

Creep-Feeding Beef Calves

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Gross income in the cow-calf phase of the beef industry depends on the production of calves with high weaning weights. Therefore, the primary criterion for evaluating a beef enterprise should be the total weaning weight per cow exposed.

Put another way, we can say that annual gross income from your beef herd depends on three areas of production:

1. fertility, which determines the number of animals available for sale;
2. growth rates, which influence the weight at sale; and
3. carcass characteristics, which influence the price you receive.

Research suggests that when it comes to determining annual gross income, fertility is five times more important than growth rate, which (in turn) is twice as important as carcass characteristics.

On a scale of 1 to 10, fertility rates 10, growth gets a 2, and carcass characteristics rate a 1.

Why feed supplements are important

Feed accounts for about 70% of the cost for raising beef cattle. Supplementing the grass and milk available to unweaned calves with creep can be an economically sound practice, especially during a dry period when forage is short.

A creep feeder that allows the calves to eat supplemental feed, while it excludes adult animals, will assist calves in growing more rapidly.

The potential return of creep-feeding depends on the price of cattle and the price of feed. Here's a good rule of thumb: Selling price per lb of calf

should be greater than 10 times the cost of the creep. It takes about 10 lb of feed per lb of gain.

After a beef calf is 90 days old, mother's milk will supply about half the nutrients it needs for maximum growth. Supplementing the calf's diet should pay its cost in most commercial herds—in years of inadequate forage and in dry months when calves could use extra feed provided by creep feeding.

However, creep feeding doesn't always produce an advantage in weaning weight. It depends very much not only on the dam's potential milk production but also on the forage available to the cow herd.

What research tells us

When and how long. It's a common practice to allow beef calves to remain with their mothers on pasture throughout the grazing season 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 for 64 days increased calf weight by 48 lb, with 5.3 lb of feed required per lb of gain.

However, an Oregon State University study showed creep-feeding male calves from August 9 to October 14 resulted in only 15 lb of gain, with 13.4 lb of feed required per lb of gain.

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Mother's age and condition. The 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 is gained with creep rations.

Under most range conditions, calves born in the spring and creep-fed will weigh 30 to 80 lb more at weaning than calves not creep-fed.

Creep-feeding calves from first-calf heifers and old cows usually gives positive results. Creep-feeding calves from cows that are poor milkers isn't a sound practice. Cull these cows!

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

Creep-feeding calves of 2-year-old heifers is a common practice on ranches and does result in a uniform sized calf crop. Some cattle producers figure if range conditions are such that a cow can't wean a calf weighing more than 400 lb, it's time to consider creep-feeding. But this may not always be practical.

Producers who raise their own replacement heifers should study the advantages and disadvantages of creep-feeding carefully. Creep-feeding can result in disadvantages in developing replacement heifers. Excess condition or fatness of heifers may influence subsequent development of desired maternal traits.

A University of Illinois study reported that noncreep-fed females produced 28% more milk at 120 days into lactation than did those that had received creep feed.

Purdue 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 a creep.

Creep-feeding fall-born calves during periods of feed shortages may add 40 to 90 lb over those not creep-fed.

In small herds, it may be feasible to separate cows and calves daily, for a few hours of supplemental feeding. In most cases, separating cows from calves isn't practical, and it's desirable for the calves to have access to feed at all times.

You can accomplish this with a self-feeder placed in an area that will keep older cattle out but has openings through which calves can pass.

Recommended rations

The choice of feeds (barley, wheat, oats, corn, etc.) will depend on their availability and price. Calves will usually start readily on a mixture of whole oats and bran, and this is adequate at the start. Bran sticks to the muzzle and helps get calves started on feed.

You could substitute cracked corn or coarsely ground barley, wheat, or milo for each other, so their use along with oats may depend on price and availability. The reason for a mixture of grains in preference to any one grain is to provide increased palatability.

Adding 5% molasses improves the palatability of the ration. You could use this to replace equal amounts of grain in any of the rations in table 1.

Table 1.—Some recommended rations (lb)^a

1. Cracked or rolled barley	50
Oats (whole, cracked, or rolled)	50
Total	100
2. Cracked or rolled barley	55
Oats (whole, cracked, or rolled)	30
41% cottonseed meal	10
Molasses	5
Total	100
3. Cracked shelled corn	40
Oats (whole, cracked, or rolled)	40
Soybean or cottonseed meal	15
Molasses	5
Total	100
4. Cracked or rolled wheat	50
Oats (whole, cracked, or rolled)	50
Total	100
5. Pelleted ration, for calves during the winter:	
Alfalfa	70
Grain, any of the above	25
Molasses	5
Total	100

^aIn addition to grain, as in rations 1 through 4, calves should have access to top quality hay.

