The effect of breed on heat detection and fertility of dairy cows maintained on 2 feeding levels

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Context : seasonal calving systems

Seasonal calving systems :

- Answer to labor demands
- Consistent with pasture-based systems
- Reproduction within a short breeding period

Reproduction within a short breeding period :

- High ovulation detection rate
- Good fertility (re-calving rate) at each insemination
- Adapted cows : genetic* effect.

* Dillon et al., 2003, Horan et al., 2005, Pollot and Coffey, 2008

Our purpose :

Investigate breed*feeding strategy interactions

In view of management of short breeding period

BREED x FEEDING system experiment

70 cows per year; 2006, 2007, 2008; N = 203 lactations

2 breeds:

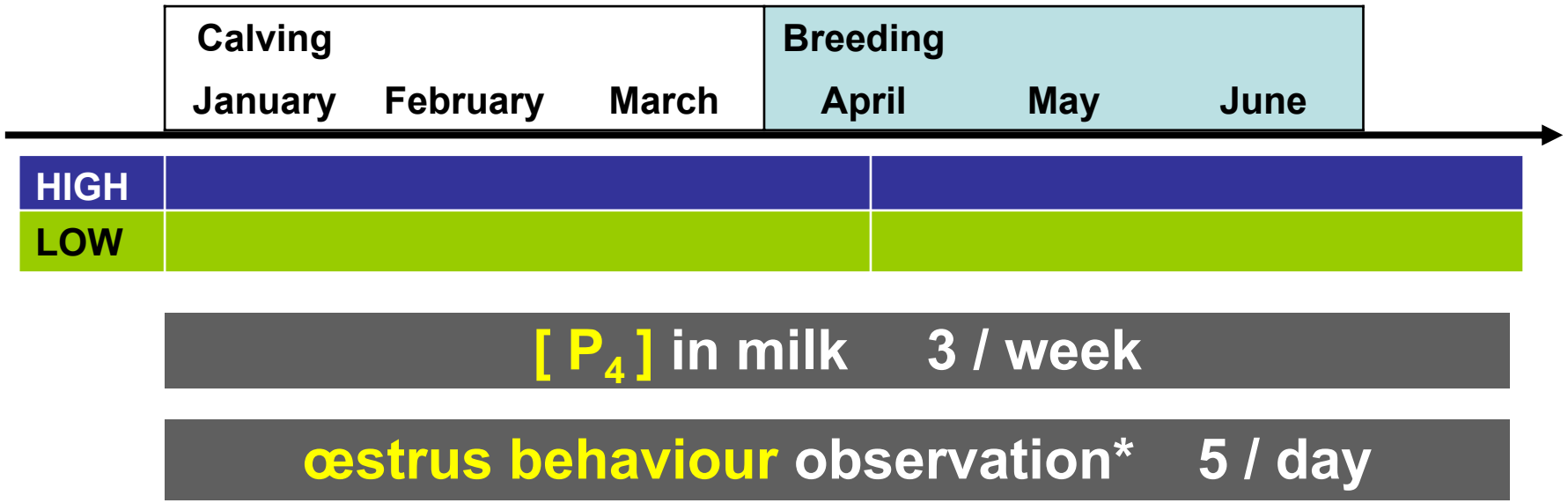
Normande (105)

Holstein (98)

2 pasture-based feeding systems:

HIGH	TMR: 55% MS, 15% Alfalfa Hay, 30% [C]	PASTURE + 4 kg [C]
LOW	TMR: 50% GS, 50% Haylage	PASTURE

