

ALTERNATIVE FEEDING STRATEGIES FOR COWS AND CALVES DUE TO DROUGHT RELATED FORAGE SHORTAGES

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This paper will concentrate on early weaned calves and feeding high grain rations to cows in order to survive the drought.

Let's look at some of the key questions being asked by cattlemen and review what information is available.

1. Should I consider alternative feeding systems or simply sell the cows?

That's a decision many cattlemen have been wrestling with the last two to three months. Some have already made the decision to liquidate cows, while others have sought out grass in neighboring states. Still others are feeding hay or grain to stretch sparse pastures. Pond water is low or dried up in many areas. The reasonably strong cull cow market has made it attractive to liquidate some of the cows, alleviating some grazing pressure.

The hard part of selling cows is that many producers have made great progress in improving the genetics of their cow herds. Liquidating the cow herd at this time is an extremely hard alternative to accept. Before a final decision is made, take a strong look at the economics of some of the following alternative feeding programs. For those producers eligible for drought disaster support through the emergency feed assistance program, some very reasonable grain feeding programs can be put together to maintain cow herds.

The kind of drought conditions we've faced make these decisions difficult, but it's also important to keep in mind that at some point in time, it will rain. Producers need to be in a position to take advantage of the economic opportunities in the cattle industry down the road.

2. In many cases, cow/calf pairs now being sold are split and sold separately. Should I keep the calves?

Reports indicate that many early weaned calves are selling for \$250 to \$350. One alternative that producers might consider is to sell some cows and retain the calves, which have a considerably lower daily feed requirement. Early weaned calves perform extremely well and since many of these calves are already weighing 200 pounds, it's important to keep in mind that the price being received for these calves is in the range of 90¢ to \$1.25 a pound. Since these calves are very efficient converters of feed to gain, there may be some excellent profit potential in feeding the calves until normal weaning time.

If only a portion of the calves are kept, an option would be to keep the heifers with the intent that these would become future cow replacements in the operation. This allows a producer to take advantage of the genetic progress that has occurred without having to restock the operation with cattle of possibly lower genetic potential.

3. *Why early wean beef calves?*

Early weaning of beef calves has several attributes that make it very practical, particularly when feed resources are limited. First, it reduces the nutritional requirements of the cow by approximately 40%. Secondly, it is more efficient to feed the calf directly than to supply extra feed to the cow so that she will provide adequate nutrition for the calf. Thirdly, removing the nutritional strain of nursing the calf will greatly improve rebreeding. Research trials indicate that rebreeding will be improved by 10-25%. Additionally, cows should breed much earlier in the breeding season resulting in heavier calves next year.

4. *How early can calves be weaned?*

As evidenced by the common practice of weaning at birth in the dairy industry, calves can be weaned at any age. However, the earlier they are weaned, the greater the potential for problems. A logical time to wean is near the start of the breeding season when the calves are 45-80 days old, in order to take advantage of improved rebreeding. It may be wise to delay weaning of late-born calves which may be only a few days old at the start of the breeding season.

5. *How will early weaned calves perform?*

A review of research on early weaning indicates that with good management early weaned calves will weigh the same or heavier in the fall than calves that are weaned at the normal time. This is logical when one considers that after the early weaned calves recover from the initial stress of weaning, they usually have access to better nutrition than their mates still on the cow, particularly late in the grazing season. Early weaned calves are very efficient feed converters, generally requiring only 4 to 6 lbs. of feed per lb. of gain. Table 1 shows the average daily gain of calves either early weaned, creep fed or not creep fed.

TABLE 1. AVERAGE DAILY GAIN OF CALVES IN A KANSAS STATE UNIVERSITY TRIAL EVALUATING EARLY WEANING, CREEP FEEDING OR NON-CREEP FEEDING OF DRYLOTTED COWS			
Breed Type	Not Creep Fed	Early Weaned	Creep Fed
Commercial	1.00	2.41	2.35
Simmental	1.17	2.77	2.59

6. *How should early weaned calves be managed?*

Based on numerous research trials, the following management practices should reduce problems and result in good performance in early weaned calves:

1. Reduce stress on the calves as much as possible by:
 - a. Offering a highly palatable creep feed for a couple of weeks before weaning.
 - b. Keeping pen size small at weaning to reduce fence walking. However, very close confinement may increase health problems.
 - c. Sorting calves into separate pens based on size and age.
 - d. Reducing dust in the pens by spreading straw or "watering down" the pen frequently.
 - e. Providing adequate air movement -- don't confine early weaned calves in a closed building.
 - f. Making sure that clean water is available at all times. Early weaned calves may not have learned to drink water which may necessitate providing running water to attract them until they learn to drink.
 - g. Penning calves out of sight and hearing range of their mothers.

2. Provide a high quality, very palatable ration and manage the feeding system to maximize intake by:
 - a. Providing adequate bunk space.
 - b. Placing bunks or self feeders so that calves will run into them as they "walk the fence" looking for their mothers.
 - c. Placing newly weaned calves with a few older calves that know how to eat from bunks.
 - d. Minimizing dust in the ration by coarsely processing grains and using wet molasses.

