

Creep Feeding Beef Calves

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OVERVIEW

Creep feeding is the managerial practice of supplying supplemental feed (usually concentrates) to the nursing calf. Feed is provided in a creep feeder or some type of physical barrier, which prevents cows from having access to the supplemental feed (Figure 1). Milk from a lactating beef cow furnishes only about 50 percent of the nutrients that a 3-4 month-old calf needs for maximum growth. The remaining nutrients must come from elsewhere if the calf is to realize its genetic potential for growth. High quality pasture is the best and most economical source of required nutrients during this period of insufficient nutrient intake. Unfortunately, in spring-calving beef herds, the shift from “milk to grass” to meet the nutrient requirements of young beef calves frequently comes at a time when the availability and quality of pastures are declining. If high quality pasture is inadequate or unavailable, supplemental creep feeding may be a viable alternative.

THE NEED FOR CREEP FEEDING

Creep feeding the nursing calf increases subsequent rate of gain and weaning weight. These responses are related to the lactational curve of beef cows, the decline in pasture or feed quality and quantity needed to support the cow/calf pairs, and the increasing nutrient requirements of the calf during the nursing period. Studies have revealed that maximum milk production of beef cows occurs during the first two months after calving and then declines. By contrast, milk production of dairy cows increases up to 120-180 days following parturition and then decreases gradually.

The energy and protein requirements of a growing calf increase well beyond the milking potential of most beef

cows to meet the nutritional requirements of calves from birth to weaning. For example, 10 lbs. of milk are required by a 100 lb. calf to meet its daily energy and protein requirements for growth, whereas a 500 lb. calf needs 50 lbs. of milk. Since the average beef cow produces approximately 13 lbs. of milk daily throughout a 205-day suckling period, a 500 lb. calf is short-changed by 40 lbs. from getting enough milk from its dam at this lactational stage to meet its nutritional needs. As indicated in Figure 2, the best way to fulfill the “hungry calf gap” is to creep feed or creep graze.

It should be noted that the rumen starts to develop functionally as soon as roughage is consumed, but time is required before it is completely functional. Nursing calves (consuming roughage) begin ruminating at about three months of age; however, if only milk and concentrate feeds are consumed, the rumen develops considerably slower.

Fulfilling the energy and protein requirements over and above that provided by the average milk production (13



Figure 1. Example of a creep feeder for calves.

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lbs.) of a beef cow would require the daily consumption of 50 lbs. of grass pasture (average quality) by the nursing calf. Unfortunately, the rumen of a 500 lb. calf cannot accommodate that much roughage. However, a high energy, supplemental concentrate can satisfy the nutritionally-deficient nursing calf. The advantages and disadvantages of creep feeding are pointed out in Table 1.

EFFICIENCY OF GAIN FROM CREEP FEEDING

Generally speaking, the most efficient conversion of creep to added weaning weight exists when nursing calves are unable to attain normal weaning weights without supplemental feed. Best results from creep feeding generally occur when 1) forage is too mature for utilization by nursing calves; 2) forage quantity is inadequate due to drought or overgrazing; or, 3) calves are born to poor milking cows or first-calf heifers.

Creep feeding research studies show a wide range of feed conversions from 4:1 to 18:1 pounds of creep feed to a pound of calf gain. Conditions that permit heavy weaning weights without creep feed usually give poor responses to creep feeding due to the biological nature of the “true growth” in calves. Calves gain about as fast as their genetic makeup will allow when there is an abundance of high quality forage and large quantities of milk available. When creep feed is offered to these calves, they will eat the creep feed and reduce their forage intake. Milk intake is usually not affected by creep feeding. No research is available to document that creep

feeding can be used to reduce nursing frequency and intensity on cows and heifers. Most evidence suggests that calves will nurse to capacity before consuming creep feed or forage. Calves generally prefer milk first, palatable creep feed second, and forage third. When forage and milk are available, creep feed is substituted for forage.

CONSIDERATIONS FOR CREEP FEEDING

Three major considerations must be examined when selecting creep rations: 1) cost; 2) palatability; and 3) nutrient content or quality of creep feed. Creep feeding is most commonly practiced in purebred herds where appearance, size, and condition of calves are extremely important. Commercial cow/ calf operators creep their calves less frequently because economics of this managerial practice do not always make it as feasible as with more valuable purebred animals. Important factors such as feed prices, efficiency of creep feed conversion to added weaning weight, and the effects of added weaning weight and condition on calf prices must be analyzed to determine the feasibility of creep feeding in purebred and/ or commercial cow herds.

