How Do You Do A Chemical Soil Test?

By: Helen Disler | **Posted:** Jul 20, 2009

Chemical analysis is the most common method used to assess the nutrient content (and nutrient needs) of soil. An accurate determination of nutrient need is possible if two conditions are satisfied: first, that the soil sample is truly representative of the field to be analysed; and, second, that the chemical testing method has been calibrated through enough research to the crops and soils in the area.

The farmer may choose to take soil samples either by soil type or on a grid basis.

Soil-type sampling involves making a diagram of the field by soil type and obtaining a composite sample of each type. The composite sample may consist of 10 to 15 individual cores of each type which are thoroughly mixed together. From this mix, about 1 pint (0.5L) or 1 pound (0.4kg) is submitted to the lab for testing. This process is done for each soil type present in the field.

Grid sampling involves dividing the area into squares of 1.2 to 2.0 ha (3-5 acres) and taking from each square a composite sample consisting of 8 core samples thoroughly mixed together. Contamination of samples should be avoided.

The lab may also want historical information about the field, such as cropping history for two years or more, previous applications of fertiliser or manure, yield levels, etc. It is advisable to have the samples analysed by a reputable lab whose technicians are well-acquainted with the soils and crops in the farm's locality.

The information generated from the chemical tests gives an indication of the soil quality in the field.

Soil organic matter (SOM). Labs use chemical or thermal oxidation of the total soil to determine SOM. Since the carbon content of SOM is typically around 58-60%, a factor of 1.7-1.72 is used to convert soil organic carbon content into SOM. An organic carbon content value of 0.8%, for example, translates into an organic matter content of 0.8% x 1.7 = 1.36%. Larger values of SOM are desirable because SOM enhances water retention as well as nutrient retention properties of soil, making these available to plants. The lab will have to indicate an optimal SOM value for your area. SOM values that decline over time indicate deterioration in quality.

Soil reaction (pH). The soil reaction or pH value, measured from soil slurry, is dependent on the type and quantities of organic and inorganic materials. However, environmental and management action also affect pH. Excessive nitrogen fertilisation makes soil acidic, whilst poor management of irrigation can induce alkalinity in soil. A soil pH analysis gives data about active acidity (or the hydrogen ion H+ in solution); in contrast, a test for lime requirement evaluates the reserve acidity (or the buffering ability) and provides an accurate guidance on how much lime to apply to a particular field.

Nutrient Availability. Soils can be analysed for virtually all nutrients but within limits. The more routine chemical tests are for phosphorus, potassium, calcium, and manganese — all of which

significantly influence plant growth. There are specific tests tailored to specific soil types and crops. A recommended test will generate data expressed in units of nutrient content per hectare (e.g. kg/ha), and these values will be compared with an appropriate scale defined by local technicians.

Chemical soil testing may have the most accurate results in soil testing because they entail precise measurements of nutrients detected in the soil. Selection of the method is a decision made by the lab scientists, depending on the facilities available to them. The farmer's role is to submit the most representative, contamination-free samples of the soil in their fields.

About the Author

For More Info: Helen M. Disler Farming Secrets http://www.farmingsecrets.com/ Email: info@farmingsecrets.com

Printed From http://www.articlesbase.com/gardening-articles/how-do-you-do-a-chemical-soil-test-1052833.html
Back to the original article