

PRUSSIC ACID POISONING

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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.

Cyanide poisoning is related to the amount of forage consumed and the animal's physiological condition, but HCN levels exceeding 200 ppm on a wet weight (as is) basis are dangerous. On a dry weight basis, forages with more than 500 ppm HCN should be considered potentially toxic. Prussic acid acts rapidly, often killing the animal within minutes. Symptoms include excessive salivation, difficult breathing, staggering, convulsions and collapse.

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.

Drought and Frost. Drought-stunted plants accumulate cyanide and can possess toxic levels at maturity. Freezing ruptures the plant cells and releases cyanide. After a killing frost, wait at least four days before grazing to allow the released HCN gas to dissipate. Prussic acid poisoning is most commonly associated with regrowth following a drought-ending rain or the first autumn frost. New growth from frosted or drought-stressed plants is palatable but can be dangerously high in cyanide. Most losses occur when hungry or stressed animals graze young sorghum growth.

GUIDELINES TO AVOID PRUSSIC ACID POISONING

- Do not allow hungry cattle to graze where prussic acid may be a problem.
- Do not allow animals to graze potentially troublesome plants after a light frost or after rain has ended a summer drought.
- Hay or ensile plants high in cyanide to reduce toxin levels.
- Have representative samples of any suspect forage analyzed before feeding.

For more information, we have the following publications available:

Nitrate and Prussic Acid Toxicity in Forage, MF-1018;

Prussic Acid Poisoning (Forage Fact Sheet Series);

Nitrate Toxicity (Forage Fact Sheet Series);

Summer Annual Forages, MF-1036