

## Dairy expert talks about nitrates in forage crops

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NEWARK, DE — Nitrates occur in many forage crops. Most commonly they are formed in corn, sorghum, pigweeds, lambs-quarter, wheat, barley, rye and small grains for fall grazing that were fertilized with well over 50 pounds of nitrogen per acre.

Drought, cold or any climatic condition that interrupts normal plant growth and photosynthesis will cause nitrate accumulation in plants. Under stress, inorganic nitrogen from the soil is stored in plant leaves but not converted to plant protein. Three or 4 days of sunshine, or rain after a period of drought stress followed by several sunny days will often correct the problem, making plants safe again for animal feeding.

When forages must be harvested regardless of unfavorable conditions, silage making will usually reduce nitrate levels in the green crop by half. A heavy brown gas — lethal nitrous oxide — can be seen escaping from a silo filled with crops that had too much nitrates.

When this happened to us once at the Delaware Agricultural Experiment Station, we turned on the silo blower again (it was still sitting on the silo after filling it) and let it run several hours to blow air through and help the gas to dissipate. We also kept the cattle away from the area.

If you have hay or green chop forages or fall grazing which look suspiciously lush and dark green, don't feed or graze them before having tested them for nitrates at your nearest forage testing lab. Cattle and sheep can tolerate and utilize nitrates for protein synthesis in moderate amounts only. Even then, reduced milk production, irregular estrus and repeat breeding due to embryo losses may occur. It may be possible to slowly adapt cattle and sheep to somewhat higher nitrate levels, up to a point.

Acute poisoning of livestock from high levels of nitrates shows up in heavy and rapid breathing, frothy mouth, diarrhea, frequent urination, staggering, convulsions

and death in a few hours. Sometimes, acute cases can be saved by quick intravenous injections of 4 percent methylene blue solutions at 100 milliliters per 1,000 pounds bodyweight. Borderline cows should be injected with Vitamin A at 60 to 100,000 units per cow per day to restore body supplies destroyed by

nitrates and to avoid detrimental effects on the reproductive organs.

When forage tests show up to 1,000 parts per million or 0.1 percent nitrates on a dry basis, you will usually see no ill effects. Between 1,000 to 5,000 ppm or 0.1 to 0.5 percent nitrates per dry matter are safer to feed to non-pregnant heifers and open cows. For

pregnant and lactating cows, dilute such forages by 50 percent with safe forages — especially with heavy feeding of grain rations.

Forages with 0.5 percent up to 1.0 percent nitrates in the dry matter can only be fed safely by heavy dilution and slow adaptation to make up less than half of the daily dry matter ration, but be prepared

to see abortions and a drop in milk production. Forages with more than 1.0 percent nitrates/dry matter will produce acute symptoms and death if fed or grazed alone.

Don't take chances. When I have suspicions about the nitrate content of a forage, I test it first before losing cows and heifers.

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**Nov. 12** 7:30 p.m. Berks County. Marion Grange, Main St. Stouchsburg

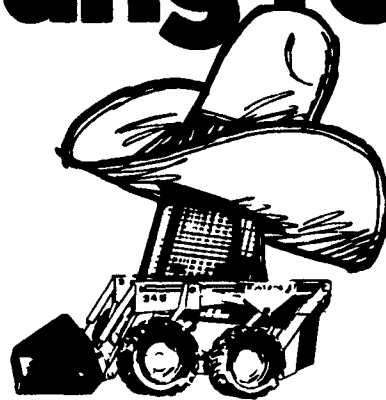
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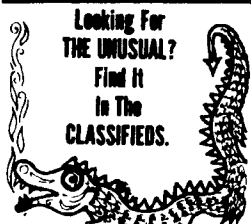
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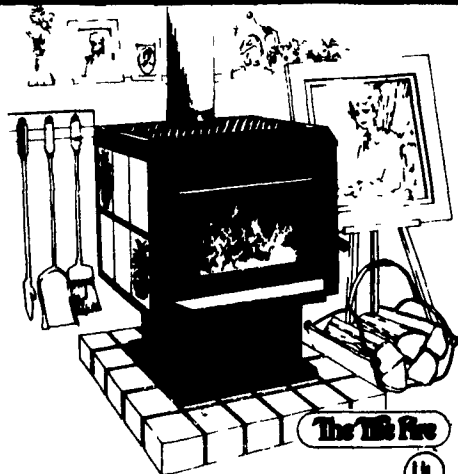
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