

Copenhagen 22. th. of May 2012

## **Legal and institutional arrangements for *ex situ* conservation of FAnGR in Denmark**

### **Historical overview of gene bank development in Denmark**

The genetic material stored in the Danish Gene Bank is obtained in different ways. Most of bull semen doses were donated, years ago, by the Danish cattle breeding associations, either spontaneously or upon request from the National Committee for Farm Animal Genetic Resources (National Committee). The oldest doses of bull semen is from 1950-s.

Since 1987, the National Committee has selected donors, and has incurred the costs of the collection and storage of sperm, oocytes and embryos from the endangered old Danish farm animal breeds. Despite the fact that Denmark, at the moment do not have an appointed National Committee, it is expected that there will continue to flow material to the Gene Bank, and that the annual budget for 2012 will be in line with the last couple of years, i.e. around 60.000 €.

### **Objective(s) of national cryopreservation programme/policy**

#### **Collection goals**

The Danish action plan for the cryopreservation of animal genetic resources are primarily focused on efforts related to the endangered old Danish farm animal breeds.

The overall objective of the Gene Bank is an ongoing expansion of stored semen, oocytes, embryos and somatic cells from all relevant breeds in sufficient numbers to be able to apply the content to meet a variety of purposes:

- 1) To support the work on conservation of the living population, partly by acting as a back-up if problems arise with, for example, inbreeding or genetic disorders, and as a means to increase or maintain the effective population size and reduce genetic drift,
- 2) For a number of research purposes, including the determination of the genetic structure in a population at a given time.
- 3) As a "backup" for a quick restoration of properties that selection has deteriorated, but for some reason have become of great importance in nature and for the restoration of a race, if for some reason lost / extinct (requires a lot of material in the bank).

## Collection categories

The National Gene Bank contains semen from bulls, boars, rams, goats and stallions of the endangered indigenous Danish farm animal breeds. The Gene Bank also contains smaller inventories of embryos from cattle, swine and sheep breeds.

## Achievements until today

Horses: The gene bank contains semen from 2 stallions of Jutland, 1 Frederiksborg stallion, 1 Oldenburg stallion and 1 Knabstrupper stallion.

Cattle: The Gene Bank contains a large stock of frozen semen for bulls of all old cattle breeds. The oldest semen is from bulls born in 1950-and 1960-s. The number of bulls of 100% Danish ancestry is 53 Red Danish Dairy Cattle, 28 Black Danish Dairy Cattle, 17 Danish Jersey and 28 bulls of Jutland Cattle. The number of doses vary from a few to about 2000.

The Gene Bank also contains semen from bulls which are not of 100% Danish ancestry. Since 1998, the Danish Cattle Breeding Associations (now VikingGenetics) systematically (and for free) has stored 20 doses from all Danish bulls. This arrangement covers both dairy and beef breeds.

Pigs: There is stored semen from 4 Black Spotted Danish Landrace boars and from 7 Danish Landrace boars. The number of doses ranges from 5-50 per boar. In addition, 204 embryos after 16 sows of Danish Landrace and 94 embryos after 8 Black Spotted Danish Landrace are stored in the Gene Bank.

Sheep: There is semen stored after 11 rams of the Danish Landrace and 4 rams of the White Headed Danish Marks Sheep. The number of doses/ram ranges from 36 to 140. Furthermore there is 9 embryos after 3 White Headed Danish Marsk sheep in the Gene Bank.

Goats: There is semen of 12 bucks of Danish Landrace. The number of doses/buck ranges from 8-30.

## Future plans

To continue to collect relevant genetic material from endangered old Danish farm animal breeds for the Danish Gene Bank.

Most likely, to expand the Gene Bank by including 'modern' genetic resources from other species than cattle.

Most likely, to collect poultry genetic resources, in collaboration with NordGen and the Nordic Countries.

