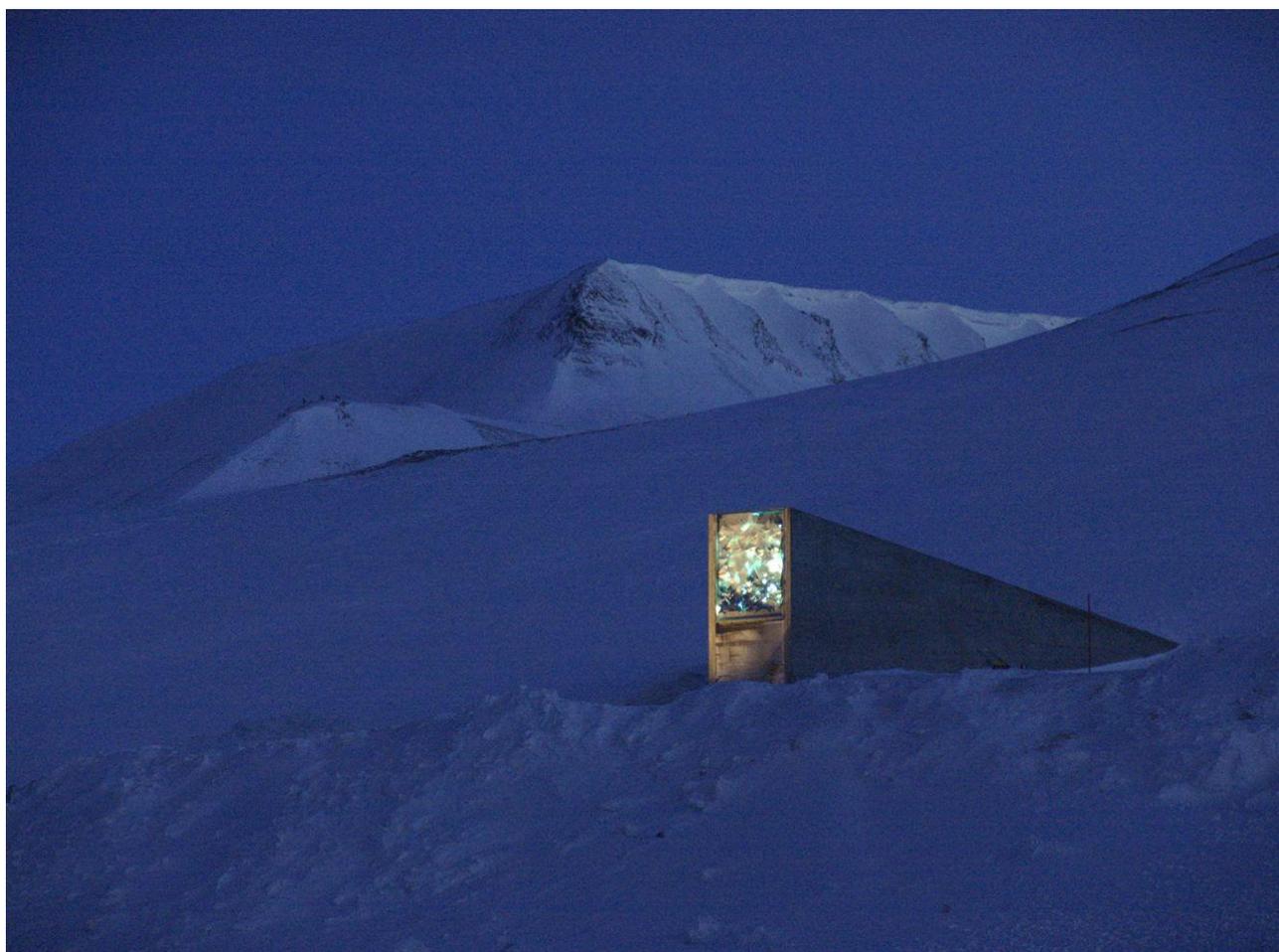


SVALBARD GLOBAL SEED VAULT

Annual Progress Report 2008

Submitted by NordGen April 2009



Svalbard
Global Seed Vault

Contents

| | |
|--|----|
| <i>Foreword</i> | 3 |
| <i>Introduction</i> | 4 |
| <i>Physical maintenance</i> | 4 |
| <i>Seed Management</i> | 6 |
| <i>Platform 1: Overall Administration & IAC Secretary Administration</i> | 6 |
| <i>Platform 2: Information management</i> | 9 |
| <i>Platform 3: Practical Seed Administration</i> | 10 |
| <i>Platform 4: PR</i> | 12 |
| <i>Annex 1 New Depositor Agreements signed in 2008</i> | 13 |
| <i>Annex 2 Articles about the Seed Vault</i> | 14 |
| <i>Annex 3 Deposits in 2008</i> | 15 |

