



# AGRI-FACTS

Practical Information for Alberta's Agriculture Industry

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## Creep Feeding Calves

### Introduction

Creep feeding is the practice of providing supplemental feed to calves before weaning. Creep feeding helps in supplementing mother's milk and pasture. The feed is provided in a facility designed so that adult animals are unable to consume the creep feed.

By providing creep feed, it is possible to increase preweaning weight gains and weaning weights. 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.

As calves approach weaning, their nutrient requirements increase. This increase is greater in calves with a good growth potential (i.e. male or crossbred calves). If the calves' nutrient requirements are greater than the nutrients supplied by milk and pasture, the calves' growth rate will be restricted.

The cows' milk production decreases in late summer and fall, as does available pasture and quality. Thus, the gap between the calves' nutrient requirements and the amount of nutrients supplied by milk and pasture tends to increase.

The dam's milk production depends on her genetic capability, pasture availability, age and previous nutritional history. A summary report comparing the creep feeding response of calves from 2 and 3 year old dams showed that

the creep fed calves were 8 and 12 kg (18 and 26 lb) heavier, respectively, than non-creep fed calves. This result also indicates that creep feeding calves from two-year-old heifers will tend to produce a more uniform calf crop.

### Effect on calf growth

The extra weight gained as a result of creep feeding is variable. The factors affecting the response are as follows:

- supply and quality of pasture or range
- milk production of the dams
- growth potential of calves
- sex of calves
- age of calf at weaning
- type of feed
- length of creep feeding period
- distance travelled to creep feeder
- season of birth of calf

Depending on these variables, creep fed calves can be expected to gain from 2 to 45 kg (5-100 lb) more before weaning than non-creep fed calves. Under most pasture conditions, the average increase in weaning weight is 18 kg (40 lb) – with 10 to 27 kg (25-60 lb) being common.

Calves sucking good milking dams on good pasture will gain little from creep feeding, but if milk and/or pasture are poor, weaning weights can be substantially improved by creep feeding.

*Creep feeding can have advantages and disadvantages*

The previous nutritional history of the cow is also a factor. In one trial, creep fed calves whose dams had been wintered at a low nutritional level gained an average of

40 kg (88 lb) more than their non-creep fed counterparts. In comparison, creep fed calves from dams wintered at a nutritionally adequate level gained only 24 kg (53 lb) more than the comparable non-creep fed calves.

Lactating beef cows grazing on good pasture early in the season can meet their nutritional needs for optimum milk production. However, by the time a calf is 90 days old, an average milking beef cow may produce enough milk to meet only one-half the nutrients needed by the calf for maximum growth.

For example, a 90 kg (200 lb) calf requires about 11 kg (25 lb) of milk to gain at a rate of 0.9 kg (2 lb) per day. If its dam produces only 7 kg (15 lb) of milk per day, the calf must also consume 2 kg (4.5 lb) of dry matter per day to maintain a growth rate of 0.9 kg (2 lb) per day.

By the time the calf weighs 180 kg (400 lb), its dam may be producing only 4.5 kg (10 lb) of milk daily. The calf must then consume about 5 kg (10.5 lb) of forage dry matter or its equivalent to maintain a 0.9 kg (2 lb) per day growth rate. The calf could probably consume this amount of forage, but the forage protein fibre and digestibility may be low, and the growth rate might decrease.

Alternative management practices such as early weaning or providing high quality forage to calves can be considered as alternatives to creep feeding. Another method for ensuring the nutrition provided to calves is superior to that of the mature cows during the grazing season is to creep graze.

In this situation, rotationally grazed pastures would be managed so that calves have the ability to graze new paddocks before cows enter. The calves can be given access through a gate or an elevated electric fence. Alfalfa or seeded annuals can be useful for this system, and rotational grazing can show even greater benefits in the weight gain of creep grazed calves. One or more of these options may help use pasture resources more efficiently.

Creep feeding fall-born calves should also be considered. The fall-born calf is more dependent on its dam's milk than spring-born calves since pasture is not available, and calves cannot compete effectively with cows for winter feed. Creep feeding of fall-born calves can result in up to 45 kg (100 lb) of additional weaning weight.

## Pasture and feed conversion efficiency

In most cases, pastures become energy deficient later in the grazing season. Using energy-rich creep feeds to fill deficiencies in energy that calves may experience will result in better growth performance. In an energy-deficient state, calves will substitute forage on pasture for creep feed, allowing for increases in stocking rates.

In situations where cattle are grazing poor quality mature or dormant grasses, protein deficiencies may be of primary concern. In this case, creep feed may be used primarily as an additional source of protein for calves. Supplemental protein fed in association with grazing poor quality, low protein forages will result in an increased consumption of poor quality feed on pasture. In this case, stocking rates would have to be reduced, as calves will tend to consume more grass.

