



NordGen
Nordic Genetic Resource Center



norden
Nordic Council of Ministers



**NordGen Annual Review
2008**

SAMMANFATTNING
YHTEENVETO

GULA SIDOR
KELTAISET SIVUT

TABLE OF CONTENTS

FOREWORD	1
CONSERVATION OF GENETIC RESOURCES IN THEIR NATURAL ENVIRONMENT	2
A NEW DIRECTION FOR FARM ANIMAL GENETIC RESOURCES	4
NORDGEN AND EUROPEAN COLLABORATION ON PLANT GENETIC RESOURCES	6
SVALBARD GLOBAL SEED VAULT 2008	8

ANNUAL REVIEW 2008

FACTS AND FIGURES 2008	10
NORDGEN FOREST	12
NORDGEN FARM ANIMALS	13
NORDGEN PLANTS	14
IT AND COMMUNICATION	16
THE BOARD AND ORGANIZATION	18
STAFF 2008	20

NordGen, Nordic Gen a viable year-old in Nordic cooperation

2008 HAS BEEN A YEAR OF CHANGES. Three units were merged into one on January 1st 2008 and new leadership was established. Many practical and strategic decisions had to be taken and a new culture built. Thanks to a flexible, competent and hard-working staff much was achieved during the first year, but there remains a lot to do. In this first annual review we want to highlight the synergistic results of the new institution, our international activities (pp 2–8) and provide some perspective on the future.

NordGen's three sectors are organized into three departments, Forest, Farm Animals and Plants. The two first mentioned are co-located in Ås, Norway, while Plants is located in Alnarp, Sweden. The reason for a split location is scientific. NordGen is a service and knowledge center and is highly competent within its own areas of expertise. There are relatively few employees at NordGen, and therefore the organization is extremely dependent on cooperation and close connections with the research sectors at various universities and research centers. Alnarp campus has a strong scientific reputation in plant sciences and Ås is similarly highly regarded in husbandry and forestry. Using this model, NordGen has successfully merged the three units into a single administrative and scientific unit, where it is possible to have frequent joint seminars and staff meetings. Many scientific issues have been discussed and new approaches, insights and opportunities across the sectors have become evident.



Short necked Icelandic Sheep

Photo: Askell Thorisson

Genetic Resource Center, Institution, builds on 30 years of work in genetic resources

NordGen has placed considerable emphasis on information activities, especially those directed at the public. An information coordinator was hired, a new information strategy was developed, and all information activities are now centralized. These efforts have resulted in production of a new website where NordGen is presented as a joint institution, with its new logo, new brochures and an increased presence at several events during the past year. The information work is dependent on cooperation and contributions from all sectors and represents an important link between our various areas of scientific capacity.

In late autumn 2008 it was decided by The Nordic Council of Ministers (NMR) that the NordGen mandate should broaden to include environmental aspects of genetic resources relevant to food and agriculture. This was a breakthrough for NordGen and increased our possibilities for development, influence and growth. It will also strengthen the linkage among our three areas of responsibility. NordGen's new environmental engagement is likely to be seen in connection with the climate program established by the Nordic ministries in 2008. Forest tree genetic resources play a crucial role in meeting climate change challenges and it is therefore natural that NordGen Forest will be strengthened over the coming years.

NordGen Plants' core activities are conservation and sustainable use of plant genetic resources of which gene-banking is one part. The gene bank for seeds includes quality secured procedures, characterization and documentation. As our gene bank is the only public one for seeds in the Nordic countries, it is of utmost importance that our collection fulfills the expectations of quality and capacity. Due to the age of the collection and structural changes in the crop industry, scientific institutions and breeding companies, gene bank activities will increase significantly. It will be a challenge to secure the necessary financial support and retain highly qualified staff for the future tasks. NordGen has started to address the challenges and will certainly follow-up in the future.

Never before has the management of genetic resources been more topical internationally than today. The main reason is the concern over predicted climate changes that can no longer be ignored. In this respect, the timing of the opening of the Svalbard Global Seed Vault (SGSV) on 26th of February 2008 was perfect. The international media has shown tremendous interest in this "Noah's Ark of seeds" and it was ranked as the 9th biggest science project in the World in 2008 by Discovery Channel and selected as one of the greatest inventions by Time Magazine. Read more about SGSV and NordGen's role on page 8.

We have been, and will continue to be engaged in many international forums as FAO, ECPGR (European Cooperative Program for Plant Genetic Resources) and others. Our international engagement is based on the Kalmar Declaration (2003) and the Convention on Biological Diversity (CBD). We fully support the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) as a useful international tool for implementation

of the CBD. The competence within NordGen on these complex, international questions is high, and therefore we can give practical support and advice on how to implement the ITPGRFA in our partner countries.

The establishment of a European integrated database (AEGIS) on plant genetic resources (PGR) to facilitate exchange of PGR are supported by NordGen. We have invested considerable effort in developing functional transfer agreements (MTAs) for our own material in harmony with the AEGIS principles.

The international activities are not limited to PGR, but include farm animal genetic resources (AnGR) and forest trees as well. In 2007, the Interlaken Declaration was presented, which provided important principles on conservation and sustainable use of AnGR. NordGen has further developed some ideas for implementation of the Interlaken Declaration that has been discussed in international forums. Finally, the State of the World's Forest Genetic Resources was recently published and NordGen is involved in the follow-up work. NordGen wants to be a strong Nordic voice in order to develop international principles on how to deal with rights and access to genetic resources relevant to food and agriculture.

Another international focus is NordGen's involvement in gene bank projects in developing countries and countries in transition. Regarding our strategic plan and mandate, all international projects have to be fully externally financed and within our core activities. Our engagements in 2008 were many, in Africa, Central Asia and the Balkans, in addition to the Baltic-Russian cooperation. All projects have an overall goal to establish, educate and provide incentives for regional cooperation in gene-banking. The future is exciting and full of opportunities. We will contribute using all available means to promote NordGen's good reputation and make sure that it fulfills its mission. This will be done in the spirit of our core values, as a professional, service-minded and communicative Nordic center for genetic resources.

Jessica Kathle
Managing director



Conserving genetic resources in their natural environment is termed *in situ* conservation. For forest trees this has always been the most important conservation method. *In situ* conservation is also important for a number of agricultural plant species and their wild relatives. Protected areas represent significant potential for *in situ* conservation of genetic resources.

Conservation of genetic resources in their natural environment

CONSERVATION OF GENETIC RESOURCES of forest trees and agricultural plants can be done using *ex situ* strategies, such as storage of seeds in seed banks or maintenance of collections of plants in field gene banks. These methods allow for the immediate use of genetic diversity in plant breeding and conservation. A quite different strategy is the continuous maintenance of populations within the environment where they originally evolved, and to which we assume they are adapted. This is termed *in situ* conservation and is a type of conservation frequently applied to populations of forest trees. The objective is to maintain genetic variation and allow the genetic makeup of a species to evolve in response to changes in the environment. *In situ* conservation is also a preferred strategy for most wild plant species and for some of the wild relatives of crop species. It is particularly useful under the current changing climatic conditions.

IN SITU CONSERVATION OF FOREST TREES

In the European co-operative programme EUFORGEN (European Forest Genetic Resources Programme: www.euforgen.org) efforts are made to create pan-European networks of *in situ* conservation units for targeted tree species across their entire distribution ranges. Each country contributes with one to three populations of each of the targeted species. Definitions are made of common criteria and there are minimum requirements for a population to qualify as a gene conservation unit: it must be above a minimum size and contain more than a minimum number of reproducing trees, management must be allowed that makes it possible to maintain the specific population for the future and its long-term existence must be assured. There should be no plantations of non-local origin of the same species nearby.

In Norway, the strategy has been to search for gene conservation units among established protected areas that fulfil the minimum requirements set by EUFORGEN. In protected areas like nature reser-

ves, active management that contributes to fulfilment of the objective of the nature protection may be allowed. This could be the case when the conservation objective of the protected area is the long-term maintenance of targeted populations of one or more tree species. In such cases nature conservation is compatible with the conservation of genetic resources. Protected areas that have the specific objective of conserving the total biological diversity with minimum human influence can not serve as gene conservation units as the long term maintenance of targeted tree species is not secured. To date 120 protected areas containing the tree species ash (*Fraxinus excelsior*), elm (*Ulmus glabra*), oaks (*Quercus robur* and *Q. petraea*), English yew (*Taxus baccata*) and Holly (*Ilex aquifolium*) have been nominated, and from these 21 have been selected as tentative gene conservation units. Specific stand parameters of the populations in these areas will be assessed. Further assessments are planned to be made in the future to monitor the future development of these species in Norway. The data from the Norwegian units will be included in a common European database.

Conservation of genetic resources may not always be compatible with the objectives of nature conservation. Several countries are therefore reluctant to use protected areas as gene conservation units. Finland has chosen to establish managed *in situ* gene reserve forests which do not have the same constraints as strictly protected areas. The stands for the main species, spruce, pine and birch, should be more than 100 hectares, and the owner of the forest must formally agree to follow a set of guidelines for its tending and management.

