Influence of Limited-Creep Feeding on Pre and Postweaning Performance of Spring Born Calves[1]

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Summary

Two limited-creep feeding trials were conducted in Northwest and Southeast Kansas using spring-born, suckling calves to evaluate the effect of available forage supply on creep-fed calf performance. Energy vs. protein creep feeds were compared at each location. Creep feed intake was limited with salt to achieve an average daily intake of about 1.5 lb per head. Calves consuming the limited energy and protein creep feeds gained from 0.1 to 0.6 lb more per head daily preweaning, and required 2.3 to 7.6 lb of creep per lb of extra weaning weight. Postweaning gains of the noncreep-fed calves were .12 to .27 lb per day higher than those of creep-fed calves, suggesting some compensation by the control calves postweaning.

Introduction

Kansas producers are interested in improving the carrying capacity of pastures, increasing weaning weights, and achieving top market prices for their calves. Ad lib creep feeding historically has helped cattlemen improve carrying capacity and weaning weights, but feed conversion and economic feasibility have often been unsatisfactory. A promising approach to creep feeding, however, is limiting creep intake to 1 to 2 lbs per day with salt. Recent research has indicated that this method results in feed conversions of 4 to 6 lbs of feed per lb of extra gain. Providing calves a salt-limited creep could be especially beneficial when 1) pastures are in poor condition in late summer (starting around August 1st), 2) during droughts, and 3) in pastures with young cows (2 to 3-year olds).

Use of limited creep in suckling calves looks promising, but questions remain. One question relates to the use of high protein vs. high energy creep. Trials have yielded variable results that could depend upon available forage supply and quality. Another concern relates to the market value of creep fed and limited creep-fed calves at weaning. To demand top prices at weaning, calves must not be overly conditioned by excessive creep feed consumption. Other concerns relate to economic feasibility of creep feeding suckling calves in retained ownership programs where cow-calf producers have the opportunity to capitalize on postweaning compensatory gain.

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Two trials were conducted to (1) evaluate differences in pre-and postweaning performance of nursing calves on native grass pasture when offered an energy vs. protein, salt-limited creep feed and (2) evaluate the pre-and postweaning productivity of suckling calves receiving salt-limited creep feeds vs. noncreep-fed calves.

Experimental Procedures

Trial 1: One hundred forty-one exotic cross, suckling calves were randomly allotted to three treatments: (1) noncreep-fed controls, (2) energy creep feed or (3) protein creep feed. On August 17, the calves were weighed, paired with cows and moved to three native, short-grass pastures located in Northwest Kansas. Calves allotted to treatments 2 and 3 were provided creep feed in self feeders located in cattle loafing areas. Nutrient content of the creep feeds is detailed in Table 18.1. Creep intake was closely monitored, and salt was added as necessary to limit daily intake to no more than 2 lb per head. Calves were re-weighed on November 2, weaned, implanted, dehorned, and moved to a backgrounding lot. During the 71-day backgrounding period, calves received an average of 8.5 lbs of milo, 1.5 lb of a commercial 36% protein supplement, and a full-feed mixture of 2/3 sorghum silage and 1/3 cane-wheat hay. Final calf weights were obtained on January 11th.

Trial 2: One hundred forty-six Angus-Hereford crossbred, suckling calves were randomly allotted to the same treatments as used in Trial 1. On August 10, the calves were weighed, paired with cows, and moved to three native tallgrass pastures located in the Kansas Flint Hills. Calves on the creep treatments were provided creep feed in enclosed wind-vane feeders at two locations in each pasture. Nutrient content of the creep feeds was identical to that used in Trial 1. Creep feed intake was monitored throughout the 62-day trial. The cow-calf pairs were rotated among the three pastures every 21 days to minimize pasture effects. The calves were reweighed and condition-scored on October 12, weaned, and shipped to the KSU Beef Research Unit for a 65-day growing trial. During this phase, the calves were fed an average of 2.0 lb of a 36% protein supplement, 3 lb of milo, and a full-feed of grain sorghum silage. Final calf weights were obtained on December 16, after an overnight stand without feed and water.

Results And Discussion

Table 18.3 details the pre- and postweaning performance of calves from Trial 1. Calves consuming the energy creep gained .61 lb per day more than noncreep fed calves and .28 lb per day more than protein creep-fed calves ($P<.01$). Protein creep-fed calves gained .33 lb per day more than noncreep-fed calves ($P<.01$). Calves receiving the energy creep consumed an average of 1.4 lb per head daily and required 2.3 lb of creep feed per lb extra gain. Protein creep-fed calves consumed an average of 1.6 lb per head daily and required 4.8 lb of creep feed per lb extra gain. Creep feed intake by 24-day periods is outlined in Table 18.2. Neither the energy nor protein creep feeds required the addition of salt to limit intake until the second 24-day period. Both types of creep feed required 6 to 7% salt by the end of the feeding period to limit daily intake to about 1.5 lb per head.

