

AI on sheep in Iceland

Protocol and results

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AI in sheep in Iceland, all inseminations 5.3% of total population of sheep in 2021

Year	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Number of AI	27686	26415	25284	26514	25851	20359	17658	18371	22300	20218
Lambing	61%	65%	65%	61%	64%	64%	65%	62%	62%	66%
Lamb/ ewe	1,82	1,82	1,81	1,81	1,85	1,84	1,83	1,85	1,85	1,85



AI in sheep in Iceland. How we do

- Two AI stations
- Insemination in the beginning of the breeding season Dec 1st to Dec 21st
- The farmers AI their ewes
- Single insemination
- Blind deep vaginal deposition
- Fresh semen
 - Within 20 hours after collection
 - Natural heat, not synchronized
 - AI 10 – 36 hours after the beginning of the heat



Fresh semen natural heat 2021

Station	Number	Lambing	Lamb/ Ewe
Borgarnes	8.205	67%	1,83
Þorleifskot	10.363	69%	1,87
Total/average	18.568	67%	1,85

Semen collection

- 20 to 25 rams in each of two AI stations
- 4 to 5 ewes to stand under. We use prostaglandin every 5 days to hold them in heat.
- Collect the semen with artificial vagina

- **Two** following ejaculates within 2- 3 minutes in same tube

Another round 1-2 hours later

- Beginning early in the morning 5 or 7 am
- One man fetches the rams
- Another collects the semen





Handling and diluting the semen

- The tube with semen is put in water bath at 30°C
- The quality of the semen is assessed both visually and under the microscope
- The density (sperms per ml) is measured
- Dilute with skimmed milk extender at 30°C
- 1,100 million cells/ml.
- Fill in 0.5 ml straws IMV (**5 semen doses 0.1 ml each 110 million sperms/dose**)
- Close the straws with latex powder IMV 20 minutes at 22°C
 - The tip of the straw with the powder in water bath

Handling of the semen

- Store the semen in a room at 15°C
- Start sending the semen out to the farmers at 8 to 11 am
- Use thermoses with water 10°C
- Cool the semen to 4°C after two hours or when it reaches the farmers



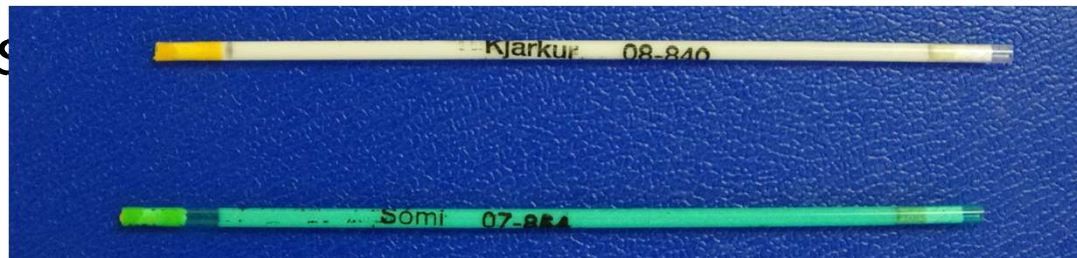


The insemination

- The farmers get semen 3 or 4 following days for AI
- Teaser ram
- The day before the first day they look after ewes in heat with teaser ram 10 am.
 - **These ewes should not be inseminated the following day they will be too late**
- Find ewes in heat the evening before insemination
 - Best to look after ewes 16 to 24 hours before AI
- Work without stress and the ewes should be close to the rams when they are inseminated
- Blind deep vaginal deposition, **no speculum**
- **One single insemination**

The insemination

- There are **5 doses** in the straw
 - 5 ewes after each other receive semen from the same ram
- We use inseminator for cows and the same cover sheath for 5 ewes





Fresh semen

- We send semen all over the country and semen even from early morning gives good lambing rate late afternoon
- Many inseminations after 17 o'clock; 10 – 12 hours after collecting
- Insemination with fresh semen the next day after collecting
 - Lambing rate about 55% and 1.8 lambs/ewe
- It is important, not too fast cooling of the semen
- Semen diluted at 30°C and is 20 – 30 minutes in a room temperature and then in a room at 15°C in 1 to 5 hours.
- Transport in water bath 10°C.
- Cooling to 4-5°C after 2 hours or when the semen reaches the farm

Number of insemination technicians
 who got results column 1 and number
 of ewes they inseminated

Pregnancy %	Number of technicians	Number of ewes	Fertility
> 89	5	81	1,90
80-89	36	78	1,87
70-79	66	89	1,86
60-69	47	76	1,84
50-59	29	67	1,84
40-49	18	59	1,77
< 40	11	50	1,74



Synchronization of the heat

- Ram effect
- The Icelandic sheep starts to breed in November
- The first ovulation in the breeding season is in late November
- Housing starts in November with shearing
- If there has not been any contact with the older rams most of the the ewes come in heat 19 to 21 days after shearing and contact with the rams.
- Shearing and ram contact November 20th
 - AI 9th to 12th December
- Lambing rate 65%

Insemination on second heat after
synchronization with Veramix sponges no use of
PMSG.

Teaser ram. Fresh semen

Lambing

- Sponges out 17 days ago 4 ewes 50 %
- Sponges out 18 days ago 43 ewes 65 %
- Sponges out 19 days ago 33 ewes 79 %
- Sponges out 20 days ago 30 ewes 67 %



Deep frozen semen old trials

- The problem using deep frozen ram semen is the insemination
- It is no problem freezing ram semen in high dilution
- Then you must inseminate with laparoscope
- In the seventies I found a method to freeze ram semen in high concentration by equilibrating it in high dilution and reconcentrate by centrifugation before freezing
 - (Olafsson T. Insemination of sheep with frozen semen in sheep. Zuchthyg 1980;8:113-8)
 - Olafsson, T. (1980) Insemination of sheep with frozen semen. Results obtained in a field trial in Norway. Zuchthygiene 15, 50-59
- 1,000 million sperms/ml. Then we fill in 0.25 ml mini straws IMV (containing 0.23 ml). It is about 235,000,000 sperms/dose
- Then I could use cervical insemination with high pregnancy rate

Deep frozen semen to day in Iceland and Norway



- Today, new extenders Andromed (Minitüb) and **Optixcell (IMV)** make it possible to freeze ram semen in high concentration in medium straws.
- 500 million sperms/ml
- Medium straws 0.5 ml and thaw in 50°C in 14 seconds. The dose is 250.000.000 sperms
- Blind deep vaginal deposition
- In Norway, about 70% non return not synchronized heat.
- Timing of insemination is important.

Trial with frozen semen, Andromed medium straws 0.5 ml and thaw in 50°C in 14 seconds. The dose is 250.000.000 sperms. Single AI

Three groups AI always on the same time of day, single AI			
Hours from seaching	Number	Lambing %	Lambs/ewe
16 hours	31	32%	1,90
20 hours	30	23%	1,86
24 hours	33	42%	1,93
Searching three times and AI three times a day, single AI			
Hours from searching too AI	N	Lambing %	Lambs/ewe
20 -24 hours	19	74%	1,72

Thank you



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