

How to Take a Soil Sample?

WHY IS IT IMPORTANT TO TAKE A SOIL SAMPLE?

- Soil analysis helps determine the inputs required for efficient and economical crop production
- A proper soil test will help determine fertilizer requirements to meet crop needs while accounting for the nutrients already present in the soil
- Soil analysis helps determine lime requirements
- Sampling can help diagnose problem areas
- Soil testing is a requirement for nutrient management plans

WHEN SHOULD A SOIL SAMPLE BE TAKEN?

Soil samples can be taken at anytime of the year. Many producers prefer to take samples in the fall directly after the crop is harvested because results should not change significantly from the fall to the spring. In addition, sampling in the fall allows producers to develop their spring fertility plan (including fertilizer, lime, and other soil amendments).

Soil analysis results can vary throughout the year; therefore, it is best to sample at the same time each year. Soil tests should be completed every 2-3 years for most crops. However, more frequent soil samples will only increase the knowledge of your soils and may be required in certain conditions.

WHAT MATERIALS AND TOOLS ARE REQUIRED?

- Farm Map
- Soil Probe, Shovel or Auger*
- Measuring Cup
- Garden Trowel
- Knife
- Clean Plastic Bucket
- Soil Boxes* or a plastic bag
- Sample Submission Forms* (Links on page 4)
- *Materials can be obtained from Perennia or the Nova Scotia Department of Agriculture (NSDA) regional offices



Soil Probe



Auger



Shovel

SOIL SAMPLING PROCEDURE

Before Soil Sampling:

1. Divide your fields into sampling blocks. Often, fields are sampling blocks; however, you may want to divide fields further if there are changes in topography, drainage, management, soil type, or climate.
2. Map out the fields from which you will take a soil sample and keep this map as a record (Figure 1). Give each field or block a unique ID which can be carried forward. Collect one composite sample per field or block.
3. Take note of field history such as rotations, past problems, liming amounts etc.



Figure 1. Field A and Field B identified on a farm map

Soil Sampling:

1. Take at least 15-20 soil samples per field using a shovel, a probe, or an auger. Samples should be 15 cm deep in a ploughed field and 8 cm deep in a pasture*; however, other sampling depths may be used depending on the crop or your sampling goals.

Field Crop - The samples should be randomly taken in a zig-zag pattern throughout the field to ensure uniform distribution (Figure 2).

Perennial (Apples/Grapes) - Take soil samples in a zig-zag pattern between 2 rows while skipping a row in between (Figure 3).

*Soil Depth: In a ploughed field, a soil sample should be taken at a 15cm depth, whereas in a pasture, a soil sample should be taken at an 8cm depth because the soil is not being mixed.

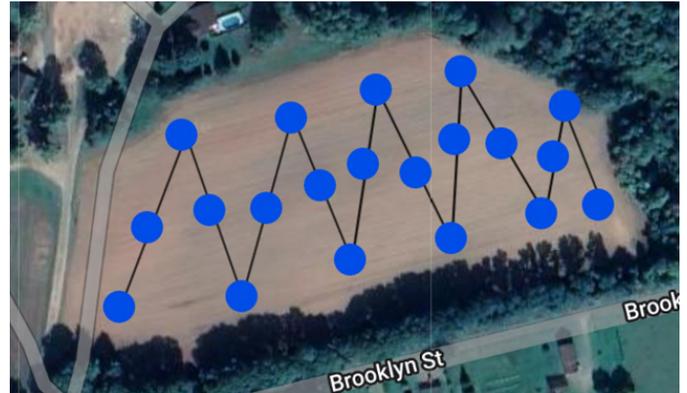


Figure 2. A zig-zag sampling pattern where each blue dot represents a sample.

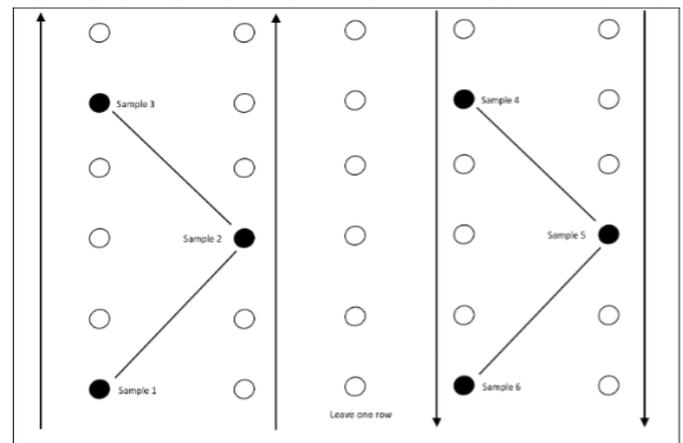


Figure 3. Perennial and trellised crop sampling pattern.