Foreword

It is with great pleasure we in NordGen present the 2008 annual progress report for the Svalbard Global Seed Vault. This report describes the activities and highlights in the first operative year in the Vault's history. 2008 was the year of the opening and was characterized by a high activity level, a great media interest, technical challenges and good visible results.

When the International Advisory Council for the Seed Vault, consisting of eminent experts in PGR conservation and use, met in February 2009 they concluded: "The IAC is very pleased with the operations of the Seed Vault, with the physical facility, security and management. It is also pleased with the substantial progress made in securing a large and broad array of seed samples." We in NordGen are proud to play an active part in the global endeavor Svalbard Global Seed Vault is.

Jessica Kathle

Director

NordGen



Norwegian PM Jens Stoltenberg and Nobel Laureate Wangari Mathai at the opening ceremony in February 2008. Photo: Simon Jeppson

Introduction

Svalbard Global Seed Vault is the ultimate security net for the world's crop diversity. The Seed Vault aims at safeguarding the world's most important plant genetic resources for food and agriculture with a maximum level of security. The Seed Vault offers free-of charge back-up for the seed collections held in seedbanks around the world.

Svalbard provides a remote and secure yet accessible location. The safety of the seed samples is ensured by the thick sandstone rock surrounding them and their long time survival is ensured by the permafrost conditions that will maintain the airtight seed samples well below freezing even in the unlikely event that the mechanical cooling (-18°C) should fail.

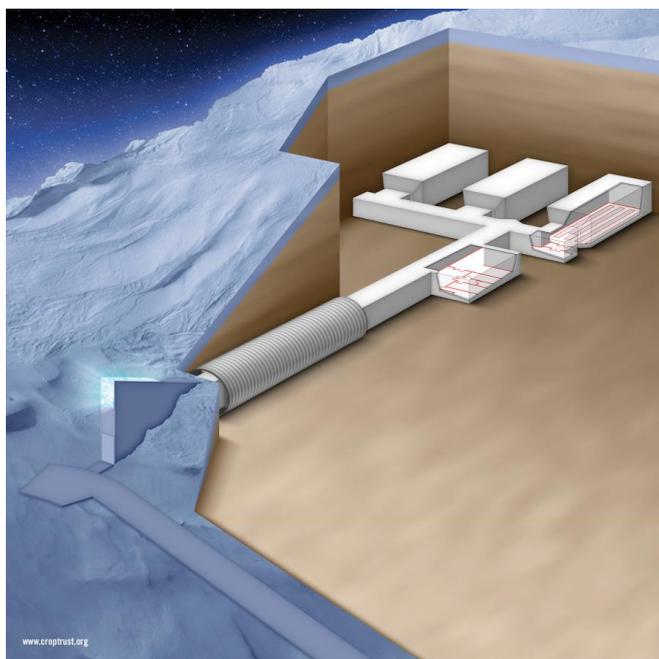
NordGen's operative responsibility for the Seed Vault is done according to an agreement with our partners in the funding, management and operation; the Norwegian Ministry of Food and Agriculture and the Global Crop Diversity Trust.

This document gives an overview of key events in the first operational year of the Svalbard Global Seed Vault (SGSV).

Operations may be divided into two elements: (1) physical maintenance of the facility overseen by Statsbygg and (2) seed management overseen by NordGen. In all important respects, the SGSV has functioned according to its mission thanks to the enthusiasm and cooperative spirit shown by all concerned, from depositors to the local partners in Svalbard.

