Type traits
Possibilities – collecting and using AMS data

Kevin Byskov

Anders Fogh

PARTNER I

DLBR.

DANSK
LANDBRUGSRÅDGIVNING
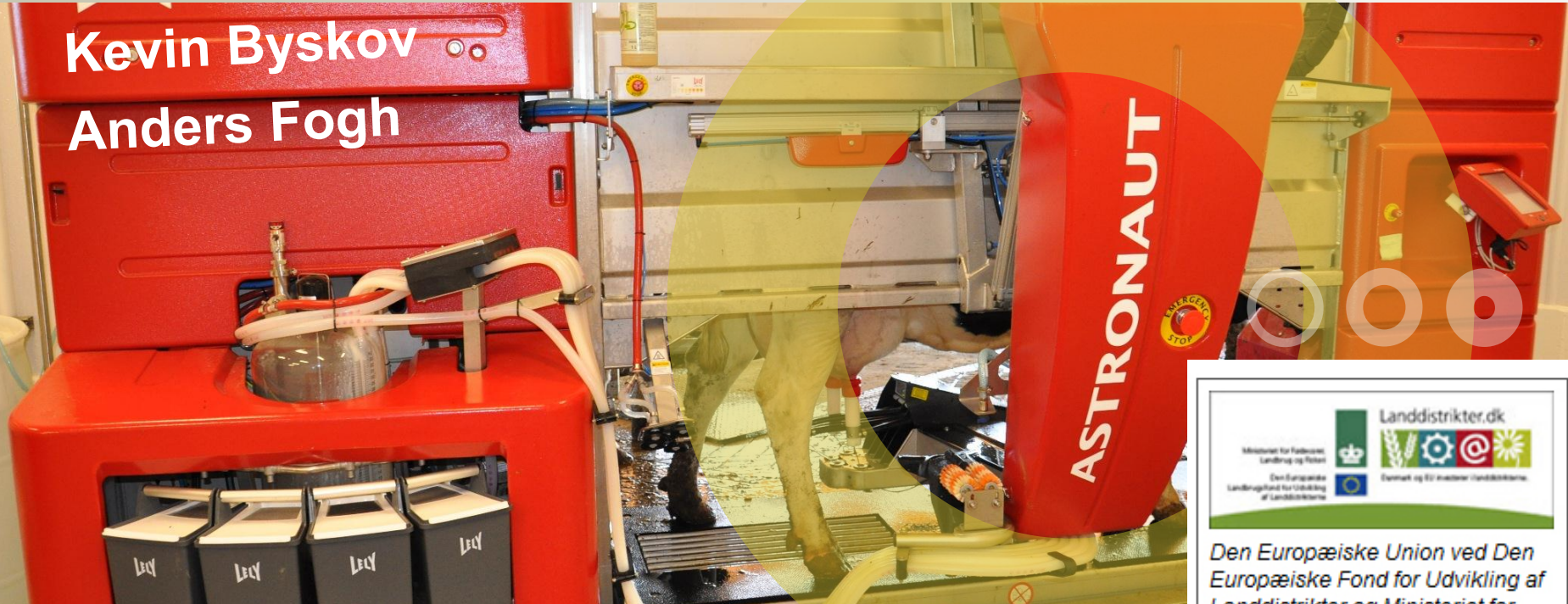
Outline

- **Background**

- **Data collection**

- **Udder conformation**

Background

- **Collecting data from AMS**
  - More difficult than expected and not yet successful for other than Lely systems

- **Define an optimal cow for AMS**
  - Technical improvements solved some problems
  - Breeding for NTM is also beneficial for AMS herds (improved milk ability, health, fertility etc.)

- **Utilize data to improve traditional breeding values**
  - Big potential – lot of data!

