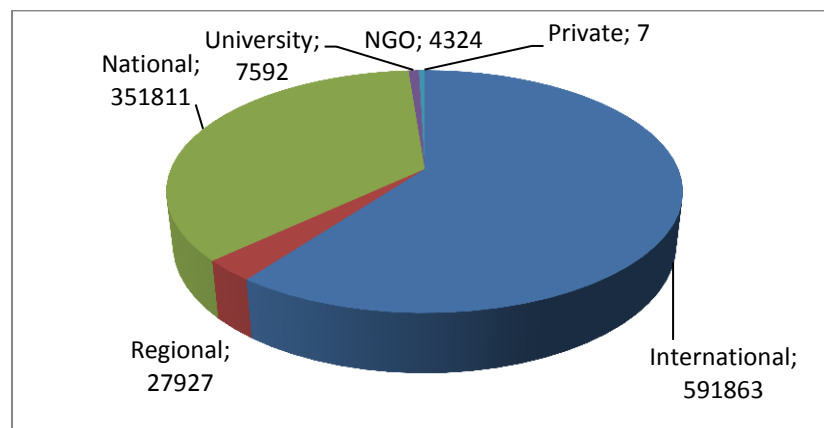


Figure 1. The proportion and numbers of safety duplicates currently deposited in The Vault at the end of 2018 by different categories of genebanks. The distinction between national gene banks and universities is not clearly defined as universities in some countries have responsibilities as national gene banks.

A routine for transferring previous seed deposits to new gene bank institutions after reorganisation and/or merging of institutions has been developed. In addition to the gene banks in Chile and Portugal, one of the depositor gene banks in Australia (Australian Pasture Gene bank, APG) has been reorganized, signed a new agreement, made new deposits under the new name and taken over the ownership of previously deposited seeds from the former South Australian Research and Development Institute (SARDI).

In addition to these, three gene banks deposited seeds for the first time in 2018; the Estonian Crop Research Institute, Department of Agriculture gene bank in Thailand and the United Kingdom Vegetable Gene Bank at the University of Warwick.

A complete list of depositors, signed agreements and current seed deposits is included in Annex 1 to this report. Three Seed Vault openings have been organized during 2018, see Table 2.

Table 2. Seed Vault deposits and dates in 2018

Depositor / Date of seed deposit	Acronym	Code	Accessions
26th of February			
Australian Grains Genebank	AGG	AUS165	9283
Australian Pastures Genebank	APG	AUS167	25567
Africa Rice Center	AfricaRice	BEN089	861
Plant Gene Resources of Canada	PGRC	CAN004	3858
Station Federale de Recherches en Production Vegetale de Changins	AGROSCOPE	CHE001	719
Instituto de Investigaciones Agropecuarias	INIA	CHL044	102
Centro Internacional de Agricultura Tropical	CIAT	COL003	323
Centro Agronomico Tropical de Investigacion y Enseñanza	CATIE	CRI001	591
Leibniz Institute of Plant Genetics and Crop Plant Research	IPK	DEU146	5556
Estonian Crop Research Institute	ETKI	EST019	133
International Crop Research Institute for the Semi-Arid Tropics	ICRISAT	IND002	355
Department of Agriculture, Food and Rural Development	DAFF	IRL029	296
World Agroforestry Centre	ICRAF	KEN023	318
International Institute of Tropical Agriculture	IITA	NGA057	1530
Margot Forde Forage Germplasm Centre, AgResearch Ltd	AGRESEARCH	NZL001	512
Centro Internacional de la Papa	CIP	PER001	94
International Rice Research Institute	IRRI	PHL001	3433
Portuguese Bank of Plant Germplasm	INIAV	PRT001	217
Nordic Genetic Resource Center	NORDGEN	SWE054	1307
International Centre for Agricultural Research in Dry Areas	ICARDA	SYR002	8647
The World Vegetable Center	AVRDC	TWN001	1004
Seed Savers Exchange	SSE	USA974	242
National Plant Germplasm System	NPGS	USA996	12723
21st of August			
N.I. Vavilov All-Russian Scientific Research Institute of Plant Industry	VIR	RUS001	804
National Rice Seed Storage Laboratory for Genetic Resources	NRSSL	THA012	86
Department of Agriculture, Ministry of Agriculture and Cooperation	DOAGB	THA032	32
31st of October			
Crop Research Institute	CRI	CZE122	362
International Livestock Research Institute	ILRI	ETH013	389
Warwick Genetic Resources Unit	HRIGRU	GBR006	101
Centro Internacional de la Papa	CIP	PER001	182
International Centre for Agricultural Research in Dry Areas	ICARDA	SYR002	11411
SADC Plant Genetic Resources Centre	SPGRC	ZMB030	1600

In total, 287 seed boxes were taken into the Seed Vault in 2018. Over the years, 2976 seed boxes have been deposited in the Vault, while 290 boxes have been taken out. By the end of 2018 2686 boxes are stored in the Vault. The capacity of the current shelving is 2880, which means that there, at the moment, are approximately 200 free box locations in seed storage hall #2.

