



Lehr- und Forschungszentrum
Landwirtschaft
www.raumberg-gumpenstein.at

Abschlussbericht EFABIS.net

Action Nr. 020 (Projekt Nr. 2741)

An integrated network of
decentralized country biodiversity
and genebank databases (EFABIS.net)

Final technical activity report workpackages 6 and 7
CRYOweb

rau

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Final technical activity report Workpackage 6 and Workpackage 7 CryoWEB

Objective 2. *Establishment of decentralized national inventories of national genebank collections on the basis of CryoWEB database.*

Zusammenfassung

Situation zu Beginn des Projektes

Von den 10 ursprünglich am Modul CryoWEB beteiligten Partnern verfügten nur Österreich und die Niederlande über eine definierte nationale Kryoreserve landwirtschaftlicher Nutztiere und nur die Niederlande hatten eine Dokumentation des Inhaltes der nationalen Kryoreserve in einem mit CryoWEB kompatiblen elektronischen Format.

Die meisten Partnerländer (Finnland, Island, Slowenien, Schweiz und Großbritannien) lagerten Kryomaterial nur auf privater Basis oder ohne definierten Status und mit zersplitterter und unvollständiger Dokumentation. Estland, Georgien und die Slowakei meldeten keine Kryoreserven aber bekundeten Interesse eine nationale Sammlung zu beginnen.

Situation am Ende des Projektes

Alle Partnerländer außer Großbritannien, das keine nationale Kryoreserve landwirtschaftlicher Nutztiere besitzt, und Georgien, das aus anderen Gründen das Projekt nicht beendete, verfügen über eine definierte nationale Kryoreserve landwirtschaftlicher Nutztiere. Der Prozess der Datensammlung ist organisiert und das Abkommen über die Datensammlung und die Datenveröffentlichung ist in allen Ländern mit einer nationalen Kryoreserve landwirtschaftlicher Nutztiere in Kraft.

Die Verantwortung für die Datensammlung liegt in den meisten Partnerländern bei öffentlichen Forschungseinrichtungen, Landwirtschaftskammern oder Universitäten. In Finnland und der Schweiz ist die Verantwortung für die Datensammlung an private Tierzuchtunternehmen ausgelagert.

In Österreich, Finnland, Island, den Niederlanden, Slowenien und der Schweiz dient die nationale Kryoreserve landwirtschaftlicher Nutztiere zusätzlich als Archiv der Besamungsindustrie.

In allen Partnerländern mit nationalen Kryosammlungen wird die CryoWEB-Software zur Eintragung der Stammdaten des gelagerten Kryomaterials und für das Hochladen in die EFABIS Datenbanken genutzt.

Summary

Situation at the start of the project

Of the 10 partners originally subscribing to the CRYOweb module only Austria and the Netherlands had a defined national cryo-reserve and only the Netherlands had a formal documentation of the content of the national cryo-reserve available in electronic format for upload into CRYOweb.

Most partner countries (Finland, Iceland, Slovenia, Switzerland, United Kingdom) had depositories of cryo-material only on a private scale or of not defined status and with scattered and incomplete documentation. Estonia, Georgia and Slovakia reported no cryo-reserves but were interested in starting a national collection.

Situation at the end of the project

All partner countries save the United Kingdom, which has no national cryo-reserve and Georgia which dropped out of the project have defined a national cryo-reserve. The data collection process is organised and the agreement on data collection and upload is in place in all partner countries with a national cryo-reserve.

Responsibilities for the data collection in most partner countries lie with public research institutes, agricultural boards or universities. In Finland and Switzerland responsibility for data collection is outsourced to private breeding companies.

The national cryo-reserve is used as a backup for the AI-industry in Austria, Finland, Iceland, the Netherlands, Slovenia and Switzerland.

In all partner countries with national cryo-collections the CRYOweb software is used to enter passport data of the stored cryo-material and to upload the data into EFABIS.

Detailed technical report on Workpackage 6 and Workpackage 7

WP_6: Organizing the data collection process about cryo samples within countries

Deliverable 8: Report for each participating country (month 25)

Several partner countries were not able to finish WP 6 at the scheduled time. Countries with many stakeholders involved into the data collection process needed more time to reach the national agreement.

