



# FREQUENTLY ASKED QUESTIONS ABOUT SOIL TESTING

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May 1999

HG-513

## WHY SHOULD I SOIL TEST?

Regular testing helps develop and maintain more productive soils for farming, gardening, and landscaping. Soil tests indicate whether plant nutrients are deficient and, if so, what amounts are needed for optimum growth. Soil testing is also a useful diagnostic tool to identify problems related to excessive levels of nutrients and salts, high pH, low organic matter, and poor drainage. When properly interpreted, soil tests increase profits in agricultural production systems and promote more favorable conditions for productive and esthetically pleasing gardens and landscapes.

## WHEN DO I SAMPLE?

The best windows of opportunity for soil sampling are early spring and late fall. Field, garden, and landscape activities are limited during these periods, and samples can be collected and analyzed in time for fall or spring fertilization. Fall testing has the advantage of allowing the application and incorporation of fertilizers with fall tillage or winter precipitation. Spring testing, however, often provides a better indication of nutrient (especially nitrogen) availability immediately prior to plant growth. Regardless of when samples are collected, allow a minimum of two to three weeks for analyses, fertilizer purchase and application, and any other corrective measures to be taken before planting.

Soil sampling can also be done during the growing season to aid in diagnosing plant growth problems. Landowners who observe a problem may want to sample the soil while symptoms are present to diagnose the problem and take corrective action during the current growing season. Plant tissue sampling and analysis can also be used to diagnose problems. Specific plant parts and collection and handling procedures are required for accurate tissue testing. Contact your County Extension Agent for more information on plant tissue testing.

## HOW OFTEN DO I SOIL TEST?

For perennial plants such as turf, trees, alfalfa, and pasture, soil should be tested prior to planting and once every two to three years. Soil testing prior to establishing perennials is particularly important since it provides an opportunity to incorporate immobile nutrients into the

root zone before planting, and to diagnose and correct soil problems before the investment in planting is made. For annuals such as corn, small grains, and gardens, soil should be tested once every two years. Generally, as the intensity of management increases so should the frequency of soil testing. Highly productive growers making frequent fertilizer, manure, or other soil amendment applications should test more frequently to monitor changing soil conditions and prevent the build-up of excess levels of nutrients or salts.

Growers should keep soil test records for all areas sampled, as well as fertilizer application and plant yield and quality information. This allows growers to relate yield and plant performance to soil test results and fertilization practices. Information in this form is “site specific.” Since soils and grower management practices vary widely, knowing what soil test values correspond with optimum plant performance on a site allows the grower to customize a soil management program for individual production systems.

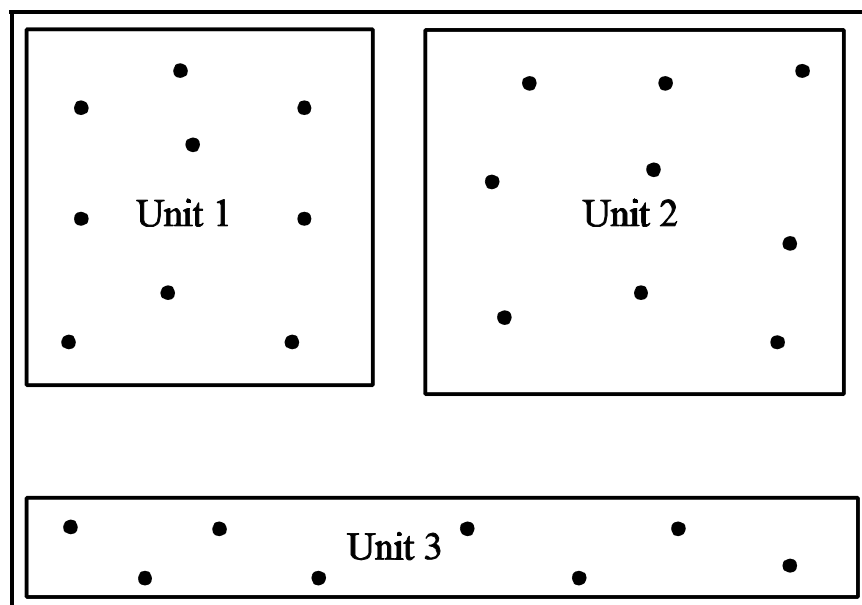
## HOW DO I TAKE A SOIL SAMPLE?

