Practical Methodological Aspects of Milk Recording and Management in South America

("South American Project" of Dairy Cattle Milk Recording Working Group)

General overview of the project and available data

Countries that completed the questionnaire:

**Argentina, ACHA** (Asociación Criadores de Holando Argentino)

**Brazil, APCBRH** (Associação Paranaense de Criadores de Bovinos da Raça Holandesa)

**Chile, Cooprinsem**

**Colombia, Asosimental - Simbrah**

**Uruguay, MU** (Instituto Nacional para el Control y Mejoramiento Lechero)
### General overview of the project and available data

**Countries that completed the questionnaire:**

<table>
<thead>
<tr>
<th>Country</th>
<th>Organization</th>
<th>Dairy Cows Country</th>
<th>Recorded Country</th>
<th>% cows recorded</th>
<th># MRO</th>
<th># Labs</th>
<th>Covered by this MRO</th>
<th>National coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>ACHA</td>
<td>1,800,000</td>
<td>454,132</td>
<td>25%</td>
<td>79</td>
<td>5</td>
<td>454,132</td>
<td>Yes</td>
</tr>
<tr>
<td>Brazil</td>
<td>APCBRH</td>
<td>22,914,000*</td>
<td>67.579</td>
<td>0.3%</td>
<td>8</td>
<td>10 of.</td>
<td>35,000</td>
<td>No</td>
</tr>
<tr>
<td>Chile</td>
<td>Cooprinsem</td>
<td>400,000</td>
<td>200,000</td>
<td>50%</td>
<td>9</td>
<td>7</td>
<td>175,000</td>
<td>Yes</td>
</tr>
<tr>
<td>Colombia</td>
<td>Assosimental</td>
<td>3,396,000*</td>
<td>52,000</td>
<td>2%</td>
<td>9</td>
<td>3</td>
<td>1,240</td>
<td>No</td>
</tr>
<tr>
<td>Uruguay</td>
<td>MU</td>
<td>425,000</td>
<td>102,000</td>
<td>24%</td>
<td>1</td>
<td>3</td>
<td>102,000</td>
<td>Yes</td>
</tr>
</tbody>
</table>

* IFCN Dairy Report 2014
Data Capture

Which tools do you use to capture data on farm in milk recording and what is the most common data capture tool
Identification

Which kind of sample identification is used?

- Stand position
- Manual marking (ID written on vial)
- Bar code
- RFID
Technicians

Your sample technicians are:

- Employees of milk recording organisation(s)
- Outsourced (sample technicians from external commercial organisation or individual persons not employed by...)
- Farmers in method B or C
Technicians

Are they trained regularly?

- Yes, several times a year
- Yes, once a year
- Yes, less frequent than once a year
- No
Technicians

Is there a required level of education for the technicians?

<table>
<thead>
<tr>
<th>Education Level</th>
<th>#MRO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary school</td>
<td>1</td>
</tr>
<tr>
<td>Secondary school</td>
<td>2</td>
</tr>
<tr>
<td>Agricultural school</td>
<td>2</td>
</tr>
<tr>
<td>Agricultural college</td>
<td></td>
</tr>
<tr>
<td>University (Bc., Master degree, etc.)</td>
<td></td>
</tr>
<tr>
<td>No requirements</td>
<td></td>
</tr>
</tbody>
</table>
Milk Analysis

How do you conduct milk-recording analysis?

- Fat
- Protein
- Somatic cell count
- Urea
- Lactose
- Total Solids
- Pregnancy
- Bacterias (Bactoscan)
- Bull tank culture
- Diseases (Elisa)

#MRO

- With the Fee
- Additional Charge
Milk Analysis

What kind of additional analysis do you offer or plan to offer?

- Pregnancy
- Bacteria check (Udder quarter)
- Illness or disease control (Johne's...)
- Ketones (BHB, acetone)
- Casein fractions
- Free fatty acids
- Unsaturated fatty acids
- Infrared spectra (saved for present...)

#MRO

Routine (it is implemented)  Plan for the future
Milk Sampling

How are the samples transported?

- By mail or courier
- By lorry/van with refrigerator
- Directly transported to the lab
- Transported along collection points

#MRO
Milk Sampling

Who is responsible of transport samples?

- Technician
- Dairy companies
- Farmer
- Farmer in method B
Milk Sampling

What temperature is used when transporting samples?

