# Got Forage? The Reality of a Drought Situation

*Jim Paulson, University of Minnesota Extension*

The reality for many livestock producers in the Midwest is that drought will impact their feed/forage supply and pasture. Additionally, the greatest impact may be in the price of purchased feed and forage. In this year of drought, it is going to be more expensive to feed livestock and producers need to consider strategies to best deal with the current situation.

The starting point would be to determine what the current feed/forage supply is and what the livestock numbers are. Assessing where those numbers will be on November 1 (after the crop is out) and December 31 (if no changes are made to the producer's original plan) will be essential. It may be useful to put together a team of family members and/or key stakeholders to evaluate the assessment, help make sure nothing is overlooked, and develop a plan B. The following should be considered:

1. Take an accurate inventory of feed and animals by age and location.
2. Allot feed for each group/category of animals. Prioritize quality of forage to greatest need of animals.
3. Take note of shortfalls in feed and forages. Will some crops have to be used for other uses than intended, such as silage instead of grain? Are replacement feeds needed?
4. Should herd size be reduced? Which animals could be sold? How soon? Which feed will be saved the most by those actions? Will it be enough?
5. What are some ways to add to or stretch the forage supply?
6. How will these decisions affect cash flow? By selling the weanlings early, will they be lighter than originally planned in the cash flow? If more milk cows are culled, will there be adequate milk flow? What expenses will increase or decrease? How much equity is there to work with?

## Options to Increase Forage Supply

Corn chopped early for silage can be very good feed, even if it has very little grain. Typically, it is estimated the feeding value of early-chopped corn would be ~70% of normal corn silage. If additional forage is needed, producers should check with local grain farmers who may be willing to sell drought-stressed corn with no grain for silage. The price would have to be negotiated on a per ton basis. Consideration should also be given to baling corn stalks in addition to chopping. Other forages to consider include sweet corn cannery waste and wheat straw which can be mixed with regular corn silage to extend the supply. For growing heifers and brood cows, adding wet corn distillers or wet corn gluten feed will add protein and improve palatability.

Planting a forage crop on fields where the corn was chopped early or on other harvested fields should also be considered. Planting a spring oat, barley, or triticale is a very good option. Wisconsin and Minnesota research studies suggest a planting rate of two bushels per acre. Fifty pounds of forage peas could also be added to the mix. Many producers are now planting forage turnips with oats for fall grazing. Turnips are very cold tolerant and will provide grazing forage until they are covered by snow.

Other options exist for late summer planting. Many consider planting a sorghum/sudangrass. This can be an excellent choice, especially if BMR seed is used. Another option is to plant a regular corn silage variety corn, a BMR corn, or a grazing corn. Each of these could produce a forage crop in 60 days, which could be chopped or grazed.

During periods of drought, these questions inevitably arise: What about nitrate poisoning or prussic acid poisoning? What is the difference? Which crops are most susceptible?

## Nitrate Poisoning

Nitrate itself is not toxic to animals, but at elevated levels it causes a disease called nitrate poisoning. Nitrates normally found in forages are converted by the digestion process to nitrite, and in turn the nitrite is converted to ammonia. The ammonia is converted to protein by bacteria in the rumen. If cattle rapidly ingest large quantities of plants which contain high levels of nitrate, nitrite will accumulate in the rumen. Nitrite in the rumen is ten times as toxic to cattle as nitrate itself.

Nitrite is absorbed into red blood cells and combines with hemoglobin (oxygen carrying molecule) to form methemoglobin. Methemoglobin cannot transport oxygen as efficiently as hemoglobin, so the animal's heart rate and respiration increases, the blood and tissues of the animal take on a blue to chocolate brown tinge, muscle tremors can develop, staggering occurs, and the animal eventually suffocates.

List 1. Common plants known to accumulate nitrate.

| Crops | Weeds |
|---|---|
| Barley | Canada Thistle |
| Corn | Dock |
| Flax | Jimsonweed |
| Millet | Johnson Grass |
| Oats | Kochia |
| Rape | Lambsquarter |
| Rye | Nightshade |
| Soybean | Pigweed |
| Sorghum | Russian Thistle |
| Sudangrass | Smartweed |
| Sugar Beets | Wild Sunflower |
| Sweetclover | |
| Wheat | |

The majority of nitrate poisoning cases occur with drought-stressed oats, corn, and barley. However, a number of other plants can also accumulate nitrate, including sudangrass, sorghum-sudan hybrids, and pearl millet. List 1 identifies common crops and weeds known to accumulate nitrate. Plants which have been fertilized have higher nitrate levels than non-fertilized plants. The abnormal accumulation of nitrate in plants is influenced by various factors such as moisture conditions, soil conditions, and type of plant. Plant stresses, such as drought, are associated with increased levels of nitrate. Soils high in nitrogen readily supply nitrate to plants. Acidity, sulfur or phosphorus deficiencies, low molybdenum, and low temperatures are also known to increase nitrate uptake by plants.

## Prussic Acid Poisoning

Prussic acid, cyanide, or hydrocyanic acid are all terms related to the same toxic substance. It is one of the most rapidly acting toxins affecting mammals. List 2 identifies common plants that may accumulate large quantities of prussic acid (cyanogenic compounds). Sorghums and related species readily accumulate these compounds.

A veterinarian will determine the proper treatment by taking a blood sample. If the blood has a dark or chocolate color, it is most likely due to nitrate poisoning. If the blood is bright red, it is likely due to prussic acid poisoning.

List 2. Plants with Cyanogenic Potential

| | |
|---|---|
| Apple | Johnsongrass |
| Apricot | Lima Bean |
| Arrow Grass | Peach |
| Birdsfoot Trefoil | Poison Suckleya |
| Cherry | Sudangrass Hybrids |
| Elderberry | Sorghum-Sudangrass Hybrids |
| Flax | Shattercane |
| Forage Sorghums | Velvet Grass |
| Grain Sorghums | Vetch Seed |
| Hydrangea | White Clover |
| Indiangrass | |