Physical maintenance

Since the inauguration in February 2008 the Seed Vault has been fully operational according to its purpose as high-security seed storage. The seeds are stored in the vault's chamber number two (the middle chamber) and the 320 000 samples stored by the end of 2008 utilizes a little more than 1/5 of the total storage capacity in this chamber alone.



The Seed Vault design. Graphics by The Global Crop Diversity Trust

There have been some technical start-up problems in connection with the construction and the temperature. Statsbygg considers the SGSV to be both in project phase and operation phase until the structure and all infrastructures works in a stable way.

The most notable problem was the damage of the entrance section, the Svalbard tube (summer 2008) caused by settling of rock and dirt caused by the fact that the permafrost above was not reestablished prior to spring (due in part to the fact that construction and the refilling of dirt and rocks was completed too late in the winter to allow for complete re-freezing). The damage, which never affected the safety of the seed collections at the other end of the facility, has now been repaired in such a way that the tunnel structure at the entrance is stronger and more secure than before. In addition, (a.) a drainage system has been installed in case of any future water incursion in this area, and (b.) an additional doorway has been placed in the tunnel to prevent cool air in the tunnel from escaping.

Achieving the desired temperature of -18C has taken longer to achieve than expected. In part this is positive in that it indicates the reverse will also be true – it will take longer to warm in the event of equipment failure. The current temperature is approximately -15.5C. Engineers have advised to improve air circulation by moving boxes away from the fans in Vault Room 2. This was done in February 2009.

These problems have not jeopardized the security of the seeds stored inside chamber number two.

Seed Management

Nordgen's role is stated in the *Three Party Agreement between the Royal Ministry of Food and Agriculture of Norway, The Global Crop Diversity Trust and the Nordic Genebank¹* providing for the long term funding, management and operation of the Svalbard Global Seed Vault.

The Nordic Genetic Resource Centre is responsible for managing and operating the Seed Vault. This responsibility spans from liaising with PGRFA collection holders interested in depositing seed samples to operation of the storage facility at Svalbard.

NordGen's organization of the work

The overall framework for the tasks to be carried out by NordGen is organized into four Platforms, illustrated in Figure 1. A detailed illustration of the tasks within each Platform is described in the following text. A Coordinator for the management and operation of Seed Vault is employed to provide overall leadership and internal coordination of, and to take responsibility for, all NordGen activities and obligations in regard to the Seed Vault, in cooperation and harmony with partners, including in particular the Royal Norwegian Ministry of Agriculture and Food and the Global Crop Diversity Trust.

