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- **Effect of energy restriction and management on reproduction in Belgian Blue cows**
  L. O. Fiems, W. Van Caelenbergh, S. De Campeneere, D. L. De Brabander, ILVO, Animal Science Unit, Scheldeweg 68, B-9090 Melle, Belgium* Belgian Blue double-muscled cows (n=123) were used from December 1999 to April 2004 to study the effect of energy level during the indoor period (E: 100, 90, 80 or 70% of the requirements; 140 days) on reproduction. Within each E, half of the calves were suckled by their dams for 16 weeks; the other calves were reared. Service bulls were used. No oestrus synchronisation was applied. Cows were eliminated if not pregnant within 9 months postpartum. Body condition score (BCS; 6-point scale) was determined at calving.Eight abortions and 213 parturitions were registered. Six calving were not assisted by caesarean. The occurrence of abortion (P=0.191), length of calving interval (P=0.865), calf birth weight (P=0.289) and calf sex ratio (P=0.670) were not affected by E. Fifty of the 123 cows were culled because they were not pregnant within nine months postpartum, but the number of open cows was not affected by E (P=0.922). Mean BCS at calving decreased with decreasing E (P=0.006). More open cows were culled if their BCS was more than 2 (P=0.019). There was a tendency for an increased calving interval for suckling cows (P=0.087). Calf mortality seemed to be increased by a reduced E (P=0.075), but not by rearing or suckling (P=0.522). The effect of dam BCS at calving on calf mortality was less clear (P=0.245).

Background

- Cyclic weight loss and restoration of body reserve tissue is often applied in beef cows to make maximum advantage of cheap feeds

☞ What about Belgian Blue double-muscled cows?

  - Less body fat, more lean meat (= less reserve tissue)
  - Lower intake capacity

Experimental design

- 123 cows, several parturitions (1999 – 2004)

- 4 treatments:
  - grazing period: similar conditions for all cows
  - indoor period (140 d): tie stalls
    - 100, 90, 80 or 70% of energy requirements
    - 100% of protein requirements
    - Diet: maize silage/straw (80/20), premix, urea and/or soybean meal

Experimental design

- Calf management:
  - ±50/50 suckling/rearing (for 16 weeks)

- Elimination of cows:
  - not pregnant within 9 months pp.
  - health problems (eg. perimetral adhesions)

