

Taking a Good Nitrate Soil Sample

To ensure accurate results of your nitrate soil sample the most important step is collecting the soil sample. This can be the largest source of errors in the soil testing process. The information is critical for obtaining information on which to base recommendations and decisions concerning nitrogen fertilizer.

Basic Sampling Guidelines

Time of Soil Sampling: The first soil samples should be collected when corn plants are 6-12 inches tall. Continued sampling is recommended throughout the growing to ensure your nitrogen to yield potential ratio is in line – to better understand if nitrogen is a limiting factor based on yield potential.

Selecting Test Area: Soil samples should be collected within several test areas that are around 10-20 acres and uniform with respect to soil characteristics and management. It is important to have a strategy on the location of the field you plan to sample prior to going to the field. Base your location on different characteristics. For example:

1. Pull a representative sample from high OM – CEC and high yield,
2. Pull a representative sample from low OM – CEC and lower yield area,
3. Pull a representation sample on an area that represents the average OM – CEC and yield of the field. Avoid, or sample separately, odd or dissimilarly treated areas not representative of the uniform soil or management zone area.

Depth of Soil Sampling: Take soil cores at a 0-12 inch depth and a 12-24 inch depth once corn reaches the V6 stage.

Number of Cores per sample: When taking the soil sample, pull several (8-12) cores per soil sample. Cores should be pulled across the row from one row to the other every 3-4 inches apart. This will ensure that soil samples are collected in a manner that is not biased by presence of corn rows or bands of fertilizer. Placing a template constructed from a 1" X 6" X 30"

board with holes, drill every 3 inches to ensure you are getting a good pattern sampled. Repeat the process until you achieved the desired number of cores per sample.

The soil from all cores should be crushed and thoroughly mixed before a subsample is removed for analysis.



Handling Samples

before testing: Temperature can have a big effect on the results of nitrate in the soil. Moist soil samples should be protected from temperatures above 75° F and should be refrigerated if they cannot be analyzed quickly.

DO NOT leave samples in a hot vehicle, for example, or place them on the dash of a pickup, even if the outside temperature is below 75°.

DO NOT wait more than 24 hours before analyzing the samples. The soil is a living environment and microbes can have an effect on the nitrate results if the temperature is different than the soil environment. Soils that are extremely wet or muddy should not be sampled.

Analyzing Results: The 360 Soil Scan Nitrate Test will analyze the amount of nitrate ions present in your soil that are available for plant uptake. Depending upon crop stage and rainfall, a producer will be able to determine whether they have enough nitrogen for the crop to optimize yields for the remainder of the crop year. Consult ISU recommendations PM-1714 “Nitrogen Fertilizer Recommendations for Corn in Iowa” and your crop advisor to interpret the results.