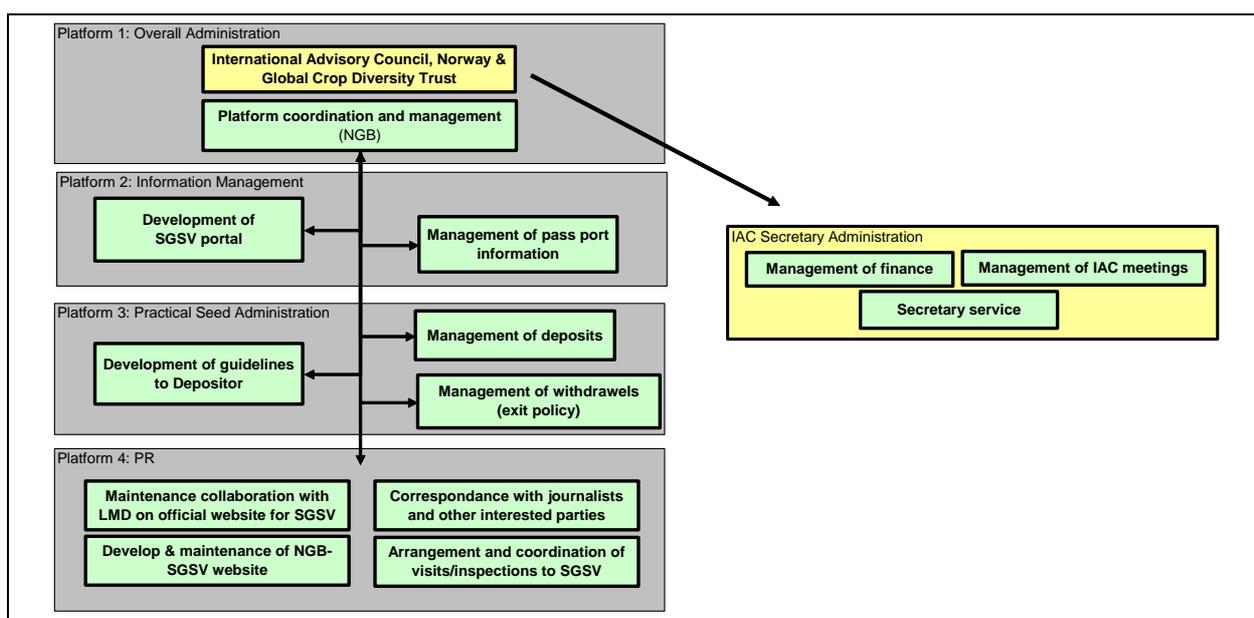


Figure 1: NordGen organization chart for the management and operation of Svalbard Global Seed Vault.

Platform 1: Overall Administration & IAC Secretary Administration

The overall administration includes coordination and liaising with all relevant stakeholders to SGSV including, but not restricted to, The Royal Ministry of Food and Agriculture Norway, The Global Crop Diversity Trust, Statsbygg, The Governor of Svalbard, and Depositors. This

¹ The Nordic Genebank changed name to the Nordic Genetic Resource Centre in January 2008

platform also includes the provision of secretariat services for the International Advisory Council in accordance with the Three Party Agreement.

The financial administration covers; annual financial statements to be presented to the Trust and the Royal Norwegian Ministry of Agriculture and Food, bookkeepings of: records and original vouchers in accordance with NCMs practice. Open book inspection service available for the Trust and the Royal Norwegian Ministry of Agriculture and Food. Further, annual progress reports (covering each year up to Dec 31) submitted by March 31 the following year, will be provided by NordGen. Preparation of an annual budget for each financial year (to be approved by the Trust and the Royal Norwegian Ministry of Agriculture and Food), and submitted by April 1, of the year prior to the onset of the budget periods (in SEK value, incl. the Working Capital Fund).

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

2008 was the year of the opening of the Svalbard Global Seed Vault. The opening on the 26th February was a spectacular event organized by the Ministry of Agriculture and Food. NordGen worked closely with the organizing committee and thanks to a massive effort from all partners involved, not least the event company Dinamo the opening turned out a great success.

NordGen has in fulfillment of the articles in the three-part agreement carried out the following tasks in 2008:

Article 3.3 Liaise with depositors with respect to the material to be deposited and timetables and process for deposition, including guiding on packaging and labeling: Deposits are accepted and included in the SGSV from 25 institutions so far. 10 out of the 25 are CGIAR centers (Appendix 1&2). The CGIAR deposits and the deposits from non-OECD countries have been organized in close collaboration with the Trust. The Trust has reimbursed all expenses for these institutions, including purchasing of the standard deposit boxes. The depositors from OECD countries have deposited at their own expense and have chosen different types of deposit boxes. Only deposits from established genebanks are accepted and decision about including samples in SGSV or not are based on the general premises laid out in the Deposit Agreement's Article 3.

3.4 Enter into and sign DA: NordGen, on behalf of LMD has entered into 14 new Deposit Agreements (DA) in 2008 (See Annex 1).



Seed preparation and shipment to Svalbard. Photos: CGIAR and NordGen

Article 3.5: Request the International Advisory Council for advice: The first meeting of the IAC was organized during the opening at Svalbard in February 2008. NordGen performed the secretariate tasks.

3.14 Cooperate with “the person appointed by LMD to be responsible for the surveillance and maintenance of the Seed Vault: NordGen is working closely with Statsbygg which has this role.

3.19/3.20 Annual progress report submitted and approved by Trust and LMD: On the 29.08.08 the Trust approved the annual report for the 2007 agreement between the Trust and the Nordic Genebank providing for the financing of the start-up costs for the SGSV.

1.6.c Samples deposited in the seed vault shall be safety duplicated in a suitable genebank, unless this requirement has been waived by the Svalbard Global Seed Vault: NordGen has issued a waiver for one collection from the Netherlands.

1.8 Deposit of wild seeds from Svalbard: Two boxes with seed samples from 88 species of vascular plants from the native flora of Svalbard were included during the October deposit opening.