Situation per country 31.12.2010:

Austria: WP 6 was finished at 31.01.2009. All donor and sample data of the original national-cryo-reserve were collected in electronic format. The agreement on data upload has been in place since 1999. Further data collection for upload into CRYOweb was necessary due to an enlargement of the national cryo-reserve.

Estonia: The collection of cryo-material (semen, embryos; cattle) has the status of a national reserve. Data are collected in electronic format. The agreement for uploading of the data is in place.

Finland: The collection of cryo-material (cattle, sheep) has the status of a national reserve. Data are collected in electronic format. The agreement for uploading of the data is in place.

Georgia: Currently there is no collection of cryo-material in Georgia.

Iceland: The collection of cryo-material (cattle, sheep, horses) has the status of a national reserve. Data are collected in electronic format and uploaded into CRYOweb. As the data are the property of the Republic of Iceland no written agreement was necessary. A technical visit in October 2010 was necessary to organise the data collection process in the country.

Ireland: A new installation of the CRYOweb software was done but currently the collections are in private ownership. Ireland hopes to begin collections for national genebank in 2011. Also private owners will be approached to re-transfer some material from their collections.

Netherlands: WP 6 was finished at 31.01.2009. All data from the old CRYO-IS database were transferred to the new CRYOweb. Further data collection for upload into CRYOweb was necessary due to an enlargement of the national cryo-reserve.

Slovakia: The collection of cryo-material (semen; cattle, horse) has the status of a national reserve. Data are collected in electronic format. The agreement for collection and uploading of data is in a written document and in place.

Slovenia: The collection of cryo-material (semen, blood, tissue, DNA; cattle, horse, pig, sheep, goat, dog) has the status of a national reserve. Data are collected in electronic format. The agreement for uploading of the data is in place but not in a written document.

Switzerland: The collection of cryo-material (semen; cattle, goat) has the status of a national reserve. A technical visit in October 2010 was necessary to organise the data collection process in the country. At the end of November 2010 the agreement for collection and uploading of the data is in place. Data collection and upload has been completed in October 2010.

United Kingdom: There are collections of cryo-material (cattle, sheep, goat, pig, chicken, horse, pony) but they do not have the status of a national reserve. CRYOweb software was not installed in the UK.

WP_7: Entering passport data of cryo material

Task 1 title: Entering passport data of cryo material

Deliverable 9: *Available within country cryo data loaded in the new established national CryoWEB database for each of the 10 partner countries (Month 32)*

In all partner countries still in the project the CryoWEB database is in place and operational. Depending on the size of the national cryo-reserve and the number of involved stakeholders one or several institutions have at least reading access to the data. The responsibilities for the data upload remains with one institution per country. In all participating countries the CryoWEB module is used to enter the passport data of the collected material and to upload the information into EFABIS. Several partner countries with cryo-collections were not able to finish WP 7 at the scheduled time. Data upload was done in 2010 in all partner countries depending on the size of the national cryo-collection.

Passport data of donor animals and samples have been identified in all participating countries with national cryo-collections (8). Donor data are cleaned by herdbook entries or central national databases. The labelling of semen samples for AI generally follows EU recommendations, other materials and semen samples are labelled according to established national policies. Storage locations are provided by the AI industry and/or research institutes or universities.

The cleaning of old data before entering into the CryoWEB database was mostly done by hand.

As the amount of available data differs widely between countries different approaches for entering the data were used. If the donor data are uploaded from existing databases or files specially written software is used. All other data are entered by hand. Donating organisations usually are registered and have at least reading access to the data. For the current content of the national CryoWEB databases see table 1.

Situation per country 31.12.2010:

Austria:

In Austria data entry into the national CryoWEB data base started with the uploading of donor data from the Austrian Cattle Archive (backup of the AI centres) available in electronic format but not compatible with the CryoWEB software.

The data from the local database were compared to the central national RDV and SCHAIZIE databases to clean the old data and life numbers. The resulting file contained all life numbers from the local database and all available information from the central databases. Some differences had to be cleaned by hand. These data were loaded by Zhivko Duchevev into CryoWEB from an excel file with specially written software. The software is further used to update the database.

