



Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
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Eidgenössisches Volkswirtschaftsdepartement EVD
Bundesamt für Landwirtschaft BLW

National Gene Pool Switzerland

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1. Why cryoconservation is important



Freiburger Cow



Frutiger Cow



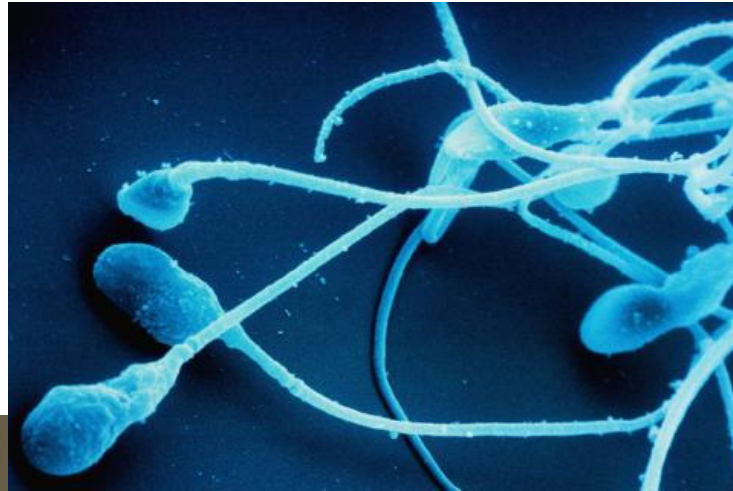
Bündner Oberländerschwein (Torfschwein).
Durch Herrn Prof. Disch in Dissentis.

- Prevention of loss of genetic material
- Conservation of rare bloodlines
- Conservation of biodiversity



Material for Cryoconservation

- **Semen**
- Tissue
- Blood
- DNA
- Somatic cells
- Oocytes
- Embryos





2. Legal bindings and dispositions



- 1992 Signature of the CBD in Rio de Janeiro
- 1994 Deposit of act of ratification and approval by the Swiss Parliament
- 1999 Revision of the ordinance for livestock breeding:
Introduction of article 16: This article grants funds to support the conservation of Swiss breeds (CHF 900'000)
Introduction of article 17: this article grants funds to support research projects for animal genetic resources (CHF 100'000)
- 2009 Adaptation of the ordinance for livestock breeding:
Definition of Swiss breeds: origin in Switzerland or managed in a herdbook in Switzerland before 1949.
- 2010 Adaptation of the ordinance for livestock breeding: Funds granted for the **long-term storage of cryomaterial** to recognized organizations.



3. Cryoconservation prior to 2010

Cattle



swissgenetics 

Swissgenetics is one of the leading supplier of genetic material in Switzerland. Since 50 years Swissgenetics manages, beside the commercial semen storage, a gene pool for Swiss breeds (cattle and goats) and new introduced breeds.



3. Cryoconservation prior to 2010

Horses



The Swiss National Stud was founded in 1899 and is today the center of excellence for keeping and breeding horses. The Stud is operated on the basis of a service agreement by the Swiss Federal Council. It is subordinated to the department “research and consultation” of the Federal Office for Agriculture (FOAG). It manages a semen collecting center and stores the semen from mainly Freiburger horses, the only original Swiss horse breed.



3. Cryoconservation prior to 2010

Goats



- **FOAG** 
- **Swiss Goat Breeding Association** 
- **Swissgenetics** 

These three institutions contributed to the National Gene Pool for Swiss goat breeds with semen projects funded by the FOAG between 2001 and 2010.



