

630.71  
Or38e1  
no.935  
1977  
c.3

DOCUMENT  
COLLECTION  
OREGON  
COLLECTION

# Creep Feeding and Early Weaning of Beef Calves

OREGON

AUG - 8 1977

STATE LIBRARY

Supplementing the grass and milk available to unweaned calves with additional feed can be an economically-sound practice, especially during a dry period when feed is short. A "creep feeder" that allows the calves to reach the supplemental feed, while excluding adult animals, will assist in getting the feed to the growing young calves who need it.

After a beef calf is 90 days of age, mother's milk usually will supply about half of the nutrients it needs for maximum growth. Although supplementing the calves diet

may not pay its cost in most commercial herds, where calves are born in late winter and early spring and when the feed conditions are normal, there are years of short grass and dry months when calves could use extra feed provided by creep feeding.

It is common practice to allow beef calves to remain with their mothers on pasture throughout the grazing season without supplemental feed. Some producers, however, creep-feed grain to the calves through the latter half of the nursing period. Other producers find it economically feasible to creep feed only during the last 30 to 45 days before weaning. A study done at Oregon State University in 1968 showed creep feeding male calves the last 70 days before weaning increased weaning weights 33 pounds, at a cost of 8.3 pounds of feed per pound of gain. In 1969 however, creep feeding male calves from August 9 to October 11 resulted in only 15 pounds gain, with 13.4 pounds of feed required per pound of gain. The milking ability of the mother, and the abundance and quality of the pasture or other feed available to the cow 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 weigh 30 to 60 pounds more at weaning than calves not creep fed.

Creep feeding calves from first-calf heifers, old cows, or poor milking cows usually shows positive results. Creep feeding calves of 2-year-old heifers is a common practice on ranches and does result in a more uniform calf crop. Some cattle-producers figure if range conditions are such that a cow cannot wean a calf weighing more than 400 pounds it is time to consider creep feeding. It still may not be practical.

Calves born in the fall or winter 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 this tendency should be encouraged if a creep is to be used. Creep feeding fall-born calves can add 100 pounds over those not creep fed.

In a small herd, this supplemental feeding can be given the calves while they are separated from the cows for a few hours each day. In most cases separating cows from calves is not practical, and it is desirable for the calves to have access to feed at all times. This can be done with a self-feeder placed in a lot that will keep older cattle out but has openings that calves can pass through.

Choice of feeds (barley, wheat, oats, corn, etc.) will depend on their availability and price. Calves 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

---

W. Dean Frischknecht, Extension animal scientist, and  
A. Gene Nelson, Extension farm management specialist,  
Oregon State University

---

Extension Circular 935

July 1977

Oregon State University Extension Service

---



started on feed. Cracked corn or coarsely ground barley, wheat, or milo may be substituted 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 to 10 percent dried or blackstrap molasses improves the palatability of the ration. These may be used to replace an equal amount of grain. When developing breeding stock, it is desirable to use oats as 50 percent or more of the grain ration in order to keep calves from getting too fat.

#### Some Recommended Rations

	Pounds
1. Cracked or rolled barley .....	50
Oats, whole, cracked or rolled .....	50
	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

In addition to grain rations 1 through 4, fall born calves should have access to top quality hay. Dilute high quality alfalfa hay with grass or straw to prevent bloat.

Protein supplements such as cottonseed meal, soybean oil meal, or linseed oil meal should be added when the cows slow down in their milk flow, or when the grass becomes mature. About 9 parts grain to 1 part protein supplement, by weight, make a desirable mixture. Since milk is a good source of protein, when cows are milking fairly well the protein of the milk will balance a straight grain creep ration. If the calves are fed past 7 months of age, or if the pasture begins to dry up, increase the protein supplement to about 15 percent of the ration.

#### Average Feed Consumption by Creep-Fed Calves

Age of calf	Feed consumption	
	Per day	Per month
	Pounds	Pounds
1 to 2 months.....	½	15
2 to 3 months.....	1½	45
3 to 4 months.....	2½	75
4 to 5 months.....	3½	105
5 to 6 months.....	5	150
6 to 7 months.....	6½	195*
7 to 8 months.....	8½	255

\* It usually takes 500 to 600 pounds of supplemental (creep-fed) feed from birth to 7 months.

## How Much Supplemental Feed Does a Calf Need?

The amount of feed consumed in creep feeding varies according to the age of the calf, amount of milk the dam produces, the amount of grass available, and the palatability of the feed. Naturally as calves get older they consume more feed.

Figure on 6 to 10 pounds of supplemental (creep) feed to put on a pound of gain.

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

In 1954, a dry year, an Oklahoma study of spring-born calves from 2-year-old heifers showed creep-fed calves consumed an average of 740 pounds of supplemental feeds and gained 108 pounds more than calves not fed a supplement. The ration was corn 50 percent, oats 30 percent, cottonseed meal 10 percent, and molasses 10 percent. It took 6.9 pounds of feed per pound of gain.

Another Oklahoma study, with fall-born calves on a similar ration, showed creep-fed calves consumed an average of 884 pounds of feed and gained an average of 87 pounds more than calves not allowed the supplemental feed. It took 10.2 pounds of feed per pound of gain.

