

EFFECTS OF BODY CONDITION SCORE AT CALVING AND POSTPARTUM NUTRITION ON PERFORMANCE OF TWO-YEAR-OLD HEIFERS

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Story in Brief

Eighty-one Hereford and Angus x Hereford heifers were used to study the effects of body condition score at calving and postpartum nutrition on rebreeding rates by 90 and 120 days postpartum and weaning weights of calves. Pregnancy rates of thin heifers were significantly less than for heifers with good body condition (body condition score ≥ 5). Greater postpartum energy intake increased pregnancy rates of thin heifers by 120 days postpartum. However, postpartum nutrition did not affect pregnancy rates of heifers that calved in good condition. Calf weaning weights were influenced by BCS at calving for the Hereford heifers but did not for the Angus x Hereford heifers.

(Key Words: Body Condition Score, Heifer, Nutrition, Reproduction.)

Introduction

The period from parturition to conception is a very demanding time in a heifer's life. She is still growing, has just calved for the first time, is nursing a calf, and is expected to rebreed. Heifers must become pregnant and wean a heavy calf to be profitable. The purpose of this study was to evaluate the effects of body condition score (BCS) at calving and postpartum nutrition on rebreeding and growth of the calf.

Materials and Methods

Eighty-one Hereford and Angus x Hereford heifers that calved as two-year-olds during February and March of 1985 and 1986 were used in this study. In November, before calving, heifers were blocked based on breed and BCS (1 = emaciated, 9 = obese) and were divided into two groups to either lose or gain weight until calving. At calving, each heifer was randomly assigned to one of

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two nutrition groups; either to gain or maintain weight for 69 days postpartum. Body weight, BCS, and calf weight were measured at 2-week intervals. For the purpose of this study, heifers were divided into two groups; those with a BCS < 5 at calving and those with a BCS \geq 5.

Results and Discussion

Body weights and BCS of the heifers during the first 12 weeks postpartum are depicted in Figures 1 and 2, respectively. The greatest increase in weight was for heifers calving with a BCS < 5 and assigned to the diet to gain weight. Heifers on the gain treatment gained about 100 lb after calving. The percentages of heifers that become pregnant by 90 days postpartum are depicted in Figure 3. The difference in pregnancy rates at 90 days between heifers on maintain or gain diets that calved on BCS \geq 5.0 (35% vs 53%) was not significant ($P \geq .20$). Nor was there a difference in pregnancy rate between maintain and gain groups that calved with a BCS < 5.0 (7% vs 18%). There was, however, a significant difference ($P < .02$) between pregnancy rates of heifers fed to gain weight which calved in BCS \geq 5.0 and heifers on the gain diet that calved with a BCS < 5.0. Similarly, heifers on the maintain diet which calved with a BCS \geq 5 had a greater pregnancy rate than those that calved with a BCS < 5 ($P < .07$).

