Effects of Creep Feeding on Preweaning and Postweaning Performance Of Angus x Hereford Calves

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Story in Brief

The effect of creep feeding on preweaning and postweaning calf performance was determined. Forty-two Angus x Hereford calves produced by Hereford cows were allotted to either a creep or non-creep feeding program.

Creep-fed calves were 40 lb heavier at weaning and gained 0.17 lb more per day than calves not receiving creep. In addition, creep-fed calves were 0.90 inches taller and 0.47 inches longer at weaning than non-creeped calves. Creep feeding reduced forage intake by 11.70 percent but did not influence the level of milk intake.

During the postweaning feedlot phase calves which were previously creep-fed gained 6.4 percent faster and were 5.2 percent more efficient at converting feed to gain than non-creeped calves.

At slaughter, creep-fed calves were 46 lb heavier and yielded carcasses 49 lb heavier than non-creeped calves. Creep-fed calves had 0.2 inches more backfat and produced carcasses with 1.2 percent lower cutability than non-creeped calves. Other carcass characteristics were not significantly affected by creep feeding.

Introduction

The cow-calf producer trying to obtain the highest possible return per dollar invested is interested in increasing the weaning weight of his calves. Creep feeding has been shown to effectively increase the rate of gain and condition of suckling beef calves. Kuhlman *et al.* (1961) reported increased gains from creep feeding of 44 lb and Nelson *et al.* (1958) reported weight increases of 65 and 88 lb on two creep rations as compared to non-creeped calves.

No previous work at this station has been conducted to determine the effect of creep feeding on postweaning performance. This study conducted in the spring and summer of 1976 was designed to determine the effect of creep feeding on preweaning and postweaning performance and carcass traits of beef calves.

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Materials and Methods

Forty-two Angus x Hereford calves were used to determine the effect of creep feeding vs non-creep on preweaning and postweaning feedlot performance. Calves produced by Hereford cows were allotted to either a creep or non-creep feeding program. Cow-calf pairs were managed under tallgrass native range conditions at the Southwestern Livestock and Forage Research Station (El Reno) during the spring and summer of 1976. All cows were seven-year-olds producing their sixth calf. Calves were born during December, January and February with an average calving date of January 15.

Cows received 5 lb of a 30 percent all-natural crude protein supplement five days per week post-calving. This supplement level was calculated to allow an approximate winter weight loss of 20 percent (including calving weight loss).

Creep feeding was initiated on March 2 and continued until calves were weaned at 240 ± 7 days of age. Composition of the creep ration is shown in Table 1.

Milk intake by calves was estimated at monthly intervals using the calf suckle technique. Estimates of daily milk intake represent the cumulative total milk consumed during four consecutive determinations made after 6 hr periods of separation of calves from their dams.

Forage intake of calves was estimated in August 1976, while calves were on lush native pasture. Forage intake was estimated using an external indicator technique employing chromic oxide as the indicator.

At weaning calves were fasted for 6 hr, weighed, photographed and vaccinated for blackleg, parainfluenza-3 and infectious bovine rhinotraecheitis. Calves were placed directly into the feedlot at weaning.

Skeletal size was estimated from 2″ × 2″ slides taken of each calf behind a grid at weaning and prior to slaughter. Height was defined as the distance from the hip to the floor and length as the horizontal distance from the point of the shoulder to the hip.

Table 1. Composition of creep ration

Ingredient	Percentage
Corn, ground	49.5
Alfalfa hay, chopped	15.0
Cottonseed hulls	10.0
Soybean meal (44%)	17.5
Molasses, liquid	5.0
Wheat mids	3.0
	100%

Table 2. Composition of feedlot ration

Ingredient	Percentage
Corn, rolled or ground	60.20
Cottonseed hulls	15.00
Alfalfa hay, chopped	10.00
Cottonseed meal	8.00
Molasses, blackstrap	5.00
Dicalcium phosphate	0.50
Urea	1.00
Salt	0.30
	100.00%
Chlortetracycline (Aureomycin) mg/lb	7
Vitamin A IU/lb	1000

In the feedlot, calves were fed a 75 percent concentrate diet (Table 2) *ad libitum*. Calves were divided by treatment and sex and fed in four groups.

Each calf was fed to an estimated quality grade of low choice based on subjective evaluation of apparent fatness. Final weights and photographs were taken after a 12 hr fast.

Calves were slaughtered in a commercial packing plant and chilled 72 hr before quality grade, marbling score, maturity and kidney, heart and pelvic fat were estimated by a USDA grader. Rib-eye area and backfat thickness were measured from a tracing at the 12th to 13th rib separation on each carcass. Cutability was predicted by the equation of Murphey *et al.* (1960).

Results and Discussion

Preweaning calf performance is summarized in Table 3. Creep-fed calves were 40 lb heavier ($P<.02$) at weaning than non-creeped calves. This represents an 8.9 percent increase in preweaning rate of gain.

Creep-fed calves consumed 702 lb of creep ration per head. This represents 17.8 lb of creep feed/lb of added gain.

