



## Annual Progress Report 2017

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Front page photo: Svalbard Global Seed Vault, September 2017  
(Photo Riccardo Gangale)

## 2017 at a glance

- Altogether 64,403 new safety duplicates from 14 depositors were stored in the Seed Vault in 2017. By the end of the year total holding of seed accessions in the Seed Vault was 890,886 samples.
- The International Centre for Agricultural Research in Dry Areas (ICARDA) re-deposited seeds of accessions withdrawn in 2015 after production of seeds at ICARDA units in Lebanon and Morocco. In September ICARDA made their second withdrawal of seeds from the Seed Vault.
- Seeds of 230 threatened orchid species from Myanmar were deposited. Collecting of seeds and the establishment of an orchid seed bank in Myanmar has been supported by the Norwegian government after a Royal visit to Myanmar in 2014.
- Two new institutions signed the Deposit Agreement in 2017; Scientific Practical Centre of the National Academy of Sciences of Belarus for Arable Farming and Estonian Crop Research Institute.
- A new ten year three party agreement for the funding, management and operation of the Seed Vault was signed in May.
- News about the heavy rainfall and water intrusion in the Seed Vault access tunnel in October 2016 were published in a large number of media all over the world in May. Due to the nature of the media coverage, the partners made a joint statement assuring that the seeds in the Seed Vault remain safe.
- Seed samples belonging to the 100 year experiment were taken out of Coal mine #3 after 30 years storage in permafrost. The seeds have been analysed at Kimen Seed Laboratory in Ås, Norway.

## **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).

The first ten year three-party agreement expired in March 2017, and a renewed agreement for another ten years was signed on the 31<sup>st</sup> of May 2017, valid from 1<sup>st</sup> 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 of 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 2017, the Seed Vault holds more than 890 thousand safety duplicates representing wide inter- and intra-specific crop diversity deposited by 73 genebanks from around the world.

The Svalbard Global Seed Vault is a flagship project for NordGen and 2017 was the tenth 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.

Parts of 2017 and also the days when this report has been prepared have been characterized by planning and conducting the celebration of the Seed Vault 10 year anniversary. The anniversary itself will be further reported in the yearly report for 2018. However, it feels natural in this foreword to express gratitude for good cooperation and congratulation to all involved for a successful celebration.

Lise Lykke Steffensen  
Director NordGen

## **Introduction**

This annual progress report for the Svalbard Global Seed Vault is prepared by NordGen to give an overview of the operation of the Vault in 2017. The report is presented in the same format as previous annual reports.

As stated in the standard Depositor agreement between depositors and the Royal Norwegian Ministry of Agriculture and Food, 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 techniques”*.

Operation of the Seed Vault consists of two parts: (1) Physical maintenance of the facility, overseen by Statsbygg and (2) Seed management and operation, overseen by NordGen. NordGens' responsibilities for the management of seed deposits are stated in the Three Party Agreement providing for the long term funding, management and operation of the Svalbard Global Seed Vault.

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 who is responsible for the maintenance and the daily surveillance and monitoring of the facility in Svalbard. At the seed logistics level we cooperate with the institutions sending safety duplicates as well as with a 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 2017.

The Svalbard Global Seed Vault is now the major safety back-up site for PGRFA worldwide. By the end of 2017 the collection at Svalbard stood at 890,886 safety duplicates from 73 institutes. In 2017, 64,403 new safety duplicates were deposited from 14 depositors.

## **Facility management**

The Norwegian Ministry for Food and Agriculture (MAF) is the national responsible authority for the Svalbard Global Seed Vault. The property management and daily monitoring of the Vault is the responsibility of Statsbygg (the Norwegian directorate for public constructions). The property management duties of Statsbygg are stated in the lease-agreement between MAF and Statsbygg.

Statsbygg reports on the daily operation and the outcomes of work on the physical facility to MAF and partners in user-meetings. Electro-technical installations are managed through a central operation system (SD-system) accessible inside the Seed Vault as well as from the Statsbygg office in Longyearbyen.

Over the last years there are increasing concerns about climate change in Svalbard and the impact this might have for the management of the Seed Vault. The average temperature in Longyearbyen have increased recent years, causing longer melting season and reduced frozen soils around the outer parts of the Vault construction.

During recent years, more or less continuous low level water intrusion in the entrance tunnel has been controlled and taken care of by Statsbygg through the established drainage system, water pumps, etc. In October 2016, a heavy rainfall incident caused larger water volumes in the tunnel than previously recorded and damage to electricity supply systems. This incident reinforced the need for technical improvements, and plans for construction of a new waterproof tunnel have been discussed through 2017.

Statsbygg is responsible for planning and conducting the construction work and a project advisory council has been established, consisting of representatives of Statsbygg and the three parties. The council has met regularly through 2017.