Data collection from AMS herds

32.786 cows

Approx 240 herds and 57.000 cows in total
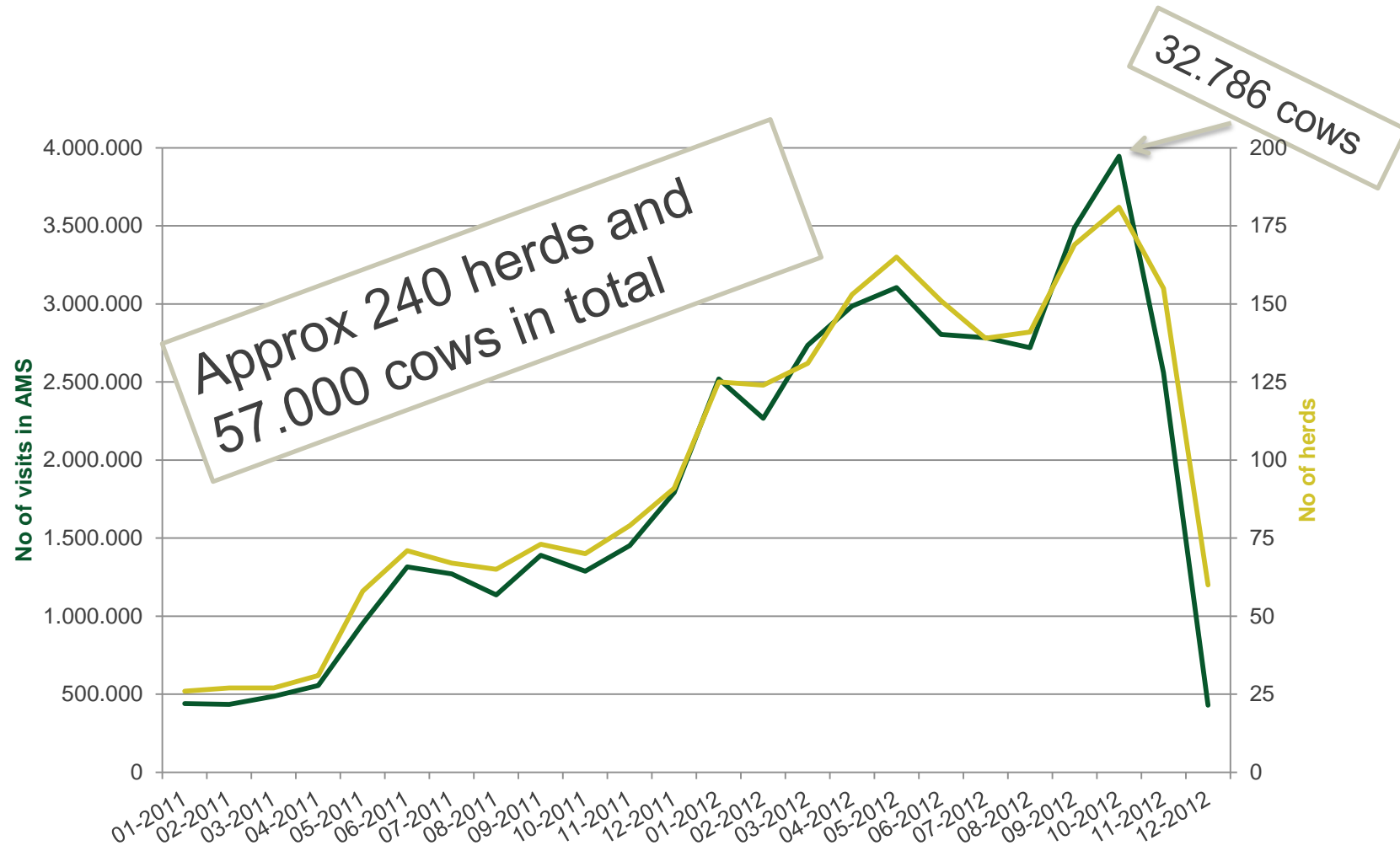
Data collection from AMS herds

- **Collected by technicians in connection with milk recording (6 or 11 times a year)**
- **No extra work for technician**
- **Software used for extraction can easily be shared with Sweden and Finland**
- **Data are subsequently transferred to the national cattle database**
- **At present only data from Lely's milking robots**
  - **But work is on-going with Delaval**
- **Long-term strategy is real time transfer of data**
- **Help for possibility to collect data from DeLaval is needed!**