Add protein supplements (such as cottonseed meal, soybean meal, canola, or linseed meal) when the cow's milk flow decreases or when the grass becomes mature.

Nine parts grain to one part protein supplement, by weight, make a desirable mixture. Milk is a good source of protein; so when cows are milking fairly well, the protein of the milk will balance a straight grain creep ration.

If the calves are at least 7 months old and the pasture begins to dry up, you may find it more economical to consider early weaning than creep-feeding.

How much supplemental feed?

The amount of feed consumed in creep-feeding varies according to the age of the calf, the amount of milk the dam produces, the amount of grass available, and the palatability of the feed (see table 2).

Older calves consume more feed. Figure on 6 to 14 lb of supplemental creep feed to put on a lb of gain.

In a 3-year Nebraska study, in which spring-born calves were creep-fed a supplemental ration of 50% corn and 50% oats, calves consumed an average of 382 lb of feed and gained 49 lb more than calves not supplemented. This required 7.8 lb of feed per lb of gain.

A University of Florida study of spring-born calves from crossbred cows showed creep-fed calves consumed an average of 489 lb of supplemental feed and gained 73 lb more than calves not creep-fed.

The ration was a commercial high energy feed: 14% crude protein, not more than 8% crude fiber, and not less than 2.5% crude fat. The feed required was 6.7 lb per lb of gain.

Table 2.—Average feed consumption by creep-fed calves

Age of calf (months)	Feed consumption (lb)	
	Per day	Per month
1 to 2	0.50	15
2 to 3	1.25	45
3 to 4	2.50	75
4 to 5	3.50	105
5 to 6	5.00	150
6 to 7	6.50	195 ^a
7 to 8	8.50	255
8 to 9	11.00	330

^aIt usually takes 550 to 650 lb of supplemental (creep-fed) feed from birth to 7 months.

An Oklahoma study of fall-born calves reported that creep-fed calves consumed an average of 884 lb of feed and gained an average 87 lb more than calves not offered the supplemental feed. Calves were fed a ration consisting of 50% corn, 30% oats, 10% cottonseed meal, and 10% molasses. It required 10.2 lb of feed per lb of gain.

Anticipating profit

Advantages of supplemental feeding:

1. It adds weight and finish.
2. Calves of the same age grow to a more uniform size.
3. There's less shrinkage at weaning time.
4. 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 feeding:

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

Creep-feeding is likely profitable when:

1. calf prices are high relative to feed prices;
2. pastures begin to decline in quality;
3. dams are first- or second-calf heifers;
4. the growth potential of the calf isn't being met with milk and natural forage; or
5. calves are being reared during times when grazing is impossible.

Creep-feeding won't usually pay when:

1. the price of feed is high in relation to calf prices;
2. pastures remain lush to weaning age;
3. calves are retained for grazing or backgrounding;
4. dams are good milkers;
5. forage resources are short because the older calves should be weaned instead of creep-fed; or
6. heifers are being retained as replacements.

Calculating profit

Despite the research that's been conducted, you must determine whether creep-feeding pays by considering the costs and returns specific to *your* operation. To analyze whether creep-feeding will be profitable in a given year, you can use a "partial budget" format such as the one in table 3.

Income

How much additional gain? The usual range in extra weaning weight that is gained with creep rations will be 30 to 60 lb.

For the purposes of our example, we've assumed that the additional weight gain will be 40 lb. As indicated under "Income" in the partial budget, creep-fed calves will weigh 420 lb compared to 380 lb if they're not creep-fed.

How do you determine the value of this gain?

First, let's make an assumption about the price the rancher would receive for calves if they weren't given supplemental feed.

If we assume 96¢ per lb at 400 lb, the "reduced income" for the creep feeding program would amount to \$364.80. Now, what price will the rancher receive from the sale of creep-fed calves weighing 40 lb more, or 420 lb per head?

Normally, these heavier calves will bring a lower price. The difference in the price for the heavier calves depends on the year, and it even varies among lots of cattle.

