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

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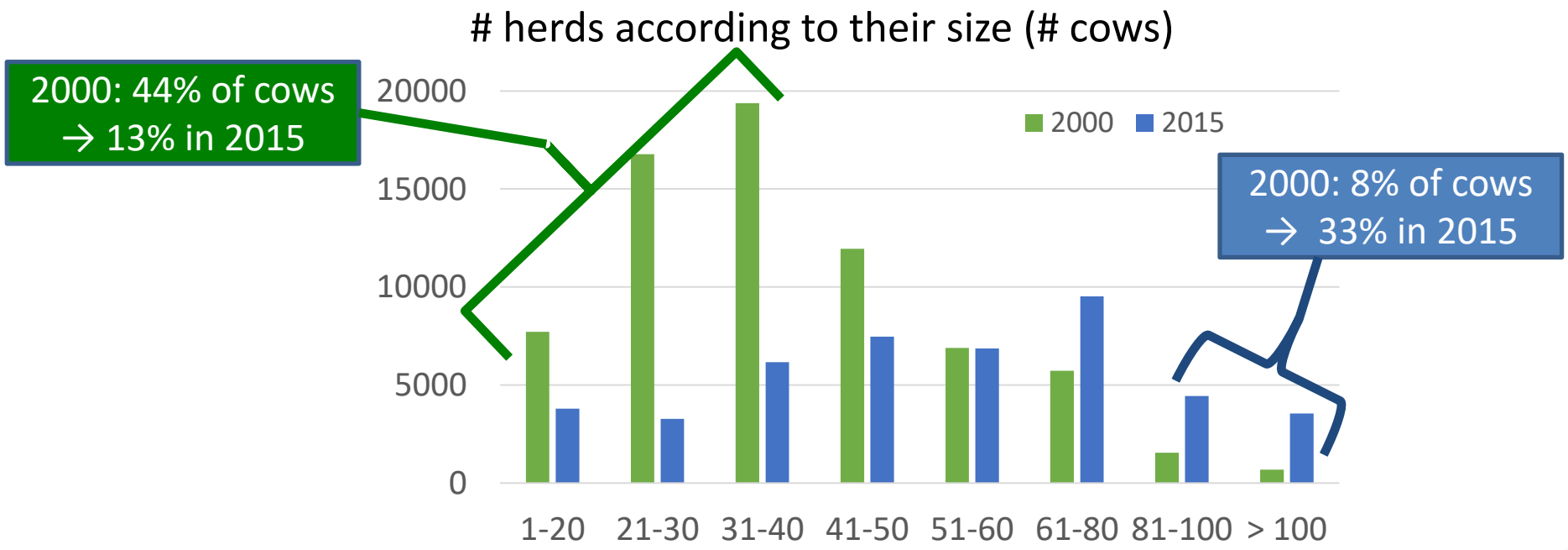
Introduction:

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

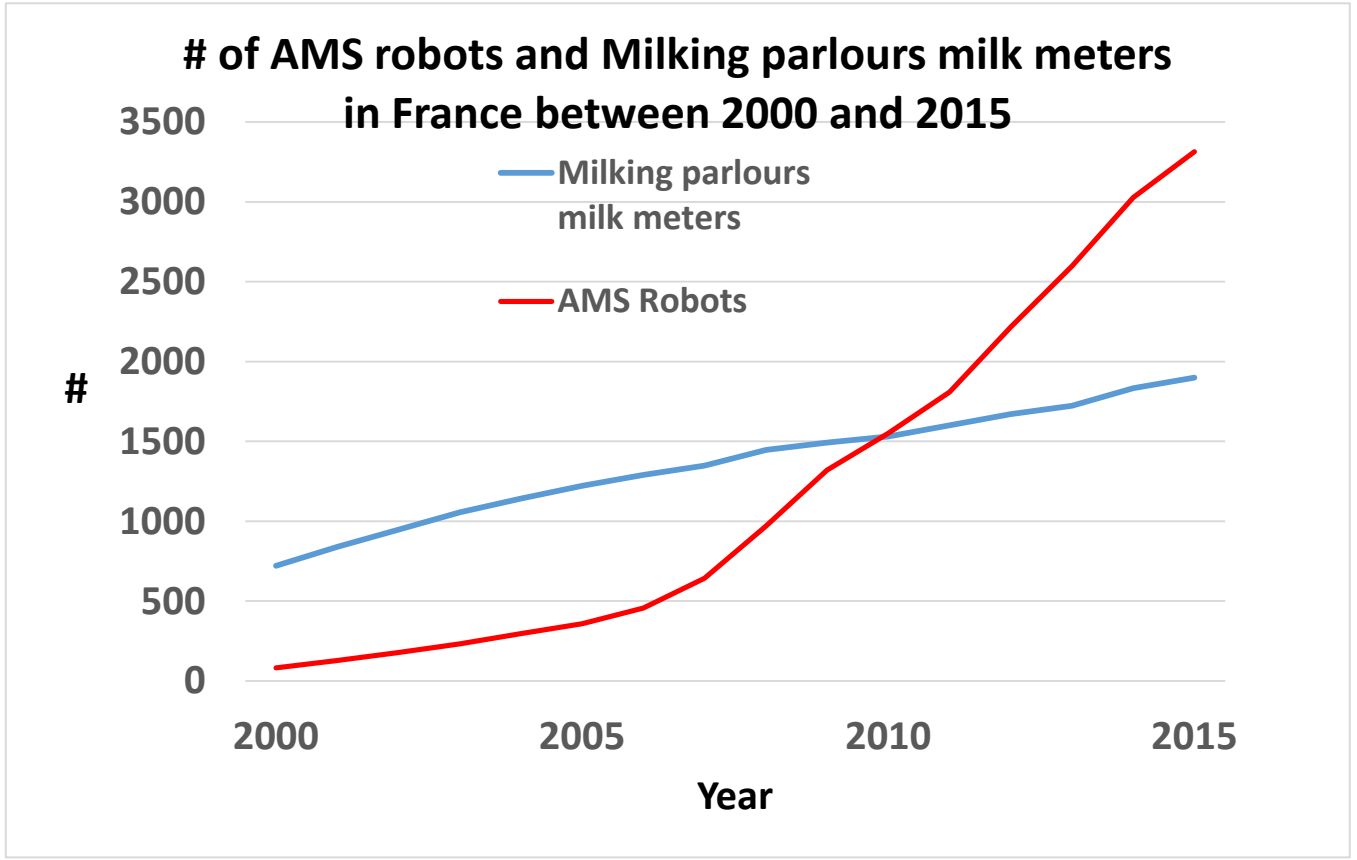
- # cows: -7%
- # herds: -36% (76 000 → 45 000)
- Much less small farms and much more « big » farms



