The reproductive success of dairy cows in low-inputs grass-based production systems relies on their ability to safeguard body reserves after calving.

J-B. Menassol, J.A.A. Pires, Y. Chilliard, C. Delavaud, I. Constant, D. Pomiès, F. Blanc
2 systems, 2 breeds, 3 years

- Grass + 4 kg/d/cow for one system
- Grass only for another system

Holstein
Montbéliarde
2 systems, 2 breeds, 3 years

Seasonal calving: challenging conditions

- Pasture turn-out: May 12, June 12
- A.I.: 40 d
- 54 d bulls
- 28 d
- Calving: week -4, 2, 3, 5, 8 and 12

Hormones:
- Thrice a week: progesterone
- Twice a day: milk, MF & MP
- LW & BCS: ≈ 80 d
- Thrice a week: week 2, 3, 5, 8, 12 and monthly

Grass: 4 kg/d/cow cc
- Grass + grass only
A global fertility of 49% over the three years of the study
Holstein cows produces more milk (+3.4 kg/d 12w after calving)
Holstein cows lose more body condition (-0.3 BCS at 12w)

**HOWEVER**

Reproductive performances were independent of the fixed effects
A global fertility of 49% over the three years of the study Holstein cows produces more milk (+3.4 kg/d 12w after calving) Holstein cows lose more body condition (-0.3 BCS at 12w)

**HOWEVER**

Reproductive performances were independent of the fixed effects → From a **forward** to a **backward** approach

e.g. hormonal response

\[\text{recalving yes / no}\]

weeks around calving

groups composition was checked

discrimination
INDICATORS OF MOBILIZATION OF BODY RESERVES

DELAY in CLA

- BCS
- igf-1 (ng/mL)

**no**
**yes**
INDICATORS OF MOBILIZATION OF BODY RESERVES

**DELAY in CLA**
- BCS
- igf-1 (ng/mL)

**OVARIAN PATTERN**
- Delay in CLA
- Ovarian pattern

- no
- yes
- normal
- abnormal
- anovulatory

* * *
* * *
* * *

Trend
A clear association between “reproductive” performances and a lower mobilization of body reserves.
INDICATOR OF PRODUCTION

**DELAY in CLA**

![Graph showing milk production over time with 'no' and 'yes' categories marked with green and red circles, respectively.](image)

- Green circles represent 'no' delays.
- Red circles represent 'yes' delays.

---

* **Milk (kg/d)**

1 2 3 4 5 6 7 8 9 10 11 12
INDICATOR OF PRODUCTION

**DELAY in CLA**

**OVARIAN PATTERN**

![Graph showing milk production over time with different patterns and trends.](image-url)
This “reproductive” adaptation does not compromise milk production

Some animals “win” while others “lose” everywhere in terms of reproductive performances: efficient vs. poor use of body reserves
AS TAKE-HOME MESSAGES, A CLEAR PICTURE IS DRAWN:

Some cows:

- limit their body mobilization after calving
- experience a higher proportion of normal ovarian patterns
- have better reproductive performances
AS TAKE-HOME MESSAGES, A CLEAR PICTURE IS DRAWN:

Some cows:

- limit their body mobilization after calving
- experience a higher proportion of normal ovarian patterns
- have better reproductive performances

NOT AT THE COST OF A DECREASE IN MILK PRODUCTION
AS TAKE-HOME MESSAGES, A CLEAR PICTURE IS DRAWN:

Some cows:

• limit their body mobilization after calving
• experience a higher proportion of normal ovarian patterns
• have better reproductive performances

NOT AT THE COST OF A DECREASE IN MILK PRODUCTION

In a productive perspective some animals have the physiological tools to adapt to low-inputs conditions (not selected on this purpose!)

A particular attention should be driven toward these animals in genetic programs for sustainable livestock farming systems
THANK YOU FOR YOUR ATTENTION