NAV evaluation of udder linear and coordinate traits

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Växa Sverige

Elisenda Rius-Vilarrasa

Jan-Åke Eriksson

Kjell Johansson

SEGES

Ulrik Sander Nielsen

NAV

Gert Pedersen Aamand

Faba Co-op

Jukka Pösö

Elisenda.rius-Vilarrasa@vxa.se

Why use robotic milking data?

- **High genetic correlations** (~ 0.90) between udder linear and AMS traits
- **high heritablilites of AMS traits**
  - → **Increased EBVs accuracy**
- **Information from multiple lactations**
  - → **Accurate EBVs for 2nd and 3rd lactations**

- It is possible to get information from more herds than those enrolled in linear classifications today and with a lower cost

Udder coordinates from Lely milking robots (AMS data)

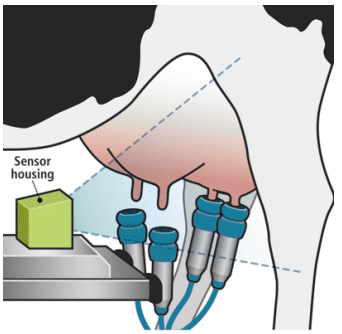
- AMS data from Danish herds (HOL, RDM and JER)
- Multiple observations from udder traits are available:

Teat placement front = TPLF

Teat placement back = TPLB

Udder balance = UB

Udder depth = UD



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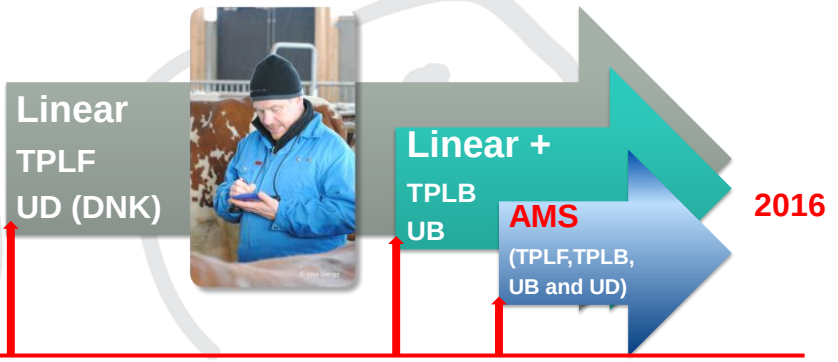
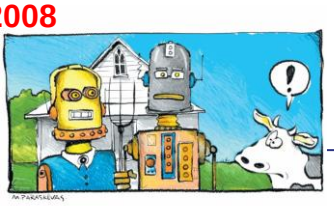
Time span of linear and AMS traits





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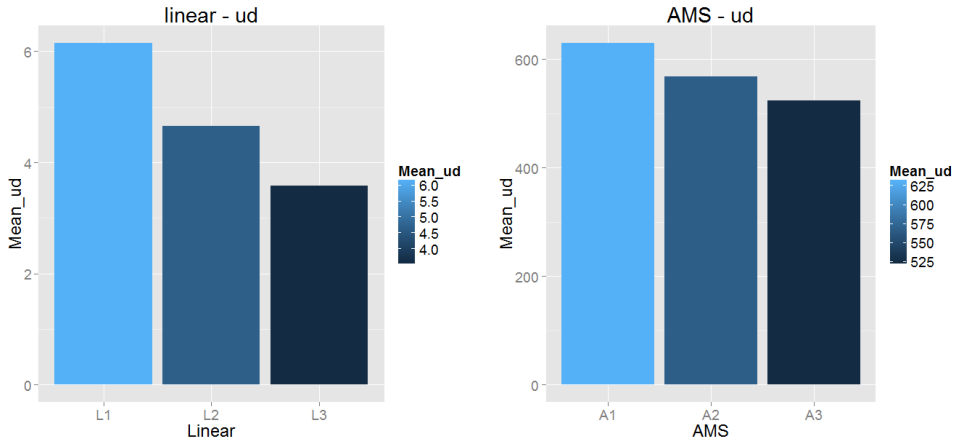
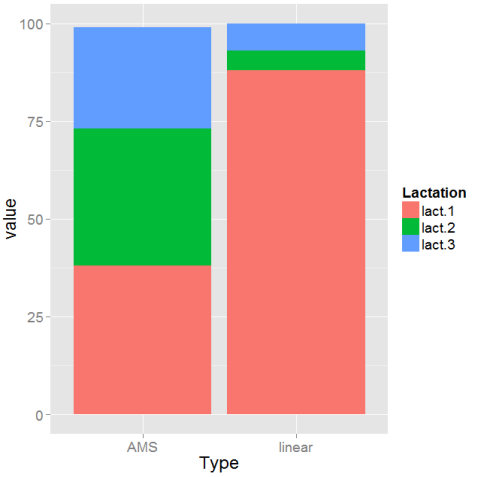
Means of Udder Depth - Hol



