September 21, 2007

EFFECT OF FREEZES ON FORAGE

Our weather patterns this year have been really interesting. Speaking of weather, we should experience a hard freeze sometime in October. When it happens, it has an effect on forages including some hazards beef producers need to be aware of.

When plants freeze, changes occur in their metabolism and composition that can poison livestock, but you can prevent any problems. Sorghum-related plants, like cane, sudangrass, shattercane, and milo can be highly toxic for a few days after frost due to a sudden release of prussic acid. Freezing breaks plant cell membranes. This breakage allows the chemicals that form prussic acid to mix together and release this poisonous compound rapidly. Livestock eating recently frozen sorghum can get a sudden, high dose of prussic acid and potentially die. Fortunately, prussic acid soon turns into a gas and disappears into the air. So wait 3 to 5 days after a freeze before grazing sorghums; the chance of poisoning becomes much lower.

Once plants containing prussic acid have been consumed, the toxin rapidly enters the blood stream and is transported throughout the body of the animal. Prussic acid inhibits oxygen utilization by the cells in the animal's body. In essence, the animal suffocates. Ruminant animals (cattle and sheep) are more susceptible to prussic acid poisoning than non-ruminant animals because the ruminal microorganisms have enzymes which will release prussic acid in the animal's digestive tract.

Freezing also slows down metabolism in all plants. This stress sometimes permits nitrates to accumulate in plants that are still growing, especially grasses like oats, millet, and sudangrass. This build-up usually isn't hazardous to grazing animals but green chop or hay cut right after a freeze can be more dangerous.

Alfalfa reacts two ways to a hard freeze. It takes temperatures in the lower twenties before it is cold enough for plants to wilt down. Nitrate levels can increase but rarely to hazardous levels. Freezing also makes alfalfa more likely to cause bloat for a few days after the frost. Then several days later, after plants begin to wilt or grow again, alfalfa becomes less likely to cause bloat. So waiting to graze alfalfa until well after a hard freeze is a good, safe management practice.

Frost causes important changes in forages so manage them carefully for safe feed. For more information on questions with forages and beef production, go to the world wide web and look at beef.unl.edu or give us a call at 821-2151.

Randy Pryor, Extension Educator
University of Nebraska-Lincoln Extension in Saline County
306 West 3rd Street, Wilber, NE 68465

Phone (402) 821-2151 • Fax (402) 821-3398 • e-mail: randy.pryor@unl.edu