DAIRY CROSSBREEDING IN FRENCH HOLSTEIN FARMS

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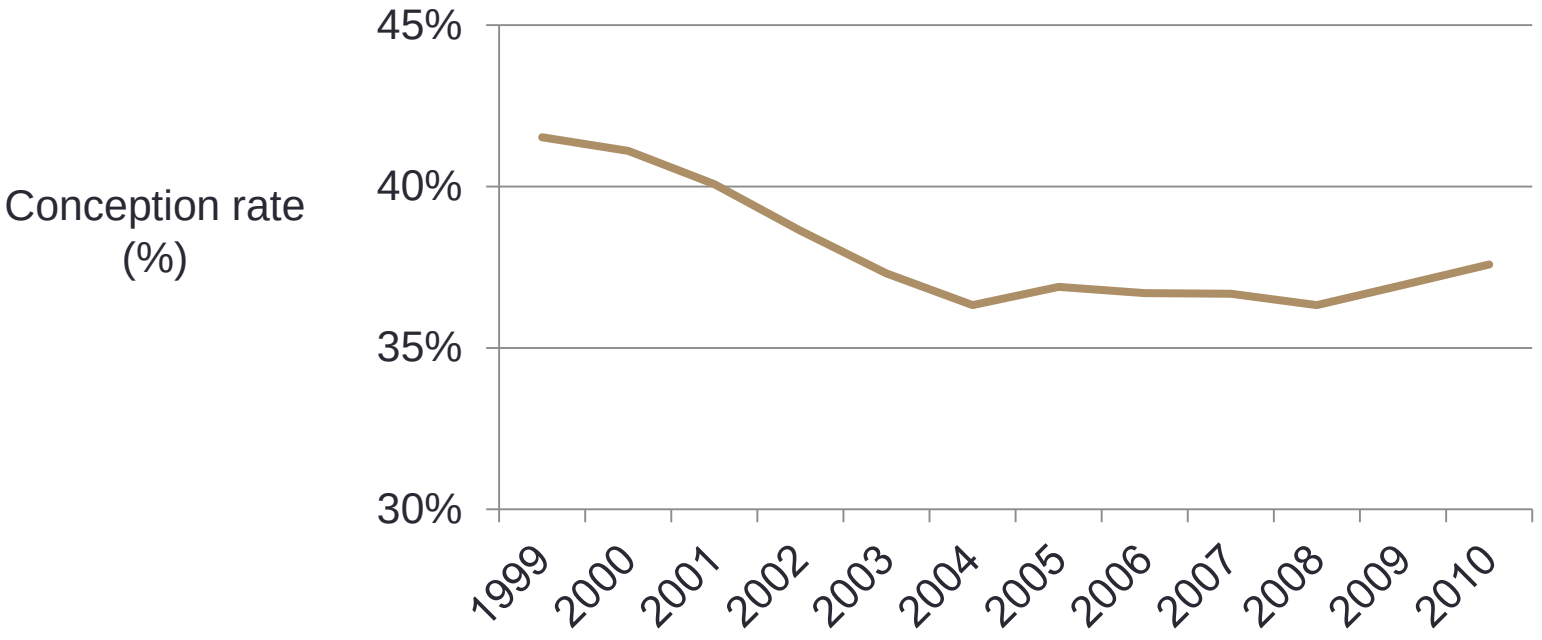
Introduction

- Over the past five decades for Holstein breed:
  - Milk production has increased considerably
  - While functional traits have decreased



Source: P. Le Mezec, personal communication

Introduction

- Interest about dairy crossbreeding has grown lately (Heins et al, 2006; Sørensen et al., 2008)
- In France, an increase of the number of crossbred offspring born every year has been found from 2001 to 2010 (Bouguoin and Le Mezec, 2010)

The objective of this study is to give an overview of dairy crossbreeding practices in French Holstein farms

Material and methods

- **MATERIAL**
  - Artificial insemination (AI) and milk records from the national database from 2002 to 2012
  - AI information (N=18,700,000):
    - Rank between two successive calvings, Breed of service bull