We'll leave it to you, based on your observation of the market, to estimate the price for the heavier, creep-fed calves compared to the lighter calves without creep feeding.

For the purposes of this example, we've assumed that the price will be 2¢ per lb less (94¢ per lb) for the creep-fed calves, giving a total "added income" of \$394.80 per calf.

Credits

What's the value of forage saved? In a supplemental feeding program, the calf is substituting the added ration for some of its normal forage requirement. Again, there are no clear answers as to the quantity of forage that will be saved, but a reasonable estimate is that each lb of supplemental grain consumed saves from 0.5 to 1.0 lb of forage (dry-matter basis).

If we take the midpoint of that range and assume a reduction in forage consumption of 0.75 lb per lb of supplemental ration fed, then the calves would consume 300 lb forage.

Table 3.—Example of partial budget to evaluate the economics of supplemental (creep-) feeding of beef calves

Income differences	
Sale (420 lb @ \$.94) from creep-fed calves	\$ 394.80
Sale (380 lb @ \$.96) from noncreep calves	– 364.80
Sales difference	\$ 30.00
Credits: Forage savings (300 lb @ \$.05)	+ 15.00
Total credits	\$ 45.00
Expenses	
Creep ration (400 lb @ \$.07)	\$ 28.00
Use of equipment	0
Labor for feeding	– 0
Increase in net income	\$ 17.00

If a value for this forage is 5¢ per lb, then there would be a saving or "reduced expense" for forage amounting to \$15.00 per head. This forage would then be available to the cow herd.

You'll need to look at your own situation when you evaluate the quality and value of the hay or grass that you'd save by supplemental feeding.

Expenses

How much feed? You can decide the quantity of supplemental feed, in part, by estimating the cost of the additional feed per lb of additional gain as reported in the various research findings. However, there's a high degree of variability in calves' ability to gain, ranging from 6 to 14 lb of feed per lb of additional gain.

This large variation is caused by a number of factors; for example, it depends on the tradeoff that the calf makes between his normal consumption of roughage and the supplemental feed ration.

For the purposes of the budget example, we've assumed that the conversion is 10 lb of supplemental feed per lb of additional gain. Assuming a cost of 7¢ per lb, this puts a total cost for the extra ration at \$28.00 per calf.

What are the other expenses? These include labor, the creep or other feeder, and use of equipment such as feed bunks, gates, and vehicles for transporting the feed. In our budget example, we didn't put costs on these items. The appropriate charge for labor would depend on opportunities for employing the labor elsewhere.

The equipment may already be available, requiring only additional costs for fuel and repairs. If the equipment isn't available, you'll need to budget a figure for depreciation and interest on your investment to be included for purchased or constructed items.

The bottom line

The profitability of creep-feeding, then, is the difference between the total of “added income” and “reduced expenses,” minus the total of “added expenses” and “reduced income.”

In our example, the “increase in net income” amounts to \$17.00 per head, but this figure is based on assumptions. The rancher needs to consider these assumptions and make projections regarding whether supplemental feeding will pay, given the individual situation.

Feeding trials indicate response to supplemental feeding is greatest when natural forage is lacking. When natural forage is in short supply, calves given supplemental feed would be expected to gain considerably more than the 40 lb used in this partial budget.

However, early weaning of these calves may be more economical than creep-feeding during periods of forage shortages.

Equipment

The creep is an enclosure or lot with an opening large enough for calves to pass through, but too small for older cattle. You can build it with wire, poles, lumber, pipe, or a combination of these materials.

It should be strong enough that mature cattle won’t tear it down. Figures 1 and 2 show portable creeps constructed with wood. Both use individual passageways for calves. These openings or passageways should be 16 to 20 inches wide and 30 to 36 inches high.

The feeder may be one of several types, but it should fit your individual needs. You can build self-feeders that allow calves to feed on one or both sides; make them large enough to hold about 5 days feed supply. You can use open troughs, but they lack the advantages of self-feeders.

The feeder in figure 1 allows calves to eat from both sides and is designed to accommodate about 20 calves. It’s 8 feet long and holds 25 bushels of grain. It can be filled from outside the pen.

The feeder in figure 2 is 8 feet long and holds 50 bushels of grain and can accommodate 30 calves. Again, calves can eat from both sides, but you can’t fill the feeder from outside the pen.

Creep feeders in figures 1 and 2 are portable.