A key event in 2008 was the employment in October of Professor Roland von Bothmer as Senior Information Advisor.

Platform 2: Information management

This platform serves the development, technical service to depositors, and maintenance of the Seed Vault Data Portal, where information about the stored material will be publicly available through the internet.

3.9: *Maintain a publicly available database.* The dataportal for the SGSV database is publicly available on www.nordgen.org/sgsv. The portal is linked to both from NordGen's homepage and the official webpage of the Seed Vault maintained by the Ministry. Statistics from the three first months of 2009 tells us that the dataportal has had 3 867 visits from 123 countries/territories throughout this period.

This dataportal has been developed and was updated throughout the last year, including the guidelines for depositing seeds in the SGSV. The database is updated at every seed deposit event. The electronic inventories submitted by the depositors have been of varying quality and only a few have been in such a condition that they could be uploaded to the database without any problems. All technical mistakes have been resolved in collaboration with the depositors. However, data quality is a matter with a large potential for approval and NordGen is considering ways to improve guidelines, templates etc.

Data from the SGSV dataportal is included in the System-wide Information Network for Genetic Resources (SINGER) - the germplasm information exchange network of the Consultative Group on International Agricultural Research (CGIAR) and its partners.

Svalbard Global Seed Vault Global Crop Diversity Trust NordGen

Svalbard Global Seed Vault

Home Depositor Guidelines Information sharing Search

Depositors and Material

[Advanced search with list of all accessions, click here]

Search the Seed Portal by:

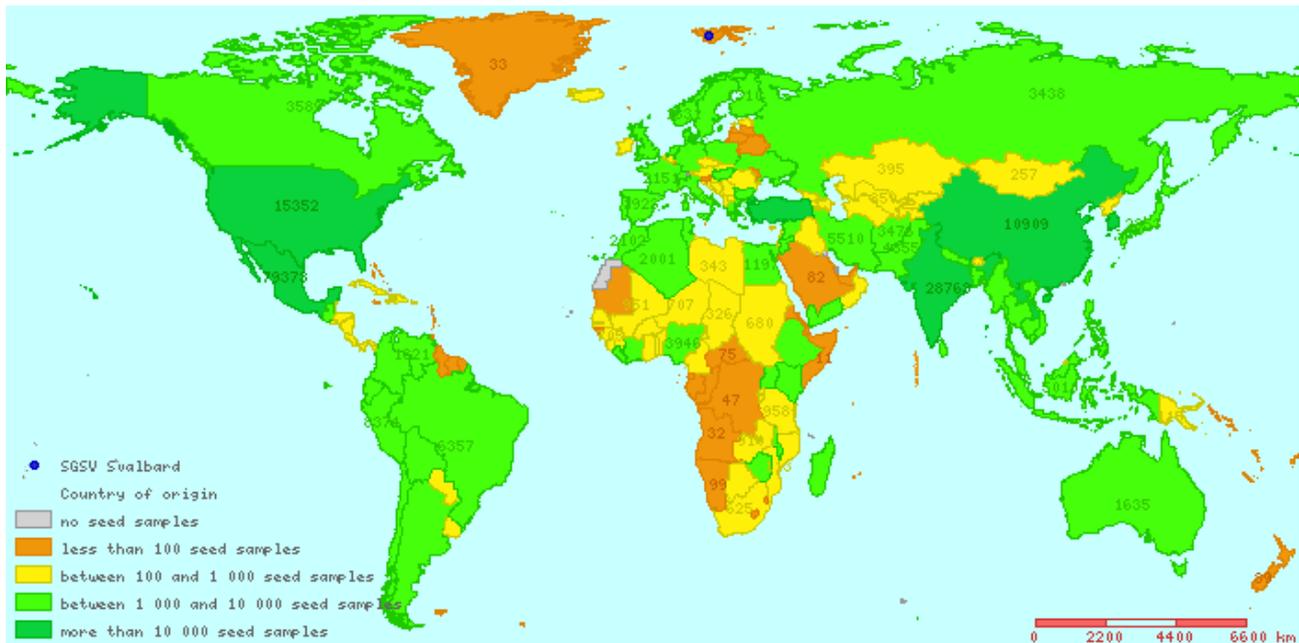
- Seed samples [406 607] [Download]
- Taxon names [5 378] [Download]
- Species [3 277] [Download]
- Genus [665] [Download]
- Country of origin [218] [Download] [Map]
- Continent of origin [8] [Download] [Map]
- Depositor institutes [25] [Download]
- Depositor and genus [1 204] [Download]
- Seed deposit events [34] [Download]

A total number of 406 607 accessions and seeds have been stored at the Svalbard Global Seed vault (SGSV).