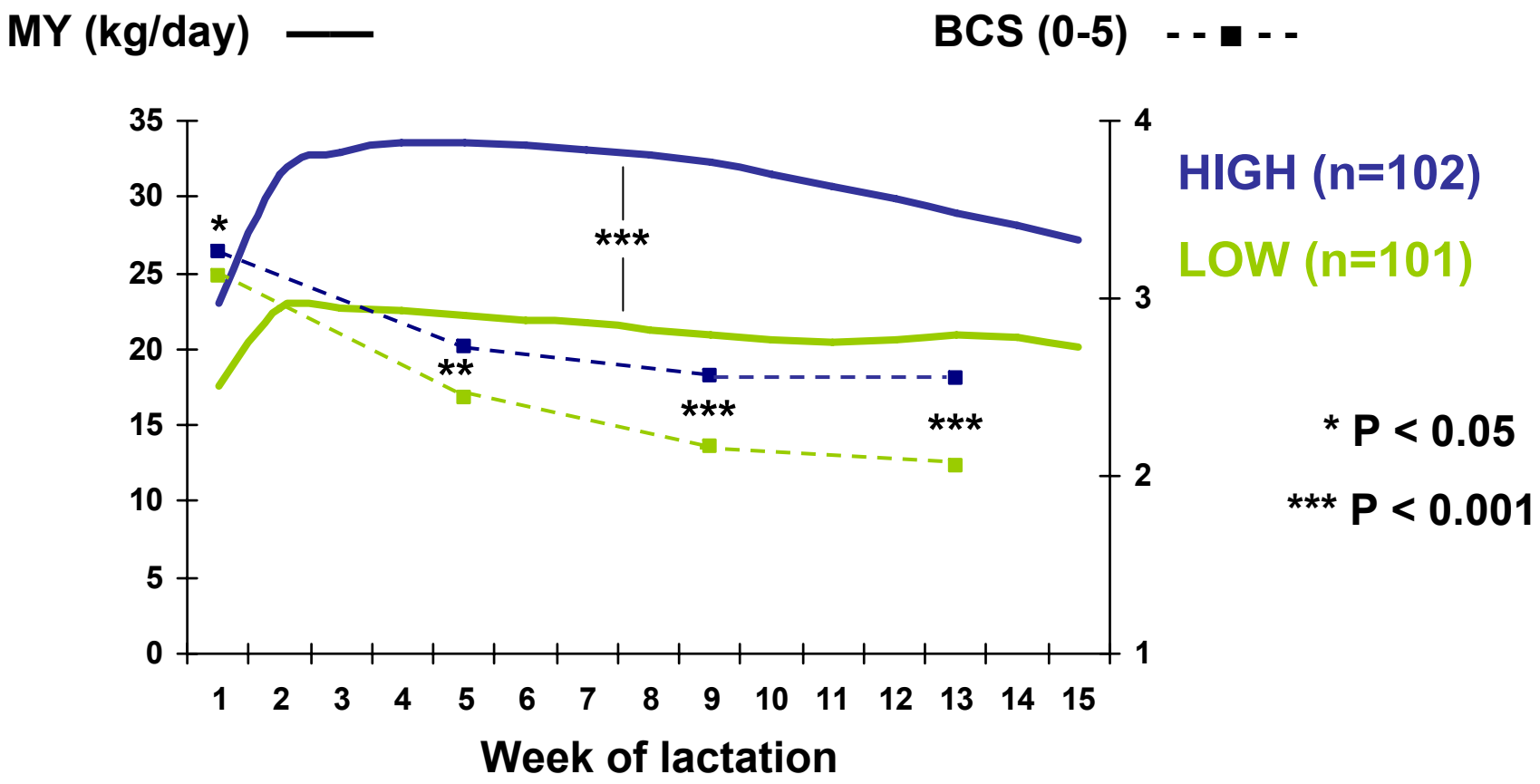
BREED x FEEDING system experiment



Variance – covariance analyses and logistic regressions

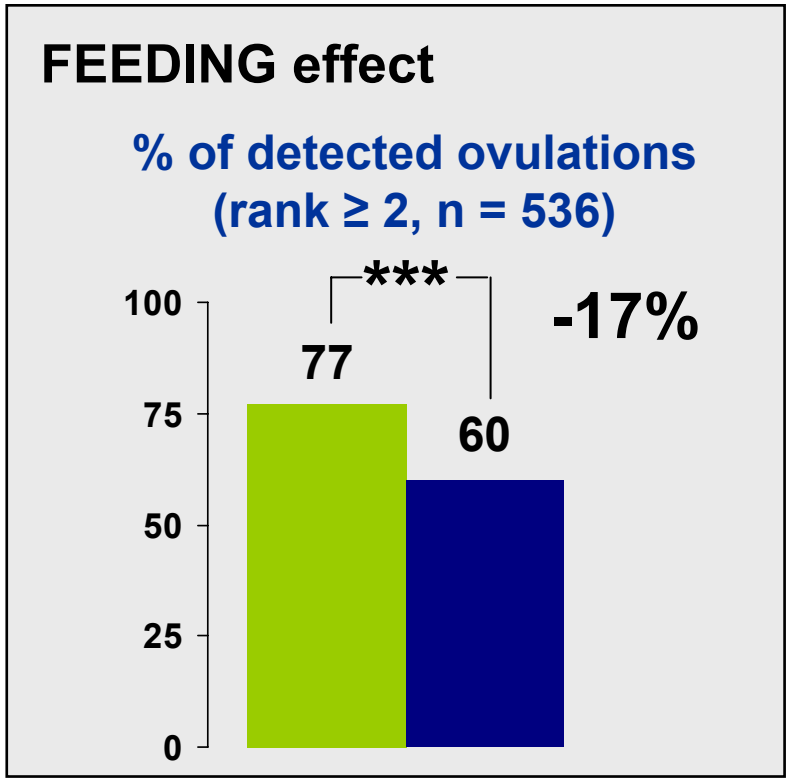
*Kerbrat and Disenhaus, 2004

