How to take a Field Soil Test

Why soil test?

Soil testing is the key to developing a sustainable crop production program. Without a soil test, it's hard to tell if your fertilizer program is meeting the crop's needs. Keeping track of soil nutrient levels over the long term allows you to maintain the right level of nutrients in the soil.

Soil tests provide important information on such things as nutrient content and pH levels. Laboratory Services can test your soil to provide this information so that good management decisions can be made.

Soil testing should be done at least once every three years, and more often on high-value cash crops. Tests that are older than three years old are not accurate. Relying on them can lead you to apply too few or too many nutrients to your fields. This not only jeopardizes crop yield and quality, but it may fail to detect environmental risks.

NOTE

The dirt on soil

- *Soil is formed when rocks, plants, and animals decay.*
- *An average sample is made up of 45% minerals, 25% air, 25% water, 5% organic matter.*
- *It can take more than 500 years to form 2.5cm (1 inch) of topsoil.*
- *Soil gets its texture from how much sand, silt, or clay it contains.*
- *Plant roots help*
  - *aerate the soil*
  - *break up new rocks to create new soil*
  - *stop soil from eroding*

Collecting samples the right way

You must take soil samples the right way or test results won't be accurate. Correct test results mean you can make the appropriate choices for liming and fertilizing your land.

To get the most from your soil test, make sure the sample

- accurately represents the field
- is handled and packaged properly
- has enough information on the field submission forms so Laboratory Services can make appropriate recommendations

TIP

Test your soil at least every three years to ensure your crop is getting the right amount of nutrients. Annual tests are even better.

Equipment for collecting soil samples

- clean, residue-free plastic pail
- soil probe, shovel, or trowel
- permanent marking pen
- sample boxes* or plastic bags
- *Field Soil Submission Forms* from Laboratory Services*

TIP

REMEMBER — A soil test is only as good as the sample it was taken from. Taking a poor quality sample is a waste of your time and money.

* Sample boxes and submission forms are available at Laboratory Services in Truro or from regional Agriculture Offices. Forms are also available online at www.gov.ns.ca/agri/qe/labserv/

Types of Sampling Methods

Producers commonly use two sampling methods, composite or grid. You can decide which works best for your situation.

Composite Soil Sampling

Composite sampling is the most common type used by producers. Several smaller subsamples are taken randomly throughout the field, then mixed together for one large representative sample that is sent to Laboratory Services.

Advantages

- It's inexpensive and quick.

Disadvantages

- Nutrient amounts may vary within the field so mixing several small samples together may not accurately represent the field's fertility. This means the right amount of fertilizer might not be applied.

Grid Soil Sampling

Grid sampling is becoming more popular, especially for large fields and high value crops. Modern computer software programs can create an accurate field map using GPS co-ordinates. The field is then subdivided into a grid, such as 0.5 to 2.5 acre squares. Samples are taken from each grid point with its location recorded by GPS. A soil test analyses each of the grid points, giving a more accurate analysis of the entire field's condition.

Advantages

- Grid sampling provides more complete assessment of nutrient levels across the entire field. Most fields vary in nutrient levels, pH levels, and soil characteristics across the field. Grid samples show this variation, while a composite sample provides only average information across the field.
- Producers can use the information to apply different amounts of lime and fertilizer across the grid to develop more uniform nutrient and pH levels across the field.
- Producers develop an accurate field map.

Disadvantages

- It's more expensive and time consuming than composite sampling.

Taking Soil Samples

When should you sample?

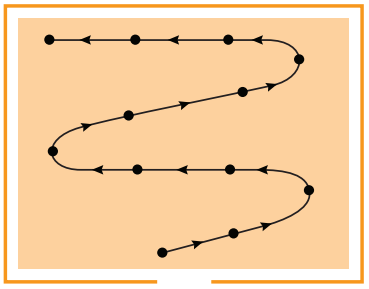
- Always soil test at the same time, preferably the spring or the fall. Soil test levels change throughout the year, tending to be higher in the spring and lower in the fall. Sampling during the growing season can give unreliable results due to crop uptake. Fall is a good time to sample to provide the producer with information that can be used for the next growing season.
- Don't sample when fields are wet. Mould can grow in the samples and they take longer to process at the lab because of drying time. If it's too wet to plow, it's too wet to sample.

TIP

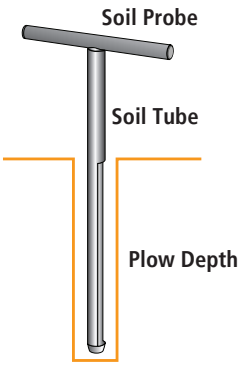
A good sample is

- *taken at the same time of the year*
- *taken when fields are dry enough to plow*
- *taken throughout the field for accurate representation, not just from one area*
- *taken from the right depth*
- *mixed in a clean, plastic pail, not metal*
- *soil only, with leaves, rocks and other things removed*
- *properly labeled in a sample box or bag*
- *submitted with a Field Soil Submission Form that's filled in as completely as possible*

Where should you sample?



- If using the composite method, take a number of samples over the entire field. Choose a W, S, or zigzag pattern when walking through the field to take subsamples that represent the entire field. Take 10 to 20 subsamples per field (depending upon field size) and mix thoroughly in the plastic bucket.
- If using the grid method, keep subsamples separate and properly labelled with the grid points.
- Sample depth varies with the type of crop. Sample most crops to the plow layer which is about 15 centimetres (6 inches) deep. In permanent sod or minimum or no till conditions, sample 5 to 8 cm (2 to 3 inches) deep.



- Areas within the same field can have different slope, colour, texture, drainage, and cropping practice. Sample these areas separately, as well as areas that are managed differently.
- If there is an abnormal area which may have poor crop growth, take separate soil samples. Name and record these special samples and areas on a field map.
- Don't sample
  - field entrances, edges, depressions, and hill tops
  - near water ways, old burn sites, and areas where animals congregate
- Remove all non-soil particles from the sample, such as grass, thatch, leaves, and rocks.
- Don't use a metal pail to mix the subsamples because it can contaminate the results.

What do you do with the samples?

- Label the sample box or bag with your name, sample identification, and address. Fill in the *Field Soil Submission Form* as completely as possible. You must indicate the crop you intend to grow on the submission form. Laboratory Services needs this information to provide interpretation ratings, and lime and nutrient recommendations on the soil test report.
- Mail or take samples to the Nova Scotia Department of Agriculture, Laboratory Services in Truro or drop them off at regional *Agricultural Offices*.

TIP

*Ask Laboratory Services for the **S1,Standard Soil Package**, unless you want additional tests run.*

- The standard soil package required is called S1. You can request additional tests such as nitrogen and soil conductivity. Review the fee schedule for additional tests and pricing.

For more information, please contact Laboratory Services, or go to the website at www.gov.ns.ca/agri/qe/labserv/ .

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