Toxic Forages

Livestock producers can quickly lose valuable animals if they fail to carefully monitor prussic acid and nitrate levels in drought-stressed forages. While producers should be vigilant in learning the signs of a drought-stressed plant, diagnostic testing is the best way to monitor prussic acid and nitrate levels. The Texas A&M Veterinary Medical Diagnostic Laboratory (TVMDL) offers experts in toxicology testing.

Eye out for dangerous plants

Johnsongrass, a common grass in Texas, can become especially lethal during stressed conditions, like drought. Johnsongrass tends to have high levels of prussic acid when the weather turns hot or dry, or when dry Johnsongrass is exposed to a little moisture and grows very quickly. Prussic acid builds up in stressed plants, causing acute death losses when consumed by ruminants.

When Johnsongrass leaves have a ribbon-like appearance, this can be an indicator that Johnsongrass is stressed by drought or heat and may be high in prussic acid. Any of the sorghum species – such as haygrazer, sorghum sudan, and some milo – may also contain high levels of prussic acid.



Nitrate levels in forages are also a concern. Sorghum hybrids, corn and grain sorghum may contain high levels, as may pigweed or careless weed. Too much nitrate affects hemoglobin oxygen binding capacity, which can be deadly. Nitrates are generaly highest in fertilized pastures.TVMDL can test forages for prussic acid and nitrate levels.



How to test forages on your land

TVMDL can test forages and hay for dangerous levels of prussic acid or nitrate. It is good practice to test all forages from well-used grazing land that are known to accumulate high levels of prussic acid and nitrate.

- Each fresh plant sample should include 10 to 12 plants, which should be randomly selected from the grazing area.
- Cut samples three to four inches above the ground. For a large area, divide the land into manageable sections.
- Label each sample according to the section from which it was taken, then include that information on the paperwork that accompanies the samples.
- Fold the samples if necessary, and place them in a garbage bag (which should be tied tightly) or into a large zip-lock baggie.
- Next, box up the bags with cool packs and send them by an overnight courier to TVMDL's College Station laboratory. Samples must arrive within 24 hours after they are cut. TMVDL suggests cutting samples at 3 p.m. and sending them with the last daily shipment.

Test your baled hay, too

For prussic acid:

- Take one probe from the baled hay and transfer it quickly into a glass-canning jar and tighten the lid and ship it overnight to TVMDL.
- If a round bale has high prussic acid levels, let the bale cure for at least 30 days. Roll out the bale and air it out for several hours before allowing cattle access.

For nitrate:

- Take 3-4 probes of grass from the baled hay, combine all the hay to a plastic bag, and ship it overnight to TVMDL.

Take these additional steps

If you are concerned about the forage on your grazing land, you should tightly control your livestock's grazing. Consider supplementing – or replacing grazing entirely – with dry hay that has tested safe (especially when forage test values for prussic acid are dangerously high). Take care to isolate livestock from suspected plants, including any forage that may grow on the other side of a fence or along a right-of-way. Also, take extra caution when moving cattle from one pasture to another. Finally, be prepared to quickly treat animals that have ingested forage with high levels of prussic acid or nitrate. TVMDL suggests consulting your veterinarian for guidance on treating animals ingesting toxic forage. If you have questions about toxic threats around your farm or ranch, call TVMDL Toxicology Section at 1.888.646.5623.