Knowledge about the reproductive biology of a target species and its interactions with environmental conditions is important when establishing an *in situ* conservation strategy. Browsing by red deer and roe deer in nature reserves in western Norway was shown to prevent regeneration of seedlings and cause injuries to stem and tree crowns in *Taxus baccata* trees in a majority of the





It is challenging to conserve the genetic resources of lime (*Tilia cordata*) and secure its future adaptation to future climate, particularly due to its limited sexual reproduction. The picture shows an old lime tree in Øyastøl Nature Reserve, Rogaland, Norway.

Foto: Åsmund Åsdal

areas studies. This will in the long term affect the genetic resources of the species in the northern environment. In another survey of the reproductive capacity of *Tilia cordata* in 27 nature reserves in Norway, only 11 seedlings were found, and only at sites with good climatic conditions. Temperature seems to be a limiting factor in the sexual reproduction of this species, and without sexual reproduction no new genetic variation that could be the basis for adaptation to future climatic conditions is generated.

IN SITU CONSERVATION OF PLANTS

Most of the traditional crops cultivated in the Nordic countries were at some point in their history introduced, and have their centres of origin in other parts of the world. However, the Nordic flora has many native plant species representing important genetic resources. We are obliged to conserve these resources, in gene banks as well as *in situ*. Populations of plants growing at our latitudes are adapted to long days and to a wide diversity of climatic conditions. Our plant genetic resources may therefore be important for agriculture in regions at similar latitudes under improved climatic conditions.

The species suitable for forage production and their wild relatives are the economically most important group of wild plant species in our flora. In Norway, *in situ* conservation fields for grass and clover species have been established in meadows that have been under traditional cultivation. This has resulted in a register of valuable meadows, and management plans have been made for some fields. They have been prioritised for grants and support from local and regional agricultural authorities.

Other important plant species growing in nature are the wild berries and aromatic and medicinal plants. One example is roseroot (*Rhodiola rosea*), which suddenly has become of interest for use in the perfume and health food industries. In some countries, medicinal and aromatic plant species are harvested to the extent that they become

threatened, and their genetic resources in the Nordic countries can therefore be of value for large parts of Europe.

For several of these species established protected areas offer possibilities to conserve their genetic resources. Lists of target species for *in situ* conservation will be made, and the use of protected areas as conservation sites will be explored. *In situ* conservation in nature reserves is most appropriate for species that do not require special care or management measures. Experiences with the conservation of forest genetic resources in protected areas, as discussed above, will be used for the conservations of the plant species.

It is assumed that global food security, considering expected climate changes, to a large extent will depend on 500-700 plant species. The best assurance for the future will be to conserve these species so that they are allowed to adapt to changing environmental conditions *in situ*, and let their genetic resources be secured *ex situ* in gene banks. Several of these species also grow in our northern flora.

Tore Skroppa and Åsmund Åsdal



In September 2007, the International Technical Conference on Animal Genetic Resources for Food and Agriculture was held in Interlaken, Switzerland. Two important documents aiming at preventing the genetic erosion of farm animal biodiversity and promoting the sustainable use of genetic resources were adopted: The Global Plan of Action for Animal Genetic Resources and the Interlaken Declaration on Animal Genetic Resources.

A new direction for farm animal genetic resources

BROAD ATTENDANCE

A total of 109 countries sent their delegations to the Interlaken Conference. The main organizer of the conference was FAO – the Food and Agriculture Organization of the United Nations.

Earlier in the 2000s, a total of 169 FAO member countries delivered their country reports on national animal genetic resources and their utilization and conservation to FAO. These reports contained the information that formed the basis for the FAO publication ‘The State of the World’s Animal Genetic Resources for Food and Agriculture’ published in 2007, but also they provided constructive and crucial information for planning the conference and designing the two Interlaken documents.

THE INTERLAKEN DECLARATION ON ANIMAL GENETIC RESOURCES

The Interlaken Declaration consists of 20 distinct statements on farm animal genetic resources and their importance.

In the Declaration, the sovereign rights of each state over its own animal genetic resources for food and agriculture are recognized. The Declaration reminds us that agricultural genetic resources are a part of our cultural heritage.

In the Declaration, negative effects of the extinction of local farm animal breeds on animal biodiversity are highlighted. In the long run, this is assumed to increase risks in the security of food production and diminish resources for rural livelihoods. In addition, it is pointed out that animal genetic resources are actually underutilized. Only a limited share of the global genetic diversity existing in each farm animal species is effectively used to produce food: genetically similar black-and-white Holstein cows are milked and the same chicken hybrids lay eggs in different parts of the world. Typically without prior testing of their adaptability and profitability for different biogeographic and production circumstances, while locally adapted breeds and their genes and gene combinations no longer have anymore economic importance in food production or rural development.





Light Sussex Photo: Liv Lønne Dille



Peasant goat, Ingelstad land race park, Sweden Photo: Lars Erik Wallin

The Interlaken Declaration emphasizes conservation through sustainable use of animal genetic resources. Also the active role of scientific research is acknowledged in order to increase our knowledge on animal genetic resources and their utilization in different environments and production conditions. Moreover, the Declaration clearly points out that there are major gaps in financial sources, inventories and characterizations of animal genetic resources, sustainable utilization, development and conservation. According to the Declaration, many actions need to be taken both at international and national levels in order to meet the requirements for sustainability in the utilization and conservation of animal genetic resources.

THE GLOBAL PLAN OF ACTION FOR ANIMAL GENETIC RESOURCES

The Global Plan of Action accepted at the Interlaken Conference lists many useful measures to be implemented in international and national strategies in order to prevent genetic erosion and improve the sustainable use of animal genetic resources. The needs of future food production and agriculture should be considered when actions and decisions are implemented now and in the near future on utilization and conservation.

The Global Plan of Action for Animal Genetic Resources has four main goals that should be implemented in policies on conservation and utilization of genetic resources:

- The characterization and inventory of current genetic resources and identification of risks and trends in the use of genetic resources. In practice, production and other traits of different breeds need to be characterized, the trend in census sizes followed, the parentage of individuals within each breed recorded and effects of socio-economic and cultural aspects followed on e.g. the popularity of different breeds.
- The sustainable development and use of animal genetic resources. The measures given in the Global Plan are hoped to promote sustainability in animal production. The considerations of food security and development of rural livelihoods are central when the sustainability of the production system is evaluated.

- The conservation of animal genetic resources through preserving genes and gene combinations of animals by conserving rare breeds, creating national policy and programmes and by establishing living and frozen gene banks (i.e. freezing semen, embryos and also oocytes in liquid nitrogen for long-term conservation purposes).
- National policies for animal genetic resources should be developed and the competence, financial resources and other relevant infrastructure and facilities of institutions responsible for genetic resources should be improved. In addition, national and international networking among these institutions should be improved.
- The Interlaken Declaration and the Global Plan of Action can be found at: www.fao.org/ag/againfo/programmes/en/genetics/angrvent2007.html

AFTER INTERLAKEN

The Global Plan of Action has been accepted by all FAO members and currently several national coordinators for the management of animal genetic resources within the FAO networks have informed FAO that the Interlaken documents will be implemented by developing national action plans. In addition, the Interlaken Conference has led to discussions on access and benefit sharing of animal genetic resources – which has had a crucial influence on the use and conservation of national plant genetic resources in the global context. The implementation of suggestions given in the Interlaken documents in strategic planning and practical work is a challenge also for the Nordic Genetic Resource Center.



Juha Kantanen

A European regional plant genetic resources project has been launched to improve conservation and utilization. The Nordic region, represented by NordGen, will be an active contributor in encouraging this regional undertaking.

NordGen and European collaboration on plant genetic resources

NORDGEN HAS BEEN participating in the European Cooperative Programme for Plant Genetic Resources (ECPGR) for many years. Several European countries are members of ECPGR and NordGen, as the executant for Nordic collaboration, plays a major role.

BACKGROUND

ECPGR was established in 1980 as a European regional program and operates with Bioversity International, the Consultative Group on International Agriculture Research (CGIAR) center in Rome. The current structure of ECPGR comprises 18 crop working groups based on germplasm use and taxonomy and are organized around six crop networks and three thematic networks. The NordGen networks and staff are represented in all relevant working groups and NordGen staff is also represented.

ECPGR

The ECPGR working groups are efficient European networks that initially established central crop databases and developed descriptor lists for their respective mandate species. The current 64 central crop databases contain data on germplasm from all member gene banks and collections in Europe (more than 600). The ECPGR working groups have also proved to be efficient networks in allocating funds for germplasm work, a large number of projects having been funded by the EU NordGen has participated in more than a dozen such projects that have improved the quality of collections by accelerating characterization, evaluation, documentation and rationalization of the conserved germplasm. Furthermore, ECPGR collaborates with other regional programs on a global scale.