Advantages of data from milking robots

- Repeated measurements of a variety of traits

- Objective measurements

- Measured on all cows in milk
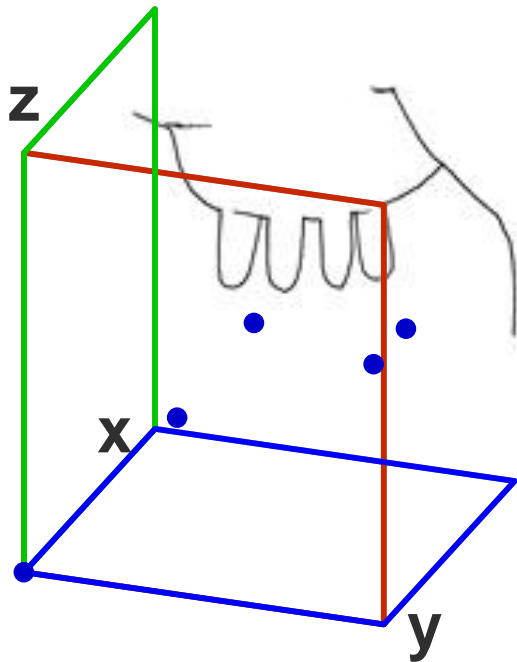
- Measured over more lactations
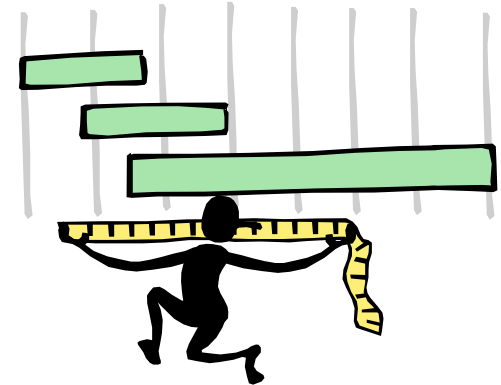
How to handle repeated measurements

- **Great many observations**

- **Average of the variable in question over a period of time**

- **Presumably more sophisticated methods to utilize the information further**
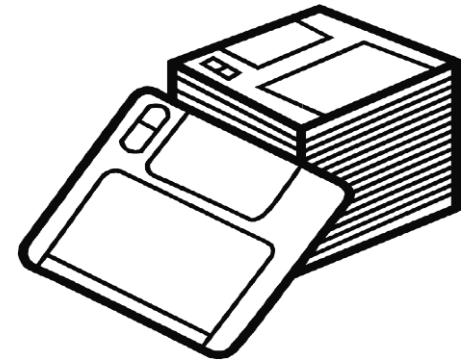
Udder conformation