A combination creep and self-feeder on skids has been useful where the creep feeders have to be moved frequently from pasture to pasture. Figure 3 illustrates a creep and self-feeder with the individual passageways for the calves on both sides of the feeder. It should be large enough to feed 50 to 60 calves.

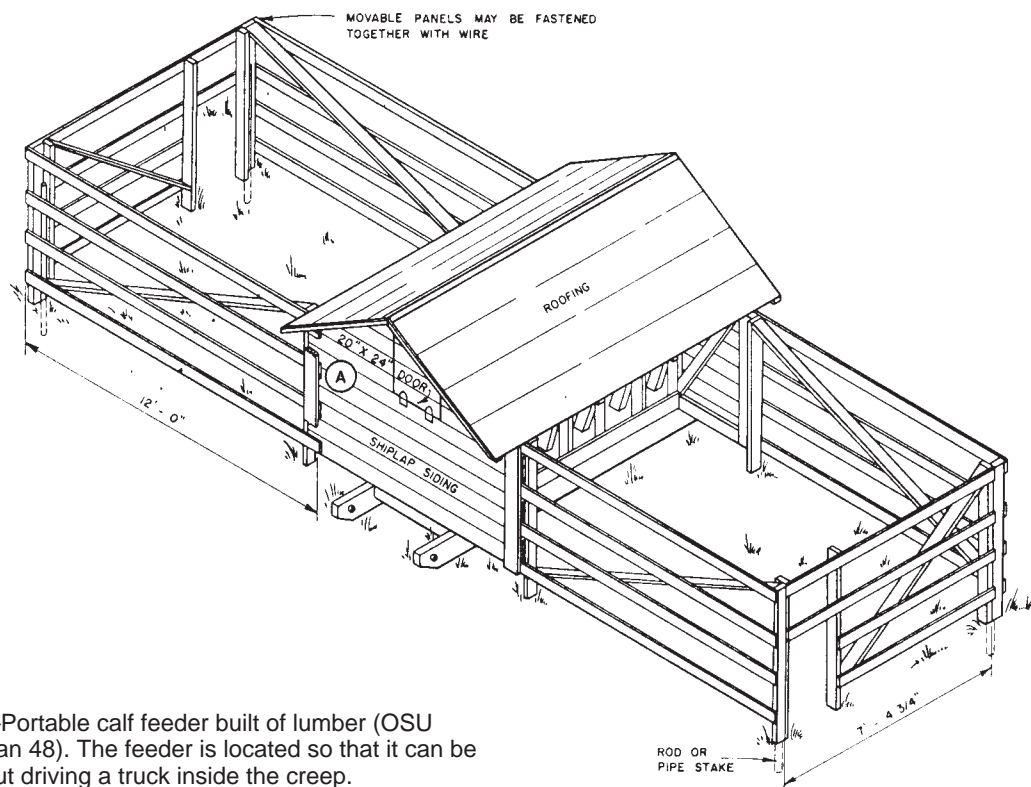
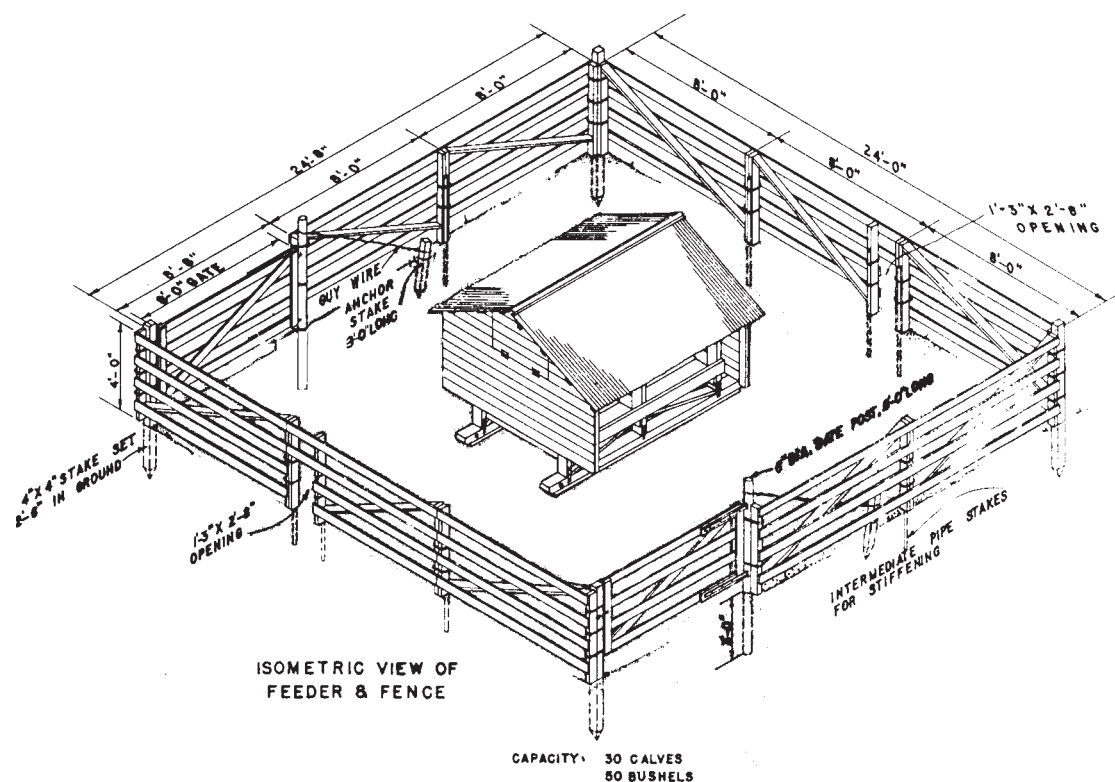