The water intrusion incident in the Seed Vault access tunnel in October 2016 was commented in an article about climate change in the Norwegian newspaper Dagbladet in May 2017. This article was quoted in the English newspaper The Guardian a few days later. The word 'flooding' was used, giving the impression that the Seed Vault, including the seed storage was flooded. This caused comprehensive media attention all over the world and many questions from media, from the public, from gene banks and from other stakeholders.

Due to this, the partners, including Statsbygg, made a joint statement in order to assure that the seeds in the Seed Vault were safe:

*Statement on Water Intrusion at the Svalbard Global Seed Vault.*

*The Svalbard Global Seed Vault is the world's backup for crop collections. It currently safeguards more than 930,000 different varieties. It has been reported that the Seed Vault has seen water intrusion due to melting permafrost. The Royal Ministry of Agriculture and Food in Norway, the Crop Trust, and NordGen would like to assure seed depositors and the public that the seeds are completely safe and no damage has been done to the facility. The Royal Ministry of Agriculture and Food and Statsbygg, Norway, is taking appropriate measures to ensure the protection of the Seed Vault and improve the construction to prevent future incidents. Globally, the Seed Vault is, and will continue to be, the safest backup of crop diversity.*

The statement was published on relevant webpages and from NordGens' side forwarded to current and potential gene banks. The feedback received showed that depositing gene banks are 100% confident that the seeds are taken good care of and remain safe in the Seed Vault.

## **Seed management and operation**

NordGen is responsible for managing and operating all aspects of the safety deposit process, including information tasks. This responsibility spans from liaising with collection holders interested in depositing seed samples to operation of the databases and organization of the storage process at Svalbard.

The overall framework for the tasks carried out by NordGen is organized into four platforms: 1) Overall administration; 2) Information management; 3) Practical Seed administration and 4) Public relations. A

senior advisor provides overall leadership and internal coordination of entering into deposit agreements, planning and preparing for seed shipments, and handling of the deposit openings on the site. The senior advisor also works with public information and requests for visits to the site. NordGen activities in the Seed Vault are conducted in cooperation with the partners MAF and the Crop Trust.

### **Platform 1: Overall Administration & IAC Secretary Administration**

The overall administration includes general management and administrative tasks related to the operation of the Seed Vault organised as a project in the NordGen management and account system. Tasks include coordination and liaising with relevant stakeholders, in particular MAF and the Crop Trust.

In 2017, significant time and resources have been allocated to negotiations related to the new three party agreement, to project council meetings related to the Seed Vault construction work and to the preparation of the 10 year Seed Vault anniversary. According to the new three party agreement a contact meeting between the three partners was held in October at the Ministry of Agriculture and Food in Oslo.



*Figure 1. NordGen director Lise Lykke Steffensen together with Director General of ICARDA Aly Abousabaa in the Seed Vault when the first re-deposit of ICARDA seeds was done in February 2017. (Photo NordGen)*

The financial administration covers annual budgets and financial statements to be presented to the Crop Trust and MAF, 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 more formally in its annual progress report for the Seed Vault. NordGen staff assists in the Seed Vault operations with document handling, archive and organizing events and travels.

The NordGen director is the responsible secretary for the International Advisory Council. This task is budgeted for in a separate account number. The secretary administration tasks for IAC lies within (1) budgetary administration (2) planning arrangements and follow up of IAC meetings and (3) general secretary services for IAC members.

A meeting in the International Advisory Council was held in Longyearbyen on the 27<sup>th</sup> and 28<sup>th</sup> of February 2017. Among other topics, the Council discussed preliminary plans for construction improvements at the Seed Vault facility that were presented by Statsbygg.

This was the last meeting of the International Advisory Council under the first 10 year three party agreement for the management and operation of the Seed Vault valid from 2007 to 2017. Under the new three party agreement that was signed in May 2017, the IAC has been replaced by an International Advisory Panel (IAP).

### **Deposit Agreement signing and deposit coordination**

By the end of 2017 NordGen has signed the Deposit Agreements (DA) with 79 institutions (Annex 1). Five of these have not yet made deposits. Two new depositors signed the DA in 2017. One of these, Scientific Practical Centre of the National Academy of Sciences of Belarus for Arable Farming made its first deposit in 2017.

Twelve of the current 73 depositors are International Agricultural Research Institutes (IARCs), 49 are national gene banks, two are regional genebanks, 6 are university gene banks and 3 are NGO gene bank collections. One of the depositors is a private company that 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 2 shows the proportion and numbers of safety duplicates deposited by different categories of genebanks by the end of 2017. 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.