Teat co-ordinates

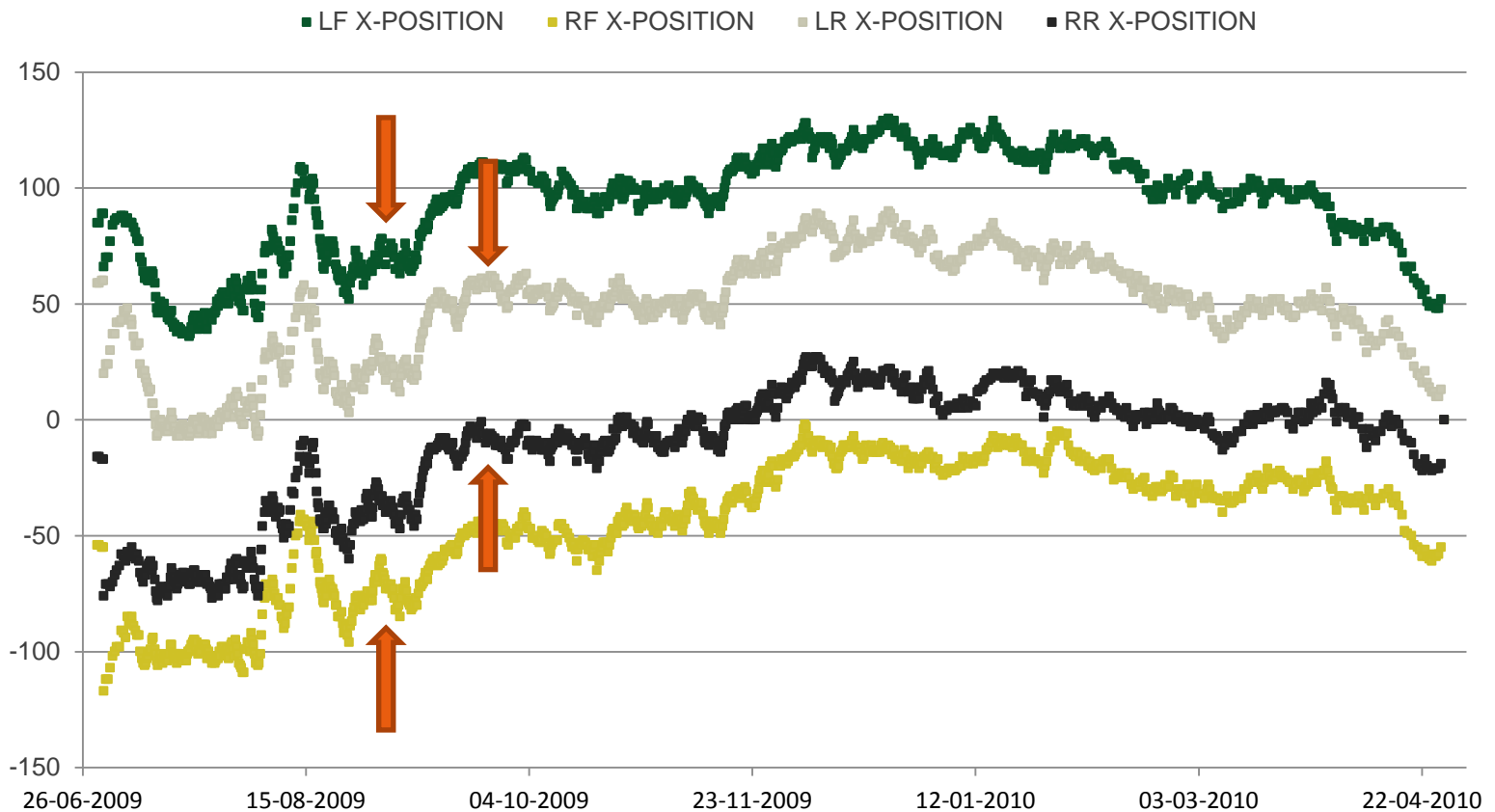○ **Front teat placement**

○ **Rear teat placement**

○ **Distance, front - rear**

○ **Udder balance**

○ **Udder depth**

Example of X coordinates
1st parity cow