In both breed HIGH-fed cows produced more milk BUT lost less body condition*



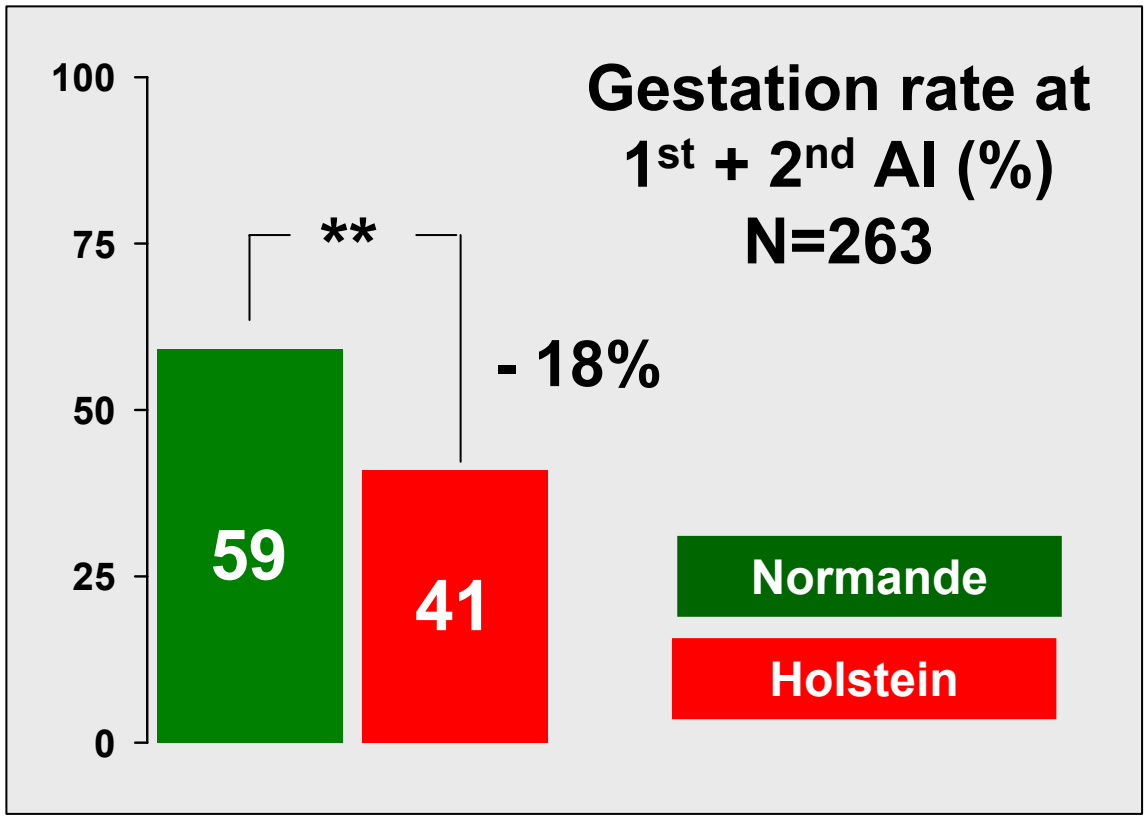
*Cutullic et al., 2009, J. Dairy Sci. 92 (E-suppl 1): 355.