Seed boxes on the shelves in the Vault. Photo by Mari Tefre/Global Crop Diversity Trust

| Depositor institute | Institute code (WIEWS) | Seed samples safe duplicated at SGSV (accessions) | Number of taxa | |
|---|------------------------|---|-------------------|---------|
| Centro Internacional de Mejoramiento de | CIMMYT | MEX002 | 80 492 accessions | 12 taxa |

Screenshot of the homepage for the dataportal at www.nordgen.org/sgsv



Country of origin or source for the material currently stored in SGSV. Source: www.nordgen.org/sgsv

Platform 3: Practical Seed Administration

This platform will serve the update and maintenance of guidelines and thus practical depositing and withdrawal of seeds from the Seed Vault. It will collaborate with Platform 2 (Information Management) on registration procedures of information.

Overall management of transport logistics and hence exit arrangements for seeds deposited will also be managed under this platform.

The practical seed administration will further cover assistance regarding security, customs, phytosanitary certificates and other relevant clearances. The Royal Norwegian Ministry of Agriculture and Food is the primary responsible body for the Seed Vault surveillance and maintenance, however, NordGen work closely with Statsbygg who is the responsible institution for the surveillance and maintenance of the Seed Vault.

Article 3.2a Development and update of Management Guidelines for the operation: The Guidelines were produced and a first version presented to the Ministry in December 2007. The guidelines were updated to accommodate the decisions on visitor policy by the Ministry in March 2008

3.6 Receive and handle material at Svalbard including making arrangements to help with local handling of boxes and other local arrangements in Svalbard: NordGen organized four deposit openings in 2008. This has provided multiple opportunities for potential depositors to arrange for seed shipments. Dates are arranged and settled in advance in consultation with depositors. Deposits of the CGIAR institutions and of developing countries have been financially supported by the Trust (incl. standard boxes, packages and shipping). OECD countries are expected to cover their own expenses. As a result, a number have chosen different types of deposit boxes. The total number of seed samples deposited in 2008 was about 320 000, the majority of this was organized to arrive for the opening ceremony in

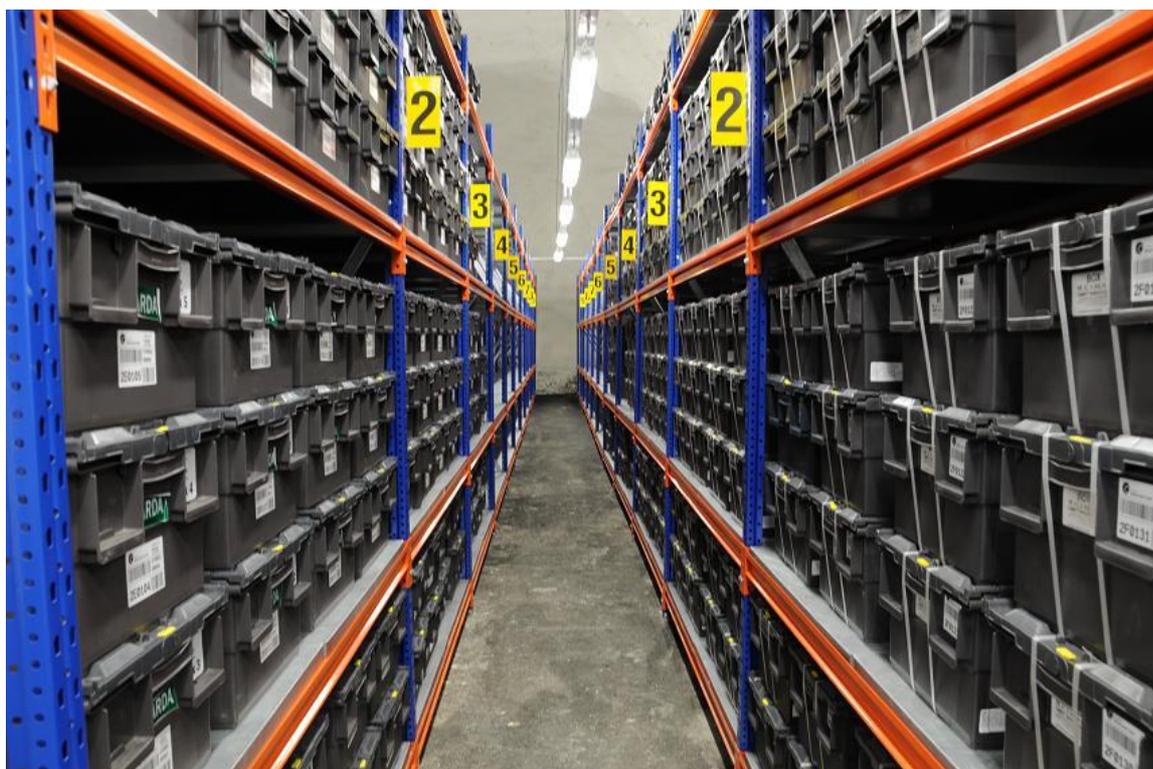
February 2008. Local manpower and very helpful staff at the airport has facilitated these events and they have all gone smoothly.

