

THE EFFECTS OF PROTEIN SUPPLEMENTS AND BREED TYPE ON CYCLICITY AND PREGNANCY IN LACTATING COWS GRAZING A LOW QUALITY PASTURE

P. J. WILLIAMSON and D.W. HENNESSY

NSW Agriculture, Agricultural Research and Advisory Station, PMB 2, Grafton, N.S.W. 2460

The profitability of a beef enterprise on the NSW North Coast depends primarily on the weaning rate. On the low quality pastures of the North Coast, weaning rates are low for cows of British breeds (45%), but higher (62%) for F₁ Brahman x Hereford (Hearnshaw and Barlow 1982). Supplementation of British breed cows with protein meals during early lactation improved their fertility (Hennessy and Williamson 1988), but this response has not been assessed for *Bos indicus* genotypes. In this paper we report on the effect of protein meal supplements in the second year of a 4-year study to improve fertility by examining proportions of cows which cycled but failed to subsequently calve.

Four-year-old cows (n = 108) from 3 breed types (Hereford, Brahman and the F₁ cross) were supplemented in open troughs, twice weekly for 130 days during lactation, at daily rates of either 0,750 or 1500 g cottonseed meal/cow. In early October the cows were divided into 12 mating groups and bulls were placed with cows 60 days after the first calf was born. Post-calving cyclicity was monitored on the basis of blood progesterone concentrations in samples taken at days 88-95 and 122-130 post-calving. Bulls were rotated among cow groups every 21 days and removed, following a 105 day period with cows, and the cows scanned *per rectum* 60 days later. Embryo age (30 to 100+ days after conception) was determined at scanning. Cyclicity of each cow, based on the progesterone data, was related to whether or not the cow subsequently calved, and these data are presented in Figure 1.

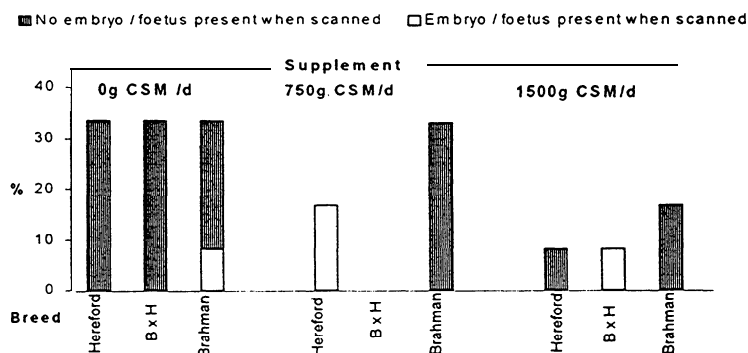


Figure 1. Percentage (%) of cows which cycled, but did not calve

Overall, 91% of the cows cycled and there was no effect of supplementation or genotype ($P > 0.05$). Supplementation reduced ($P = 0.065$) the proportion of cycling cows that failed to calve and there was a tendency for fewer of the cycling Brahman cows to calve. All of the cycling Hereford or Brahman x Hereford cross cows at 0 supplementation which did not calve were diagnosed as non-pregnant when scanned. However, 8% of cycling crossbred cows supplemented at 1500 g/day and 17% of cycling Hereford cows supplemented at 750 g/day failed to calve although there was an embryo or foetus present at scanning. This suggests embryo mortality in these cows. In contrast, the failure of Brahman cows to calve was their failure to conceive. Our results suggest that while cyclic activity will occur in cows grazing low quality pastures they require supplementary protein meal, in amounts greater than 750 g/day, during lactation and when placed with bulls, to establish and maintain pregnancy. This finding applies particularly to Hereford cows.

We thank Drs M. J. D'Occhio (CSIRO) for progesterone analyses and J. F. Wilkins for real-time ultrascan of the cows. The work was supported by the Meat Research Corporation.

HEARNSHAW, H. and BARLOW, R. (1982). Proc. Wld Cong. Sheep and Beef Cattle Breed. Vol. 1. Tech. p. 469.

HENNESSY, D.W. and WILLIAMSON, P.J. (1988). *Aust. J. Exp. Agric.* 28: 439-47.