SALT-LIMITED CREEP FEED FOR NURSING CALVES

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Story in Brief

Seventy-two spring-born nursing calves were allotted to Control (no creep) or Creep-fed cottonseed meal in a creep feeder with salt added to limit intake to about 1 lb/head/day from July 17 to October 2. Thirty eight fall-born calves were similarly allotted to Control (no creep) or Creep-fed treatments and fed from June 1 to August 3. Spring-born calves and their dams grazed native range near Stillwater while fall-born calves and their dams grazed bermudagrass pastures near Muskogee. Spring-born calves consumed an average of .88 lb of cottonseed meal/head/day and gained .32 lb/day faster ($P<.01$) than Control calves. Fall-born calves ate an average of .68 lb of cottonseed meal/head/day and gained .3 lb/day faster ($P<.01$) than Control calves. The percent salt required to limit intake to about 1 lb/head/day was 10% for fall calves and 15% for spring calves. At a cottonseed meal cost of $.10/lb, the cost of added gain for fall-born calves was $.23/lb and $.28/lb for spring-born calves.

(Key Words: Salt-Limited, Protein, Creep Feed, Beef Cattle.)

Introduction

Creep feeds for nursing calves have traditionally consisted of grain mixtures fed free-choice. Daily intakes typically reach 6-8 lbs/head/day with conversions of creep to added gain between 5:1 and 15:1. The high costs of mixed rations and the poor feed conversions have seldom made creep feeding feasible for commercial cow-calf operations. Research has shown that supplementing relatively small amounts of high protein feeds to stocker cattle grazing native grass or bermudagrass from mid- to late summer increases forage intake and digestibility and results in efficient conversions of supplement to added gain. If nursing calves would respond to protein supplementation as efficiently as stocker calves, limit-fed high protein creep feeds might offer a method of profitably increasing weaning weights in commercial cow-calf operations.

Materials and Methods

Trial 1

Thirty-eight fall-born Simmental crossbred calves nursing Hereford x Angus cows were used to study the effects of a salt-limited cottonseed meal creep on the rate and efficiency of calf gain. This trial was conducted at the Eastern Research Station near Muskogee in eastern Okla-

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homa. Forage consisted of bermudagrass that was 8-10 inches tall at the start of the study. Calves were allotted by sex, birthdate and age of dam on June 1 to two treatment groups; (1) Control, grazing with no creep feed, and (2) Creep Feed, to receive free-choice salt-limited cottonseed meal at a rate of about 1 lb/head/day. Creep was provided in a whirlwind mineral feeder equipped with a rubber pan that could hold approximately 50 lb of cottonseed meal and salt. A small creep feeding area was constructed with portable panels and a creep gate allowing access only to calves. Initial mixtures consisted of 5% salt and 95% cottonseed meal with a small amount of hay to entice the cattle into the creep feeding area. Creep intake was measured three times each week and the percent of salt was increased as necessary to maintain cottonseed meal intake at about 1 lb/head/day. The trial lasted from June 1 to August 3 when calves were weaned at about 10 months of age. Calves were weighed after overnight withdrawal from feed and water.

Trial 2

Seventy-two Hereford, Angus and Hereford X Angus calves nursing Hereford and Angus cows were used. Procedures were similar to Trial 1 with the following exceptions. Calves were born between late February and mid-April. Cows and calves grazed native range near Stillwater in North Central Oklahoma. Allotment to treatment groups was based on calf birth date and breed of dam. The study began on July 17 and ended on October 2 when the calves were weaned.

Table 1. Gain and efficiency of calves fed salt-limited creep on bermudagrass pastures.

	Control	Creep-fed	Prob.
Number of calves	18	20	
Initial weight, June 1 (lb)	437	442	
Daily gain, 63 days (lb)	1.24	1.54	P<.01
Lb creep/lb added gain		2.27	
Cow weight, June 1 (lb)	931	903	
Cow weight change, 63 days (lb)	53	70	

Table 2. Gain and efficiency of calves fed salt-limited creep on native grass pastures.

	Control	Creep-fed	Prob.
Number of calves	36	36	
Initial weight, July 17 (lb)	247	261	
Daily gain, 76 days (lb)	1.60	1.92	P<.01
Lb creep/lb added gain		2.79	
Cow weight, July 17 (lb)	942	950	
Cow weight change, 76 days (lb)	116	115	
Cow condition score, July 17[a]	5.2	5.4	
Cow condition change, 76 days	+.6	+.4	

[a]1=very thin, 9=very fat.

Results and Discussion

Trial 1

The calves were 7-9 months of age at the start of creep feeding and averaged 440 lbs in weight (Table 1). Creep-fed calves gained 1.54 lb/head/day compared to 1.24 for Control calves ($P<.01$). Creep consumption ranged from .25 to 1.55 lb/head/day and averaged .68 lb/head/day for the 63 day trial period. Two weeks were required for the calves to begin consuming the creep, and then the desired cottonseed meal intake was sustained by adjusting the salt content to between 5 and 10%. A level of 15% salt reduced intake below the 1 lb/head/day level. Creep-fed calves had slicker haircoats and appeared thriftier than Control calves. This difference in appearance is consistent with observations of stocker cattle fed protein supplements during the summer. Weight changes were similar for dams of Control and Creep-fed calves.

Trial 2

The calves used in Trial 2 were younger (4-6 months old) and lighter (254 lbs) than the fall-born calves used in Trial 1. The native grass pastures had not been grazed during the summer prior to the creep feeding study and contained ample forage. The creep feeding area was established under a shade tree close to a stock pond in a 160 acre pasture. A period of about 10 days was required for daily cottonseed meal consumption to reach the desired 1 lb/head/day. A salt level of 15% was adequate to maintain the desired intake of cottonseed meal. Creep-fed calves gained .32 lb/head/day more than Control calves ($P<.01$) with a conversion of 2.79 lb cottonseed meal/lb of added gain. Differences in animal appearance was obvious, similar to results of Trial 1.

No differences in weight or condition change were noted among dams of Control and Creep-fed calves. This observation is consistent with other studies that have shown no effect of creep feeding on milk intake of calves.

The efficient conversion of cottonseed meal to added gain seen in both trials strongly suggests that forage intake and/or digestibility was increased. At a cottonseed meal cost of $.10/lb, the cost of added gain would have been about $.23 for calves in Trial 1 and $.28 for calves in Trial 2.

As in all programs dependent on forage intake responses, a protein-based creep feeding program assumes that adequate forage is available. Aside from the low cost of added gain, a salt-limited high protein creep feeding program has the advantage of reducing the amount of creep feed that must be handled. It is likely that the addition of growth promotives such as Rumensin could further improve the efficiency of creep feed conversion to added gain. It is also probable that the addition of Rumensin will permit a reduction in the amount of salt needed to limit intake. This comparison is planned for future studies at OSU.