In both breed, feeding treatment had a significant effect on ovulation detection rate



Difference is greater for Normande cows
-21% vs -14% (P<0.01)

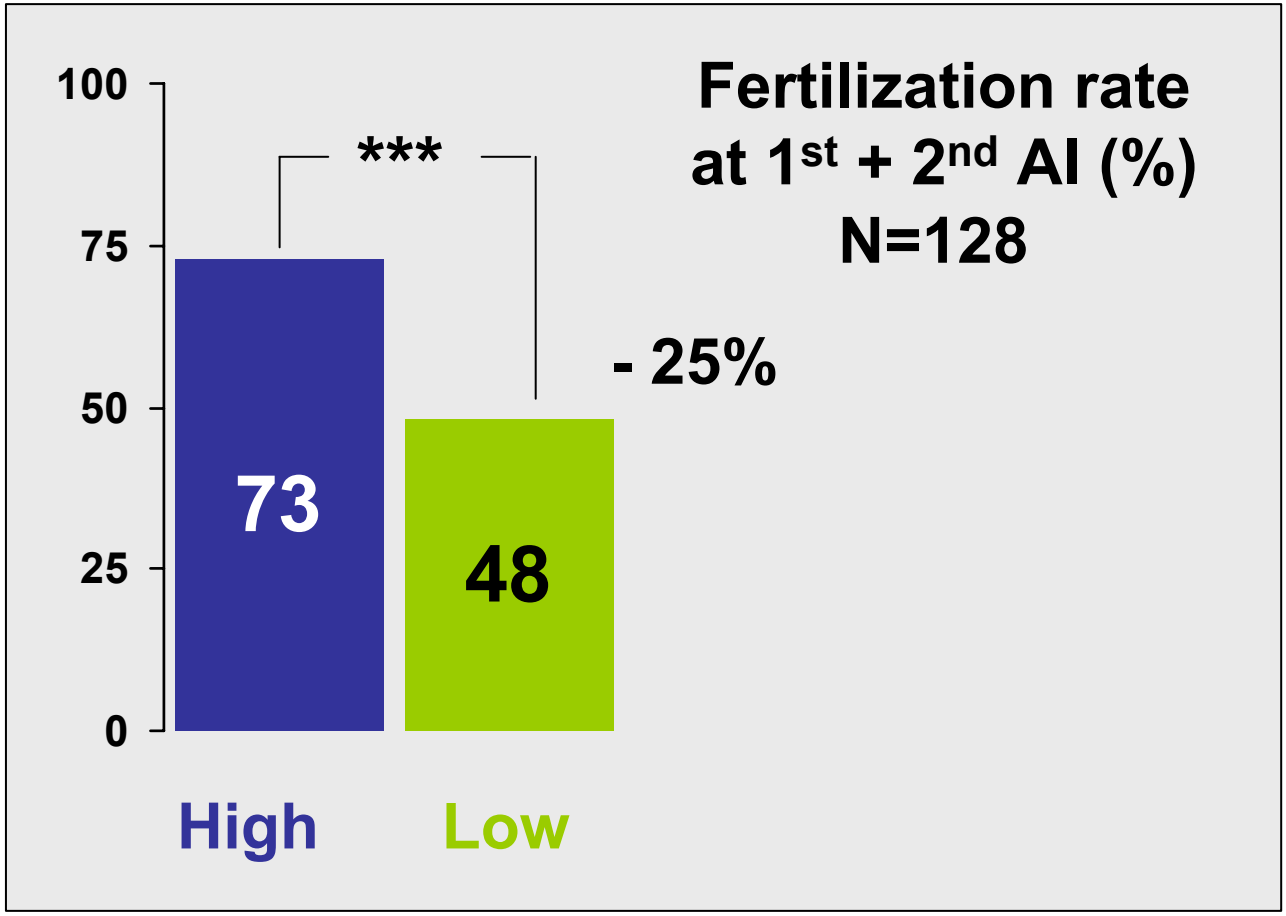
Normande cows had better fertility than Holstein ones



With no feeding treatment effect in Normande cows

Feeding treatment had converse effects on fertility estimators in Holstein cows (1)

