

Relationship between Changes in Prepartum Body Weight and Condition and Reproductive Performance of Range Cows

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Story in Brief

Thirty-five Hereford cows were maintained in two groups under range conditions. One group was fed so that only 3.5 percent of the November weight was lost prior to calving in March. The other group of cows lost about 14 percent of the fall weight prior to calving. On an individual cow basis, the range in body weight change was from a 5 percent increase to a 20 percent loss. Body condition score averaged 6.1 in November, and percentage change in condition from November to calving was between +23 percent and -43 percent. Percentage changes in body weight and body condition score during the winter before calving were both correlated with days to first estrus and days to conception, and the correlations were of similar magnitudes. Therefore, either body weight change or body condition score change before calving can be used to estimate rebreeding performance.

Introduction

Only about 70 to 75 percent of beef cows wean a calf each year. A major reason for this reduced calf crop is that about 15 percent of the cows are not pregnant at the end of the breeding season. In many cases, the cause of cows being open after the end of the breeding season is the failure of these cows to resume normal estrus cycles after calving.

The ovary is nonfunctional, and estrus does not occur for varying lengths of time during the postpartum period. Level of nutrition before and after calving has been shown to have a major influence on how quickly ovarian function is resumed after calving. Obviously, the level of nutrition provided the cows also affects body weight and condition. Therefore, the purpose of this study was to evaluate the relationships among changes in prepartum body weight and body condition with the intervals from calving to first estrus and to conception in range cows.

Materials and Methods

Spring calving Hereford cows were maintained in two groups under native tall grass range conditions. One group of 18 cows was fed so that the November body weight was maintained through the winter until the time of calving. The other group of 17 cows was fed so that they would lose 10 to 15 percent of the November weight by the time of calving. Feed levels (supplemental protein) were adjusted on the basis of body weights taken every two weeks. Body condition

scores, based on visual observations, were determined independently by three individuals on November 14 and March 8. The scores were based on a scale from 1 = very thin, to 9 = very fat. Cows were exposed to bulls wearing chin-ball markers to aid in detecting breeding activity. Days to conception was calculated by subtracting 283 days from the date of birth.

Results and Discussion

The characteristics of the cows used to determine what relationship precalving weight and body condition change have with reproductive performance are listed in Table 1. The large variation for the traits would be expected since the cows were divided into two groups and maintained during the winter on two levels of nutrition. At the start of the trial (November) these Hereford cows weighed between 755 and 1250 pounds and body condition scores ranged from 4.7 to 8.0. Just prior to calving in the spring, cows weighed from 5 percent more to 20 percent less than they did in the fall and the percentage change in body condition score ranged from +23 to -43 percent.

Table 1. Characteristics of spring calving Hereford cows used to determine the relationships between weight and condition changes and reproductive performance

| Characteristic | Average | Minimum | Maximum |
|--|---------|---------|---------|
| Number of cows | 35 | — | — |
| November weight (lb) | 986 | 755 | 1250 |
| November body condition score ^a | 6.1 | 4.7 | 8.0 |
| Precalving weight (lb) | 893 | 655 | 1160 |
| Precalving body condition score | 5.1 | 3.8 | 6.5 |
| Weight change (November to precalving) (%) | -9 | +5 | -20 |
| Body score change (November to precalving) (%) | -14 | +23 | -43 |
| Calving to first estrus (days) | 70 | 35 | 109 |
| Calving to conception (days) | 73 | 39 | 127 |

^a1 = very thin, 9 = very fat.

As observed in previous research, the percentage decrease in body weight from November until just prior to calving was correlated with days to first estrus ($r=.58; P<.01$) and days to conception ($r=.60; P<.001$). The relationships among percentage weight lost before calving and days to first estrus and days to conception are plotted in Figure 1. Each 10 percent of body weight lost before calving delayed first estrus by about 19 days and delayed conception by about 16 days.

Use of body condition score allows the evaluation of potential reproductive performance of cows without weighing them. The relationships between percentage change in body condition score from mid pregnancy (November) to calving, and days to first estrus and days to conception are depicted in Figure 2. The percentage decrease in body condition score during the winter before calving was correlated with days to first estrus ($r=.61; P<.005$) and days to conception ($r=.62; P<.001$). These correlations are of similar magnitude as those between body weight change and days to estrus and conception. Thus, either body weight change or body condition score change can be used to estimate potential rebreeding performance.