2. Place the 15-20 samples in a clean plastic bucket and mix using your hands or a garden trowel, breaking up any clumps of soil. Any plant residue or rocks should be removed from the sample.
3. Place approximately 2 cups of this sample into the soil sampling box or a bag (Note: drier samples reduce lab time).
4. Label the box or bag with the field identification number, the date the sample was taken, your name, address, and the crop planted in that field.
5. Fill out the sample submission form.

Adding the crop type on your sample submission form will allow the lab to provide nutrient ratings for macronutrients which will help you better interpret your results.

HOW TO USE A SHOVEL, SOIL PROBE, OR AUGER FOR SOIL SAMPLING

A shovel, soil probe, or auger can be used to take a soil sample. A soil probe is the most effective tool for getting a uniform sample, and an auger can be used when the ground is too hard or rocky for a soil probe to go through. A shovel is best used if you are taking a few soil samples and do not have access to a soil probe or an auger. Each tool is used in a slightly different manner to get the most uniform soil sample.

Probe - Step on the probe until the appropriate soil depth is reached. Most probes are approximately 30cm deep, therefore, you will want to push the probe in the soil approximately halfway. Make sure all soil is removed from the probe before taking the next sample.



Shovel - Use a shovel and push it into the soil at an angle to the appropriate depth and remove a wedge of soil. Tilt the shovel back and pull it out of the soil. Square-head shovels or wedged shovels can be used. If you use a wedged shovel, use your hands or a garden trowel to remove soil from the edges of the shovel creating a uniform rectangular-shaped soil sample.



Auger - Twist the auger into the ground until you reach the appropriate depth. Pull the auger out of the ground and remove any excess soil.



SPECIAL CONSIDERATIONS

- Areas within a field with different topography, soil type, treatment history, crop rotation, and drainage should be sampled separately.
- Small areas different from the rest of the field (e.g., a small wet spot) can be avoided while sampling.
- For a more detailed nutrient profile of your field, grid sampling (splitting a field into multiple plots and sampling each plot separately) can be used. This sampling method is often used for precision agriculture or to identify problem areas in the field. Grid sampling will increase your sample amount and the cost of sampling.

WORDS OF CAUTION

- Do not sample old fencerows, manure/hay/ lime storage areas, dead furrows, or areas close to trees/ roads and windrows
- Do not sample areas of high erosion
- Try not to sample directly after heavy rain

WHERE DO YOU SEND THE SOIL SAMPLES?

1. Nova Scotia Department of Agriculture Laboratory Services Tel: (902) 893-7444 Civic: Harlow Institute 176 College Road, Bible Hill Mail: PO Box 890 (Harlow Bldg) Truro, NS B2N 5G6
2. PEI Soil and Feed Testing Lab PEI Analytical Laboratories 23 Innovation Way Charlottetown, PEI C1E 2X3 Tel: (902) 620-3300
3. Soil and Plant Lab NL Department of Natural Resources Provincial Agriculture Building 308 Brookfield Rd. PO Box 8700 St John's, NL A1B 4J6 Tel: (709) 729-6738

Other labs outside of the Atlantic provinces can also be used. Be sure to check any sample storage and shipping requirements before sending.

WHAT SAMPLE ANALYSIS SHOULD YOU REQUEST WHEN SENDING OFF YOUR SOIL SAMPLE?

Analysis of the soil samples will depend on your goals. For fertility purposes, each sample should be, at a minimum, analyzed for pH, micronutrients, macronutrients, base saturation, cation exchange capacity, and organic matter levels in the soil (coded as an S1 soil sample in Nova Scotia and PEI analytical labs). Other analyses may be completed based on your goals. More information about different soil analyses and their respective costs can be found using the following links:

Nova Scotia Department of Agriculture Laboratory:
[analytical-lab-fees.pdf \(novascotia.ca\)](#)
[analytical-lab-soil-field-submission.pdf \(novascotia.ca\)](#)

PEI Soil and Feed Testing Lab PEI Analytical Laboratories:
[Microsoft Word - Form # 112140109b Soil analysis form Dec 2017.docx \(princeedwardisland.ca\)](#)

Soil and Plant Lab NL Department of Natural Resources:
[Soil-and-Growth-Media-Sample-Submission-Form-June-20-2022.pdf \(gov.nl.ca\)](#)