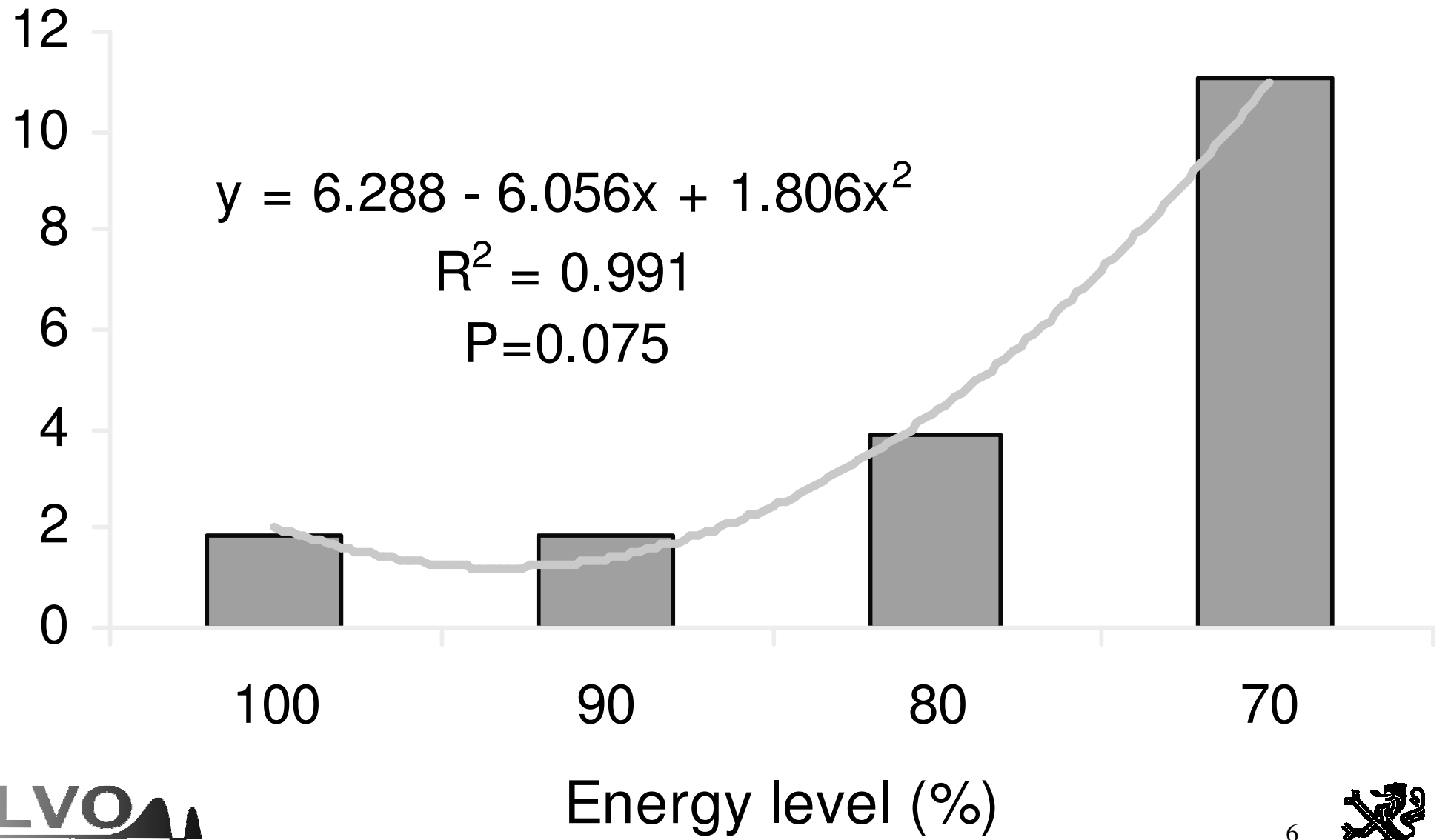
- BCS: scale 0-5 (Agabriel e.a., 1986)

Results: Effect of energy level

	100	90	80	70
n of CI*	53	55	51	54
n of abortions	4	1	0	3
n of caesarean	50	53	51	53
n of not preg 9m	14	12	13	11
Parity	2.4	2.4	2.3	2.2
BCS at calving	**1.65**^{a}	**1.68**^{a}	**1.47**^{b}	**1.44**^{b}
♂/♀	0.89	1.12	0.76	0.93
Birth Wt** (kg)	51.6	53.6	52.0	51.7
CI** (days)	422	423	416	416

*CI: calving interval; ** sex as covariate; ^{a,b} $P < 0.05$

Effect of energy level on calf loss (%)



Effect of calf management

	Suckling	Rearing
No. of CI	93	117
♂/♀	1.04	0.81
Birth Wt. (kg)	52.0	52.6
CI* (days)	**428‡**	**412**
No. of caesareans	89	115