4. Development of a National Gene Pool - status quo

- Discussions with Swissgenetics about the integration of the existing semen stocks since 2009
- Discussions with the Swiss National Stud about the integration of the existing semen stocks since 2009
- September 2010: FOAG and Swissgenetics signed a service agreement
- October 2010: Transfer of the conditioned data of bulls and stallions into CryoWEB.
- October 2010: Training Workshop for persons managing the National Gene Pool

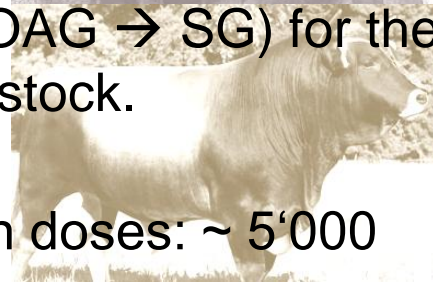




Content of the service agreement with Swissgenetics (SG), **Cattle**

It regulates:

- The **long-term storage** and **management** of semen from Swiss cattle breeds and Rhetic Gray Cattle.
- The **ownership** and **access authorization** to the National Gene Pool.
- The one-time investment of the FOAG for the **data transfer into CryoWEB**.
- The **annual contribution** (FOAG → SG) for the conservation of the semen stock.
- Number of bulls with semen doses: ~ 5'000





Content of the service agreement with Swissgenetics (SG)

- Three possibilities which allow that core doses, with the agreement of both parties (FOAG and SG), can be removed from the National Gene Pool:

- **1. Scientific investigations**
- **2. Economical interests**
- **3. Revitalization of a breed**



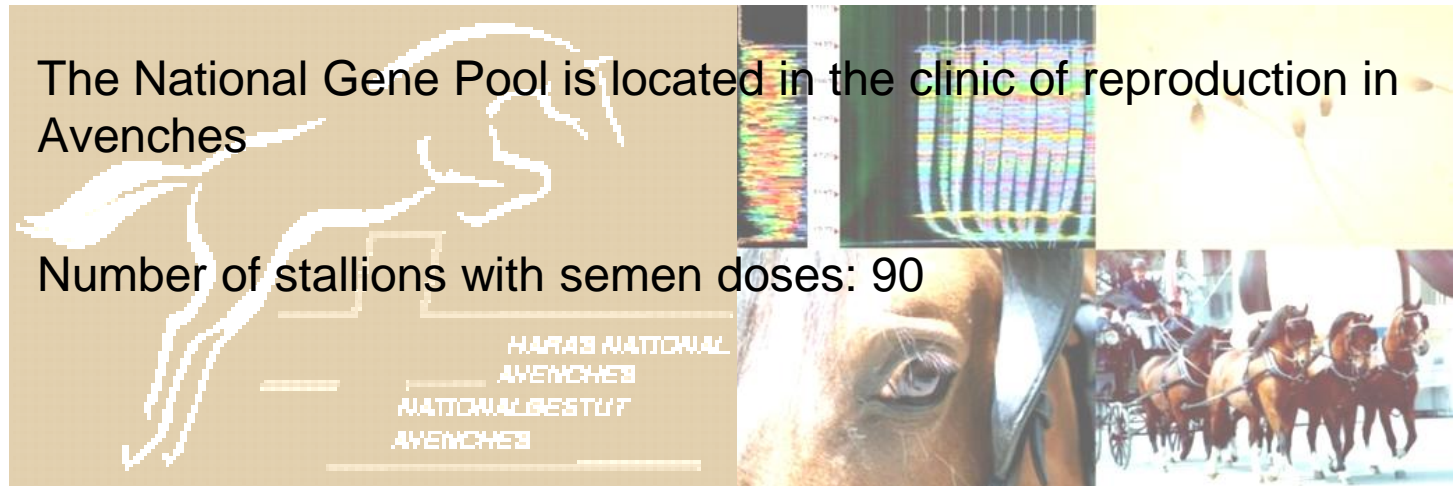


National Gene Pool Swiss National Stud, Horses

- The semen of the Swiss National Stud (Freiberger stallions) is owned by the Swiss Confederation.
- Some doses are private property → the Stud plans to sign contracts with owners for the import of the semen into the National Gene Pool.

- The National Gene Pool is located in the clinic of reproduction in Avenches

- Number of stallions with semen doses: 90





Breeds registered in the National Gene Pool

Cattle



- Eringer
 - Evolene
 - Original Swiss Braunvieh
 - Original Simmental
 - Gray Cattle
- Because Swissgenetics administrates their non commercial gene pool (Swiss and foreign breeds) with CryoWEB, there are more than the 5 Swiss Breeds enlisted in CryoWEB (~ 45).