It is no surprise that creep feeding is more profitable when calves are relatively expensive and feed is cheap. For example, there are some years when calf prices may exceed \$1 per pound and virtually any practice that increases weaning weights will generate more income for the producer. Unfortunately, this economic situation does not occur that often.

Figure 2. Milk yield of a typical beef cow vs nutrient requirements of a nursing calf.

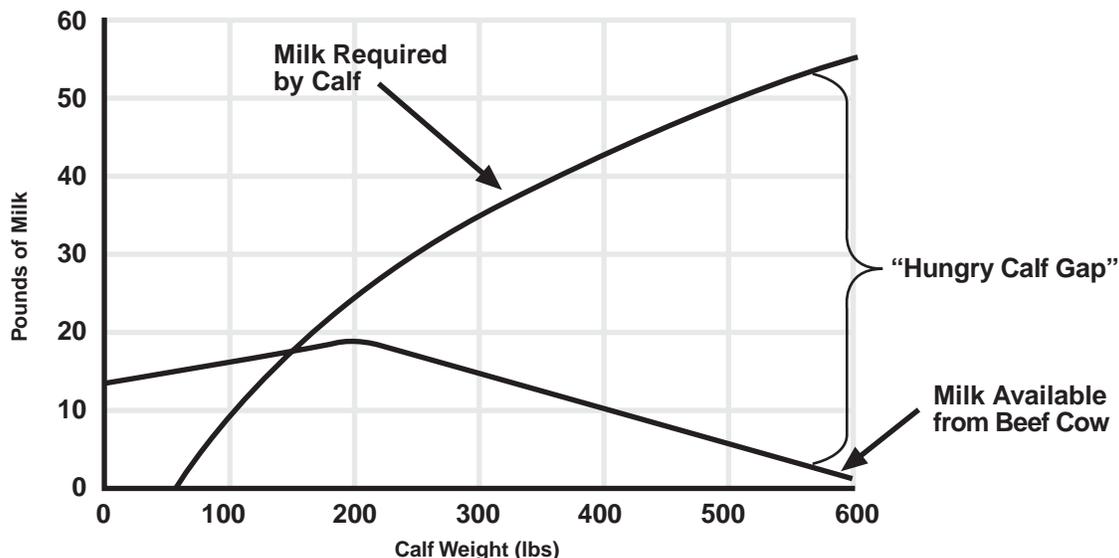


Table 1. Advantages and Disadvantages of Creep Feeding

Advantages	Disadvantages
1. Provides a way to fill the “hungry calf gap”	1. May not be economical
2. Improves weaning weight and rate of gain	2. May impair future milk production of replacement heifers
3. Compensates for low milk production	3. Interferes with selection of cows for milk production
4. Facilitates fall-calving	4. May produce fleshy calves with a price discount
5. Improves calf uniformity	5. May lower feedlot gain and efficiency
6. Enhances merchandising program by adding bloom and weight to calves	6. Can be difficult in remote areas
7. Provides calves that are bunk-broke	7. Impossible with companion grazers, such as sheep or goats
8. Provides market flexibility	
9. Simplifies weaning	
10. Aids in controlling parasites	
11. Leaves cows in better body condition	

Another major concern among producers is the higher degree of body condition that results from creep-fed calves. Any creep feeding program that produces heavily fleshed calves in a discriminating market usually reduces the price per pound for the calves. The result is a significant reduction in the value of added gain from creep feeding.

A sample budget showing the necessary calculations for evaluating a creep-feeding program is shown in Table 2. It is assumed in this example that there is some forage limitation, calves will have relatively light weaning weights without creep feed, and moderately efficient gains are

expected. A daily consumption of 10 lbs. of creep feed for 60 days is expected, along with a penny discount in the selling price for the heavier fleshed creep-fed calves.

In the above example, creep feeding results in a loss of \$3.72 per calf due to the high cost of feed. Creep feeding could have been profitable if the calf price were increased, the efficiency of conversion improved, or the creep feed costs lowered. Since every creep feeding situation is different, one cannot automatically determine that it will or will not be profitable. The use of growth promotants and ionophores such as Rumensin or Bovatec can certainly improve the economics of creep feeding.

