









sampling and shipping samples for prussic acid analysis can be obtained from the TVDML.

A testing laboratory can evaluate the prussic acid concentration either qualitatively or quantitatively. Some references suggest that 250 ppm HCN is a safe level. However, the extreme variability in prussic acid sampling and shipping methods and rapid field changes limit the value of a quantitative result. A simple qualitative analysis to show whether or not prussic acid is present will generally suffice. If a forage does contain prussic acid, livestock should not be allowed to consume it until the level declines to the point that it is no longer detectable.

### **Prussic acid management**

Forage type and harvest method determine the best management techniques.

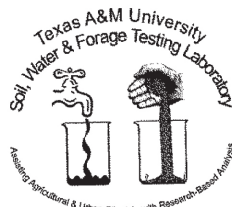
1. Standing forages that test positive for prussic acid and will be grazed should be sampled every 3 to 4 days. With frequent sampling, forage can be grazed as soon as it is safe and before its nutritive value decreases more than necessary.
2. Standing forages can be green chopped and ensiled. Prussic acid is enzymatically converted to free cyanide, which escapes when silage is removed. Another benefit of green chop/silage systems is that the effect of prussic acid is diluted when livestock are not free to select only leaves.
3. Standing forages also can be cut, field cured and baled. As with all baled forages, proper sampling with a bale probe is required. Bales should be sampled repeatedly until prussic acid is no longer detected. Bales can be made even safer by grinding them to combine leaves and stems.

### **Forage analyses at Texas A&M University**

Two Texas A&M University laboratories analyze forage samples. The Texas AgriLife Extension Soil, Water, and Forage Testing Laboratory (SWFTL) measures plant nitrates, protein, ADF and minerals. Analyzing just for nitrate concentrations does not give useful information about the nutritive value of the forage and the need for energy or protein supplementation. The laboratory does not do prussic acid analysis. The SWFTL Web site is <http://soiltesting.tamu.edu>. The phone number is (979) 845-4816. There is also the Texas Veterinary Medical Diagnostic Laboratory (TVMDL), which specializes in toxicological analysis of feeds, forages and animals. The TVMDL can do both nitrate and prussic acid testing. The TVMDL can be reached at (979) 845-3414.

### **Additional Sources of Information**

- “What Happens to Nitrogen in Soils?” Texas AgriLife Extension, E-59.
- “Sampling Hay and Pastures for Forage Analysis,” Texas AgriLife Extension, E-148.
- “Nitrate and Prussic Acid Poisoning,” Texas AgriLife Extension, L-5231.
- “Prussic Acid Poisoning,” Cooperative Extension, University of Nebraska-Lincoln, G86-775-A.
- “Prussic Acid Poisoning,” Colorado State University Cooperative Extension, 1.612.
- “Preventing Prussic Acid Poisoning of Livestock,” Oregon State University Extension, Circular 950.
- “Prussic Acid Poisoning in Livestock,” Oklahoma Cooperative Extension Service, F-2904.
- “Prussic Acid Poisoning in Livestock,” New Mexico State University, Guide B-808.



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