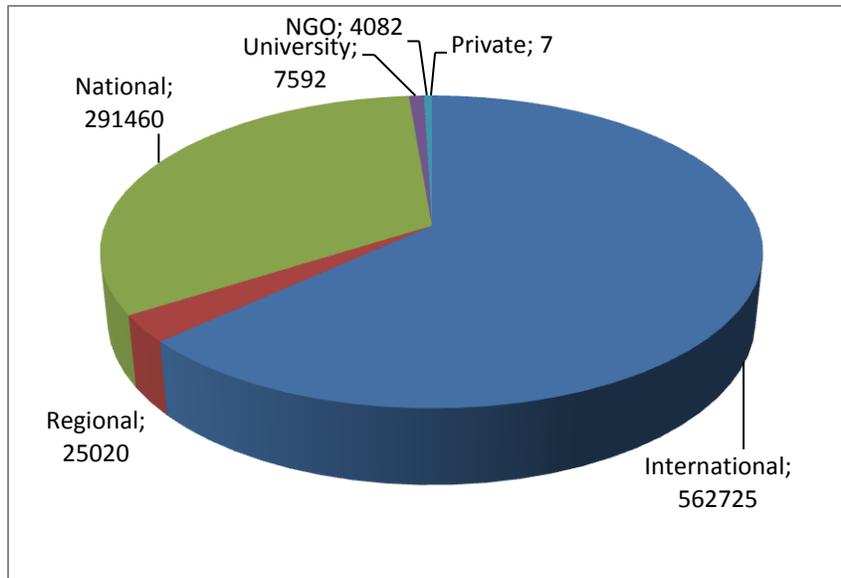


Figure 2. The proportion and numbers of safety duplicates currently deposited in The Vault at the end of 2017 by different categories of genebanks. The distinction between national gene banks and universities is not clearly defined as universities in some countries have responsibilities as national gene banks.

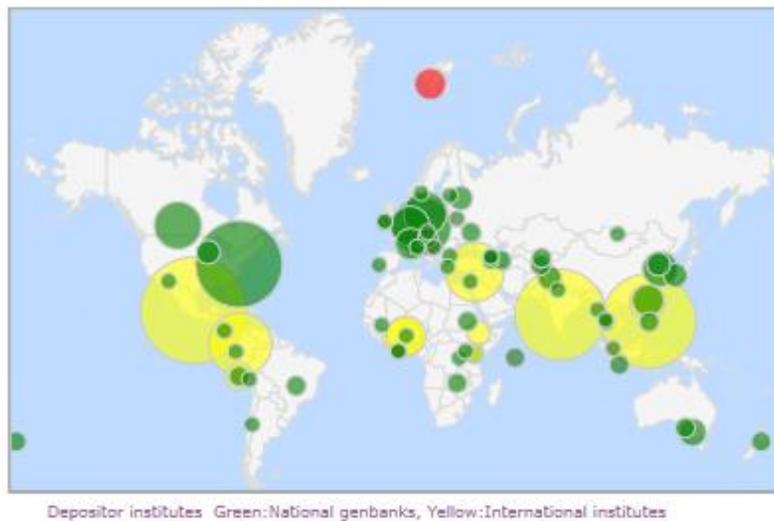


Figure 3. Genebanks with safety deposits in the Svalbard Global Seed Vault. The radius of the circles is relative to the number of samples deposited, and the circle size reflects the size of the deposits according to 25 size classes. Yellow circles are International Agricultural Research Centres and green circles are regional, national or subnational genebanks. (The radius of the red Svalbard circle is not relative to the holdings.)

## **Platform 2: Information management**

This platform serves the development, technical service to depositors, and maintenance of databases. NordGen maintains two databases for the Seed Vault; one box storage system database and one safety duplicate database with descriptors of all the material stored.

Depositors are required to provide electronic inventories of the material they wish to deposit prior to shipment to Svalbard. The purpose of receiving the data prior to shipment is to allow NordGen to check if the data is of satisfactory quality, as well as to check for obvious duplications of material already stored in the Vault. Depositors report a minimum set of descriptors necessary for unique identification of the samples. Information for depositors is provided on the “guidelines for depositors” page of [www.nordgen.org/sgsv](http://www.nordgen.org/sgsv). The database is updated directly following every seed deposit event. The data is publicly available and searchable from the Information Sharing page of the Seed Portal webpage.

The data portal is an important tool in NordGens’ interaction with partners, especially the Crop Trust and the depositors. The data portal is also a standard reference for journalists searching for the latest statistics and biological and geographic information of the material stored in the Seed Vault. There are links to this portal both from NordGens’ homepage and the official webpage of the Seed Vault maintained by MAF ([www.seedvault.no](http://www.seedvault.no)) as well as the website of the Crop Trust ([www.croptrust.org](http://www.croptrust.org)).