* sex as covariate

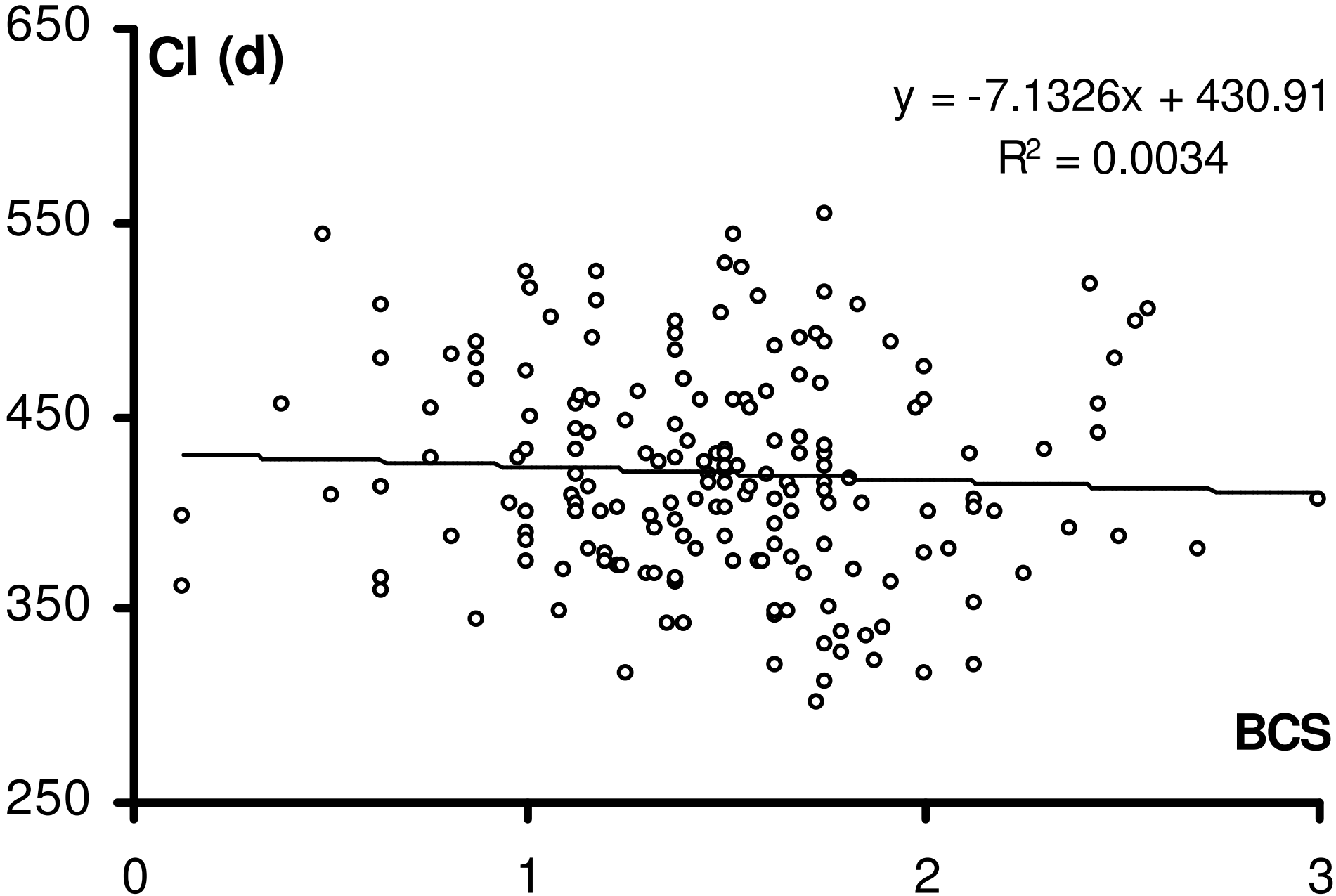
‡ $P < 0.10$

No interaction between Energy level and Calf management

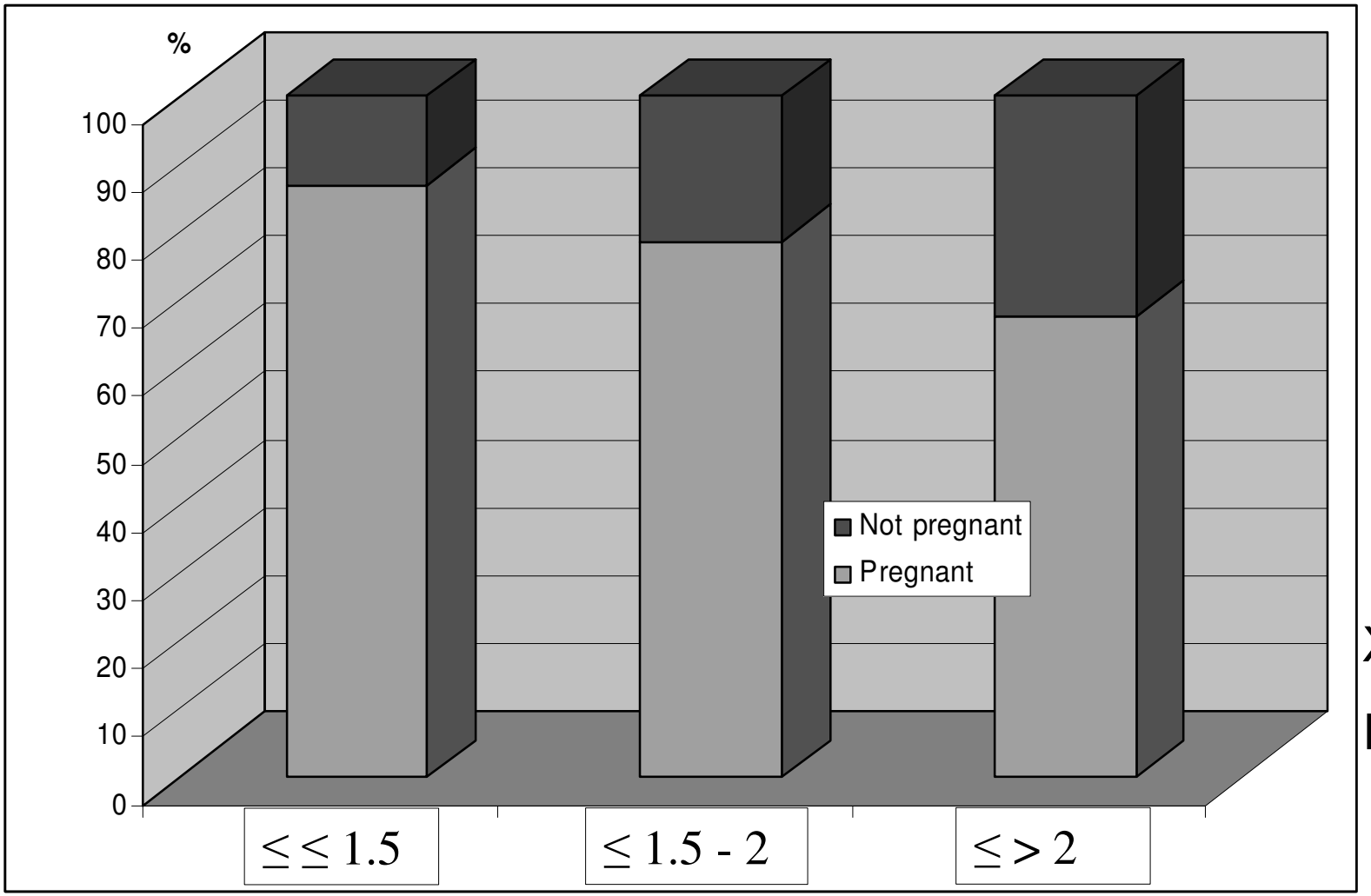
Effect of BCS at calving on dam milk yield and calf performance

	BCS			Pooled SD	P
	≤1.5	1.5 - 2	>2		
No. cow-calf pairs	62	41	17		
Mean BCS	1.23^{a}	1.74^{b}	2.42^{c}	0.22	<0.001
Milk yield* (kg/d)	5.64^{a}	7.60^{b}	7.54^{ab}	1.62	0.051
Calf gain* (kg/d)	0.90^{a}	1.00^{b}	0.96^{ab}	0.16	0.014

