



## INTERPRETATIVE GUIDE FOR SOIL TEST REPORTS

A soil test report may contain terminology which you may not be familiar with. A brief explanation of these terms is given below. Contact the laboratory if you need additional information. We have available several Fact Sheets on related subjects as well as our Agronomy Handbook.

### ANALYTICAL RESULTS

**Organic Matter** measures the amount of plant and animal residues remaining in the soil after initial decomposition. Light colored soils generally range from 1.0 to 3.5% organic matter; dark-colored soils generally range from 3.5 to 7.0% organic matter.

**Phosphorus (P<sub>1</sub>), Potassium (K), Magnesium (Mg), Calcium (Ca)** values are also shown in the indicated columns. The letters beside each of the numbers are ratings to help you determine whether the fertility is very low (VL), low (L), medium (M), high (H), or very high (VH). Generally, it's best to have all of these nutrients in the high and very high range for optimum plant growth.

**Phosphorus (P<sub>2</sub>)** measures available phosphorus (P<sub>1</sub>) and, to a certain degree, some reserve phosphorus. Reserve phosphorus is temporarily unavailable to plants but can become available as physical and chemical reactions take place in the soil.

**Soil pH** determines the level of active soil acidity or alkalinity. A pH of 7.0 is neutral. Above 7.0 is alkaline (sweet); below 7.0 is acid (sour). A pH between 6.0 and 6.5 is best for most plants.

**Buffer pH** is an index value used for determining the amount of lime to apply on acid soils with a pH of less than 7.0. A value is not given for high pH soils.

**CEC** measures the capacity of a soil to hold nutrients. The higher the CEC reading, the greater the capacity. Heavy clay type soils have CEC's of about 12 to 20; loamy soils, 6 to 12; and sandy soils, 2 to 6. Although high CEC soils can hold more nutrients, it doesn't necessarily imply they are more productive. Much depends on good soil management.

**Percent Base Saturation** provides information on the nutrient balance of potassium, magnesium, and calcium in the soil. Too much of any one nutrient can be just as harmful to plant growth as not enough.

### SOIL FERTILITY RECOMMENDATIONS

Soil fertility recommendations are given in this section of the report. Lime is recommended in units of tons per acre and all other nutrients in pounds per acre. If the area you are treating is less than an acre in size, you will need to make some calculations to determine how much fertilizer and/or lime you need to apply.

**Lime Recommendations** For most garden crops the soil pH should be between 6.0 and 6.5. If the pH is below 6.0 and lime is needed, it should be spread like fertilizer and mixed thoroughly with the soil. To calculate the pounds of lime needed for 1,000 ft<sup>2</sup> multiply the tons of lime that's shown on the recommendation report by 46. To calculate the pounds of lime needed for 100 ft<sup>2</sup> multiply the tons of lime shown by 4.6.

For example; a recommendation is for 2 tons of lime. To determine the amount of lime needed for 1000 ft<sup>2</sup>, multiply 2 tons X 46. The result is 92 pounds of lime.

Some plants prefer an acidic soil environment. Some of these include rhododendrons, azaleas, other plants of the heath family as well as white pines, blueberries, and potatoes .

Be careful not to over lime, too much can be just as harmful as too little.

# FACT SHEET

A & L GREAT LAKES  
LABORATORIES, INC.

3505 Conestoga Drive  
Fort Wayne, IN 46808

Phone: 260-483-4759  
Fax: 260-483-5274  
lab@algreatlakes.com  
www.algreatlakes.com

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## SELECTING FERTILIZER MATERIALS

**Nutrient Recommendations** Meeting nutrient recommendations requires selecting the proper fertilizer materials. Lawns and gardens less than an acre in size require relatively small amounts of fertilizer and it's usually more convenient to apply all nutrients in a single mixed fertilizer. It may be more economical to use a combination of fertilizer materials for very large lawns and gardens. In order to determine which blend fits your soils nutrient requirements best, an understanding of the label on a fertilizer bag is essential.