Postweaning performance of creep-fed vs. noncreep-fed calves from Trial 1 is shown in Table 18 .3. Noncreep-fed calves gained about 0.25 lb per day more during the 71-day backgrounding phase than calves receiving either type of creep feed. Final calf weights were similar for all treatments, suggesting that noncreep fed calves produced compensatory postweaning gain.

Preweaning performance of calves from Trial 2 is detailed in Table 18.4. Although daily intake of the energy and protein creep feeds averaged only .83 and .38 lb per head, respectively, for the 73-day test, creep-fed calves still gained an average of 0.13 lbs/day more than noncreep fed calves (P<.08). This resulted in 7.6 lb and 2.7 lb of creep feed per lb of extra gain for the energy and protein creep-fed calves, respectively. Condition scores were higher (P<.08) for energy creep-fed calves than noncreep-fed calves; however, protein creep-fed calves were not different from noncreep-fed or energy creep fed calves. Postweaning gains of the noncreep-fed calves averaged .12 lb and .21 lb per head daily higher than that of the energy and protein creep-fed calves, respectively, durng the 65-day growing period.

Table 18.1. Nutrient Composition of Experimental Creep Feeds used in Trials 1 and 2 [a]

Nutrient	Energy Creep	Protein Creep
Crude Protein, %	16.0	36.0
Crude Fiber, %	11.2	11.5
TDN, %	69.5	68.6
Calcium, %	.85	.85
Phosphorus, %	.85	.85

[a]Nutrient composition expressed on an air-dry (90% dry matter) basis. Creep feeds as supplied to KSU by Farmland contained no added salt; however, salt was added as needed to limit creep feed intake to 1.5-2.0 lbs/hd/day.

Table 18.2.Limited Creep Feed Intake Over 73-Day Preweaning Period (Trial 1)

	Limited Energy Creep		Limited Protein Creep	
Period	Avg. Daily Intake, lb	% Salt	Avg. Daily Intake, lb.	% Salt
First 24 Days	.42	0	1.12	0
Second 24 Days	1.56	5	1.76	6
Third 24 Days	2.21	6	2.04	7
Overall 73 Days	1.40	--	1.60	--

Table 18.3. Effect of Limited Creep Feeding on Pre- and Postweaning Calf Performance (Trial 1)

Item	No Creep	Limit-fed Energy Creep	Limit-fed Protein Creep
Preweaning Calf Performance-73 Days on Native Grass:			
No. Calves	49	44	48
Initial Wt., lb	386[a]	395[b]	383[ab]
Weaning Wt., lb	505[c]	557[d]	525[e]
Total Gain, lb	118[c]	162[d]	142[e]
Daily Gain, lb	1.62[c]	2.23[d]	1.95[e]
Daily Creep Intake, lb.[4]	----	1.4	1.6
Creep/Extra Gain, lb.[5]	----	2.3	4.8
Postweaning Calf Performance-71-Day Backgrounding Period:			
No. Calves	41	37	42
Weaning Wt., lb	522[a]	558[b]	540[ab]
Final Wt., lb	651[a]	668[b]	651[b]
Total Gain, lb	129[a]	110[b]	112[b]
Daily Gain, lb	1.82[a]	1.55[b]	1.59[b]

[ab]Means in a row not sharing the same superscript differ (P<.05).
[cde]Means in a row not sharing the same superscript differ (P<.01).
[3]Total number of calves preweaning = 141; Total number of calves postweaning = 120.

Table 18.4. Effect of Limited Creep Feeding on Pre- and Post-weaning Calf Performance (Trial 2)

Item	No Creep	Limit-fed Energy Creep	Limit-fed Protein Creep
Preweaning Performance-73 Days on Native Grass:			
No. Calves	47	51	48
Initial Wt., lb	342	365	365
Weaning Wt., lb	450	480[b]	482[b]
Total Gain, lb	108[a]	115[b]	117[b]
Daily Gain, lb	1.75[a]	1.86[b]	1.89[b]
Condition Score[1]	6.84[a]	7.04[b]	6.96[ab]
Daily Creep Intake, lb[2]	----	.83	.38
Creep/Extra Gain, lb	----	7.6	2.7
Postweaning Performance-65 Days:			
Total Gain, lb	178[b]	170[ab]	165[a]
Daily Gain, lb	2.74[b]	2.62[ab]	2.53[a]

[ab]Means in a row not sharing the same superscript differ (P<.08).
[1]Body condition scores: 1 = extremely thin, 9 = very fleshy.
[2]Average daily creep intake over entire 73-day preweaning period. Due to little or no creep feed intake for the first 30 days of the trial, dry molasses was added to the creep feed to get the calves started eating.