The new CombiFoss™ 7 DC – Differential somatic cell count and other advancements in milk testing

D. Schwarz

Speaker: Andy Carr
THE NEW COMBIFOSS 7 DC – DIFFERENTIAL SOMATIC CELL COUNT AND OTHER ADVANCEMENTS IN MILK TESTING

ICAR 2017 UK CONFERENCE, EDINBURGH, SCOTLAND
14 JUNE 2017

Dr. Daniel Schwarz, FOSS, Denmark
THE NEW FOSS

• New branding launched

• Customer first strategy

• New website: www.fossanalytics.com
DEVELOPMENT OF UDDER HEALTH

SCC

600,000 cells/ml

200,000 cells/ml

1971 2002

Time

e.g. Sampimon et al., 2005
REASONS FOR COWS EXITING DAIRY HERDS

US

- Mastitis: 36.4%
- Reproduction problems: 25.2%
- Locomotion Problems: 15.3%
- Metabolic problems: 5.2%
- Unspecified: 13%
- Other (e.g. low production): 10.3%

CDCB, 2015; vit Annual report 2016
• “We need to provide dairy farmers with more information for improved decision making through DHI testing.”

• Mastitis: Differential Somatic Cell Count (DSCC)
60 YEARS OF INNOVATION

FOSS

7th Generation Milkoscan

- Diamond or CaF2 cuvette
- 600 samples/hour
- Optimized optics and flow system:
  - Increased signal/noise ratio
  - Improved repeatability for minor constituents
7TH GENERATION FOSSOMATIC (DC)

• Modular design
• Improved working factor
• New measuring unit with patented DSCC technology (Damm et al., 2017; Schwarz, 2017)
• Performance range 50-1,500 k cells/ml
DSCC – UPDATE ON PRACTICAL APPLICATION
MASTITIS CASCADE

Proven under practical conditions – infection trial (Wall et al., 2017 in prep.)

Lymphocytes play minor role only
EXAMPLE FOR DSCC DATASET

Normal and (unspecific) mastitis are shown on the scatter plot. The X-axis represents SCC (x 1,000 cells/ml) and the Y-axis represents DSCC (%). The plot shows a distinction between normal and mastitis conditions, with active and inactive inflammatory responses highlighted.
<table>
<thead>
<tr>
<th>Project</th>
<th>Objective</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Denmark</td>
<td>Longitudinal study to develop general guidelines for application of DSCC in practice</td>
<td>In progress</td>
</tr>
<tr>
<td>Germany</td>
<td>Implementation of DSCC in routine DHI analysis – development of application guidelines</td>
<td>In progress</td>
</tr>
<tr>
<td>University</td>
<td>Value of DSCC for selective dry cow therapy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Data analysis</td>
<td></td>
</tr>
<tr>
<td>DHI laboratory, North America</td>
<td>DSCC for enhanced analysis of udder health in fresh lactating cows</td>
<td>Kick-off: May 2017</td>
</tr>
<tr>
<td>DHI laboratory, Europe</td>
<td>DSCC as parameter for improved microbiological testing</td>
<td>Kick-off: September 2017</td>
</tr>
<tr>
<td>DHI laboratory &amp; universities, Europe</td>
<td>DSCC as indicator for prediction of the recovery phase after mastitis</td>
<td>Kick-off: October 2017</td>
</tr>
</tbody>
</table>
More to be done with Mastitis:
The challenge and the potential

Differential Somatic Cell Count with the Fossomatic 7 DC - a novel parameter
By: Dr. Daniel Schwarz, Cattle Disease Specialist, FOSS, Denmark

Differential somatic cell count—A novel method for routine mastitis screening in the frame of Dairy Herd Improvement testing programs
Malin Damm,1 Claus Holm, Mette Blaabjerg, Morten Novak Bro, and Daniel Schwarz1,2
Foss Analytical A/S, Foss Alle 1, 2400 Hillerød, Denmark

J. Dairy Sci. 100:4926–4940
KETOSIS SCREENING

• Simple, practical, rapid, and inexpensive tool

• Evidence of success of ketosis screening in various countries

• Keys to success: QA and communication

De Roos et al., 2007; Schwarz et al., 2015; Santschi et al., 2016; Coburn et al., 2017; Schwarz, 2017
OTHER FTIR APPLICATIONS

• Prerequisite: Standardisation of MilkoScan analyser/spectra using FTIR Equalizer

• Adulteration screening

• Fatty acid profiling

FTIR spectra, milk
JOIN THE NEXT WAVE – COMBIFOSS 7 DC

+ Highly accurate, fast, reliable, repeatable, and robust determination of up to 19 parameters at low cost

€ New services to provide dairy farmers with better information:
  - Mastitis: Various applications based on DSCC currently under validation
  - Ketosis screening: well-accepted and valuable service in many countries

@SchwarzD123 @FOSSAnalytical