Pure breeding

Dairy crossbreeding

Dairy-beef crossbreeding

  - Cow information (N=4,000,000):
    - Parity, 305-d milk production
  - Herd information (N=20,078):
    - Size (number of cows), Average 305-d milk production, Calving period

Material and methods

- **Steps in analysis**
  1. Global analysis of AIs (whole study population):
     - What factors influence dairy crossbreeding practices on Holstein cows?
  2. Dairy crossbreeding practices (sub-population of herds with crossbreeding AIs):
     - Typology of how crossbreeding was started and how it evolved
  3. Keeping and inseminating of F1 crossbreds
     - Persistence of dairy crossbreeding

Material and methods

Step 1: Dairy crossbreeding AIs

- Logistic regression on the binary trait crossbreeding AI (CAI)

- **Fixed effects**: relative cow's milk production, rank of AI, parity, average herd milk production, herd size and type of calving period

Results and Discussion

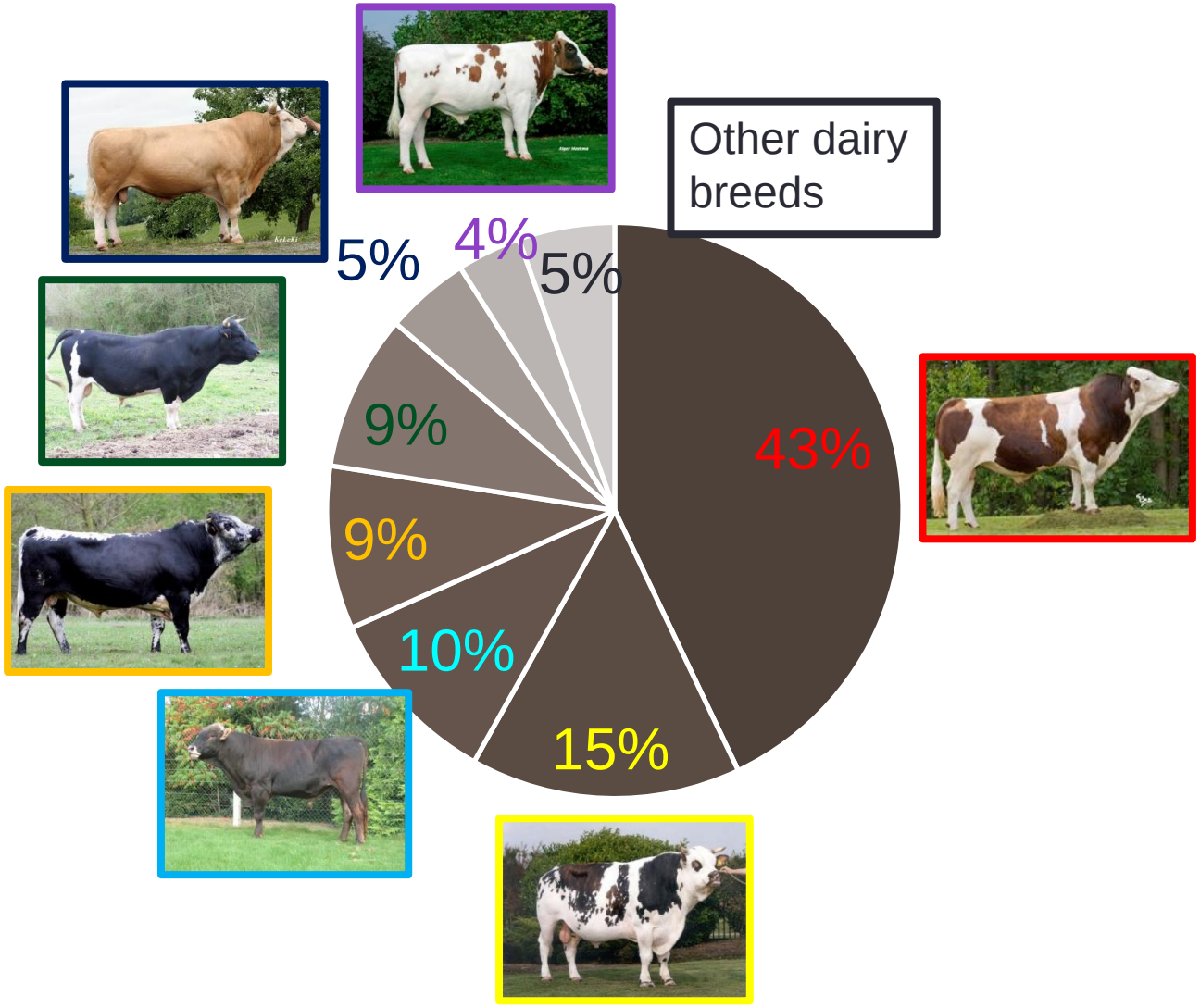
Step 1: Dairy crossbreeding on Holstein cows

