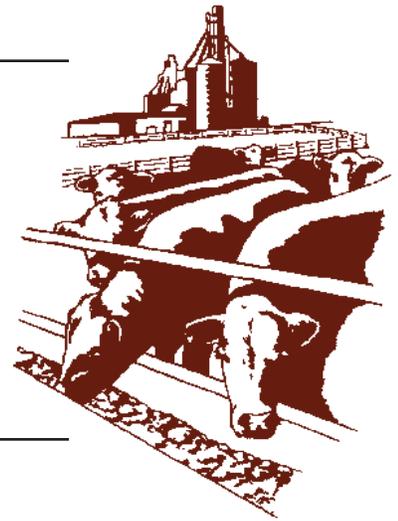




Beef Cattle Handbook



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Creep Feeding

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Creep feeding is the practice of providing supplemental feed to nursing calves, usually with the use of a creep gate large enough for calves to enter the feeding area, but too small to allow cows to pass. The kind of creep feed varies widely from grain-based "energy creeps" to limit-fed high protein creeps to "green creeps," which are high quality pastures grown solely for grazing by nursing calves. Simply increasing weaning weights may not be profitable. Creep feeding, like any other supplementation practice, must be analyzed based on estimates of expected increases in performance and income compared to the costs of these improvements.

Selecting the most profitable program requires calculating the impact of factors that affect the economics of creep feeding. Factors that should be considered include:

1. Calf prices and the effects of added weight and condition on calf prices
2. Feed prices
3. Efficiency of conversion of creep feed to added weaning weight
4. Forage quality and quantity
5. Labor availability
6. Plans for retained ownership

Efficiency of Gain from Creep Feeding

The most critical consideration for a creep feeding program is the cost of added gain.

Conditions that permit heavy weaning weights usually give poor responses to creep feeding. There are physical limits to the rate of gain a calf can achieve. If calves are already getting large quantities of milk and

have abundant, high quality forage, they will be gaining about as rapidly as their genetic makeup will allow. Since creep feed cannot significantly increase the rate of gain of rapidly growing calves, the result is that creep feed is substituted for forage and the conversion of creep feed to added weaning weight is very poor.

In general, the most efficient conversions of creep to added weaning weight will be seen when calves cannot reach weaning weights appropriate for their growth potential without supplemental feed. The best results from creep feeding are usually seen when:

- Forage is too mature for use by nursing calves.
- Forage quantity is inadequate due to drought or overgrazing.
- Milk production is poor such as with first calf heifers.

Calf Prices and Feed Prices

Creep feeding is more profitable when feed is relatively cheap and calves are relatively expensive. In 1979, for example, stocker and feeder calf prices exceeded \$1 per pound, and virtually any practice that increased weaning weights was profitable for the producer. Unfortunately, this pricing situation has not occurred too often. Even though creep feeding has not always been profitable in commercial operations, it is commonly practiced in purebred herds where size, condition, and appearance of calves is critical to establishing sale prices.

An important factor that cannot be overlooked is the degree of fatness that will be added to creep-fed calves. If market discrimination against fleshy weaned calves is expected, any creep feeding program that produces heavily fleshed calves can greatly reduce the price per

pound for the cattle. The result is a significant reduction in the value of added gain from creep feeding. As with added gain in stockers, the value of added gain from creep feeding cannot be assumed to equal the sale price for the calves.

Type of Creep Feed

The type of creep ration can greatly influence the apparent conversion of creep feed to added gain. Grain-based creep rations fed free choice have been the most commonly used formulations, and a good deal of research has been conducted to predict calf responses for gain, forage intake, and milk intake.

