Prussic Acid Poisoning and Nitrate Toxicity with Sorghum/Sudangrass Grazing

The good news is that although the potential from hydrocyanic acid (HCN) or prussic acid poisoning or nitrate toxicity does exist when grazing sorghums and sudangrass, the fact is that actual cases of poisoning are rare. A few precautions taken will let you graze sorghums and sudangrass with relative safety.

The important thing to remember is that HCN formation is more likely in young, immature plants and damaged plants. HCN can form within a few hours in plants that have been damaged by grazing or chopping or by frost, but it dissipates over a suitable waiting period. Nitrate accumulation occurs with heavily fertilized ground under low light or drought conditions. Nitrate buildup also occurs in pre-bloom stage of growth and dissipates with further growth.

The ideal way to utilize sudangrass or sorghums is to set up a rotation system in the field or pasture. With sudangrass, wait until plants reach 18 inches in height before grazing. Sorghum/sudan hybrids have greater potential for acid formation, so wait until plants are 30 inches in height. Graze for about a week and then rotate to another section to allow plants to reach safe height again. If ground has been heavily fertilized and drought or low light conditions exist, check for nitrate accumulation.

Grazing Frost Damaged Plants
If growth is sufficient for safe grazing and a hard, killing freeze occurs, wait 5-6 days following the freeze before resuming grazing. If plants were immature and unsafe for grazing before the freeze, wait 10-14 days before grazing. If the frost was not a killing frost and new growth appears, do not graze. Wait for a hard freeze and then 10-14 days before grazing with young, immature growth.

HCN will also form in a few hours in fresh green-chopped forage, but will dissipate during ensiling. Sorghums stored as silage should lose most of the HCN and be safe to feed in six to eight weeks. When feeding fresh green-chop, chop only what livestock will eat in a few hours and avoid leaving it in bunks or feed wagons overnight. Sorghums cut for hay will lose their HCN during the curing process.

Following these precautions should allow for safe utilization of sudangrass/sorghums, but if you are in doubt, send a sample to us for evaluation. Better safe than sorry! In addition, some farmers allow a few animals to graze a suspect field for a day or two before turning in the entire herd.

Management Tips for Grazing Sorghum/Sudan
1. Do Not Graze young, immature growth at any time.
2. Allow sudangrass to reach 18 inches in height before grazing.
3. Allow sorghum/sudan hybrids to reach 30 inches in height before grazing.
4. If plants are safe for grazing and a hard freeze occurs, withhold livestock from grazing for 5-6 days following freeze. CAUTION: With frost (less than killing freeze) new growth may appear at the base of the plant. If this occurs, wait for a hard, killing freeze then wait 10-14 days before grazing.
5. If plants are immature and unsafe for grazing and a hard freeze occurs, wait 10-14 days before grazing.
6. Check Nitrate levels if ground has been heavily fertilized with commercial fertilizer or manure. Under 0.44 % as NO₃ is considered non-toxic.
7. When feeding fresh chopped forage sorghums, chop only what livestock will eat within a few hours. Avoid leaving green-chop sorghums in feed bunks or feed wagons overnight.
8. When in doubt, test. Send a sample to us (1/2 to 1 lb.). For prussic acid, do not allow sample to dry. Place in air-tight plastic bag and ship fastest way in cooler with ice pack. Remember, HCN content dissipates with drying!