A fertilizer bag is labeled with three numbers which indicate the nutrient content. The first number indicates the percent nitrogen (N), the second, the percent phosphate (P<sub>2</sub>O<sub>5</sub>), and third, the percent potash (K<sub>2</sub>O) in the fertilizer.

For example, a 20-10-5 grade indicates that each 100 pounds of fertilizer contains 20 lbs of N, 10 lbs P<sub>2</sub>O<sub>5</sub>, and 5 lbs K<sub>2</sub>O, or a 20 lb bag contains 4 lbs N, 2 lbs P<sub>2</sub>O<sub>5</sub> and 1 lb K<sub>2</sub>O. Some common fertilizers available are shown in the following table. When choosing a fertilizer for use, select one that has the N, P<sub>2</sub>O<sub>5</sub> and K<sub>2</sub>O present in a ratio similar to the amounts of N, P<sub>2</sub>O<sub>5</sub>, and K<sub>2</sub>O recommended on the report form.

### COMMON GRADES OF FERTILIZER MATERIALS

Description	Grade	Approximate Ratio	Description	Grade	Approximate Ratio
	N-P <sub>2</sub> O <sub>5</sub> -K <sub>2</sub> O			N-P <sub>2</sub> O <sub>5</sub> -K <sub>2</sub> O	
	- % -			- % -	
Ammonium Nitrate	34-0-0	1-0-0	Starter Fertilizers	18-24-6	3-4-1
Urea	46-0-0	1-0-0		5-12-5	1-2-1
Dried Blood	12-1-1	1-0-0	Equal N, P, K Fertilizers	12-12-12	1-1-1
Bone Meal	4-21-1	1-5-0		15-15-15	1-1-1
Seaweed	1-1-5	0-1-5	High N, Low P & K Fertilizer	20-3-3	7-1-1
Wood ashes	0-1-5	0-1-5		28-2-3	9-1-1
Milorganite	5-3-2	2-1-1	High N, Low P & Medium K Fertilizers	25-5-15	5-1-3
				28-3-10	9-1-3

The following example describes how to calculate the amount of fertilizer needed from the soil analysis report.

*A recommendation is for 100 lbs nitrogen, 20 lbs phosphate, and 60 lbs potash. The ratio of N-P<sub>2</sub>O<sub>5</sub>-K<sub>2</sub>O needed is 5-1-3. Therefore a fertilizer material containing these nutrients in the same ratio is desired. One suitable material would be a 25-5-15. To determine the amount of 25-5-15 fertilizer needed for each 1,000 ft<sup>2</sup> of garden area, use the following procedure.*

- Divide** lbs of N, or P<sub>2</sub>O<sub>5</sub> or K<sub>2</sub>O in the recommendation by 44.  
ANSWER: 2.3-0.5-1.4
- Multiply** the answer in Step 1 by 100.  
ANSWER: 230-50-140
- Divide** the answer in Step 2 by the N or P<sub>2</sub>O<sub>5</sub> or K<sub>2</sub>O content in the fertilizer  
ANSWER: 9

The above calculations indicate that 9 pounds of 25-5-15 fertilizer per 1,000 ft<sup>2</sup> must be applied to provide the needed 2.3 lbs of N, 0.5 lbs P<sub>2</sub>O<sub>5</sub> and 1.4 lbs. K<sub>2</sub>O.

## MICRONUTRIENTS

Micronutrients are used by plants in very small amounts. Most mineral soils are adequately supplied with them, especially if large amounts of organic materials are worked into the soil. If they are needed, purchase a soluble micronutrient fertilizer material at a lawn and garden store and follow the manufacturer's directions for application.

## ORGANIC AMENDMENTS

Manure or compost may be substituted for commercial fertilizer. One bushel of cattle manure is equal to approximately 1.5 lbs of 16-8-8 fertilizer or the equivalent. One bushel of poultry or sheep manure would be equivalent to approximately 4.5 lbs of 16-8-8. One bushel of manure weighs about 50 pounds.