Priorities among growth, pregnancy and lactation in dairy

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Rationale

Nutrient partitioning

- major source of
  - performance improvement
  - variability among animals

  → **scientific challenge**

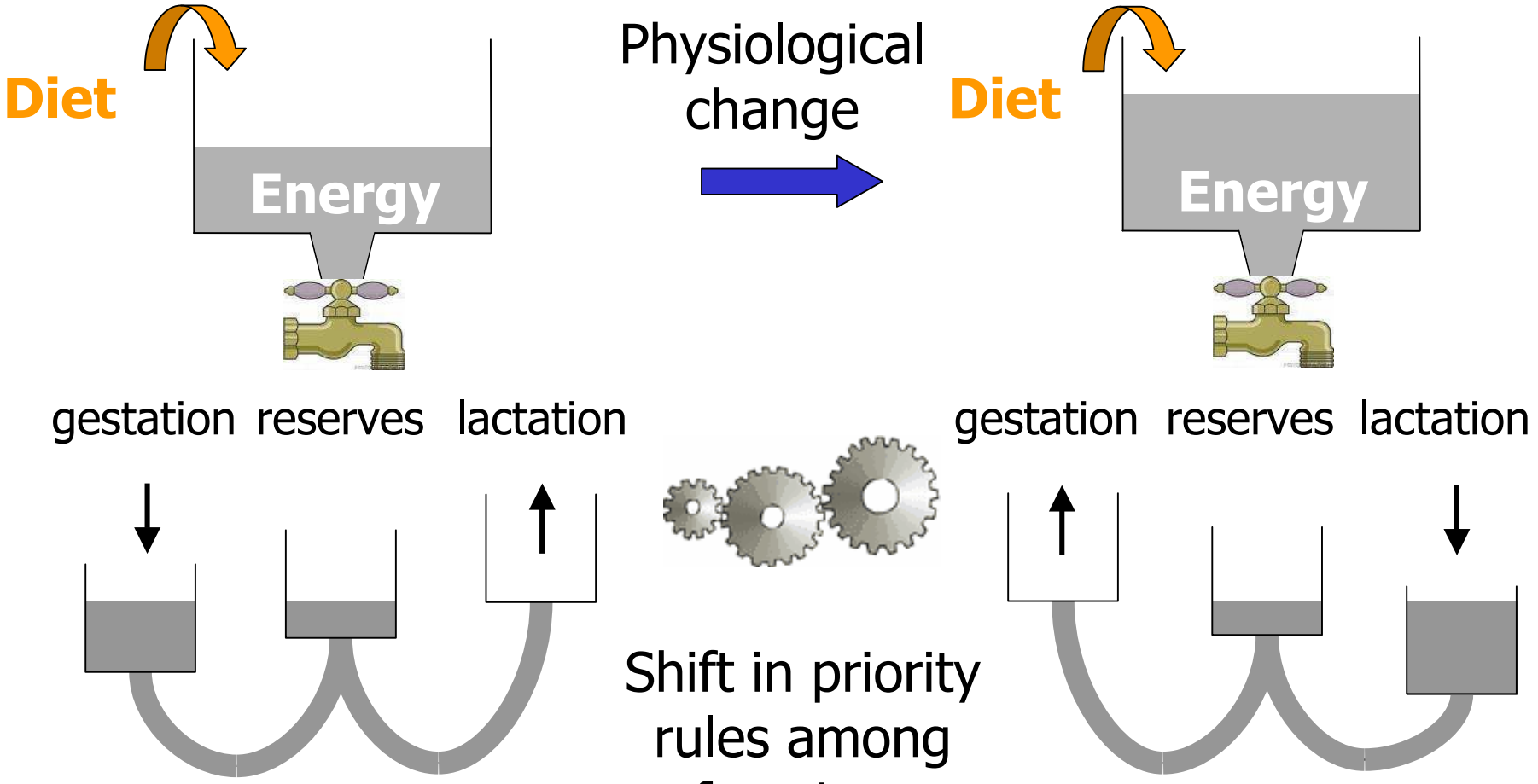
- controlled by **priority rules** among physiological functions (homeorhesis)

Research question & outline

→ Effects of succession and overlapping of functions on BW change and MY ?

