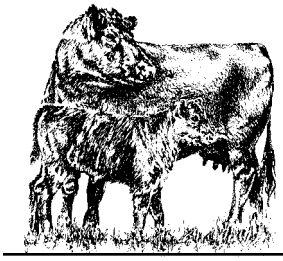

Western Beef Resource Committee *Fourth Edition*

Cattle Producer's Handbook

Nutrition Section 326

Creep Feeding Beef Calves

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Creep feeding is the practice of supplementing feed to preweaned calves to increase production. Preweaning weight gains and weaning weights can be increased through creep feeding. However, the selling price of the calves and the cost of feed must be considered when a producer is making a decision about creep feeding. Creep feeding has many advantages, but there are also disadvantages that must be considered by the livestock producer.

When Is Creep Feeding Most Likely to Be Cost Effective?

- **In purebred herds where you want heavy weaning weight and extra bloom on calves.**
- **When calves are born in the fall or early winter:** Creep feeding usually will increase the weaning weight of calves born in fall more than those born in the spring, even if fall-calving cows are fed well throughout the winter.
- **When lactating cows are grazing poor pasture:** Pasture forage often is scant and of low quality during July and August unless legumes, warm-season grasses, or sudangrass hybrids are available. These are the months when creep feeding is most beneficial on many cattle operations.
- **In drought years:** Creep feeding increases weaning weights most in drought years when forage production and quality are below normal.
- **When there are many first-calf heifers or cows over 11 years of age in a herd:** These cows typically produce less milk and subsequently wean lighter calves.
- **In herds that have inherently poor milkers:** Creep feeding is more likely to be profitable for steer calves than for heifer calves if they will be sold as weanling feeders, since steer calves sell for more per pound as feeders. In University of Missouri trials, creep feeding increased the weaning weight of bull calves more than heifer calves born in the fall.
- **When the price discount is small for heavier-weight feeder calves:** This at times happens when feeder calf prices are low and grain prices are high.
- **When grain prices are low in relation to feeder calf prices.**
- **When large-frame calves are to be put on a high-energy feed at weaning and finished for slaughter:** Creep feeding for 90 days before weaning tends to decrease the time and weight at which these calves will grade choice.

When Is Creep Feeding Not Likely to Be Cost Effective?

- **When calves are to be pastured or wintered on roughage after weaning to gain before they are finished for slaughter:** The heavier weaning weight of the creep-fed calves is largely offset in this period because of faster gains by the lighter-weight, non-creep-fed calves. In a University of Missouri study, calves born in the fall and creep fed in winter lost half their extra weight gain advantage from creep feeding after they were pastured the following summer without creep feed.
- **If grain feeding will continue for more than 90 days after weaning:** The fatter creep-fed calves make slower and less efficient gains in the feedlot. This may not apply to large-frame calves whose extra gain from creep feeding is mostly lean growth.
- **If pasture is excellent for the cow herd throughout the summer and when creep-fed calves born in late winter or early spring are to be sold for feeders:** When pastures are sufficient, creep feeding yields less increase in weaning weight, and each pound of gain requires more feed. The selling price per pound for heavier creep-fed calves will likely need to be as high as the price for the lighter-weight, non-creep-fed calves to make creep feeding cost effective when pastures are good.

Creep feeding potential replacement heifers can reduce their milking ability as cows. This generally applies to heifers creep-fed ad libitum for 90 days or longer. Consider a limited creep feeding program for replacement heifers.

Another criticism of creep feeding is that it masks the differences in the milking abilities of cows in a herd. This is detrimental to selection for weaning weight to increase the milking capacity of a herd.

Efficiency of Gain from Creep Feeding

The most critical consideration for a creep feeding program is the cost of **added gain**. Additional weight at weaning is only of value if the cost of added gain is below the price per pound when the calves are sold.

When conditions permit heavy weaning weights without creep feed, poor responses to creep feeding are usually noted. Why? The reason is that if they have abundant, high quality forage in addition to the milk, the calves will be gaining about as rapidly as their genetic ability will permit. Because creep feeding 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 poor.

In general, the most efficient conversions of creep to added weaning weight will be realized when calves cannot reach weaning weights appropriate for the growth potential of the calf without supplemental feed. The best results from creep feeding usually occur under the following conditions:

1. Forage is too mature for good utilization by nursing calves (e.g., fall, winter, and sometimes late summer).
2. Forage quantity is inadequate.
3. Milk production is poor.

What Research Tells Us

When and how long? It's a common practice to allow beef calves to remain with their mothers on pasture without supplemental feed. However, some producers creep-feed grain to the calves through the last 3 months of the nursing period.