Grain-based Creeps

Reviews of creep studies with grain-based creep formulations fed free choice show a range of feed conversions from 5:1 to 30:1 pounds of creep to pounds of added gain. The study shown in Table 1 demonstrates typical calf performance under conditions where calves were weaned at good weights without creep. The study involved spring-born Hereford-Angus calves nursing Hereford cows that grazed excellent native range. The creep ration was fed from March 2 until the calves were 8 months old in August, September, and October. Creep feeding increased weaning weights by 40 pounds. However, the creep-fed calves ate 702 pounds of creep per head, and the conversion of creep to added weaning weight was 17.8:1. These calves were well fed without creep and weaned at 525 pounds without creep. Under these conditions of adequate milk and high quality forage, creep feeding was inefficient and costly.

Two other factors from this study should be carefully considered. First, forage intake was 11.7 percent lower for the creep-fed calves; second, milk intake was not affected by creep feeding. Many feel that creep feed can be used to reduce nursing pressure on cows and heifers. However, research to document this is lacking. Most evidence suggests that calves will nurse to capacity before consuming creep feed or forage. This means

Table 1. Daily gain, weaning weights, milk intake and forage intakes of creep-fed vs. non-creep-fed calves.¹

	Creep	No creep
No. of calves	21	21
Birthweight (lb)	69	68
Weaning weight (lb)	565	525
Daily gain (lb)	2.07	1.90
Creep feed (lb)	702	
lb creep: lb added gain	17.80	
Milk intake per day (lb)	11.40	11.20
Relative forage intake (%)	88.30	100

¹Creep ration: corn, 49.5; alfalfa hay, 15.0; cottonseed hulls, 10.0; soybean meal, 17.5; molasses, 5.0; wheat midds, 3.0. Oklahoma, MP-103, 1978.

calves prefer milk first, palatable creep second, and for that age third. When milk and forage are available, creep feed becomes a substitute for forage.

Under favorable conditions (fall-born calves during the winter season, inadequate forage, etc.) conversion of grain creep to added gain will range from 5:1 to 10:1. These conversions can be used to estimate the returns from the program.

Limit-fed Creep Feeds

Recent research at Oklahoma State University has shown that high protein feedstuffs such as soybean meal and cottonseed meal, limit-fed with salt, can provide efficient increases in weaning weight when conditions are favorable for their use. The major action of high protein creep feed is to increase forage digestibility and forage intake. When forage is adequate but is lacking in protein content, conversions of creep to added gain have ranged from 2.25 to 2.8 pounds. Results of a trial conducted with spring calving Angus and Hereford cows grazing native range are shown in Table 2. Salt-limited cottonseed meal was offered beginning in late July and fed until weaning on October 2. Average consumption of cottonseed meal was .88 pound/head/day with a conversion of 2.79 pounds cottonseed meal per pound of added gain.

From 10 to 15 percent salt has been effective in limiting daily intake to about 1 pound of soybean meal or cottonseed meal. Intake should be limited to about 1 pound because most of the favorable effects on forage digestibility and intake are achieved with the first pound of protein creep. Beyond the 1 pound level, additional protein creep will likely be used for energy and the conversions of creep to added gain will become less efficient.

Other studies have shown that calves grazing bermudagrass in summer and native range during winter also respond efficiently to high protein creeps. Creep feed for fall-born calves should be withdrawn as soon as the first green forage emerges in early spring. This has been shown to be true for grain creeps as well as protein creeps.

In a Kansas study, 1.5 pounds/head/day of a 15 percent protein (soybean meal and sorghum grain) creep was limit fed with salt, dicalcium phosphate, and 50 mg

Table 2. Weaning weights of spring-born calves fed high protein creep on native range in late summer.

	No creep	.88 lb/head/day cottonseed meal
No. calves	36	36
Start weight (lb)	247	261
Weaning weight (lb)	369	407
Total gain (lb)	122	146
lb creep: lb added gain	-	2.79

Oklahoma, MP-117, 1985.

of Rumensin/pound. Calf gains from August 8 to November 11 on native grass were improved with an efficiency of 4.4 pounds of creep per pound of added gain.

