

A FIELD GUIDE TO SOIL SAMPLING

Adapted from Darryl D. Warncke's *Sampling Soils for Fertilizer and Lime Recommendations* (2000)

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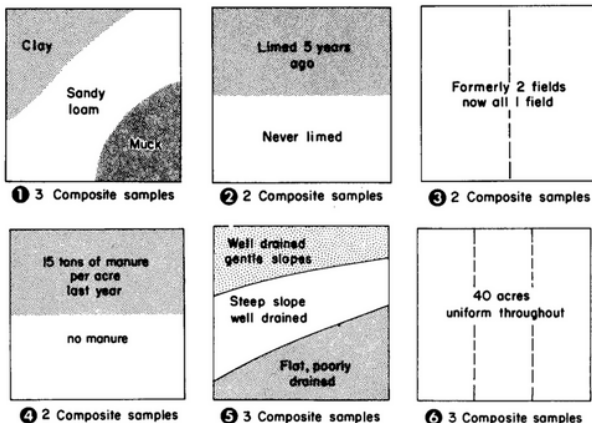
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Soil sampling is a foundational step to make effective farm management and soil fertility decisions. Evaluating changes in soil pH and available nutrient levels over time requires that the collection of soil samples accurately represents field conditions. Reliable soil analysis and proper interpretation of the results can only occur when appropriate soil sampling practices are used. This step-by-step field guide is a summary of best practices and recommendations for composite soil sampling to help you do just that.

1 Plan on where to sample

Develop a map of uniform areas within the field based on soil type (1), past management or cropping history (2,3,4), topography (5) and/or field size (6).

Make use of soil survey maps, topography and management history. Each area will represent one composite sample. Samples should not represent more than 40 acres.



2 Decide on a sampling depth

Surface samples are generally considered to be of the first 6". However, differing management styles and goals for the soil sample information may lead you to consider using different soil sample depths. Whatever depth chosen for taking the soil probes, it should be taken consistently across the field and be indicated in your records. Mark your collection tool to maintain consistent depth. Other depth considerations:

System Consideration	Sampling Depth Suggestion
Plowed soils	Should be sampled to the depth of plowing
Reduced-tillage systems and no-till systems	Sample to 8 inches
Field has annually surface applied nitrogen without incorporation	Collect a second sample to a depth of 3 inches for determination of soil pH. This is important for determining the proper lime rate and efficacy of herbicides
Coarse texture soils	Sample from 6"-24". In these soils, nutrients may accumulate in the subsoil where they can still be utilized by growing crops
Sampling for mobile nutrients such as nitrate, sulfur, and chloride	Collect a separate 6" to 24" sample (minimum 10 cores per 20 surface cores)



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Mark probes at the desired depth to maintain consistent sampling

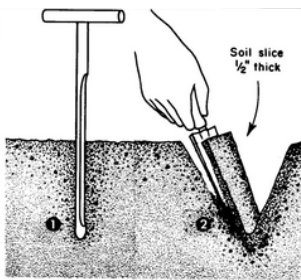
How often should I test my soil?

- Sampling and testing the soil in each field at least once every 3 years is adequate
- In sandy soils (CECs below 6me/100g), nutrient levels may change rapidly because of crop uptake and leaching and more frequent sampling may be preferred

When should I test my soil?

- Soil nutrient content fluctuates depending on the season and plant demand
- Sampling should occur at the same time in order to be consistent year to year
- Late fall or spring before planting are ideal times for soil testing

3 Collect soil cores

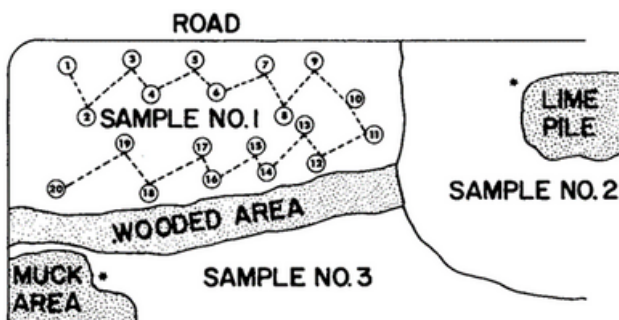


1. Sampling probe provides uniform sampling cores—easy to use—saves time—best tool for sampling farm soils.
2. Use a narrow (1½ inch) garden dibble to take a slice of soil ½ inch thick.

Collect soil cores using a soil probe, auger, or spade at the chosen depth and placed into a clean bucket. Samples taken with an auger or soil probe should be taken perpendicular to the soil surface, not at an angle. Slices of soil samples taken with a spade should be approximately 0.5 to 0.75 inch thick.

4 For each composite sample, collect 20 cores in a zigzag pattern

Studies have shown that a representative composite sample is best generated by using a zigzag sampling pattern, in which the sampling points are at predetermined distances based on the dimensions of the field. Avoid fertilizer bands when their location is known and scrape aside the crop residue before inserting the soil probe, auger, or spade.



*Omit or take separate samples

5 Thoroughly mix the soil cores

After all the cores for one composite sample are taken, mix the soil thoroughly. Be sure to break up the soil cores and discard any stones and crop residue. For soils that are quite wet and contain significant amounts of clay, it may be necessary to partially dry the soil prior to mixing the soil.

6 Fill the sample bag



Fill the sample bag with a well-mixed, composite sample.

7 Complete the information form

Fill out the information form with all the pertinent cropping management information, field, and/or sample depth if unique.

8 Send the composite sample(s) and form for lab testing



SOURCES

USDA NRCS. (2007). Sampling Soils for Nutrient Management. NRCS MT. https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs144p2_051273.pdf

Warncke, D. D. (2000). Sampling Soils for Fertilizer and Lime Recommendations. Michigan State University Extension Bulletin, E498.

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