

Nordic Total Merit Index

Use of sexed semen(SS) and beef semen(BS) in dairy herds

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Nordic Cattle Genetic Evaluation

Introduction

- **Use of sexed semen (SS) and beef semen(BS) can improve revenue in dairy herds**
- **In dairy breeding: Which traits will be affected by use of SS and BS ?**
- **In the 2018 TMI-model the use of SS and BS was included**
- **Today, I will:**
 - **Give short review of the assumptions in 2018 TMI-model**
 - **Compare with the actual situation (results from survey)**
 - **A start for further discussions**

Which traits are affected by use of SS and BS

- Dairy beef production traits: Growth and Form
- Female fertility – conception rate (for sexed semen and beef semen)
- Calvings traits – survival and calving ease
- Youngs stock survival

How will traits be affected

- **Only effect of improving dairy genes should be evaluated**
- **Introducing BS will reduce the share of dairy genes in calves born in dairy herds**

How have the traits been affected

- The value will be **reduced** for:
 - *Dairy beef traits – especially form score*
 - *Direct calving traits (birth index)*
 - *Young stock survival for (dairy) bull calves*
- The value will be **increased** for:
 - *Fertility (conception rate)*
 - *Maternal calving traits (calving index)*
 - *Young stock survival for heifer calves*

Important assumptions in 2018

- SS is used for almost all heifers
 - SS is used mainly at 1st AI
 - BS is used **only** for cows
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- Replacement rate: Determine the share of cows available for insemination with beef semen – a low replacement rate was assumed.

Assumptions on use of SS in 2018 TMI-model

| | HOL and RDC | | | JER |
|---------------------------------------|-------------|-----------|-----------|-----------|
| | DNK | SWE | FIN | All |
| Pct SS in heifers 1st ins. | 94 | 91 | 88 | 98 |
| Pct SS in cows 1st ins. | 10 | 10 | 10 | 10 |
| Replacement rate | 32 | 32 | 32 | 32 |

In other words – assumptions were:

- **Nearly all heifers are inseminated with SS**
- **More that 50% of calves born at 1st calving are a result of SS**
- **How does that correspond with the actual situation ?**

Results from the new survey

Use of Sexed Semen and Beef Semen in dairy breeds
Across heifers and cows – all inseminations

| | DNK | | SWE | | FIN | 2018 Assumptions Approximation |
|--------------|------------|-----|-----|-----|------------|--------------------------------|
| | HOL RDC | JER | HOL | RDC | HOL RDC | <i>HOL,RDC,JER</i> |
| Conventional | 57 | 10 | 64 | 72 | 67 | 35 |
| SS | 22 | 63 | 24 | 14 | 8 | 23 |
| BS (total) | 21 | 27 | 12 | 14 | 25 | 42 |
| Sexed BS | 2.7 | 8.7 | 2.7 | 1.3 | 1.3 | 0.0 |

Comparison – differences between assumptions and actual

- **Actual use of SS**
 - Higher than assumed in JER
 - Close to assumptions in DNK HOL and RDC
 - Close to assumptions in SWE HOL
 - Somewhat lower in SWE RDC and in FIN
- **Actual use of BS is generally lower than assumed**

Might be partly due higher replacement rate than assumed (give less "room" for use of BS)

Results from the new survey – FIN data

Use of Sexed Semen and Beef Semen in dairy breeds

| | Heifers Distribution of Ins. (pct) | | | Cows Distribution of Ins. (pct) | | |
|----------------------|---------------------------------------|-----|------------|------------------------------------|-----|------------|
| | HOL | RDC | <i>JER</i> | HOL | RDC | <i>JER</i> |
| SS – 1st ins. | 15 | 10 | 44 | 9 | 6 | 27 |
| SS – All ins. | 12 | 8 | 38 | 7 | 5 | 24 |
| BS – 1st ins. | 6 | 7 | 10 | 25 | 31 | 26 |
| BS – All ins. | 10 | 11 | 12 | 30 | 35 | 27 |



Observations from Finnish part of the survey

- **SS is used more at later inseminations than assumed**
- **Use of BS for heifers are higher than assumed**

The future: Expected 2025-2030 situation

- Are the assumptions on future use of SS (and BS) realistic? -
With respect to:
 - Total number of SS-calves born (dairy heifer calves)
 - Distribution on SS ins. on heifers and cows
 - SS ins. (after 1st)
- Other factors
 - Replacement rate – too low or too high
 - Beef breeds used – country differences
 - Sexed Beef semen
- Other aspects ?