

October 15, 2018
 FOR IMMEDIATE RELEASE
 David Dugan
 Extension Educator, Agriculture and Natural Resources
 and Community Development

Avoid Forage Toxicities after Frosts

Last week I wrote about some of the dangers of frosted forages. This appeared in this week's CORN newsletter from OSU Extension Forage Specialist, Mark Sulc. This is only part of the information provided in his post, but much more detailed than what I explained last week. You can see the entire post at <http://corn.osu.edu> which includes information on greenchop, bloat and horse management for grazing.

As cold weather approaches this week, livestock owners need to keep in mind the few forage species that can be extremely toxic soon after a frost. Several species contain compounds called cyanogenic glucosides that are converted quickly to prussic acid (i.e. hydrogen cyanide) in freeze-damaged plant tissues. A few legumes species have an increased risk of causing bloat when grazed after a frost. Each of these risks is discussed in this article along with precautions to avoid them.

Species with prussic acid poisoning potential

Forage species that can contain prussic acid are listed below in decreasing order of risk of toxicity after a frost event:

- Grain sorghum = high to very high toxic potential
- Indiangrass = high toxic potential
- Sorghum-sudangrass hybrids and forage sorghums = intermediate to high potential
- Sudangrass hybrids = intermediate potential
- Sudangrass varieties = low to intermediate in cyanide poisoning potential
- Piper sudangrass = low prussic acid poisoning potential
- Pearl millet and foxtail millet = rarely cause toxicity

Species not usually planted for agronomic use can also develop toxic levels of prussic acid, including the following:

- Johnsongrass
- Shattercane
- Chokecherry
- Black cherry
- Elderberry

It is always a good idea to check areas where wild cherry trees grow after a storm and pick up and discard any fallen limbs to prevent animals from grazing on the leaves and twigs.

Fertility can affect poisoning risk. Plants growing under high nitrogen levels or in soils deficient in phosphorus or potassium will be more likely to have high prussic acid poisoning potential.



Fresh forage is more risky. After frost damage, cyanide levels will likely be higher in fresh forage as compared with silage or hay. This is because cyanide is a gas and dissipates as the forage is wilted and dried for making silage or dry hay.

Plant age affects toxicity. Young, rapidly growing plants of species that contain cyanogenic glucosides will have the highest levels of prussic acid. After a frost, cyanide is more concentrated in young leaves and tillers than in older leaves or stems. New growth of sorghum species following a non-killing frost is dangerously high in cyanide. Pure stands of indiangrass can have lethal levels of cyanide if they are grazed when the plants are less than 8 inches tall.

Toxicity Symptoms

Animals can die within minutes if they consume forage with high concentrations of prussic acid. Prussic acid interferes with oxygen transfer in the blood stream of the animal, causing it to die of asphyxiation. Before death, symptoms include excess salivation, difficult breathing, staggering, convulsions, and collapse.

Ruminants are more susceptible to prussic acid poisoning than horses or swine because cud chewing and rumen bacteria help release the cyanide from plant tissue.

Grazing Precautions

The following guidelines will help you avoid danger to your livestock this fall when feeding species with prussic acid poisoning potential:

- Do not graze on nights when frost is likely. High levels of toxic compounds are produced within hours after a frost, even if it was a light frost.
- Do not graze after a killing frost until plants are dry, which usually takes 5 to 7 days.
- After a non-killing frost, do not allow animals to graze for two weeks because the plants usually contain high concentrations of toxic compounds.
- New growth may appear at the base of the plant after a non-killing frost. If this occurs, wait for a killing freeze, then wait another 10 to 14 days before grazing the new growth.
- Don't allow hungry or stressed animals to graze young growth of species with prussic acid potential. To reduce the risk, feed ground cereal grains to animals before turning them out to graze.
- Use heavy stocking rates (4-6 head of cattle/acre) and rotational grazing to reduce the risk of animals selectively grazing leaves that can contain high levels of prussic acid.
- Never graze immature growth or short regrowth following a harvest or grazing (at any time of the year). Graze or greenchop sudangrass only after it is 15 to 18 inches tall. Sorghum-sudangrass should be 24 to 30 inches tall before grazing.
- Do not graze wilted plants or plants with young tillers.

Dates to Remember

October 25 Beef Quality Assurance Training at the United Producers Stockyards in Hillsboro at 6:30 p.m. Call 393-3424 to register prior to the event. Meal starts an hour prior.

November 19 Pesticide Testing at the Old Y Restaurant at noon. Third Monday versus the normal second Monday of the month due to Veteran's Day on November 12. Please pre-register at <http://pested.osu.edu> or call the Ohio Dept. of Ag at 800-282-1955.