EURISCO

As the European central crop databases became more comprehensive, the updating became

increasingly laborious and new solutions were sought. As a consequence, the EURISCO web catalogue was developed based on national focal points (eurisco means “I find” in Greek). National inventories were established and updated datasets can now be uploaded to the catalogue automatically. The catalogue currently contains passport data for more than 1.1 million germplasm accessions of 8,665 species from 38 countries. NordGen acts as a common focal point for the Nordic countries and provides the information to EURISCO. A future task for the web catalogue is to include characterization and evaluation data in the catalogue to facilitate use of the plant genetic resources in the collections.

AEGIS

The most recent development in European PGR issues is organization of an Integrated European Genebank System – AEGIS, which represents a major task for the European gene bank community in the near future. The aim is to conserve genetically unique and important germplasm accessions in Europe on a long-term basis and make them available for breeding and research.

From the outside AEGIS will appear as a virtual gene bank of unique accessions stored according to strict safety criteria and accompanied by detailed information.



Wild Chives, collected at Gotland, Sweden

Photo: Simon Jeppson

This requires that the ECPGR working groups and the collection curators go through the entire collections and identify the unique accessions, which are termed MAA, most appropriate accession. These MAA will be marked in the EURISCO catalogue. Subsequently, it will be up to the national gene banks to decide if they want to maintain non-MAA material. Simultaneously, a quality management system will be developed to increase the standard of conservation of the material. It will be based on agreed minimum standards and will facilitate mutual trust and task sharing among European members. Safety duplication will represent an essential improvement to the existing germplasm conservation systems operating in Europe.

During the development phase of this project a feasibility study was conducted on four model crops to develop a suitable proposal. The crops included *Allium* (onions), *Avena* (oats), Brassica (rape seed and cabbage) and *Prunus* (plums and cherries).

NORDGEN AND AEGIS

It is essential that the NordGen collection is thoroughly checked to decide which accessions are to be categorized as MAA. Most of the collections will be included because NordGen's general mandate is restricted to Nordic material, which is thus *a priori* unique material.

We will continue long-term conservation of our germplasm following the agreed standards. This will require some adjustments and will provide us an opportunity to review our procedures and develop a quality management system in line with European standards. Particularly regarding safety duplication, it is expected that many European accessions will be conserved in the Svalbard Global Seed Vault. This will emphasize the utility of this safety back-up facility and promote its success.

We will continue to generate information on the stored material and develop facilitated access to it. The material itself is already easily accessed and freely available.

The action plan for the implementation of AEGIS has been launched and the political basis was established by member countries by signing a collective Memorandum of Understanding. A proposal to the EU Commission 7th Framework Program for funding the startup process of AEGIS was simultaneously initiated by the ECPGR secretariat in collaboration with the participating countries.

BEYOND EUROPE

ECPGR is the regional program for Europe, but other regional programs also operate, and it is hoped that in the future all regional programs might collaborate and contribute data on their germplasm. A step in this direction is illustrated by the Global Information on Germplasm Accessions (GIGA) project where data are extracted from International Agricultural Research Centers, from the US Genetic Resources Information Network and from EURISCO. The aim is to facilitate access to data on a global scale and thus bolster plant genetic resource use.

Gert Poulsen



The European plant genetic resources community 2009. There are 629 germplasm collections in 41 European countries, in all more than 1.9 million accessions. Of these only 37% are of European origin. It is estimated that 30–40% of all the accessions are unique (Maggioni and Engels 2009).



Cauliflower (*Brassica oleracea* L.) was among the species included in the initial feasibility studies. Photo: G. Poulsen

MORE INFORMATION ABOUT:

AEGIS: www.ecpgr.cgiar.org/AEGIS/AEGIS_home.htm

ECPGR: www.ecpgr.cgiar.org/Index.htm

EURISCO: eurisco.ecpgr.org

Biodiversity International:
www.biodiversityinternational.org/

SGSV: www.nordgen.org/sgsv/

GIGA: www.biodiversityinternational.org/news_and_events/news/news/article/giga-project-to-ease-access-to-global-genebanks.html

REFERENCE:

Maggioni L and Engels J 2009. AEGIS in the making. 19th EUCARPIA Genetic Resources Section Meeting – 27-29 May, 2009 – Ljubljana, Slovenia

2008 was the year the Svalbard Global Seed Vault opened. The opening on the 26th February was a spectacular event, which was attended by distinguished guests from around the globe. The Norwegian Ministry of Agriculture and Food hosted the event and thanks to a massive effort from all partners involved the opening turned out to be a great success, generating a media interest unprecedented in the field of crop diversity conservation.

Svalbard Global Seed Vault in 2008

SVALBARD GLOBAL SEED VAULT (SGSV) is the ultimate safety net for the world's crop diversity. The Seed Vault offers free-of-charge back-up for the seed collections held in conventional genebanks and *ex situ* collections around the world and it is therefore an important element in an emerging global system of gene banks dedicated to the conservation of plant genetic resources for food and agriculture (PGRFA). This global system is a joint effort by national institutes, global and regional collection holders and international organizations such as the Global Crop Diversity Trust and The Food and Agriculture Organization (FAO) of the UN, all working in compliance with the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). NordGen is responsible for the daily operation and management of the Seed Vault. The terms and conditions governing its role are established in the agreement with the Norwegian Ministry of Agriculture and Food and the Global Crop Diversity Trust (the Trust).

HIGH SECURITY SEED STORAGE

Svalbard represents a secure and remote, yet accessible location. The safety of the seed samples is ensured by the thick sandstone rock surrounding them and their long term survival is guaranteed 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.

Operations of the Seed Vault can be divided into two categories: (1) physical maintenance of the facility, overseen by the Norwegian Directorate of Public Construction and Property Management, Statsbygg, and (2) seed management, overseen by NordGen. The SGSV has operated in accordance with its mission in all important respects. Not least this is thanks to the enthusiasm and cooperative spirit shown by all concerned, from depositors to the local partners in Svalbard.

Since the inauguration in February 2008, the Seed Vault has been fully operational as a high-security seed storage facility. The seeds are stored

in the vault's middle chamber (there are three chambers in total) and the 320 000 samples stored there by the end of 2008 occupied a little more than 1/5 of the total storage capacity of this single chamber. There have been some technical start-up problems in connection with the construction and Statsbygg considers the SGSV to be both in 'project phase' and 'operational phase' simultaneously until the structure and all infrastructures work reliably. The most notable problem was the damage done to the entrance section, the Svalbard tube (summer 2008), caused by settling of rock and dirt when the covering permafrost failed to re-establish before 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, was repaired during the summer of 2008 in such a way that the tunnel structure at the entrance is stronger and more secure than before. These problems have not jeopardized the security of the seeds stored inside the chamber.

NordGen organized four deposit openings in 2008. This provided numerous opportunities for potential depositors to arrange for seed shipments. Dates were arranged and settled in advance in consultation with depositors. Deposits of the institutions of the Consultative Group on International Agricultural Research (CGIAR) and of developing countries have been financially supported by the Global Crop Diversity Trust (incl. standard boxes, packages and shipping). OECD countries are expected to cover their own expenses. Deposits are accepted and included in the SGSV from 25 institutions to date. 10 out of the 25 are CGIAR centers. The CGIAR deposits and the deposits from non-OECD countries have been organized in close collaboration with the Trust. NordGen, on behalf of the Ministry of Agriculture and Food, entered into 14 new Deposit Agreements in 2008.

THE SEED VAULT AND THE MEDIA

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 substantial interest and have given many 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 the printed press around the world. NordGen hosted media visits in connection with each of the four deposit openings in 2008. The selection of the limited number of journalists granted access to the Seed Vault was done in close collaboration with The Global Crop Diversity Trust and the Ministry. NordGen also collaborated with the University Center in Svalbard (UNIS) and the Svalbard Museum on information work. The collaboration with UNIS also involves a project in

which seeds from the local flora at Svalbard are stored in the Seed Vault for regular germination testing. This project is a direct link between the Seed Vault project and important climate change related research at UNIS.

In 2008 Nordgen was invited to speak about the Seed Vault in several international meetings, 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.

NordGen maintains the publicly available database for the SGSV collection. The data-portal for the SGSV database is accessible at www.nordgen.org/sgsv. The portal is also accessible from NordGen's homepage and the official webpage of the Seed Vault maintained by the Ministry. The database is updated at every seed deposit event and can be searched by crop name, country of collection or source and several other descriptors for the material currently stored. Data from the SGSV data-portal are included in the System-wide Information Network for Genetic Resources (SINGER) – the germplasm information exchange network of the CGIAR institutions and its partners.

When the International Advisory Council for the Seed Vault, consisting of eminent experts in plant genetic resources 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 and crucial role in the global endeavour that the Svalbard Global Seed Vault has become.

