EFFECT OF COW TYPE AND BODY CONDITION SCORE ON POSTPARTUM CYCLICITY OF VARIOUS TWO-BREED-CROSS COWS

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Story in Brief

The effect of body condition score on reproductive performance was evaluated with two-breed-cross cows representing various biological types. The study consisted of 188 aged crossbred cows nursing calves from single births. Cows were bled twice, 7 days apart, at an average of 85 days after calving and body condition scores were assigned at time of blood sampling during one of the two weeks. Blood plasma was analyzed for progesterone concentration by radioimmunoassay to determine luteal activity. Body condition score at time of sampling did have an effect on the percentage of cows with luteal activity at 85 days postpartum. Crossbred group did affect the percentage of cows with luteal activity but no crossbred group x body condition score interaction was detected. Jersey-cross cows had a greater percentage of cows with luteal activity than Simmental-cross, Brown Swiss-cross and Hereford x Angus cows. This provides evidence that the desired body condition score to enhance reproductive performance may be different for cows of differing breeds and biological types.

(Key Words: Body Condition Score, Crossbred Cows.)

Introduction

Many studies have shown the importance of adequate body condition in beef cows to ensure rebreeding early in the ensuing breeding season. Much of this work has been conducted with cows of a single breed type. Whether cows of different breeds or breed combinations, and thus biological types, will perform the same reproductively while at a similar body condition score (BCS) remains to be addressed. If response varies by cow type, it would be appropriate to have different BCS recommendations for the different types.

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Therefore the purpose of this research was to determine reproductive performance of cows of various types and breed combinations at similar BCS.

Materials and Methods

The cow herd used in this study was composed of eight crossbred cow groups produced by mating Hereford, Angus, Simmental, Brown Swiss and Jersey bulls to Angus and Hereford cows. The 188 cows were 11, 12 and 13 years old when they calved during the spring of 1986 at the Lake Carl Blackwell Research Range west of Stillwater. Only cows which had normal, single births and were nursing a calf 85 days after calving were included in the study. Two blood samples were collected by venipuncture from these cows at a seven day interval approximately 85 days after calving. BCS was assigned to each cow at the time of blood sampling during one of the two weeks that a blood sample was collected. A panel of four people familiar with the 1 - 9 scoring system (1 = emaciated, 9 = very obese) assigned the scores to cows. Average BCS was determined for the panel and utilized in the analysis. Cows were assigned to one of three groups based on condition score, with groups consisting of cows with a BCS of 4 or less, BCS 5 and BCS 6 or greater. Progesterone concentrations of blood samples were measured by radioimmunoassay to identify those cows with luteal activity (LA), which indicates those cows which have initiated cyclic ovarian activity since calving. Data were analyzed to determine the percentage of cows cycling in each crossbred cow group, BCS and crossbred cow group x BCS combination.

Results and Discussion

Body condition score at time of blood sampling had an effect on percentage of cows with LA. Only 42% of cows with a BCS 4 or less had LA whereas cows with BCS 5 and those with BCS 6 or greater had 71% and 87% cows cycling, respectively. The eight crossbred cow groups were separated into breed of cows' sire and breed of cows' dam for evaluation. The Hereford x Angus reciprocal cross cows were omitted from the breed of dam analysis and grouped together to make comparisons with the other breed of sire groups. No difference was found for breed of cows' dam (Angus vs Hereford) but breed of cows' sire did have an effect. Least squares means for the crossbred groups are listed in Table 1. A greater percentage of cows from Jersey sires had LA than cows of the other three crossbred groups.

No interaction was present between crossbred group and BCS but comparisons within a BCS show differences in LA between some crossbred groups. Least squares means for these subgroups are also presented in Table

Table 1. Least squares means for percentage of cows with luteal activity 85 days postpartum for crossbred groups and crossbred groups x body condition score subgroups[a].

Crossbred group	Body condition score ≤4	5	≥6	Group average
Hereford x Angus	10.1[b] (3)	61.3[b](28)	77.0(18)	55.7[b](49)
Simmental-sired	36.4[bc](8)	65.1[b](27)	82.8 (9)	61.4[b](44)
Brown Swiss-sired	51.4[bc](9)	59.6[b](26)	57.6 (2)	59.5[b](37)
Jersey-sired	62.5[c](43)	98.6[c](15)	--- (0)	89.0[c](58)

[a]Number of cows in each group or subgroup is shown in parentheses next to the mean.
[b,c]Group averages within a column with a different superscript are different (P<.05).

1. The number of cows classified in each subgroup is given in parentheses after each mean. There were no Jersey-sired cows with a BCS 6 or greater to establish a mean for that subgroup. At BCS 4 or lower more cows from Jersey sires had LA than Hereford x Angus cows, with cows from Simmental and Brown Swiss sires intermediate and not different from Jersey-sired or Hereford x Angus cows. More Jersey-sired cows had LA than cows of the other three crossbred groups at BCS 5. There were no differences between Simmental-sired, Brown Swiss-sired and Hereford x Angus cows at BCS 6 or greater and there were no Jersey-sired cows with this degree of body condition.

This research reinforces that BCS does have an effect on percentage of cows returning to estrous by 85 days after calving. Crossbred group did affect percentage of cows with LA but there was no interaction between crossbred cow group and BCS. A greater percentage of the Jersey-cross cows exhibited LA than the other two-breed combinations. Since cows of this breed type do not need to be in as high a BCS as other types of crossbred cows in order to cycle 85 days after calving, they would not need to be fed to the same body condition. Thus money could be saved due to reduced feed costs while attaining a desirable level of reproductive performance. Therefore some refinements of the BCS recommendations for enhancing reproductive performance may need to be investigated for cows of various breed combinations and biological types.