Preparation for a Seed Portal upgrade has been carried out in 2017. Improved procedures for withdrawals of seeds, for handling reorganizing and renaming of depositor institutes and for standardizing species names are needed. New tools can also improve and widen the display of interesting data in the database.

The Svalbard Global Seed Vault is part of the global system for *ex-situ* conservation of PGRFA. An important element in that system is the global accession level database Genesys – Gateway to genetic resources database (<http://www.genesys-pgr.org/>). The provider institute code, accession number and genus in the Seed Vault data base is matched with data in Genesys and the database reports whether the accession is backed-up at Svalbard or not.

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.

## **Platform 3: Practical Seed Administration**

The practical seed administration covers assistance regarding logistics, security, customs, phytosanitary certificates and other relevant clearances. NordGen communicates closely with depositors on all practical aspects of making seed shipments.

The depositors are instructed to make the shipments with a regular courier from their genebank to Oslo. In the cases where the shipment cost is covered by the Crop Trust, NordGen and Trust staff works in close collaboration to ensure proper packaging, etc.

To avoid bottleneck problems between the mainland and Svalbard, NordGen organizes transport from Oslo to Longyearbyen together with a private logistics company. NordGen negotiates regularly contracts for the Oslo-Longyearbyen logistics, and for 2017 shipments have been carried out under contract with the company Jetpak.

Logistics at Svalbard is coordinated by NordGen and handled in close collaboration with the local logistics company, Pole Position. Screening and security at arrival in Svalbard is handled in collaboration with the airport authorities at Longyearbyen airport and the security company, Securitas. Statsbygg provides support with logistics and technical backstopping during deposit openings at Svalbard.

Security during transport between the airport and the Seed Vault is considered together with the police department at the Governor's office. NordGen receives, registers and stores seed boxes inside the Seed Vault. The routines for the management of Depositor Agreements, organization of deposit logistics, data handling and practical on site logistics and security are described in Working Instructions under NordGens' Quality Management System.

NordGen has organized between three and six openings of the Seed Vault for storage of new safety duplicates per year since the opening in 2008. Depositors are asked to organize shipments for arrival in Oslo during seven days windows.



*Figure 4. Ali Shehadeh from ICARDA, Terbol, Lebanon assisted when 161 seed boxes from ICARDA were withdrawn and 31 other boxes were deposited in September 2017. (Photo: Riccardo Gangale)*

NordGen organized four deposit occasions during 2017, comprising 64,403 seed samples of PGRFA from 15 different depositors. In addition, seed samples of 230 threatened orchid species from Myanmar were deposited as non-PGRFA material. (Table 1).