Ola Westengen



READ MORE:

WWW.SEEDVAULT.NO

The Official webpage maintained by the Norwegian Ministry of Agriculture and Food

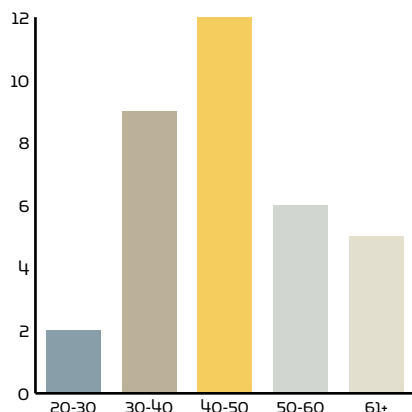
WWW.NORDGEN.ORG/SGSV

The Svalbard Global Seed Vault data-portal maintained by NordGen

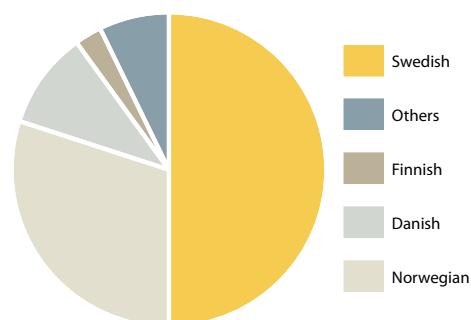
WWW.CROPTRUST.ORG

The Global Crop Diversity Trust's webpage contains comprehensive information on the Seed Vault

Facts and figures 2008



Graph 1. Staff by age



Graph 2. Staff by nationality

THE MAIN MISSION of the Nordic Genetic Resource Center (NordGen) is to secure genetic resources of plants, farm animals and forest trees of Nordic origin relevant for food and agriculture. Forest trees are generally conserved in their natural environment – *in situ*. Farm animals are conserved through sustainable breeding programs and plants *ex situ* by storing seeds or maintaining vegetatively propagated material in clonal archives.

NordGen manages and has the operational responsibility for the seed gene bank that operates on behalf of all the Nordic countries. The active gene bank is at Alnarp, the base collection is at Årslev in Denmark and the security storage is in Svalbard Global Seed Vault (SGSV), Norway. NordGen has the operative responsibility for the SGSV. However, storage in gene banks is not sufficient to secure the genetic resources for the future: the genetic resources should also be utilized.

In order to be able to use forest tree, farm animal and plant genetic resources there has to be free access to information on them. NordGen therefore puts considerable emphasis on characterizing genetic resources and developing specialized databases for the accessions (SESTO). The networks and information activities are vitally important if NordGen is to fulfill its mission.

STAFF

NordGen was established on 1st of January 2008 after merging the Nordic Gene Bank (NGB), the Nordic Gene Bank, Husbandry (NGH) and the Nordic Network for Forest Genetic Resources (NSFP). NordGen is an independent institution under the Nordic Council of Ministers (NMR). Its three sectors are organized into three departments, Forest, Farm Animals and Plants. The two first are co-located with the Center of Forest and Landscape at the University of Life Science in Ås, Norway, while Plants and the administration unit are located in Sweden at the Alnarp campus of the Swedish Agricultural University (SLU).

INCOME	CONSERVATION	UTILIZATION	NETWORK/INFO	INTERNAT.	ADM.	TOTAL
NMR budget	3 309	1 083	7 943	217	5 190	17 742
Project means NMR	500	68	143		94	805
National support	1 354	754	300			2 408
External project means	834	339	623	10 214		12 010
Other sources	18	145	26	437	356	982
Total Income	6 015	2 389	9 035	10 868	5 640	33 947
Total Costs	6 846	2 389	9 170	10 868	5 640	34 913
ANNUAL BALANCE	-831	0	-135	0	0	-966

Table 1. Overview of income and costs split on activity fields (1000 SEK)

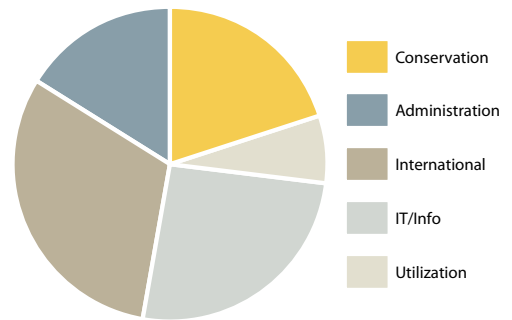
NordGen has 34 employees or 27.6 man years of which 3 are allocated to Farm Animals, 0.55 to Forest and 13.25 to Plants. According to the NMR regulations, the duration of contracts is a maximum of 8 years within a Nordic institution. All staff members in the three earlier bodies were offered and accepted a transfer contract with NordGen. With the exception of Iceland, all Nordic countries are represented on the staff. The gender profile is close to 50% male and 50% female. In 2008, two new positions were established and staff were hired; an information coordinator and an economic adviser.

ECONOMIC REPORT

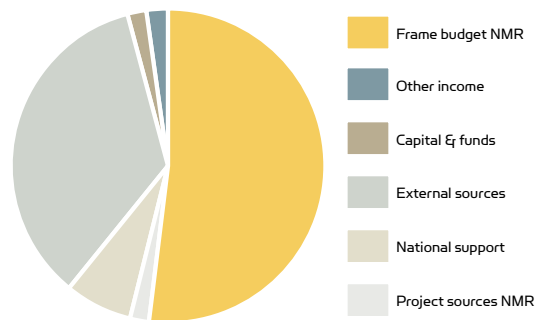
For reporting purposes activities are split into four fields according to our mission; conservation of genetic resources, sustainable utilization of genetic resources, information and networks, and international activities. General administration and leadership are reported separately. The budget component from the NMR was 17.7 MSEK, while the NordGen total budget was 33.9 MSEK. The overall budget registered a deficit of close to one million SEK (Table 1), mainly due to increased labour costs but also increased international engagements (see p. 6), marketing and higher expenses connected to the seed bank. The various sources of finance and the costs divided among the five fields of activity are indicated in the following table and pie chart.

INTERNATIONAL PROJECTS, EXTERNAL FINANCE

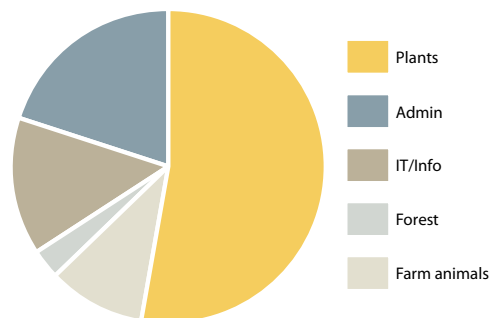
The Strategic Plan (2008-2012) states that all international projects shall be fully financed by external sources. In 2008 NordGen was engaged in four projects in developing countries or countries in transition in addition to involvement in the Svalbard Global Seed Vault (SGSV). See Table 2.



Graph 3. Costs by activity fields



Graph 4. Financial sources



Graph 5. Sum of man-years by sector

PROJECT	1000 SEK	SOURCE
SADC – Southern African Development Community	6 457	Nordic Development Agencies
SEEDNet – South East European Development Network on PGR	669	SIDA – Swedish International Development Agency
EAPGREN – Eastern African PGR Network	1 208	SIDA
CAC – Central Asian Countries Network	474	SIDA
SGSV – Svalbard Global Seed Vault	1 843	LMD – Ministry of Food and Agriculture, Norway
TOTAL	10 651	

Table 2

The NordGen forest unit was established in 2008 as a project at the Norwegian Genetic Resource Centre, located at the Norwegian Forest and Landscape Institute, Ås, Norway. Personnel resources correspond to 55 % of a man year and three part time employees.

NordGen Forest

NORDGEN FOREST serves as a Nordic meeting place in the fields of forest genetics and genetic resources, supply of seeds and plants and methods for regeneration. Our main goal is to contribute to the establishment of the best possible Nordic forests for the future by organizing thematic days, conferences, seminars and meetings. We monitor and initiate research and development, and disseminate information. NordGen Forest contains two external bodies, each with members from all Nordic countries:

- The Council members exchange information on regeneration issues, discuss different topics of interest for Nordic forestry and plan coming events.
- The Working Group on Genetic Resources ensures cooperation on conservation and use of forest genetic resources.

CONSERVATION OF FOREST GENETIC RESOURCES (FGR)

The meeting of the Working Group on Genetic Resources in 2008 discussed how to maintain and develop genetic research and tree breeding in the Nordic region and agreed that NordGen should contribute to such cooperation. NordGen Forest has submitted a project application to the Nordic Council of Ministers entitled: "Searching for appropriate legislation regulating access and exclusive rights to forest genetic resources in the Nordic region". The project period is 2009–2010. The ash decline has spread across large parts of Europe and also in the Nordic countries. NordGen Forest initiated seed collection from individual trees in natural ash populations to provide materials for long-term conservation and research.

SUSTAINABLE USE OF FGR

The Council met three times in 2008 and exchanged information about supply of seeds and seedlings and methods for regeneration, status of forest damage, research news and international matters. Forty participants attended each of the two thematic days, "Optimized seed collections from forest stands" and "Forest seeds – today and tomorrow". The conference "Nordic forests in a changing climate – forest regeneration and CO₂ sequestration" was partly



The world's northernmost beech population on the west coast of Norway (60°40' N), established during the Viking age.

Photo: Tor Myking

organized together with the annual meeting of the Nordic forestry ministers and was attended by 60 participants.

