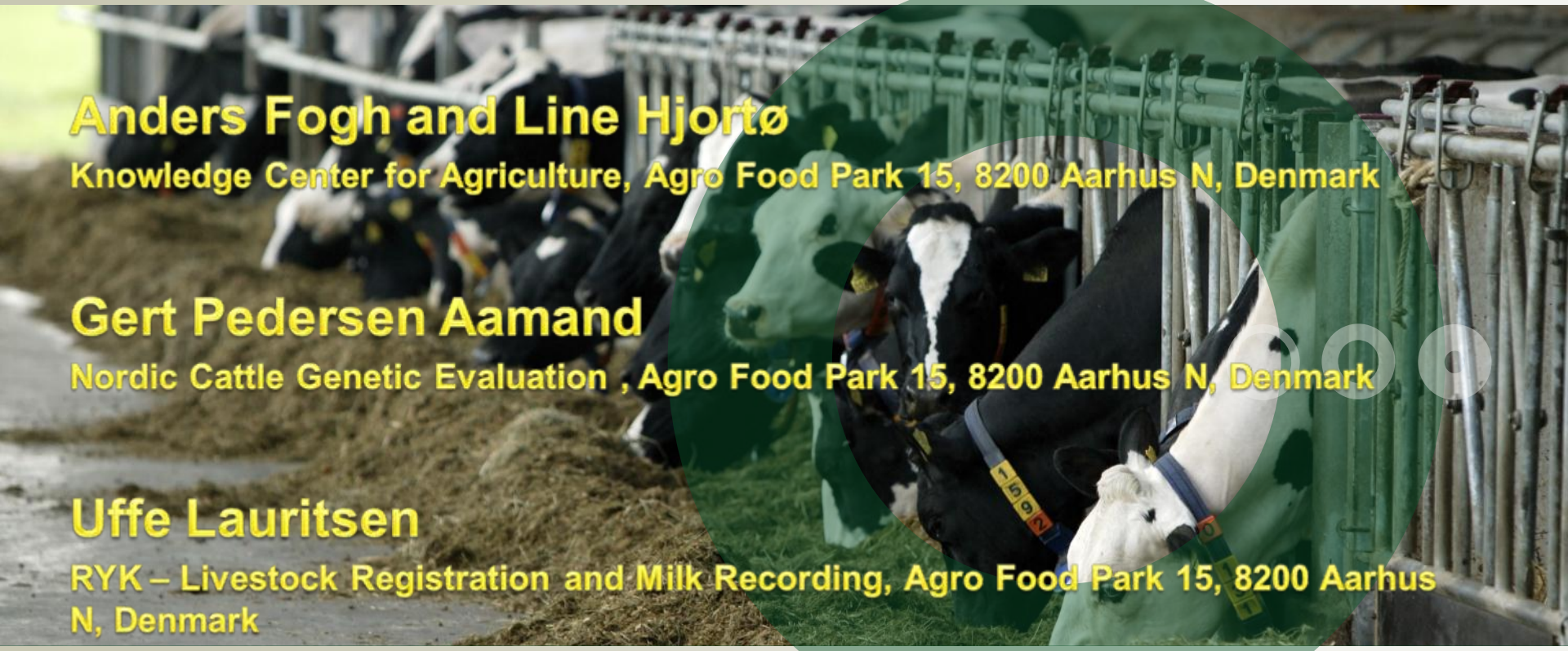
KNOWLEDGE CENTRE FOR AGRICULTURE
Cattle

Recording of data and identification issues
- New recordings and use in genetic evaluation



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Recordings and central collection in Denmark

- Traditional recordings
- New recordings within the last 5 years
- New recordings the next 5 years

Traditional

Milk recording

AI tecnicians

Farmers

Veterinarians

Slaughter houses

Last 5 years

AMS systems

- Lely today (project) and others later
- Yield per quarter, milking time, weight, activity, rumination ect.
- Extraction by milk technicians
- Potentially 26% of all cows

Veterinarians – mandatory

- Recorded weekly or fortnight
- Score of ketone bodies and uterine score and others
- Automatically from vet PC to Central Database
- 40% of all herds (larger herds)

Last 5 years

Hoof trimmers

- Recorded at visit – tablet pc
- Automatically from pc to Central Database
- Disease and severity
- 40% of all cows

TruTest Milk Meters

- Milk amount and milking speed
- Extraction by milk technicians
- 60-70% of all cows

Last 5 years

SNP's

- Tissue sampling
- 54K and 10K
- Automatically from lab to Central Database
- 2,500 cows in 2012 – increasing!