Table 2. Sample Budget for Calculating Creep Feeding Returns

	No Creep	With Creep
Weaning weight (lbs.)	450	517
Creep feed (lbs.) ^a		600
Price per pound at weaning	\$0.85	\$0.84
Value of calf	\$382.50	\$434.28
Value per pound of added weight		\$0.77
Feed cost per pound added		\$0.83
Value of added gain		\$51.78
Cost of added gain ^b		\$55.50
Return from creep feeding		-\$3.72

^a Projected conversion of 9 lbs. of creep feed per pound of added gain

^b Creep feed cost = \$185/T

Table 3. Composition of Several Home-made Creep Rations for Beef Calves Using Normal Moisture Contents for Ingredients

Ingredient	Ration (Lbs., As -fed basis)							
	1	2	3	4	5	6	7	8
Cracked shelled corn	100	65	87					41
Whole oats		35		100	70		30	30
Rolled barley					30	40		
Soybean meal 44			8					20
Dried brewers grain							35	
Dehydrated alfalfa pellets						60		
Soybean hulls							30	
Cane molasses			5				5	7
Dicalcium phosphate								1
Trace mineralized salt								1
Analysis, % dry matter								
Crude protein (%)	10.1	11.2	13.2	13.3	13.4	16.8	18.4	18.6
TDN (%)	90.0	84.5	88.7	77.0	79.1	70.0	68.9	81.7

OTHER CONSIDERATIONS

When calves are on lush pasture and their dams are milking well, difficulty may be experienced in starting calves on creep. Calves born in the fall and early-spring recognize and utilize creep feed sooner than late-spring born calves simply because there is a lower abundance of quality forage and milk available.

Starting calves on creep rations is sometimes difficult. Feeding their mothers small amounts of ground feed a few days prior to the beginning of creep feeding is one of the best starting methods because calves quickly learn to eat with their dams. Another technique is to scatter a little feed on the ground around and through the creeping area so that the cows will loiter nearby.

Creep feeders should be placed where cows browse a few hours every day. These sites are usually shaded, have water or salt-mineral mixtures available nearby, are open to prevailing winds on hot summer days, and are large

enough for the whole herd to congregate. If the pasture is large, more than one creep site should be chosen.

Concentrate feeds or grains in creep diets should be processed for optimum utilization and digestion by calves. Wheat and shelled corn should be cracked and barley should be rolled. Oats can be rolled or crimped, which will aid digestion, but is not critical. The addition of cane molasses to creep rations at the rate of 5 lbs. per 100 lbs. of creep feed decreases dust problems and increases the palatability. Creep rations do not have to be complex, but you may find that purchasing higher quality commercial creep feeds may be your best choice. Examples of homemade creep rations are shown in Table 3.

Feed efficiency (feed conversion), or the pounds of creep feed needed to produce a pound of gain must be determined if the increased rate of gain will be profitable. One can usually expect increases in daily gain of .10 to .25 lbs/ day with feed efficiency values ranging from 4:1

to 18:1. As a rule of thumb, a 10:1 conversion rate for high concentrate creep feeds is assumed. Table 4 shows costs of gain for creep feeding at various feed costs and feed conversion rates.

For example, if it takes 10 lbs. of feed per pound of gain at a feed cost of \$6.00 per 100 lbs., the extra pound of gain costs \$.60, not including labor or added equipment. Generally speaking, if conversion rates average 10 lbs. of feed per pound of gain, it is profitable to creep feed if the price of calves (\$/ cwt) is more than ten times the cost of creep feed. If a creep diet costs \$.07 per pound, the price of calves must be greater than \$.70 per pound in order for creep feeding to be profitable.

Effect of Creep Feeding on Replacement Heifers

The effect of creep feeding on lifetime productivity of heifers is usually related to the degree of fatness achieved at weaning time. If fat is deposited in the heifer’s udder, it will inhibit formation of milk-secreting tissue. Thus, daughters of heavy milking cows frequently are poor milkers because of the inadequate development of secretory cells in the udders of heifers reared on creep feed. When 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 potential breeding replacements.

Salt-Limited Creep Programs

Consumption of creep feed can be limited by including white salt in the creep ration at the rate of 3 to 10%. A limited creep feeding system during the last 60 to 90 days prior to weaning may offer the following two advantages: 1) a moderate advantage in weaning weight without a noticeable increase in “fleshiness”; and 2) improved feed conversion compared to unlimited creep feed. Maintenance of desirable intake levels (1.5 to 3.0 lbs. per day) requires frequent monitoring and adjustment of salt levels. When starting calves on a very low (less than 2%) salt level, it may be necessary to add molasses to get the calves started eating creep feed. Meal forms of creep feed are preferred to pelleted forms because it is easier to adjust the salt levels (3 to 10%) to maintain daily intakes.

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Table 4. Cost (\$/ cwt) of Extra Gain from Creep Feeding

Feed/ pound extra gain	Feed cost (\$/ cwt)					
	4	5	6	7	8	9
6	24	30	36	42	48	54
8	32	40	48	56	64	72
10	40	50	60	70	80	90
12	48	60	72	84	96	108