Creep-fed calves tended to be longer ($P>.17$) and taller ($P<.02$) at weaning than non-creeped calves.

Creep-fed calves were showing more condition than non-creeped calves as evidenced by their higher ($P<.01$) weaning condition scores. Conformation score was not influenced by creep feeding.

The effect of creep feeding on forage and milk intake is shown in Table 4. Calves on creep tended ($P>.14$) to consume less forage (11.7 percent less) than non-creep calves. Milk intakes were not affected by creep feeding.

Feedlot performance of the calves is summarized in Table 5. Creep-fed calves tended to have higher average daily gains ($P>.17$) and more efficiently converted feed into gain than non-creeped calves. Creep-fed calves were heavier ($P<.02$) at slaughter than non-creep calves.

There was a trend for creep fed calves to be taller ($P>.14$) and longer ($P>.14$) at slaughter than the non-creep calves. This is consistent with trends observed for these calves at weaning.

Table 6 summarizes carcass data for the calves. The cutability of the creep-fed calves was 1.2 percent lower ($P<.03$) than non-creeped calves. This resulted from the creep-fed calves having significantly ($P<.01$) heavier carcasses and greater ($P<.02$) backfat thickness and tending ($P>.19$) to have more kidney, heart and pelvic fat, while rib-eye areas were not affected.

Non-creep-fed calves on the average had more marbling and thus graded slightly higher than creep-fed calves. However, this effect was not significant.

Economic analysis

Creep feeding is practiced with the expectation of increased profit; however, careful consideration must be given to many factors when deciding

Table 3. Preweaning performance of calves

	Creep	No Creep
Birthweight, lb	69.	68.
Weaning weight, lb[a]	565.[f]	525.[g]
Average daily gain, lb	2.07[f]	1.90[g]
Weaning height, in[b]	38.6[f]	37.7[g]
Weaning length, in[c]	28.3	27.8
Conformation grade[d]	12.3	12.0
Condition score[e]	6.0[f]	5.3[g]

[a]240-day sex corrected weaning weight. Sex correction factor of 1.05 used to adjust heifers to a steer equivalent.
[b]Height at hip.
[c]Length from point of shoulder to hop.
[d]10=average good 11=high good 12=low choice
[e]1=very thin 9=very fat
[f,g]Means with different superscripts are statistically different (P<.10).

Table 4. Forage and milk intake

	Creep	No Creep
Relative forage intake, %	88.3	100
Milk intake; day, lb	11.42	11.17

Table 5. Postweaning performance of calves

	Creep	No Creep
Average daily gain, lb	2.51	2.36
Feed conversion[a]	7.80	8.23
Feed intake, lb/day	19.56	19.37
Slaughter age, days	398	408
Slaughter weight, lb	946.82[b]	900.75[c]
Height at slaughter, in	44.07	43.31
Length at slaughter, in	30.68	29.69

[a]Pounds of feed required to produce a pound of live weight gain.
[b,c]Means with different superscripts are statistically different (P<.10).

Table 6. Carcass data

	Creep	No Creep
Cutability[a]	46.11[e]	47.33[f]
Hot carcass wt, lb	946.82[e]	900.75[f]
Rib-eye area, sq. in	10.81	10.39
Backfat thickness, in	1.01[e]	0.84[f]
Kidney, heart and pelvic fat	3.57	3.37
Quality grade[b]	6.64	7.13
Marbling[c]	10.79	11.60
Maturity[d]	1.28	1.13

[a]Calculated using Murphey's Prediction Equation.
[b]6=good plus, 7=low choice
[c]10=small minus, 11=small
[d]1=a minus maturity
[e,f]Means with different superscripts are significantly different (P<.10).

Table 7. Economic Analysis

	Creep	No Creep
Adjusted selling wts, lb	557	518
Value of calf, $	236.73	222.74
Creep-fed per calf		
Pounds	701.6	0
Cost, $	42.10	0
Value of increased gain, $	13.99	
Return of increased gain minus feed cost, $	−28.11	

whether or not to creep feed. These factors include the age and milk producing ability of the dam, season of calving, availability of pasture, the kind of creepfeed and the market outlook.

The economic analysis shown in Table 7 is based on Oklahoma 1977 prices. Different prices may be substituted as appropriate.

Several assumptions were employed in the economic analysis. Selling weights were based on a sex distribution of 50 percent steers and 50 percent heifers with a 240-day adjusted weaning weight.

The calves had an estimated value of $44.50/cwt for creep feed steers and $45.00/cwt for non-creep steers with a $5.00/cwt discount for heifers. Estimated calf value was calculated by multiplying the selling weight by their respective price/cwt and then calculating a weighted steer heifer average. A sex distribution of 60 percent steers and 40 percent heifers was assumed for calves produced for sale.

Creep-fed calves had the highest total value. However, adjustment for the extra cost involved in feeding creep removed this advantage. On the basis of return above investment the non-creep fed values were the most profitable. The economic loss due to creep feeding was −$28.11 per head.

Literature Cited

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