A University of Florida study reported creep-feeding calves consuming warm-season grasses for 64 days increased calf weight by 48 pounds, with 5.3 pounds of feed required per pound of gain. However, an Oregon State University study on cool-season grasses showed creep-feeding male calves from August 9 to October 14 resulted in only 15 pounds gain, with 13.4 pounds of feed required per pound of gain.

Mother's age and condition: Milking ability of the mother, and the abundance and quality of the pasture or other feed available to her and her calf, largely determine how much extra weaning weight can be gained by creep feeding. Creep-feeding calves from first-calf heifers and old cows usually give positive results.

Colorado State University reported that creep-feeding bull calves from dams 2 years old and 11 years or older had a greater response (60 and 42 pounds, respectively) compared to calves from mature dams (5 to 10 years), which had a 23-pound improvement in weaning weight over bull calves that were not creep-fed.

Creep-feeding calves of 2-year-old heifers is a common practice on many ranches and may improve the uniformity of the calf crop. Some cattle producers figure if range conditions are such that a cow cannot wean a calf weighing more than 400 pounds, it's time to consider creep-feeding. But this may not always be practical or cost effective on the open range.

Producers who raise their own replacement heifers should consider the advantages and disadvantages of creep-feeding carefully. Creep-feeding can negatively effect replacement heifer development. Excess condition or fatness of heifers may influence subsequent development of desired maternal traits. A University of Illinois study reported that non creep-fed females produced 28 percent more milk on day 120.

Purdue University researchers found that creep-fed heifers that were retained in the breeding herd weaned lighter calves than those that were not creep-fed as calves. This suggests that increased fat deposition in the udder during the preweaning period may hinder secretory tissue development and permanently reduce cow-milk production.

Calves born in midwinter may not have any pasture available for several months; so if you plan to use a creep for these calves, provide it as early as possible. Young calves will begin to nibble at grain and hay by 3 weeks of age, so you should encourage this tendency if you plan to use creep. Creep-feeding fall-born calves during periods of feed shortages may add 40 to 90 pounds over those not creep-fed.

Table 1 shows the results of an Oklahoma State University creep feeding trial. In this study, crossbred calves born in January from excellent milking Hereford x Angus cows were used to study effects of free choice creep on milk intake, forage intake, and gains. Calves averaged 4.2 pounds of creep from March 2 until weaning in September and weighed 40 pounds more than non-creep-fed calves. The conversion of creep to added

Table 1. Effects of free-choice creep feeding on weaning weights forage intake and milk intake of beef calves (Oklahoma).

	Creep	No creep
240-day weaning weight (lb)	565	525
Daily gain (lb)	2.07	1.90
Creep intake/day (lb)	4.2	—
lb creep/lb added gain	24.7	—
Relative forage intake, % of BW	88	100
Milk intake/day (lb)	11.4	11.1

weaning weight has a disappointing 24.7:1 ratio. Calves eating creep feed consumed 11.7 percent less forage than non-creep-fed calves, while milk intake was not affected by creep feeding.

The calve's order of preference for feed sources were as follows: (1) milk, (2) palatable creep feed, and (3) forage. If forage is more palatable than creep, the creep will not be consumed, but creep feeding almost never affects milk consumption.

While many producers believe they are giving the cow some relief from nursing by feeding creep feed, research has rarely shown any reduction in suckling by creep feeding calves. Similarly, creep feeding has rarely affected cow weight change. The only time cow weight change or body condition score is likely to be impacted is when pasture conditions are so poor that providing creep increases forage availability for the cow.

Because the nursing calf has three potential sources of nutrients (milk, forage, and creep), it should not be surprising that creep feeding is often inefficient and yields extremely variable responses. A summary of 31 university trials involving free-choice creep feeds (Table 2) shows a conversion of 9 pounds of creep per pound of added gain. Feed would need to be cheap and/or calf prices high for this conversion to be cost effective. In addition, creep-fed calves may become fleshy, which adds to the economic problems by reducing the value of the creep-fed calves.

Formulating Free-Choice Creep Feeds

Intake of free-choice creep feeds will range from about 1 pound/day when calves are learning to eat a mixed feed, up to as much as 10 pounds/day when calves are near weaning age. Calves usually begin to eat creep feeds when they are about 2 months of age. Fall-born calves on dormant pasture may eat creep feed at an earlier age than spring-born calves on lush summer pastures. Therefore, creep feeds designed for free-choice consumption must be a compromise between high levels of protein, energy, and safety since calves have the opportunity to eat large quantities.

Acidosis caused by overeating of grain or other highly fermentable feeds can be a problem with free-choice creep feeds. However, ensuring the creep formulations contain some roughage products can minimize this danger.

