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G74-166 Creep Feeding Beef Calves

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Creep Feeding Beef Calves

Effects of creep feeding calves are covered here.

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Gross income of the cow/calf enterprise is partially dependent on weaning weight of the calves. Three possible non-genetic ways of increasing calf weaning weight are to increase milk production of the dam, increase forage consumption of the calf, or provide supplemental feed to the calf to increase nutrient intake.

Management practices exist to increase standing forage quality, but management of that grass for the calf only is difficult. Likewise, increasing milk production of the dam requires greater feed inputs and possibly supplemental feed.

Creep feeding studies consistently have shown an increase in weaning weight, but in most cases they've failed to show an economic advantage because of poor conversion of creep feed to extra pounds of calf weaned.

Creep feeding of beef calves usually is reserved for certain market/management situations such as high calf prices, low feed prices, drylot operations, fall-born calves, purebred bull calves and larger-framed breed types. Because non-creep fed calves tend to catch up with their creep-fed mates post-weaning, the greatest return is realized only if calves are sold at weaning. Creep feeding usually is not economical if

calf ownership is retained through backgrounding, summer grazing and/or finishing.

Under severe drought conditions, creep feeding can be used to sustain a minimal level of growth on heifer calves to ensure sufficient size to develop them as replacements for the next year. One risk of creep feeding is getting calves too fat, resulting in price discounts or in lowered lifetime milk production of heifer calves.

Creep feeding must be carefully appraised in view of the economics of cost of gain, potential market, and the influence on sale price of calves.

During drought conditions when cows are nursing calves, instead of creep feeding calves to maintain weight, producers should consider early weaning calves. Due to poor conversions of creep feed to gain, early weaning may be more economical. Information on this management alternative can be found in NebGuide G83-655, *Management of Early Weaned Calves*.

Nutrient Requirements and Ration Composition

The dam supplies part of the nutrients needed for calf growth through her milk. Up until the calf is 6-12 weeks old, milk should meet its nutrient needs.

As the calf gets older, the amount of milk produced by the dam decreases and it becomes more difficult to meet the calf's nutrient needs. In addition, for spring calves, the quality of grass decreases in late summer and fall, and again, there is usually not enough protein or energy in the forage for optimum gain.

If it is decided to creep feed calves nursing their dam, the ration must be energy and protein dense. This is because the rumen of the calf is small, so the calf will not eat a large amount of feed.

As an example, for a 220 pound calf to gain 1.8 pounds per day, it must consume about 7 pounds of a ration that supplies 1.12 pounds of protein/day, 2.72 Mcal/day for NEM, and 1.66 Mcal/day for NEG. To accomplish this the creep ration must be about 70 percent TDN and 14 to 16 percent crude protein.

Not only must a creep ration be nutrient dense, it must be palatable. Most commercially available creep rations are pelleted and appear to be highly palatable.

For creep rations that are not pelleted, the ration must be dust-free and uniformly mixed so ration ingredients cannot be sorted out by the calf. Liquid molasses at 5 to 10 percent of the ration or low levels of fat (about 2 percent of the ration) help reduce dust. Molasses at levels greater than 10 percent may produce a laxative effect. Rolling or coarsely cracking grains rather than fine grinding helps reduce dust.

Simple mixtures of grain and protein supplement make satisfactory creep rations. Pelleted creep rations are handled easily and may have less waste. Bulky feeds such as oats or bran should be included to protect against overeating. Both ground oats and bran are good feeds for getting calves started on feed.

Research results where intake of the creep ration was limited using salt will be discussed later in this NebGuide. Salt is used in the creep ration to hold daily consumption of the ration to less than 3 pounds per head per day.

When using salt to limit daily intake to get calves started on creep, use 0-2.5 percent of the ration as salt.

After calves are eating the creep ration it may be necessary to increase salt up to 10 percent of the ration.

