

Soil and Soil Nutrients



Soil Texture

In general, most plants grow by absorbing nutrients from the soil. Since your soil affects how well nutrients and water are retained in the soil, it's important to understand the soil texture and pH of your soil. Clay and organic soils hold nutrients and water much better than sandy soils. As water drains from sandy soils, it often carries nutrients with it. These nutrients are then no longer available to plants. An ideal soil contains equal amounts of sand, silt, clay and organic matter.

Soil pH

Soil pH is a measure of the acidity or alkalinity of the soil. pH is one of the most important soil properties that affects the availability of nutrients. The optimum pH range is 6.0 to 6.5. In this range, nutrients are more readily available to plants.

- Macronutrients (Nitrogen, Phosphorous, Potassium, Calcium etc.) are less available in soils with a **low pH**.
- Micronutrients (Copper, Iron, Zinc, etc.) are less available in soils with a **high pH**.

Plant Nutrients

Macronutrients – these major nutrients are usually lacking from the soil first, because plants use large amounts of them for their growth and survival.

Nitrogen (N)

- Required for green, leafy growth.
- Helps plants with rapid growth and helps increase seed and fruit production.
- Is a part of Chlorophyll; the green part of the plant that helps it create its own food (a process called photosynthesis).
- Good sources of Nitrogen are 20-20-20, Blood Meal.

Phosphorous (P)

- Like nitrogen, phosphorous is essential to the plant creating its own food.
- Helps plants mature and withstand stress.
- Encourages blooming and root growth.
- Good sources of phosphorous include Bone Meal, Kelp, 15-30-15.

Potassium (K)

- Absorbed by plants in larger amounts than most minerals



780-467-7557

- Helps in fruit quality and the reduction of diseases.
- Good sources include Turf Revolution Rose n' Bloom (3-1-5) or Off the Vine (4-3-6).

The following Macronutrients are often needed in small quantities, and there are usually enough already present in our soils. However, if growing in a soilless mix, chances are these nutrients are not plentiful.

- Calcium – especially important for tomatoes; a good source is Turf Revolution Off the Vine (4-3-6).
- Magnesium – essential to photo-synthesis; a good source is Epsom Salts (Magnesium Sulphate).
- Sulfur – essential for root growth and seed production, helps with resistance to cold, essential in producing plant protein. A good source is garden sulphur.

Micronutrients

Needed in very small quantities, Micronutrients are rarely found to be deficient. They are easily added to the soil by way of organic matter (compost, recycled leaves and grass clippings).

Testing Your Soil

A soil test involves taking sample from your garden and measuring the sample for pH and available nutrients. Why test?

- A test will determine the proper amount of fertilizer or amendments needed for your soil.
- A test will diagnose if there is **too much** of a nutrient.



How to Test

- Work on one area at a time ie. vegetable or flower garden, shrub border. Use a good garden trowel and take small samples from 6 to 8 areas of the garden. Combine all of these into a clean pail and mix together.
- For lawns, sample to a depth of four inches. For vegetable and flower gardens, four to six inches. For tree and shrub borders, four to six inches. **ENSURE any mulch or surface debris** is removed from the soil surface prior to taking samples.

Greenland carries 3 soil test kits:

McKenzie Soil Test Kit - Our basic kit. It has a one time test for each of the nutrients plus one for pH. Simply put soil in the tube , then fill with distilled water . Add capsule and shake. After 10 minutes compare color of solution to the chart provided, then note the results.



780-467-7557

C.I.L. Soil Test Kit - This kit contains 4 pH tests and 2 of each nutrient. Since we recommend testing more than one are in the garden, we recommend this kit the most. The other advantage to this kit is the instruction sheet. It has extensive information that is very helpful . Even better, you can visit www.soiltest.ca to submit your results and receive specific recommendations.

Rapidtest Soil Test Kit - This kit will test 40 samples, so is the largest that Greenland carries. It also includes a pH preference list for over 450 plants.

Once you have completed your tests, Greenland's staff will be happy to recommend the appropriate soil amendments to correct any soil deficiencies. Just bring in the results so we can help.

Amending Your Soil for pH and nutrients

- Your pH should read around 6.5; if your reading differs significantly from the average level, follow the instructions below for adjusting pH.
- pH changes can take some time, so we suggest amending the soil and then retesting your soil within 3 months.

Amounts listed below will **adjust pH by 0.5** (if you need to adjust pH by 1, double amount). **Amount is listed as # of pounds to add per 100 square feet.**

Adjusting pH:

Material	Sandy Soil	Loam Soil	Clay Soil
Dolomite Lime	2.5	5	5.5
Aluminum Sulphate	.75	1	1.5

Fertilizer Recommendations for N-P-K

Nitrogen Deficiency

- Blood Meal (12-0-0)
- 30-10-10

Phosphorous Deficiency

- Super Phosphate (0-45-0)
- Kelp Meal
- Bone Meal

Potassium Deficiency

- Muriate of Potash (0-0-60)



780-467-7557