Figure 1.—Portable calf feeder built of lumber (OSU Building Plan 48). The feeder is located so that it can be filled without driving a truck inside the creep.

Figure 2.—Portable calf feeder built of lumber (OSU Building Plan 49).



Locate the creep feeders where cows gather one or more times a day—near feeding grounds, shade, water, and salt. Pastures with several watering sites, shade, or both, require more than one creep for best results.

Scatter cake or hay near the creep and more of it inside the pen to coax the calves to enter. Once inside, they should find the feed. Fresh, clean feed is essential when teaching calves to feed from the creep.

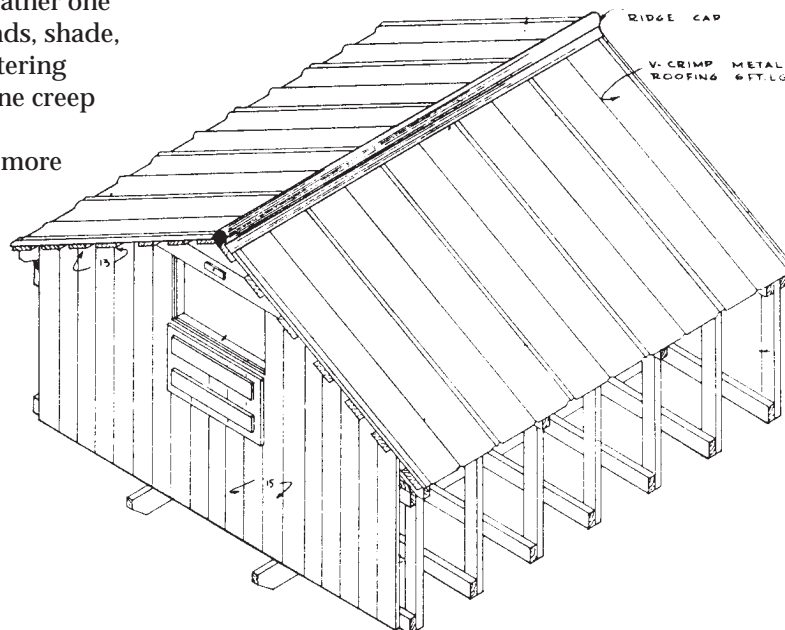


Figure 3.—Creep and feeder with individual passageways for calves on either side (OSU Building Plan 50).

For further reading

OSU building plans. Single copies of each of these plans are available at no charge; order from: Dept. of Bioresource Engineering, Oregon State University, Gilmore Hall 116, Corvallis, OR 97331-3906. Be sure to include the plan number.

Movable calf creep feeder, Building Plan 48, Oregon State University.

Movable calf creep feeder, Building Plan 49, Oregon State University.

Calf creep feeder, Building Plan 50, Oregon State University.

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Extension Service, Oregon State University, Corvallis, O.E. Smith, director. This publication was produced and distributed in furtherance of the Acts of Congress of May 8 and June 30, 1914. Extension work is a cooperative program of Oregon State University, the U.S. Department of Agriculture, and Oregon counties.

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