* Cow parity and calf sex as covariates


650
550
450
350
250
CI (d)
y = -7.1326x + 430.91
R2 = 0.0034
BCS
0
1
2
3

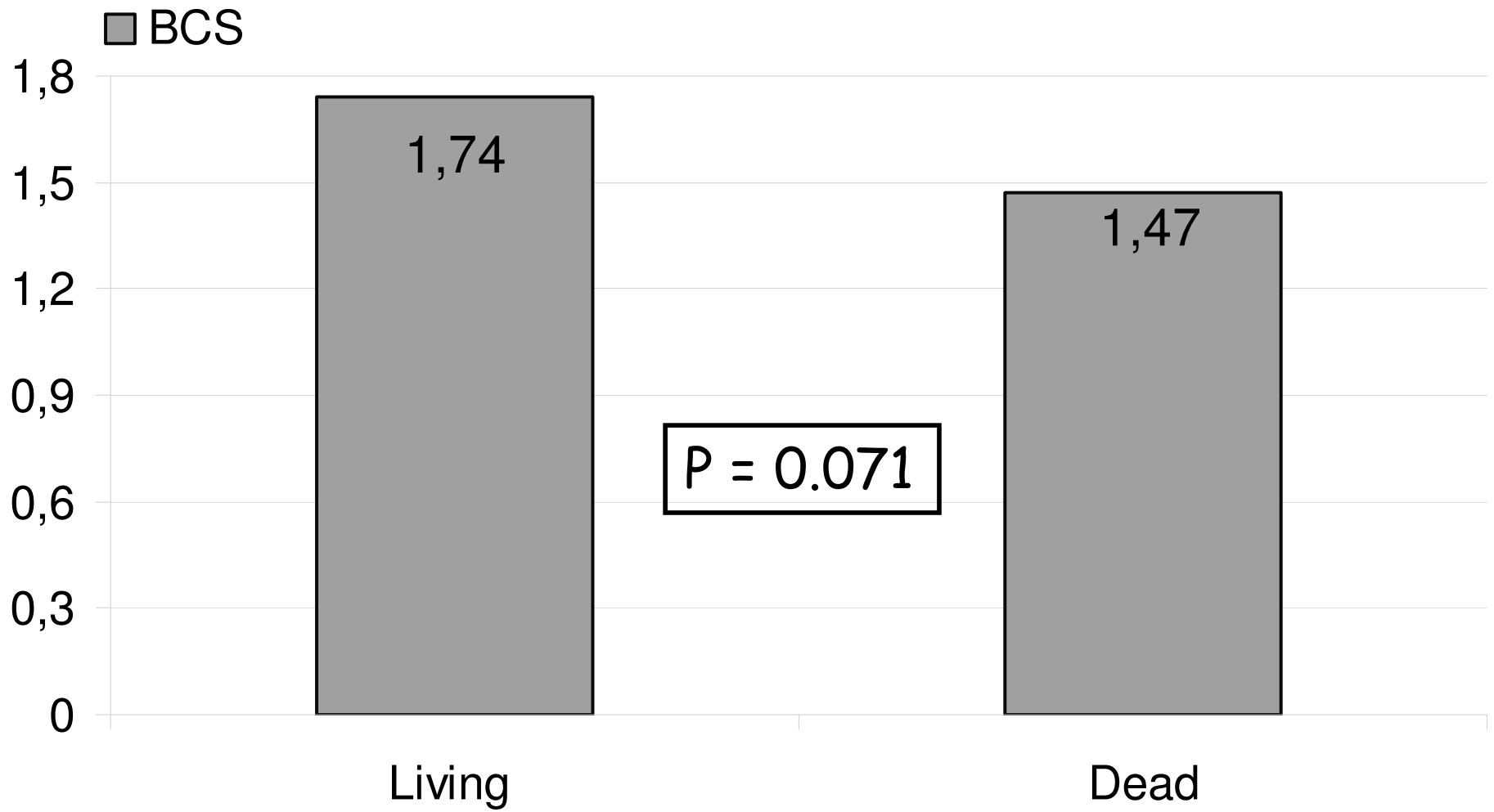
Effect of BCS at calving on open cows 9 months pp. (%)



