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Nordic claw health index
Weight on single traits

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Survey of presentation

- Claw health traits are introduced already
- **Short introduction of the NTM-economic model (originally presented at NAV workshop Jan. 8th, 2008)**
- **Adjustments for claw health traits**
- **Economic assumptions**
- **Results**

Method: NTM - economic model

The model used for development of NTM in 2007-08

- ***Deterministic data simulation (Excel – farm accounting)***
- ***Results expressed as: Marginal profit per cow per year***
- ***Many assumptions: Economic, technical, biological***

Shortcomings

- ***Insufficient modelling of cow culling process***
- ***All cow replacement costs attached to longevity***

  ”repair” by transfer of value from longevity

Introducing claw health traits into the NTM-model

- 7 additional traits (SU, SH, HH, DE, SP, WLS, CSC)
- For each trait: Breeding value for 1st, 2nd and 3rd lact. breeding values
- In total: 21 economic values should be estimated

Claw health traits

Phenotypic input to estimation of breeding values

SP, WLS, CSC

Two values: 0 = no disorder, 1 = disorder

Similar to mastitis, health (digestive diseases, feet&leg diseases, reproductive diseases)

SU, SH, HH, DE

Three values: 0 = no disorder, 1 = mild disorder, 2 = severe disorder

Require some additional scaling of economic values if costs of a mild disorder are not 50% of a severe disorder (similar problem for calving ease)

Which cost should NOT be included ?

- **The basic cost of the claw-trimming**
- **Veterinarian treatments:**

  They are already included via the genetic evaluation in the other disease index
- **Effect on other diseases *(included in other disease index)***

- **Permanent production loss *(included in yield index)***
- **Effect on fertility *(included in fertility index)***
- **Effect on longevity in general *(is included in longevity)***

Which cost should BE included ?

- **Claw-trimmer costs:**
  - **Extra costs caused by the disorder**
  - **Extra acute visits by the claw trimmer (Sole Ulcer)**
  - ***(BUT the basic cost of the claw-trimming itself should NOT be included)***
- **Herdsman/herd owner**
  - **Extra work follow-up treatment should be included**
- **Medicine, bandages or similar**

Which cost could be included ?

We might consider additional effects not included in evaluation, e.g.

- **Increased risk of death (not part of longevity)**
- **Cost related to weight loss**
- **General loss of vitality**

Previous analyses of economic value of claw diseases

Common to most analyses are that a major part of the economic value of a claw disorder is determined by

- **Cost of permanent production loss**
- **More subsequent claw disease or other diseases**
- **Lower fertility**
- **Costs due to increased risk of culling**

Most of the analyses are based on costs of veterinarian treatments (include vet. costs)

From a breeding perspective: They include mostly costs that we do not want to include in the economic value of our claw health index

Previous analyses of economic value of claw diseases

In a Swedish report by Marcus Oskarsson there are detailed estimates of costs connected to claw-trimmer records for SU, DE and SP. That include:

- **Claw trimmer cost**
- **Extra work for herdsman**
- **Medicine, bandages, other treatment costs**
- ***(and permanent production loss)***

Consultations with a Danish expert (Pia Nielsen)

NB: Pia Nielsens estimates of costs were somewhat lower than those of Oskarsson

Basic cost per Claw disorder

	Mild disorder			Severe disorder		
	Extra work, herdsman, Minutes	Extra work, Claw trimmer, Minutes	Treatment, €	Extra work, herdsman, Minutes	Extra work, Claw trimmer, Minutes	Acute effect/ Treatment, €
SU	30	5	0	270	5	80
SH	15	2.5	0	30	5	0
HH	15	2.5	5	30	5	10
DE	15	2.5	5	30	5	10
				All disorders		
SP				30	5	10
WLS				15	2.5	0
CSC				0	5	0

Basic cost per claw disorder

- Same basic cost for all countries
- Same basic cost for all breeds

- Cost of herdsman work: Same as in 2008 model
- Cost of claw trimmers work per minute: 4 x herdsman
- Other costs: Assumed to be at same level as in 2008

Consequence: Economic value for claw health traits are comparable with the economic values estimated in 2008

Results

7 traits, 3 lactations, 3 countries, 3 breeds
The NTM-model produces 7 x 3 x 3 x 3 = 189 different values
In report: Results are summarized across all lactations

Difference in frequencies of disorders causes:

- **Different values for breeds (small differences)**
- **Different values for countries**
  - **Difference between DNK and SWE is small**
  - **Large deviation for FIN, because severe disorders are absent in FIN data (especially SU)**
  - **Therefore: The final result used is average of DNK and SWE**

Main results:
Value of breeding values summed across lactations

	Unit	HOL	RDC	JER
Protein	Kg	4.60	4.81	4.15
Feet&Leg diseases	%-units	1.75	1.70	1.69
Feet&Legs conf.	Point	17.0	17.0	17.0
SU	Point	64.91	65.23	66.43
SH	Point	8.67	8.71	9.00
HH	Point	13.98	14.05	14.52
DE	Point	13.98	14.05	14.52
SP	Point	25.56	25.68	24.14
WLS	Point	8.67	8.71	9.00
CSC	Point	9.67	9.73	12.81

Main results:
Value of breeding values relative to value per SU-point

"Making breeding values (not indexes) comparable on the SU-scale"

	HOL	RDC	JER
SU	1.000	1.000	1.000
SH	0.134	0.134	0.136
HH	0.215	0.215	0.219
DE	0.215	0.215	0.219
SP	0.394	0.394	0.363
WLS	0.134	0.134	0.136
CSC	0.149	0.149	0.193

Conclusion

- **Claw traits included in the NTM-model**
- **Basic costs: Mostly based on Marcus Oskarssons report**
- **Breed and country differences are small (except Finnish results for SU)**