Introduction

The ICAR Lactation Working Group completed a survey in 2000 among ICAR member countries (Miglior et al., 2000) to assess daily yield and lactation calculation methods worldwide.

- New guidelines on calculation of daily yield, when data collected with flexible recording or automated milking systems (AMS)
- Research projects carried out by lactation WG members: updated existing guidelines on milk recording, developed new guidelines for lactation calculation methods, alternate milk recording and milk recording in AMS herds.
- Missing in the 2000 survey was information on milk recording in farms with electronic milk meters (EMM).

New Survey

- Electronic milk meters (EMM) more widely used than AMS.
- No guidelines for milk recording in farms with EMM, especially for data updated directly from farm computers to DHI.
- A new survey was prepared in order to obtain relevant information from ICAR members on milk recording with EMM.
- Questions were also included on labeling and milk recording strategies, as requested by the ICAR Executive Board.
- Survey distributed in January 2006 to 44 ICAR member organizations from 39 countries.
- Thirty-six organizations from 30 countries replied, for a response rate of 82%.

Distribution of ICAR members by presence of EMM* in client farms

Survey results

Electronic milk meters (EMM)

- Many farmers now have EMM, which record milk weights for every animal, every day, every milking.
- Meters are linked to a PC which stores and processes data.
- Processed data is then available to producers in real time to make appropriate management decisions.
- Stored data can also be transferred electronically to DHI for further processing in order to provide data back to the farmer input data for genetic evaluation units.
- Easier now to access more milk weight data than was available previously with traditional milk recording 8 to 10 times per year.
**Distribution of ICAR members by presence of EMM* in client farms**

- **Less than 10% EMM**: 8%
- **10-19% EMM**: 11%
- **20-29% EMM**: 17%
- **30-39% EMM**: 11%
- **More than 40% EMM**: 11%
- **Denmark**: 30%
- **Great Britain**: 15%
- **The Netherlands**: 11%
- **Australia**: 11%
- **Canada**: 11%
- **France**: 8%
- **Germany**: 17%
- **Italy**: 17%
- **New Zealand**: 11%
- **United States**: 8%

*Electronic milk meters

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**Other survey results**

**Electronic milk meters**

- Close to 42% of countries upload data directly from some or all the farms with EMM to DHI data processing centers.
- Answers from two questions regarding percentage of farms with EMM and direct uploading of data were cross-referenced.
- No clear pattern indicating that countries with high percentage of EMM farms tended also to upload data directly to DHI.
- In EMM farms, most organizations (78%) used the last 24 hour milk weight at test day.
  - The remaining countries (22%) use multiple-day averages of various lengths from 2 to 14 previous days.

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**Distribution of ICAR members by presence of AMS* in client farms**

- **Less than 1% AMS**: 36%
- **1% AMS**: 8%
- **2-5% AMS**: 3%
- **More than 5% AMS**: 3%
- **No AMS**: 42%

*Automatic milking systems

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**Other survey results**

**Automatic milking systems**

- Most organizations that have AMS farms (70%) calculate 24 hour milk yield, using all milkings in the last 24 hours.
- Remaining organizations (30%) use multiple-day averages of various lengths from 2 to 7 previous days.
- 61% of organizations use a 24-hour sampling period, and the remaining 39% use varying sampling periods (12 to 24 hours).
- For the calculation of fat and protein percentages:
  - Most countries (70%) use all available samples per cow within the sampling period.
  - The remaining organizations (30%) use only one sample per cow.

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**Survey results**

**Labeling and milk recording strategies**

- All countries except Canada and US use ICAR standard labeling for various types of milk recording.
- A, B and C represent supervised, unsupervised, and combination of supervised and unsupervised tests, respectively.
- 2, 4, 6, or 8 represent the number of weeks between tests.
- T is an additional label for alternate testing between morning and evening milkings (am/pm recording).