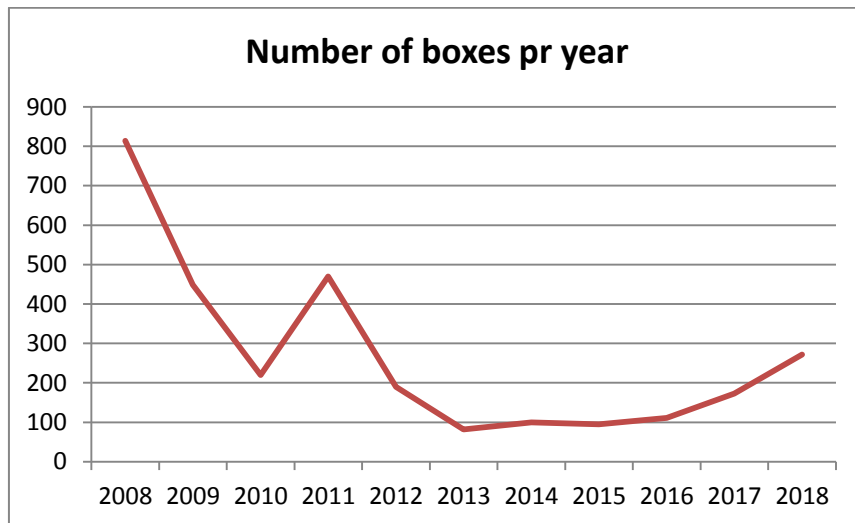


Figure 2. Numbers of boxes arriving per year 2008-2018. (Withdrawals not shown).

3. Celebration of the 10 year anniversary

The Svalbard Global Seed Vault ten years anniversary was celebrated in Longyearbyen between the 24rd and the 28th of February. NordGen was commissioned by MAF to organize the celebration events. Planning and conducting of the anniversary events were carried out through most of 2017 in cooperation with MAF, Crop Trust and local authorities and partners in Longyearbyen.

Registered participants, besides media, mounted to around 110 participants. This number comprised the Norwegian Minister of Agriculture and Food with staff and invited guests, gene bank representatives, invited speakers to the Seed Vault Summit, the International Advisory Panel, representatives from the Nordic Council of Ministers, the NordGen board and a large group of other cooperative partner representatives. In addition, Crop Trust and NordGen were present with delegations for organizing the events and for serving guests and media. The number of media representatives mounted to around 50.

The official anniversary programme started with a tour at Svalbard Museum on Sunday the 25th of February. On the very anniversary day, Monday the 26th the conference The Seed Vault Summit “Towards rational conservation and sustainable use of plant genetic resources” was organised with invited speakers from different parts of the global plant genetic resource community; farmers, breeding and research, gene banking, policy and stakeholder organisations.

The summit started with a ceremony involving gene bank participants pouring seeds of their important gene bank crops into the so called Seed Vault Seed Cylinder. This item was made for symbolizing the cornerstone when the decision to build the Seed Vault was announced by the Norwegian Prime Minister Jens Stoltenberg in June 2006.



Figure 3. Representatives from 27 gene banks gathered at the Seed Vault Summit; First row from the left; David Ellis (Peru), Iván Matus (Chile), Hari Upadhyaya (India), Teresita Borromeo (the Philippines), Ana Maria Barata (Portugal), Justify Shava, (Zambia) and Peter Wenzl (Colombia). Second row; Lise Lykke Steffensen (NordGen), Michael Abberton (Nigeria), Dagfinn Høybråten (Nordic Council of Ministers), Alice Muchugi (Kenya) and Rajeev Varshney (India). Third row; Beate Schierscher, (Switzerland), Ahmed Amri (Morocco), Gordana Djuric (Bosnia & Herzegovina), Jean Hanson (Ethiopia), Jon Georg Dale (Norway), Suwit Chaikiatiyos (Thailand) and Graziano Rossi (Italy). Fourth row; Arthur da Silva Mariante (Brazil), Külli Annamaa (Estonia), Dallas Kessler (Canada), Sally Norton (Australia), William Solano (hidden)(Costa Rica), Maarten van Zonneveld (Taiwan), Ramni Jamnadass (Kenya), Steve Hughes (Australia), Ruairaidh Sackville Hamilton (the Philippines), Lee Buttala (USA), Thomas Payne (Mexico) and Garry Duffy (Ireland).

