

# **Effect of Fall Calving Cow Nutrition and Calf Creep Feeding on Subsequent Feedlot Performance and Carcass Traits**

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## **Story in Brief**

Effects of cow nutrition and calf feeding on subsequent feedlot performance and carcass traits were evaluated using 40 Angus x Angus x Hereford calves. At the beginning of the feedlot period, creep fed calves weighed more than calves not fed creep, and calves from cows fed at a higher plane of nutrition had a weight advantage over calves from cows fed on a lower plane of nutrition. Daily gain did not differ during the finishing period although calves that had not been creep fed had numerically greater daily gain compared with calves that received creep feed. Creep-fed calves from cows fed on a low plane of nutrition had lower feed lot feed intake than calves from cows fed a low plane of nutrition without creep, whereas creep-fed calves from cows on a high plane of nutrition had greater feed lot feed intake than calves from cows on a high plane of nutrition without creep. Calves from cows on a high plane of nutrition and fed creep consumed more feed than calves from the remaining treatments during the finishing period. Calves from cows on a low plane of nutrition had similar feed efficiencies, regardless of creep. In contrast, calves from cows on a high plane of nutrition not fed creep had a 12.1% better feed efficiency than high plane of nutrition, creep fed calves. Carcass weights were greater for creep fed calves. Other carcass traits were similar.

Key Words: Cow Nutrition, Creep Feeding, Fall Calving, Carcass Traits

## **Introduction**

When medium framed cattle are placed on feed at weaning, carcass weights can be reduced by as much as 120 to 180 lb, compared to genetically similar cattle that are placed on feed as yearlings (Klopfenstein et al., 1999). One of the limitations in fall calving beef production systems in the southern Great Plains is the lack of high quality forage available during mid-summer. Consequently, most fall-born calves bypass the stocker phase and are delivered directly to feed yards at weaning time, or after a brief conditioning period. Management practices that increase carcass weight will increase gross income, and may reduce break-even price at market. According to the 1995 Beef Quality Audit, the industry could benefit by producing 17% more average Choice cattle than was being produced in 1995. When spring-born calves were placed in a calf-fed system, creep fed calves had higher quality grade and 42 lb heavier carcasses with no differences in finishing phase weight gain or feed efficiency (Faulkner et al., 1994).

This report represents the first year's data from a 2-yr experiment. The objectives of the experiment were to determine the effects of level of cow nutrition and creep feeding during the late winter suckling phase on feedlot performance and carcass traits.

## **Materials and Methods**

**Animals and Diets.** Fifty six Angus x Angus x Hereford cow/calf pairs grazed native tall grass prairie pasture throughout the suckling phase of this experiment. Calves were born during late August through early October and winter nutrition treatments were initiated after the breeding season had ended on January 7 and continued through April 14. Treatments were: 1) 2 lb of 40% crude protein supplement fed to cows (low cow nutrition) with no creep feed available to calves; 2) low cow nutrition with calves having free-choice access to creep feed; 3) 6 lb of 20% crude protein supplement fed to cows (high cow nutrition), no creep; or 4) high cow nutrition, creep. On April 14, steers were treated for internal and external parasites using Dectomax<sup>®</sup> and implanted with Ralgro<sup>®</sup>. Three weeks prior to weaning calves were vaccinated with CattleMaster IV<sup>®</sup> and Ultrabac<sup>®</sup>. At weaning (July 7, 2000) the cattle were shipped to the Willard Sparks Beef Cattle Research Center, Stillwater, OK. Upon arrival, steers were individually weighed. On d 1, steers were processed and allotted to one of eight pens (4 hd/pen). At processing, all steers were vaccinated with Bovi-Shield 4<sup>®</sup> and treated for internal and external parasites using Ivomec injectable<sup>®</sup>. Steers were housed in eight partially covered pens; pen shades primarily functioned as shade for the steers, and to protect the feed bunk from precipitation, which allows for more accurate measure of feed intake. Steers were weighed on arrival and every subsequent 28 d for the duration of the experiment. The final gross weight was subjected to a 4% shrink.

Steers were harvested after 160 d on feed at Iowa Beef Packing, Emporia, KS. Following a 0°C, approximately 36-h chill period, Kansas State University personnel collected ribeye area, marbling score, lean and skeletal maturity, 12<sup>th</sup> rib fat, and recorded USDA Quality and Yield Grades.

**Statistical Analysis.** Data were analyzed using the GLM procedure of SAS (SAS Inst. Inc., Cary, NC) as a 2 x 2 factorial arrangement of treatments in a completely random design. Pen served as the experimental unit for gain, dry matter intake, and efficiency data, and steer was used as the experimental unit for carcass parameters.

## Results and Discussion

At the beginning of the feedlot period, initial weight (Table 1) tended to be greater ( $P=.12$ ) in creep fed steers compared with calves not fed creep. Non-creep fed steers from cows fed the higher plane of nutrition tended ( $P=.15$ ) to weigh more compared with calves from cows fed the lower plane of nutrition. Daily gains were not significantly different during the finishing period. A cow nutrition x creep feed interaction ( $P=.06$ ) was evident for DMI. Steers from the low cow nutrition, creep group had lower DMI than calves from low cow nutrition, no creep group. Calves from the high cow nutrition, creep treatment had greater DMI than calves from the high cow nutrition, no creep treatment. Calves from cows on a high plane of nutrition and fed creep consumed 3.4% more DM than calves from the remaining treatments during the finishing period. Calves from the low cow nutrition treatment had similar efficiencies, regardless of creep. In contrast, calves from the high cow nutrition, creep treatment had a 12.1% poorer feed conversion than calves from the high cow nutrition, no creep.

**Table 1. Effect of cow nutrition and/or creep feeding on subsequent feedlot performance**

Item	Low cow nutrition		High cow nutrition		SE
	No creep	Creep	No creep	Creep	
Initial wt	634	701	677	708	48
Final wt	1110	1150	1148	1162	52
ADG	2.98	2.81	2.95	2.85	.09
DMI <sup>a</sup>	19.53	18.44	18.94	20.49	.52
Feed:gain	6.59	6.58	6.45	7.23	.33

<sup>a</sup>Cow nutrition x creep (P=.06)

Hot carcass weight (Table 2) was greater (P=.05) in creep fed compared with calves not fed creep. Other carcass traits were generally similar except yield grade, which responded with a cow nutrition x creep feed interaction (P=.02). Creep-fed calves from cows on a low plane of nutrition, and calves from cows on a high plane of nutrition and not fed creep had higher numerical yield grades than the other treatments.

**Table 2. Effect of cow nutrition and/or creep feeding on subsequent carcass traits**

Item	Low cow nutrition		High cow nutrition		SE
	No creep	Creep	No creep	Creep	
Dressing %	63.6	66.7	66.0	64.0	--
HCW <sup>a</sup>	706	758	744	767	19
REA	12.9	12.7	12.8	13.5	.34
BF	.55	.60	.60	.58	.03
MARB	416	439	426	433	18
YG <sup>b</sup>	2.77	3.21	3.15	2.93	.14

<sup>a</sup>Creep effect (P=.05).  
<sup>b</sup>Cow nutrition x creep (P=.02)

### Implications

Because this report contains only the first year's data with limited numbers of animals, the results must be interpreted with caution. It is apparent, however, that creep feeding calves during the late winter suckling phase can serve to increase carcass weights in a fall calving beef production system when cattle are fed a constant number of days.

### Literature Cited

Faulkner, D.B. et al., 1994. J. Anim. Sci. 72:470.

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