- 14,000,000 AIs recorded on Holstein cows
  - 222,500 were CAIs

Dairy crossbreeding inseminations represented **1.6%** of AI on Holstein cows

Results and Discussion

Step 1: Dairy breeds used to cross-inseminate



Results and Discussion

Step 1: Principal effects

- No interaction between cow's milk production and the other factors
- Interaction between rank of AI and the other factors

More crossbreeding on **high producing cows** intra-herd

More crossbreeding on the **fourth AI and more**

Results and Discussion

Step 1: Principal effects

- Interaction rank of AI and respectively parity, herd average milk production, type of calving period and herd size

More crossbreeding on **multiparous** cows especially on **1st AI after calving**

More crossbreeding in **low producing herds** especially on **1st AI after calving**

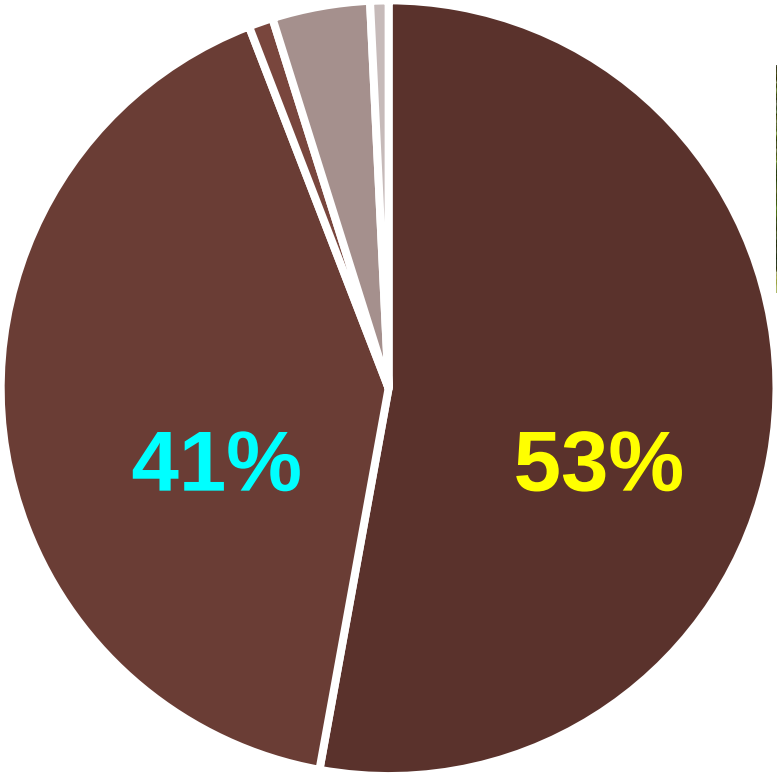
Opposite effect of calving period depending rank of AI
Rank 1 : More crossbreeding in **seasonal calving** herds
Rank 4 : More crossbreeding in **year round calving** herds

No effect of size for crossbreeding on **1st AI**
More crossbreeding in **small** herds especially on **4th and more AI after calving**

