On-farm monitoring of milk parameters

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On-farm monitoring – Why?
• Larger herds
• Increasing demands with respect to:
  - animal health and welfare
  - milk quality and consumer safety
• Limitations regarding personnel: Less available time, recruitment
• Higher milk yields

Average Annual Milk Yields of Swedish Cows in the Official Milk-Records

On-farm milk analysis – economical opportunities with respect to:
• Udder health
• Reproduction
• Metabolic disorders
• Feed utilization/nutrition
• Milk quality
• Cow productive lifetime

Sampling/measuring level for on-farm monitoring on milk

DeLaval cell counter DCC

Unique concept
For the first time:
Direct and accurate counting of milk somatic cells on the farm
DCC instrument

- Technology based upon optical measurements
- Counts each cell directly
- Measuring time < 45 seconds
- Measuring performance is factory pre-set

Disposable cassette

- Sampling of milk
- Measuring window (cuvette)
- Reagent
- Mixing channels
- Storage: > 18 months in sealed bag

DCC functional principle

‘Fluorescent microscope’, DCC image

DCC measuring “accuracy”
(DCC vs. Fossomatic)

- SCC range 10 – 2000 cells/μl
- Correlation

Repeatability
- 60 samples x 2 measurements
- 0.99

Recovery
- 6 samples x 5 serial dilutions
- 99.3 ±0.75%
- (93 – 106 %)

Matrix effects
- 5 samples x 6 serial dilutions
- >0.99

(Sarikaya & Bruckmaier, 2004)
DeLaval database kit DCC

- Storage of SCC data
- Possibility to list and print SCC
- Use the data in a professional way via Herd Management Software or other calculation tools
  - Easy way to compare SCC in bulk milk on day to day basis
  - Easy way to compare SCC on cow and quarter level over lactations

DCC usage strategies

- Monitor Bulk Milk Somatic Cell Counts (SCC) regularly (estimate the trend)
- Check SCC of individual quarters at calving (from 3-4 days post partum)
- Check SCC of individual quarters at drying-off
- Check of SCC of individual quarters following treatment
- Check of SCC of individual cows at trading
- Check of quarters of mastitis suspicious cows

Somatic cell counts (SCC) in various milk fractions throughout milking in relation to quarter composite SCC

On-farm, on-line monitoring of milk parameters
On-farm, on-line monitoring of milk parameters – further developments

- Measuring of LDH, BHB, Progesterone and Urea
- Analysis of data by Bio-models
- Alarms and/or Prediction of Risks
- Recommendations for actions; Standard Operation Procedures
- Follow-up

DeLaval Herd Management System

Utilization of advanced IT to enable communication link between dairy farmer and various other bodies for "local and global access" of data
Efficient and profitable milk production in the future will require collective efforts within the dairy community:

- By increased cooperation between milk producers, veterinarians, researchers, extension agents, dairy industry, breeding organizations and machine manufactures
- Locally and globally
- Between partners with professional competences within each respective area
- In particular by small countries