Frost can cause some grasses to be poisonous for livestock

Farmers often grow annual warm-season grasses, such as sorghum-sudangrass, for cattle and sheep to supplement permanent pastures and hayfields.

It grows quickly during the dry, hot summer months and provides a nutritious and high-yielding forage. Locals call it “cow candy” because it is readily eaten by cattle.

However, as cold weather approaches, livestock owners who feed forages need to keep in mind certain dangers of feeding sorghum species after frosts. The tissue of these forages produces prussic acid when damaged by frost or freeze, which will convert to hydrogen cyanide.

Animals can die within minutes if they consume forage with high concentrations of prussic acid. Prussic acid interferes with oxygen transfer in the bloodstream of the animal, causing it to die of asphyxiation.

Before death, symptoms include excessive 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 the plant tissue.

Forage species that have the potential for prussic acid toxicity after a frost include:

- Grain sorghum, Indian grass, sorghum-sudangrass hybrids, forage sorghums, and sudangrass varieties.
- Species not usually planted for forage or other agronomic use can also develop toxic levels of prussic acid. These include johnsongrass, shattercane, choketcherry, black cherry, and elderberry.
- 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 dangerous 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.

Dr. Mark Sule, Ohio State University Extension state forage specialist, recommends the following practices to minimize prussic acid poisoning in certain forage species during periods of frost and young growth during the summer:

- 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 (four to six head of cattle per 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 green chop 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.
- Cut for hay or silage. Prussic acid content in the plant decreases dramatically during the hay drying process and the forage should be safe once baled as dry hay. To play it safe, wait 5 to 7 days after a frost before chopping for silage.

Annual summer grasses are excellent forage for livestock, but many of them have the potential for prussic acid poisoning after a frost and new growth. However, with proper management, farmers can utilize this valuable forage and protect their cattle.

For more information on prussic acid poisoning, go to https://agcrops.osu.edu/newsletter/corn-newsletter/2017-34/ dangers-harvesting-and-grazing-certain-forages-following-frost.

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