INFORMATION AND NETWORKING

NordGen Forest produced a brochure in Finnish, English and Scandinavian and six posters describing the activities of NordGen related to forest trees. High priority has been given to the development of the forestry section of the new home page of NordGen. Several short articles have been written for the information newsletter.

INTERNATIONAL ACTIVITIES

The employees and members of the Council and the Working Group have discussed common Nordic initiatives, when appropriate, in international cooperative programs. The head of NordGen Forest participated in and gave presentations at meetings in FAO about climate change and genetic resources and was a member of the FAO Panel of Experts on Forest Genetic Resources.



Tore Skroppa

NordGen Farm Animals had three employees in 2008. The office is in Ås, Norway, co-located with the Norwegian Genetic Resource Centre. Our main function is to stimulate solid and functional Nordic cooperation to ensure added values in conservation and sustainable use of farm animal genetic resources (AnGR). Our work is done through various information activities and networking both within the Nordic countries as well as internationally.

NordGen Farm Animals

2008 WAS THE FIRST YEAR for NordGen Farm Animals (former Nordic Gene Bank Farm Animals) as a unit within the Nordic Genetic Resource Center – NordGen. To secure a good dialogue with regard to our future function as a center of competence and cooperation, several activities were undertaken. NordGen Farm Animals has a network of four species-specific working groups, each with members from all Nordic countries.

The four working groups on poultry, horse, cattle and sheep & goat ensure cooperation on conservation and use of animal genetic resources. The group members exchange information, discuss topics of common interest for the Nordic countries.

CONSERVATION OF ANGR

A workshop was arranged in Bergen for all members of the different working groups to discuss future Nordic conservation activities and cooperation. A short version of the report “*Coordinating and Optimising the Conservation of Livestock Breeds in the Nordic Countries*” was also made available.

SUSTAINABLE USE OF ANGR

NordGen’s managing director and representatives of the Farm Animals unit visited various commercial breeding organizations in the Nordic countries to ensure close communication and mutual understanding about the value of sustainable breeding programmes and broad breeding goals. In addition, a good balance between inbreeding and selection was promoted. NordGen – Farm Animals also participated in an external project within the programme “*New Nordic Food*”, about developing products from old breeds in cultural landscapes. This project is to end in 2009. The Report “*Recommendations and regulations for management and exchange of AnGR – Nordic perspective*”, was published in November 2008.

INFORMATION ACTIVITIES AND NETWORKING

NordGen Farm Animals has a long tradition in publishing Farm Animal News, a magazine about Nordic farm animals. It comes out in a Scandinavian and a Finnish version, and has a distribution of about 3000.

A brochure “*Livestock and biodiversity in the Nordic pastoral landscape*” was produced in

cooperation with the Norwegian Genetic Resource Centre.

NordGen Farm Animals has participated in the Nordic countries’ Genetic Resource Council meetings, and there have been 1–2 meetings in each of NordGen’s working groups for farm animals. Support in publishing a study on the “*Linderoed-pig*” at the Swedish Agricultural University has been provided. NordGen also supported a seminar at Aaland by the working group for sheep and goats, “*Cultural heritage in diversity*”. We also participated in a number of seminars at the Institute for Farm Animals at Ås, Norway, and at international conferences and workshops. Close cooperation with the Norwegian Genetic Resource Centre was established and further developed. Our employees were also engaged in giving lectures as well as providing services such as reviewing scientific work at the University for Life Sciences at Ås.



Erling Fimland



For NordGen Plants, 2008 has been a year of re-establishment in our new NordGen facilities. Not only has new interesting collaboration been initiated, but also some basic tasks, not recently addressed, have been reactivated. There is a strong need and desire to increase focus on sustainable utilization of our plant genetic resources (PGR). Not only does this represent a justification to our stakeholders, but it will also help meet future challenges in the Nordic region, especially regarding the increasing needs for conserving Nordic PGR.

NordGen Plants

KEY FACTORS INCLUDE development of efficient systems and facilities, defining roles and task-sharing among stakeholders, and accessing our Nordic organizations and networks in the most efficient way. NordGen Plants has three external bodies, each with members from all the Nordic countries:

- The Council for plant genetic resources
- A coordinating group of ECPGR-representatives (European Cooperative Programme for Plant Genetic Resources)
- Four crop-specific working groups

CONSERVATION OF PLANT GENETIC RESOURCES (PGR)

NordGen's basic seed store operations and our seed delivery is now as efficient as our systems allow. A total seed store inventory has been initiated, NordGen's material at the Svalbard Global Seed Vault (SGSV) is in place and errors have been corrected, and an inventory of our active seed store has been initiated. A regeneration drawback was addressed, and a relatively large amount of material was successfully regenerated. The challenges of maintaining an aging collection and simultaneously addressing an acquisition drawback due to changes in research and breeding in member countries have led to initiation of both a new regeneration strategy and a new laboratory strategy. A successful collection mission to Iceland was carried out, concentrating on forage crops, herbs and medicinal plants. The development of national programs for PGR over recent years has created good and valuable collaboration among NordGen partners, and clarification of respective tasks and responsibilities among NordGen and national programs has begun.

SUSTAINABLE UTILIZATION OF PGR

In addition to our national programs, the primary network of NordGen Plants consists of our working groups. A new network strategy was developed, and four working groups have been reformed and re-established. Our ongoing project on timothy continues, and several minor projects of importance

for using Nordic material have been carried out, including assisting in the development of a search and information tool for apples.

To stimulate germplasm use, discussions on NordGen's role regarding pre-breeding have been initiated. Manageable structures providing NordGen material for potential users have also been initiated. Pre-breeding activities to meet future challenges posed by climate change will be important. The development of New Nordic Food also increases the potential use of authentic Nordic material. Access to the cultural history of our crop plants is also important in this context and contacts to stakeholders in our museums, from industry and with other users have been made.

INFORMATION

Informing about our activities and maintaining contact with our stakeholders is vitally important for NordGen Plants.

Regular network newsletters have also been started. New contacts and collaborations have been initiated to reach our various stakeholder groups, for example partners in ornamental PGR, a mandate task for NordGen since some years, and Nordic seed savers organizations. Such interactions with non-governmental organizations have become increasingly important. NordGen Plants also participated in planning and conducting a successful seminar on the cultural history of crop plants, a new field for us.

INTERNATIONAL WORK

NordGen continued its international engagements. Two elements are particularly important, our international development projects and the contact with our international PGR framework. A course in gene banking for the SEEDnet project was carried out in spring, followed by in-country back-stopping activities. The Central Asian Countries project was finally begun, planning visits were carried out and preparations for building up facilities and competences were put in place. The support to Tajikistan is progressing as planned, but the project component in Kyrgyzstan is still on hold as commitments from the national side have been delayed.

The support to SADC (*Southern African Development Community*) continues and NordGen held a summer course at Alnarp. Several of the larger development projects are entering their final phases; an issue that must be addressed in the near future. NordGen also revived contact with the Vavilov Institute in Russia, stimulating collaboration on repatriation of Nordic PGR. Our collaboration with PGR institutions in the Baltic States continued. International development within ECPGR on AEGIS took a new step forward, as described earlier on

page 6. Participation and the possibility to influence ongoing international integration and development is of crucial importance for NordGen Plants, both regarding conservation and sustainable utilization of Nordic PGR and our role as administrator of the Svalbard Global Seed Vault, a key element of the same international development. NordGen's interaction with Bioversity International, and especially with ECPGR, was also renewed via participation in working group meetings and by resuming a coordination role for the Nordic countries.

INTERNAL DEVELOPMENT

A reorganization of NordGen Plants was carried out in March, aimed at addressing our outreach obligations, basic gene banking operations, and improved use of core staff competences. Meeting facilities have been developed and responsibilities defined, but our very ambitious mandate and broad activity spectrum remain challenging, although a much stronger focus has been introduced. Further development of individual job responsibilities will be invaluable to develop the organization further. Staff education has mainly been via participation in conferences and workshops, as well as in some more formal programs.



Morten Rasmussen

The main tasks for IT staff at NordGen are to develop and maintain applications for documenting and publishing information about genetic resources within the assignments of NordGen. Other important tasks are to develop and maintain necessary infrastructure and support for the whole organization. In 2008 we have among other things launched, together with Communication, a new web-portal for all sections in NordGen, using a content management system (EZ Publish), through which non IT-experts can publish and update information on the Internet for the public.

IT and Communication

IT

The daily work performed in NordGen IT was mainly done by four persons. Similarly as in previous years, a relatively large part of the workload was financed from external projects, not from the budget of the Nordic Council of Ministers (NMR).

Conserving plant genetic resources (PGR)

- Our documentation system SESTO is developed to manage material in seed gene banks. SESTO is now installed and used in several international projects and adapted to local and national conditions. We have especially worked with modularizing the SESTO application.
- The database has acquired new accession data from collecting missions performed by NordGen Plants. Nine datasets have been included in the database, plus some evaluation data for vegetables.

Using plant genetic resources

- Two new versions of SESTO were launched during 2008.
- A much improved system for dealing with seed orders has been developed. This new feature also handles MTA (Material Transfer Agreements), but has not been deployed yet.