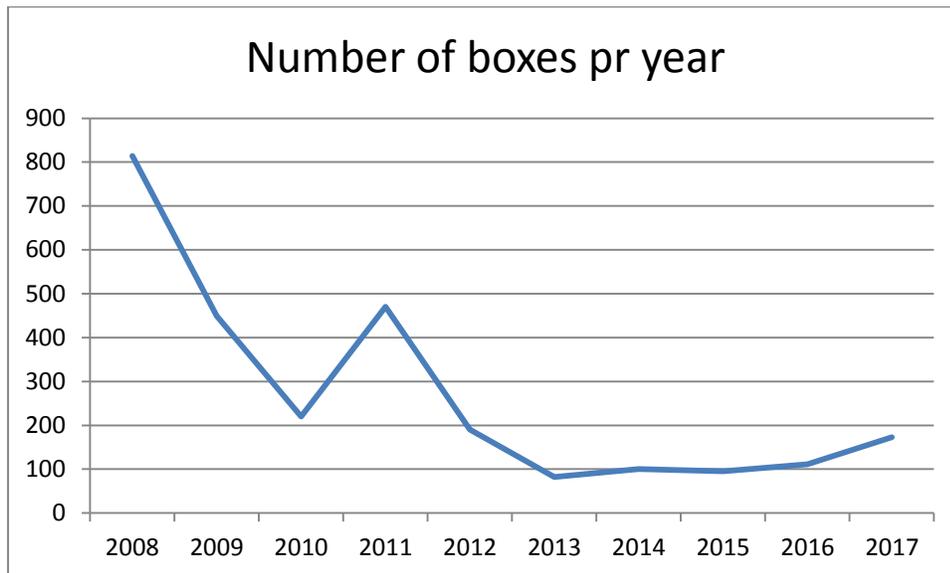
Table 1. Deposits and dates in 2017

<b>Depositor/Date of seed deposit</b>	<b>Acronym</b>	<b>Code</b>	<b>Acc.</b>
<b>22-25th of February</b>			
James Hutton Institute	JHI	GBR251	1033
Centre for Genetic Resources	CGN	NLD037	525
Scientific Practical Centre of the NAS of Belarus for Arable Farming	RPCNASBAF	BLR011	341
Centro Internacional de Mejoramiento de Maiz y Trigo	CIMMYT	MEX002	27927
Genetic Resources Institute, University of Banja Luka	GRIBL	BIH039	595
Seed Savers Exchange	SSE	USA974	225
National Bureau of Plant Genetic Resources India	NBPGR	IND001	200
Africa Rice Centre	AfricaRice	BEN089	2000
Plant Genetic Resources Institute, National Agricultural Research Centre	PGRI-NARC	PAK001	1748
International Centre for Agricultural Research in Dry Areas	ICARDA	SYR002	15160
Myanmar Ministry of Natural Resources and Environmental Conservation	MNREC	MMR075	230
<b>9th of May</b>			
Plant Gene Resources of Canada	PGRC	CAN004	2229
Margot Forde Germplasm Centre	AGRESEARCH	NZL001	484
<b>5th of September</b>			
International Centre for Agricultural Research in Dry Areas	ICARDA	SYR002	7511
<b>17th of October</b>			
Centro Internacional de Agricultura Tropical	CIAT	COL003	1277
Nordic Genetic Resource Center	NORDGEN	SWE054	2437
Centro Internacional de la Papa	CIP	PER001	711

At two occasions in 2017 The International Centre for Agricultural Research in Dry Areas (ICARDA) re-deposited seeds of accessions withdrawn in 2015. The first ICARDA withdrawal of seeds was carried out in September 2015, and the first seeds were sown already a few weeks after arrival in at ICARDA units in Lebanon and Morocco. New seeds were harvested in 2016 and 2017.

The first re-deposit was conducted already in February 2017 and the second in September. In total, ICARDA deposited 22671 seed samples in 2017. These were a mixture of accessions that had been retrieved from the Seed Vault in 2015 and accessions that so far had not been duplicated in the Vault. The second withdrawal of ICARDA seeds were carried out in September 2017, consisting of 54354 accessions. In total, ICARDA at these two occasions has retrieved 92430 of its initial deposits between 2008 and 2014, or about 78% of their initial seed collection in the Vault.

By the end of 2017, 2433 seed boxes are stored in the Seed Vault. The current capacity in storage hall 2 is 2880 boxes.



*Figure 5. Numbers of boxes arriving per year 2008-2017. (Withdrawals not shown).*

#### **Platform 4: Public Relations**

In accordance with article 4 in the Three Party Agreement NordGen works considerably with public outreach activities. In addition, MAF and the Trust both do active PR-work in connection with the Seed Vault. Information about the Svalbard Global Seed Vault is passed on through several arenas: responding to questions about the operation from the public and from media; presenting the Seed Vault to different scientific and general audiences through public presentations; interviews to the press, own articles and conducting visits to the Vault for prioritized groups and media.

NordGen receives a large number of requests for visits, information, interviews and lectures about the Seed Vault. All serious requests are responded to.

A quite strict visitor policy is pursued. The general guiding principle is that we «bring the seed vault to the people rather than people to the vault». However, in connection with deposit openings and in special cases NordGen hosts selected media and VIP for information and a tour in the vault. This is done in close collaboration and coordination with the other partners.

Options for visiting the interior of the Seed Vault were significantly cut down in 2017 compared to previous years, due to ongoing construction work in the Vault. Only at the Seed Vault opening event in the last part of February it was planned to receive media and visitors as usual.

A comprehensive program that included participation from the Norwegian Minister for Agriculture and Food Jon Georg Dale was planned for on the 22<sup>nd</sup> and the 23<sup>rd</sup> of February. The plans included among

other agenda points the first re-deposit of seeds from ICARDA made by high rank representatives from ICARDA and deposit of orchid seeds from Myanmar made by the Minister of Natural Resources and Environmental Conservation in Myanmar.

However, due to a severe snow avalanche in Longyearbyen the Minister had to cancel his own travel and also the plans for receiving the Myanmar delegation in Svalbard.

Nevertheless, parts of the program were carried out, among this the seed deposit from ICARDA made by Director General Aly Abousabaa and his colleagues. Two other gene banks deposited seeds at this occasion accompanied by gene bank representatives, namely James Hutton Institute in Great Britain and the National Bureau of Plant Genetic Resources in India represented by the Ministry of Agriculture and Farmers Welfare in India.

About ten visiting media teams hosted by NordGen, were given a guided tour of the Seed Vault between the 21<sup>st</sup> and the 27<sup>th</sup> of February. In addition, Crop Trust hosted tours for partners and media. At later seed deposit occasions in 2017 media were given interviews outside the Seed Vault or in Longyearbyen.

