

## Procedures for Testing Plants for Nitrate:

This is a qualitative test for determining when the level of nitrate detected in corn, sorghum species, millet, johnsongrass and potentially other perennial grasses could possibly cause nitrate poisoning in livestock. If high levels of nitrate are indicated growers are urged to send samples for accurate quantitative laboratory analysis before using for feed.

Test plants within a few hours of cutting.

Place stalks on newspaper for easy cleanup and safety (the test solution is acid and will damage surfaces).

Split a normal appealing stalk from base to node closest to ear or head. Place a few drops of test solution on each internode. **Do not let the eyedropper tip touch the stalk** (contamination of the solution shortens the life of the test kit).



If nitrates are present, the drop will change to a dark blue (picture below). If ample nitrogen is available, a dark blue spot would be expected to develop almost instantaneously at the first internode at base. For non-drought damaged plants, each node up stalk should show a lighter blue spot or take longer to become dark blue. *Remember, only a blue or blue-black color is a measure*

of nitrate concentration.



## Repeat the process on several representative, drought damaged stalks.



**Normal Plants:** When an ear has formed and proper nitrogen fertility is present, the node above the ear should be very light blue and a brown color may begin to appear. *The brown coloration indicates carbohydrates and may occur anywhere in the plant if nitrates are absent.* For corn, if only a weak test (brown or light blue) is observed above the ear node, there will be a dilution of at least half of the nitrate in the base nodes nitrate when chopped. No problems should be anticipated in direct feeding or ensiling.

**Drought Damaged Plants:** When a stalk is severely drought damaged (whitish-green to gray leaves), or does not have a fully developed ear or head, expect blue-black color in the test solution. Nitrates accumulate when the plant does not have a place to go with the nitrogen (ear). Take note of how far up the stalk a dark blue-black color develops and how fast. Dark blue development up the stalk indicates high nitrates and caution in using for green chop, pasturing, or silage.

Send a representative sample to the MU Vet Diagnostic Clinic (<http://vmdl.missouri.edu/>) in Columbia, MO for quantitative nitrate levels. Nitrate concentrations equal to or greater than 1% (10,000 ppm) on a dry-matter basis have been associated with acute death of cattle from nitrate/nitrite poisoning. To prevent nitrate-associated abortions, pregnant cattle should not be fed forage containing greater than 0.5% (5,000 ppm) nitrates, with total dietary concentrations <0.25% (2,500 ppm) of nitrates.