When using salt to limit intake, use a grain-based mix (corn or milo). It is easier to incorporate salt into this type of ration than into a pelleted ration.

Ionophores (Rumensin, Bovetec) are feed additives that increase feed efficiency and average daily gain. These compounds also can be used to control coccidiosis.

Data published by Kansas State University indicates (*Table III*) there is little advantage to including an ionophore in a creep ration. There was no reduction in pounds of creep feed needed per pound of added calf gain, and no increase in average daily gain of calves fed a creep ration that contained an ionophore. However, if there is known history that calves in the herd get coccidiosis, an ionophore can reduce this problem.

Examples of an energy creep ration, salt-limited creep ration, and a high protein creep ration are shown in *Table I*.

Table I. Example rations			
<i>Ingredient</i>	<i>Energy Creep</i>	<i>Salt-Limited Creep</i>	<i>High Protein Salt-Limited Creep</i>
Ground Milo, %		76.5	
Ground Corn, %	50		
Ground Oats, %	40		
Soybean Meal, %		19.5	90
20-40% Protein Suppl., %	5		
Soybean Oil, % ^a		1.0	
Molasses, % ^a	5		
White Salt, %		3.0 ^b	10 ^b
^a To reduce dust			
^b The level of salt may need to be varied to obtain the desired feed intake.			

Gains and Feed Conversion

Even if gain is not maximum, the poor conversion of energy creep rations to pounds of gain makes the economical use of creep feeding questionable. *Table II* indicates creep fed calves will out-gain their non-creep fed counterparts, but it takes on the average of 11.5 pounds of feed per pound of extra gain. A review of 18 trials revealed range in converting a creep ration to extra pounds of calf is 2.3 to 31 pounds of creep fed per pound of extra gain.

Creep fed spring calves averaged 40 pounds heavier than non-creep fed calves and required 13.1 pounds of creep feed for each extra pound of gain. For fall born calves, the average increase in gain was 63 pounds and 12 pounds of feed was needed for each additional pound of gain.

Researchers have tried to increase the feed efficiency of creep-fed calves by limiting the intake to less

than 4 pounds per head per day by using 3 to 10 percent salt in the ration.

In the salt-limited high protein creep feed studies, the Oklahoma and Kansas studies in *Table II*, intake was limited to 1 to 2.0 pounds per head per day. They found an excellent feed to gain response (2.3 to 6.8 pounds of creep/pound of gain). Feed conversion of the salt-limited energy creep feed, reported in the Kansas studies in *Table II*, averaged 11.2 pounds of creep feed per extra pound of gain. In the Oklahoma studies the creep rations were about 38 percent crude protein, and in the Kansas studies the protein content ranged from 12 to 36 percent.

Table II. The effect of creep feeding spring and fall calves on gain and feed efficiency		
<i>Research Source</i>	<i>Extra Gain from Creep Feeding</i>	<i>Pounds Feed/Pound of Extra Gain</i>
	lb	
Spring Calves		
Kansas	23	16.3
Kansas	11	31.1
Nebraska	47	8.3
North Dakota	20	11.0
Oklahoma	37	9.5
Texas	58	9.6
Kansas	25	12.1
USDA	100	7.0
Average	40	13.1
Fall Calves		
Alabama	75	9.3
Indiana	42	10.6
Oklahoma	87	10.2
Kansas	47	21.0
Average	63	12.0
Salt Limited Energy or High Protein Creeps		
Kansas	13	13.8
Kansas	12	6.8
Kansas	19	5.4
Kansas	20	18.8
Oklahoma	19	2.3
Oklahoma	30	3.3
Average	18.8	8.4

Economically, the high protein salt-limited creep feed appears more favorable compared to the energy

creeps. However, the 20 to 38 percent crude protein rations assumes there is plenty of standing forage for the calf to consume to meet its energy needs.