An exception was made for a visit to Svalbard from the Chinese Minister of Science and Technology Mr. Wan Gang hosted by the Norwegian Ministry of Education and Research. A group of ten high officials from China were given a guided tour on the 3<sup>rd</sup> of September.

A delegation from the Swedish Parliament were given a lecture and a guided tour in Coal Mine #3 and the NordGen seed container as a substitute for a Seed Vault tour on the 15<sup>th</sup> of August.

NordGen staff has given a significant number of lectures and presentations at various occasions and audiences during 2017. A list of lectures is given in Annex 3.

NordGen launched a new website platform in 2017, including better options for publishing news posts about Seed Vault activities, see <https://www.nordgen.org/en/global-seed-vault/>. The Norwegian Ministry of Agriculture developed and launched a new Seed Vault website at <http://www.seedvault.no/> in 2017. NordGen has provided information, text and photos.

## **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. In February, a set of sealed glass tubes with seeds for testing after 30 years were taken out of the NordGen steel container that previously also served as storage for the security back-up for the Nordic seed collection.

As for tests carried out at previous test dates in the project, the seeds have been analyzed at Kimen Seed Laboratory in Ås, Norway. In addition to germination rates, the survival of seed born fungi and virus that can impact germination is investigated.

The experiment comprises 15 commonly cultivated crops of importance for Nordic agriculture. Analysis of test data and drafts of a 30 year report have been made during 2017. The report will be published in 2018.



*Figure 6. After 30 years of storage in permafrost, at approximately  $-3,7^{\circ}\text{C}$  in Coal mine #3, NordGen retrieved a wooden box containing glass tubes with seeds of 15 different species in February 2017. The seeds were analyzed during the year.(Photo: NordGen)*

## **Financial result**

Financial result for 2017 amounts to SEK 91,091 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.

The positive result is, according to the three party agreement, transferred to a working capital fund.

**Annex 1. List of depositors to the Svalbard Global Seed Vault listed in order of Deposit Agreement signature.**

<b>Acronym</b>	<b>Country</b>	<b>Institute name</b>	<b>SDA</b>	<b>Accessions_End2017</b>
WARDA	International, Benin	Africa Rice Center	2007/2008	16839
CIAT	International, Columbia	Centro Internacional de Agricultura Tropical	2007/2008	55941
CATIE	International, Costa Rica	CATIE	2007/2008	723
ILRI	International, Ethiopia	International Livestock Research Institute	2007/2008	5335
ICRISAT	International, India	International Crop Research Institute for the Semi-Arid Tropics	2007/2008	110818
ICRAF	International, Kenya	World Agroforestry Centre	2007/2008	777
CIMMYT	International, Mexico	Centro Internacional de Mejoramiento de Maiz y Trigo	2007/2008	158218
IITA	International, Nigeria	International Institute of Tropical Agriculture	2007/2008	20738
CIP	International, Peru	Centro Internacional de la Papa	2007/2008	8930
IRRI	International, Philippines	International Rice Research Institute	2007/2008	122060
ICARDA	International, Syria	International Centre for Agricultural Research in Dry Areas	2007/2008	46728
AVRDC	International, Taiwan	The World Vegetable Center	2007/2008	15618
NORDGEN	Regional, Sweden	Nordic Genetic Resource Center	30.01.2008	23560
IPK	Germany	Leibniz Institute of Plant Genetics and Crop Plant Research	30.01.2008	48653
CGN	Netherlands	Centre for Genetic Resources	30.01.2008	20238

PGRI-NARC	Pakistan	Plant Genetic Resources Institute, National Agricultural Research Centre	30.01.2008	4622
SSE	USA	Seed Savers Exchange	30.01.2008	3312
NGBK	Kenya	Kenya Agricultural & Livestock Research Organisation (KALRO): Genetic Resources Research Centre	26.02.2008	1314
NAC	South Korea	National Agrobiodiversity Center	06.05.2008	13185
IAS	Macedonia	Institute of Agriculture Skopje	11.06.2008	0
NCPGR	India	National Bureau of Plant Genetic Resources	04.07.2008	225
VIR	Russia	N.I. Vavilov All-Russian Scientific Research Institute of Plant Industry	04.07.2008	5278
RAC	Switzerland	Station Federale de Recherches en Production Vegetale de Changins	27.10.2008	9665
EMBRAPA	Brazil	EMBRAPA	06.11.2008	1319
AFT	Ireland	Oak Park Research Centre	16.01.2009	577
DAFF	Ireland	Department of Agriculture, Food and Rural Development	22.01.2009	100
TARI	Taiwan	Taiwan Agricultural Research Institute	26.02.2009	10503
UAAS	Ukraine	Institute of Plant Production n.a. V.Y. Yurjev of UAAS	03.03.2009	2782
PGRC	Canada	Plant Gene Resources of Canada, Canadian Genetic Resources Program, Saskatoon Research Centre	05.11.2009	28097
ILRF	Georgia	I. Lomouri Research Institute of Farming.	23.02.2010	305

