

Heritage sheep breeds

Agri Gen Res 870/2004 Heritage Sheep

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WP3 Ex situ conservation

Collection and cryo-preservation strategies

- Objective 1
Identification of collection and cryopreservation strategies through a detailed survey
- Objective 2.
Comparison and evaluation of practicalities in collection and freezing methods
 - Wider discussion with experts
 - Includes technical, economical and sanitary aspects
- Objective 3.
Development and implementation of strategies for ex situ conservation, tailored for HSBs in Europe

Output WP3

Defined framework on how to conserve HSBs + guidelines for cryopreservation.

WP3 Timeline



- D04 Questionnaire
- D07 Results questionnaire
- M08 “Workshop” wider discussion with experts collection, freezing etc
- D15 final report questionnaire
- M16 “Workshop” discussion European wide strategies for ex situ conservation
- D24 final framework on ex situ conservation of HSBs
- M24 presentation of final frame work

HSB gene banks in UK, NL, France, Greece

Countries	Breeds	Organisation	Mean males/breed	Mean doses/male
UK	15	Innovis for NSP semen archive and heritage gene bank	30	152
NL	6	CGN	26	135
France	3	Nat. Cryobanque + AI org.	30	116
Greece	1	Nagref research Institute	15	67

Current Stocks of frozen HSB semen

Name of breed	Organi- sation ¹	When collected	No of rams	No of doses	Sperm / dose	Eja or Epi	Storage sites	Straw or Pellet
Kempen Heath Sheep	CGN	2001-2002	15	2234	200	Eja	2	Str
Veluwe Heath Sheep	CGN	2001-2002	7	715	200	Eja	2	Str
Veluwe Heath Sheep	CGN	2004- - - -	27	3036	200	Epi	2	Str
Drenthe Heath Sheep	CGN	2001-2002	2	44	200	Eja	2	Str
Drenthe Heath Sheep	CGN	2004- - - -	55	4014	95-200	Epi	2	Str
Mergellander	CGN	2001-2002	21	2538	200	Eja	2	Str
Mergellander	CGN	2004	4	398	200	Epi	2	Str
Schoonebeker	CGN	2001-2002	10	1096	200	Eja	2	Str
Schoonebeker	CGN	2008	7	709	80-200	Epi	2	Str
Zwartbles	CGN	2003	7	168	200	Eja	2	Str
Zwartbles	CGN	2005	1	616 ⁵	200	Epi	2	Str
Basco Béarnaise	Ordiarp	2005	16	2032	100	Eja	1	Str
Manech tête noire	Ordiarp	2005	20	2263	100	Eja	1	Str
Manech tête rousse	Ordiarp	2005	53	6017	100	Eja	1	Str
Chios	NAGREF	2006-2007	15	1000	100	Eja	1	Str

Current Stocks of frozen HSB semen

Name of breed	Organisation ¹	When collected	No of rams	No of doses	Sperm/dose	Eja or Epi	Storage sites	Straw or Pellet
Brecknock Hill Cheviot	NSP	2005-2007	18	3499	100	Eja	2	Str
Cheviot	NSP	2005-2007	41	7076	100	Eja	2	Str
Clun Forest,	NSP	2005-2007	7	1567	100	Eja	2	Str
Dalesbred	NSP	2005-2007	6	1154	100	Eja	2	Str
Dalesbred	Heritage	April 2001	7	150x2	240	Eja	1	Pel
Derbyshire Gritstone,	NSP	2005-2007	2	308	100	Eja	2	Str
Devon Closewool	NSP	2005-2007	9	1923	100	Eja	2	Str
Exmoor Horn	NSP	2005-2007	11	2302	100	Eja	2	Str
Herdwick	NSP	2005-2007	37	7262	100	Eja	2	Str
Herdwick	Heritage	April 2001	155	2196x2	240	Eja	1	Pel
Lonk	NSP	2005-2007	1	200	100	Eja	2	Str
Lonk	Heritage	April 2001	4	59x2	240	Eja	1	Pel
Romney	NSP	2005-2007	17	1302	100	Eja	2	Str
Rough Fell	NSP	2005-2007	16	2584	100	Eja	2	Str
Rough Fell	Heritage	April 2001	20	324x2	240	Eja	1	Pel
Shetland	NSP	2005-2007	30	13012	100	Eja	2	Str
South Welsh Mountain	NSP	2005-2007	20	4173	100	Eja	2	Str
Southdown	NSP	2005-2007	3	545	100	Eja	2	Str
Southdown	NSP	2005-2007	20	3567	100	Eja	2	Str
Welsh Hill Speckled Face	NSP	2005-2007	19	11306	100	Eja	2	Str

Organisation

- Single campaigns
 - Triggered by diseases (FMD, Scrapie)
 - Therefore financial support now but maybe not in the future.
 - France and Greece; Any chance on continuation for other breeds, regions?.
 - How about updating gene bank collections in the future, and continuation of the storage of the present collections?