3.7 In collaboration with depositors, make sure boxes of seeds for deposit are have the necessary customs, security, phytosanitary and other required clearances: There has not been any significant problems with the shipments with regard to documentation and custom clearance. All shipments have been accompanied with an import permit from the Norwegian authorities issued by NordGen on the basis of the electronic inventories submitted. Depositors have used courier companies to organize the shipments into Norway.

3.8 Manage boxes in the storage hall: The seed storage system is explained in the Management Guidelines developed and updated by NordGen. Following the decision about moving the boxes in hall 2 away from the generators NordGen moved the boxes and updated the storage system accordingly.

Return of material for reestablishment of lost original material, or destruction of material due to replacement of low viability material has not yet been a need.

All material has been screened at the airport before registration and storage in the SGSV.



Inside Vault chamber number 2. Photo: Mari Tefre

Platform 4: PR

The development and maintenance of NordGen-SGSV website are carried out within this platform, together with press and journalist correspondence in general and arrangement and coordination of visits/requested inspections to SGSV.

The opening of the Seed Vault on February the 26th 2008 was a great success and became an unprecedented media event in the global effort to conserve genetic diversity. The public awareness value of this event can hardly be overestimated.

Activities in fulfillment of the duties in the three part agreement in relation to the relevant articles:

3.12 In collaboration with the Ministry of Agriculture and Food (LMD) and the Trust, maintain and update appropriate technical information to be used at Official web-site of the Seed Vault hosted by LMD. NordGen has delivered updates and web articles about new deposits etc. to this site.

4.2. Take part in information activities related to the objectives and the role of the Seed Vault. Ensure good coordination with the other partners. NordGen has contributed with articles and lectures in several relevant professional and public forums throughout 2008. The media interest in the SGSV has been massive. During the opening a large number of international media outlets were present. All three partners in the project have experienced a large interest and have given interviews.

In close collaboration with the Trust and photographer Mari Tefre (based at Svalbard) NordGen has distributed still pictures and film from the SGSV that has been widely used by TV channels and printed press around the world. NordGen has hosted media visits in connection with each of the four deposit openings; the selection of the limited lists of media that has been granted access to the Seed Vault (not inside Vault no 2) has been done in close collaboration with The Global Crop Diversity Trust and the Ministry. NordGen has presented the SGSV at two high-level VIP visits at Svalbard, in one occasion the visit was arranged by the Global Crop Diversity Trust and co-hosted by the Trust and the Ministry. Furthermore, NordGen has collaborated closely with the University Center in Svalbard (UNIS) and the Svalbard Museum on information work. UNIS has provided lecture halls for several presentations by NordGen to visitors who has not been allowed into the Seed Vault itself. Through the collaboration with botanists at UNIS we have been able to handle many media requests for interviews about the storage of seeds from the local flora in the Seed Vault at times of the year where no NordGen staff has been present. This has been a good way to enhance the feeling of local ownership to the Seed Vault in Longyerabyen, and also a good way to create public awareness about the Seed Vault in a Climate Change context. A standard presentation about the Seed Vault and its mission developed by NordGen has been given by the UNIS leadership at several occasions.