Sires statistics

Location Zollikofen

Species Rindvieh					Sires	502
Breed	Angus				Sires	1
	Material type	MIN	AVG	MAX		
	Sperma	10	10.00	10		
Breed	Braunvieh				Sires	10
	Material type	MIN	AVG	MAX		
	Sperma	4	45.60	70		
Breed	Holstein-Friesian				Sires	93
	Material type	MIN	AVG	MAX		
	Sperma	6	43.33	70		
Breed	Montbéliard				Sires	4
	Material type	MIN	AVG	MAX		
	Sperma	15	46.25	70		
Breed	Original Schweizer Braunvieh				Sires	3
	Material type	MIN	AVG	MAX		
	Sperma	70	70.00	70		



Breed	Original Simmental				Sires	71
	Material type	MIN	AVG	MAX		
	Sperma	20	52.48	100		
Breed	Red Holstein				Sires	165
	Material type	MIN	AVG	MAX		
	Sperma	5	36.36	100		
Breed	Simmental RC70				Sires	73
	Material type	MIN	AVG	MAX		
	Sperma	30	51.21	100		
Breed	Swiss Fleckvieh				Sires	82
	Material type	MIN	AVG	MAX		
	Sperma	20	52.41	70		



Breeds registered in the National Gene Pool

Horses



Sires statistics

Location Avenches

Species Pferd				Sires	90
Breed	Franches-Montagnes			Sires	90
	Material type	MIN	AVG	MAX	
	Sperma	14	31.66	32	

- Freiburger





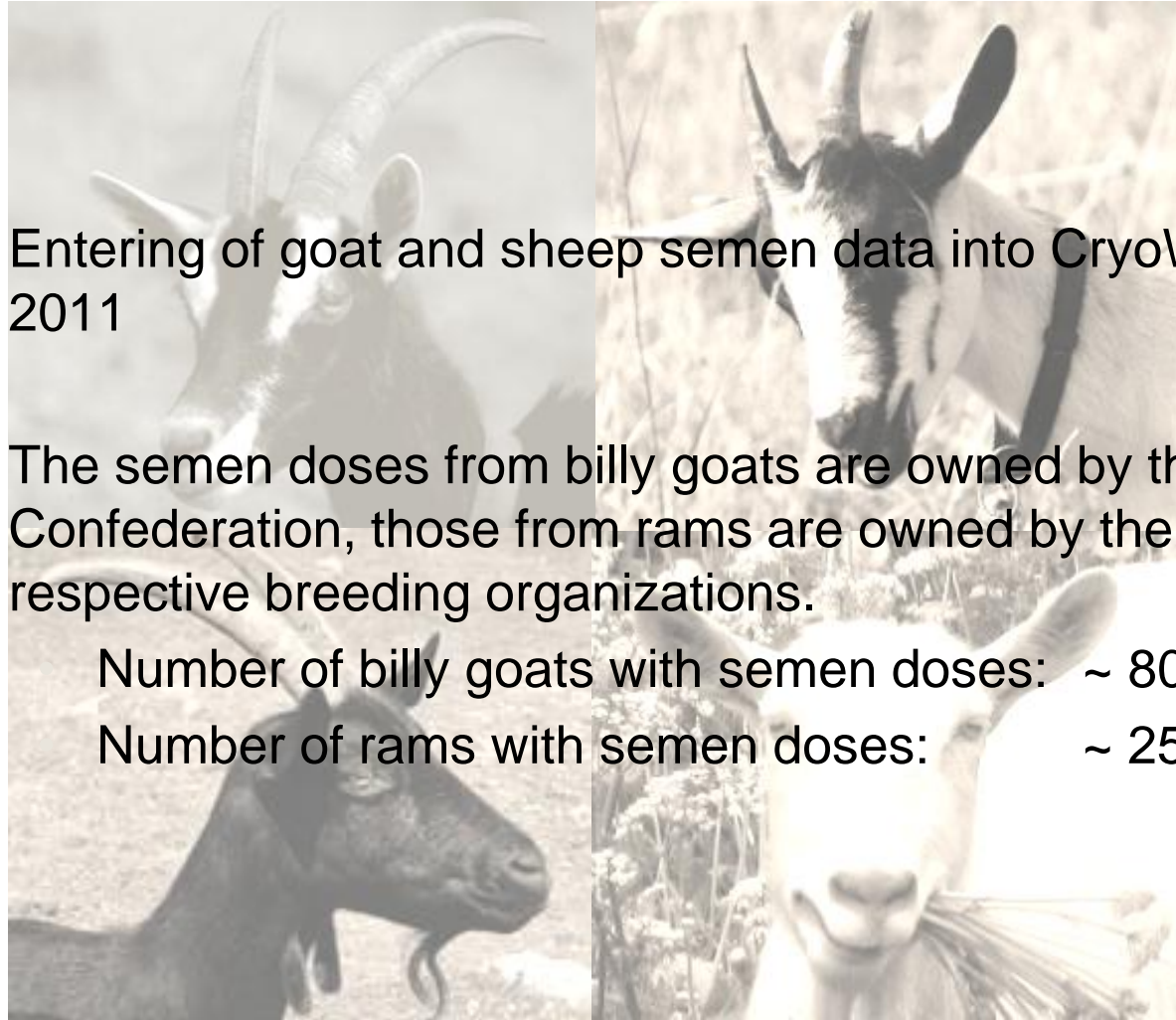
5. Further development of the National Gene Pool – future