- We do not have any defined requirements
- We use isolated boxes for transport (no temperature defined)
- We have specific temperature requirements
Milk Recording

Milk recording methods (% of herds)

- MRO 1: 100%
- MRO 2: 99%
- MRO 3: 98%
- MRO 4: 70%, 20%, 10%
- MRO 5: 100%

Legend:
- A (technician)
- B (farmer)
- C (combination of A and B)
Milk Recording

Sampling schemes (% of herds)

- MRO 1: 100%
- MRO 2: 98%
- MRO 3: 40% (Equal measure sampling (E)), 60% (Alternated one-milking recording (T))
- MRO 4: 100%

Equal measure sampling (E)  Alternated one-milking recording (T)
Milk Recording

Recording intervals in weeks (% of herds)

- MRO 1: 100% (4 weeks)
- MRO 2: 86% (4 weeks), 14% (6 weeks)
- MRO 3: 100% (4 weeks)
- MRO 4: 85% (4 weeks), 15% (6 weeks)
- MRO 5: 100% (4 weeks)
Milk Recording

Which methods are used to calculate accumulated yield / lactation?

<table>
<thead>
<tr>
<th>Method</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Test interval method (TIM) (Sargent, 1968)</td>
<td></td>
</tr>
<tr>
<td>Interpolation using Standard Lactation Curves (ISLC) (Wilmink, 1987)</td>
<td></td>
</tr>
<tr>
<td>Multiple-Traits Procedure (MTP) (Schaffer and Jamrozik, 1996)</td>
<td></td>
</tr>
<tr>
<td>Best prediction (VanRaden, 1997)</td>
<td></td>
</tr>
<tr>
<td>TIM modified (first interval factor)</td>
<td></td>
</tr>
</tbody>
</table>
Milk Recording Organisation

Is milk recording the most important business for these organisations?

Yes (for the 79 MR Entities reporting to ACHA)

No
Milk Recording Organisation

How many employees are there in your organisation working in milk recording?

![Bar Chart]

- Less 50
- 51-200
- 201-1000
- More than 1000

#MRO
Milk Recording Organisation

Is there any public ownership (government) of your organisation?

Yes, government
Yes, another public body
No

#MRO
Milk Recording Service

How were milk recording services paid for in 2015?

( Fees for farmers / Payments from AI-business
  from breeding organizations / from Dairy industry
  Public Source / Government )

<table>
<thead>
<tr>
<th>MRO 1</th>
<th>MRO 2</th>
<th>MRO 3</th>
<th>MRO 4</th>
<th>MRO 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>100%</td>
<td>90%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

- Fees from farmers
- Government
Milk Recording Service

Does the farmer receive any public refunding for his recording fee?

![Bar chart]

- No
- Quality assurance payments
- Better price for milk
- Better price for beef
- AI refunding (e.g. lower price for...)
- AI refunding for testing sires
- Refunding for data providing to...
Milk Recording Service

Options included in the minimum payment for recording

- Supervision
- Data processing
- Travel costs for technicians
- Sample transport
- Reports/outcomes for farmers
- Web service for farmers
- Apps for mobile devices
- Milk-recording by technician

#MRO
Milk Recording Service

Options included in the minimum payment for recording (cont.)

- Basic milk analysis
- Data capture by technician
- Recording and sampling equipment
- Advisory services
- Interpretation of reports with the...
- Animal identification system
- Animal identification equipment
- Grade Registration

#MRO
Milk Recording Service

Additional payment options provided by your organisation

- Additional milk analysis
- Advisory services
- Animal identification system
- Animal identification equipment
- Lamness report
- Pregnancy test and control diseases
Milk Recording Service

Do you receive direct subsidies or financial support for any part of the recording process?

No, all services are paid for by the customer.

Yes, some services receive financial support from government or public funds.

Yes, there is some support from the industry.
Milk Recording Service

In which field do you offer advisory services?

- Feeding
- Herd management
- Health traits
- Technical milking parlours, meters
- Fertility and pregnancy check

#MRO
Milk Recording Service

What is your future milk recording strategy?

- Use of milk analysis spectra
- Employ cutting-edge technology
- Fertility, feeding and health management
- New online services
- New traits
- New summaries
- New Benchmarks
- Cost-cutting
- Higher level of automatisation in laboratories
- Electronic reporting
- New business areas (including outside milk...)
- Advisory services
- Quality assurance system for the food chain
- Expand abroad MR services in neighbord...
Milk Recording Service

Financial matters
Are there any special tax incentives for farmers?

#MRO

Yes

No
Milk Recording Service

If your sources of financing were to decrease, how would it be resolved?

#MRO

<table>
<thead>
<tr>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Consolidation</td>
<td>Merger or take-over</td>
<td>Reduce the number of local branches</td>
<td>Rapidly cut staff</td>
<td>Rapidly close less profitable services</td>
<td>Redesign pricing policy</td>
</tr>
</tbody>
</table>
Milk Recording Service

Which type of cost-cutting option would you prefer?