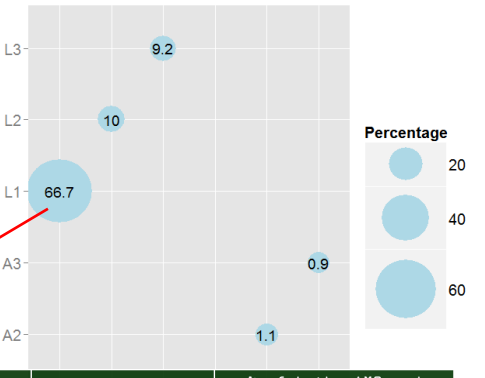
Traits by lactations



- **Overlapping number of observations in *udder balance* - between AMS and Linear traits**

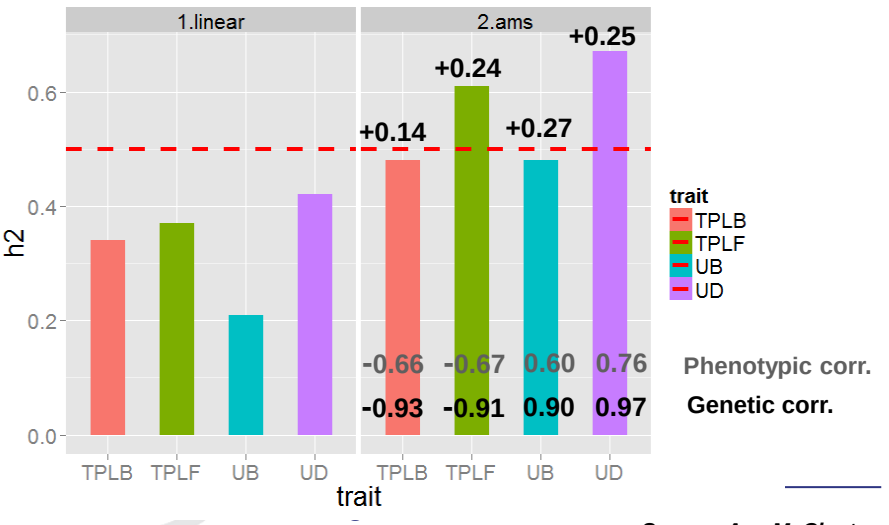
From the total of cows with AMS data 66.7% also have linear data

HOLSTEIN



Breed	N		% of both AMS and linear					
	Linear	AMS	L1	L2	L3	A1	A2	A3
HOL	1,762652	38,664	1,7	1,1	0,9	67	10	9
JER	164,490	3,595	0,6	0,6	0,2	60	4	3
RDM	853,678	3,693	0,2	0,1	0,2	77	9	24

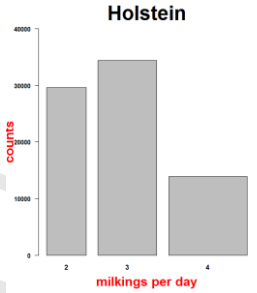
Genetic parameters (lact.1)