For years, oats have been a favorite ingredient in creep feeds because oats contain enough fiber that they can safely be consumed as the sole ingredient in a creep feed. When grains are used in creep feeds, roughage products, such as alfalfa, are typically used to ensure safety. Recent trends toward using low-starch, high digestible-fiber ingredients, such as soybean hulls, corn gluten feed, and wheat middlings, in creep feeds have also minimized the danger from acidosis.

Free-choice creep feeds should contain from 14 to 16 percent crude protein in most situations. The protein should be from natural sources because young calves do not utilize NPN sources, such as urea, very well.

Table 2. Summary of 31 trials with free-choice creep feeding.

	Creep	No creep
Total gain (lb)	279	221
Daily gain (lb)	1.83	1.45
Total creep/calf (lb)	524	—
lb creep/lb added gain	9.0	—

Limit-Fed Creep Feeding

Researchers have evaluated ways to make creep feeding more economically viable. With a better understanding of the principles of supplementation, limit feeding of creeps has emerged as an alternative. With specific attention to correcting nutrient deficiencies and maintaining forage intake of the nursing calf, results have been encouraging.

A study conducted at Oklahoma State University (Table 3) compared performance of spring-born calves fed no creep, limit-fed high protein creep (cottonseed meal—41 percent CP), or free-choice 15 percent CP creep. Calves fed the free-choice creep gained 79 pounds more than controls with a conversion of 7.8 pounds creep per pound of added gain.

This conversion is similar to the average reported by Kuhl (1984). However, calves fed cottonseed meal limited to 1.0 pound/day consumption with 10 percent salt gained 30 pounds more than controls with a conversion of 3.3 pounds creep per pound of added gain. Creep feeding did not significantly affect cow weight change.

Kansas researchers have conducted several trials with low protein limit-fed creeps. In one trial (Table 4), conducted beginning in mid-August, a 16 percent protein creep feed with 50 mg/lb Rumensin was offered the last 85 days before weaning. Creep intakes were limited to 1.5 pounds/day with salt. Calves consuming the limit-fed creep gained .31 pound/head daily faster and required 4.4 pounds creep per pound of added gain.

The Creep Ration

Locally available grains are good energy sources for creep rations. Whole oats is the preferred grain in

Table 3. Effects of protein or grain creep on cow and calf performance (Oklahoma).

	Control	Protein creep	Grain creep
Number of calves	15	14	15
Initial calf wt. (lb)	201	205	200
Calf gain (6/4 to 10/15)	230	260	309
Creep/calf (lb) (133 days)	—	99	614
lb creep/lb added gain	—	3.3	7.8
Cow weight change (6/4 to 10/15)	101	88	89

Table 4. Effects of limit-fed 16 percent protein creep on calf gains (Kansas).

	Limit-creep + Rumensin	Control
Number of calves	31	27
Initial wt. (lb)	308	290
Daily gain (lb)	1.84	1.53
Daily creep intake (lb)	1.46	
Creep/added gain	4.4	

creep rations because of its bulk and energy concentration relative to other grains. There are fewer problems of over-consumption with oat-based rations than with diets based on the other cereal grains. The energy density is lower than other grains resulting in lower readily available carbohydrates. This decreases the potential for rumen related digestive upset (e.g., acidosis).

Barley is also good, but because of the irregular feeding habits of calves and the higher energy concentration in barley, there is greater risk of digestive upset with barley than with oats. Wheat and corn can be used in limited amounts in creep rations. Bulky feeds, such as bran and dehydrated alfalfa, reduce the risk of overeating and the subsequent incidence of digestive upsets.

Calves intended for breeding stock should receive creep rations containing at least 50 percent oats. This approach will help keep the calves from getting too fat. Opportunity feeds, such as screenings from differing sources of crops, should not be overlooked, as they can provide nutritional value similar to oats at a reduced cost. The palatability of these types of feeds, however, has to be carefully monitored. Screenings from lentils, for example, are highly palatable, while those of canola may be somewhat less palatable. Palatability can be improved by protecting the ration from the weather and only putting 1 week's supply of creep feed in the feeder.

The palatability of creep rations is also enhanced by using combinations of two or more grains or by adding bran, molasses, and/or trace mineralized salt. Bran works well in helping calves become accustomed to dry feed since the bran will stick to the calf's muzzles.

Livestock producers should consider forage quality, forage quantity, and feedstuff costs before choosing particular feeds. Example rations are shown in Tables 5 and 6 using various concentrate sources.

Some good sources of supplemental protein for creep rations are soybean meal, canola meal, commercial protein supplements (urea free), and dehydrated alfalfa pellets. The grains can be fed whole, cracked, or rolled but avoid fine grinding to minimize the possibility of digestive upsets. Some processing results in less separation of the ingredients. Pelleting the ration allows for easier handling. It also reduces waste and eliminates separation.