Next 5 years

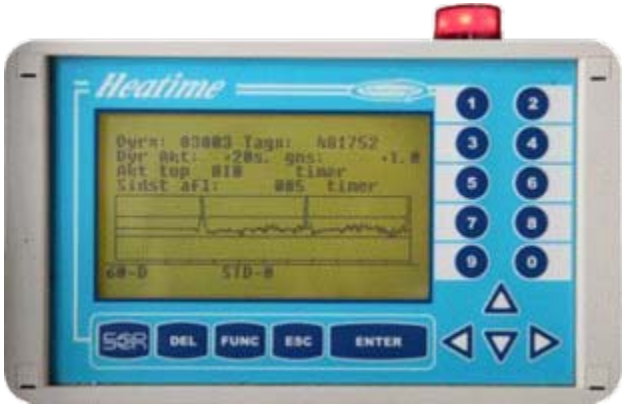
Milk recording - New lab tests

- Pregnancy tests and BHB (beta-hydroxybutyrate)
- Automatically from lab to Central Database
- Starts in 2014

Methane measure

- Methane from expiratory air in AMS systems
- Data transfer to Central Database?
- Test phase

Next 5 years



Activity and rumination

- Over 1,000 stand-alone systems
- New system can transfer data
- No start time

Urine and faecal samples

- Dry matter content, energy efficiency and others in feces
- Urea and others in urine
- 1,000 cows yet

Central Danish Cattle database - the connecting element

Traditional records

- Displayed only on printouts from database
- Transfer is an integrated part of registration

New records

- Some times extracted from ”Management program”
- Transfer is a challenge

New records

- Better management today
- But as a spinoff – better breeding values tomorrow

Data on central database is a good idea!

Farmers with AMS

Add extra value in combination to management!

Data on central database is a good idea!

All farmers

Rest of talk about genetic use of data

More genetic progress used in combination**!**

New registrations can improve estimation of breeding values

- New traits – economic importance
- More recordings – higher reliability
- Correlated traits – higher reliability

More genetic progress – higher productivity

Estimation of breeding values are done jointly in Denmark, Sweden, and Finland

New traits

Claw health:

- Claw diseases are related to large economical loss
- Recording started in 2010 in Denmark – earlier in Sweden and Finland
- Index for claw health in 2011
- Included in Total merit index (NTM) in 2011

New traits

Feed efficiency:

- Higher feed efficiency -> higher productivity – economic important trait
- Direct measure is expensive – only research herds
- Use of indicators might be feasible way to make genetic progress

New traits

Feed efficiency:

- **Possible indicators**
  - **Rumination time**
  - **Methane measure**
  - **Faecal samples - digestibility**
- **Medium to large scale collection**
- **Project in 2013-2016**

More recordings

Milking speed

- **Originally only “Farmer evaluation”**
- **TruTest milk meters**
  - **Flow of fat+protein**
  - **Same trait as “Farmer evaluation”**
  - **Included in genetic evaluation (2011)**

More recordings

Milking speed:

- **Recordings from AMS**
  - **Flow of fat+protein**
  - **Research project**

Genetic parameters for flow

Heritabilities and genetic correlations (S.E.)

	h^2	Rg - Assessments	Rg - Flow, milk meters
Flow, robots[1]	0.63 (0.07)	0.91 (0.05)	0.94 (0.03)
Assessments	0.20 (0.02)	-	0.91 (0.02)
Flow, milk meters[2]	0.41 (0.01)	-	-

[1]Based on 4,000 1st parity Holstein cows – 1,000 with assessment. Only 1st milk recording after calving.

[2] Based 272,000 1st parity Holstein cows – 5,000 with assessment. Only 1st milk recording after calving.

More recordings

All traits:

- **SNP information can be considered as new records on existing traits**
- **Collection started in 2008**
- **No. records from females are increasing with decreasing test prices**
- **Included in routine genetic evaluation in 2011**

Correlated traits or better phenotypes

Udder health and metabolic diseases

Today: veterinarian diagnoses

Not objective measure of disease. Depends on farmers:

- Ability to observe
- Threshold for initiating treatment

Correlated traits or better phenotypes

Udder health and metabolic diseases

Future indicators of disease:

- Milk yield per quarter
- Weight change
- Rumen activity
- BHB/Systematic health recording

Combining registrations - better phenotype of health status/correlated information

Correlated traits

Fertility:

- **Originally, CF, IFL, NoINS**
- **Largely affected by management and farmer skills**
- **Activity is more objective trait**
- **PhD project 2011-2014**

Conclusion

- Many new recordings in the last 5 years - more will follow in the next 5 years
- In relation to breeding
  - Some have been implemented
  - Some are underway
  - Others have to be analyzed
- Better breeding values -> faster genetic progress