The Seed Vault Summit concluded a statement with recommendations to governments to tackle three urgent tasks; to facilitate improvement of community seed banks, to address the need to protect and safeguard the viability of stored seeds and other plant genetic resources, and to strengthen the global system for conservation and sustainable use of crop diversity. The statement was submitted to all participants and published on the official Seed Vault webpage.

After lunch, the anniversary seed deposit chaired by the Norwegian Minister of Agriculture and Food Jon Georg Dale, took place at the Seed Vault entrance. Representatives from the participating gene banks carried one box of their own seeds through the entrance door.

In the evening the Minister hosted a reception at Longyearbyen Cultural Centre. Afterwards the audience was invited to attend the music and dance performance "Frozen Songs" produced by Zero Visibility Corp, Hålogaland teater/The Arctic Theatre and the Ibsen International foundation. NordGen had cooperated with this consortium for a couple of years already, and the performance has been shown in European countries including Belgium, Serbia, France, Spain, Italy and Austria, and parts of it in China.

Seed Vault group visits for participants were organized on Tuesday the 27th. In the evening Crop Trust organized a Legacy Awards Dinner at Mary Ann's Polarrigg, where a number of gene bank managers approaching retirement were honoured.

Media and press delegations were taken care of during the whole week, from Thursday the 24th of February until the 1st of March. A press seminar was organized on the 24th of February and journalists were given a short tour in groups inside the Seed Vault during the following days, guided by NordGen and Crop Trust staff. Some media groups and other visitors were given a guided tour in Coal Mine #3 and to the NordGen seed container that is still placed here, hosting seeds included in the 100 seed longevity experiment.

NordGen noticed comprehensive feedback after the celebration expressing appreciation for a successful anniversary. Costs for NordGen extra work load related to the Seed Vault anniversary have been covered by extra grants provided by MAF.

4. The International Advisory Panel

The first meeting of the International Advisory Panel (IAP) was conducted back to back with the Seed Vault 10 year celebration, from the 25th to the 27th of February. The IAP has replaced IAC (International Advisory Council) that were operating during the first ten year phase of the Three Party Agreement.

Members of IAP are representing depositor institutes, suggested ad hoc for each meeting by Crop Trust and NordGen and approved by MAF. In addition, MAF appoints two members representing key stakeholders. The chair of the Governing body of the ITPGRFA is invited to act as the chairperson of IAP. The NordGen director is the responsible secretary of IAP.

Members of the IAP for the meeting in 2018 have been:

- Christine Dawson, USDA, USA (chair)
- Ahmed Amri, ICARDA, Morocco
- Ann Tutweiler, Bioversity, Italy

- Arthur da Silva Mariante, Embrapa, Brazil
- Gordana Djuric, University of Banja Luka, Bosnia & Herzegovina
- Kristin Børresen, Graminor, Norway
- Teresita Borrromeo, NPGRL, the Philippines

In addition to general information about routines etc. the IAP was informed by Statsbygg representatives about the ongoing construction improvements including a tour into the Seed Vault. IAP discussed procedures for attracting new eligible gene banks as depositors, future strategies for increasing the number of deposited samples and public awareness activities, including how IAP members can act as ambassadors for the Seed Vault. IAP members have during the year included the Seed Vault in their external information activities.



Figure 4. The Seed Vault International Advisory Panel while inspecting the Seed Vault facility. From the left Jon Georg Dale, Gordana Djuric, Lise Lykke Steffensen, Christine Dawson, Kristin Børresen, Teresita Borrromeo, Ann Tutweiler, Ahmed Amri, Arthur da Silva Mariante and Luigi Guarino, Crop Trust.

5. Public awareness activities

In accordance with article 4 in the Three Party Agreement, NordGen works considerably with public outreach activities, in cooperation with the partners. Information about the Svalbard Global Seed Vault is passed on through several platforms: responding to questions about the operation from the public and from media, presentations and lectures for different scientific and public audiences, written articles and giving press interviews.

Compared to previous years, a low number of visitors have been granted access to the Seed Vault during 2018. In the end of February the participants in the 10 year anniversary events, including media delegations, were given short guided tours in the Vault. In addition, around 40 members of the “Global

Seed Vault 10 year Anniversary Expedition” organized by Crop Trust and led by the American TV show host Martha Stewart was given a tour in the Seed Vault in early February. After the anniversary, from the beginning of March, the building work at the Seed Vault started on a full scale and the Vault was closed for all external visitors.

