

POSTPARTUM NUTRITION, BODY CONDITION AND REPRODUCTIVE PERFORMANCE OF FIRST CALF HEIFERS

R.P. Wettemann¹, K.S. Lusby², J.C. Garmendia³,
M.W. Richards³, G.E. Selk⁴ and R.J. Rasby³

Story in Brief

Forty Hereford and Angus x Hereford first calf 2-yr-old heifers calving in February and March were used in the first replicate of a study to evaluate the influence of body condition score at calving and nutrient intake post partum on reproduction and calf performance. Birth weights of calves were not influenced by body condition score at parturition. Heifers were fed to maintain or gain weight after calving. At the start of the breeding season, gain heifers were heavier (377 vs 313 kg) and had a greater body condition score (5.4 vs 4.7) than maintain heifers. Of the heifers calving with a body condition score of 4 and fed to maintain weight, fewer had ovarian activity during the breeding season compared with heifers that calved with a body condition score of 5 or 6 and maintained weight, or calved at a body condition score of 4, 5 or 6 and gained weight. Pregnancy rate was reduced in heifers with body condition score of 4 that maintained weight post partum (20%) compared to the other treatments (75-100%). These data suggest that calf birth weight is not influenced by body condition score between 4 and 6 at calving but reproductive performance may be altered.

(Key Words: Body Condition, First Calf Heifer, Nutrition, Post Partum, Reproduction)

Introduction

Body condition of beef cows at spring calving is an important factor that regulated reproductive performance. Weight gain after calving may influence pregnancy rate and the interval from calving to conception. The objectives of this study were to determine the influence of body energy reserves at calving and postpartum nutrition of first calf heifers on reproduction and calf performance.

Materials and Methods

Forty Hereford and Angus x Hereford heifers that calved as 2-yr-olds during February and March, 1985 were used in this study. About 3 months prior to the initiation of the calving season, the cows were blocked based on body condition score (BCS, 1=emaciated, 9=obese) and breed and divided into two groups. They were fed so heifers would calve with BCS between 4 and 6.

At calving, heifers were again blocked based on BCS and breed and allotted to either maintain weight or gain (.5 kg/day) during the postpartum period. Gain heifers were offered a 12% CP complete ration

¹Regents Professor ²Associate Professor ³Graduate Student ⁴Assistant Professor

free choice and maintain heifers grazed pasture and received supplemental hay and 1.5 kg/d 41% CP cotton seed meal cubes. Progesterone was quantified in blood samples collected each week during the 60 day breeding season to determine ovarian luteal activity. Natural breeding commenced on May 1 when heifers were between 41 and 84 days post partum.

Results and Discussion

At calving the BCS of the heifers ranged from 4 to 6. Birth weights of the calves were not influenced by BCS at parturition. Birth weights, corrected for sex of calf, averaged 30.8, 30.4 and 30.7 kg for heifers with BCS of 4, 5 and 6, respectively. Calving difficulty and loss of calves at birth were not influenced by BCS. Calf loss averaged 10% for all treatment.

During the four weeks before the start of breeding, maintain heifers actually lost .2 kg/d and gain heifers gained .8 kg/d. At the start of the breeding season, gain heifers were heavier (377 vs 313 kg; $P < .01$) and had a greater BCS (5.4 vs 4.7; $P < .01$) than maintain heifers.

Body condition score at calving and nutrient intake after calving influenced reproductive performance (Table 1). Fewer heifers that calved with a BCS of 4 and were fed to maintain weight had ovarian luteal activity during the breeding season compared with heifers on the other treatments (BCS and postpartum nutrition). Pregnancy rate tended to be reduced in heifers with a BCS of 4 that maintained weight compared to the other heifers.

Weaning weight of the calves was not influenced by BCS of the heifers at calving. However, calves from heifers that were fed to gain weight after calving were heavier at weaning (170 vs 164 kg) compared to calves from heifers fed to maintain weight during the first 85 days after calving.

This trial suggests that calf birth weight is not influenced by body energy reserves of first calf heifers when they have BCS between 4 and 6 at parturition. Reproductive performance is influenced by BCS and postpartum nutrition. This trial will be replicated during the spring, 1986 calving season.

Table 1. Reproductive Performance of heifers that calved with a body condition score of 4, 5 or 6 and were fed to maintain (M) or gain (G) weight post partum.

Criteria	BCS					
	4		5		6	
	M	G	M	G	M	G
Heifers (no)	5	4	8	11	4	3
OA during breeding (%) ^a	20	100	75	91	100	100
Onset OA (da) ^b	101	100	94	90	96	76
Pregnancy Rate (%) ^c	20	100	75	82	75	100

^aOvarian luteal activity determined by concentration of progesterone in plasma. BCS x Nut ($P < .05$).

^bDays from parturition until concentration of progesterone in plasma indicated ovarian luteal activity.

^cBCS x Nut ($P < .12$).