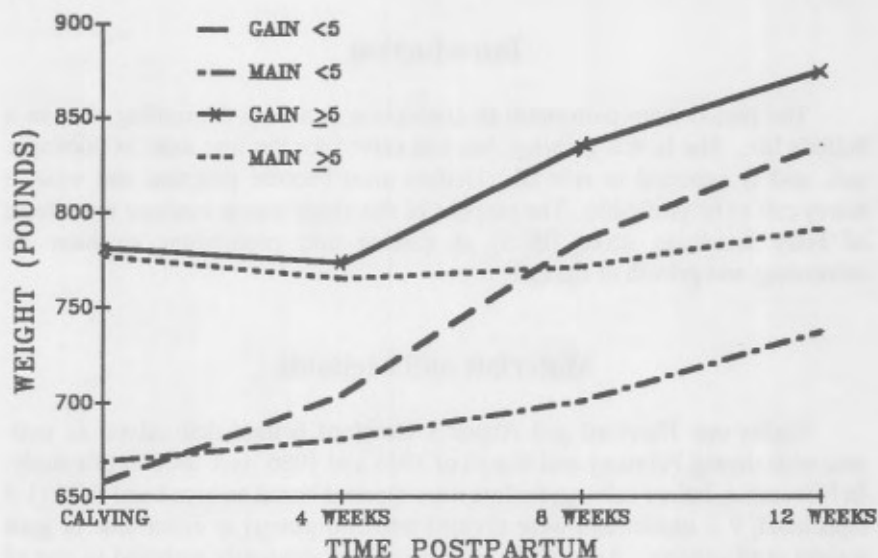


Figure 1. Postpartum weight of heifers with a body condition \geq 5 or < 5 at calving and fed to gain or maintain weight.

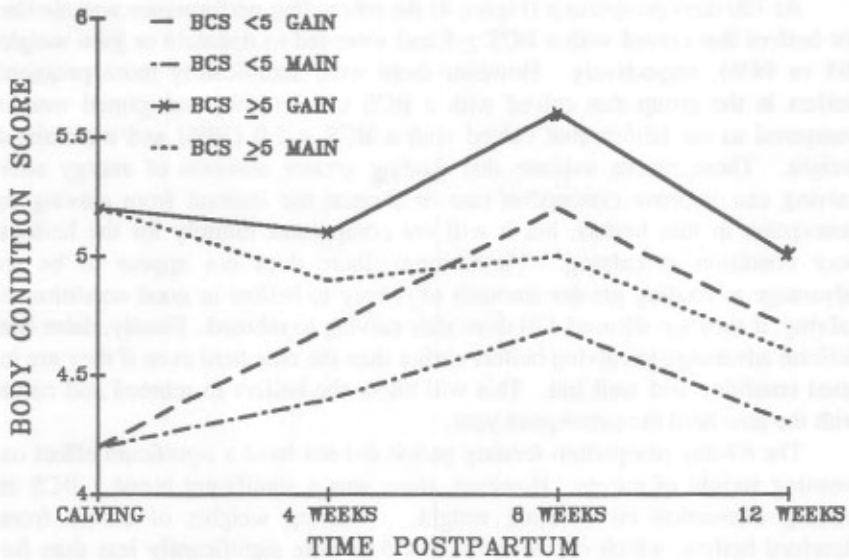


Figure 2. Postpartum body condition scores of heifers with a body condition ≥ 5 or < 5 at calving and fed to gain or maintain weight.

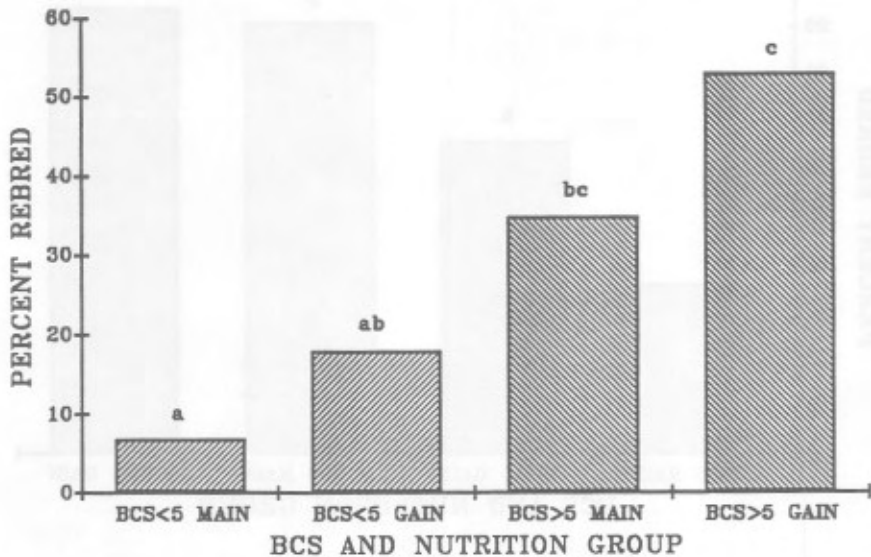


Figure 3. Percentage of heifers pregnant by 90 days after calving, when heifers calved with a BCS ≥ 5 or < 5 and were fed to gain or maintain weight. Bars with different letters (a,b,c) differ ($P < .05$).