Nordgen was in 2008 invited to speak about the Seed Vault in several international forums, including a popular science presentation for the royal heirs from Sweden and Norway when they visited Svalbard in July. NordGen has also contributed with articles about the Seed Vault in several publications in 2008. See annex 1.

Annex 1

New Depositor Agreements signed in 2008

| Depositor | Signed |
|---|---------------|
| International-Benin, WARDA | 2/5/08 |
| International-Colombia, CIAT | 2/21/08 |
| International-Syria, ICARDA | 1/30/08 |
| International-Kenya, ICRAF | 1/30/08 |
| Netherlands, CGN | 2/6/08 |
| USA, Seed Savers Exchange | 1/30/08 |
| Pakistan, NARC | 2/6/08 |
| Germany, IPK | 2/6/08 |
| Kenya, KARI | 2/6/08 |
| Democratic Republic of Korea, ITCC/RDA | 5/7/08 |
| Macedonia, Institute of Agriculture Skopije | 6/26/08 |
| Brazil, Embrapa | 6/28/08 |
| Russia, Vavilov Institute | 6/7/08 |
| Switzerland, Agroscope Changins-Wadenswil | 12/17/08 |

Annex 2

Articles about the Seed Vault published in 2008 by NordGen staff

Conservation of crop biodiversity for a food secure future. (2008) Westengen O.T. In Sandlund O.T. & Saksgård L (eds). 2008. Proceedings of the Norway/UN Conference on Ecosystems and People – Biodiversity for Development –The road to 2010 and beyond. –Directorate for Nature Management, Trondheim. 179 pp.

Experiences from establishing an international seed bank –Svalbard Global Seed Vault –Practical Management Measures. Kathle J. & Rasmusen M.C. (2008) Proceedings of the APEC-ATCWG Workshop on Capacity Building for Development and Implementation of Risk Management Systems on Genetic Resources. 281 pp.

Svalbard Global Seed Vault opened. (2008) Westengen O. T. Geneflow. Bioversity International

Svalbard Globale Frøhvelv– symbol og realitet / Svalbard Global Seed Vault -symbol and reality. (2008) Westengen O.T. Nordiske Genressurser. Nordisk Genressurssenter.

Svalbard Global Seed Vault opened. (2008) Westengen O.T. Newsletter for Europe. Bioversity International.

Safety storage of plant genetic resources in the Arctic. (2008) Westengen O.T. Agrifood Working paper series. MTT Agrifood Research Finland.

Annex 3.

Seed Deposits in 2008

| Centre/Country | Number of seed samples | | | | Total 2008 |
|-------------------|------------------------|-----|--------|--------|---------------|
| | Feb | Mar | Jun | Oct | |
| CIAT | 30,911 | | | | 30911 |
| CIMMYT | 57,721 | | | | 57721 |
| CIP | 5,847 | | | | 5847 |
| ICARDA | 30,567 | | | | 30567 |
| ICRAF | 101 | | | 407 | 508 |
| ICRISAT | 0 | | | 20,003 | 20003 |
| IITA | 6,513 | | | | 6513 |
| ILRI | 4,008 | | | | 4008 |
| IRRI* | 70,18 | | | | 7018 |
| WARDA | 2,158 | | | 3,246 | 5404 |
| Canada | 5,942 | | | | 5942 |
| Germany | 2,590 | | 15,081 | | 17671 |
| Kenya | 558 | | | | 558 |
| Netherlands | 18,212 | | | | 18212 |
| Republic of Korea | | | 5,182 | 8000 | 13182 |
| Pakistan | 480 | | | | 480 |
| Philippines | 500 | | | | 500 |
| Russia | | 945 | | | 945 |
| Sweden | 12,699 | | | | 12699 |
| USA SSE | 485 | | | | 485 |
| USA | 10,865 | | | | 10865 |
| Total | | | | | 313201 |