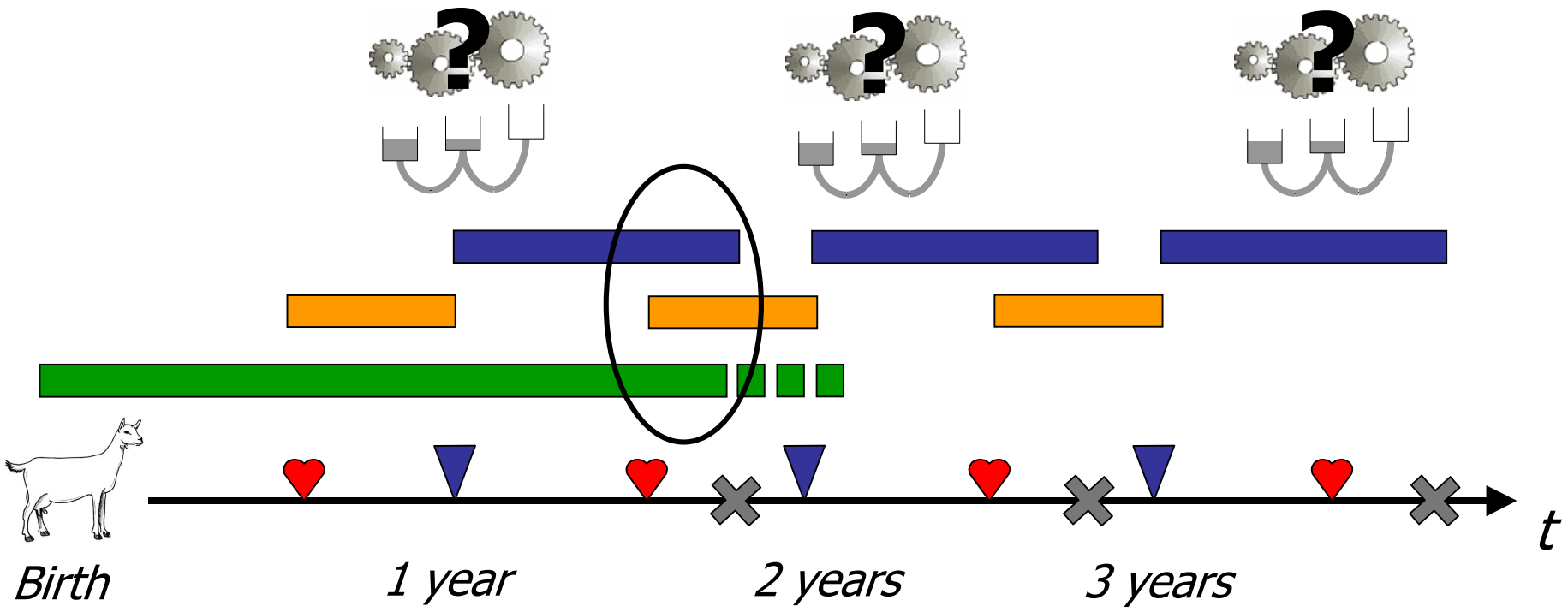
- Background
- Data & analysis
- Results
  - Gestation
  - Early lactation
  - Late lactation
- Conclusion & perspective

