



# Vet Call

► by **Bob Larson**, Kansas State University

## Feeding strategies during drought conditions

*Every year, some part of the United States deals with a shortage of rainfall and reduced forage availability. If grazing is not modified during periods of drought, reproductive and growth performance of cattle is harmed, and long-term damage to the grazing ecosystem can occur. Because total annual rainfall explains most of the variation in forage production from year to year, it is important to monitor the amount and timing of precipitation.*

### Have a plan

The timing of precipitation that is most important to each year's forage production is described as the "water year" and in most locations does not coincide with the calendar year. For example, in the Flint Hills of Kansas, the amount of precipitation from Nov. 1 of the previous calendar year through Oct. 31, when forage availability has started to decline, impacts forage production during the spring, summer and fall grazing seasons.

By tracking the total precipitation from the start of the water year to specific decision dates, ranchers can take action early in a drought situation before animal, pasture or range performance is severely affected. An example of a drought-management plan using decision dates might be to alter prescribed burning or fertilization plans if less than 15% of the expected annual rainfall

for the water year has occurred by the time that forage is just starting to grow (April 1 in the Flint Hills). If precipitation increases, then no further action may be needed; however, if rainfall amounts continue to lag, producers should increase monitoring of forage production and pasture condition.

A second decision date may be at a point by which time one-half of the annual forage production is expected to have occurred (June 30 in the Flint Hills). For example, if less than 80% of expected annual rainfall to that date has fallen, calves should be weaned and moved to another location to reduce stocking density on the drought-



stressed pastures by 30%. If the drought is more severe and less than 60% of expected rainfall has occurred, in addition to early weaning of calves, replacement heifers or the oldest bred cows should be culled in order to decrease the stocking density by 40%.

If drought conditions continue, ranchers need to look forward and be prepared to adjust stocking density during the later

months of the current production year in order to protect the following year's grazing potential. Plant vigor as measured by adequate leaf area and root health late in the growing season before forages become dormant is critical for normal growth the following growing season. Therefore, if precipitation is less than 70% of normal during the peak growing period, cattle should

be removed from pastures before severe damage to the following year's grazing occurs.

If by the end of the water year the total precipitation was less than 80% of normal, ranchers should anticipate that the following year's grazing will be impacted by the just-ended year's drought condition, and plans to reduce stocking rates should be prepared.

### Feeding options

If cows need to be removed from pastures because of drought conditions, ranchers may be able to receive advice on how to stretch available forages or to utilize unfamiliar feedstuffs from local nutritionists, university specialists and local veterinarians. If hay is available and cost-competitive, it is an excellent feed for cows when standing forage is lacking.

Corn and other grain, byproduct feeds, crop residues and weeds are also feeding alternatives. Many byproduct feeds such as distillers' grains, soy hulls and wheat midds are excellent energy and protein sources for cows and are generally much less likely to cause digestive upset than whole or processed grains when fed at high levels. Specific byproduct feeds may have characteristics that limit their inclusion in the diet, so you should work with a nutritionist or veterinarian who is familiar with locally available byproduct feeds.

Crop residues such as baled wheat straw or

cornstalks can supply some of the herd's energy needs, particularly if they are treated with ammonia to improve the digestibility, palatability and crude protein content of poor-quality forages. Standing crop residues are a potential feed source, but for corn, sorghum and other crops, one must be aware of the risk of nitrate toxicity.

Nitrate will accumulate in plants due to stress from drought. Rain following a drought will also cause a rapid buildup of nitrate levels. After a drought-ending rain, one to two weeks are required for nitrate concentrations to be reduced to safe levels. Nitrate levels are highest in the roots and stems, levels are lower in the leaves, and almost no nitrate accumulates in the flower and seed. Nitrate levels of hay will not change once the hay is cut, but grazed forages will change concentrations on a daily basis.

Poisonous weeds can be a significant

problem during a drought because they may be the only green plants in a pasture.

Normally, cows would avoid these poisonous plants, but they will consume them during periods of limited forage availability. On the other hand, some weeds may provide a significant portion of the diet during a drought without manageable negative effects. Kochia and Russian thistle are weeds that may be present on crop- or pastureland in some parts of the country that can be used in cow diets when other more-desirable feeds are not available. Again, care must be taken because toxic levels of oxalates or nitrates can be present in Kochia diets, and other weeds may have toxic components that limit the amount that can be included in the diet.

If faced with a drought situation, ranchers should carefully monitor precipitation amounts and timing, and use preplanned decision dates to minimize the negative effects

of drought on the current year's production and future years' forage production. If cows have to be removed from a drought-stricken pasture, ranchers may have to utilize unfamiliar feedstuffs. By utilizing feeds that are unfamiliar, ranchers may be able to supply the cow herd's nutrient needs at a reasonable cost, but toxicity, nutrient deficiencies and palatability may be significant problems that need to be addressed by seeking good advice and planning to limit the negative aspects of a new feedstuff.



**EMAIL:** [rlarson@vet.k-state.edu](mailto:rlarson@vet.k-state.edu)

**Editor's Note:** *Bob Larson is professor of production medicine at Kansas State University.*