7. *What type of ration works best with early weaned calves?*

Since an early weaned calf doesn't have a fully functional rumen, it should be treated initially as a monogastric and fed a high concentrate ration. Again, ration palatability is of the utmost importance. Rations used at weaning should meet the following criteria.

Additionally, roughage content (preferably high quality ground alfalfa hay, dehydrated alfalfa or sun-cured pellets) of the milled ration should be restricted to 20% initially, and 5% wet or dry molasses added to improve palatability. In some cases, free choice roughage may be offered along with the concentrate ration, especially during the first few days after weaning. This roughage especially during the first few days after weaning. This roughage should be either alfalfa, brome or other high quality hay.

After the calves are readily consuming the ration, the protein level can be reduced to 15%. Additionally, the percentage of roughage can be increased to reduce the possibility of excess condition on the calves. This may be particularly desirable on heifers that may be retained for replacements.

Nutrient	Level in Ration
Crude Protein	16%
TDN	70%
Calcium	0.50%
Phosphorus	0.35%
Trace Mineralized Salt	0.50%
Vitamin A	2000 IU/lb

8. *What are some typical rations for early weaned calves?*

The rations in Table 3 have been used in early weaning research trials and are provided as examples. These diets illustrate that a variety of feedstuffs can be used with early weaned calves depending on local supply and cost, so long as the mixture is highly nutritious and palatable. In general, the milled ration will contain 60-70% grain, 10-20% roughage and protein, vitamin and mineral supplements. Many commercial creep and starter feeds will meet these specifications.

Ingredient	Ration					
	1	2	3	4	5	6
Corn	37	50		64	56.5	50
Oats	27	30	72			
Milo			18			
Soybean Meal, 44%	15	20	4.5	20	17	12
Wheat Bran	10					
Alfalfa Hay, ground			4.5			
Dehy Alfalfa Pellets						
Cottonseed Hulls	5			10	20	33
Molasses	5			5	5	3
Trace Mineral Salt	0.5		0.5	0.5	0.5	0.5
Dicalcium Phosphate	0.5					
Limestone				0.5	0.5	0.5
Pre-mix			0.5			
Potassium Chloride					0.5	0.5

*Source of Rations:

- 1 - Used in Missouri early weaning trails.
- 2 - Used in Iowa trials with access to alfalfa and/or brome hay plus equal parts of trace mineral salt and dicalcium phosphate.
- 3 - Used in Kansas trials. Pre-mix contained 77% rolled milo, 10% trace minerals, 6% Aurofac-10, and 6.7% Vitamin A pre-mix.
- 4 - Used as a starter in Oklahoma, trials with 1 lb of Vitamin A (30,000 IU/gm) and 1 lb. of Deccox premix added per ton of feed; fed for 14 days.
- 5 - Used in Oklahoma research after starter ration; Deccox premix reduced to 0.8 lb/ton; fed from 14 days to 6 weeks after weaning.
- 6 - Used in Oklahoma research after 6 weeks postweaning; Vitamin A reduced to 0.5 lb/ton.

Other typical of rations for early weaned calves can be found in the Great Plains Beef Cattle Handbook fact sheet GPE-1670 available from your local extension office.

9. *What type of health program should be used on early weaned calves?*

Since early weaned calves are usually too young to develop strong immunity through vaccination, the key to preventing health problems is providing a clean environment and adequate nutrition. However, they should receive a 7-way Blackleg vaccination to prevent enterotoxemia which can occur with high-grain feeding. Consult your local veterinarian for this suggestions on other vaccines and medications. Routine management chores like castrating, dehorning and vaccinating should be done well in advance of early weaning rather than further stressing the calves at weaning time.

Observe the calves closely, especially during the first couple of weeks, so that any scouring or other health problems can be treated immediately.

10. *Should an antibiotic be included in the ration for early weaned calves?*

The addition of 20 to 30 mg Aureomycin or Terramycin per pound of feed is an excellent way to reduce health problems and improve performance of early weaned calves.

11. *We traditionally run cows on grass. One of the alternatives this year appears to be high grain, low roughage diets for maintaining cows. Can we maintain cows on this type of ration?*

Definitely. In many cases, the best alternative for cow/calf producers is to utilize a limit-fed, high grain diet fed in drylot or semi-confinement. The most expensive nutrient for a cow is energy (TDN). The following table indicates the nutritional requirements and typical rations for beef cows--either a fall or spring calving cow where the calf has been weaned or a lactating cow producing 14 to 16 pounds of milk per day (calves should be creep-fed). The initial reaction of many people evaluating these diets is that cows will not survive on that small amount of feed. But, it's important to keep in mind that grain is a very concentrated energy source with 10 pounds of grain supplying the energy equivalent of 15-20 pounds of hay.

Cows should be slowly adapted to high feeding, just like feedlot cattle. A suggested practice is to begin with 2 to 3 pounds of whole shelled corn per head and free-choice roughage. Then, increase the grain by 1 pound per day, and reduce the hay by 2 pounds each day, until the final ration is attained. Make sure plenty of bunk space is provided so all cows can eat at the same time. Once the cows are switched over to the limit-fed, grain-based ration, observe their body condition (fleshiness) over time and adjust the grain as needed to maintain adequate condition.