Significant parts of the public contact work load consist of responding to requests, mainly received by email. All serious emails are responded to. NordGen has during the year received and responded to around 200 requests ranging from simple requests for visiting the Vault and seed donations to more labour demanding press inquiries and media interviews and different offers for collaboration.

Media attention for the ongoing building project during 2018 has been limited. Inquiries about the Seed Vault construction and the ongoing technical upgrade have been forwarded to the Statsbygg Communication director.

By the end of 2017, MAF established a new official Seed Vault website www.seedvault.no. During 2018 NordGen has produced and published around 20 news web posts on this website. NordGen staff has given a significant number of lectures and presentations for various occasions and audiences during 2018. A list of lectures is given in Annex 3 and a list of articles in Annex 4.

6. Additional comments related to budget and work plan platforms

Work plan and budget for 2018 have partly been presented in four platforms. Some additional comments related to the approved budget are given below.

6.1. Platform 1: Overall Administration

The overall administration includes general management and administrative tasks related to the operation of the Seed Vault. Tasks include coordination and liaising with relevant partners and stakeholders, in particular MAF and the Crop Trust. The frequency of meetings and processes involving the NordGen director has been larger in 2018 than in average years, in particular activities related to the Seed Vault construction upgrade.

During the first months of 2018, significant time and resources were allocated to planning and implementation of the 10 year anniversary in Longyearbyen.

The financial administration covers annual budgets and financial statements to be presented to MAF and Crop Trust and bookkeeping's of records and original vouchers in accordance with Nordic Council of Ministers practice. NordGen reports on its work throughout the year in meetings between the partners and in its annual progress report.

NordGen staff assists in the Seed Vault operations with document handling, archive and organizing events and travels.

6.2. Platform 2: Information management

This activity area serves maintenance and updating of two databases handling information about seed deposits; one box storage system database and one safety duplicate database with basic data of all stored material.

Depositors provide electronic inventories that include a minimum set of descriptors necessary for unique identification of the material they wish to deposit prior to shipment to Svalbard. This allows NordGen to check if the data is complete and of satisfactory quality, as well as to check for duplications of material already stored in the Vault. The Seed Portal database, available online on www.nordgen.org/sgsv, is updated directly after seed deposit events.

The Seed Portal has remained unchanged since the opening and the first deposits were made in 2008. Preparation for a Seed Portal upgrade started in 2017 and has been further pursued in 2018. MAF has already allocated parts of the funding needed for the upgrade that will comprise improved procedures for withdrawals of seeds, for handling reorganizing and renaming of depositor institutes, standardizing species names and taxonomy and routines for replacing previously deposited accessions with new fresh seeds. New tools can also improve and widen the display of interesting data in the database.

The Seed Vault databases are maintained on separate servers at NordGen headquarters in Sweden. All data are backed-up daily to two different locations; a dedicated backup server and a remote server located in another town.

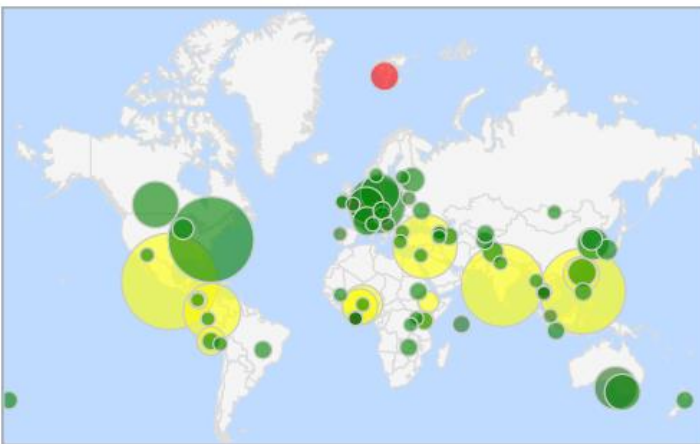


Figure 5. Map at the Seed Portal interface displaying gene banks with safety deposits in the Svalbard Global Seed Vault. The radius of the circles is proportional to the number of deposited samples. Yellow circles are International Agricultural Research Centres and green circles are regional, national or subnational genebanks. (The radius of the red Svalbard circle is not relative to the holdings.)

6.3. Platform 3: Practical Seed Administration

The practical seed administration covers all parts of the safety deposit process, from the initial communication with seed collection holders via assistance regarding agreements, logistics, security, customs, phytosanitary certificates etc. until the seeds are in place in the Seed Vault.