AAS	North Korea	Pyongyang AAS	18.03.2010	5700
La Molina	Peru	Programma de Mais	25.05.2010	1296
ICCI	Israel	Institute of Cereal Crop Improvement, Tel Aviv University	23.06.2010	900
DELEP	USA	Desert Legume Program. University of Arizona	24.08.2010	134
ARC	Sudan	Agricultural Research Corporation	18.10.2010	1195
SPGRC	Regional, Zambia	SADC Plant Genetic Resources Centre	09.11.2010	1463
NAGREF	Greece	National Agricultural Research Organization	02.02.2011	25
ICABIOGRAD	Indonesia	Indonesian Center for Agricultural Biotechnology and Genetic Resources	02.02.2011	1050
DAR (MOAI)	Myanmar	Department of Agricultural Research	23.02.2011	718
INIAP	Ecuador	Instituto Nacional Autónomo de Investigaciones Agropecuarias	12.04.2011	168
NARO	Uganda	National Agricultural Research Organization	26.05.2011	777
BARI	Bangladesh	Plant Genetic Resource Centre, Bangladesh Agricultural Research Institute	10.06.2011	0
LS	Italy	University of Pavia, Department of Earth and Environmental Sciences, Lombardy seed bank	23.06.2011	2

NACGRAB	Nigeria	National Centre for Genetic Resources and Biotechnology (NACGRAB)	06.09.2011	800
IRAG	Guinea	Institut de Recherche Agronomique de Guinée	07.10.2011	0
RNGRC	Tajikistan	Republican National Genetic Resource Center	14.11.2011	1646
AGRI	Azerbaijan	Genetic Resources Institute (AGRI) of the Azerbaijan National Academy of Sciences	17.02.2012	1522
INRB	Portugal	Instituto Nacional de Recursos Biológicos	05.03.2012	12
ISABU	Burundi	Agricultural Research Institute of Burundi	19.06.2012	439
IER	Mali	Institute of rural economy	19.09.2012	158
PSARTI	Mongolia	Plant Science Agricultural Research Institute	02.10.2012	160
INIA La Platina	Chile	Unidad de Recursos Genéticos -INIA La Platina	03.10.2012	43
AUG	Georgia	Georgia State Agrarian University	15.10.2012	120
NPGRL	Philippines	National Plant Genetic Resources Laboratory	18.10.2012	2254
ASAU	Armenia	Armenian State Agrarian University, Laboratory of Plant Gene Pool and Breeding	16.12.2012	175
CN FCRC	Thailand	Chainat Field Crops Research Center	01.03.2013	150
UzRIPI	Uzbekistan	Uzbek Research Institute of Plant Industry	01.03.2013	2038

SARDI	Australia	South Australian Research and Development Institute	12.06.2013	2926
AGG	Australia	Australian Grains Genebank/Australian Tropical Crops Collection	26.11.2013	7486
BWPRC	Japan	National University Corporation Okayama University	26.11.2013	5268
NRSSL	Thailand	National Rice Seed Storage Laboratory for Genetic Resources, NRSSL, Rice Department	14.08.2013	81
AGES	Austria	Austrian Agency for Health and Food Safety, Dept. for Plant Genetic Resources	17.03.2014	1457
BGRIPGR	Bulgaria	Institute for Plant Genetic Resources "K.Malkov"	17.03.2014	933
NCGRP	USA	National Center for Genetic Resources Preservation, USDA	SIGNED 18.01.2015	108022
NFSC	Norway	The Norwegian Forest Seed Centre	08.01.2015	208
Luke	Finland	Natural Resources Institute Finland	21.01.2015	7
CRI	Czech Republic	Crop Research Institute	28.08.2015	806
UCR-CIA	Costa Rica	Universidad de Costa Rica	08.09.2015	6
PdeP	Peru	Parque de la Papa	09.09.2015	750

AgResearch	New Zealand	Margot Forde Germplasm Centre	11.1.2016	1210
CHAIPATT	Thailand	Chaipattana Foundation	11.2.2016	20
APG	Australia	Australian Pastures Gene Bank	11.3.2016	0
GRIBL	Bosnia & Herzegovina	Genetic Resources Institute, University of Banja Luka	16.6.2016	921
INRA	France	National Institute for Agricultural Research	16.6.2016	2
TLL	Singapore	Temasec Life Sciences Laboratories Ltd.	19.8.2016	7
James Hutton	UK	James Hutton Institute	09.11.2016	1033
MNREC	Myanmar	Myanmar Ministry of Natural Resources and Environmental Conservation	09.11.2016	230
RPCNASBAF	Belarus	Scientific Practical Centre of the National Academy of Sciences of Belarus for Arable Farming	17.1.2017	341
ETKI	Estonia	Estonian Crop Research Institute	25.10.2017	0