Source: Ane M. Closter

Genetic model

- Udder linear traits model as in routine evaluation
- AMS data is included as a correlated trait
- **NEW:** number of milkings per day (AMS)



Photograph by Lely

Holstein sires with AMS data

Description	Value
Number of AMS sires	1824
Average AMS daughters/sire	14.4
highest number of AMS dghters/sire	805
Sires with > 10 AMS dgthrs	15.4% (274)
Sires with > 50 AMS dgthrs	4.1%
Sires with > 100 AMS dgthrs	2.3%

HOLSTEIN - EBV correlations

between current and new evalaution

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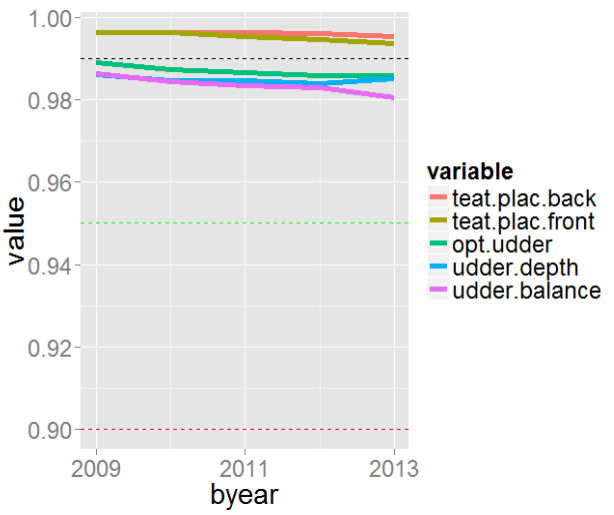
What are the changes in breeding values?

Correlations between current evaluation and AMS evaluation - cows with linear traits



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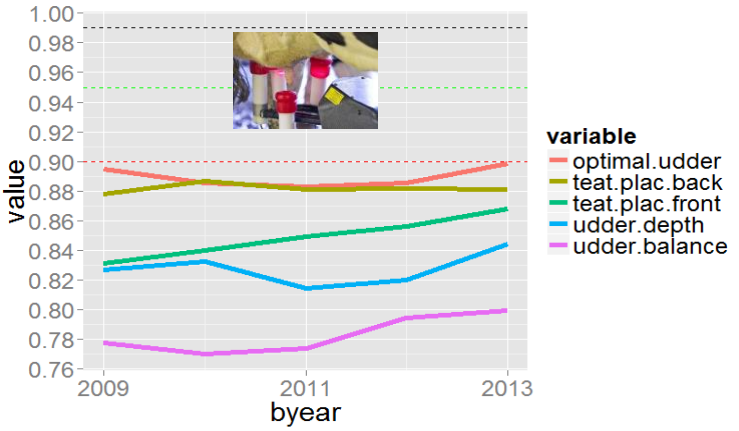
Influence of AMS data on breeding value estimation

Correlations between current evaluation and AMS evaluation - for cows with both AMS and linear traits



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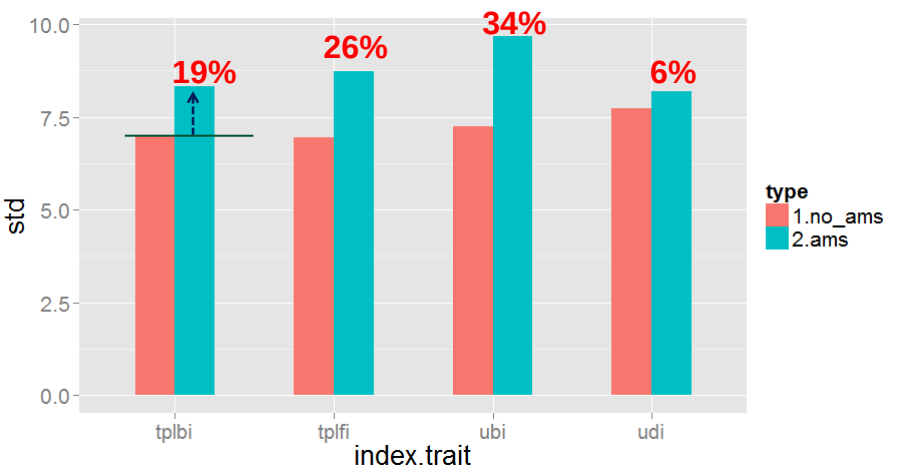
Standard deviation of EBVs - HOL cows



