Suitable cows for grass based systems: what stakeholders do in France?

Photo: J.F Glinec

Emilie Ollion, ISARA-Lyon
Hélène Brives, ISARA-Lyon
Estelle Cloet, CRA de Bretagne
Marie-Angélina Magne, ENSAT - INRA
Context

Dairy cows in France: pure-bred tradition

- 2nd herd of UE:
  - 3.8 million dairy cows
- Average production:
  - 8,432 kg in 305 days
- More than 20 breeds:
  - 12 breeds in selection programs
  - 5 breeds in conservation programs
- 1.5% of 1st AI in dairy crossbreeding
- A diversity of contexts

Cniel, 2018, Idele 2016
**Context**

**Interests of grass-based systems**

---

**French agricultural law 2014:**
Agroecological transition of farming systems

1. Adopting management practices aiming to improve animal health
2. Decreasing the inputs needed for production
3. Decreasing pollution by optimizing the metabolic functioning of farming systems
4. Enhancing diversity within animal production systems to strengthen their resilience
5. Preserving biological diversity in agro-ecosystems by adapting management practices

---

**Prices volatility**

Feeding cost (€/1000l)

% of ingested grazed grass

(Source: Bretagne Contrôle Laitier sur 2 000 élevages - Campagne 2008-2009)

---

**Better use of local forage resources**

Dumont et al. 2014

---

**Réseaux d'élevage, 2017**
Context
Feeding systems still based on maize silage

MAIN FEEDING STRATEGIES IDENTIFIED
IN FRANCE IN 2015

- 0% maize silage: 50% of farmers
- < 50% maize silage: 22% of farmers
- > 50% maize silage: 8% of farmers
- > 75% maize silage: 9% of farmers
- 0% grazing: 19% of farmers

Why?
Structural and agronomical reasons
but animal related reasons?

Grass growth kg DM/ha
Herd energy needs / day

Are there locks-ins preventing farmers
from selecting and rearing adapted
dairy cows to grass-based systems?

VS
Average IBC 429 days

Res’alim 2017
Material and method: qualitative interviews

- 70 dairy farmers
- 47 pure-bred herds
- 23 crossbred herds
- 6 representatives from dairy breed societies
- 3 AI technicians

Breeding practices (mating plan, selection, culling), cow robustness, transition from pure to crossbreeding, relationships with AI technicians

Inclusion of new adaptive traits in selection schemes

Job evolution and relationship with farmers


Role of **technical tools** to understand actors’ interactions and knowledge articulation (Callon 1984, Labatut et al. 2009) → identification of locks-ins?
Results
Global merit index (ISU): a gap with farmers’ expectations

Dairy farmers in grass based systems

Animal expected grazing abilities?


Breeding societies

Global merit index

Prim’holstein
- Milk production: 35%
- Conformation: 15%
- Fertility: 22%
- Milking speed: 18%
- Udder health: 5%

Normande
- Milk production: 40%
- Conformation: 18%
- Fertility: 15.5%
- Milking speed: 18.5%
- Udder health: 5%

Montbéliarde
- Milk production: 45%
- Conformation: 12.5%
- Fertility: 18%
- Milking speed: 14.5%
- Udder health: 5%

Source: Ollion, 2015
Results

Global merit index (ISU): a black box for farmers

- Most farmers: ISU is the main indicators “indexes [...] too complicated, I don’t know how to read it” ; “it is difficult to find bull adapted to our conditions [...] and negative in milk” → choose an average ISU or delegate bull choice to **AI technicians**

- For breeding societies representatives: ISU is ok to breed suitable cows to grass-based systems with the increased weight of functional traits
- For local breeding societies representatives: grazing abilities are inherent to the breed
Results

The mating plan: farmers facing the increasing complexity of choosing a bull

- Since 2011, selection companies sell genomic: the number of bulls available for the 3 main breeds
  - 50 bulls tested/year in Holstein in 2009 vs 180 in 2014 (Inra, 2016)

- Since 2015, insemination cooperatives proposed reproducers profiles adapted to different production objectives

VS

- Lack of trust for some farmers with non-tested bulls: “If the reliability is not > 95% I don’t choose the bull”

- Lack of interest for some farmers to diversify the selection of males: “I choose 2 or 3 bulls that I know because they gave good results with the neighbors [...]” “The bulls, they go fast... I trust the technicians, they choose 3 or 4 for all the cows”

- Complete delegation of the mating plan to the AI technicians for some farmers: “Every year he comes, looks at all the cows problems and choose the bulls that will not deteriorate too much one criteria, we stay in something average”
Results

Inappropriate performance indicators

- **Milk record organisms** sell:
  - monthly records: milk production (quality and quantity), reproduction and metabolic indicators with alerts ➔ short term management
  - Annual records: synthesis of the performances per cow and for the herd with an **annual time scale**

- A **dominant culture** of performance = animal productivity performance: departmental and national ranking (PLM top list) based on milk volume per breed

**VS**

- **Farmers looking for suitable cows for grass-based system** analyze performances on the long run “I will know if the cow was adapted at the end of her life” and look for other performance criteria “the fertile ones”; “A good cow in my system is the one that bring the herd grazing”; “[...] the one able to cut down milk when there is a bump and come back in milk before drying off”
Perspectives
Crossbreeding: a strategy to overcome locks-ins?

The locked system for

Crossbreeding
Which actors, tools and knowledge exchange to help on-farm management of genetic to breed suitable cow for grazing?
Participative reflection and participative design of tools (performance indicators, selection indexes…) and inter-breed reflection

The unlocked system?

Breeding societies (define and promote breed specifications, advise)

Milk records organisms (calculate indicators on lactation time scale, advise)

Insemination cooperatives (Sell semen, advise, inseminate)

Farmers (select, breed, cull)

Insemination cooperatives (Sell semen)

Farmers (Define mating plan)

Selection companies (produce genetic, sell genetic)
Thank you for your attention

- Acknowledgments
  - All the farmers, the breeding societies representatives and the AI technicians interviewed
  - Marie Basset for her internship work
  - INRA SAD and PHASE departments, Vetagro-Sup and ANR Agrobiosphère (TATA-Box project) for their financial support
  - JF Glinec for the pictures
References