- Entering of goat and sheep semen data into CryoWEB in 2011
- The semen doses from billy goats are owned by the Swiss Confederation, those from rams are owned by the respective breeding organizations.

Number of billy goats with semen doses: ~ 80

Number of rams with semen doses: ~ 25





Breeds registered in the National Gene Pool

Goats



- Appenzell goat
- Grisons striped goat
- Nera Verzasca goat
- Peacock goat
- Valais Blacknecked goat
- Booted goat
- Capra Grigia goat
- Saanen goat
- Coloured Chamois goat
- Toggenburg goat



Breeds registered in the National Gene Pool Sheep

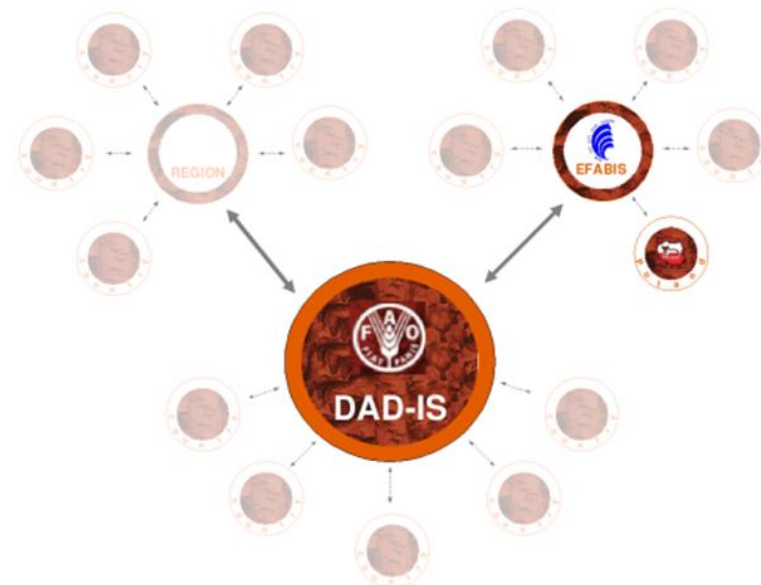


- Valais Blacknose sheep
- Swiss Black-Brown Mountain sheep
- Brown-headed Meat sheep
- Swiss White Mountain sheep



Further development of the National Gene Pool – future

- Definition of policies: criteria how data is to be entered into CryoWEB (uniformity of the data input)
- Summary of the data → EFABIS → DAD-IS





CryoWEB → EFABIS → DAD-IS

- CryoWEB contains individual animal data;
- EFABIS contains cumulated yearly statistics per breed → These cumulated statistics can be generated from the data in CryoWEB; The generated statistics from other systems can be merged und uploaded to EFABIS.
- The network links regional information systems and/or national information systems in individual countries to DAD-IS.





Thank you for your attention!