The regular shipment route that has been used since the start implies that the depositors conduct shipments with a regular courier from their gene bank to Oslo airport, from where Jetpak forward the seeds to Longyearbyen in accordance with rates that are negotiated by NordGen. In cases where the shipment cost is covered by the Crop Trust, NordGen and Crop Trust staff works in close collaboration to ensure proper packaging and shipment.

During 2018, direct shipping of boxes/packages from the depositor institute to the logistic partner in Longyearbyen, Pole Position Logistics (PPL), has been explored and tested for some of the shipments. All seed shipments and either system have worked well and not a single seed sample or seed box have been missing.

Logistics at Svalbard have been coordinated by NordGen and handled in collaboration with the local logistics company PPL. Screening and security at arrival in Svalbard has been handled in collaboration with the airport authorities at Longyearbyen airport and the security company Securitas. Statsbygg has provided support with logistics and technical backstopping during deposit openings at Svalbard. Seed Vault openings for receiving seeds have been coordinated with Statsbygg and the ongoing building works.

6.4. Platform 4: PR

Public relation activities are carried out and coordinated by the NordGen communication manager and the Seed Vault Coordinator. Several NordGen employees have been involved in responding to requests, providing information on a broad diversity of occasions and platforms, giving lectures and organising travels and events related to PR activities.

Further details are described in the separate public awareness activities chapter above.

6.5. Long term storage of seeds in permafrost

The so called NordGen 100 year experiment for testing of longevity of seeds was established in December 1986 in Coal Mine #3 owned by Store Norske Spitsbergen Kulkompani. Seed samples have been withdrawn for testing every fifth year (every 2.5 years up till 2006), the last set so far in February 2017. Seeds were tested during 2017. A report developed during 2018 will be published in 2019.

MAF has indicated the need for implementing a new long term seed longevity experiment in the Seed Vault, involving some depositing gene banks. The planning process started by the end of 2018.

7. Financial result

The financial result for 2018 amounts to SEK 23,941 as stated in the Budget and Spending report in Annex 2. The accounts are quite in accordance with the budget. Increased workload accounted on a couple of platforms has been compensated by lower spending on others. Some overlap and unclear limits between accounts, especially related to coordination, practical seed administration and PR activities have resulted in deviations and adjustments in these budget and spending accounts, including travels.

The costs registered for the long term storage project cover rent to Store Norske Spitsbergen Kulkompani for having the steel container placed in the coal mine. Doubled spending in 2018 is due to the fact that the invoice for 2017 was paid in 2018.

The positive result is, according to the Three Party Agreement, transferred to the working capital fund.

Annex 1. List of depositors to the Svalbard Global Seed Vault

Listed in order of Deposit Agreement signature

Acronym	Country	Institute name	Wiews code	SDA	Accessions end 2018
WARDA	International, Benin	Africa Rice Center	BEN089	2007/2008	17700
CIAT	International, Columbia	Centro Internacional de Agricultura Tropical	COL003	2007/2008	56264
CATIE	International, Costa Rica	The Tropical Agricultural Research and Higher Education Center	CRI001	2007/2008	1314
ILRI	International, Ethiopia	International Livestock Research Institute	ETH013	2007/2008	5724
ICRISAT	International, India	International Crop Research Institute for the Semi-Arid Tropics	IND002	2007/2008	111178
ICRAF	International, Kenya	World Agroforestry Centre	KEN023	2007/2008	1095
CIMMYT	International, Mexico	Centro Internacional de Mejoramiento de Maiz y Trigo	MEX002	2007/2008	158218
IITA	International, Nigeria	International Institute of Tropical Agriculture	NGA057	2007/2008	22268
CIP	International, Peru	Centro Internacional de la Papa	PER001	2007/2008	9206
IRRI	International, Philippines	International Rice Research Institute	PHL001	2007/2008	125493
ICARDA	International, Syria	International Centre for Agricultural Research in Dry Areas	SYR002	2007/2008	66786
AVRDC	International, Taiwan	The World Vegetable Center	TWN001	2007/2008	16622
NORDGEN	Regional, Sweden	Nordic Genetic Resource Center	SWE054	30.01.2008	24864
IPK	Germany	Leibniz Institute of Plant Genetics and Crop Plant Research	DEU146	30.01.2008	54209
CGN	Netherlands	Centre for Genetic Resources	NLD037	30.01.2008	20238