Obviously, the rations shown in Table 4 represent fairly high levels of grain feeding in order to minimize the amount of scarce forage used. However, other proportions of grain and roughage can be used depending on the forage supply, so long as the ration is formulated to meet the cow's nutrient requirements.

TABLE 4. POSSIBLE HIGH GRAIN RATIONS FOR DRY AND LACTATING COWS	
Dry Cows - 1050 lbs.*	Lactating Cows - 1050 lbs*
1. Requirements: TDN - 9.2 lbs Protein - 1.3 lbs Phosphorus - 16 grams Calcium - 16 grams Vitamin A - 25,000 IU	1. Requirements: TDN - 13 lbs. Protein - 2.3 lbs. Phosphorus - 24 grams Calcium - 32 grams Vitamin A - 40,000 IU
2. Possible Ration: Corn - 10 lbs Hay** - 3 lbs Soybean Meal - .5 lbs Free Choice Mineral (high calcium feedlot type with Vitamin A)	2. Possible Ration: Corn - 13 lbs Hay** - 4 lbs Soybean Meal - 2.0 lbs Free Choice Mineral (high calcium feedlot type with Vitamin A)

* For each 100 lbs increase in body weight, increase TDN by .7 lb and protein by .1 lb per day.

** Assumes average to poor quality grass hay, or crop residues. If good alfalfa hay is fed no supplemental protein is needed by the dry cow, and the lactating cow would need only 1 lb. of soybean meal or equivalent.

12. In formulating a cow diet, could I use cheaper sources of protein like urea?

Traditionally, we have not recommended the use of urea in beef cow rations because they are ordinarily maintained on high forage diets which often lack sufficient energy to allow efficient utilization of urea. Keep in mind, however, that the feedlot industry routinely uses urea as a predominant protein source. The high grain diets that might be used for cows are very similar to feedlot rations (about 70-90% concentrate), which should allow the cow to utilize urea very effectively. Note that only a small amount of supplemental protein is needed in the dry cow

diet when average to poor hay is fed, while the lactating cow requires a considerable amount of supplemental protein. It would appear that urea could be used very effectively in either case.

In making the substitution, keep in mind that urea is a very concentrated source of nitrogen with a crude protein equivalent of 282%. Thus, .10 pound of urea supplies the same amount of protein (nitrogen) as approximately .6 lbs of soybean meal. A commercial "feedlot" supplement containing 50-70% of its protein from urea could be used, and should be substantially cheaper than soybean meal.

13. *Will these grain diets require a change in mineral supplementation?*

Yes. Keep in mind that typical forage-based cow diets are often deficient in phosphorus. In contrast, calcium becomes the limiting mineral in feedlot diets because of the low calcium and high phosphorus content of grains. In these high grain cow diets, a typical "feedlot" mineral mix with a calcium to phosphorus ratio of 3 to 4:1 would work quite well. For example, a mixture of equal parts limestone, dicalcium phosphate and trace mineralized salt would produce an adequate free choice mineral containing about 20% calcium and 6% phosphorus. Add about 300,000 IU of Vitamin A per pound of mineral mix to satisfy this vitamin requirement.

14. *In high grain rations, would the inclusion of an ionophore such as Rumensin be economically advantageous?*

Rumensin was officially cleared for use with beef cows in December, 1988. At the rate of about 200 mg per head daily, research indicates that cows on a maintenance type program required about 10% less feed to maintain themselves. In this year's situation, that could be very important economically. What about lactating cows? Unfortunately, little research exists on feeding Rumensin to lactating beef cows. However, it appears advantageous to include Rumensin since it will be fairly easy to feed and should only cost about 1.5 to 2¢/head/day. Based on limited research available, a small reduction in the amount of grain fed should be possible without any reduction in performance when Rumensin is fed. Rumensin is also beneficial in reducing acidosis and bloat, which can occur on high grain rations.

15. *Are there other alternatives that I need to be thinking about?*

One alternative that producers need to take a hard look at is maximum utilization of whatever crop aftermath will be available this summer and fall. Admittedly, with the wheat crop already lost or production greatly reduced in many areas, the amount of wheat straw is going to be very limited. However, if a producer has access to wheat straw, ammoniation of straw may be a great way to maintain the cows this summer after wheat harvest, or as a feed source this fall and winter. Excellent research information exists on the use of ammoniated crop residue showing that it is equal to native grass hay in feed value. As short as producers are for feed, don't overlook the excellent potential of crop residues.

Also, this may be a good time to start looking around for irrigated corn or milo stalk fields to contract for fall and winter grazing. Maintaining the cows during the summer on a high

grain diet as outlined above, and then going to irrigated stalks might give producers an opportunity to maintain their cowherd.

The two most logical forms of alternative feed supplies are grains and crop residues. But, producers also might take advantage of by-products from the grain and alcohol industries. Often these grain by-products have excellent nutritional value and could work very nicely as a cheaper source of energy. Lightweight grain, wheat midds, grain dust, grain and oilseed screenings, brewery by-products, etc., could become very economical feedstuffs for cows and calves.