High-fed Holstein cows: higher fertilization rate



*** P<0.001

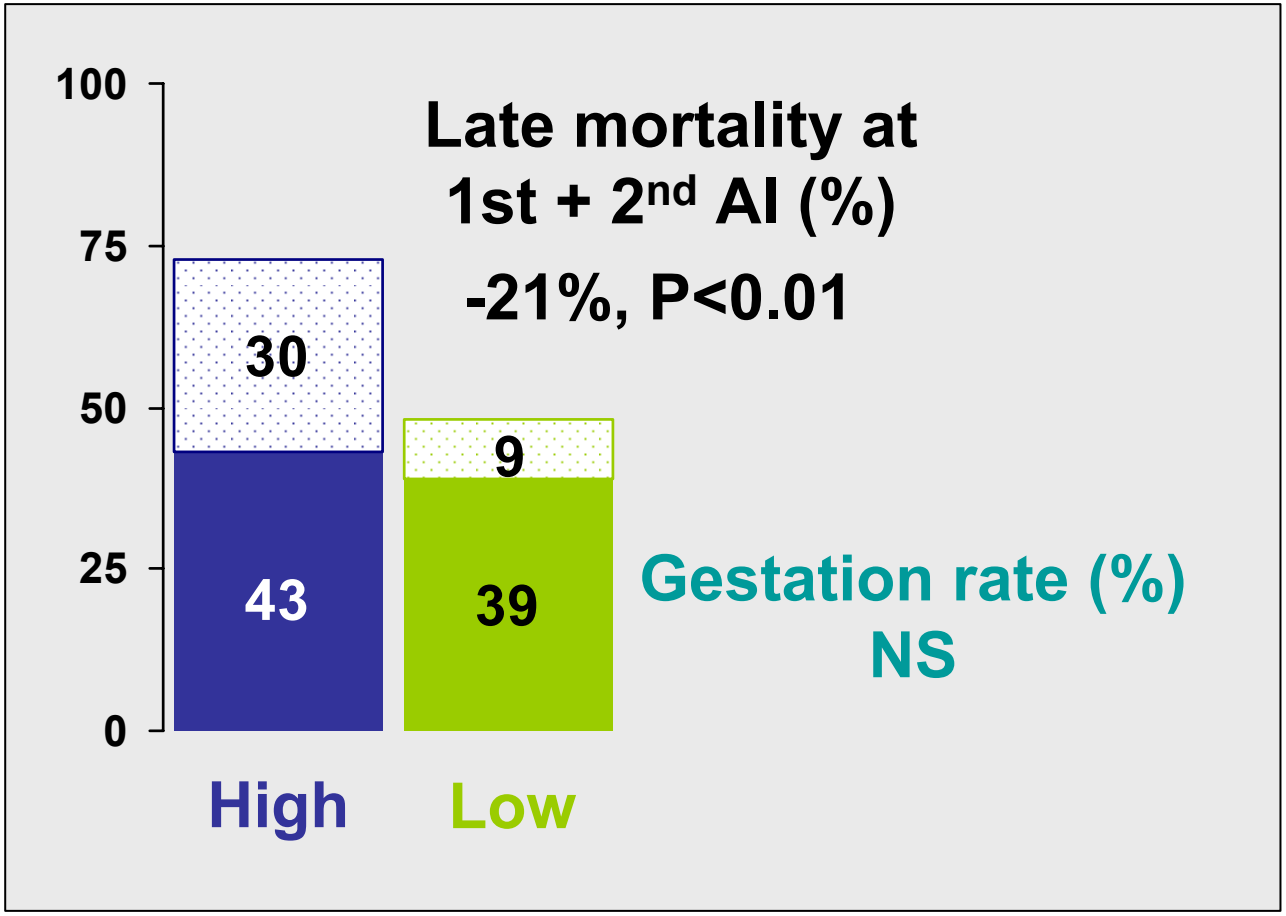
** P<0.01

* P<0.05