### **Participation of stakeholders: responsibilities/roles by stakeholder/actor**

Please see Collecting new material

### **Laws, regulations or arrangements between stakeholders**

All breeders of the endangered cattle breeds can get bull semen from the Gene Bank for free. The National Committee should be consulted, if the amount of doses is (or gets) lower than 100.

The remaining part of the Gene Bank is mainly stored for long time purposes. However, recently a few straws of old boar semen was handed out to a Landrace breeders and a new litter with 11 piglets (all alive) were born. The decision to hand out the doses of boar semen was taken by the former National Committee.

### **Transboundary issues/arrangements**

The National Committee decided in 2012 to collect semen after 6 Jutland bulls owned by a Dutch zoo. Three of the bulls are currently at an AI station in the Netherlands.

Beside this, there are no arrangements.

### **Decision making process**

The (former) National Committee chose to give the highest priority to breeds that were (are) at greatest risk of extinction, and which had not already been partially guaranteed by cryopreservation.

If possible, donors are always chosen in collaboration with the relevant breeding association(s).

Potential donors were evaluated according to whether they could provide increased genetic diversity to the gene bank. All this is expected to continue in the future.

### **Type of material / Collection targets**

Please see 'Achievements until today'

### **Storage and documentation**

#### **Storage facilities and rules / data management and documentation / Gene Bank security**

The genetic material from pigs, goats and sheeps are located at Aarhus University and the material is recorded in a Acces database. Each batch is for security reasons stored in 2 different tanks.

The stallion semen is placed on Nørlund Horse Hospital.



The stocks of bull semen are stored at VikningGenetics laboratory in Assentoft. Stocks are registered in the Danish Cattle database.

The Gene Bank content, the placement, pedigree information etc. can also be found on the Danish AgriFish Agencies homepage:

[http://1.naturerhverv.fvm.dk/genbankens\\_indhold.aspx?ID=10148](http://1.naturerhverv.fvm.dk/genbankens_indhold.aspx?ID=10148)

Beside this, lots of information and photos etc. are stored in 2 big boxes.

### **Sanitary arrangements/regulations**

The bull semen produced before 1 st. of January 1991 may not be distributed unless it has taken special precautions for its use. The Danish Veterinary and Food Administration demands that the bull semen is tested at a laboratory for Bovin Virus Diarrhea, Foot and Mouth Disease and Infectious Bovine Rhinotracheitis, followed by insemination test on female cattle kept in a quarantine. After this, the semen can be used freely, if no sign of diseases has been demonstrated.

### **Legal issues (related to genetic material and data)**

#### **Ownership and IP**

The current stocks in the gene bank is public property and the National Committee (at the moment the Ministry) has absolute power over the bank's content. In accordance with international recommendations for the creation, monitoring and use of gene banks in relation to the conservation of animal genetic resources, the unrestricted ownership and disposition will be tried maintained for all material which is now kept in the Gene Bank. This implies that whether the material is donated to the gene bank, or purchased by or produced for National Committee funds will only be attributed to the Gene Banks inventories if the National Committee has full rights over the material.

The genetic material can only be used for research purposes after the completion of a prior application to and acceptance by the at any time sitting National Committee.

Material may not be used commercially, including any patent, without prior consultation and approval of the National Committee.

### **Collecting new material: Articles and conditions in Material Transfer Agreements**

Farmers who receive support from the National Committee are required to make their animals available as donors of genetic material. The farmers are not paying for the additional costs this may entail and in addition receive a bonus for each animal. The bonus pr. bull is 667 € and 400 € for the smaller farm animals.

[translated agreement attached]



### **Access to gene bank: Articles and conditions in Material Transfer Agreements**

Regarding the access to and use of the material in the Gene Bank, this can be used for maintenance and expansion of the living populations. If there is a breeding association for the population concerned, there will usually be more detailed guidelines for the use of and access to the material in a cooperation agreement between the association and the National committee.

To conclude, there is no standard Material Transfer Agreement in use in Denmark (yet).