

## OSU EXTENSION NEWS

# Nitrates can be higher after “heat-breaking” rain shower

Oklahoma summers often bring “high pressure domes” that cause 100+ degree days and no rain.

The resulting heat stress can cause nitrate accumulation in summer annual forage crops. Producers are very cautious about cutting or grazing the drought-stressed forages and for good reason. However, when the first drought-ending thunderstorm comes along, cattlemen are anxious to cut the forage or turn in the cattle on the field that has just received rain.

This practice can lead to a potentially dangerous situation. As the plant starts to grow and turn green once again, the nitrate uptake is accelerated. Plant enzymes (such as nitrate reductase) are still not present in great enough quantities or active enough to convert the nitrate to plant proteins. Therefore the plant nitrate concentrations become even greater in the first few days after the first rain.

Producers should exercise caution and test forages before cutting or grazing shortly after a drought-ending shower. Some of the greatest concentrations of nitrate in forages will be recorded at this time. Usually by 7 to 10 days after the rain, plant metabolism returns to normal and nitrate accumulations begin to decrease. Be sure to test the



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forage before cutting and storing a large quantity of potentially poisonous hay.

Some forage crops that are most susceptible to nitrate accumulation and should be monitored closely include: Johnsongrass, Sudangrass, Sorghum-sudan hybrids, pearl millet, corn, wheat, and oats. Certain weeds may also accumulate toxic levels of nitrates and thus pose a serious threat to livestock,

especially when consumed in a cured (hay) form, because the animal is less likely to pick around these species. These include pigweed, ragweed, smartweed, lambsquarter, nightshades, and other species.

Symptoms of nitrate toxicity include labored breathing, muscle tremors, and a staggering gait that leads to collapse of the animal, gasps for breath, and death. The membranes of the eyes and mouth are often bluish, indicating a lack of oxygen. There is treatment for animals with symptoms, but it is unlikely that the problem will be diagnosed in time to administer this treatment. Therefore, control of nitrate levels is the best way to reduce toxicity. This includes following recommended intervals of harvest or grazing after drought, analyzing hay for nitrates, and diluting high nitrate hay with other hay or feedstuffs low in nitrates.