



MANAGEMENT

Alternative Feeds for Cattle During Drought no. 1.626

by R. Baird LeValley¹

Quick Facts...

Drought is a part of the normal production cycle. Dealing with these dry periods and decreased feed supplies need to be part of the overall management plan.

In many cases, the best solution for cow/calf producers is to utilize a limit-fed, high grain diet fed in drylot or semi-confinement.

Substitute 1 pound of grain or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay.

Since intake on concentrate diets is restricted, cattle may appear gaunt and behave as though hungry, however after 14 to 21 days, they will adapt to the reduction in feed intake.

Drought conditions greatly reduce the available forage for livestock. They also impact forage and rangeland production across the state. Short and long-term ramifications will continue to affect the management of livestock. Livestock have been sold, or relocated out of state in record numbers; however, there are alternatives for the remaining population.

Alternative Feeding Options

When deciding on an alternative feeding program, there are several options to consider. The goal is to re-breed cows while maintaining calving intervals, maintain pounds of calf produced per cow, and minimize feed cost per pound of calf sold. When considering feed options, think about the following:

- Design a feeding program to fully utilize local feeds,
- Supplement low-quality feeds correctly,
- Analyze forages and feed precisely,
- Substitute 1 pound of grain or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay,
- Carefully balance every ration against the animal's requirements,
- Make every effort to reduce feed losses,
- Feed the highest quality feeds to animals that have higher feed requirements (i.e., growing replacement heifers or growing calves),
- Feed the lower quality roughages to cows in the middle-third stage of pregnancy,
- Save the better quality feeds for periods before and after calving, and
- Treat low-quality roughages with various feed additives. Additives can improve palatability and feeding quality. (Brownson, 1996).

Stretching the Hay Pile

Substitute 1 pound of grain or other concentrate feed for 2 pounds of alfalfa hay or 3 pounds of grass hay. Do not exceed grain feeding by 0.4 percent of the live body weight when forage is the major component of the diet. Grain is not always practical to feed, but there are ways to feed it even in pasture or rangeland situations. Many producers use barrels, gated pipe split in half, bunks, or old hog feeders mounted on a trailer. Other management options can be found at www.ext.colostate.edu/drought/altfeed.html.

Relocating the cowherd into drylot is a management alternative that may allow producers to take advantage of grains and byproduct feeds (Wright, 2002). Diets for drylot cows are formulated to meet the nutrient

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requirements of the cows while minimizing feed costs. As a result, intake is generally limited and more concentrate feeds are included to cheapen the diets.

Since intake on concentrate diets is restricted, cattle may appear gaunt and behave as though hungry. After 14 to 21 days, they will adapt to the reduction in feed intake, but they may continue to appear gaunt. Cattle should adapt to high-grain diets in seven to 10 days and should be observed closely during that time. A minimal amount of roughage is required to maintain rumen function. As a rule of thumb, cows should receive at least 0.5 percent of their body weight as roughage (90 percent dry matter basis). Thus, a 1,200 pound cow should receive at least 6 pounds of roughage per day.

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). Table 1 shows 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 concentrated energy source with 10 pounds of grain supplying the energy equivalent of 15 to 20 pounds of hay.

Cows should be slowly adapted to high-grain feeding, just like feedlot cattle. A suggested practice is to begin with 2 to 3 pounds of whole shelled corn per head, per day 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. Feed two times per day if possible. 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 1 represent high levels of grain

Table 1. 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. Urea can be used as the protein source in these rations due to the higher energy level.

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.

Alternative Feedstuffs

When considering alternative feedstuffs, conduct a nutritional analysis. In addition, test for nitrates in annual forages including sorghums and for prussic acid levels in sorghums, sudans and sorghum-sudan varieties. (See fact sheets 1.610, *Nitrate Poisoning* and 1.612, *Prussic Acid Poisoning*.)

Alternative feedstuffs used to decrease the dependency on alfalfa or grass hay include harvested corn stalks, millet hay, wheat straw, sorghum-sudan, cottonseed hulls, soybean hulls, wheat middlings and corn gluten feed. Cottonseed hulls are low in protein (3.5 percent), but equal in energy to late cut grass hay. Cottonseed hulls should be fed with 2 to 3 pounds of 30 percent to 40 percent all natural protein supplement and mineral. The

References

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- Stanton, T. 1994. *Colorado State University fact sheet 1.610, Nitrate Poisoning in Livestock*. Fort Collins, CO.
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crude protein in soybean hulls ranges from 10 percent to 16 percent. Soyhulls can be fed without additional forage, however the digestible energy is increased when fed with hay in a 2-to-1 ratio. Wheat middlings are a good source of protein (18 percent) and energy. It is best to mix at least 5 pounds of forage with the wheat middlings. Corn gluten feed is a byproduct of the corn wet milling industry and is available in wet or dry form. It is high in protein (25 percent) and should be fed at a rate of 0.5 percent of body weight, with a forage source. A calcium-phosphorus mineral mixture and salt should be available to cows at all times, especially when utilizing any alternative feeds. Vitamin A may need to be supplemented also.

Planning for Spring Forage

Spring forage is always a premium. Small grains, such as annual rye triticale or oats can be used to fill the void of spring forage. In planning for next year, plant these varieties in August or September to provide even more forage the following spring. If the annual forage has been stressed (drought, wind, excessive soil nitrogen, shade, frost, certain herbicides, acid soils, low growing temperatures, and nutrient deficiencies) be sure to have the forage tested for nitrates. High nitrate forages are consumable by diluting them with other feedstuffs and supplementing with energy (fact sheet 1.610, *Nitrate Poisoning*).

Planning for Summer Forage

Plant sorghum-sudan for summer grazing. Sorghum-sudan uses less water than corn and produces enough forage for two to three cuttings or grazing rotations. However, care must be taken when grazing or harvesting sorghum-sudan. Sorghum-sudan is susceptible to prussic acid accumulation. Prussic acid accumulates in stressed plants. The stress may be a result of drought, a freeze, excessive fertilization, or wind. Grazing on stunted plants during drought is the most common cause of poisoning of livestock by prussic acid-producing plants. Management of sorghum-sudan includes:

- No grazing or green chopping for several days after a killing frost,
- No grazing until the regrowth of shoots is 15 to 18 inches tall,
- Make sure that animals are not hungry and turn them in later in the day, and
- Dilute with grass or alfalfa hay.

Other forages that can be planted for summer grazing are millet, turnips, or oats. They can also be grazed in the fall. This is critical during drought years because lack of water and forage may force some producers to come off of the rangelands and summer pastures early. Planning now ensures that there is ample grazable forage available for the livestock.

Planning for Fall Forage

In June, plant winter varieties of rye, triticale or wheat. In addition, plant oats, sorghum-sudan, or any of the brassicas such as turnips, kale, or rape.

Additional feeding and harvesting strategies include windrow grazing, stockpiling forage, ammoniation of forages, and adding liquid supplementation to the forage. Drought is a part of the normal production cycle. Management during these dry periods and decreased feed supplies need to be part of the overall plan.