The simple mixtures are adequate, but more complex mixtures containing molasses or appetizers could increase intake and may yield increased gains. Some techniques that can be used to get calves started on creep feed in-

Table 5. Creep rations for calves (in pounds).

	Rations					
Ingredients	**1**	**2**	**3**	**4**	**5***	**6***
Ground ear corn	—	—	—	797	—	—
Ground shelled corn or milo	476	343	496	—	127	93
Ground oats	300	400	—	—	—	—
Dry molasses	—	100	100	—	—	—
Dehydrated alfalfa meal (17%)	100	—	—	—	—	—
Soybean meal	100	135	185	175	—	885
Cottonseed meal	—	—	—	—	853	—
Cottonseed hulls	—	—	200	—	—	—
Ground hulls	6	5	4	8	20	8
Dicalcium phosphate	9	10	11	11	—	14
Potassium carbonate	5	3	—	5	—	—
Trace mineralized salt	4	4	4	4	—	—
Vitamin A (5,000 I.U.)	X	X	X	X	X	X
Total analysis	1,000	1,000	1,000	1,000	1,000	1,000
Crude protein (%)	13.9	14.2	13.9	14.9	36.0	40.0
Total digestible nutrients (%)	70.0	71.0	67.3	70.0	68.5	73.4
Crude fiber (%)	7.3	5.9	10.6	7.8	10.5	5.7
Calcium (%)	0.6	0.6	0.6	0.6	0.85	0.86
Phosphorus (%)	0.5	0.5	0.5	0.5	0.85	0.84
Potassium (%)	1.0	1.0	1.0	1.0	1.0	1.0

*Limit-fed at 1 to 1.5 pounds daily.

Table 6. Example: Creep rations using either a commercial 32 percent protein supplement or canola meal.

Ingredients	Crude protein content			
	13%		16%	
Oats	27	27	23	23
Barley	63	61.6	53	53.2
32% supplement	10	—	24	—
Canola meal	—	9.1	—	22
2:1 mineral	—	0.6	—	—
Limestone	—	1.2	—	1.3
Trace mineral salt	—	0.4	—	0.4
Vita. ADE premix	—	0.1	—	0.1
Total	100	100	100	100

clude the use of palatable feeds, such as oats, bran, or molasses in the feed, using an older calf to lead smaller calves into the creep area, or feeding hay to the cows near the creep area.

Anticipating Profit

Advantages of supplemental feeding:

- It adds weight and finish.
- Calves of the same age grow to a more uniform size.
- There's less shrinkage at weaning time.
- It serves as a market for homegrown feeds, particularly when feed grain prices are low.

Any creep-feeding program will have most of these advantages, but the economic importance of each one will vary greatly according to the type of calves you expect to produce.

Limitations of supplemental feedings:

- Calves that are nursing good milking dams while grazing on abundant, nutritious green pastures may not respond to creep-feeding.
- It takes extra labor and equipment.
- Hogs, sheep, or goats shouldn't be allowed in the same pasture with a creep feeder.
- Creeps cause calves to group around the feed, and cows may not move as far to graze.
- Creep-feeding does not replace a breeding program in which producers select females for growth.
- When replacement heifers are creep-fed as calves, their future production may be reduced.

Creep Feeder Design

Plans for constructing creep feeders for calves may be available at Extension offices. The feeder should be roofed to protect the feed from rain and should hold a week's supply of feed. This will depend on the size of the feeder and the number of calves it will accommodate. Allow 4 to 6 inches of trough space per calf.

A feeder that is 8 feet long and feeds from both sides (16 feet of linear trough space) will accommodate 30 to 50 calves.

The feeder should be portable. If a fence is used around the feeder to keep the cows out, the entrance for the calves should be 1 foot, 4 inches to 1 foot, 6 inches wide by 3 feet high. Feeders not enclosed by a fence should be made strong enough to prevent cows and bulls from destroying the structure.

Location

For starting calves, producers should locate the creep feeder near water or shade where cows frequently rest. The cows need to take the calves to the creep until most of them have learned to eat.

Once calves are eating, good pasture and range management dictates that the creep be located away from water to improve grazing distribution. Moving the feeders once or twice during the summer and early fall may be desirable. Handling the feeder in this manner does not contribute to maximum feed intake or maximum gain advantage for the creep-fed calves, but it should contribute to improved gains per acre of forage. Large pasture or range situations may require more than one creep feeder for reasonable increases in rate and efficiency of gain from creep feeding.

Conclusion

Creep feeding can increase weaning weights. Fleshiness of calves can also be increased with creep feeding, which may reduce replacement heifer milk production in the future. Feed conversion is variable for creep-fed calves so cost effectiveness should be carefully evaluated. Creep feeding may be used as a range management tool to reduce forage intake by calves and control grazing distribution.

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