Divide the area to be sampled into different units depending on variations in soil conditions, historic fertilizer and soil amendment applications, or other management differences. For farms, this means that different fields are normally sampled separately (see Figure 1). For landscapes, this means that garden areas, turf, and planting beds should be sampled separately. Problem areas within a field or landscape should also be sampled separately for diagnostic purposes.

A minimum of five to ten samples should be collected from throughout each area sampled and then combined together into *one composite sample* to submit for analysis (Figure 1). This ensures that the sample submitted is representative of the area. Samples should be collected to a depth of 12 inches for routine analyses of agricultural fields, gardens, and tree/shrub areas, and to a depth of 6 inches for turf. The most efficient way to collect samples is with a hollow tube soil probe. Probes are available on loan from your local County Extension Agent, or may be purchased from various equipment retailers such as Ben Meadows (1-800-241-6401) or Forestry Suppliers (1-800-360-7788) at a cost of \$50 to \$90. A shovel can also be used to collect soil samples although this is more time consuming and causes disturbance in areas with established vegetation. In addition, if a shovel is used special care must be taken to ensure that the sample is collected to the depth

recommended above. If you are sampling for available (nitrate) nitrogen, a second sample representing the 12 to 24 inch depth is also necessary.

Additional information on how to collect a soil sample can be obtained from your County Extension Agent or the Utah State University Analytical Laboratory (phone: 435-797-2217). County Extension Agents and the Utah State University Analytical Laboratory have sample kits available which include



**Figure 1.** Soil sampling patterns for three separate units in an area. Each dot represents one sample. Individual samples within a unit should be combined to make the composite sample. Units may be separate farm fields or different areas in the landscape.

additional instructions on how to collect soil samples, a site information form used by the lab to interpret soil test results, and a box for mailing samples.

## **WHAT ANALYSES DO I NEED?**

Utah State University Extension recommends a routine test package for general sampling situations. The routine package measures soil pH (acidity or alkalinity), salinity (salt level), lime, texture class, and plant-available phosphorus and potassium. Interpretations and recommendations are made based on the test results and background site information you provide with the sample. The cost of the routine test is \$10.00 per sample. A complete soil test package is also available which includes all of the tests in the routine package as well as available (nitrate) nitrogen, micronutrients (iron, copper, manganese, and zinc), sulfate-sulfur, and organic matter. The cost of the complete test is \$40.00 per sample.

Nitrogen is the most important nutrient required for plant growth. In the absence of a nitrogen soil test, nitrogen fertilizer recommendations are based on the plant to be grown, yield, and site history. Due to concerns over nitrate contamination of surface and ground water, and higher nitrogen fertilizer costs, soil testing for nitrates is becoming increasingly important. Soil samples collected for nitrate-nitrogen testing must be immediately air dried or kept cool until delivered to the lab. The combined cost for two nitrate-nitrogen samples (separate 0 to 12 inch and 12 to 24 inch depths) is \$10.00.

Regular users of soil tests may decide to have only certain or individual elements tested for in soil. For example, if previous tests show no potassium deficiency or pH or salt problems, only phosphorus may need to be tested for on a regular basis. If a soil test indicates no problems or deficiencies it is still important to periodically test soil since conditions change over time as fertilizers, soil amendments, and irrigation waters are applied. The Utah State University Analytical Laboratory can also test for other individual elements if requested. Contact your local County Extension Agent or the Analytical Lab directly for questions.

## **RECOMMENDATIONS**

Nutrient recommendations are provided on soil test reports. Additional publications are also available to help refine nutrient recommendations for specific crop, landscape, and garden situations, and to aid in correcting other problems diagnosed with a soil test. Contact your local County Extension Agent or the Utah State University Extension World Wide Web Page (<http://www.ext.usu.edu>) for more information or to obtain copies of these publications.

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Issued in furtherance of Cooperative Extension work, Acts of May 8 and June 30, 1914, in cooperation with the U.S. Department of Agriculture, Robert L. Gilliland, Vice-President and Director, Cooperative Extension Service, Utah State University, Logan, Utah. (EP//05-99/DF)

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