EFFECT OF LIVEWEIGHT AT WEANING AND POSTWEANING SUPPLEMENTATION ON RETURN TO OESTRUS IN EARLY WEANED *BOS INDICUS* CROSS COWS

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Low pregnancy rates associated with prolonged post-partum anoestrus are a major constraint to beef cattle production in northern Australia, and can be increased by early weaning (Schlink *et al.* 1988). However, response to weaning may be markedly delayed in cows in poor condition (McSweeney *et al.* 1990). The relationship between liveweight (LWT.) at weaning and the extent to which postweaning supplementation (PW-Sup) affected the resumption of cyclicity in first-calf Droughtmaster cows was examined in 2 experiments.

Experiment I. Diets before and after weaning at 7 weeks were H-H, H-L, L-H and L-L, where H = *ad libitum* roughage (40% DMD; 8.5 g N/kg DM) plus 1.5 kg maize:formaldehyde-treated sunflower meal (FSSM) 2:1; and L = 60% (per kg LWT) of the *ad Zibitum* roughage intake of H-cows.

Experiment 2. Cows were fed the L diet from calving until weaning at 10 weeks, and then the L diet with either no supplement (C), or mixtures of maize, urea, casein and FSSM that provided 3.5 MJ ME and 420g CP (P), 26.1 MJ and 147 g CP (E) or 26.1 MJ and 420 g CP (P + E). All cows were fed individually in covered pens. Plasma progesterone (P_4) levels were determined weekly until weaning, and then twice weekly for the next 6 weeks. Onset of cyclicity was determined from P_4 profiles showing cyclic rises >1 ng/mL.

Table 1. Cow LWT after calving (LWT-C), at weaning (LWT-W), and LWT (LWT-P) and percentage cycling 6 weeks after weaning

Means with different letters within columns and experiments are significantly different.

Group	(*n*)	LWT-C	LWT-W	LWT-P	% Cycling
		Experiment 1			
H–H	(6)	406	376a	377a	100
H–L	(5)	402	387a	319b	100
L–H	(6)	405	309b	330b	83
L–L	(6)	411	318b	291c	50
s.e.m.		10.4	6.4	5.1	
		Experiment 2			
C	(6)	391	294	284a	0
P	(6)	419	289	283a	50
E	(6)	408	291	297ab	50
P+E	(6)	399	291	304b	50
s.e.m.		12.4	5.4	5.2	

All cows heavier than 370 kg at weaning cycled within 6 weeks. PW-Sup of cows in experiment 2 increased the percentage cycling within 6 weeks of weaning (P=0.05, Fisher's exact test), with no difference between energy or protein inputs. Logistic regression analvsis of combined data showed percentage cycling was influenced by cow LWT at weaning (P<0.01) and PW-Sup (P=0.02), but not by postcalving LWT (P=0.75). The odds of a cow cycling increased 2.8 times for every 20 kg increase in LWT at weaning, and 8.8 times if fed a PW-Sup.

Onset of cyclicity in response to weaning was affected by cow LWT at weaning. Postweaning supplementation increased the likelihood of ovulation in cows of low LWT.

This work was partially funded by the AMLRDC.

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