As a rule, it is not advisable to include urea in creep feeds designed to act as a protein supplement as individual animal intake is quite variable. Also, without a source of readily available energy, calves are limited in their ability to metabolize urea to the microbial protein used for growth.

It is estimated that each kg (lb) of creep feed consumed will save 0.5 to 1.0 kg (0.5-1.0 lb) of forage dry matter. Therefore, if a calf consumes 90 kg (200 lb) of creep feeding throughout the summer, a saving of about 68 kg (150 lb) of forage dry matter would result. This saving would represent an additional animal unit month of pasture for every four calves being creep fed. Since creep feeds have a higher energy value than forages, a substitution of creep feed for forage dry matter will result in an increased energy intake and a subsequent increase in weight gain by the calf.

Since stocking rates can be increased if calves are creep fed, feed conversion efficiency is often difficult to calculate. Assuming no change in stocking rate, the feed conversion could range from 5 to 20 kg (with 8-10 kg being common) of creep feed per kilogram of additional gain. If changes in pasture stocking rate are considered, the feed conversion efficiency is often less than 5 kg of creep feed per kg of additional gain. In general, feed conversions are the most efficient for calves sucking two-year-old or poor milking cows, or when pastures are inadequate or mature.

## Creep feeding and preconditioning

Late summer creep feeding is beneficial as part of a preconditioning program. As calves have become accustomed to creep feed for several weeks before weaning, consumption of grains in drylot backgrounding programs will occur more readily contributing to a reduction in weaning stress. They will also be less dependent on milk from the cow. Calves also regain losses from weaning and shipping more quickly, and are often found to exhibit a lower incidence of postweaning morbidity and mortality.

## Post-weaning performance

Some of the disadvantages of creep feeding will be evident after weaning if the calves have received too much creep feed. The extra finish acquired by many calves can result in slower and costlier gains during the subsequent feeding period.

The reduced efficiency of creep fed calves in the feedlot depends on whether the creep feed has promoted skeletal and muscle growth or simply fattened the calves. If creep feeding has mainly fattened the calves, a reduced efficiency in the feedlot will result, often meaning the calves will be discounted at the time of sale.

If weaned calves are being fed to gain 0.6 to 0.7 kg (1.25-1.5 lb) per day, the extra weight gain from creep feeding will be lost over the winter feeding period. If fed alike following weaning, non-creep fed calves will catch up to creep fed calves by 16 to 20 months of age.

Replacement heifers in extra fat condition at weaning may perform poorly in the cow herd later. Extra fat will replace milk-producing tissue in the heifer's udder, which reduces the amount of milk the heifer can produce for her calves.

One study found that cows creep fed as calves raised calves that were 4 kg (9 lb) lighter for 3 subsequent calf crops than comparable calves from cows not creep fed as calves. Heifer calves should be fed to reach sexual maturity by 13 to 15 months of age. Replacement heifers should only be creep fed to promote skeletal development and subsequent normal sexual development. This approach will only be necessary under poor pasture conditions or if the cows are poor milkers.

The selection process for superior dams in either commercial or registered purebred herds can become more difficult when pasture quality and quantity were adequate throughout the creep feeding period. Creep feeding may mask the milk-producing ability and hence, the genetic value of cows in the herd. A positive aspect to creep feeding purebred calves, especially bulls, is that it can allow them to reach their full potential for growth.

Creep feeding will increase cow condition and weight in the fall, providing stocking rates are not increased. This method can be advantageous for carrying the cow through the winter in better flesh and her subsequent fertility.

## The creep ration

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

Barley is also good, but because of the irregular feeding habits of calves and the higher energy concentration in barley, there is a greater risk of digestive upset with barley than with oats. Wheat and corn can be used in limited amounts in creep rations. Bulky feeds like 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 per cent 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 by only putting one 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 additional 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 calves' muzzles. The addition of molasses at a level of three per cent by weight will decrease the amount of dust and encourage intake.

Higher levels of molasses should be avoided since these levels may attract flies and cause calves to scour. In addition, too much molasses may cause the feed to bridge in self feeders. The addition of some of these ingredients to increase palatability may not be economical unless calves are receiving very little milk and/or pasture.

The creep feed can be composed predominantly of grain and some protein-phosphorus supplement. The creep ration should contain:

- 2.9 to 3.1 Mcal/kg digestible energy
- 13 to 16 per cent crude protein
- 0.7 per cent calcium
- 0.5 per cent phosphorus
- trace mineral salt
- vitamin A, D and E

Selenium should be added in locations where the selenium content of feed is low. The 13 per cent protein creep feed can be used when forages contain 10 per cent protein or better. The 16 per cent protein creep feed can be used when pasture quality is particularly poor, i.e., unfertilized grass pasture in late season (Table 1).