Donor data of other species (horse, pig) and all sample data are cleaned and entered by hand. Data entry of old samples was finished at the end of October 2009.

Due to the further completion of the national cryo-reserve data entry into CryoWEB is an ongoing task.

All donating organisations are registered in the database and have reading access to the data. In November 2010 a national workshop was held to enable donor organisations to extract information (reports) from CryoWEB for their own purposes.

Only breeds with an existing breeding population in Austria are linked to EFABIS. Imported breeds present in Austria only as semen for commercial crossbreeding are not displayed in EFABIS.

The national gene bank acts as a backup of the AI centres and conservation breeding programmes and is still expanding. Therefore further entries will be necessary and added yearly. For uploading high amounts of data automatically responsible persons were trained.

Estonia:

The national cryo-collection of Estonia is still small. All donor and sample data were cleaned and entered by hand.

Finland:

In Finland the national CryoWEB database is part of the overall information system of information on cryo-preserved material.

FABA Services (AI co-operative) is providing information on cattle for the national programme coordinated by MTT. The cattle semen and embryo databases have a well-itemised information system where the structure is planned to satisfy the requirements and needs of national and international semen and embryo trade. Animal data from other species and all sample data must be entered by hand.

The passport data of the samples – donor, pedigree, breed, storage location(s) and number of stored units are registered in the CryoWEB database at MTT. In sheep and horses, the animal and pedigree can be compared and checked from the respective national registers for the species.

All donating organisations are registered in the database.

Georgia:

Currently no national collection of genetic material in Georgia exists. The structure for a national cryo-reserve is in place.

Iceland:

A technical visit in October 2010 was necessary to organise the data uploading process in the country.

The AI industry (cattle, sheep) provides the storage locations. The national cryo-reserve is also a backup of the AI centres. Donor and storage data which were available in electronic format were uploaded to the CryoWEB database by specially written software. As there are still donor and sample data on paper the cleaning and entering of old data is an ongoing task.

The Netherlands:

In the Netherlands data entry into the Dutch national CryoWEB database started with the uploading of the information on donors from the currently used Cryo Information System (Cryo-IS, database for Dutch gene bank collection developed in cooperation with Mariensee/Groeneveld).

All locations (storage location, tank, canister and compartment) were manually inserted into CryoWEB.

The Netherlands considers that information on veterinary and legal status of the genetic material and on method of sample collection is of importance and therefore should be recorded into CRYOweb. Three new fields (veterinary status, legal status and method of sample collection) were added to the Dutch national CRYOweb by Zhivko Ducheve. The Centre for Genetics Resources, the Netherlands (CGN) is responsible for the ex situ conservation programme for farm animals (gene bank) in the Netherlands. CGN manages the collection, cryo-storage and documentation of genetic material (CRYOweb). CGN has access to CRYOweb for entering data. For uploading high amounts of data automatically responsible persons were trained.

Slovakia:

The CRYOweb database of Slovakia contains the documentation on semen samples of bulls and rams. The information on two different storage locations is included.

All animal and sample data were entered manually.

If available, the scans of pedigree of donor sires and coordinates of keeper's location are stored in the CRYOweb.

The thawing protocols with information on dilutents and additives are included in the CRYOweb.

Slovenia:

In Slovenia data entry into the national Cryo WEB data base started with the uploading of data from the depository at the Biotechnical faculty (Animal Science department) and the Clinic for Reproduction at the Veterinary faculty. Altogether more than 10,000 samples are currently stored.

For Cika cattle the pedigree and sample data (semen) were inserted manually. Pedigree data for sheep from Clinic for Reproduction at Veterinary faculty were loaded from the sheep database, while the sample data about the semen were inserted manually. For other species pedigree and sample data were entered manually. The remaining data from the Biotechnical faculty depository had to be cleaned manually.

Organisations providing the animal information and samples are registered in the database and have access to the data.

Switzerland:

In Switzerland the national cryo-reserve is also a backup of the AI centres. Swiss Genetics is responsible for further data collection and upload. From all donor animals the following data are available: Life number donor, Name donor, Birth date donor, Breed donor, Life number sire, Name sire, Birth date sire, Breed sire, Life number dam, Name dam, Birth date dam, Breed dam.

