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Influence of limited creep feeding on pre- and post-weaning performance of spring born calves

Abstract

Spring-born suckling beef calves were offered salt-limited creep feeds containing either high protein, high energy, or energy plus Bovatec® from August 15 to October 15 in a 3- year study. Creep feeding improved ($P < .01$) daily gain over controls, but no differences were attributable to creep composition. Daily creep feed consumption was somewhat less for the protein fed group, resulting in improved feed conversion compared to the energy-based supplement, with the energy plus Bovatec creep feed intermediate in efficiency. Creep feeding improved 53-day postweaning gains ($P < .01$). Overall, limited creep feeding boosted both pre- and postweaning performance, with no difference in gain among the three types of creep rations studied.

Keywords

Cattlemen's Day, 1992; Kansas Agricultural Experiment Station contribution; no. 92-407-S; Report of progress (Kansas State University. Agricultural Experiment Station and Cooperative Extension Service); 651; Beef; Limited creep feeding; Protein energy; Suckling calves; Native grass; Bovatec

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INFLUENCE OF LIMITED CREEP FEEDING ON PRE- AND POST-WEANING PERFORMANCE OF SPRING BORN CALVES¹

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Summary

Spring-born suckling beef calves were offered salt-limited creep feeds containing either high protein, high energy, or energy plus Bovatec® from August 15 to October 15 in a 3-year study. Creep feeding improved ($P < .01$) daily gain over controls, but no differences were attributable to creep composition.

Daily creep feed consumption was somewhat less for the protein fed group, resulting in improved feed conversion compared to the energy-based supplement, with the energy plus Bovatec creep feed intermediate in efficiency.

Creep feeding improved 53-day postweaning gains ($P < .01$). Overall, limited creep feeding boosted both pre- and postweaning performance, with no difference in gain among the three types of creep rations studied.

(Key Words: Limited Creep Feeding, Protein Energy, Suckling Calves, Native Grass, Bovatec.)

Introduction

The milk production of spring-calving cows grazing native grass pastures decreases in late summer, which coincides with the decreased nutritional value of native grasses. Therefore,

suckling calves may be nutritionally limited below their genetic gain potential. Thus, creep feeding offers a way to improve weaning weights.

By definition, a limited creep feeding program restricts either the amount of feed, the length of time feed is offered during the season, or both. Research has shown that "full" creep feeding is often economically unattractive because of poor feed conversion and/or excessive calf condition at weaning, which may reduce market value.

In contrast, limited creep feeding of suckling calves appears to be more cost effective because of improved feed conversion. The objective of this study was to evaluate the pre- and post-weaning performance of spring-born calves receiving salt-limited protein, energy, or energy plus Bovatec creep feeds vs. noncreep supplemented calves.

Experimental Procedures

In the spring of 1986, 180 Angus, Hereford, and Angus-Hereford crossbred cows were allotted by age and breed to three groups. In late summer, the three groups of cow-calf pairs were assigned randomly to three 60-day nutritional treatments: 1) noncreep-fed control, 2) 16% crude protein energy-based creep

¹Appreciation is expressed to Farmland Industries, Inc., Kansas City, MO for providing creep feeds.

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feed, or 3) 16% crude protein, energy-based creep feed plus Bovatec (68 mg/lb).

Similarly, in late summer of 1987 and 1988, the three groups of cows and calves were assigned to three treatments: 1) noncreep-fed control, 2) 16% crude protein, energy-based creep feed, or 3) 36% crude protein creep feed. In mid-August of each year, the calves were weighed, allotted to treatment, and returned to three native tall-grass pastures with their dams. The cows and calves were rotated among pastures, so all treatment groups grazed each pasture for 20 days.

The creep feeds were self-fed in wind-vane feeders, fenced off for calf access only, and located in a cattle loafing area. Nutrient composition of the creep feeds is shown in Table 1. Corn gluten feed was the basic ingredient in each creep feed, with soybean meal or sorghum grain added to produce 16 or 36% crude protein supplements. Creep intake was monitored twice weekly, and salt content was increased as needed to limit daily intake to 1.5 to 2 lb/head. Salt levels ranged from 2 to 7% over the creep feeding period.

Calves were weaned, weighed after an overnight stand without feed, and shipped 120 miles to the KSU Beef Research Unit in mid-October for the post-weaning growing trial. Starting weights for the growing period were off-truck weights at the feedlot. The calves were fed a silage-based growing ration for an average of 53 days.

Results and Discussion

Calves consuming the limit-fed protein, energy, and energy plus Bovatec creep feeds gained faster ($P < .01$) than the noncreep-fed calves (Table 2). Type of creep diet had no effect on gain. Daily consumption of the energy and energy plus Bovatec creep rations was somewhat higher than that of the protein creep feed. This resulted in more efficient conversion ($P < .01$) of the protein feed than the energy feed to extra gain, whereas the energy plus Bovatec creep was intermediate. Calf body condition scores were similar among treatments at weaning.

There was no difference in post-weaning gain of calves previously fed the three creep rations. However, all limited creep-fed calves gained faster ($P < .01$) during the 53-day postweaning period than noncreep-fed calves (Table 3). The creep-fed calves tended to have better feed intake and feed utilization than controls. The creep-fed calves likely had an advantage in terms of preweaning rumen adaptation to processed feeds, which may have improved early postweaning performance.

The question of which limited creep feed is better — protein or energy — for cow/calf pairs grazing native range in late summer depends on relative feed efficiency and cost. Because limited creep feeding of calves improved both pre- and postweaning performance, economics could be favorable in most years. The biggest problems experienced with limited creep feeding of calves were the mechanics of monitoring intake and adjusting the salt level to maintain uniform desired consumption.

Table 1. Nutrient Composition of Creep Feeds^a

Nutrient Content	Energy Creep Feed	Protein Creep Feed
Crude protein, %	16.00	36.00
Crude fiber, %	11.20	11.50
Estimated TDN, %	69.50	68.60
Calcium, %	.85	.85
Phosphorus, %	.85	.85

^aNutrient composition expressed on an air-dry (90% dry matter) basis.

Table 2. Effect of Limited Creep Feeding on Pre- and Postweaning Calf Performance

Bovatec Items Feed	Control	Protein Creep Feed	Energy Creep Feed	Energy + Creep
Preweaning performance				
Starting wt, lb	376	387	387	380
Daily gain, lb (60 days)	1.52 ^a	1.80 ^b	1.74 ^b	1.76 ^b
Body condition score (1 to 10)	6.20	6.30	6.30	6.10
Daily creep intake, lb DM	-----	1.10	1.40	1.36
Lb creep/extra gain	-----	4.00 ^a	6.60 ^b	5.20 ^{ab}
Postweaning performance				
Daily gain, lb (53 days)	2.31 ^a	2.49 ^b	12.49 ^b	2.49 ^b
Daily intake, lb DM	12.54	13.00	13.00	12.76
Feed/gain	5.40	5.20	5.30	5.10

^{ab}Least squares means in the same row with unlike superscripts are different (P < .01).