- Increase farmer involvement (Method C or B)
- Encourage longer recording intervals
- Encourage longer sampling intervals
- In-line sensors
- Automatic or remote data capture
- Cooperation in data processing
- Outsourcing
- Reduce overhead costs
- Technician routes, travel optimisation
## Milk Recording Service

In which areas have you introduced new services within the last 6 years?

<table>
<thead>
<tr>
<th>Service</th>
<th>#MRO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Herd management</td>
<td>3</td>
</tr>
<tr>
<td>Feeding</td>
<td>2</td>
</tr>
<tr>
<td>Animal welfare</td>
<td>1</td>
</tr>
<tr>
<td>Quality assurance</td>
<td>1</td>
</tr>
<tr>
<td>Genomic selection</td>
<td>4</td>
</tr>
<tr>
<td>Health traits: new indicators</td>
<td>1</td>
</tr>
<tr>
<td>Milk quality</td>
<td>3</td>
</tr>
<tr>
<td>Computerisation, software, data transfer</td>
<td>4</td>
</tr>
<tr>
<td>New traits, services, new data</td>
<td>2</td>
</tr>
</tbody>
</table>
Milk Recording Service

Have you observed a change of interest in milk recording?

- Increase
- Decrease
- No
Milk Recording Service

Do you offer your services to farmers in foreign countries?

Yes

No

#MRO
Milk Recording Service

Do any foreign milk recording organisations offer services to farmers in your area?

Yes

No

#MRO

0  1  2  3  4  5
Milk Recording Service

Are you planning to expand abroad and/or form alliances with foreign companies in the future?

#MRO

<table>
<thead>
<tr>
<th></th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td></td>
<td></td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Milk Recording Organisation

SWOT analysis for milk recording

INTERNAL FACTORS - STRENGTHS
- Equipment, structure, lab. ISO 17.025
- It is an umbrella organization where the head (ACHA), through the MR Entities covers the whole country
- High reliability
- Longstanding experience, modern
- Knowledge in milk recording

INTERNAL FACTORS - WEAKNESSES
- The system is very much depending on milk price and entirely paid by farmers
- Too many technicians, big coverage
- Low supervision
- We depend of government support each year, we need to improve a payment scheme for the farmer to the future

EXTERNAL FACTORS - OPPORTUNITIES
- Raise of herd in milk recording
- We still can technify much more
- Small farmer subsidies,
- To offer services abroad
- Pregnancy or diseases diagnostics
- Independent laboratory analysis

EXTERNAL FACTORS - THREATS
- Trying to get the government involved
- New competitors
- Milk price
- New SCC laboratories
- Government will can’t support the program to the future
Summary

Financial support

• Neither AI companies, dairy plants nor breeder association provide financial support to farmers in Milk Recording Services.
• In one country the government supports payment of the service. A second country provides partial financial support.
• There is no tax incentives for farmer with milk recording.
Summary

Technicians

• Only 2 MRO ask for Agriculture studies
• In all of MRO, technician are evaluated regularly
• Some MRO hires technicians and others MRO have outsourced.
• All MRO in the survey have a type of certification for technicians
• They haven’t training more often than once a year
Summary

Milk Recording Methodologies

• Laptop and paper are most common way to record information.
• Milk samples with Barcode are most common.
• All MRO use method A (75% to 100%). Two of them use method B and two use method C.
• The milk sampling method are Equal measure (E) of two or three milkings in a vial and Alternated one milking recording (T).
• The interval between recording is 4 weeks in all MRO. One of them offers 6 weeks and another offers 8 weeks interval.
• The majority of them use TIM or TIM modified to calculate accumulated yield.
Summary
Milk Analysis

- The majority of MRO (4 of 5) have %Fat and %Protein as a routine analysis. Only 3 MRO have SCC included in fee.
- Urea is analyzed in 1 MRO as routine and 3 MRO with additional charge.
- Pregnancy test is offered in 2 MRO and 2 are planning for the future.
- Only 2 MRO have their own milk analysis laboratory.
Summary

Milk Recording Strategy

• MRO want to offer new services
• Afford financial problem thru redesign pricing policy and reduce cost, optimizing routes and travels of technician.
• There are implementing Genomic Selection.
• In last years they are working in Computerization, software and automatic data transfer.
• 3 MRO observed an increase of interest for the service in their countries.
• For the future they are thinking in add New Online Services. Also benchmarking; improving the services for fertility, feeding and health management.
Conclusions

Indicators

• The share of dairy cows with milk recording services is an indicator of introductions of this tool in each country.

• The quantity of traits analyzed in the milk samples included in the fee, could show how well established is a MRO (Fat, protein, SCC, urea).

• Additional services as pregnancy, feeding and health management (lameness) would give a good vision of development of the milk recording program.
Thank you for your attention...