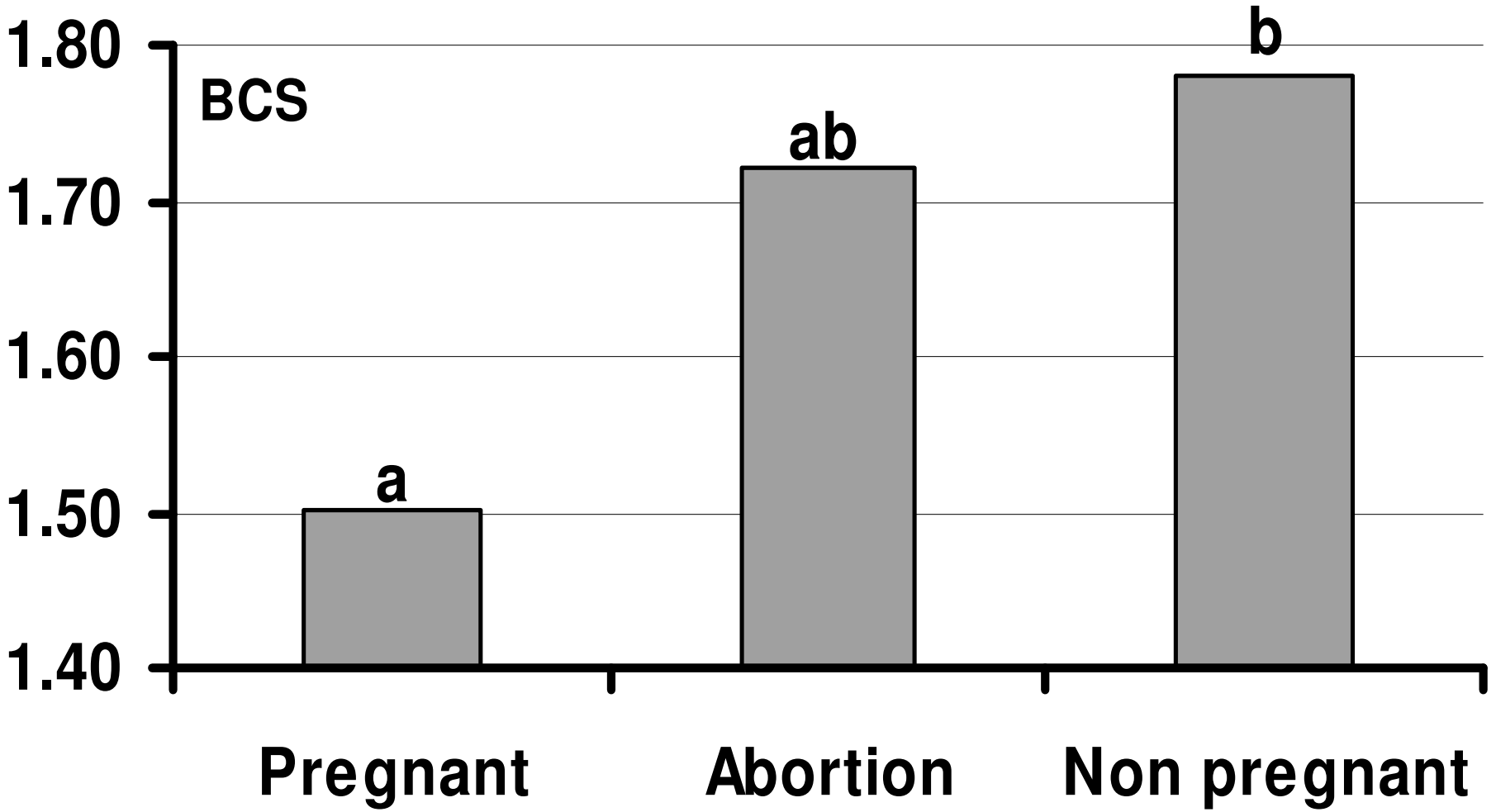
X^2 test

P=0.019

Dam BCS at calving and calf survival after 16 w.



BCS at calving and reproductive aspects



Conclusions

Energy level during the indoor period (140 d) affected

- BCS
- calf losses

Suckling increased calving interval

BCS was not related to calving interval

A higher BCS resulted in

- more open cows at 9 months pp.
- a higher milk yield and calf weight gain
- lower calf losses