■ LF X-POSITION   ■ RF X-POSITION   ■ LR X-POSITION   ■ RR X-POSITION

Calculated front and rear teat distance
1st parity cow

— Front teat distance   — Rear teat distance   — Foot rot   — Insemination
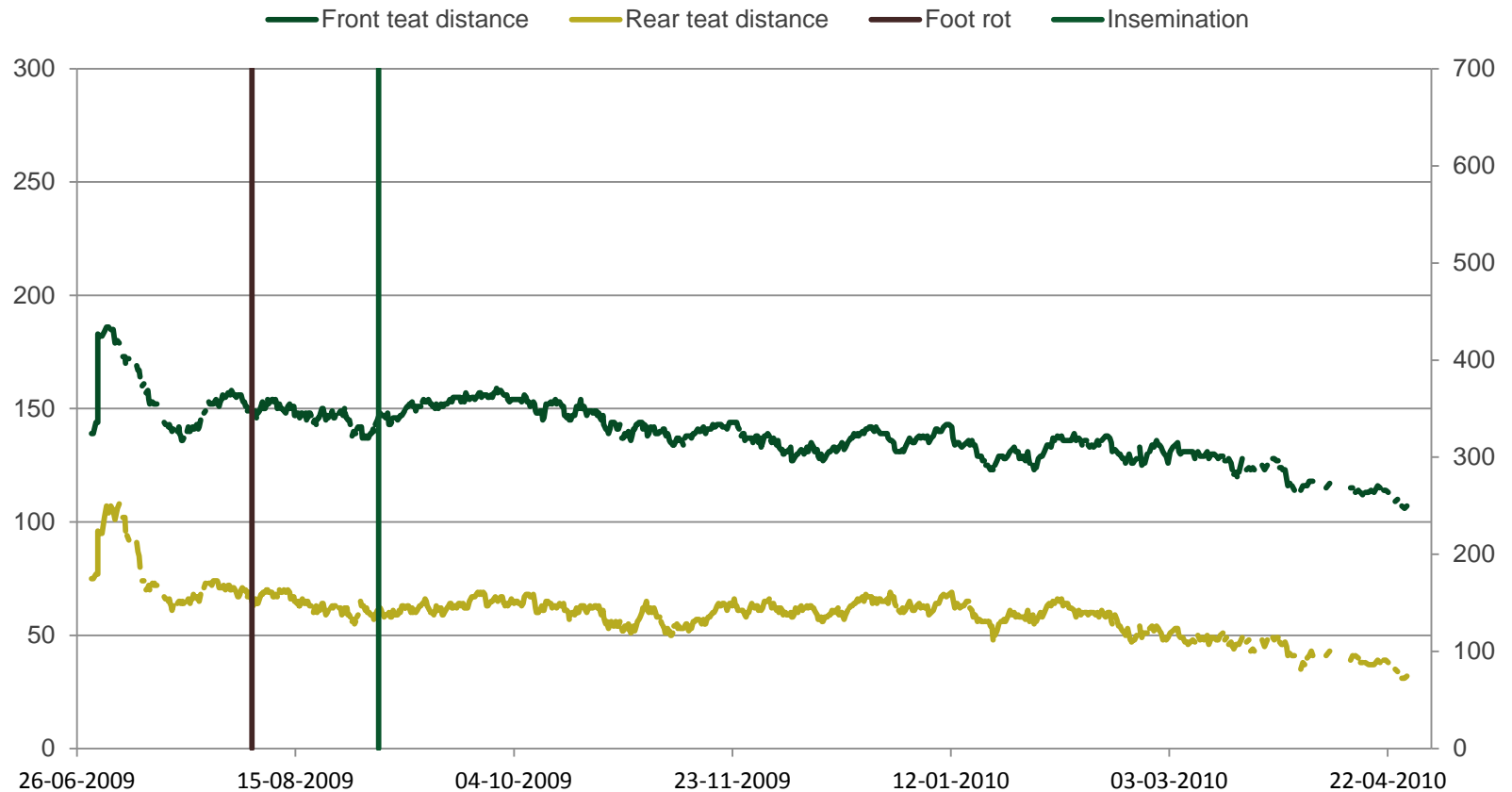
All udder traits
1st to 4th parity