(1) Background



(2) Background

Physiological states succession and overlapping throughout productive life



Data & analysis

- Animals — 266 goats

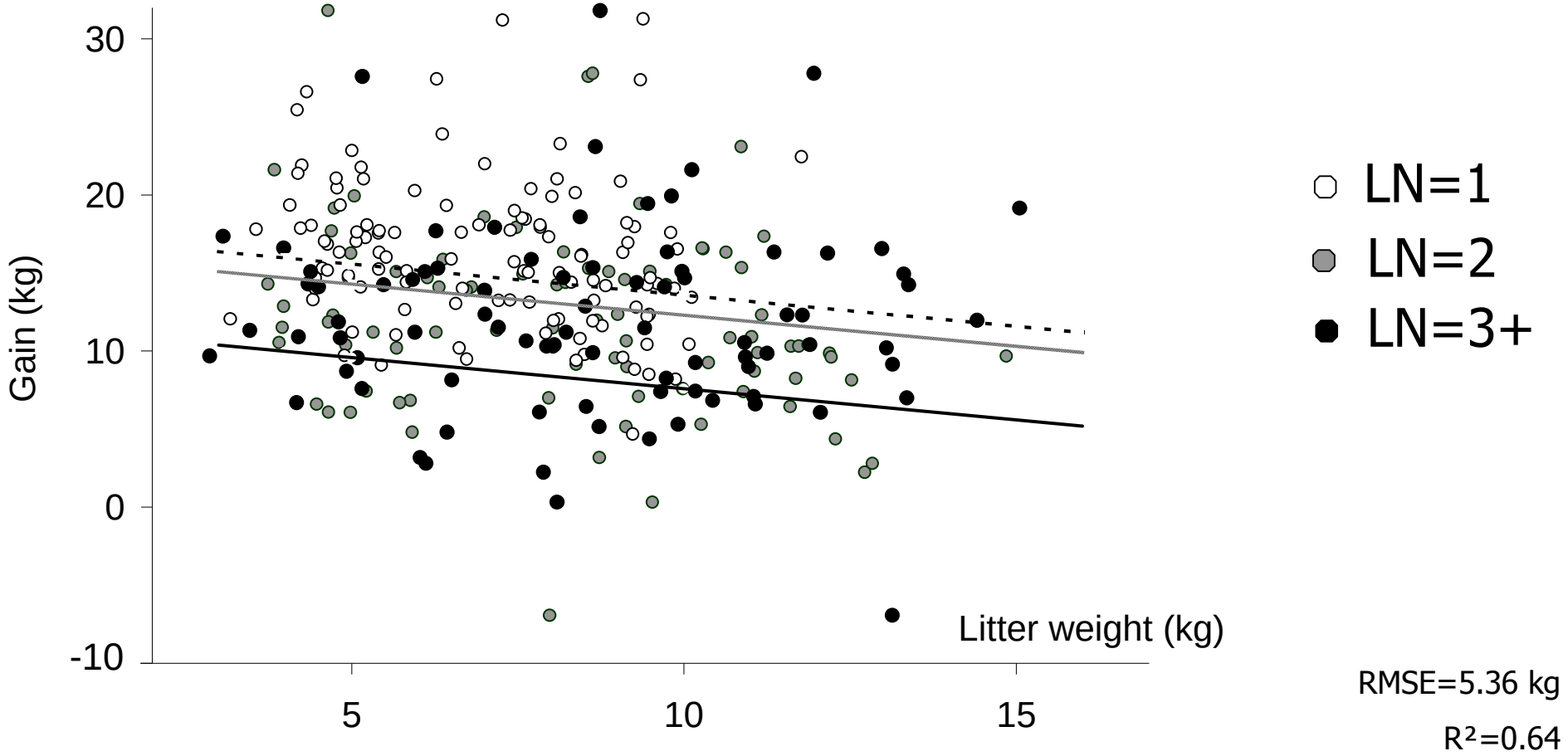
  426 reproductive cycles
- Variables BW & MY (INRA UMR PNA)
- Feed *ad libitum*
- 3 periods

	n
Gestation	*330*
Early lactation (wk 1 to 7)	*426*
Late lactation (wk 8 to 27)	*426*

- GLM procedures

(1) Results gestation

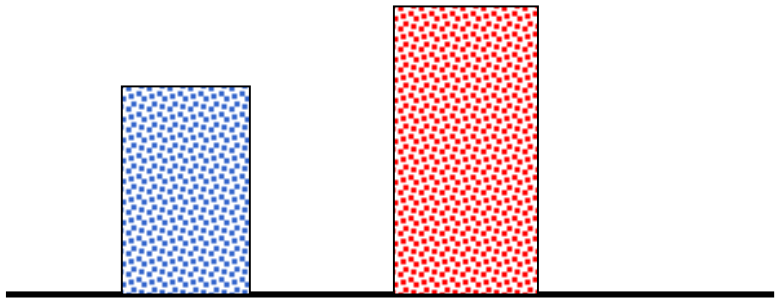
- Negative effect of litter weight (-0.4 kg gain/kg litter) on BW gain (anabolism and growth)