## Annex 2. Budget and spending 2017

### SGSV - 2017

#### Budget proposal and actual spending

Activity	Cost Category	Budget 2017	Actual spending
		SEK	SEK
709512: Coordinator	Personnel	606 756	687 816
	Travel	36 000	38 980
		<b>642 756</b>	<b>726 796</b>
709513: Platform 1 - Overall Administration	Personnel	371 800	391 532
	Travel	30 000	13 376
		<b>401 800</b>	<b>404 908</b>
709514: Platform 2 - Information Management	Personnel	173 200	136 791
	Travel	12 000	1 715
		<b>185 200</b>	<b>138 506</b>
709515: Platform 3 - Practical Seed Administration	Personnel	315 700	174 273
	Travel	96 000	111 013
	Contracted services	30 000	24 692
		<b>441 700</b>	<b>309 978</b>
709516: Platform 4 - PR	Personnel	551 600	615 154
	Webpage	40 000	0
	Travel	72 000	62 331
		<b>663 600</b>	<b>677 485</b>
709517: International Advisory Council	Personnel	172 166	195 240
	Travel	64 599	64 599
	Expenditure	203 472	181 051
		<b>440 237</b>	<b>440 890</b>
709519: Pilot Project - Longterm storage	Personnel	55 197	57 070
	Expenditure	75 000	58 766
		<b>130 197</b>	<b>115 836</b>
Total costs 2017		2 905 490	2 814 399
Result actual 2017 due to budget 2017			91 091
TOTAL SEK		2 905 490	2 814 399
TOTAL EURO		296 155 €	286 870 €

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### **Annex 3. Lectures and presentations about the Svalbard Global Seed Vault by NordGen staff in 2017**

Lise Lykke Steffensen:

27.9. Svalbard Global Seed Vault – Safeguarding Future Food Security. PIC Conference 2017, Lleida, Spain.

1.11. Long-term operation of the Svalbard Global Seed Vault: - experiences and outlook. ITPGRFA Governing body meeting, Kigali, Rwanda.

Åsmund Asdal:

9.5. Svalbard Global Seed Vault – crucial to future food security. NATO Parliamentary Assembly, Longyearbyen, Norway

9.5. Svalbard globale frøhvelv. Information for managers of Nordic institutions, Longyearbyen, Norway.

14.5. Svalbard Globale Frøhvelv. Exhibition about seeds, Geitmyra matkultursenter, Oslo, Norway

11.6. Enfin, les graines sont devenues stars du festival. We Love Green Festival, Paris, France

15.8. Svalbard Global Seed Vault. Presentation for Swedish parliament members, Longyearbyen, Norway.

6.10. Arca de Noé das Sementes. Svalbard Global Seed Vault - The Seed Arch of Noah in the Arctic Braga, Portugal. (Presented by Lorenzo Maggioni, Bioversity)

13. 9. Svalbard global Seed Vault. Information to Annual Genebank Meeting. CGIAR / Crop Trust, Meise, Belgium

22.9. Svalbard Globale Frøhvelv – Noahs ark i Arktis. Information for Bamble Local History Association, Bamble, Norway

20.11. Svalbard Global Seed Vault – An Ultimate Outcome Arising from N.I.Vavilovs Ideas. The 4th International Vavilov Conference; N.I. Vavilovs Ideas in the Modern World. St.Petersburg, Russia.

Roland von Bothmer:

20.1. Jordbruk, växtförädling, genetiska resurser och GMO. Rotary Höllviken, Sweden

30.1. Fröbanken på Svalbard. Rotary, Lomma, Sweden

22.2. Matsäkerhet, genetiska resurser och genbanken på Svalbard. Lecture at Swedish University of Agricultural Sciences, Umeå, Sweden

28.2. Varför förvarar vi frön på Svalbard? Lund University, Sweden

14.3. Presentation of NordGen and The Svalbard Global Seed Vault – ECPGR meeting, Malmö, Sweden

18.3. Jordens livsmedelssäkerhet – hur klarar vi framtiden? Aid organisation SAFRAN (for Africa), Lund, Sweden

12.6. The Svalbard Global Seed Vault. 8th International Triticeae Symposium, Wernigerode, Germany

6.9. Spannmål – Svenska lantsorter. Plenary discussion at The Royal Swedish Academy of Forestry and Agriculture, Stockholm, Sweden

12.10. 150 år sedan Mendel, var står genetiken idag? Växtförädling – och genbanker. The Mendelian Society, Lund, Sweden

