Nitrate Toxicity In Summer Annual Hay Can Cause Poisoning

DR. GARY BATES

KNOXVILLE, TENN.

Most of the hay produced for beef cows in Tennessee comes from tall fescue. There are a significant number of cow-calf producers who use summer grasses like bermudagrass, sorghum x sudangrass hybrids and pearl millet for winter feed. These plants can be used successfully for hay. But there is the potential for a buildup of nitrates in these plants, especially during a drought.

Nitrate poisoning occurs when animals consume hay containing high levels of free nitrates. Under drought conditions, both sorghum x sudangrass hybrids and pearl millet have the potential to accumulate high levels of nitrates, especially if they have been fertilized with nitrogen. Nitrate accumulation occurs because the plant continues to take up nitrogen through the roots, but drought conditions cause an inadequate water supply for rapid plant growth. Nitrates are accumulated in the plant for use in protein formation when adequate water becomes available. Thus, feeding hay that was cut during or just after a drought should be avoided.

Animals suffering from nitrate poisoning exhibit labored breathing, muscle tremors and staggering. Membranes of the eyes and mouth are bluish because of the lack of oxygen. Death can occur relatively quickly.

Prevention is the best way to deal with nitrate toxicity. The nitrate level in hay will not decrease during storage. The Tennessee Department of Agriculture diagnostic lab can test nitrate levels in hay. The table on page 16 lists a scale of the toxicity of increasing nitrate levels in hay.

Do not fertilize summer grasses with nitrogen if ad- equate moisture for growth is not available. If a period of drought occurs, do not cut or graze the crop until it starts to grow after a rain. If you have any suspicions that nitrate levels may be high, contact your local Extension office for information about getting forage tested for nitrate levels. Δ

DR. GARY BATES: Director UT Beef and Forage Center, University of Tennessee

Guide to determine the potential for nitrate toxicity in hay.

Nitrate level (ppm, DM basis)		Comments
0-2,500	SAFE	Generally considered safe to feed.
2,500-5,000	CAUTION	Generally safe when fed with balanced ration. For pregnant or young animals limit to 1/2 of total ration.
5,000-15,000	DANGER	Limit to 1/4 of ration. Should be well fortified with energy, minerals and vitamin A.
Over 15,000	TOXIC	Do not use in free-choice feeding program.