

NTM 2018 sensitivity analyses

Overview of results

Lars Peter Sørensen, Jørn Pedersen, Jukka Pösö, Freddy Fikse
Jan-Åke Eriksson, Morten Kargo, Ulrik S. Nielsen, Gert P. Aamand

NAV



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Nordic Cattle Genetic Evaluation

Outline

- **Sensitivity analyses – what we have done**
- **Details on:**
 - **Milk price decreased by 10 %**
 - **Feed costs increased by 10 %**
 - **Beef price decreased by 10 %**
 - **Changing replacement rate**
- **Conclusion**

General remark

Keep in mind that:

Large effects on economic values may not have large impact on expected genetic response

Changing economic assumptions

Overall impact on expected genetic response

- **Milk price: +/-10 % - large impact**
- **Feed costs: +/-10 % - moderate impact**
- **Beef price: +/-10 % - low impact**
- **Veterinary costs: +10 % - low impact**
- **Labor costs: +10 % - low impact**

Changing management assumption

- Use of sexed semen: +/-10 % - low impact
- Lower replacement rate: -5 %-units – low impact except for longevity
- Participation in health agreement schemes: either no herds or 20 % of all herds in basis agreement – low impact
- + a few scenarios special for JER

Milk price -10 % (conv. DNK/SWE: 0.354; FIN: 0.388 – FIN inkl. subsidies)

Effect on economic values

- Value of standard milk decreased 18 % (all breeds)
- Improving ICF and IFL_{cows} → more calvings → more milk - minor negative effects
- Improving traits involving discarded milk – minor negative effects
- Improving longevity – value decrease 13 % (more older cows → more milk)

Expected genetic response using milk price -10 %

Values from proposed conventional NTM added for comparison in small numbers

	HOL	RDC	JER
Yield	0.55 0.63	0.73 0.80	0.70 0.77
Growth	0.11 0.13	0.04 0.05	0.08 0.07
Fertility	0.50 0.44	0.27 0.21	0.30 0.25
Birth, direct	0.29 0.26	0.19 0.14	0.08 0.08
Calving, maternal	0.35 0.32	0.18 0.16	0.18 0.18
Udder health	0.38 0.34	0.20 0.15	0.45 0.38
General health	0.38 0.34	0.19 0.17	0.29 0.27
Frame	-0.02 0.01	-0.01 0.02	0.14 0.15
Feet & legs	0.19 0.17	0.23 0.20	0.19 0.17
Udder	0.13 0.11	0.07 0.04	0.22 0.15
Milking speed	0.05 0.04	0.19 0.18	0.08 0.07
Temperament	0.08 0.09	0.07 0.09	-0.01 -0.01
Longevity	0.53 0.50	0.47 0.45	0.52 0.48
Claw health	0.27 0.24	0.17 0.14	0.12 0.09
Young stock survival	0.26 0.23	0.30 0.25	0.33 0.28

Milk price -10 % - summary

- Economic value of milk drops
- This affects expected response for all traits
 - Yield ↓
 - Functional traits ↑ (fertility, udder health)
 - Conformation ↑ (JER udder)

Feed costs +10 %

- Only affect economic values of traits where improvement either results in more milk or more animals for slaughter
- Largest effect on daily gain
- Also large proportional effect on ICF

Feed costs +10 % - genetic response

- Biggest changes are seen for JER – tendency similar to effect of milk price
- In general small changes for HOL and RDC
 - Largest effect on yield for these breeds

Beef price -10 % (conv. O5: SWE: 3.98, DNK: 3.45, FIN: 3.52)

- Value of daily gain decreased 22-26 %
- Improving survival rate – more cows can be inseminated with beef semen → more calves for slaughter – large negative impact (-15 to -22 %)
- Improving ICF and IFL_{cows} → more calvings → more calves for slaughter – similar negative effects – large impact on ICF
- Improving YSS → more calves for slaughter – large negative impact on all 4 traits (-12 to 23 %)

Expected genetic response using beef price -10 %

Values from proposed conventional NTM added for comparison in small numbers

	HOL	RDC	JER
Yield	0.65 0.63	0.81 0.80	0.77 0.77
Growth	0.11 0.13	0.05 0.05	0.08 0.07
Fertility	0.41 0.44	0.19 0.21	0.24 0.25
Birth, direct	0.24 0.26	0.13 0.14	0.08 0.08
Calving, maternal	0.30 0.32	0.15 0.16	0.18 0.18
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Udder	0.12 0.11	0.05 0.04	0.15 0.15
Milking speed	0.04 0.04	0.18 0.18	0.07 0.07
Temperament	0.09 0.09	0.09 0.09	0.00 -0.01
Longevity	0.50 0.50	0.45 0.45	0.48 0.48
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Generally limited effect on responses

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Decreasing replacement rate (-5 %)

- More older cows - fewer replacement heifers are needed
- More beef crosses are born
- Fewer purebred heifers and bulls are born
- Survival rate 1st and $IFL_{heifers}$ decrease – expressed fewer times – opposite for survival rate later and IFL_{cows}
- Improving ICF – more calves for slaughter but proportionally less for lower replacement rates; thus value decreases

Replacement rate and longevity

- Value of longevity decreases 28 % (all breeds)

SWE HOL	Replacement rate	
	27→26	37→36
Herd life (longevity), days	53	28
Profit per cow per %, €	11.3	11.0
Profit per cow per day, €	0.219	0.402

- Value of longevity expressed in profit per day not constant at different replacement rates

Expected genetic response using replacement rate 27 %

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Conclusive remarks I

- **Economic values**
 - **Milk price – large effect on value of milk (mainly)**
 - **Beef price – large effect on value of daily gain and other traits**
 - **Feed costs – small effects but affects many traits**
- **Only milk price has notable effect on expected genetic response**

Conclusive remarks II

- **Feed costs do not have a large impact on expected response**
- **...but combined with lower milk price the impact on response may be large**
- **Replacement rate and longevity explained**
- **Remaining scenarios: minimal impacts on expected genetic response**