Front teat distance — Rear teat distance — Distance front to rear — Udder balance — Udder depth
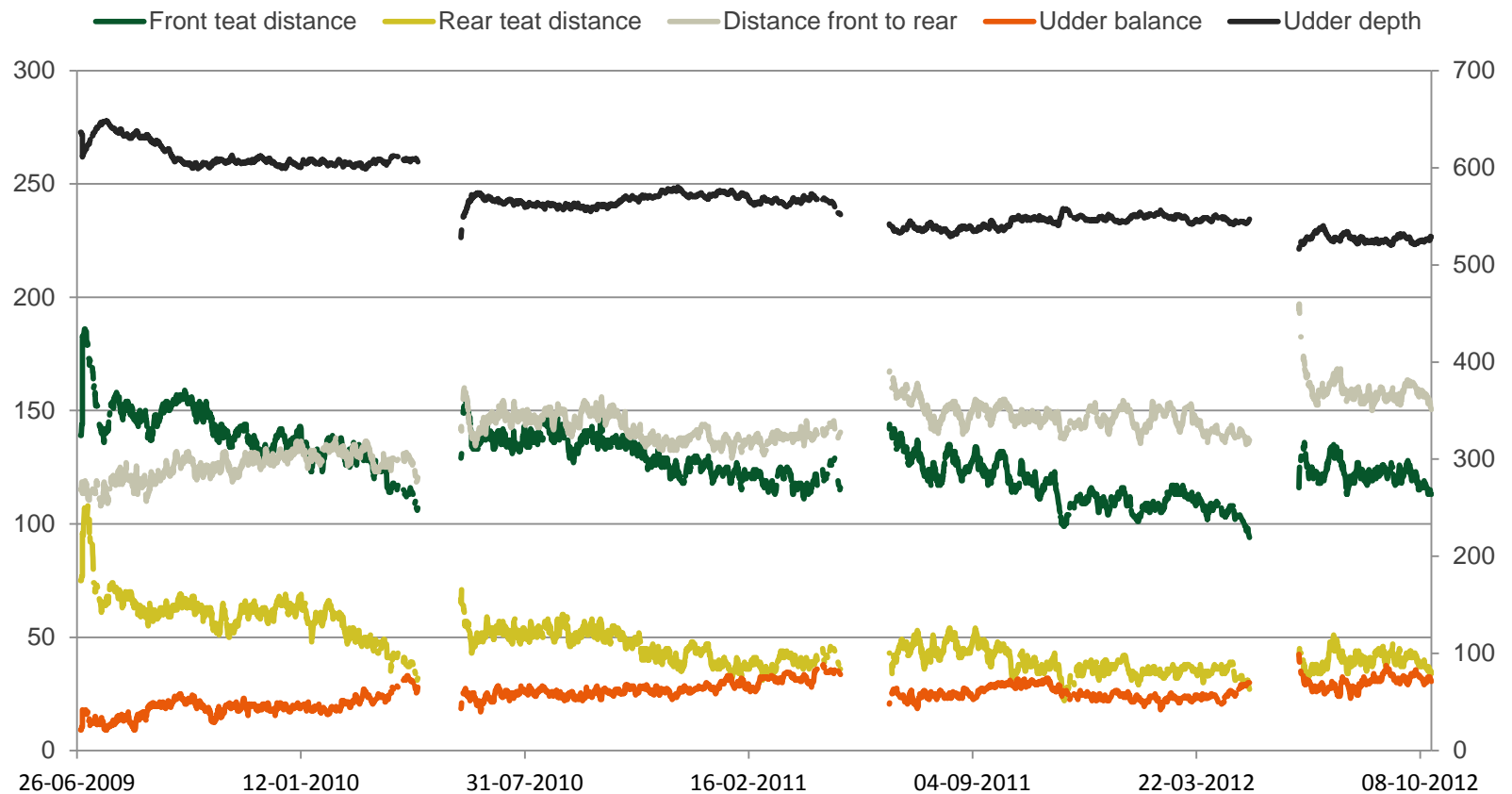
Is udder conformation from AMS and traditional classifications comparable?

- A study on variance components was conducted in spring 2013

- Aim was to investigate to what degree udder conformation based on AMS data is comparable to traditional udder conformation traits

- Study based on Danish data:
    - 2,591 cows with AMS data (avg. of obs. 30-60 DIM)
    - 102,818 classified cows
    - 1,480 having both

Is udder conformation from AMS and traditional classifications comparable?

- The model was chosen to contain similar fixed effects as used in routine evaluation for udder traits:
  - Herd-year-season*
  - Age at calving
  - Month of calving
  - Classifier-2 month period**
  - Distance calving to classification**

*Only Herd-year for AMS data
**not used for AMS data

Heritabilities and genetic correlations

Trait	h^2 (S.E.) - AMS	h^2 (S.E.) – CLA	r_g (S.E.)
Front teat placement	0.46 (0.06)	0.31 (0.01)	0.92 (0.04)
Rear teat placement	0.38 (0.05)	0.32 (0.01)	0.94 (0.04)
Distance, front - rear	0.46 (0.09)	-	-
Udder balance	0.44 (0.07)	0.22 (0.01)	0.90 (0.04)
Udder depth	0.65 (0.06)	0.42 (0.01)	0.94 (0.02)

○ **High heritabilities**

　　○ **AMS> Classifiers assessments**

○ **High genetic correlations**

Conclusion – Udder conformation

- Teat co-ordinates from robots will be included as supplement to traditional classification in the genetic evaluation
  - NAV implementation is planned to start this year
- Earlier registrations from AMS in many cases
- Cheap way to get phenotypic information on important udder traits in later lactation
- More reliable indices for later lactations
- More reliable indices for cows not classified
- Data can be used to set deviation codes in the insemination plan programme

Den Europæiske Union ved Den Europæiske Fond for Udvikling af Landdistrikter og Ministeriet for Fødevarer, Landbrug og Fiskeri har deltaget i finansieringen af projektet.