- France and Germany use additional labels due to increased flexibility of milk recordings offered to their customers.
- France is adopting a new labeling system called CZ.
  - milk weights are on both milkings (1 by the technician, the other by the farmer).
  - samples on 1 milking on an alternate basis (by the technician).
- Germany uses an extensive labeling system in addition to ICAR labels already in place (see report).
### Labeling in Germany

<table>
<thead>
<tr>
<th>Survey results</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robotic milking</td>
<td>1, 2, 3 or 4 milkings per day</td>
</tr>
<tr>
<td>Milking frequency</td>
<td>Every 1, 2, …, 9 weeks</td>
</tr>
<tr>
<td>Daily</td>
<td>Daily, every 1-9 weeks</td>
</tr>
<tr>
<td>Milk test intervals</td>
<td>As above using 1 milking and sample collected from the same milking with adjustment for milking time</td>
</tr>
<tr>
<td></td>
<td>As above using 1 milking and sample collected from alternating milking</td>
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<tr>
<td></td>
<td>As above using all milkings and sample collected with equal amount of milk from each milking</td>
</tr>
<tr>
<td></td>
<td>Daily*, using all milkings and sample collected in proportion of milk yield from milkings</td>
</tr>
<tr>
<td></td>
<td>Using 1 milking collected on using 1 milking and sample collected test day, no alternating from the same milking with adjustment for milking time</td>
</tr>
<tr>
<td></td>
<td>Using 1 milking collected on using 1 milking and sample collected test day, but alternating from alternating milking</td>
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<tr>
<td></td>
<td>As above using 1 milking and sample collected from the same milking with adjustment for milking time</td>
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<td>As above using 1 milking and sample collected from alternating milking</td>
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<td></td>
<td>As above using all milkings and sample collected with equal amount of milk from each milking</td>
</tr>
<tr>
<td></td>
<td>Use all milkings collected using all milkings and sample collected on test day in proportion of milk yield from milkings</td>
</tr>
</tbody>
</table>

### Survey results

#### Discussion

- An increasing number of farmers have invested in computerized electronic milking systems
  - record milk weights for every animal, every day, every milking
- In-line analysis technology may also be available soon at the farm level
  - information on fat, protein, SCC, lactose and MUN may be available on a daily basis for each cow in the herd
- DHI organizations may struggle to keep farms with such facilities as their members

- Day to day variation of milk weights exists for each cow
  - Many farmers believe that data stored in their computers (multiple day averages) more accurate than 24-hour weights collected monthly by DHI
  - DHI need to increase efficiency in their service
    - Must be capable of offering value added service when data is processed and sent back to farmers, in order to help them in the daily management of their herds

- Farmers with EMM will be critical of any level of redundancy in data recording
  - may wonder why data, which is already on their computer, needs to be entered again by DHI personnel
  - They may challenge the requirement to pay for DHI services when the data already sits in their farm PC
  - Some large farms may consider discontinuing DHI services once they have installed EMM
    - EMM percentage outside of DHI may be large
  - Several organizations already tackling this challenge
    - uploading automatically data from farms to their central systems

- Most DHI organizations worldwide have not adapted to the changing needs of farmers
  - Too many countries are still offering the standard 4-6 weeks, supervised milk recording
  - Generally, those countries still receive public funding
    - They are not preparing for when the full cost may fall on the shoulders of the dairy industry and producers
Survey results
Milk recording strategies

- There may also be a perception that any type of flexible milk recordings brings inaccuracy to collected data.
- The success of the dairy industry in those countries that have fully embraced flexible milk recordings should serve to confirm that flexibility:
  - primarily benefits the heterogeneous pool of farmers
  - ultimately maintains or increases the membership base to DHI programs.

Conclusions

- More and more farms invest in EMM or AMS facilities
  - Storage and automatic transmission of accurate data to DHI
- Many countries still do not offer convenience and flexibility of am/pm or unsupervised milk recording
  - Limiting the range of services (and prices) offered to DHI clients
- Each DHI organization should consider potential future benefits of increasing the flexibility of their milk recording services
  - such as reductions in public funding
  - use of in-line analysis at the farm level
- These challenges will create a potential decrease in the DHI membership base.

Acknowledgements

- 36 organizations from 30 countries that took the time to answer the survey (and follow-up questions)

New Technologies
Afternoon 13:00-15:30

- Three invited speakers
  - T. Asmussen, Denmark (On-farm milk analysis)
  - J. Clay, USA (New Technologies at DHI)
  - D. Abernethy, Australia (New herd management tools)
  - Open session
    - H. Soyeurt, Belgium (Fatty acids in milk samples)
    - E. Van’t Land, The Netherlands (Web technologies)
    - P. Bredbacka, Finland (Mastitis DNA diagnostics)