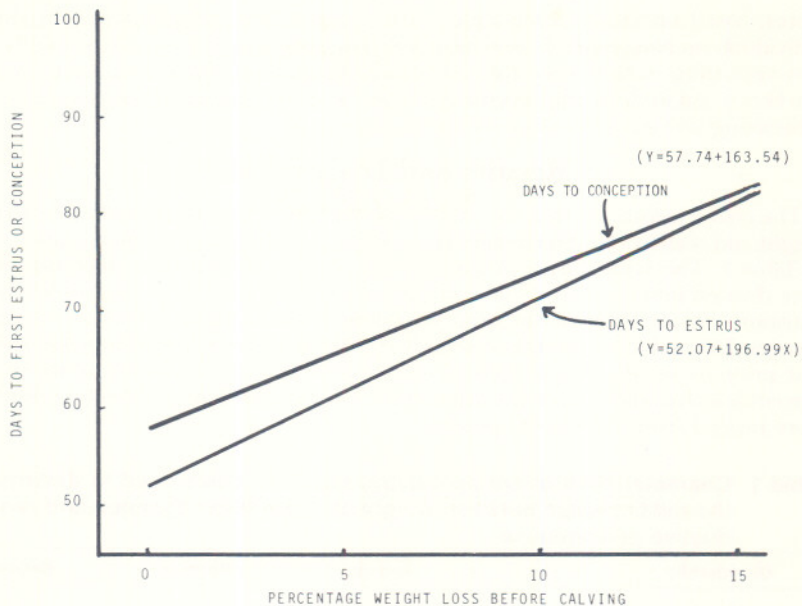


Figure 1. Relationships between percentage body weight lost before calving and days to first estrus and conception in Hereford range cows

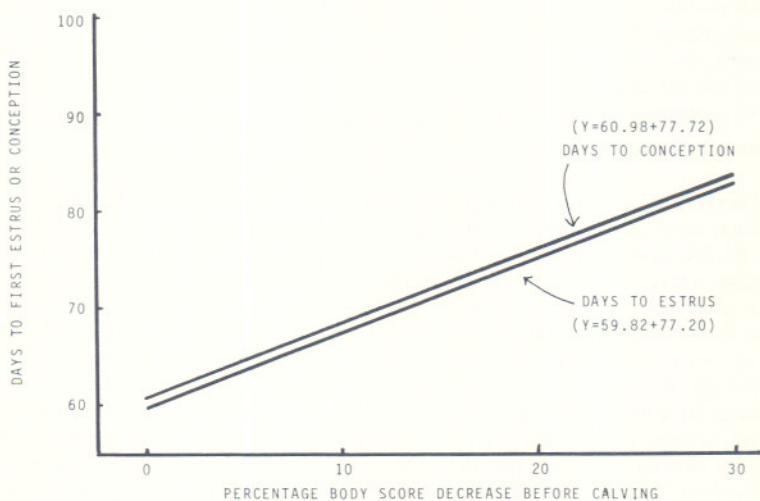


Figure 2. Relationships between percentage decrease in body condition score before calving and days to first estrus and conception in Hereford range cows

A 20 percent decrease in body condition score from November to calving in the spring (a cow changing from a 6.0 to a 4.8) would be associated with an additional 15 days to first estrus after calving compared to a cow that maintained body condition. Similarly, a 20 percent decrease in body condition score would be associated with an additional 16 days to conception.

This study reemphasized the relationship between weight loss during pregnancy and rebreeding performance. Either body weight loss or change in body condition are good indicators of potential reproductive performance of range cows.

A Comparison of Different Breeds for Growth Rates, Performance Traits and Scrotal Circumference in Young Beef Bulls

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Story in Brief

Performance data and testicular measurements from 497 Hereford, Polled Hereford, Angus, Brangus and Charolais bulls were collected from December 19, 1979, through April 2, 1981, at Oklahoma Beef, Incorporated, a performance bull test station. The on-test age of these bulls was approximately 7 months, and they remained on-test for 140 days.

Charolais bulls were taller, heavier, faster gaining and trimmer, and they possessed larger rib eye areas than the other breeds. Hereford, Polled Hereford and Angus bull on-test and off-test hip heights were similar (43.2 in.), while Brangus (44.5 in.) and Charolais (45.8 in.) were taller, representing differences in breed frame and mature size. However, skeletal growth as measured by hip height growth rate per day was similar for all breeds, averaging .0328 in. per day or 1 in. per month. Average daily gains on test were very similar for Charolais, Polled Hereford, Angus and Brangus bulls, ranging from 3.37 to 3.58 lb per day, while Hereford bulls gained slightly less (3.18 lb per day).

Angus bulls had the largest on-test scrotal circumference measurement (27.7 cm) while the Hereford and Polled Hereford bulls had the smallest (25.6 cm). Brangus, Angus and Charolais were similar in their off-test scrotal circumference