PGRI-NARC	Pakistan	Plant Genetic Resources Institute, National Agricultural Research Centre	PAK001	30.01.2008	4622
SSE	USA	Seed Savers Exchange	USA974	30.01.2008	3554
NGBK	Kenya	Kenya Agricultural & Live-stock Research Organisation (KALRO): Genetic Resources Research Centre	KEN015	26.02.2008	1314
NAC	South Korea	National Agrobiodiversity Center	KOR043	06.05.2008	13185
IAS	Macedonia	Institute of Agriculture Skopje	MKDxxx	11.06.2008	0
NCPGR	India	National Bureau of Plant Genetic Resources	IND001	04.07.2008	225
VIR	Russia	N.I. Vavilov All-Russian Scientific Research Institute of Plant Industry	RUS001	04.07.2008	6082
RAC	Switzerland	Station Federale de Recherches en Production Vegetale de Changins	CHE001	27.10.2008	10384
EMBRAPA	Brazil	The Brazilian Agricultural Research Corporation	BRA008	06.11.2008	1319
AFT	Ireland	Oak Park Research Centre	IRL001	16.01.2009	577
DAFF	Ireland	Department of Agriculture, Food and Rural Development	IRL029	22.01.2009	396
TARI	Taiwan	Taiwan Agricultural Research Institute	TWN006	26.02.2009	10503
UAAS	Ukraine	Institute of Plant Production n.a. V.Y. Yurjev of UAAS	UKR001	03.03.2009	2782
PGRC	Canada	Plant Gene Resources of Canada, Canadian Genetic Resources Program	CAN004	05.11.2009	31955
ILRF	Georgia	I. Lomouri Research Institute of Farming.	GEO001	23.02.2010	305
AAS	North Korea	Pyongyang AAS	PRK013	18.03.2010	5700
UNALM	Peru	Universidad Nacional Agraria La Molina	PER002	25.05.2010	1296

ICCI	Israel	Institute of Cereal Crop Improvement, Tel Aviv University	ISR003	23.06.2010	900
DELEP	USA	Desert Legume Program. University of Arizona	USA971	24.08.2010	134
ARC	Sudan	Agricultural Research Corporation	SDN034	18.10.2010	1195
SPGRC	Regional, Zambia	SADC Plant Genetic Resources Centre	ZMB030	09.11.2010	3063
NAGREF	Greece	National Agricultural Research Organization	GRC035	02.02.2011	25
ICABIOGRAD	Indonesia	Indonesian Center for Agricultural Biotechnology and Genetic Resources	IDN179	02.02.2011	1050
MPGRPPD	Myanmar	Department of Agricultural Research	MMR003	23.02.2011	718
INIAP	Ecuador	Instituto Nacional Autónomo de Investigaciones Agropecuarias	ECU076	12.04.2011	168
NARO	Uganda	National Agricultural Research Organization	UGA031	26.05.2011	777
BARI	Bangladesh	Plant Genetic Resource Centre, Bangladesh Agricultural Research Institute	BGD164	10.06.2011	0
LSB	Italy	University of Pavia, Department of Earth and Environmental Sciences, Lombardy seed bank	ITA411	23.06.2011	2
NACGRAB	Nigeria	National Centre for Genetic Resources and Biotechnology	NGA010	06.09.2011	800
IRAG	Guinea	Institut de Recherche Agronomique de Guinée	GIN020	07.10.2011	0
RNGRC	Tajikistan	Republican National Genetic Resource Center	TJK027	14.11.2011	1646
AGRI	Azerbaijan	Genetic Resources Institute of the Azerbaijan National Academy of Sciences	AZE015	17.02.2012	1522
INRB	Portugal	Instituto Nacional de Recursos Biológicos	PRT005	05.03.2012	Transferred to PRT001
ISABU	Burundi	Agricultural Research Institute of Burundi	BDI003	19.06.2012	439