Studies designed to have calves consume creep late in the grazing season, when forage quality is decreasing, have shown improvement in feed efficiency (*Table III*). Kansas State University has done the bulk of the experiments involved in limit creep feeding calves late in the grazing season. Their work indicated that when the number of days on creep was between 54 and 85 days, on the average, daily gain increased .27 pounds per day, and 6.2 pounds of creep was needed per pound of extra gain.

Table III. Summary of limited creep feeding trials (Kansas)					
<i>Trial</i>	<i>Protein content of creep (%)</i>	<i>No. days</i>	<i>Lb creep per calf per day</i>	<i>Increase in ADG over controls</i>	<i>Lb creep per lb added calf gain</i>
1987*	16	85	1.46	+.31	4.4
1987*	16	63	1.36	+.26	5.2
1988	16	61	.76	-.04	---
1988	16	73	1.40	+.61	2.3
1988	36	73	1.60	+.33	4.8
1988	16	73	.83	+.11	7.6
1988	36	73	.38	+.14	2.7
1988*	16	54	2.08	+.13	16.0
1988*	16	71	2.11	+.12	8.8
1988*	16	63	2.54	+.60	4.2
1989	36	61	1.82	+.34	5.4
1989	16	61	1.91	+.28	6.8
AVERAGE	--	--	---	+.27	6.2

*The creep diet included an ionophore.

The wide variation in efficiency of feed use from creep feeding may be due to the following management factors:

1. waste of feed due to wind, improper feeder design or adjustment;
2. location of the feeder, which affects frequency of eating and total feed intake.

Intake of creep feed should reduce grass intake, but the amount is hard to estimate because nutrient requirements increase as a result of the added gain from creep feed.

Table IV includes items and calculations to help determine whether to creep feed. These calculations include feed costs only. Labor and costs of feeders and equipment should be included.

Table IV. Calculations to make in determining whether to creep feed			
	<i>Value \$/CWT</i>	<i>Weight Lb.</i>	<i>Total Value</i>
Calf Performance			

Weaning Wt.			
Without Creep	\$1.00	500 lb.	\$500.00
With Creep	\$0.96	540 lb.	\$518.40
Days Creep Fed 90 days			
Extra Gain on Creep			
Total Gain	\$0.46	40 lb.	\$18.40
Avg. Daily Gain		.44 lb	
Creep Feed			
Cost/CWT	\$10.00		
Daily Consumption		2 lb	\$0.20
Total Consumption		180 lb.	\$18.00
Creep Feed Efficiency			
Lb. Creep/Lb. added gain		4.5 lb.	\$0.45
Net Return From Creep Feed			\$0.40
Net return calculations only consider the cost of the creep feed. Cost of feeders, other equipment and labor should be considered before initiating a creep feeding program.			

Effect of Creep Feeding On Post-Weaning Calf Performance

There appears to be little difference in average daily gain 30 to 90 days after weaning for creep fed versus non-creep fed calves. Some research indicates a slight advantage in average daily gain for non-creep fed calves.

Feed conversions for creep-fed compared to non-creep fed calves during the post-weaning period are not significantly different. The non-creep fed calves tend to "compensate" for their lower level of pre-weaning nutrition.

The length of time it takes non-creep fed calves to catch up in weight depends on their nutrition after weaning. The difference is generally eliminated by the time the cattle reach slaughter weights (*Figure 1*). Unless marketed for slaughter within 3 months of weaning, it is doubtful the extra weight will be sufficient enough to pay for the added costs associated with creep feeding.

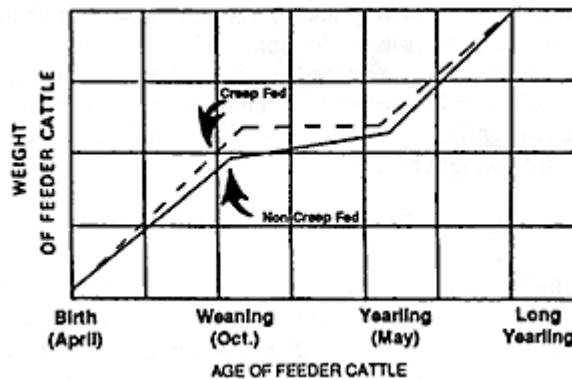


Figure 1. Effect of creep feeding on weights to yearling age.