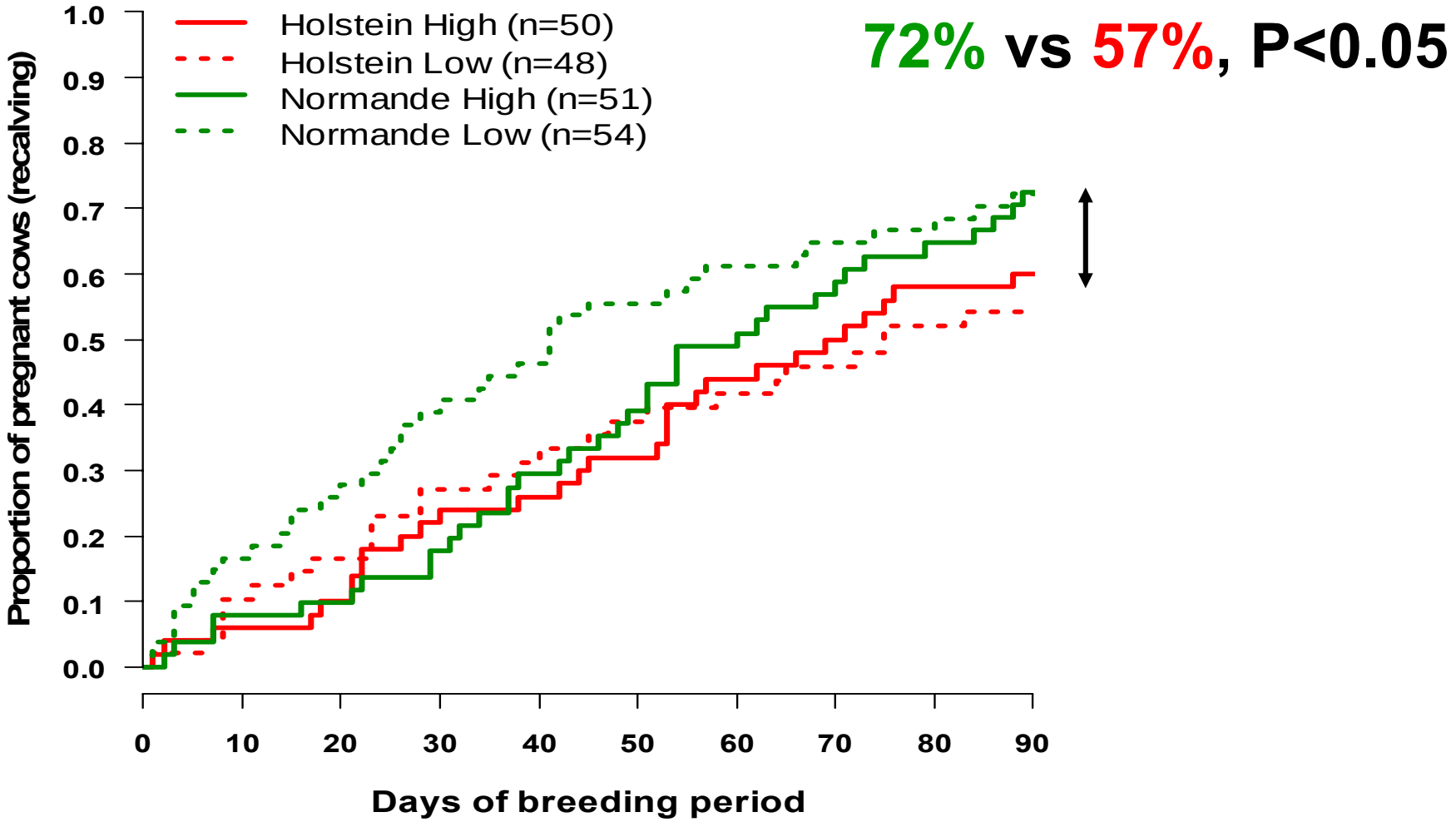
(*) P<0.10

Feeding treatment had converse effects on fertility estimators in Holstein cows (2)