IER	Mali	Institute of Rural Economy	MLI002	19.09.2012	158
PSARTI	Mongolia	Plant Science Agricultural Research Institute	MNG030	02.10.2012	160
INIA La Platina	Chile	Unidad de Recursos Genéticos -INIA La Platina	CHL002	03.10.2012	Transferred to CHL044
AUG	Georgia	Georgia State Agrarian University	GEO028	15.10.2012	120
NPGRL	Philippines	National Plant Genetic Resources Laboratory	PHL129	18.10.2012	2254
ASAU	Armenia	Armenian State Agrarian University, Laboratory of Plant Gene Pool and Breeding	ARM035	16.12.2012	175
CN FCRC	Thailand	Chainat Field Crops Research Center	THA214	01.03.2013	150
UzRIPI	Uzbekistan	Uzbek Research Institute of Plant Industry	UZB006	01.03.2013	2038
SARDI	Australia	South Australian Research and Development Institute	AUS006	12.06.2013	Transferred to AUS167
AGG	Australia	Australian Grains Genebank/Australian Tropical Crops Collection	AUS165	26.11.2013	7486
BWPRC	Japan	National University Corporation Okayama University	JPN009	26.11.2013	5268
NRSSL	Thailand	National Rice Seed Storage Laboratory for Genetic Resources, Rice Department	THA012	14.08.2013	167
AGES	Austria	Austrian Agency for Health and Food Safety, Dept. for Plant Genetic Resources	AUT001	17.03.2014	1457
BGRIPGR	Bulgaria	Institute for Plant Genetic Resources "K.Malkov"	BGR001	17.03.2014	933
NCGRP	USA	National Center for Genetic Resources Preservation, USDA	USA996	SIGNED 18.01.2015	120745
NFSC	Norway	The Norwegian Forest Seed Centre	NOR056	08.01.2015	208
Luke	Finland	Natural Resources Institute Finland	FIN027	21.01.2015	7
CRI	Czech Republic	Crop Research Institute	CZE122	28.08.2015	1168

UCR-CIA	Costa Rica	Universidad de Costa Rica	CRI092	08.09.2015	6
PdeP	Peru	Parque de la Papa	PER862	09.09.2015	750
AGRESEAR CH	New Zealand	Margot Forde Germplasm Centre	NZL001	11.1.2016	1722
CHAIPATT	Thailand	Chaipattana Foundation	THA513	11.2.2016	20
APG	Australia	Australian Pastures Gene Bank	AUS167	11.3.2016	28493
GRIBL	Bosnia & Herzegovina	Genetic Resources Institute, University of Banja Luka	BIH039	16.6.2016	921
INRA	France	National Institute for Agricultural Research	FRA040	16.6.2016	2
TLL	Singapore	Temasec Life Sciences Laboratories Ltd.	SGP008	19.8.2016	7
JHI	UK	James Hutton Institute	GBR251	09.11.2016	1033
MNREC	Myanmar	Myanmar Ministry of Natural Resources and Environmental Conservation	MMR075	09.11.2016	230
RPCNASBAF	Belarus	Scientific Practical Centre of the National Academy of Sciences of Belarus for Arable Farming	BLR011	17.01.2017	341
ETKI	Estonia	Estonian Crop Research Institute	EST019	25.10.2017	133
	Slovakia	National Agricultural and Food Centre	SVK001	08.01.2018	0
INIAV	Portugal	Banco Português de Germoplasma Vegetal	PRT001	26.02.2018	229
INIA	Chile	Instituto de Investigaciones Agropecuarias	CHL044	06.04.2018	145
DOA	Thailand	Department of Agriculture, Ministry of Agriculture and Cooperatives	THA032	09.08.2018	32
UKVGB	United Kingdom	University of Warwick	GBR006	13.08.2018	101
LSFRI	Latvia	Latvian State Forest Research Institute "Silava"	LVA009	28.10.2018	0

Annex 2. Budget and spending 2018

Spendings		2018	
Activity	Cost Category	Budget 2018 SEK	Actual 2018 SEK
709512: Coordinator	Personnel	559 750	669 509
	Travel	36 600	86 933
	Total SEK	596 350	756 442
709513: Platform 1 - Overall Administration	Personnel	345 150	348 472
	Travel	30 450	3 937
	Total SEK	375 600	352 409
709514: Platform 2 - Information Management	Personnel	197 500	209 038
	Travel	12 200	0
	Total SEK	209 700	209 038
709515: Platform 3 - Practical Seed Administration	Personnel	303 300	259 752
	Travel	97 600	47 517
	Contracted services	30 450	15 604
	Total SEK	431 350	322 873
709516: Platform 4 - PR	Personnel	635 099	638 897
	Webpage	0	0
	Travel	73 200	4 147
	Total SEK	708 299	643 044
709517: International Advisory Panel (IAP)	Personnel	140 906	223 438
	Travel	120 000	128 667
	Expenditure	100 000	16 060
	Total SEK	360 906	368 165
709519: Pilot Project - Longterm storage	Personnel	0	0
	Expenditure	6 000	12 294
	Total SEK	6 000	12 294
Total costs	SEK	2 688 206	2 664 265
Result actual due to budget			23 941

2019-01-18
MS

Annex 3. Lectures and presentations 2018

Lectures and presentations about the Svalbard Global Seed Vault by NordGen staff

Åsmund Asdal:

9.1. Svalbard Globale Frøhvelv – Noahs ark i Arktis. Lions Club, Brevik, Norway.

23.2. Operation of the Svalbard Global Seed Vault. Crop Trust Press Information Seminar. Longyearbyen, Svalbard, Norway.

3.4. Svalbard Globale Frøhvelv – Noahs ark i Arktis. Information for lecturers at Søgne Agricultural High School. Grimstad, Norway.