## Economics

Despite the research that has been done, each rancher must determine whether creep feeding pays, considering the costs and returns specific to each operation. To analyze whether creep feeding will be profitable in a given year, the rancher can use a "partial budget" format such as the one illustrated. Looking only at those costs and income items that will be affected by the decision to offer supplemental feed to calves, the rancher needs to estimate the added income, reduced expenses, added expenses, and reduced income.

To complete a partial budget for the decision to creep feed calves, the rancher must answer a number of questions. An example is shown in the accompanying table.

#### Example of Partial Budget to Evaluate Economics of Supplemental (creep) Feeding of Beef Calves.

<i>Added income:</i>		
Sale of creep-fed calves (420 lbs. @ \$.43)		\$180.60
<i>Reduced expenses:</i>		
Hay for calves (240 lbs. @ \$.03)	\$ 7.20	
		\$187.80
<i>Added expenses:</i>		
Creep ration (320 lbs. @ \$.05)	\$ 16.00	
Use of equipment	0	
Labor for feeding	0	
<i>Reduced income:</i>		
Sale of calves not creep fed (380 lbs. @ \$.44)	\$167.20	
		\$183.20
Increase in net income		\$ 4.60

### How much additional gain?

The usual range in extra weaning weight that is gained with creep rations will be 30 to 60 pounds. For the purposes of our example, we have assumed that the additional weight gain will be 40 pounds. As indicated under "Added income" in the partial budget, the calves will weigh 420 pounds compared to a weight of 380 pounds if they are creep fed under "Reduced income."

### How much feed?

The quantity of supplemental feed can be decided, in part by estimating cost of the additional feed per additional pound of gain as reported in the various research findings. However, there is a high degree of variability in calves ability to gain, ranging from 6.9 to 13.4 pounds of feed per pound of additional gain. This large variation is due to differences in a number of factors; for example, it depends on the trade-off that the calf makes between his normal consumption of roughage and the supplemental-feed ration. For the purposes of the budget example we have assumed that the conversion is 8 pounds of supplemental feed per pound of additional gain. Assuming a cost of 5¢ per pound, this puts a total cost for the extra ration at \$16 per calf.

### What's the value of forage saved?

In a supplemental feeding program, the calf is substituting the added ration for some of his 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 pound of supplemental grain consumed may result in a savings of from 0.5 to 1.0 pound of forage (dry matter basis). If we take the midpoint of that range and assume a reduction in forage consumption of 0.75 pounds per pound of supplemental ration fed, then the calves would consume 240 pounds less hay, or equivalent grazing per head. If we assume a value for this hay of 3¢ per pound, then there would be a savings or "reduced expense" for forage amounting to \$7.20 per head. The rancher needs to look at his own situation here evaluating the quality and value of the hay or grass that would be saved by supplemental feeding.

### What's the value of the gain?

First, let's make an assumption about what price the rancher would be receiving for calves if they were not given supplemental feed. If we assume 44¢ per pound at 380 pounds, the "reduced income" for the creep-feeding program would amount to \$167.20. Now, what price will the rancher receive from the sale of creep-fed calves weighing 40 pounds more, or 420 pounds 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 even varies among lots of cattle. We will leave it to the rancher, based on observation of the market, to make estimates of the price for the heavier, creep fed calves compared to lighter calves without creep feeding. For the purposes of this example, we have assumed that the price will be 1¢ per pound less (43¢ per pound) for the creep-fed calves, giving a total "added income" of \$180.60 per calf.

### What are the other expenses?

Other expenses associated with supplemental feeding of calves include labor, the creep or other feeder, use of equipment such as feed bunks, gates, and vehicles for transporting the feed. In our budget example we did not

put costs on these items. The appropriate charge for labor would depend on opportunities for employing the labor elsewhere. Also, the equipment may already be available, requiring only additional costs for fuel and repairs. If the equipment is not available, the rancher will need to budget a figure for depreciation and interest on the investment to be included for purchased or construction of items.

### Does it pay?

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 \$4.60 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 situation.

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

### Advantages of Supplemental Feeding

1. It adds some weight and finish.
2. Calves grow to more uniform size.
3. There is less shrinkage at weaning time.
4. Serves as market for homegrown feeds.

Any creep-feeding program will have most of the above advantages, but the economic importance of each will vary greatly according to the type of calves to be produced.

### 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. Takes extra time and equipment.
3. Hogs, sheep or goats cannot run in the same pasture with a creep feeder.
4. Creeps cause calves to hang around the feed, and cows may not move out as far as normal.

## How About Early Weaning?

Several trials indicate early weaning can be a sound practice where there is a shortage of feed. Early weaning is considered to be any time earlier than the normal weaning age of about 7 months, although some ranchers regularly wean calves from first-calf heifers at about 5 months of age. On an average year on most western ranges, calf gains during May and June are about 2 pounds a day; during July about 1.5 pounds, and during August about 1 pound per day. After September 1 on most ranges calf gains are slow. During late summer and autumn many ranges become extremely short of both feed and water, so early weaning should be considered.