Salt is corrosive to metal creep feeders but whirlwind-type mineral feeders with rubber pans have worked quite well in research trials. Feeders that hold 100 to 150 pounds of creep can serve about 20 calves for 5 to 7 days. The mineral feeders should be placed in an enclosure accessible only to calves.

Green Creep

All creep feed does not have to come from a feed truck. One alternative to purchasing creep feed is to raise it. Because daily feed intake of nursing calves is not great, a small acreage of high quality forage can be an economical, effective feed source for calves. Green creep programs involve planting small acreages of high quality forage adjacent to pastures grazed by cow-calf pairs. Calves are then allowed access to the creep pastures through creep gates. When creep feed can be grown more cheaply than purchased, this system can be profitable.

Most research trials have shown that high quality creep pastures provide calf weaning weights similar to or slightly less than obtained with free choice grain creeps. As a general rule 6 to 10 calves can be creep-fed on an acre of winter small grain or summer annual pasture. The decision of whether to use green creep, grain creep, or protein creep will depend on relative costs of producing green creep and the physical problems associated with establishing a small tilled acreage adjacent to pastures.

Effects of Creep Feeding on Replacement Heifers

Daughters of heavy milking cows frequently are poor milkers. Research has shown an inadequate development of secretory cells in the udders of heifers reared on high concentrate diets. Increased fat deposition in the udders of heifers grown rapidly during the preweaning phase has also been suggested to decrease subsequent milk production. Creep feeding also increases preweaning growth rate, and body condition of calves and creep-fed heifers retained in the breeding herd have generally been shown to wean lighter calves than non-creep-fed heifers.

Table 3. Performance of cows that were creep-fed or not creep-fed as calves.

	No creep	Creep-fed
No. of cows	110	100
No. of calves	702	604
Calves weaned per cow (lb)	6.38	6.04
Cow age at birth of last calf (yr)	8.44	7.94
Calf birth weight (lb)	66.7	65.3
Calf 210 day weight (lb)	426	417

J. Anim. Sci., 1981, 53:37.

In a 21-year Indiana study (Table 3), replacement heifers that were creep-fed as calves weaned calves that were about 8.5 pounds lighter at 210 days of age than calves of noncreep-fed heifers. The number of calves weaned in the lifetime of the cow was also reduced when the cow was creep-fed as a heifer. An Oklahoma study showed a tendency for creep feeding to reduce subsequent milk production in replacement heifers.

The effects of creep feeding on lifetime productivity of heifers likely is related to the degree of fatness achieved at weaning time. If preweaning nutritional conditions are such that heifers do not achieve normal weaning weights without creep, then sufficient creep feed to obtain acceptable weaning weights probably would not be detrimental.

The greatest potential for retardation of cow productivity can be expected when heifers are overly fat at weaning. When cow milk production and forage conditions are adequate for heifers to wean at acceptable weights, a good recommendation is to avoid creep feeding heifers that may be retained as breeding replacements.

Effects of Creep Feed on Postweaning Performance of Stockers and Feeders

Feeding programs that alter rate of gain during one phase of growth almost always affect rate and efficiency of gain during subsequent phases of development, and creep feeding is no exception. The effects of creep feeding on post-weaning performance seem to depend on the energy level of the postweaning feeding program and the growth potential of the calves involved. The following general statements have been condensed from a number of research studies in which a significant increase in weaning weight was obtained through creep feeding.

1. When postweaning feeding programs provide low to moderate rates of gain (1.5 pounds/day or less), calves that have previously been creep-fed tend to gain slower than noncreep-fed calves.
2. Bull calves show less reduction in postweaning gains due to creep feeding than heifer calves, suggesting that calves with more growth potential can use the additional preweaning nutrition more efficiently than calves with less growth potential. It is likely that larger framed calves can also use creep feed more efficiently because preweaning nutritional conditions are less likely to allow large calves to grow to their potential.
3. When placed directly on high energy finishing rations after weaning, calves that have been creep-fed eat more feed and gain faster during the first month on feed. This response is due to the familiarity of creep-fed calves to manufactured feed and feeding devices.
4. When placed directly in the feedlot, calves that have previously been creep-fed reach finish weight in a shorter period of time than noncreep-fed calves. Gains and feed efficiency tend to favor noncreep-fed calves. The depression in gain and efficiency may be

slight or nonexistent if the calves are slaughtered at an equal fatness endpoint rather than fed to equal days.