A technical visit in October 2010 was necessary to organise the data uploading process in the country.

The passport data of the samples - identification of donor on the straw, breed, storage location(s) and number of stored units are registered in different local databases at the AI centres for cattle/goats/sheep and horses. Cattle and horse donor and sample data are uploaded automatically into CRYOweb by specially written software. Goat and sheep data have to be entered manually. Frozen semen protocols are also provided in electronic format. For uploading high amounts of data automatically responsible persons were trained. Since a national workshop in November 2010 all donor organisations are registered and have access to the data.

United Kingdom:

Currently CRYOweb is not installed in the UK.

Tables

Table 1 Genebank content in partner countries 2010

	Austria	Estonia	Finland	Iceland	Netherlands	Slovenia	Slovakia	Switzerland
cattle breeds	22*	1	3*	1*	9*	4*	2	5*
semen/straws	97330		351000	100/sire	181753	82852	2600	225340
embryos	~30	103	~100					
tissue samples						150		
blood samples	192							
DNA samples	194							
sheep breeds	9		3	1	7	4	2	4
semen/straws	53628		1305	534	23810	575	321	25
embryos								
tissue samples								
blood samples	39							
DNA samples	57							
goat breeds	9			1	2	1		10
semen/straws	25106				3820	in production		80
embryos								
tissue samples								
blood samples	41							
DNA samples	33			70				
horse breeds				1	5			1
semen/straws					10906			14 to 31/sire
embryos								
tissue samples				~2000				
blood samples				~2000				
DNA samples				~2000				
pig breeds	2				16	1		
semen/straws	~500				69981			
embryos								
tissue samples	22					121		
blood samples								
DNA samples								
poultry breeds					20			
semen/straws					18827			
tissue samples								
blood samples								
DNA								

* and additional backup material from AI industry

Appendix 1: Dissemination of results by LFZ Raumberg-Gumpenstein

Publications

Berger, B., 2007: National Report 2006. European Regional Focal Point Webseite; www.erfp.com.

Papers

Berger, B., Rassen - Vielfalt oder Verwirrung. Biodiversität - was ist das? 10.02.2010;

Berger, B., Können Gene Depressionen haben? Biodiversität - was ist das? 10.02.2010;

Berger, B., CRYOweb - Einführung für Benutzer. Workshop CRYOweb, 17.11.2010; 4600 Thalheim bei Wels, Austria

Berger, B., Biodiversität in der Landwirtschaft. Biodiversität - was ist das? 10.02.2010;

Berger, B., Fischerleitner, F., The Austrian National Cryo-Conservation Programme. Final Workshop EFABIS.net Project, 01.12.2010; Palermo, Italy

Berger, B., Fischerleitner, F., Erfahrungen mit der Erhaltungszucht in Österreich. Workshop „Tiergenetische Ressourcen“, 26.05.2010; Berne, Switzerland

Berger, B., Fischerleitner, F., Ex Situ Conservation of Endangered Farm Animal Genetic Resources in Austria. DAGENE - Workshop; International Meeting - Animal Genetic Resources, 27.06.2007; Raumberg, Austria

Reports

Berger, B., 2010: National Report on loading of national cryo data - Austria. National Report EFABIS.net, CRYOweb.

Berger, B., 2010: Loading national cryo data - CRYOweb, Workpackage 7. Technical Report workpackageleader WP7-Cryoweb 2009.

Berger, B., 2009: Uploading of key data of the national cryoreserves into CryoWEB. Technical report workpackageleader WP7-Cryoweb 2008.

Berger, B., 2009: Organizing the data collection process about cryo samples within countries. Technical Report workpackageleader WP6-Cryoweb 2008.

Berger, B., 2009: National Report on data collection and uploading of data - Austria. National Report EFABIS.net, CRYOweb.

Workshops

Berger, B., Biodiversität - was ist das? 1 day, 10.02.2010;

Berger, B., Schimps, S., National Workshop CRYOweb. 1 day, 17.11.2010