

Understanding and Interpreting Your Soil Test Report

Soil testing done through The Soil, Plant and Feed Laboratory can help you determine how effective your soil is to grow your crop(s) of choice.

The Laboratory determines soil pH levels and plant available nutrients from a soil sample. The Soil Fertility Specialist then reviews the report and makes recommendations for limestone and/or nutrient application, tailored specifically to the crop(s) that you want to grow.

The Soil Test Report is divided into four main sections (as shown on the Soil Test Report Sample Copy). The four main section are:

- Information on clients, sample and field
- Results of soil test
- Interpretation ratings for nutrient levels
- Recommendations for limestone and required applications of nutrients

Client and Sample Identification

Name/Farm Name: client name or the farm name from their Sample Submission Form.

Samples Received/Reported: the date the Lab received the samples for analysis and the date the Lab produced the soil test report.

Lab #: the number assigned by the Lab to an individual sample for tracking and recording purposes.

Field ID: the name/number of the field where the crop grows which is assigned by the client.

Field Size: the size of the farm field in hectares (ha).

Crop to be Grown: the crop identified by the client on the Soil Sample Submission Form available on the department website.

Soil Test Results

Soil pH is the level of soil acidity or alkalinity. A pH of 7 is neutral, a value greater than 7 is basic, and less than 7 is acidic. Soil in Newfoundland and Labrador is naturally acidic, in a pH range of 4.5- 6. Every crop has a required optimal pH, which can vary from 5.0 to 6.5.

On average, 65% of applied nutrients are available at pH levels below 5.9, and 35% of applied nutrients are available below 5.5.

Most crops have optimum growth and make maximum use of fertilizers and soil amendments between 6.0 and 7.0. Lab recommendations are based on increasing the soil pH to 6.5.

Note: pH level

Soil with a pH of 6.0 to 7.0 is best for crop growth and fertilizer use. Aim for a pH of 6.5.

Soil Test Values of Phosphorus, Potassium, Calcium, Magnesium, Iron, Manganese, Copper, Zinc, Boron, Aluminium, and Sulphur, reported in mg/L. These values tell you the contents of these nutrients currently in your soil.

Organic Matter is made of living, recently dead, and very dead plant and animal residues in the soil.

- Living – plant roots and living organisms
- Recently dead – newly dead organisms, crop residues, and fresh manure
- Very dead – humus and final breakdown of organic matter

Organic matter is an important soil health indicator as it contributes to the biological, chemical, and physical properties of the soil.

- Organic matter stores energy and nutrients;
- increases cation exchange capacity (CEC) levels;
- holds 6 times its weight in water;
- encourages good root growth; and
- helps to reduce soil compaction and crusting.

Note: Organic matter

Over 3.5% in soil has good organic matter levels.

CEC (Cation Exchange Capacity) – is the soils ability to hold and exchange certain nutrients (cations) for plant growth. CEC is an indicator of soil fertility and is expressed in centimole per kilogram of soil (cmol/kg). CEC is dependent on soil texture and can vary from 4 (very sandy soil) to 200 (very clay soil).

Soil Test Ratings

The ratings show the level of the nutrients in current soil samples for the specified crop, ranging from very low (L-) to excessive (E). This tells you the level of fertility for the specific crop. The rating is based on historical values that show the relationship between the levels of major crop nutrients in the soil and the levels required by the specific crop in order to achieve optimum yields.

There are ten levels of ratings, based on low, medium, high, and excessive levels of nutrients:

L- , L, L+	levels are low
M-, M, M+	levels are sufficient
H-, H, H+	levels are high
E	levels are excessive

Low Soil Test Levels (L-, L, L+)

Nutrient levels in the soil are below crop requirements.

- Crops will respond when additional nutrients are applied.
- If the field has very low soil levels, it can take years of applying extra nutrients to bring the soil to optimum levels.

Medium Soil Test Levels (M-, M, M+)

Nutrient levels in the soil are sufficient or slightly below crop requirements.

- In most cases, crops will respond when additional nutrients are applied, but yield may not offset the additional cost of fertilizer in some cases.

High and Excessive Soil Test Levels (H-, H, H+, E)

Nutrient levels in the soil are above crop requirements.

- Crops may not respond if more nutrients are applied.
- Additional nutrients are usually not recommended.

Recommendations for limestone and required applications of nutrients

LR (limestone Recommendation) – The value given on the soil test report is in tonnes/hectare (t/ha) and is the amount required to raise the pH to the level required by the specific crop. By increasing the pH to the optimum level, applied nutrients will be more available to the crop.

Required Applications of Nitrogen (N), Phosphate (P₂O₅), and Potash (K₂O) are based on crop requirements for these nutrients and on the different soil ratings. These nutrients are integral components for plant establishment and growth.

Nitrogen (N)

- stimulates root growth and development and uptake of other nutrients
- stimulates plant productivity

Phosphorus (P)

- stimulates root formation and growth
- encourages flower development, pollination and seed formation

Potassium (K)

- increases plant vigour and resistance to certain diseases
- enhances quality of flowers and fruits and vegetables by improving flavour and colour, and by strengthening stems

Nutrient Recommendations and Comments are experts' knowledge on how to apply the required nutrients to specific crops. The Soil Test Report will provide nutrient recommendations instead of a recommendation on particular fertilizers, which may not be available or economically unviable to the producer. Producers may choose common blends (like 15-5-15, 12-24-24, 19-19-19), special blends (made by fertilizer dealer if requested) or basic fertilizers (like ammonium nitrate, urea, triple super phosphate and potassium chloride) to meet the required application of nutrients (amount and ratio).

For more information on interpreting your soil test report, contact the Soil Fertility Specialist at 709.729.1055