



## On-farm monitoring of milk parameters

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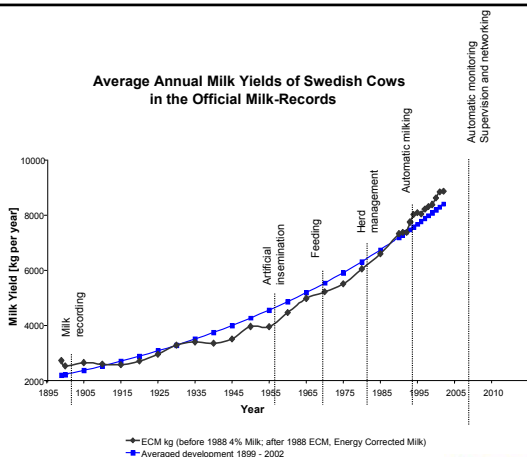


## On-farm monitoring – Why?

- 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

Sampling level	Objectives (Examples)					
	Quality	Safety	Mastitis	Metabolic disorders	Reproduction	Feeding
Bulk Tank	XXX	XXX	(X)	(X)	-	X
Cow Groups	X	X	(X+)	XX	(XX)	XX
Cow	-	-	XX	XXX	XXX	XXX
Quarter	-	-	XXX	-	-	-



## 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



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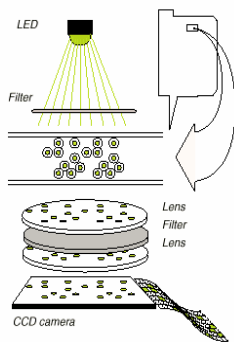
## Disposable cassette

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



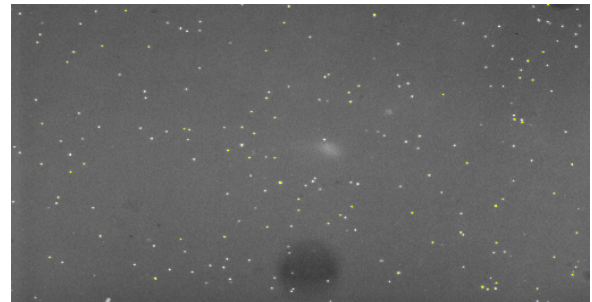
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## DCC functional principle



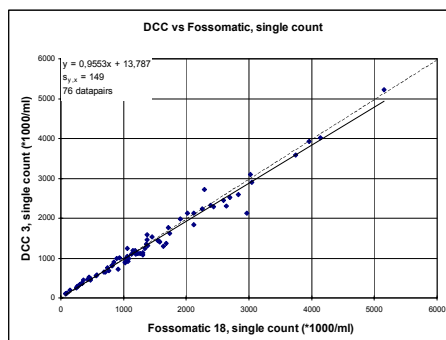
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## 'Fluorescent microscope', DCC image



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## DCC measuring "accuracy" (DCC vs. Fossomatic)



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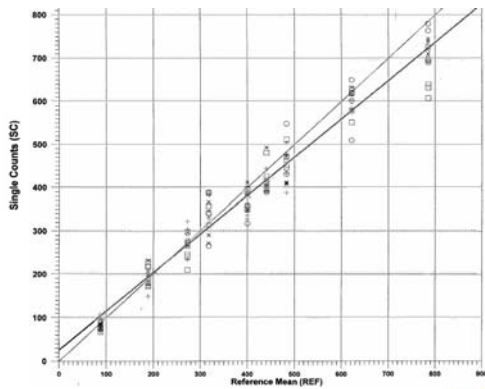
## Repeatability and Recovery

(Sarikaya & Bruckmaier, 2004)

	SCC range 10 – 2000 cells/μl	Correlation
Repeatability	40 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

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### Result from the participation of DCC in recent Ring Test



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### DeLaval database kit DCC



