Overview of milking schemes evolution due to technological and economical changes over the last 30 years in France

X. Bourrigan, H. Leclerc, S. Mattalia, L. Journaux, C. Lecomte
Introduction:

2000-2015: Changes in dairy farms in France (1/2)

- # cows: -7%
- # herds: -36% (76,000 → 45,000)
- Much less small farms and much more « big » farms

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# herds according to their size (# cows)

- 2000: 44% of cows → 13% in 2015
- 2000: 8% of cows → 33% in 2015
Introduction:

2000-2015: Changes in dairy farms in France (2/2)

Increasing use of Automatic Milking Systems or Milking parlours milk meters

![Graph showing the number of AMS robots and Milking parlours milk meters in France between 2000 and 2015. The graph depicts a clear trend of increased usage over time.]
Needs for adaptation:
Changes implemented in France (1/2)

How to better use new equipments?

- Robots → AR, BR (2005)

### CZ method
- **Recording operator:** C MRO and Farmer
- **Nb of milkings / day:** 2 milkings/day
- **Recording performance:** 
  - Milk yield recorded on 2 milkings
  - Contents recorded on 1 alternate milking

<table>
<thead>
<tr>
<th>Recording n</th>
<th>Recording n+ 1</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Evening milking:</strong></td>
<td><strong>Evening milking:</strong></td>
</tr>
<tr>
<td>Farmer</td>
<td>Technician</td>
</tr>
<tr>
<td>milk yield</td>
<td>milk yield + contents</td>
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</tbody>
</table>
Needs for adaptation:
Changes implemented in France (2/2)

How to reduce costs?

- With conventional equipements
  - Less records per lactation → A8, A9 (2010, 2016)
  - Record by the breeder instead of a technician → B (2005)

- With robots
  - Less samples: each milking within 12 to 24 hours (2005) → 2 samples within 12 to 24 hours (2012)

How to provide more reliable information with new schemes?

- With AT schemes
  - Liu’s approach (2011)

- With CZ schemes
  - Improvement of Liu’s approach by using Milk Yield of previous milking as covariate

\[ y_{A4}^{ijkl} = b_0^{ijkl} + b_1^{ijkl} y_{AT-am}^{ijkl} + b_2^{ijkl} \text{Milk}_{pm}^{ijkl} \]
Needs for changes... but still needs for quality!

Before any change, verify /reference (A4)

Daily yields and contents:
- Unbiased
- Accurate

Necessary for genetic evaluation and herd management

All changes were based on ICAR’s recommendations or they were presented during ICAR’s meetings...

However some of them are still not included in ICAR’s guidelines...
- CZ
- Estimation of yields and contents for CZ...
On field impact of changes of schemes

Repartition of recorded dairy cows according to milking schemes between 2000 and 2015
... But studies must go on!

New technologies:

New threats for milk recording

✓ Genomics → no needs for performances to get breeding values
✓ New sensors → more data available on farm

... but new opportunities!

✓ Genomics → needs for new phenotypes
✓ New sensors, use of milk analyses (MIR data) → new phenotypes!

Farmer’s requests in opposite directions

Less expensive schemes
More accurate results
New studies conducted in France (1/2):

How to reduce costs?

Simplify requirements for qualification of lactations

✓ Until now, lactations within herd are qualified separately, according to average intervals, maximum accepted intervals etc...
✓ Next: only average intervals within each lactation:
  ◀ Needs for clarification of ICAR’s rules
  ✔ More accurate than ICAR’s recommendation (intervals calculated at herd’s level)

Robots: use of one sample only?

✓ Correction of contents and yields using adapted Liu’s approach?
How to use new technologies?

- Sensors in-line analyzers for breeders equipped of AMS robots or milking parlors milk meters
  - Yields, contents, SCC... but also other indicators!
  - Can we use data from in-line analyzers for official milk recording?

How to simplify the organization of on field milk recording?

- Non alternate schemes?
Conclusion

- Milking schemes must be adapted to more and more heterogeneous farmer’s demands
  - Otherwise performances may be less representative of the diversity of production systems

- Needs for new studies
  - Share of experiences within ICAR is needed!
  - Needs for recommendations

Thank you for your attention!