(2) Results early lactation

BW loss

+ 0.9 kg

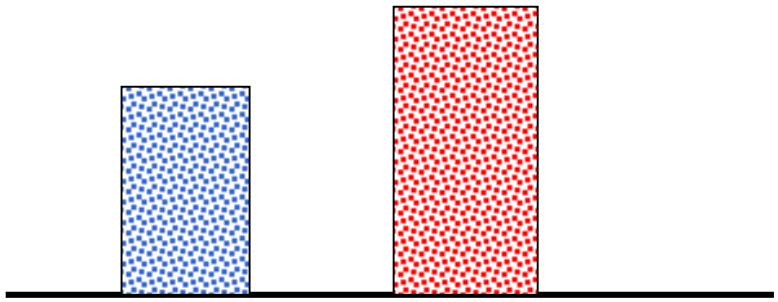


RMSE=3.71 kg

R^2=0.77

MY

+ 220 g/d



Kids born

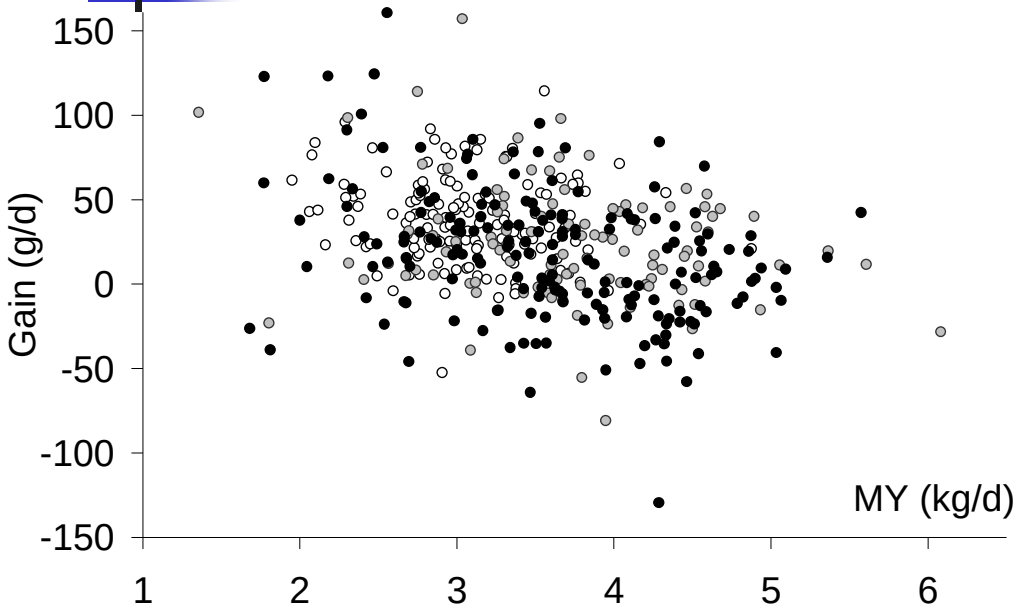
RMSE=731g/d

R^2=0.71

↑ BW loss and ↑ MY

→ Delayed effect of pregnancy

(3) Results late lactation

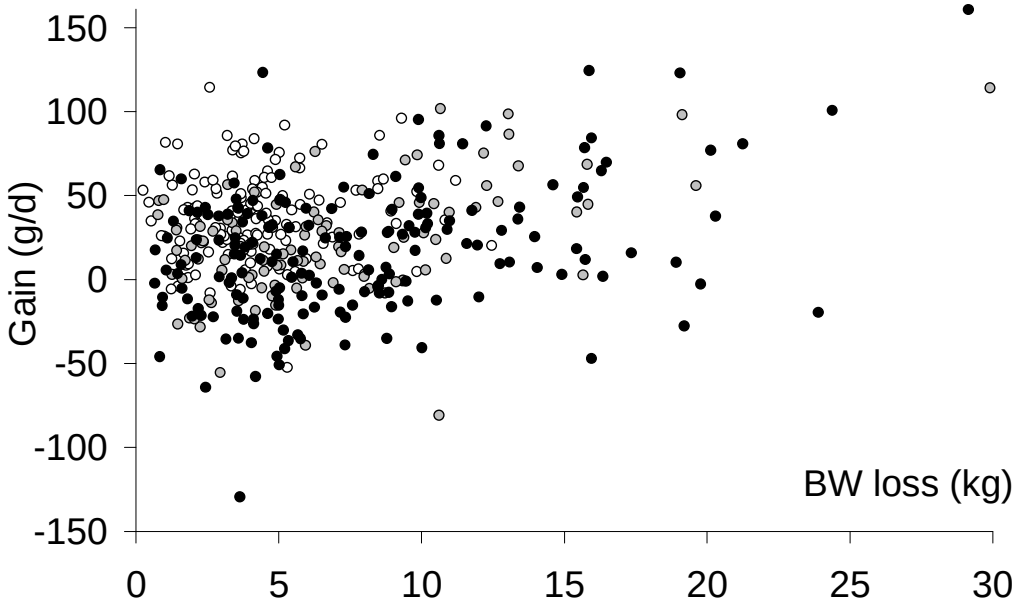


Opposition between MY persistency and BW reconstitution (-11g/d)

LN=1

LN=2

LN=3+



Slight compensatory effect between BW loss & reconstitution (+2g/d)

RMSE=29.61g/d

R^2=0.69

Conclusion & perspectives

- High productive goat with ≥ 2 kids
  - ↓ reserves & growth during gestation
  - ↑ BW loss during early lactation
  - ↓ BW gain during late lactation

  → Risk of physiological deterioration **?**

- Meta-analysis
  - Range of management intensity

  ↔ various priority rules

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