#### 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

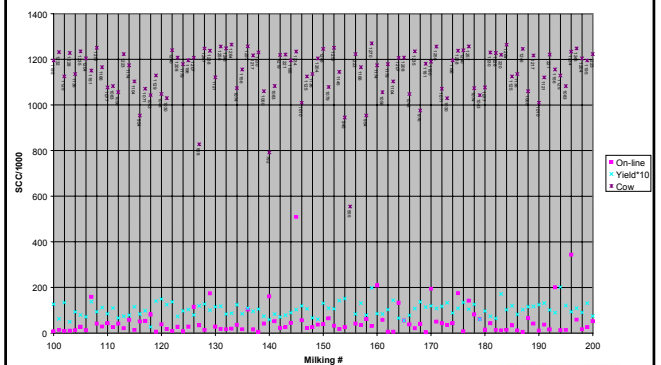
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### DCC usage strategies

- 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

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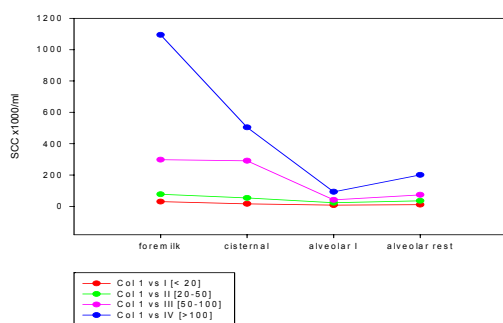
### Example of on-line milk somatic cell counting at 100 consecutive individual cow milkings



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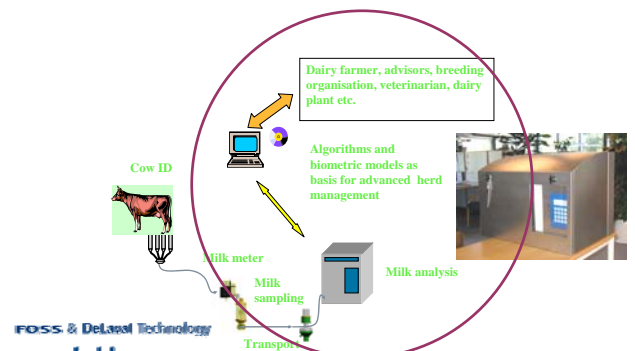
### Somatic cell counts (SCC) in various milk fractions throughout milking in relation to quarter composite SCC

(Sarikaya & Bruckmaier, 2005)



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### On-farm, on-line monitoring of milk parameters



FOSS & DeLaval Technology  
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## On-farm, on-line monitoring of milk parameters – further developments

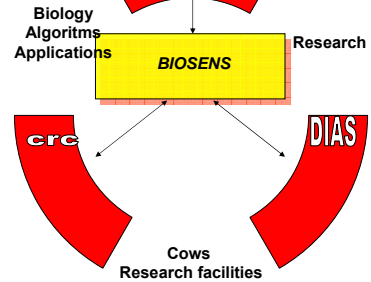
- Measuring of LDH, BHB, Progesterone and Urea
- Analysis of data by Bio-models
- Alarms and/or Prediction of Risks
- *Recommendations for actions; Standard Operation Procedures*
- Follow-up

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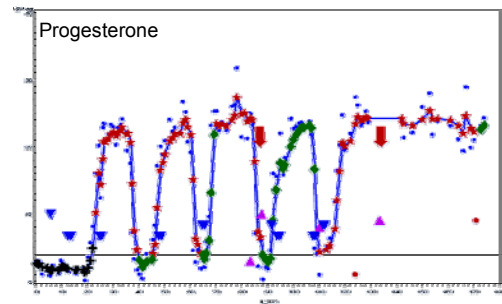
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## On-line monitoring of milk progesterone



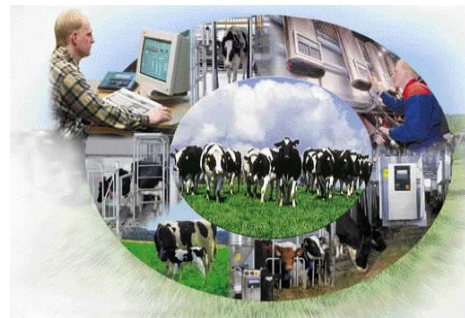
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## DeLaval Herd Management System



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Utilization of advanced IT to enable communication link between dairy farmer and various other bodies for "local and global access" of data



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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**



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