COMPARISON OF LIMIT-FED HIGH PROTEIN CREEP FEED AND FREE-CHOICE GRAIN CREEP FOR SPRING-BORN CALVES ON NATIVE RANGE

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Story in Brief

Forty-three spring-born Angus, Hereford and Hereford X Angus calves were allotted to three treatment groups: no creep (Control); limit-fed, high protein creep (Protein); or free-choice grain creep (Grain). Creep was offered from June 4 to weaning on October 15. Calves began consuming the grain creep almost immediately but did not consume protein creep at the desired 1 lb/day level until early July. Calf weight gains during the creep feeding period (June 4 to October 15) were 230, 260 and 309 lb for Control, Protein and Grain creep groups. The conversion of creep to added gain was 3.3:1 for Protein creep and 7.8:1 for Grain creep. Cow weight and condition score changes were similar for dams of calves in all groups.

(Key Words: Early Weaning, Creep Feed, Fall Calving, Beef Cattle)

Introduction

Limit-fed, high protein creep has been shown to efficiently increase weaning weights when fed to spring-born calves in late summer (Lusby et al., 1985). The probable action of protein creep is to stimulate forage intake and digestibility during late summer when protein content of the forage is low. Traditional creep feeds have been grain-based and fed free choice, typically at 5-7 lb/day. While free-choice creep feeding has increased calf weaning weights, the conversions of grain to added gain often have not been economically feasible, especially for spring-born calves. The objectives of this trial were to compare cow and calf performance when spring-born calves were creep-fed with either limit-fed, high protein creep or free-choice grain-based creep.

Materials and Methods

Forty-three Angus, Hereford and Hereford X Angus calves and their dams were allotted by calving date and breed to three management treatments on June 4, 1985. Calves were born from late February to late April and grazed native range pastures with their dams. All calves were weighed and individually identified at birth. All male calves except Angus were castrated by banding at birth. The three treatment groups were Control, limit-fed high protein creep (Protein), and free-choice grain based creep (Grain). Composition of the Grain creep is shown in Table 1.

Protein creep calves were first offered straight cottonseed meal in a whirlwind-type mineral feeder surrounded by portable panels. Calves had access to the feeders through creep gates. When intake of

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Table 1. Composition of grain creep ration.

Ingredient	Percent
Cottonseed hulls	19.5
Rolled corn	53.9
Cane molasses	5.8
Soybean meal	19.1
Limestone	.9
Dicalcium phosphate	.4
Salt	.4
Composition, DM basis, %	
Dry matter	86.0
Protein	15.3
TDN	78.0

cottonseed meal reached 1 lb/head/day, salt (10%) was added to limit intake. Grain calves were offered creep in a metal creep feeder with a capacity of 1000 lb. Calf weights and cow weights and condition scores (scale of 1=very thin to 9=very fat) were taken after overnight withdrawal from feed and water. Pastures were rotated twice during the trial which ended on October 15 when all calves were weaned. Data were analyzed by least squares analysis of variance.

Results and Discussion

Calves weighed about 200 lb at the beginning of the study on June 4 (Table 2). One of the objectives of the study was to determine when calves would first begin to consume the limit-fed creep feed. Calves consumed very little cottonseed meal without salt until early July when consumption exceeded 1.0 lb/head/day. At that point, 10% salt was added to the meal and consumption dropped to about 0.5 lb/head/day and remained at that level until early August. During August, daily intakes approached 1.5 lb/head/day. Beginning in September, intake was restricted to 1.0 lb/head/day on a weekly basis by adding the 10% salt-90% cottonseed meal mixture to the feeders twice weekly at a rate to provide 1.0 lb/head/day. Consumption of the Grain creep was about 2.0 lb/head/day from June until mid-July. From mid-July to mid-September, intake of Grain creep was about 6.5 lb/head/day and increased to as much as 9.5 lb/head/day from mid-September to weaning on October 15.

Least squares means for calf weight gains are shown in Table 2. Control calves gained 230 lb (1.73 lb/day) during the 133 day trial period compared to 260 lb (1.95 lb/day) for Protein creep calves and 309 lb (2.32 lb/day) for Grain creep calves ($P<.01$). Protein creep calves consumed 99 lb of cottonseed meal per calf for a conversion of creep to added gain of 3.3:1. Grain creep calves ate 614 lb of feed for a conversion of 7.8 lb of feed per pound of added gain. The efficiency of utilization of the Protein creep in this trial is slightly poorer than seen in previous studies. This is likely because the trial was started early in June when forage quality was high and calves would not be as likely to need additional protein as well as the fact that creep consumption was permitted to increase to 1.5 lb/head/day in August.

Table 2. Effects of protein creep or grain creep on cow and calf performance.

	Control	Protein Creep	Grain Creep	Prob.
No. of calves	15	14	15	
Initial calf weight	201	205	200	
Calf gain, 6/4-10/15[a]	230[b]	260[c]	309[d]	P<.01
Creep/calf, lb (133 days)	---	99	614	
Pound creep/lb added gain	---	3.3	7.8	
Initial cow weight	876	945	898	
Cow wt change, 6/4-10/15[a]	101	88	89	
Initial cow condition score	4.9	5.0	5.0	
Condition score change, 6/4-10/15[a]	.5	.4	.4	
Cows pregnant/cows exposed	13/15	11/14	12/15	

[a]Least squares means.
[bcd]Means on a line with different superscript letters differ (P<.05).

Based on observations with stocker cattle fed high protein supplements in summer, the efficiency of utilization of protein may be expected to decrease as intakes exceed 1.0 lb/head/day. Considering that nursing calves are usually lighter in weight than stocker cattle, the optimum level of protein creep may be even lower than 1.0 lb/head/day but this has not been studied.

Calf creep feeding treatment did not significantly affect cow weight or body condition score changes during the trial. All cows gained weight and body condition during the trial. Pregnancy rates also were similar across treatment groups.

Literature Cited

Lusby, K.S., et al. 1985. Salt-limited creep feed for nursing calves. Okla. Agr. Exp. Sta. Res. Rep. MP-117:249.