USING NORDIC NATIONAL PROGRAMS

DENMARK: In collaboration with Pometet within the University of Copenhagen, a search and information tool for apples, has been developed.

SWEDEN: Continuous improvements and corrections to the inventory database. Improvements in making reports and support to users of the National Program database (Inventory database).

FINLAND: A dataset with information about vegetables has been inserted into the database.

INTERNATIONAL COOPERATION

Eastern Africa Plant Genetic Resources Center – EAPGREN

A regional data portal has been launched for the EAPGREN region. The portal aggregates and publishes passport data from some gene banks in the region (www.eapgren.org). SESTO was installed and introduced to gene bank staff in Sudan, Rwanda, Burundi and Uganda (updated version).

SOUTH EASTERN EUROPE

NordGen has contributed with support to a biology meeting in Macedonia and a documentation workshop and education in server administration in Albania.

CENTRAL ASIA

As part of a project to build new gene banks in Kyrgyzstan and Tadjikistan we visited the region to evaluate aspects of technical infrastructure and documentation.

SOUTHERN AFRICAN DEVELOPMENT COMMUNITY (SADC)

Lectures were held in gene bank documentation during the summer course in 2008.

SVALBARD GLOBAL SEED VAULT (SGSV).

A documentation system was developed to handle the logistic and storage information of the SGSV. A portal for publishing the SGSV data has also been created. The portal has continuously been updated during the year and the vault as of December 2008 houses 320 000 seed accessions. The portal can be accessed at www.nordgen.org/sgsv.

GLOBAL BIODIVERSITY INFORMATION FACILITY (GBIF)

Is an inter-operable network of biodiversity databases and information technology. We took active part in the work of GBIF and a representative from NordGen was elected vice chairman for one of the working groups.



NordGen's staff demonstrating the gene bank documentation system.

Photo: M. Svärth, NordGen

Communication

In 2008 a new position of communication coordinator was established and a new information strategy was developed and accepted by the NordGen board in September 2008. Communication became centralized and the work contributed to a new identity for NordGen, complete with a new logo and newly designed information folders, letter paper and posters. A project to create an updated, state-of-the-art website was initiated in autumn and was launched in January 2009.

NordGen arranged and participated in several events, including the opening of the Svalbard Global Seed Vault in February and the Night of Culture in Copenhagen in October.

Nordic GENETIC Resources is a cross-sectoral magazine with articles on animal, forest and plant genetic resources. The 7th annual volume was published in June. Our cross-sectoral electronic newsletter Diversity appeared in 5 issues in 2008.

Johan Bäckman and Karin Bäcklund



African vegetable market

Photo: M. Svärth, NordGen

The NordGen board

The NordGen board members are appointed by the Nordic Council of Ministers and the Executive Committee for Fisheries and Aquaculture, Agriculture, Food and Forestry. The board consists of five members and five deputies. An employee representative from NordGen and two representatives/observers from the Nordic Council of Ministers are also included.

MEMBER	DEPUTY
DENMARK	
Grethe Tarp Head of Sector The Danish Plant Directorate Ministry of Food, Agriculture and Fisheries	Henrik Gorm Jensen Head of Sector The Danish Plant Directorate Ministry of Food, Agriculture and Fisheries
FINLAND	
Tuula Pehu Senior Advisor Ministry of Agriculture and Forestry	Mikko Peltonen Head of projects Ministry of Agriculture and Forestry
ICELAND	
Áslaug Helgadóttir Deputy Principal Agricultural University of Iceland	Dr. Jón Hallsteinn Hallson Agricultural University of Iceland
NORWAY	
Per Harald Grue Director Ministry of Agriculture and Food	Elisabeth Koren Senior Advisor Ministry of Agriculture and Food
SWEDEN	
Ylva Tilander Deputy Director Ministry of Agriculture Chairperson	Per Ståhl, Head of Research Skogforsk – the Forestry Research Institute of Sweden

Employee representative from NordGen was Agnese Kolodinska Brantestam.

Representative from the Nordic Council of Ministers was Mads Randbøll Wolff, Senior Adviser, and Tryggvi Felixson, Head of Section, was deputy.

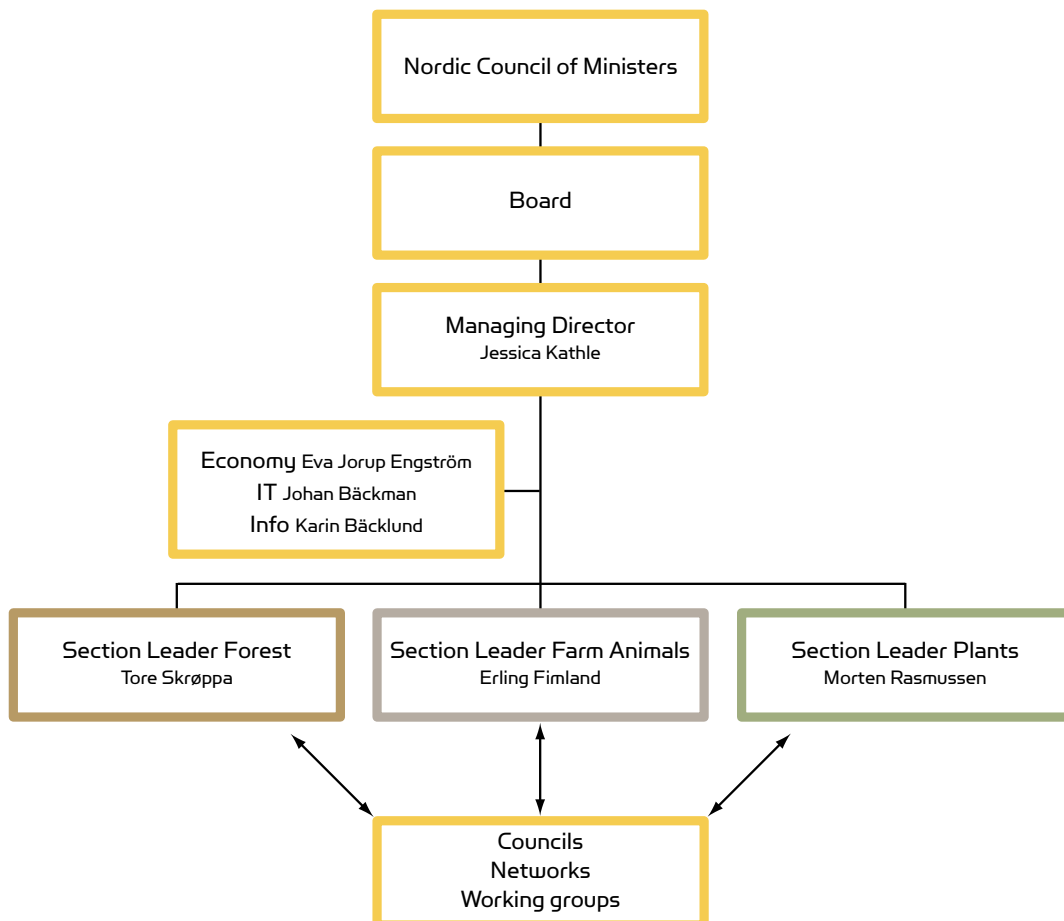
Secretary of the board was Director Jessica Kathle.

The board met six times in 2008.



The NordGen board. From the left: Áslaug Helgadóttir, Agnese Kolodinska Brantestam, Jessica Kathle, Tuula Pehu, Grethe Tarp, Ylva Tilander and Per Harald Grue.

The NordGen organization



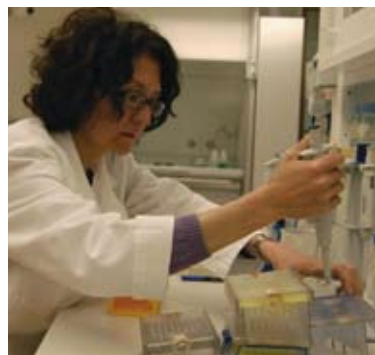


Staff 2008

Managing Director	Jessica Kathle
Economy Manager	Eva Jorup Engström
Economy Assistant	Carina Frankel
Administrative Coordinator	Annica Nilsson
Management Advisor	Martin C Rasmussen
Communication Coordinator	Karin Bäcklund
IT Manager	Johan Bäckman
PhD student	Dag Terje Filip Andresen
Service Administrator	Lars Falk
System Developer	Peter Frodin (on leave)
System Developer	Jonas Nordling
Database Developer	Magdalena Svärth