- Who instigate, organise (and fund) the work
 - In NL: Central authority: CGN.
 - In UK: Ad hoc organisations: 'Heritage Gene Bank, and 'NSP Semen Archive'.
 - In France, initiative lies at AI organisations?
 - Greece: Research institute, On behalf of.. Funded by...?

- Organisation; Who are doing the work
 - ASG (+ Vet faculty UU) for CGN. Also Research institute in Greece
 - Commercial/co-operative organisations in France and UK. Seems to be quite efficient. However, this is not available in NL.

Procedures Collection

- Epididymal vs ejaculated semen
 - NL advocate use of epididymal semen for its good fertility and cost-efficiency.
 - Not good to kill rams for obtaining semen. Why? Rams need to be culled anyway.
 - Sanitary status; Is it allowed? Interpretation of law and regulations? How real is that? Exemptions/derogations for gene banking? Should the EU have one rule? Should we advocate that?
- Semen for Cervical or Laparoscopic insemination
 - Laparoscopic is prohibited in NL (animal welfare).
 - Laparoscopic may be 4-10 times more efficient (number of sperm required).
- Collections on farm vs central facility
 - France cannot do on farm collection. (Same issue: Rules/derogations?). But may be an efficient central facility is just as good? Must be discussed.
- Collections in season, teaser ewe or dummy
 - Lower sperm quality and quantity in the summer. But it is probably not a bad constraint to limit collecting of semen for the gene bank to the season.
- Dose size needed
 - Could we use less than 200×10^6 sperm per cervical AI?
 - What about laparoscopic. Why 100×10^6 sperm? Could we use less?

Procedures Freezing

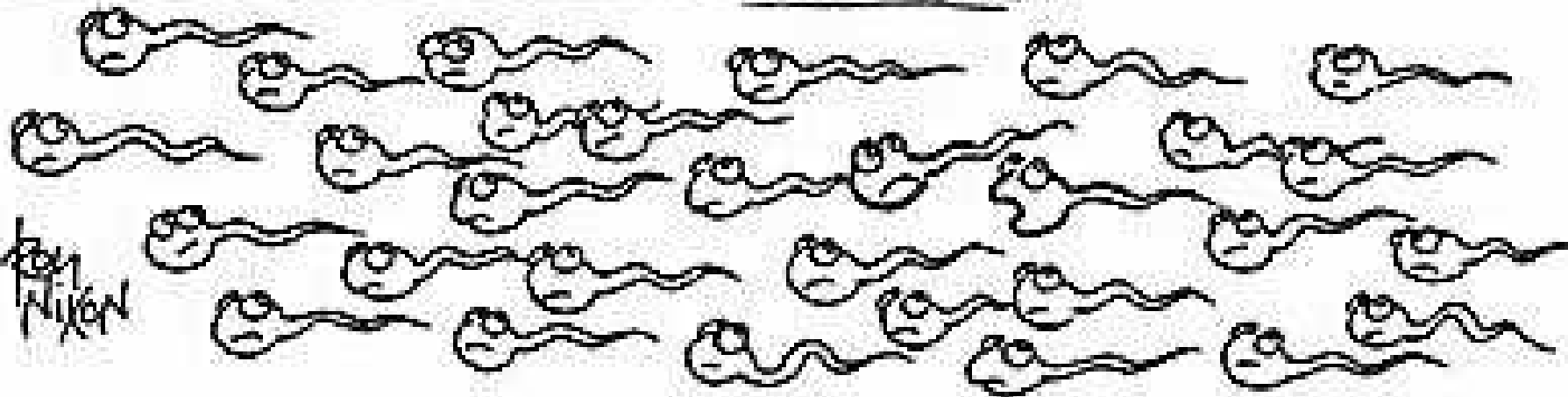
- Literature is very unclear. Always confounding factors.
- Various methods seem to work! (as to semen handling, freezing medium, and actual freezing procedure)
- In NL expertise had gone up from zero to just adequate. (30% pregnancy with cervical AI may not be too bad)
- But probably France and UK have much more to say in this regard.
- So could we organise comparison of methods? and exchange of researchers/personnel?

Recommendations for WP4

- In WP4 the partners will make new stocks of frozen semen from two breeds per country.
- Perhaps this could be an opportunity to compare and exchange methods and expertise.
 - If it can be organised, a split sample comparison of freezing media/methods could perhaps be done combined with exchange of researchers/ personnel.
 - If possible and deemed necessary, we could also compare the same semen but using different dose sizes.
- These plans are attractive,
 - but HSB funding only covers the collection and freezing of the semen.
 - We should preferably be able to make use of on-going insemination activities instead of organise a costly 'animal experiment' in a research facility.
- At any rate, WP3 must supply guidelines on the procedures followed in WP4!

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by Nixon

"DO YOU SUPPOSE HE KNOWS SOMETHING THAT THE REST OF US DON'T?"

Freezing ram semen

We hope we can learn from (other partners in) this project.