Results and Discussion

Step 2: Crossbreeding beginning and its evolution

- 7,061 herds : crossbreeding beginning between 2002 and 2009



Results and Discussion

Step 2: Crossbreeding beginning and its evolution

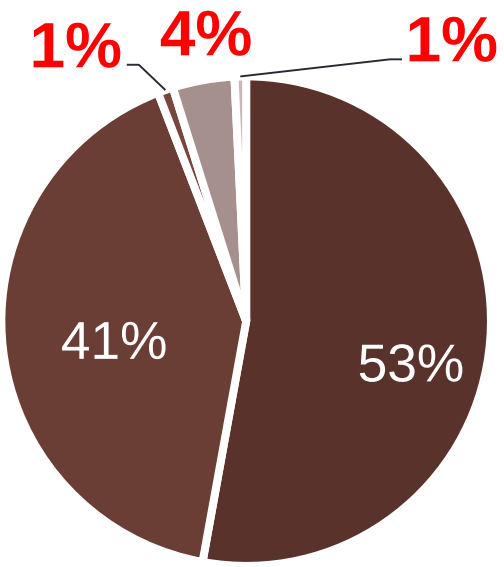
<10% at the beginning then increase

Results and Discussion

Step 2: Crossbreeding beginning and its evolution

Results and Discussion

Step 2: Crossbreeding beginning and its evolution



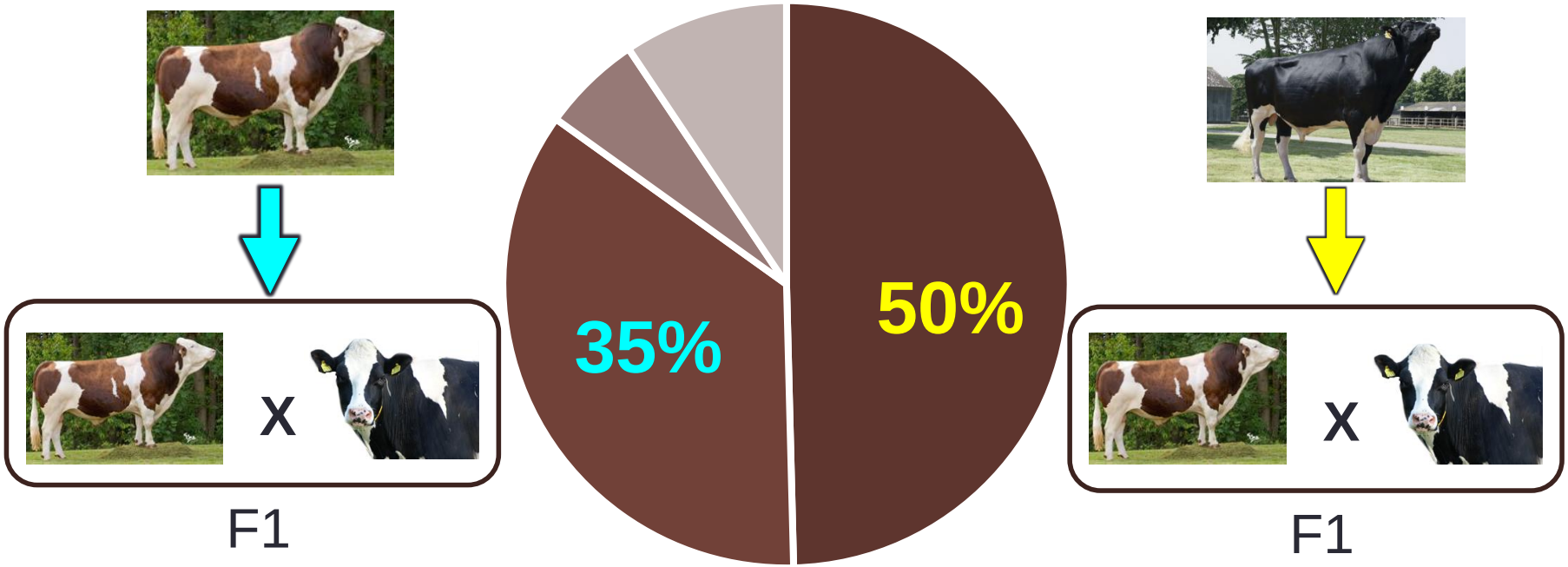
Little use of crossbreeding in most herds
Small pool of high users