PLANTS

Section Leader	Morten Rasmussen
Senior Scientist	Lena Ansebo
Senior Scientist	Kristiina Antonius
Senior Scientist	Louise Bondo (until July 08)
Professor, PR, Svalbard Global Seed Vault	Roland von Bothmer
PhD student	Lena Dafgård
Seed Store Manager	Simon Jeppson
Seed Store Technician	Eva Johnsson
Laboratory Technician	Alfia Khairullina
Senior Scientist	Agnese Kolodinska Brantestam
Senior Advisor	John Kristofferson
Senior advisor	Lena Krøl Andersen
Seed Store Assistant	Leo Lindberg
Scientist Emeritus	Udda Lundqvist
Laboratory Technician	Pia Ohlsson
Genetic Resources Officer	Fredrik Ottosson
Senior Scientist	Gert Poulsen (since September 08)
Coordinator of Operation and Management, Svalbard Global Seed Vault	Ola Westengen
Senior Scientist	Svein Øivind Solberg



FARM ANIMALS

Section Leader Erling Fimland
Senior Scientist Hans Ekström
Senior Advisor Benedicte Lund

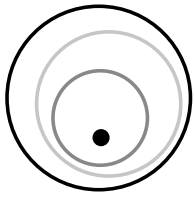
FOREST

Section Leader Tore Skrøppa
Senior Scientist Kjersti Holt Hansen
Senior Scientist Tor Myking

Annual Review 2008 is produced by NordGen. Editor: Karin Bäcklund

Photo front cover: Beech '*fagus sylvatica*', photo Simon Jeppson. Photo back cover: Germination test, photo: Simon Jeppson

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NordGen
Nordic Genetic Resource Center



norden
Nordic Council of Ministers

NordGen Annual Review 2008

Sammanfattning Yhteenveto

2008 VAR NORDGENS första år efter sammanslagningen av tre institutioner under Nordiska Ministerrådet (NMR). Ny ledning och ny organisationsstruktur skulle etableras, ny strategisk plan antas och en ny, samlad kultur byggas. Vi vill med denna årsrapport fokusera på något av det som oppnåddes 2008 samt ge lite framtida perspektiv.

Nordiskt Genresurscenter – NordGen – är ett kunskaps- och servicecenter inom genetiska resurser (GR). NordGen är en liten institution och vi är därför helt beroende av en tät kontakt med andra institutioner inom vårt område som omfattar både skog, husdjur och växter.

Vår strategiska plan lägger stor vikt vid bärkraftigt bruk av GR som ett effektivt sätt att bevara genetisk diversitet. Det förutsätter bland annat spridande av information och kunskap om GR. Vi har därför under 2008 satsat mycket på informationsarbete. En ny tjänst som informationskoordinator har inrättades och tillsatts och ny informationsstrategi utarbetats. Resultatet blev en gemensam websida, ny logotype, nytt informationsmaterial och deltagande i en rad arrangemang, till stor del riktade mot allmänheten. I december beslutade Nordiska Ministerrådet (NMR) att NordGens mandat skulle vidgas till att inkludera miljöaspekter knutna till GR. Detta, tillsammans med informationsaktiviteterna, knyter i hop våra områden och ger en värdefull facklig synergi, speciellt inriktad på bärkraftigt bruk av GR och in situ bevaring.

Stor variation av GR är avgörande för att matproduktion och lantbruk skall kunna anpassas till klimatförändringar. Svalbard Global Seed Vault (SGSV) öppnades i februari 2008 och har som syfte att bevara världens viktiga växtgenetiska resurser för mat och jordbruk under maximal säkerhet. Frövalvet erbjuder kostnadsfri backup-lagring för genbanker runt om i världen. För att säkra förvaltningen av valvet ingicks ett trepartsavtal mellan Mat- og Landbruksdepartementet i Norge, Global Diversity Crop Trust och NordGen. NordGen har det operativa ansvaret och genom det får vi också en enastående möjlighet att profilera oss

internationellt. Vårt internationella engagemang kan annars delas upp i deltagande i internationella fora som behandlar frågor om tillgång och rättigheter till GR inom både växt-, husdjurs- och skogsområdet. NordGen försöker koordinera de nordiska länderna i största möjliga grad så att Nordens röst får en större vikt internationellt. NordGen är också direkt engagerat i utbildning och praktisk träning i uppbyggnaden av genbanker i tredje världen samt i länder med övergångsekonomi. Under 2008 var NordGen ansvarig för fyra långsiktiga biståndsprojekt i Afrika, Centralasien och Balkan.

NordGen har ansvaret för Nordens enda genbank för frö. Ökat bruk av genbankens material, stora strukturförändringar inom fröförädlingsinstitutioner samt en åldrande genbank med ökat förnygringsbehov, är en stor utmaning för NordGen med våra begränsade resurser.



För att säkra den kvalitet och kapacitet på genbankverksamheten som förväntas utifrån NordGens mandat, är det nödvändigt med större åtagande från de nordiska länderna. Då kommer NordGen fortsatt vara ett viktigt redskap och bidrag till den framtida matvarusäkerheten, både på det nordiska och det globala planet.

EKONOMI OCH FAKTA 2008

NordGen har 34 anställda, motsvarande 27,6 årsverk. Huvudadministrationen och växtsektionen är lokaliserad i Sverige (Alnarp), medan husdjur och skog är samlokaliserade på Campus Ås i Norge.

NordGen omsatte 2008 totalt ca 35 miljoner SEK. Nordiska Ministerrådets basanslag för året uppgick till 17,7 miljoner SEK. Resterande andel finansierades av externa medel i form av projektanslag. Årsresultatet visade ett underskott på nära en miljon SEK, huvudsakligen på grund av ökade personalkostnader, ökat internationellt engagemang samt högre kostnader knutna till fröbanken.

NORDGEN SKOG

har tre anställda fördelade på endast 0,55 årsverk. Skogssektionen är en nordisk mötesplats inom skogsgenetik och -resurser, lagring av fröer samt metoder för regenerering. Det främsta målet är att bidra till att skapa eller bevara de bästa nordiska skogarna för framtiden. Detta görs genom att organisera temadagar, konferenser, seminarier och möten, leda och initiera forskning och utveckling samt sprida information om skog.

Förutom sekretariatet består NordGen Skog av Rådet för NordGen Skog och en arbetsgrupp för skoggenetiska resurser. Rådsmedlemmarna utbyter information om regenerering och diskuterar olika frågor av intresse för den nordiska skogsnäringsen och planerar kommande event. Rådet träffas en gång/år. Arbetsgruppen säkrar samarbete om bevarande och nyttjande av skoggenetiska resurser. Arbetsgruppen arrangerade två temadagar under 2008 och en konferens med temat nordisk skog i ett föränderligt klimat. De två sammanslutningarna har medlemmar från samtliga nordiska länder.

NORDGEN HUSDJUR

har tre heltidsanställda. Husdjursektionens huvudfunktion är att bädda för nordiskt samarbete som kan skapa mervärde inom bevarande och bärkraftigt bruk av husdjurgenetiska resurser (AnGR) i Norden. Detta görs genom informationsarbete och nätverksbyggande både i Norden och internationellt. Fyra artspecifika arbetsgrupper under NordGen Husdjur har dels separata möten, dels en årlig gemensam workshop. I arbetsgrupperna deltar en representant från varje nordiskt land.

Årets workshop arrangerades i Bergen med innovation och strategier om det nordiska arbetet inom AnGR som tema. Den första rapporten om juridisk reglering av handeln med husdjurgenetiska resurser publicerades och broschyren "Husdjur och biomangfold i nordisk beitelandskap" gavs ut i samarbete med Norsk Genressurssenter. NordGen Husdjur deltog också i projektet " Kött, mjölk och ost från gamla raser i kulturlandskapet" inom ramen för ministerrådets program "Ny nordisk Mat".

NORDGEN VÄXTER

består av 16 anställda fördelade på 13,25 årsverk. 2008 har varit ett uppbyggnadsår där nya intressanta samarbeten har etablerats och en revitalisering av nätverken inom växtgenetiska resurser har skett. Ett behov och en stark önskan för ett bärkraftigt nyttjande av NordGens växtgenetiska resurser måste balanseras mot ett stigande behov av bevarandet av nordiskt växtmaterial. Fokusområden 2008 har varit utveckling av mer effektiva system och faciliteter, bättre definierad rollfördelning mellan aktörer inom vårt område samt ett mer effektivt nyttjande av våra nordiska strukturer och nätverk. Detta arbete fortsätter.

NordGen Växter har undervisat ett flertal PhD och MSc-studenter under 2008 samt bidragit med många fackliga inslag på olika konferenser och seminarier i Norden. Det internationella engagemanget har varit resurskrävande och omfattande under 2008 med deltagande i många internationella förhandlingar och konferenser, speciellt inriktat på implementering av CBD. NordGen Växter ansvarar för alla NordGens löpande biståndsprojekt och genomförde under året flera kurser och workshops.

NordGen Annual Review 2008

Yhteenveto

2008 OLI NORDGENIN ensimmäinen vuosi kolmen Pohjoismaiden ministerineuvoston alaisen instituution yhdistyttyä. Uusi johto ja uusi organisaatorakenne piti perustaa, uusi strategiasuunnitelma luoda ja uusi yhtenäinen kulttuuri rakentaa. Tämä vuosiraportti on katsaus vuoden 2008 saavutuksiin ja luo samalla näkökulmaa tulevaisuuteen.

