

Technical Report for Project EFABIS.net - Module CryoWEB

Workpackages 6 and 7

Project Year 2010

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2 Establishment of decentralized national inventories of national gene bank collections on the basis of CryoM database software in 10 countries.

Workpackage 6

Main objectives

Countries wanting to start a national database documenting their national genebank will have to organize the process within the country. Often they may have deep frozen repositories of genetic material that do not (yet) have the status of a national reserve. In this package countries will reach agreement with the relevant parties so that data can be entered in the CryoM database and reported to European level.

Task 1 title: Organising the data collection process for national cryo-banks

A new installation of the CRYOweb software was done in Ireland 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.

Technical problems encountered

Switzerland reported difficulties to find an organisation willing to host the national cryo-collection, to collect the data and to update CRYOweb in the future. The final agreement with Swiss Genetics and Franche Montagne breeders concerning updating of the CRYOweb database and the housing of the cryo-collection was reached in October 2010.

Iceland had difficulties in defining the content of the national cryo-reserve and to load the data. Conclusion of WPs 3, 6 and 7 was achieved during the visit in October 2010.

Conclusion:

At the end of 2010 the data collection process is organised in all partner countries save the United Kingdom, which has no national cryo-reserve and Georgia which dropped out of the project. The agreement on data collection and upload is in place in all other partner countries. Of the 10 partner countries originally taking part in the CRYOweb module Estonia, Iceland, Slovenia and Switzerland reported activities on WP 6.

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

Workpackage 7

Objective 1: Create national decentralized inventories of ex-situ collections, i.e. genebanks in member countries.

To create a national database containing all sample descriptions from the national genebank, passport data is entered on each sample from the national genebank into the national decentralized genebank database. After the actual samples of cryo genetic material and their location within the country have been identified, information on each such sample will be entered into the database. Data to be entered will be: tissue type, protocol used for its creation, date and location of production, location of storage, identification of the source animal, its species and breed. Where available more data can be collected. The user interface developed allows the same strategy of data collection for all tissue types and all species, which greatly simplifies operations. Furthermore, being a multi-user database, different users can enter genebank data over the internet if they are responsible for different genebank locations within the country. The amount of work to be done is a function of the size of the national genebank. Most partners of this workpackage are starting on setting up a formal national register. Thus, the amount of samples is not that great.

Task 1 title: Entering passport data of cryo material

Passport data of donor animals and samples have been identified and entered in all partner countries with national cryo-collections still in the project. Donor data are cleaned by herdbook entries or central national databases either manually or automatically. The labelling of semen samples for AI generally follows EU recommendations, other semen and materials are labelled according to defined national policies. Storage locations are usually provided by the AI industry and/or research institutes or universities. Duplicate storage is recommended and in place in the countries with large collections already existing.

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 (see table) different approaches for entering the data are used. In three cases old donor data were uploaded from existing databases or files by specially written programs. All other data were entered by hand. Donating organisations are registered and have at least reading access to the data. Data upload was done in 2010 in all partner countries depending on the size of the national cryo-collection.

In 2 countries stakeholders were trained in the use of CRYOweb software on national workshops. A special challenge will be the maintenance of the databases in the future. For entering high amounts of data responsible persons were trained in the Netherlands, Switzerland and Austria to upload data automatically with specially written software.

Technical problems encountered:

Georgia dropped out of the project and has no national cryo reserve.

UK has no national cryo-reserve and no installation of CRYOweb software.

Switzerland reported difficulties to find an organisation willing to host the national cryo-collection, to collect the data and to update CRYOweb. The final agreement with Swiss Genetics and Franche Montagne breeders was reached in October 2010.

Iceland had difficulties in defining the content of the national cryo-reserve. Conclusion of the WPs 3, 6 and 7 was achieved during the visit in October 2010.

Objective 4: *Loading the available data of the samples currently stored in the national genebank collections in the newly established CryoWEB documentation repositories.*

Result 4: Data quality of samples already stored in the national cryo-collections differs widely between countries. In EU countries where the national cryo-collection is also a backup of the AI industry these semen and embryo samples are labelled according to EU regulations (Austria, Finland, Netherlands, Slovenia, Slovakia and Switzerland as non EU country). Other countries (Estonia, Iceland) use their own labelling policies.

Clean data from large national collections (Austria, Finland, Netherlands, Slovenia and Switzerland) were loaded automatically using software specially written by Zhivko Duchevev. In Austria, Netherlands and Switzerland the automatic loading of large amounts of data will be done by personnel specially trained by Zhivko Duchevev.

In case of other material (other species, tissue, blood, DNA samples) especially material from old collections not connected with the AI industry the data were cleaned and entered manually in all partner countries with national cryo-collections.

In Iceland further samples from old depositories will be added to the national cryo-reserve by the cattle AI industry. The loading of these data will be done by personnel specially trained by Zhivko Duchevev during the visit in October 2010.

Conclusion

In all 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. Responsibility for the data upload remains with one institution per country.

Table 1 Genebank content in partner countries December 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		5 to 100/sire
embryos	~30	~100	~100					
tissue samples						150		
blood samples	192							
DNA samples	194							
sheep breeds	9		3	1	7	4	1	4
semen/straws	53628		1305	534	23810	575		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 samples								

* and additional backup of AI industry