Latvian milk recording analysis and Dairy Laboratory Ltd. in the ICAR analytical reference system

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SIA Piensaimnieku laboratorija
(Dairy laboratory, Ltd.)
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History of milk recording in Latvia

✔ First information about milk recording analyses for milk fat content and milk yield we can find in beginning of 20th century

✔ Total protein for milk recording start analysed in 1980, somatic cells count in 1998

✔ In 1997 was founded State Agency Agricultural Data Centre (S/A ADC) and was started digital era of milk recording
Number of herds and cows under milk recording and statistical

<table>
<thead>
<tr>
<th>Year</th>
<th>Number of Herds, Statistical</th>
<th>Number of Herds Under Milk Recording</th>
<th>Number of Cows, Th Statistical</th>
<th>Number of Cows, Th Under Milk Recording</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>61239</td>
<td>185.2</td>
<td>12102</td>
<td>1204</td>
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<tr>
<td>2005</td>
<td>59594</td>
<td>185.1</td>
<td>11785</td>
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<td>2006</td>
<td>44373</td>
<td>180.8</td>
<td>10951</td>
<td>10951</td>
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<tr>
<td>2007</td>
<td>45313</td>
<td>177.9</td>
<td>10248</td>
<td>10248</td>
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<td>2008</td>
<td>39851</td>
<td>174.6</td>
<td>9146</td>
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<td>2009</td>
<td>35739</td>
<td>170.4</td>
<td>802</td>
<td>802</td>
</tr>
</tbody>
</table>

Source: S/A ADC, 2010
Milk yield under milk recording and statistical

Milk yield under milk recording, kg

Milk yield by statistics, kg

Source: S/A ADC, 2010
Latvian milk recording analysis

✓ Milk recording system in Latvia is voluntary
✓ In National regulation are defined requirements for:
  • milk testing laboratory
  • milk sampling
  • milk analysing
  • analysing result recording
Breeding work rule

✓ The herd owners in whose herd’s milk monitoring is being carried out shall receive control forms and reporting lists

✓ All the cows and heifers of the herd, which are older than 24 months, must be indicated in the control forms

✓ Taking milk samples for analysis, controller or the herd owner fills in the control list and sends it together with the milk samples to the Laboratory for processing
Milk testing laboratory

✓ Quality Assurance System according to standard LVS EN ISO/IEC 17025:2005

Accredited at:

✓ Latvian National Accreditation Bureau (LATAK), Member of European Co-operation of Accreditation
Milk laboratory provide

- Milk samples containers with samples vials volume up to 45 ml
- Accompanying document for samples
- Milk samples preservative (BSM II)
- Transportation of samples
Results recording

✓ Samples testing results send to central data base in Agricultural Data Centre

✓ From data base farmers and breeding specialists take all milk recording information and analyses results
National reference laboratory

The reference laboratory perform following tasks:

- co-ordinating of activities of the laboratories whose task is to conduct analyses to check the chemical and bacteriological standards
- supervision and control of laboratories involved in raw milk control
- preparation of calibration samples using reference methods, twice per month (fat, protein, dry matter, somatic cells count)
- preparation and implementation of proficiency tests four times per year
In Latvia are 6 accredited raw milk routine laboratories:

- Tree of them are Milk factory laboratories, they work only for payment testing
- Two laboratories are DHI (Dairy Herd Improvement) laboratories in the Breeding and Artificial Insemination Station
- One is independent laboratory - Dairy laboratory Ltd. It works to both systems - payment and DHI testing
Dairy Laboratory Ltd. place in milk recording system

- Government
- ICAR
- Food and Veterinary service
- National reference laboratory
- Accreditation bureau - LATAK
- Agricultural Data Centre

SIA Piensaimnieku laboratorija (Dairy Laboratory Ltd.)

Farmers and Dairies
Owners of Dairy Laboratory

- Breeding organizations: 33%
- Farmers organizations: 33%
- Dairies organization: 34%
Organization structure of Laboratory

- Board (5)
- Administration (2)
- Head of laboratory and quality system (1)
- Technical manager, chemist (1)
- Microbiologist (1)
- Instrumental equipment operators (2)
- Data operators (2)
- Samples collection (2)
Testing samples quantity, th
Education of Laboratory personal

✓ Staff of Laboratory every time renew skills and competence in testing field:
  • Participation in specialised course for staff
  • Study in High school
  • Technical tours in other testing laboratories (The Netherlands, Germany, Cyprus, Estonia, Lithuania)
Reference materials (RM)

✓ For equipment calibration in laboratory are used RM from different producers:
  • Latvia
  • France
  • Germany
  • Denmark
  • Italy
  • USA
International Proficiency Testing (PT)

✓ Laboratory regular take part in several PT schemes in Latvia and in Europe countries for each parameter at least one time per year
  - Latvia – 4 times per year
  - Germany – 5 times per year
  - France, Italy, England – 1 times per year
Testing scope

 ✓ Milk compounds
   • Fat content
   • Protein content
   • Lactose content
   • Casein content
   • Urea content
   • Total solids
**Testing scope**

- Milk quality
  - Somatic cells count
  - Total bacteria count
  - pH
- Milk falsification
  - Inhibitor
  - Freezing point
One sample 35-40ml
A lot of results

- Total bacteria count
- Inhibitor test
- Fat and Protein content
- Somatic Cells count
- Freezing point
- Urea content
- Casein content
- Lactose content
- pH
## Testing methods

CombiFoss FC - MilkoScan FT 6000, Fossomatic FC

<table>
<thead>
<tr>
<th>Methods</th>
<th>Quality parameter</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 9622:1999</td>
<td>Fat, Protein and Lactose content</td>
</tr>
<tr>
<td>LVS EN ISO 13366-2:2007</td>
<td>Somatic cells count</td>
</tr>
<tr>
<td>Validated methods</td>
<td>Urea, Casein and Total solids content</td>
</tr>
<tr>
<td></td>
<td>Freezing point</td>
</tr>
<tr>
<td></td>
<td>pH testing</td>
</tr>
</tbody>
</table>
## Testing methods

<table>
<thead>
<tr>
<th>Methods</th>
<th>Quality parameter</th>
<th>Equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>LVS EN ISO 4833:2003, MET 001 - Validated</td>
<td>Total bacteria count</td>
<td>Plate count technique, BactoScan FC</td>
</tr>
<tr>
<td>ISO 5764/IDF 108:2009</td>
<td>Freezing point</td>
<td>Multisample Cryscope 4C3</td>
</tr>
<tr>
<td>LVS 174:1999</td>
<td>Inhibitor test</td>
<td>“Delvotest SP”, Accelerator</td>
</tr>
</tbody>
</table>
Customers education

✓ Milk recording system
✓ Milk sampling for milk recording
✓ Milk sampling for payment analyzing
✓ Consulting about calibration of equipment
Relationship

- Ministry of Agriculture
- Agricultural Data Centre
- Food and veterinary department
- Latvian University of Agriculture
- International Dairy Federation (National secretary)
- ICAR
Dairy laboratory represents:

- Quality
- Speed
- Customer service

Thank you!