“Prussic Acid and Nitrate Toxicity, What’s the difference?” A very common question that comes through the Extension office, and rightfully so! Many producers know there is reason for concern when grazing some of the forages we do in Kansas, like sudangrass and grain sorghums in particular. So what’s the difference between Prussic Acid and Nitrate Toxicity?

**Nitrate Toxicity:** The potential for high nitrate concentrations occurs when crops such as corn, sorghum, cereal grains and some grasses are exposed to drought, hail, frost, cloudy weather, or soil fertility imbalances. Nearly all plants contain nitrate, but some species are more prone to accumulate nitrate than others. Crops such as forage and grain sorghums, sudangrass, sudan-sorghum hybrids and pearl millet are notorious nitrate accumulators. Nitrate content generally is highest in young plant growth and decreases with maturity. Sorghums and sudangrasses, however, are exceptions because concentrations can remain high in mature plants. If plants are stressed at any stage of growth, they can accumulate nitrate. Before feeding potentially troublesome plants such as sorghum and sudangrass, analyze the forage for nitrates. Environmental conditions in Kansas create high nitrate concentrations in some forages virtually every year. Consequently, nitrate analysis is necessary to determine if the feed is potentially toxic. High nitrate forages can be fed to animals if proper precautions are taken.

**Prussic Acid Poisoning:** Prussic acid is also known as hydrocyanic acid or hydrogen cyanide (HCN). Prussic acid poisoning is caused by cyanide production in several types of plants under certain growing conditions. Sorghums and closely related species are the plants most commonly associated with prussic acid poisoning. Poisoning occurs when livestock consume young plants, drought stressed plants, or damaged plants that are high in prussic acid. Crop species most commonly involved with prussic acid poisoning are forage and grain sorghums, Johnsongrass and sudangrass. Potential cyanide production among varieties and hybrids of most summer annual forages varies widely. Grain sorghums are potentially more toxic than forage sorghums or sudangrass, whereas hybrid pearl millet and foxtail millet have very low cyanide levels. Young, rapidly growing plants are likely to contain high levels of prussic acid. Cyanide is more concentrated in the growing point and young leaves than in older leaves or stems. New sorghum growth, especially “suckers” or tillers, following drought or frost are dangerously high in cyanide. Pure stands of Indiagrass that are grazed when the plants are less than 8 inches tall can possess lethal concentrations of cyanide. Generally, any stress condition that retards normal plant growth may increase prussic acid content. Hydrogen cyanide is released when plant leaves are physically damaged by trampling, cutting, crushing, wilting or chewing. Many producers have asked questions this fall concerning feeding some forages after a killing frost, in regards to concerns about Prussic Acid. After a killing frost, wait at least seven days before grazing to allow the HCN gas to dissipate. Harvesting as hay or silage usually results in lower concentrations of prussic acid. Be very cautious grazing short regrowth that occurs after grazing, harvesting or a light frost.
The Greenwood County Extension office is available to help producers with their forage analysis and testing to ensure forages are safe for livestock consumption.

For more information regarding Agriculture and Natural Resources, 4-H Youth Development, or K-State Research and Extension call the office at 620-583-7455, email me, Lindsay Shorter, at lindsayshorter@ksu.edu, or stop by the office which is located inside the courthouse. Be sure to follow K-State Research and Extension- Greenwood County on Facebook for the most up-to-date information on Extension education programs and the Greenwood County 4-H program.