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Abstract

Adding rumen bypass fat to a range supplement reproductive characteristics, cow weight and condition performance during a 43-day postpartum feeding period.

Keywords

Cattlemen's Day, 1987; Kansas Agricultural Experiment Station contribution; no. 87-309-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 514; Beef; Rumen; Performance; Bluestem

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Influence of Rumen Bypass Fat Fed in a Range Supplement on the Performance of Cows and Calves Grazing Bluestem Range[1]

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Summary

Adding rumen bypass fat to a range supplement did not improve reproductive characteristics, cow weight and condition changes, or calf performance during a 43-day postpartum feeding period.

Introduction

Feeding fat to lactating dairy cows has improved their performance because of increased energy intake. Since energy is one of the nutrients limiting reproductive performance, the potential of dietary fat in beef cow rations merits study. The objectives of this study were to evaluate the influence of feeding rumen bypass fat in a range supplement on: a) postpartum changes in body weight, condition, blood urea nitrogen, and progesterone levels; b) milk production and calf gains; and c) reproductive performance.

Experimental Procedures

Sixty-six cow - calf pairs were randomly assigned within age and calving date to two treatment groups: 1) control -- 4.5 lb/hd/day of a corn/soybean meal supplement and 2) Megalac® -- 4.5 lb/hd/day of the supplement used in group 1, with .75 lb/hd/day Megalac added. Three pastures were randomly assigned per treatment. Pastures varied in size and were stocked to provide a similar area per cow-calf pair. All cows had continual access to a salt/dicalcium phosphate mixture.

Cows and calves were weighed after an overnight stand without forage and water at the beginning and end of the 43-day trial. On weigh days, cows were also evaluated for body condition by palpation over the ribs and thoracic vertebrae, and by ultrasound. Palpation condition score was the average of two independent observers' rankings (1 = extremely emaciated, 9 = extremely obese).

Milk production was measured on cow-calf pairs by the weigh-suckle- weigh technique on day 36 to 39. Two observations of 12-hour milk production were summed to estimate daily milk production. Blood samples for progesterone analysis were collected on days 1, 12, 23, 33, and 43 of the trial. Samples for blood urea nitrogen were collected on days 12, 23, 33, and 43.

[1]Appreciation is expressed to Church and Dwight Co., Inc. for providing the Megalac used in this study. Megalac® is a rumen bypass fat with a guaranteed fat analysis of at least 82.5%.

At the end (day 43) of supplement feeding, all cows received a prostaglandin injection as an initial step in a synchronization program. Then, cows were heat-checked daily and artifically inseminated. On day 53, all cows not bred received a second prostaglandin injection. Daily heat checking and artificial insemination continued until day 61, when three cleanup bulls were turned in. Bulls were removed on day 99. All cows were run together during the breeding period (days 43 to 99). Blood progesterone levels were used to verify that cows were cycling.

Results and Discussion

Both control and Megalac supplements increased cow weight and condition (Table 32.1). In spite of the additional energy provided by the rumen bypass fat, control cows tended to have higher (P=.09) daily gains. Calf gains, and cow milk production, blood urea nitrogen levels, and percentage displaying heat during the artificial insemination period were similar (P>.10). In this study, feeding Megalac in a range supplement immediately before the breeding season did not yield positive responses; however, information on how the level and timing of bypass fat supplementation affects grazed forage intake and utilization would be helpful in deciding whether the responses we observed are typical, or if an alternate approach could alter cow and/or calf response.

Table 32.1. Effect of Rumen Bypass Fat on Weight Response in Cows and Calves, Milk Production, Percentage of Cows Cycling, Body Condition Change, and Blood Urea Nitrogen

Item	Control[a]	Control + Megalac[b]
Number cows	34	32
Cow initial weight (lbs)	806	810
Cow final weight (lbs)	862	845
Cow ADG (lbs)	1.3	.8
Calf initial weight (lbs)	118	115
Calf final weight (lbs)	195	192
Calf ADG (lbs)	1.8	1.8
Cow milk production (lbs/day)	16.7	15.8
% cows cycling at start of breeding season	41.2	43.8
Initial condition score[c]	4.38	4.45
Final condition score	4.64	4.68
Initial ultrasound (cm)	.26	.28
Final ultrasound (cm)	.29	.29
Blood urea nitrogen (mg/dl)	5.57	5.38

[a]Control supplement contained (%): Ground corn - 89.6; soybean meal - 7.8; and wet molasses - 2.6.

[b]Megalac supplement contained (%): Ground corn - 76.8; soybean meal - 6.7; Megalac - 14.3; and wet molasses - 2.2.

[c]Condition score represents the average of two independent observers' rankings (1 = extremely emaciated, 9 = extremely obese).