Results and Discussion

Step 3: Keeping and inseminating of F1 crossbreds

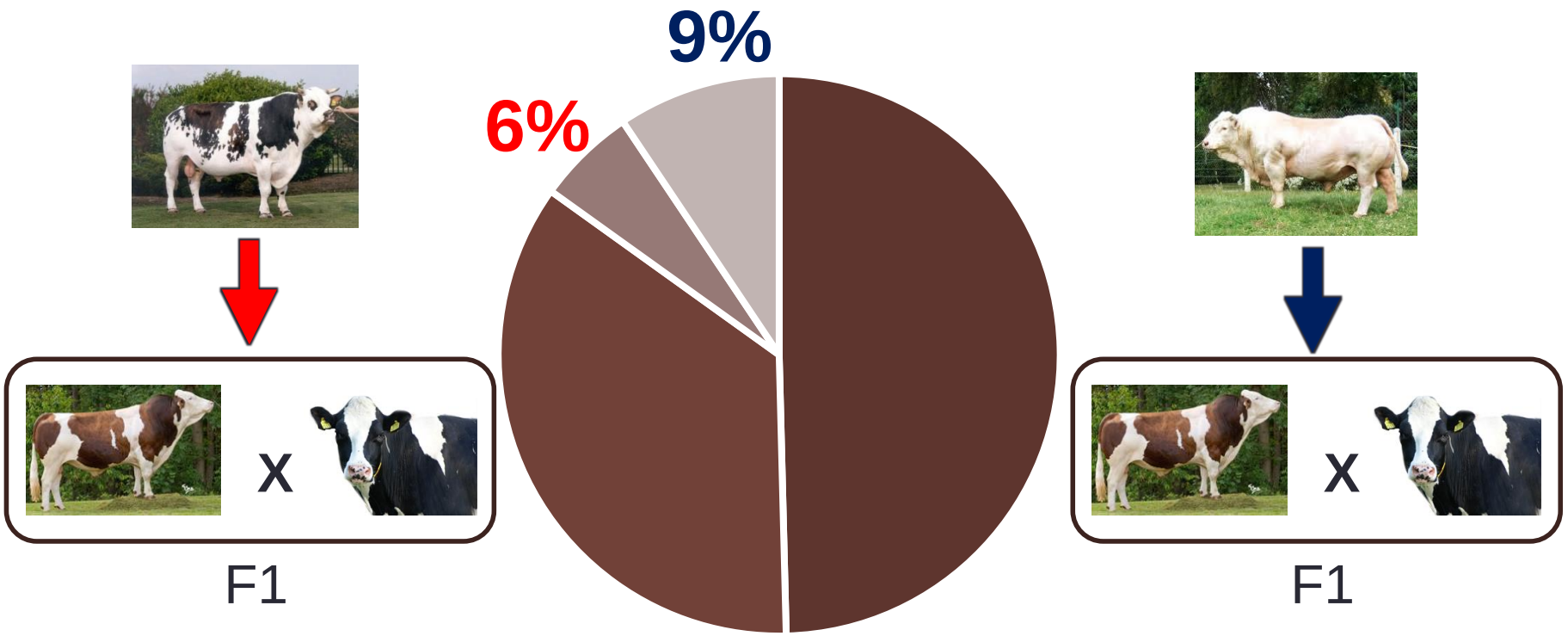
- Less than 30% of the F1 born were kept
- Herds from patterns 4 and 5 mainly kept more than 50% of the F1 born.

➔1340 herds with at least 3 F1 inseminated



Results and Discussion

Step 3: Keeping and inseminating of F1 crossbreds



Conclusion (1/2)

- In France, dairy crossbreeding is mainly used:
  - On fourth AI and more (specificity of French AI pricing)
  - On multiparous cows
  - Few F1 crossbreds kept
  - Return to Holstein breed or absorbe to another breed

→ Dairy crossbreeding = temporary attempt to solve some individual cow's fertility problems

Conclusion (2/2)

- Existence of a small pool of herds where crossbreeding is highly used
- Evolution of insemination practices on crossbred cows

Dairy crossbreeding :
Will this practice stay marginal or increase over time?

THANK YOU FOR YOUR ATTENTION