Market price of heavier, fleshier feeder calves is usually lower than for those in thinner condition. When cattle prices are high relative to feed prices, we can expect relative high price discrimination as weights increase for calves of the same frame size and/or genetic potential. Only if cattle prices are low relative to feed prices may a premium exist for the heavier calves. However, this is no guarantee that creep feeding will be profitable.

Benefits to Mother Cows?

In some experiments an increase in cow weight has been observed. This may be a result of reducing the amount of pasture being consumed by calves, particularly when pasture is short.

It is questionable as to whether creep feeding reduces the calf's appetite for milk. In lambs just the opposite appears to occur; i.e., the creep fed lamb is larger and tends to nurse more frequently and vigorously, which tends to stimulate heavier milk production.

If cows nursing creep fed calves are heavier at weaning, credit must be given for (1) the heavier sale weight of cull cows, and (2) possibly some reduction in their feed needs following weaning.

For Replacement Heifers

Heifer calves fed a high energy ration before weaning can develop fatty tissue in the udder that consequently lowers milk production, compared to those heifers not fed high energy creep rations. This impairment of future production can occur before the heifer reaches 6 months of age.

Research at Oklahoma State University and Purdue University indicates cows creep fed as calves before weaning weaned lighter calves than those not creep fed. The point is: adequate (but not excessive) nutrition is needed for the heifer calf to reach sexual maturity by the time she is 13 to 15 months old. Where milk production is low in relation to calf nutrient needs (young cows, old cows, drought conditions, or perhaps where heifer calves have exceptional genetic growth rate relative to milk production of their mothers), supplemental feeding of heifers before 6 to 7 months of age may be necessary for them to reach puberty at 13 to 15 months.

For Seedstock Herds

Long-term creep feeding reduces accuracy in comparing cow productivity and, to some extent, growth rate of the calf, because of the individual variation in creep consumption. On the other hand, calves that consume large amounts of creep feed show their maximum growth potential to a greater degree. Considering the apparent effect of creep feeding on future productivity of heifers and the reduction of accuracy in evaluating replacements, creep feeding is questionable if forage is adequate.

For Starting Calves on Feed

Calves started on creep rations before weaning begin eating sooner after they are weaned or shipped. They usually recover weaning or shipping losses in a shorter period of time, and may have less respiratory disease because nutritional stress is reduced. The information presented in *Table III* makes this management practice attractive. Calves fed salt-limited creep rations for a short period of time prior to weaning, on the average, exhibited the best feed-to-gain ratios.

Because the creep will be used only a short time, the creep enclosure and equipment needs to be relatively inexpensive. A barbed wire enclosure with creep gates and a relatively inexpensive feed bunk should be adequate.

Starting Calves on the Creep Ration

Calves will often nibble at grain when they are about 3 weeks of age, but will not eat appreciable

amounts before they are 6 to 8 weeks old. If cows are grazing lush pasture and milking well, it is often difficult to get calves started on creep feed. You can encourage calves to start on creep more quickly by:

1. including palatable feed such as ground oats, bran, cottonseed hulls, molasses;
2. using an older calf that is already eating;
3. feeding the cows some hay or other feed near the creep for a few days;
4. locating the feeder close to where cattle frequently congregate (water, shade, etc.).

Creep Feeder Design

Plans for constructing creep feeders for calves are published in *MWPS-6, Beef Housing and Equipment Handbook*, which is available at the extension office. 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 1'4" to 1'6" feet 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, locate the creep feeder near water or shade where cows rest frequently. 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 late 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.

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