

SHOULD I SOIL TEST AFTER CORN HARVEST?

When is the best time to sample soil?

Soil sampling in the fall or spring is best and preferred. Sampling in summer is not practical because the crops are in the field, and in winter sampling can give misleading results due to physical changes in the soil due to cold winter temperatures.

How often are soil tests recommended and how many samples should be taken?

Soil tests are recommended at least every four years. Sampling should occur at the same time of the year and following the same crop to reduce the variability in results. The recommended number of soil samples is a compromise between the cost and precision standpoint of the grower. However, the number of samples collected should capture the variability in the field. Recommendations vary for the number of cores taken at each sampling point, ranging from 5 to 7 cores up to 15 to 20 cores. The goal is to collect a representative sample at each point. Seasonal variations should be accounted for.

Can tillage influence the number of cores required to obtain a representative sample?

Yes. Due to less mixing and more spatial variation, continuous no-till fields or fields that do not receive tillage on a regular basis will require more cores for each sample (8 to 12) than a field that receives tillage regularly.

What kinds of sampling patterns can be used to sample soil?

There are three ways to sample a field: whole field sampling, grid sampling, and management zone sampling.

- **Whole field sampling**

This method is the least expensive from a soil sampling and analysis standpoint. If a grower chooses to manage the field as a single unit, then a single, representative soil sample should be pulled and analyzed from the field. Collect and composite 10 to 20 cores from the field to get a representative sample. Sampling in a "Z" or "W" pattern is recommended to get a good representation of the area sampled. Collecting the cores in a clean plastic bucket is recommended. Mix the cores thoroughly, then fill the bag $\frac{1}{2}$ to $\frac{2}{3}$ full to send off for lab testing.

Are there any areas where sampling should be avoided in the field?

Yes. Avoid the areas that are likely to skew results such as fertilizer bands, headlands, dead furrows, areas of dust patterns along limestone roads, and areas where stockpiling of compost, manure, or lime have been placed.

- **Grid sampling**

Grid sampling is a systematic approach in which the field is divided into individual squares or rectangles of equal size and referred to as "grid cells". Common grid size includes 2.5-acre, 4-acre, or 8-acre grids. A GPS is used to identify the soil sampling locations. Once the location is finalized, a composite soil sample is pulled from within each grid cell and analyzed separately from other grid cells. Cores should be taken at the center of a grid cell and within 30 feet in each direction from the center of the grid cell. Alternatively, a random collection of cores throughout the grid cell can be taken.

How are GPS coordinates helpful during the soil sampling process?

GPS coordinates are intended to help determine changes over time by returning to the same location each time for sampling. GPS coordinates are also used to ensure random sampling of different locations, so that a more complete picture of nutrient resources over time is created.

- **Management zone sampling**

A management zone is an area that is managed in a similar fashion and differs from other management zones within a field. Management zones within a field can be identified by single or multiple characteristics such as soil type, soil slope, organic matter, yield potential, production practices, and soil electrical conductivity. Soil samples are collected at random from within each zone, bulked together, and analyzed to provide an average sample value for each unit.

How crucial is the soil sample handling process?

Collected sample cores should be stored in clean plastic containers, mixed, and placed into bags or boxes designed for soil samples. Make sure that sample tools are not contaminated. Mark the sample so you can identify the field from where it came from. Samples can either be sent immediately to a testing lab or left to dry in a dust-free location. Complete the soil information sheet provided by the lab. Information such as cropping history, soil region, and yield goal will be used to calculate fertilizer recommendations based on the soil sample. Samples can be sent to university testing facilities or to private labs.

Sources: (Sources Verified 9/13/2019)

Mallarino, A., and Sawyer, J. 2003. Nutrient management: Soil testing. Iowa State University Extension. <https://store.extension.iastate.edu/Product/Soil-Testing-Nutrient-Management-PDF>

Hoelt, R., and Peck, T. 2003. University of Illinois Agronomy Handbook. Chapter 11: Soil testing and fertility. <http://talk.newagtalk.com/forums/get-attachment.asp?attachmentid=136051>

Sawyer, J., Mallarino, A., and Killorn, R. 2003. Take a good sample to help make good decision. Iowa State University Extension. PM 287. <https://store.extension.iastate.edu/product/Take-a-Good-Soil-Sample-to-Help-Make-Good-Fertilization-Decisions>

Legal Statements

Performance may vary, from location to location and from year to year, as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible and should consider the impacts of these conditions on the grower's fields. ©2019 Bayer Group. All rights reserved. 8005_Q2