

Introduction

Soil nitrate testing is an excellent and inexpensive way of evaluating the available nitrogen status of your soil. Michigan State University research and demonstration studies have shown that many farmers could reduce their nitrogen fertilizer application rate on corn without risk of reducing yields if they use the nitrate soil test to determine optimum nitrogen rate.

Reasons to Test

Nitrogen is one of the most important nutrients for maximizing corn yield. It is also a major contributor to the high cost of production. Nitrogen rates need to be fine tuned, not only to minimize production costs, but also to prevent leaching of excess nitrogen into the groundwater.

Nitrate nitrogen (NO₃⁻) is a very mobile nutrient in the soil. Excessive rainfall can cause nitrate nitrogen to move deep into the soil profile, where it is unavailable to the crop. In poorly drained soils, wet conditions may cause nitrate nitrogen to be lost into the atmosphere through denitrification. When normal rainfall is lacking, nitrate nitrogen can carry-over from the previous season, reducing the need for additional nitrogen fertilizers.

The uncertainty of rainfall patterns in the Midwest gives rise to an uncertainty in response to applied nitrogen fertilizer. The early season soil nitrate test is a helpful tool for managing this uncertainty. Early season sampling is late enough to reflect the effects of spring weather conditions and early enough to allow additional application of nitrogen if needed.

Interpretation of Results

Michigan State University's interpretative guidelines for Michigan are summarized below:

NITROGEN RECOMMENDATIONS FOR CORN

NO ₃ ppm	N Credit	Standard Nitrogen Rate*			
		100	125	150	175
0	0	100	125	150	175
5	30	70	95	120	145
10	60	40	65	90	115
15	90	10	35	60	85
20	120	0	5	30	55
25	150	0	0	0	25
30	180	0	0	0	0

* MSU Extension Bulletin E-550.

Advantages of Using Litchfield Analytical Services

We utilize the most modern laboratory methods available. Our staff is trained and experienced in testing soil for soil nitrate nitrogen which ensures you accurate and consistent results. Sample analysis will be completed within 24 hours of receipt of dry samples. Analysis will be completed within 48 hours of receipt of excessively wet samples. Results can be reported by phone or fax upon customer request.

Compare our turn-around time, the quality of the tests that you receive, and our very competitive rates. We are sure that you will want to place your soil nitrate testing work in our experienced hands. Our goal is to provide you with quality laboratory services at competitive rates.

Sampling Procedures

Time: Samples may be taken in the spring when the corn is 6 to 12 inches tall, however, samples taken in June after the soil has warmed-up usually contain the greatest amount of nitrate nitrogen. Samples taken within one week prior to sidedress time can be used to the greatest advantage to determine the appropriate amount of sidedress nitrogen for corn.

Depth: Samples should be collected to a depth of 12 inches. All of the interpretative guidelines presented are based on 12-inch sample depth. Take at least 15 to 20 cores per sample unit.

Place: Areas having different soil types or management histories should be sampled separately. Samples should not exceed 15 to 20 acres. Avoid starter bands or other atypical areas. Manured fields and legume fields sampled in June will likely contain the most nitrate nitrogen.

Handling: The soil from all cores should be crushed and mixed thoroughly. A one-quart sub-sample should be removed from this mixture for analysis. Samples should be shipped immediately after collection so that they may be analyzed within 48 hours. Microbial action in wet samples can significantly change the nitrate test results. Samples may be refrigerated or dried for preservation if they cannot be shipped immediately. Do not exceed a temperature of 250 degrees Fahrenheit in drying.

Shipping: Ship via UPS or courier for best results. Moist samples sent Monday through Wednesday would arrive without weekend delays, which could affect the results.