Government of Newfoundland and Labrador
Department of Fisheries, Forestry and Agriculture
Agriculture Production and Research Division

Interpreting your Soil Test Report

When you receive your soil test report you will see:

Soil test values of Phosphorus, Potassium, Calcium, Magnesium, Iron, Manganese, Copper, Zinc, Boron, Aluminium, and Sulphur, reported in mg/L. These values tell you what are currently in your soil.

Soil test ratings range from Low (L-, L and L+), Moderate (M-, M and M+), High (H-, H and H +) to E (Extremely high). This tells you the level of fertility for the specific crop. It is based on historical values which 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.

pH is the level of soil acidity or alkalinity of the soil. A pH of 7 is neutral, a value greater than 7 is basic and less than 7 is acidic. Soil in Newfoundland 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

LR (lime requirement) – 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.

CEC (Cation Exchange Capacity) – is the soils ability to hold and exchange certain nutrients (cations) for plant growth. It 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).

Required Applications of Nitrogen (N), Phosphate (P_20_5), and Potash (K_20) 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
- stimulates root growth and development and uptake of other nutrients
- stimulates plant productivity

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

Potassium
- increases plant vigour and resistance to certain diseases
- enhances quality of flowers, 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. Beginning in May 1, 2013, the Soil Test Report will provide nutrient recommendations instead of recommendation on particular fertilizers which may not be available or economically unviable to the producer. Producers may choose common blends (Example: 15-5-15, 12-24-24, 19-19-19), special blends (made by fertilizer dealer if requested) or basic fertilizers (Example: ammonium nitrate, urea, triple super phosphate and potassium chloride) to meet the required application of nutrients (amount and ratio).

To choose fertilizers and to calculate application rate of fertilizers, producers may use the following steps:

1. Divide the values of the Required Applications of nutrients according to the Nutrient Recommendations in the Soil Test Report to get sub-Required Applications.

2. Choose fertilizers having the nutrient ratio similar to the ratio of the sub-Required Applications. The match may not be exact, but pick the closest one.

3. Calculate fertilizer rate to supply the sub-Required Application of Nitrogen (N), i.e. N-based or N first approach.

4. a) If the N-based P_2O_5 rate is over 50% of the sub-Required Application of P_2O_5, use single nutrient fertilizers, e.g. 46-0-0, 34-0-0, 27-0-0 for N; 0-46-0 for P_2O_5; and 0-0-60 for K_2O.

   b) If the sub-Required Application of P_2O_5 is zero from Soil Test Report, pick 20-3-4 or 25-4-10 based on K_2O required rate, then use 0-0-60 to supply the rest of the required K_2O; or use single nutrient fertilizers only for N and K_2O.

For example, in a soil test report, Required Applications of N, P_2O_5 and K_2O are 60 kg/ha, 130 kg/ha and 150 kg/ha. The Nutrient Recommendations are to apply all the nutrients pre-planting. The producer may choose the fertilizer of 12-24-24 which has a ratio of 1: 2: 2, close to the ratio of required nutrients (60: 130: 150 i.e. 1: 2.2: 2.5). The needed amount of fertilizer is calculated:

$$60 \text{ kg/ha} \div 0.12 = 500 \text{ kg/ha of a 12\% nitrogen fertilizer}$$

That is:
500 kg/ha × 12% will supply the required 60 kg/ha N (N first approach)
500 kg/ha × 24% will supply 120 kg/ha of P_2O_5
500 kg/ha × 24% will supply 120 kg/ha of K_2O

Applying too much or too little fertilizer could be detrimental to the crop and the environment.

For more information on interpreting your soil test report, contact the Soil Fertility Specialist at (709) 637-2685