INFLUENCE OF INTERVAL OF FEEDING PROTEIN SUPPLEMENT TO SPRING CALVING BEEF COWS ON BODY WEIGHT AND BODY CONDITION SCORE DURING THE WINTER

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Story in Brief

The effect of the interval of feeding a protein supplement to beef cows grazing dormant pasture was evaluated. Cows were fed the same total amount of a 40% crude protein supplement either 3 days or 6 days each week. The interval of feeding did not influence body weight or body condition score changes during the winter.

(Key Words: Beef Cow, Nutrition, Reproduction.)

Introduction

Beef cows grazing low quality forage are usually supplemented with protein. It is desirable to feed the supplement at infrequent intervals to reduce labor and equipment costs. Early studies by (Pope et al., 1963) indicated that protein supplements could be fed every 2, 4 or 6 days without major effects on winter weight loss of mature beef cows. When steers were fed low quality prairie hay and cottonseed meal either daily or the same amount of cottonseed meal every fourth day, concentrations of glucose in plasma tended to be greater in steers fed the supplement daily (Bishop et al., 1992). When steers were fed a protein supplement every fourth day, plasma urea nitrogen was increased the day after feeding and nonesterified fatty acids in plasma were increased, compared with steers fed 25% of the amount of supplement every day. As we learn more about the delicate regulation of reproductive function in cows by the brain, hypothalamus and pituitary gland, it becomes apparent that extended intervals between protein supplementation of cows consuming low quality forage may influence reproductive function.

Many range beef cows in Oklahoma grazing dry grass pastures during the winter are fed protein supplements every second, third or fourth day. The objective of this experiment was to determine body weight and body condition score changes of cows fed the same total amount of protein supplement on either 3 or 6 days each week.

Materials and Methods

One-hundred-twenty-three mature spring calving Hereford and Angus x

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Hereford cows were blocked by age, breed, body weight and body condition score (BCS; 1=emaciated and 9=obese) and randomly allotted to one of four groups. The two treatments were: 3d = the weekly protein supplement was fed in three equal amounts on Monday, Wednesday and Friday of each week; 6d = the same total amount of protein supplement was fed in six equal amounts on all days except Sunday each week. There were two replications for each treatment. Cows in one replicate for each treatment grazed dormant bermuda grass pasture and the second replication for each treatment grazed dry prairie grass pasture. Cows on the two treatments could not be grazed on the same pasture because removing cows fed more frequently from a pasture would influence the grazing behavior of the cows on the other treatment. To prevent the feeding of the 6d cows from disturbing the grazing behavior of the 3d cows, pastures were separated from one another.

All cows were fed a 40% crude protein supplement. The intervals and total amounts fed per week were: Nov. 17 to Mar. 9, 9.5 kg per cow; Mar. 10 to April 22, 12.7 kg per cow; April 23 to May 15, 8 kg per cow. Cows were provided with hay free choice when snow or ice covered the standing forage (0 days), when the temperature was less than 4°C and it was raining, or the temperature was less than -4°C at noon. Cows calved between January 1 and April 15. This earlier than normal and longer than normal calving season was dictated by a previous experiment that utilized the cows. Cows were exposed to fertile bulls for 75 days commencing on May 17. Body weights and BCS were determined every 28 days during the feeding period. Analyses of variance were used to determine treatment effects. Pasture was the experimental unit and the treatment x replication interaction was used to test treatment and replication effects. Cows in each replicate were rotated between pastures to reduce pasture effects. Pregnancy was determined by palpation at 90 days after the end of the breeding season.

Results and Discussion

The pasture system used was adequate, and when cows were fed 6 days per week it did not influence the grazing of the 3 d cows on the days that they were not fed supplement. Body weight loss from November through April (including calving weight loss) was not influenced by the frequency of feeding supplemental protein. Cows fed supplemental protein 3 days per week lost 110 kg and cows fed the same amount of supplement in 6 days lost 116 kg (Table 1). The 21% weight loss for the cows is slightly greater than that normally experienced, however since many of the cows calved earlier than normal in the season it was possible to achieve acceptable rebreeding performance with the large weight loss.

Cows on both treatments had a BCS of 5.4 in November, and similar to

Table 1. Influence of supplementation interval on body weight and body condition score (BCS) of beef cows.

Criteria	Days supplement fed per wk	
	3	6
Number of cows	62	61
Body weight-Nov., kg	539	550
Body weight loss-Nov. to April, kg	110	116
BCS-Nov.	5.4	5.4
BCS-April	4.4	4.3
Pregnancy rate, %	98	94

body weight, loss of BCS during the winter was not influenced by interval of feeding the protein supplement. Pregnancy rate was not influenced by treatment (Table 1). Ninety-eight percent of the cows fed supplemental protein 3 days per week became pregnant and 94% of the cow fed 6 days per week. This excellent pregnancy rate with cows with an average BCS of 4.35 in April was greatly influenced by the fact that 65% of the cows were 85 days or more post partum at the onset of the breeding season. Pregnancy rate would have probably been much less in these thin cows if they did not have the long interval from calving until the onset of breeding. This experiment did not evaluate the interval from calving until the onset of estrous cycles.

In agreement with earlier observations, these results indicate that winter weight changes of mature beef cows are similar if the same total amount of supplemental protein is fed during 3 or 6 days a week. In addition, BCS of cows during the winter is not influenced by the interval of feeding of supplemental protein. However, the effect of the interval of feeding of supplemental protein on the onset of estrous cycles after calving should be evaluated if estrous cycles are to be initiated and the breeding season started during periods when low quality forage and protein supplement are fed.

Literature Cited

Pope, L.S., et al. 1963. Okla. Agr. Exp. Sta. Res. Rep. MP-70:49.
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