

Optimal combination of linear udder traits

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Outline

- Which value carry udder conformation
- How was udder conformation handled when we formed NTM in 2008?
- What has been changed in relation to udder conformation since 2008?
- Results from alternative combination of linear udder traits

What are we talking about

1. Weight on udder conformation in NTM
2. Weight on single linear udder traits in overall udder conformation index (mammary)

Weight on udder conformation in NTM

What carries the value of a good udder?

Less work



Better health



More beautiful cows



Longer living cows

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Weight on udder conformation in NTM

What carries the value of a good udder in an ideal situation?

Less work udder conformation



Better health mastitis



NAV **More beautiful cows** no value

Longer living cows



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Longevity

Handling of udder conformation in NTM report in 2008?



Less work



Better health



Longer living cows

From NAV report

- The basic economic assumptions was (subjective) assessment of the extra work-load in an average herd.
- Extra work was assumed to be 15 minutes per day per 70 cows if all traits in Udder were linearly scored 1 point away from the optimum
- **Note only costs related to work was included – all value related to longevity and health was included in economic value of longevity and health**

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Handling of udder conformation in NTM report in 2008?



Conclusion from NAV workshops

- All breeds found that longevity and udder health would have an increased value in the future
- All breeds wished to put more weight on udder conformation than in the NAV report of three major reasons:
 - A good udder essential with increasing yield
 - Important to get acceptance of NTM in practice
 - Give indirect increase in longevity and udder health



All other traits got weights very close to NAV report



Changes weight udder conformation in NTM 2008-2014

	Holstein	RDC	Jersey	Red Holstein
Suggestion	0.09	0.13	0.13	
Oct 2008	0.18	0.32	0.15	0.24
Feb 2012			0.20	
May 2013	0.25		0.26	
Current	0.25	0.32	0.26	0.24

- Today all breeds put more than double weight on udder conformation compared to the original proposal

Weight on single linear udder traits in overall udder conformation index

Linear combination of udder traits

- Weight in NTM is more than doubled compare to original estimated
- Very important that linear udder traits are weighted so that they create value
 - Impact on labor cost – difficult to judge – subjective – future AMS data might help
 - Indirect effect on functional traits - correlations
- In 2013 RDC changed the weights on single linear udder traits in udder conformation

Alternative weights - udder

- NAV has on request from the different breeds analyzed different alternatives to illustrate the effect of different weights on linear udder traits
 - Holstein – 3 alternatives
 - RDC – 3 alternatives
 - Jersey - 6 alternatives

Results

- Show correlation between
 - Alternative overall udder and linear udder traits
 - Alternative overall udder and NTM traits
 - Current and alternative overall udder

Holstein

Weight factors udder three alternatives

Traits	Current	I	II	III
Fore udder attachment	17	15	15	15
Rear udder height	10			
Rear udder width	0			
Udder cleft	10	15	15	15
Udder depth	24	30	40	35
Teat length	5			
Teat thickness	5			
Teat placement, front	7			
Teat placement, back	-12	-25	-25	-25
Udder balance	-10	-15	-5	-10

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Holstein

Correlations mammary and udder traits plus three alternatives

Traits	Current	I	II	III
Fore udder attachment	0,72	0,59	0,64	0,63
Rear udder height	0,50	0,23	0,35	0,30
Rear udder width	0,29	0,13	0,15	0,14
Udder cleft	0,15	0,03	0,05	0,05
Udder depth	0,88	0,77	0,90	0,85
Teat length	0,17	0,06	0,05	0,05
Teat thickness	0,05	-0,06	-0,09	-0,08
Teat placement, front	0,15	-0,16	-0,11	-0,14
Teat placement, back	0,01	-0,29	-0,20	-0,24
Udder balance	0,24	-0,09	0,21	0,08
Udder health	0,36	0,37	0,41	0,40
Longevity	0,15	0,20	0,22	0,21
Milking speed	0,01	0,04	0,05	0,05
Y-index	-0,21	-0,19	-0,22	-0,21
NTM	0,28	0,32	0,32	0,33
Current udder		0,86	0,93	0,91

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RDC

Weight factors udder three alternatives

Traits	Current	I	II	III
Fore udder attachment	20	10	5	5
Rear udder height	8			
Rear udder width	5			
Udder cleft	12		5	5
Udder depth	20	30	30	30
Teat length	10			-8
Teat thickness	10			-8
Teat placement, front	10			
Teat placement, back	5			
Udder balance	0			

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RDC

Correlations mammary and udder traits plus three alternatives

Traits	Current	I	II	III
Fore udder attachment	0,69	0,69	0,58	0,50
Rear udder height	0,45	0,28	0,29	0,24
Rear udder width	0,35	0,15	0,14	0,12
Udder cleft	0,24	0,08	0,25	0,24
Udder depth	0,71	0,97	0,98	0,91
Teat length	0,42	-0,05	-0,07	-0,39
Teat thickness	0,27	-0,19	-0,21	-0,52
Teat placement, front	0,32	0,21	0,23	0,26
Teat placement, back	0,23	0,13	0,23	0,25
Udder balance	0,34	0,33	0,35	0,30
Udder health	0,26	0,40	0,41	0,40
Longevity	0,06	0,18	0,19	0,25
Milking speed	-0,02	0,10	0,10	0,16
Y-index	-0,20	-0,21	-0,22	-0,16
NTM	0,22	0,24	0,25	0,24
Current udder		0,78	0,77	0,52

Results - summary

- Present weight on udder conformation in NTM is higher than weight based on pure economic considerations
- Ideally: weight based only on effect in relation to workload
- In practice: weight based on effect on workload, health, longevity, expectation and farmer acceptance
- Importance and direction of improving udder traits has generally same effect on BOTH workload, health and longevity

How do we construct index for udder in a way to get the maximal effect?