**Table 1. Example: creep rations using either a commercial 32 per cent protein supplement or canola meal**

	Crude Protein Content			
	13%		16%	
Oats	27.0	27.0	23.0	23.0
Barley	63.0	61.6	53.0	53.2
32 % supplement	10.0	–	24.0	–
Canola meal	–	9.1	–	22.0
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	100.0	100.0	100.0	100.0

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 avoid 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 give increased gains. Some techniques that can be used to get calves started on creep feed include the use of palatable feeds like oats, bran or molasses in the feed, using an older calf to decoy smaller calves into the creep area, or feeding hay to the cows near the creep area. It is more difficult to get calves started on creep feed if the cows are eating lush pasture and milking well.

## Limited creep feeding

Creep feeding is usually most profitable when pasture quantity and/or quality decline. Limit-feeding high protein rations for 60 to 90 days starting in mid-July, rather than feeding a high energy ration, has been used to better meet the calf's nutrient demands considering what is in the pasture.

Rations are limited with salt to reduce some of the fattening effects of high energy rations. Limiting a high protein creep (20-44 per cent) works best when forage quantity is adequate but quality is low. A low-protein creep (12-16 per cent), on the other hand, works better when grass is short and energy is inadequate for the calf.

Two to eight per cent salt in the creep feed appears to be the requirement to limit intake to one to three pounds per head daily. Low intake levels are optimal for high protein supplements as the goal of the creep feeding program will be to increase the intake of low quality pasture, which is abundant. High intake levels are desirable with creep feeds low in protein and high in energy as these feeds will reduce or replace intake of pasture.

## Creep feeding facilities and location

Plans for creep feeders are available through local agriculture extension offices. Requirements for a feeder include keeping the feed dry, holding at least a one-week supply of feed, portability and the ability to keep cows out while letting calves in.

An entrance 400 to 500 mm (16-20 in) wide by 750 to 1050 mm (30-42 in) high will allow access to calves only. Provide 300 mm (12 in) of feeding space for every two to three calves.

When starting the creep feeding program, locate the feeders near water, in or near a shaded area where cattle loaf frequently, near mineral and salt feeders or back rubbers. Placing salt and mineral for the herd in troughs mounted directly on the creep feeder (and extending the roof of the feeder to prevent weathering) can be a useful tool for attracting cows and their calves to certain areas of the pasture.

Once calves and cows are accustomed to using the feeder, it can be used for managing animal distribution on pasture by placing it in areas that cattle do not loaf frequently, encouraging the use of these areas.

## When to creep feed

Creep feeding may provide an economic advantage if one or more of the following apply:

- during periods of drought, when pastures are poor later in the grazing season or when cow milk production is lowered
- two-year old heifers and low-producing cows or cows older than eleven and their calves can be separated from the main herd
- as part of a forage management program to conserve pasture
- increase the pasture stocking rate
- calves are fall born
- as part of preconditioning program, creep feeding two to three weeks before weaning will help calves become accustomed to dry feed
- prices for weaned calves are high and feed grain prices are low
- the market demands calves to be in extra good flesh
- calves will be slaughtered immediately after weaning
- late calves are being pushed for a set market date
- feeding potential replacement heifers from low milk producers to get calves to reach puberty by 13 to 15 months of age for large cross-bred calves from low milk producing cows
- when the price discount is small for heavier-weight feeder calves
- when large-frame calves are immediately placed on a high energy ration and destined for slaughter at 12 to 14 months of age

## When not to creep feed

- cows are milking well
- pastures are of high quality and abundant
- calves will be fed for a low daily gain after weaning
- calves are being raised for replacements
- grain prices are high relative to calf prices

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### For more information

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## Advantages and disadvantages of creep feeding

### Advantages

- increased calf weaning weights 2 to 45 kg (5-100 lb) with an average of 18 kg (40 lb)
- increase pasture stocking rate
- conserve pasture
- accustom calves to grain feeding so that they wean easier
- reduced morbidity after weaning
- calves grow to their genetic potential
- less shrinkage at weaning time
- benefits of implants are maximized

### Disadvantages

- creep fed calves may utilize little pasture
- intake of creep feed can be variable
- poor feed efficiency under certain conditions
- extra gain usually lost in feedlot; non-creep fed calves show compensatory gain
- puts unwanted finish on calves
- cattle buyers discriminate against extra fleshing
- decreased cow productivity if cow has been too fat as a calf
- pasture close to creep feeder is overgrazed, if feeder not moved frequently
- distorts production records
- may lower finished cattle return if calves finish at smaller weights
- costs of feed, labour and facilities