At 120 days postpartum (Figure 4) the rebreeding performance was similar for heifers that calved with a BCS ≥ 5 and were fed to maintain or gain weight (91 vs 94%), respectively. However there were significantly more pregnant heifers in the group that calved with a BCS < 5.0 (66%) and gained weight compared to the heifers that calved with a BCS < 5.0 (36%) and maintained weight. These results indicate that feeding greater amounts of energy after calving can improve conception rate or shorten the interval from calving to conception in thin heifers, but it will not compensate entirely for the heifer's poor condition at calving. Furthermore, there does not appear to be an advantage to feeding greater amounts of energy to heifers in good condition at calving, if they are allowed 120 days after calving to rebreed. Finally, there is a definite advantage to calving heifers earlier than the cow herd even if they are in good condition and well fed. This will allow the heifers to rebreed and calve with the cow herd the subsequent year.

The 69-day postpartum feeding period did not have a significant effect on weaning weight of calves. However, there was a significant breed x BCS at calving interaction on weaning weight. Weaning weights of calves from Hereford heifers, which calved in BCS < 5.0 , were significantly less than for Hereford heifers calving with a BCS ≥ 5 , or for Angus x Hereford heifers

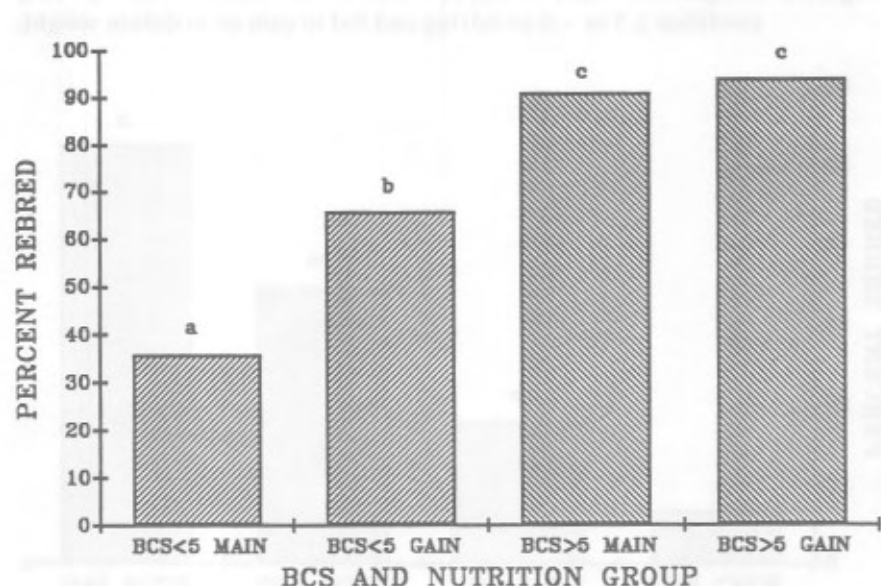


Figure 4. Percentage of heifers pregnant by 120 days after calving, when heifers calved with a BCS ≥ 5 or < 5 and were fed to gain or maintain weight. Bars with different letters (a,b,c) differ ($P<.05$).

calving with a BCS < 5 or ≥ 5 . The weaning weights of calves from Angus x Hereford heifers were not affected by BCS at calving.

These results suggest that heifers should calve with a BCS ≥ 5 to have a majority of heifers pregnant by 120 days postpartum. A greater BCS at calving, and gaining weight after calving, is associated with more pregnant heifers by 90 days postpartum. Previous research reports on these heifers have demonstrated that a BCS of 6 at calving does not increase calving difficulty.