Pohjoismainen Geenivarakeskus – NordGen – on geenivarojen (GR) tieto- ja palvelukeskus. Olemme pieni instituutio ja siksi täysin riippuvaisia kiinteistä yhteyksistä muihin instituutioihin alallamme, joka käsittää sekä metsän, kotieläimet että kasvit.

Strategiasuunnitelmassamme annetaan painoarvoa geenivarojen kestäväälle käytölle tehokkaana keinona säilyttää geneettinen monimuotoisuus. Tämä edellyttää muun muassa geenivaroja koskevan informaation ja tiedon lisäämistä. Olemme sen vuoksi vuonna 2008 panostaneet runsaasti nimenomaan informaatiotyöhön. Uusi informaatiokoordinaattorin virka on perustettu ja täytetty ja uusi informaatiostrategia on laadittu. Tuloksena oli yhteinen verkkosivu, uusi logotyyppi, uutta informaatiomateriaalia ja osallistumista erinäisiin järjestelyihin, jotka ovat suurelta osin suunnattuja yleisölle. Joulukuussa Pohjoismaiden ministerineuvosto (NMR) päätti, että NordGenin toimialaa laajennetaan käsittämään geenivariin liittyviä аспекteja. Tämä yhdessä informaatiotoiminnan kanssa yhdistää alueitamme ja luo arvokasta ammatillista synergiaa erityisesti geenivarojen kestävää käyttöä ja in situ -säilytystä ajatellen.

Geenivarojen monimuotoisuus on ratkaisevaa ruokatuotannon ja maatalouden mukautumiselle ilmastonmuutokseen. Svalbard Global Seed Vault (SGSV) avattiin helmikuussa 2008 ja sen tarkoituksena on säilyttää maailman ruokatuotannolle ja maataloudelle tärkeät kasvigeenivarat mahdollisimman turvallisesti. Siemenholvi tarjoaa maksutonta varmuusvarastointia geenipankeille eri puolilla maailmaa. Holvin hallinnon varmistamiseksi tehtiin sopimus, jonka kolme osapuolta ovat Mat- og Landbruksdepartementet i Norge, Global Diversity Crop Trust ja NordGen. NordGenillä on operatiivinen vastuu ja näin saamme myös ainutlaatuisen mahdollisuuden profiloitua kansainvälisesti. Kansainvälinen toimintamme voidaan muuten

jakaa osallistumiseen kansainvälisiin foorumeihin, joissa käsitellään geenivarojen saatavuutta ja oikeuksia niihin kasvi-, kotieläin- ja metsälalla. NordGen pyrkii koordinoimaan Pohjoismaat mahdollisimman tehokkaasti, jotta Pohjolan ääni saa vahvemman aseman kansainvälisillä areenoilla. NordGen osallistuu myös suoraan koulutukseen ja käytännön harjoitteluun geenipankkien rakentamiseksi kolmanteen maailmaan sekä siirtymätalouden maihin. Vuonna 2008 NordGen oli vastuussa neljästä pitkän tähtäimen avustushankkeesta Afrikassa, Keski-Aasiassa ja Balkanilla.

NordGen on vastuussa Pohjolan ainoasta siementen geenipankista. Geenipankin materiaalin lisääntyneen käyttö, suuret rakennemuutokset siemenjalostuslaitoksissa ja vastaisuudessa vanhentuva geenipankki ovat suuria haasteita NordGenille, jonka resurssit ovat rajalliset. NordGenin toimikaudelta odotetun geenipankkitoiminnan laadun ja kapasiteetin varmistamiseksi runsaampi pohjoismainen panostus on välttämätöntä. NordGen tulee silloin jatkossakin olemaan tärkeä väline ja apuvoima tulevaisuuden ruokatuotannon turvaamisessa sekä pohjoismaisella että globaalilla tasolla.

TALOUS JA FAKTAT 2008

NordGenissä on 34 työntekijää, mikä vastaa 27,6 työvuotta. Päähallinto ja kasvijaosto ovat Ruotsissa (Alnarp), kun taas kotieläin- ja metsäjaostot ovat samoissa tiloissa Norjan Camus Åsissa.



NordGenin liikevaihto oli vuonna 2008 yhteensä n. 35 milj. SKR Pohjoismaiden ministerineuvoston vuoden perusmäärärahat olivat 17,7 miljoonaa SEK. Loput rahoitettiin ulkoisin varoin hankemäärärahojen muodossa. Vuositulos osoitti lähes 1 MSEK alijäämää, pääasiassa lisääntyneiden henkilöstökustannusten vuoksi.

NORDGEN METSÄJAOSTO

käsittää kolme työntekijää, jakautuen ainoastaan 0,55 työvuoteen. Metsäjaosto on pohjoismainen metsägenetiikan ja -varojen, siementen varastoinnin sekä regeneroinnin kohtauspaikka. Tärkeimpänä päämääränä on myötävaikuttaa parhaiden pohjoismaisten metsien luomiseen ja säilyttämiseen. Tämä voidaan toteuttaa järjestämällä teemapäiviä, konferensseja, seminaareja ja kokouksia, ohjaamalla ja aloittamalla tutkimuksia ja kehitystyötä sekä antamalla metsää koskevaa informaatiota.

Sihteeristön lisäksi NordGenMetsä-jaostoon kuuluu NordGen Metsä -neuvosto ja metsägenivaratyöryhmä. Neuvoston jäsenet vaihtavat tietoja regeneroinnista ja keskustelevat pohjoismaiselle metsäelinkeinolle mielenkiintoisista kysymyksistä sekä suunnittelevat tulevia tapahtumia. Neuvosto kokoontuu kerran vuodessa. Työryhmä varmistaa metsägenivarojen säilyttämistä ja käyttöä koskevan yhteistyön. Työryhmä järjesti vuonna 2008 kaksi teemapäivää ja yhden konferenssin, jonka teemana oli pohjoismainen metsä muuttuvassa ilmastossa. Näillä kahdella yhteisöllä on jäseniä kaikista pohjoismaista.

NORDGEN KOTIELÄIMET


kolme kokopäivätoimista työntekijää. Kotieläinjalostuksen päätehtävänä on luoda puitteet pohjoismaiselle (AnGR) Pohjolassa. Tämä toteutetaan informaatiotyöllä ja verkostoja muodostamalla sekä Pohjolassa että kansainvälisesti. Neljällä NordGen Kotieläin -jalostuksen alaisella lajikohtaisella työryhmällä on erilliset kokoukset mutta yhteinen jokavuotinen workshop. Työryhmässä on yksi edustaja jokaisesta pohjoismaasta.

Vuoden Workshop järjestettiin Bergenissä. Ensimmäinen raportti kotieläinjalostuksen kaupan juridisesta säätelystä julkaistiin ja esite "Husdyr og biomangfold i nordisk beitelandskap" tehtiin yhteistyössä Norsk Genressurscenter -keskuksen kanssa. NordGen Kotieläin-jaosto osallistui myös hankkeeseen "Kulttuurimaisen vanhojen rotujen lihaa, maitoa ja juustoa" ministerineuvoston ohjelman "Uusi pohjoismainen ruoka" puitteissa.

NORDGEN KASVIJAOSTO

käsittää 18 työntekijää jakautuen 14 työvuoteen. 2008 on ollut rakentamisen vuosi, jolloin uutta mielenkiintoista yhteistyötä on muodostunut ja kasvigenivaraverkostot ovat piristyneet. NordGenin kasvigenivarojen kestävä käytön tarve ja sitä koskeva vahva toive täytyy suhteuttaa pohjoismaisen kasvimateriaalin säilyttämisen kasvavaan tarpeeseen. Vuonna 2008 on keskitytty tehokkaampien järjestelmien ja tilojen kehittämiseen, alueemme toimijoiden määritellympään keskinäiseen roolijakoon sekä tehokkaampaan pohjoismaisten rakenteidemme ja verkostojemme käyttöön. Työ jatkuu edelleen.

NordGen Kasvijaosto on opettanut useita PhD ja MSc-opiskelijoita vuonna 2008 sekä osallistunut ammatillisesti erilaisiin konferensseihin ja seminaareihin Pohjolassa. Kansainvälinen osallistuminen on laajaa ja vaatinut voimavaroja vuoden 2008 aikana, jolloin osallistuttiin useisiin kansainvälisiin neuvotteluihin ja konferensseihin, erityisesti koskien CBD:n soveltamista. NordGen Kasvijaosto vastaa kaikista NordGenin meneillään olevista avustushankkeista ja toteutti vuoden aikana useita kursseja ja workshoppeja.



The Nordic Genetic Resource Center – NordGen – is a joint Nordic institution, responsible for the conservation and sustainable use of agricultural, horticultural and forestry genetic resources. NordGen is funded by the Nordic Council of Ministers and by external funding. NordGen has about 30 employees and maintains a comprehensive seed collection of more than 29,000 different samples of various Nordic plants.

NordGen collaborates with genebanks, research centers, and breeding programs at both Nordic and global levels. We participate in extensive international collaboration with Bioversity International and the Food and Agriculture Organization of the United Nations (FAO).

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