

LIVESTOCK

Drought-induced Cattle Poisoning

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Cattle producers should be on watch for two types of poisoning during drought. The potential for nitrate and prussic acid poisoning of cattle is most

often associated with dry periods; therefore, livestock owners should take precautions, including forage testing. Often the first indication of a problem is one or more dead animals.

Under normal conditions, nitrate in the soil is absorbed by plant roots, transported through the stems and converted in leaves to proteins and other substances that are usable by the animal. Nitrate typically is used by the plant about as fast as it is absorbed from the soil. Any condition hindering plant growth, however, can cause nitrate accumulation, mostly in plant stems. Nitrate poisoning occurs when this excessive nitrate is consumed and converted to nitrite faster

than the animal can use it. Free nitrite in the rumen is readily absorbed into the bloodstream, where it destroys the blood's ability to absorb and carry oxygen. Haying forages has no effect on existing nitrate levels in the plants. Ensiling toxic plants tends to reduce nitrate levels during the process, but levels may still be toxic. An analysis of a representative sample to determine nitrate levels in any forage source is a must.

Prussic acid poisoning is often acute, with most problems occurring in plants from the sorghum family: forage sorghum, sorghum-sudan hybrids, sudangrass and johnsongrass.

Prussic acid is usually attached to a larger sugar molecule and is part of the normal growth process in problem plants. In this form, it is not harmful to the animal. Problems occur when environmental conditions slow plant growth, causing the sugar molecules to accumulate in the plant. Accumulation is mostly in younger

leaves and new growth.

When the plant wilts, its cells rupture and the prussic acid is freed from the sugar molecule. If consumed by grazing livestock, the free prussic acid is readily absorbed into the bloodstream, where it prohibits the animal's ability to take oxygen from the blood.

Even in unwilted plants, chewing and digestion in the rumen can release toxic levels of prussic acid. Proper curing or ensiling of forages containing high levels of prussic acid greatly reduces or eliminates the danger because free prussic acid volatilizes fairly quickly after it is released. Many other conditions can adversely affect plant growth and cause accumulation of nitrate and prussic acid, such as prolonged cloudiness, soil acidity, abnormally high or low temperature (especially sudden changes in temperature like a frost or freeze), herbicide treatments and low soil phosphorus levels. ■