Under these conditions there are some advantages to early weaning. The cows gain weight when not nursing calves, so they go into winter in better shape. Dry, non-lactating cows need less water than when nursing calves, and dry cows range farther away from water. It is a fact that dry cows can go to water every other day and still thrive, but cows nursing calves need water every day because of the milk requirement. In areas where a shortage of feed and stock water creates a problem, cows could be

left on the range and calves could be weaned and fed in a drylot or go to irrigated pasture if available. A drylot is simply a corral or feedlot.

Work at OSU's Eastern Oregon Agricultural Research Center at Union compared post-weaning gains of calves weaned on September 17 compared to calves weaned at the ordinary time of October 15. The early-weaned calves went on to good pasture and gained 1.1 pounds a day from September 17 to October 15, while those on range with their mothers gained less than .5 pound. After October 15, gains averaged 1.2 pounds a day for all calves, so weaning stress was minimal for both groups. The early-weaned calves gained 21 pounds more per head during the fall grazing period from September 17 to November 18.

In this trial the early-weaned calves were nearly 6 months of age at weaning time and average weight was 440 pounds. They were previously weighed August 20, when about 5 months of age, and average weight was 373 pounds. At this weight and age they could have been weaned and put on good pasture if a shortage of feed had existed on the range. The fact that they gained more than 2 pounds a day while still nursing shows that early weaning is not a good answer when feed is still plentiful and cows are milking well.

By the time calves are 120 days of age the rumen is working sufficiently so that calves can be weaned and make satisfactory gains without the benefit of milk. By this age calves on pasture probably are obtaining more than one-half of their nutrition from the natural forage.

If calves are not fed supplements, they can be taught to eat dry hay if a light feed of hay is fed on the ground for a few days while the calves are still with their mothers. This helps the calves to adjust to dry feed after weaning.

A weaned calf normally consumes about 3 percent of its body weight as feed each day. By the time the calf weighs 300 pounds it will eat about 9 to 10 pounds per day of a ration that is 50 percent high quality roughage and 50 percent grain. Roughage percent can be varied from 35 percent to 65 percent, depending on availability of feeds.

A ration that has given excellent results with weaned calves is 2 pounds barley, 1 pound cottonseed meal, and free-choice grass hay, which will range from 8 to 12 pounds, depending on the size of the calf.

Any of the supplemental feed rations described are suitable for early-weaned calves if they also have access to a high-quality roughage on a free choice basis.

Calves have been weaned successfully at less than 2 months of age, but that is younger than is practical or necessary under most conditions. A Kansas drylot study for 107 days compared gains of calves weaned at 50 days of age, calves on a creep in drylot still nursing, and nursing

calves in a drylot but not creep-fed. Early weaned calves gained an average of 278 pounds, creep-fed nursing calves gained an average of 264 pounds, and non-creep-fed nursing calves gained an average of 116 pounds. This study was done in drylot, but it does point out the fact that the combined energy efficiency of cow and calf was best for the early-weaned group. Early-weaned calves and their mothers consumed 17.2 pounds of total digestible nutrients (TDN) per day for a feed requirement of 6.8 pounds TDN per pound of calf produced; the creep-fed group consumed 17.6 pounds TDN daily, for a feed requirement of 7.3 pounds TDN per pound of calf produced; and the non-creep group consumed 15.0 pounds TDN daily, for a feed requirement of 14.3 pounds TDN per pound of calf produced. The Kansas rations are shown in the following table.

The starter ration was used only for calves weaned at 50 days of age. At 100 days of age these calves were gradually taken off the starter ration and put on the standard ration used for the creep-fed calves.

Rations for Early Weaned Calves

Ingredient	Starter	Standard
	ration	ration
	Pounds	Pounds
Rolled oats .....	436	1,300
Rolled corn .....	742	366
Dehydrated alfalfa .....		92
Calf Manna <sup>1</sup> .....	305	
Wet molasses .....	65	61
Dicalcium phosphate .....	11	
Limestone .....	11	
Soybean oil meal .....	436	84
Dry molasses .....		51
Pre-mix <sup>2</sup> .....	22	
Salt .....	22	10
Aurea-10 .....	15	14

<sup>1</sup> Calf Manna milk replacer is made by Albers Milling Co.

<sup>2</sup> Pre-mix, pounds per 1,000 pounds: soybean oil meal, 444; ground oats, 443; vitamin A, 33; Aureomycin-10, 30; trace mineral, 50.

Calves weaned at 3½ to 4 months of age do not require a milk replacer, but they need a palatable and nutritious ration.

To help make a valid decision about early weaning you can set up a partial budget, such as the example shown, for supplemental, creep feeding.

When arranging a drylot to receive freshly weaned calves, place feed bunks so they extend at right angles to the fence line to prevent calves from walking the fence line looking for their mothers.



OREGON STATE UNIVERSITY  
**EXTENSION  
SERVICE**

Extension Service, Oregon State University, Corvallis, Henry A. Wadsworth, 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. Extension invites participation in its programs and offers them equally to all people, without discrimination.