Drought Conditions Can Cause Issues in Cattle and Forages

While some parts of North Georgia are receiving some rain, no one knows how long our current drought conditions will last. Therefore, it is wise to develop a plan to conserve as much of your forage as possible. If one has pasture available, but is just not growing, a supplement feed can be used to "stretch" available supply. Cattle can be supplemented at 1-2% of their bodyweight to displace intake of pasture forage. This will allow the same amount of pasture to last twice as long as it normally would. If hay feeding is already necessary, the same program can be used to extend the amount of hay on hand.

Often we become concerned about protein intake and over feed protein. Remember, when feeding higher levels of supplement, the total protein intake is increasing due to volume being fed. A 12%-16% protein ration will provide adequate protein in most all cases. If hay or pasture has very low protein value, intake of the forage is going to be low and supplement intake will be higher. Feeding extra protein without a balance of energy and minerals is very costly and highly inefficient.

Fourteen percent (14%) economy feed rations provide an economical means of supplementing fair to poor quality forage or hay. Feeding this ration at 1%-2% of the animal body weight can be fed without creating digestive problems. Remember, it is far more economical to maintain body condition now than to replace it later.

Liquid Feed Supplements will fit the program if the producer has adequate volume of dry grass/hay, but needs added protein to stimulate intake and utilization for the forage. Intake of these products should not be more than 0.2-0.6% of animal body weight.

Prussic Acid and Nitrate are two substances which are normally not a concern in a normal growing season. However, under drought conditions and more specifically as we come out of a drought, they can emerge with a vengeance.

Prussic acid is a cyanide-containing compound. It is only produced by certain plants, but under stress from drought conditions, those plants can produce the problem. In Georgia, there are 2 families of plants which produce this problem. One is the Sorghum family, including forage sorghum and grain sorghum, Sudan grass, and Johnson grass. Common factors which increase the concentration of the cyanide toxin include new, young, rapidly growing plants and mature plants that are stressed due to drought and frost. The Prussic Acid is reduced in the susceptible plants by allowing the plant a week or more to return to normal growth after sufficient rain and make sure the plant attains at least a height of 18 inches before grazing or haying.

Prussic acid poisoning in cattle occurs when cattle ingest the plant and the process of digestion causes the cyanide compound to be released. The cyanide, once absorbed, enters the cells of the animal and interferes with normal cell respiration. If large amounts are consumed, the animal experiences muscle tremors and dies within a few minutes. If smaller amounts are consumer over a longer period of time, the animal salivates, has an increased breathing rate, begins experiencing muscle tremors, and finally staggers, struggles, collapses, and dies.

Nitrate Toxicity is another problem which occurs under many of the same environmental conditions. However, Nitrate Toxicity is not restricted to certain plant families. Almost any plant can accumulate nitrate. Under normal growing conditions, plants take up nitrate from the soil and convert it over to protein. During drought conditions, the plant's growth is impaired and the nitrate accumulates rather than being converted to plant protein. The fast growth of plants due to high levels of nitrogen fertilizer also contribute to nitrate toxicity because the conversation of nitrate to plant protein cannot keep up with the increased growth of a drought stressed plant.

Nitrate Toxicity occurs in cattle when large amounts of nitrate are consumed by the animal. Once consumed, the nitrate it is converted to nitrite in the rumen and absorbed. Ultimately, it interferes with the ability of the hemoglobin molecule to take up oxygen, leaving the animal is oxygen starved.

The likelihood of nitrate toxicity occurring is reduced when plants are growing under normal conditions. Once rain freshens up plants following a drought, there is a short period of heightened nitrate level. Allow a week or more of normal growth following rain to enable the plant to metabolize the accumulated nitrate.

diluted with feeds which are low in nitrate to make a total diet that is safe. See table 1 for guideline values for nitrate content in the diet.

Table 1. Guidelines for Use of Nitrate-Containing Feeds	**Nitrate Nitrogen, ppm**	**Feeding Recommendation**
Nitrate Ion, %		
0-0.44	<1000	Safe under all conditions
0.44-0.66	1000-1500	Safe for Non Pregnant. Max 50% of DM for Pregnant Animals
0.66-0.88	1500-2000	Max 50% of DM
0.88-1.54	2000-3500	Max 40% of DM. Not for Pregnant Animals
1.54-1.76	3500-4000	Max 25% of DM. Not for Pregnant Animals
Over 1.76	>4000	Do Not Feed