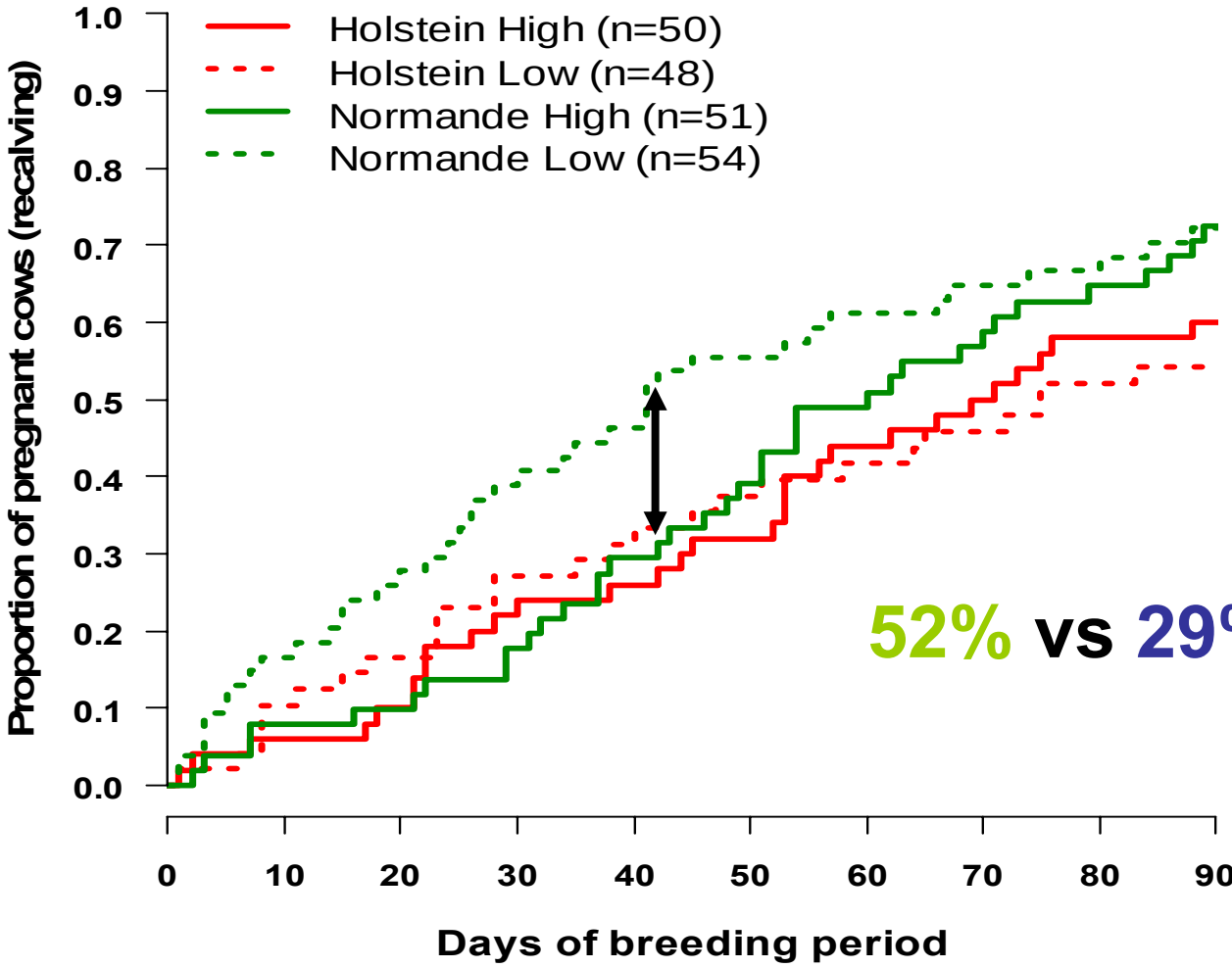
High-fed Holstein cows: increased late mortality



Feeding treatment had no significant effect on % of re-calving cows in a 3 month breeding period



After 6 weeks of breeding, the Low-fed Normande cows had a higher pregnancy rate



52% vs 29%, P<0.05

In summary :

- Feeding strategies = over 90 days breeding

- Ovulation detection rate > in Low-fed cows, especially for Normande cows

In Holstein cows :

- Fertilization rate > in High-fed
- Late Embryo survival < in High-fed
- Recalving rate ~ in High and Low-fed

In conclusion:

- Little feeding strategy effect but major breed effect on final reproductive performance (consistent with recent litterature)

- However, very short breeding periods are much more compromised by high milk yield rather than low BCS owing to depressed oestrous behaviour


Thanks for your attention
Many questions ?
Many thanks to all the people , too numerous to be named,
in the farm and the lab for excellent sampling and analyses