6.7. Svalbard Global Seed Vault. FutureFest Festival 2018, Tobacco Dock, London, United Kingdom.

7.7. Svalbard Global Seed Vault – Noah's Ark for Seeds in the Arctic. Oxford Symposium on Food and Cookery, St. Catherine's college, Oxford University, United Kingdom.

9.8. Svalbard Global Seed Vault. Lecture for delegations from National Rice Seed Storage Laboratory for Genetic Resources and from Department of Agriculture, Thailand visiting NordGen, Alnarp, Sweden.

5.11. Svalbard Global Seed Vault: Safeguarding Seeds for Future Food Security in the Arctic. Conference of National Plant Genetic Resources Center (NPGRC). Bangkok, Thailand.

12.11. Svalbard Global Seed Vault - safeguarding seeds for the future in the Arctic. National Bureau of Plant Genetic Resources, NBPGR, Indian Council of Agricultural Research, ICAR, Dehli, India.

14.11. The Svalbard Global Seed Vault. The International Crops Research Institute for the Semi-Arid Tropics, ICRISAT, Patancheru, India.

28.11. Svalbard Global Seed Vault – international cooperation for securing plant genetic resources. Vavilov-Seminar. Leibniz Institute of Plant Genetics and Crop Plant Research, IPK, Gatersleben, Germany.

Roland von Bothmer:

22.1. Genetic diversity, gene banks and The Global Svalbard Seed Vault. INIA, Punta Arenas, Chile.

23.1. Genetic diversity, gene banks and The Global Svalbard Seed Vault. The provincial governor of Magallanes, Punta Arenas, Chile.

13.3. Den globala livsmedelssäkerheten – ligger den på Svalbard? Lund Library, Sweden.

10.4. How do we manage the future? The Senior University, Stockholm, Sweden.

16.5. Conservation and sustainable use of Plant Genetic Resources. Agroecology Day, SLU, Alnarp, Sweden.

19–20.9. Domestication and breeding of cultivated plants and their conservation (6 lectures). Basic course for BSc students, SLU, Alnarp, Sweden.

18.10. Plant domestication, breeding and genetic resources (2 lectures). MSc-course in plant biology, SLU, Alnarp, Sweden.

7.11. Växtförädling i går, i dag och i morgon. Gentekniknämnden, The Swedish Gene Technology Advisory Board, Stockholm, Sweden.

Sara Landqvist:

22.3 Svalbard Global Seed Vault. One million seed samples guarantee our future food security. Nordiska Trädgårdar. Stockholm, Sweden.

24.3 Svalbard Global Seed Vault. One million seed samples guarantee our future food security. Nordiska Trädgårdar. Stockholm, Sweden.

5.11 Svalbard Global Seed Vault. Föreningen Natur och Samhälle i Norden. Stockholm, Sweden.

Karolina Aloisi:

23.3 Svalbard Global Seed Vault. One million seed samples guarantee our future food security. Nordiska Trädgårdar. Stockholm, Sweden.

25.3 Svalbard Global Seed Vault. One million seed samples guarantee our future food security. Nordiska Trädgårdar. Stockholm, Sweden.

Annex 4. Publications 2018

Publications about the Svalbard Global Seed Vault by NordGen staff

- Asdal, Å. & L. Guarino. 2018. The Svalbard Global Seed Vault: 10 Years—1 Million Samples. *Biopreservation and Biobanking*. *Biopreserv Biobank*. 2018 Oct 1; 16(5): 391–392. Published online 2018 Oct 12. doi: 10.1089/bio.2018.0025.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6204558/>
- Brodal, G. & Å. Asdal. 2018. The Svalbard Global Seed Vault and the ongoing 100 years seed storage experiment. *Acta Hort.* 1204. ISHS 2018. DOI 10.17660/ActaHortic. 2018.1204.1. Proc. VII Int. Symp. on Seed Transplant and Stand Establishment of Hort. Crops. Eds.: P. Soundy et al.
- Drori, J., G. Evjen, C. Lusty, L. Guarino & L.L. Steffensen. 2018. Conservation and sustainable use of plant genetic resources. Svalbard Summit 2018: Summary of Conclusions. Published Alnarp 13th of April 2018. <https://www.seedvault.no/files/2018/04/Seed-Vault-Summit-Conclusions.pdf>.