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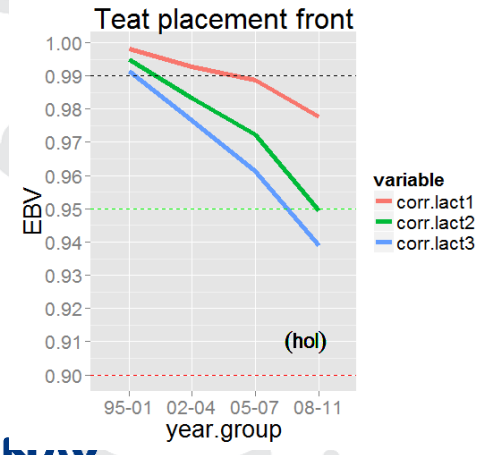
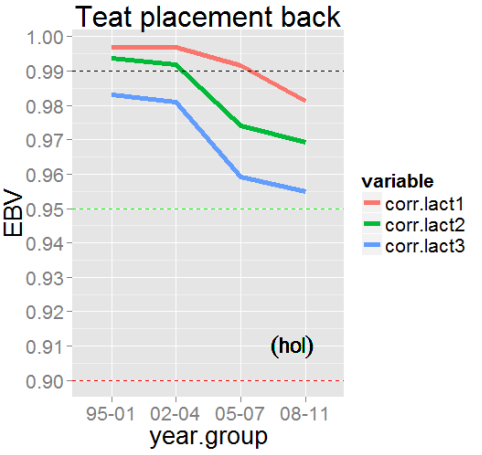
HOL- correlation old vs. new

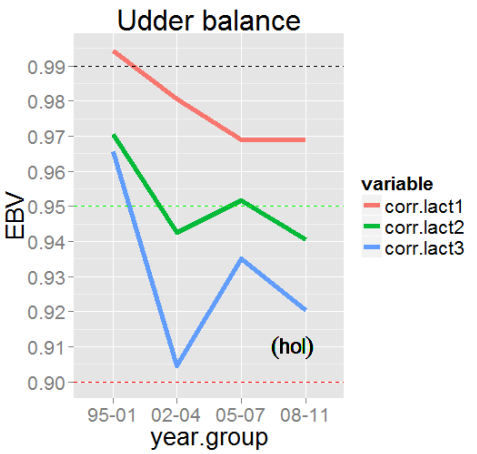
Sires with ams daughters

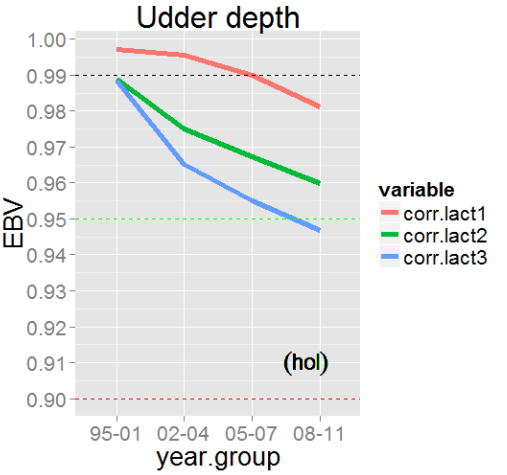




HOL- correlation old vs. New

Sires with ams daughters





Final remarks

- MORE Data: #3 lactations
- High heritabilities for AMS
- Genetic correlations >90 = same trait
- No change on the genetic trends
- Higher reliability for sires (with AMS daughters) and cows (especially later lactations)
- Plan for implementation in routine (parallel runs in 2016)
- IB test September and implementation Nov'16