- Cattlemen who sell weaned calves through auction channels may be able to reduce shrinkage from the ranch to sale ring when calves are offered feed at the auction barn. Calves accustomed to eating creep feed will usually fill readily when offered palatable feed.

Analyzing the Profitability of Creep Feeding Programs

Creep feeding may at first seem to be a simple management practice. In reality, the economic analysis of a creep feeding program is complex. Responses depend on forage conditions, milk production levels, calf growth potentials, postweaning plans for the cattle, price differentials for calves of varying body condition, feed costs, calf prices, and other factors.

The sample budget in Table 4 shows the necessary calculations for evaluating a creep feeding program. In this example, some forage limitation is assumed, calves are anticipated to have relatively light weaning weights without creep feed, and moderately efficient gains are expected. A daily consumption of 5 pounds of grain creep per day for 100 days is expected along with a 2 cent-per-pound lower selling price for the better fleshed creep-fed calves. Notice that the value of added weaning weight was only 56 cents per pound, not the 66 cents per pound selling price.

In this example, creep feeding resulted in a profit of \$7.20 per head. A more conservative conversion of creep to added gain would obviously have resulted in a financial loss even though weaning weight would have been significantly reduced. The answer to the question of whether to creep feed calves is different for each situation. One cannot automatically say that creep feeding will or will not pay. In the example in Table 4, the relatively low cost of feed and relatively good selling price for the calves made the example situation marginally profitable. Use of a protein creep or green creep may have been more profitable if forage conditions were suitable for protein creep or tillage costs were reasonable for green creep.

Growth Promotants

The use of growth-promoting implants in calves may also changed the economics of creep feeding. Ralgro (zerano) is approved for use in calves from birth and again every 65 to 100 days until slaughter. Synovex-C (estradiol benzoate and progesterone) is approved for

use in steer and heifer calves from 45 days of age to 400 pounds. It is not recommended for heifer calves.

Implanting of replacement breeding stock (heifers and bulls) may contribute to infertility and, therefore, is not generally recommended. There is no withdrawal period before slaughter for either of these implants. Other implants, such as Compudose, may also gain approval for use in calves. Feed supplements such as Rumensin and Bovatec have been cleared for use in calves, and their impact will need to be considered.

Table 4. Creep feeding analysis.

Inputs	Price structure at sale weights		
		Weight (lb)	Price (\$/cwt)
Expected weaning weight without creep	425		
Pounds of creep fed/day	5.00		
Number of days creep is fed	100	300	70.00
Cost of creep feed (\$/ton)	145.00	350	69.00
Conversion of creep to added gain		400	68.00
Interest rate (%)	6.00	450	67.00
Misc. costs, equipment, labor, fuel, etc. (\$/head)	15.00	500	66.00
	1.50	550	65.00
Calculations	No creep	With creep	
Expected weaning weight	425	508.33	
Added weaning weight (lb)		83.33	
Price at weaning (\$/cwt)	68.00	66.00	
Value of weaned calf (\$)	289.00	335.00	
Total feed cost (\$)		36.25	
Cost of feed/lb of added weight (\$)		0.44	
Misc. costs/lb of added weight (\$)		0.02	
Interest cost/head (\$)		1.55	
Interest cost/lb of added weight (\$)		0.02	
Value of added weight/lb (\$)		0.56	
Total cost/lb of added weight (\$)		0.47	
Total value of added weight (\$)		45.50	
Total cost of added weight (\$)		39.30	
Returns from creep feeding (\$)		7.20	

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