

The Missouri Corn Stalk Nitrate Test Challenge

By John Lory

Did you do a good job predicting nitrogen need for your corn crop last spring? Did you over apply? Under apply? Or get your rates just right? The stalk nitrate test is a powerful tool for assessing the fertilizer nitrogen decisions in a corn field.

Research from Iowa and other states has calibrated nitrate concentration in the corn stalk with the nitrogen status of the harvested corn crop. Nitrate concentrations above 2000 parts per million are indicative of a crop that had excess nitrogen; nitrate concentrations below 700 parts per million are indicative of plants that had marginal nitrogen supply (250-700 parts per million) or were clearly nitrogen deficient (<250 parts per million).

How to sample fields

- The window of opportunity for collecting samples is from ¼

milk stage to up to three weeks after black layer formation.

- Use a set of hand shears or loppers to remove an eight-inch segment of corn stalk from the corn plant. The top cut should be 14 inches above the ground; the bottom cut six inches above the ground.
- Get a stalk segment from at least 15 randomly selected plants from the field or subfield you are sampling.
- Place the samples in a paper bag for shipping to the lab for analysis. Do not freeze the sample. Samples held more than 24 hours before shipping should be refrigerated.

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My program is working with the University of Missouri Soil Testing Laboratory to promote use of this test

in Missouri. Typical analysis cost for the test is \$12 per sample. We will analyze up to 10 samples from any Missouri farm at the MU lab at no cost if you submit the requested information on the following form when you submitted sample. Send samples to Attention Stalk Nitrate Test Challenge, 23 Mumford Hall, University of Missouri Soil Testing Lab, Columbia, MO 65211 or MU Delta Regional Soil Testing Lab, 147 State Hwy T, Portageville, MO 63873.

Visit the Corn Stalk Nitrate Challenge website at http://nmplanner.missouri.edu/tools/Stalk_Nitrate_Challenge.asp for more information and to download more copies of the reporting form.

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Form available on page 131

Stalk Nitrate Trial Data Form

Your Name: _____ Your phone # or email address: _____

Your address: _____

Field location (description or GPS coordinates at center of field): _____

Corn Variety: _____ Yield goal: _____ bu/A Planting date: _____

Winter cover/trap crop? (if yes, what crop?): _____

Crop(s) previous year: _____

Source of Nitrogen 1:

Fertilizer type _____ Date of Application: _____

Method of application: _____ Target N rate: _____ lbs/A

If surface applied: Incorporated (yes/no): _____ Days to incorporation: _____

N loss inhibitor used (yes/no) _____ Type used _____

Source of Nitrogen 2 (if needed):

Fertilizer type _____ Date of Application: _____

Method of application: _____ Target N rate: _____ lbs/A

If surface applied: Incorporated (yes/no): _____ Days to incorporation: _____

N loss inhibitor used (yes/no) _____ Type used _____

Source of Nitrogen 3 (if needed):

Fertilizer type _____ Date of Application: _____

Method of application: _____ Target N rate: _____ lbs/A

If surface applied: Incorporated (yes/no): _____ Days to incorporation: _____

N loss inhibitor used (yes/no) _____ Type used _____

Stalk Nitrate Sample Information:

Date of sampling: _____

Number of stalks included: _____ Area represented by sample _____ Acres

There will be **no analysis cost for your first 10 samples** if you provide the requested information.

Discount may be available for more samples, contact me. Test cost typically is \$12/sample.

SAMPLE HANDLING: Sample anytime from ¼ milk line to three weeks after black layer formation. Sample at least **15 stalks** from the sampling area. For each stalk remove the 8-inch section from six inches above the ground to 14 inches above the ground. Select representative plants and do not include heavily diseased or damaged plants. Place the sample in a paper bag (not plastic). Do not freeze sample. Refrigerate if samples are shipped more than one day after sampling.

Mail the sample plus this data sheet to: Missouri Soil Testing Lab, Attn: Stalk Nitrate Test Challenge, 23 Mumford Hall, University of Missouri, Columbia MO 65211 or MU Delta Regional Soil Testing Lab, 147 State Hwy T, Portageville, MO 63873. You must include a completed form with each sample to qualify for no-cost analysis.

Questions? Contact John Lory (LoryJ@missouri.edu; 573-884-7815).