Introduction:

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

- **Increasing use of Automatic Milking Systems or Milking parlours milk meters**



Needs for adaptation :

Changes implemented in France (1/2)

How to better use new equipements?

- Robots → AR, BR (2005)
- Automatic sampling devices (TT EMM, Lactocorders)-> CZ (2003)

CZ method

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

Recording n	**Recording n+ 1**
Evening milking : **Farmer** milk yield	Evening milking : **Technician** milk yield + contents
Morning milking : **Technician** milk yield + contents	Morning milking : **Farmer** milk yield

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

    PM-milk yield when AM-contents are available

    $y_{A4}^{[ijk]} = b_0^{[ijk]} + b_1^{[ijk]} y_{AT\text{-}am}^{[ijk]} + b_2^{[ik]} \text{Milk}_{\text{-pm}}^{[ik]}$

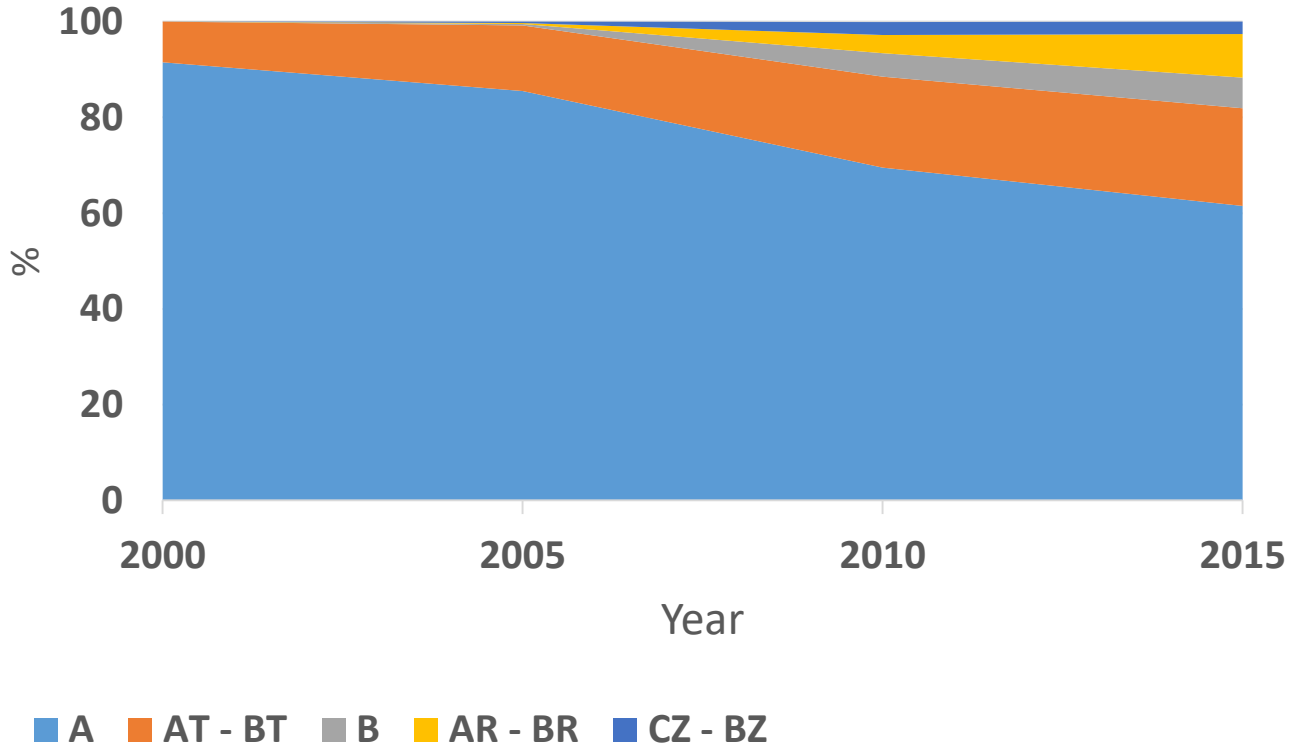
Needs for changes… but still needs for quality!

- **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?

New studies conducted in France (2/2):

- **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!