Soil Testing and Sample Collection

Soil testing is one of the best ways to begin understanding the levels of nutrients available to plants in the soil and what fertilizers are required to keep your plants healthy.

You can get your soil tested through University of Missouri Extension. Click here for a flyer that gives you sample collection information, drop-off locations in St. Louis and the fee for a basic test.

For most gardeners, a soil test taken every 3 years may be all that is needed to keep abreast with changes in nutrient levels and soil conditions. Where gardeners have problems that are considered unusual and not traceable to weather extremes or pests, a soil test is the best approach to begin understanding the problem. More frequent testing of soils may also be appropriate where fruit production is substantial as in the case of vegetable gardens, small fruits and tree fruits.

At the very least, soil tests should give you 4 basic pieces of information; 1) level of acidity/alkalinity, otherwise measured as pH; 2) phosphorous content; 3) potassium content and 4) percentage of organic matter. Two other elements are commonly evaluated; calcium and magnesium. It is rare that either of these elements are lacking in the soil. However, their measurements will allow some interpretation of how well your soil can serve as a storage reserve of important nutrients. In the case of calcium, it is also an indicator of whether lime has been used to adjust the soil acidity. Over liming soils is one of the most common mistakes in attempting to improve growing conditions.

In some cases, it may be helpful to run a complete analysis of all major and minor elements to gain some insight into the total profile of nutrients available to the plant. This is rarely needed, however, at times it is useful especially where problems reoccur and no other explanation can be found.

Sample Collection

Start with a clean bucket or other container for collecting the soil sample. Useful tools would include a soil probe, soil auger, a trowel or a garden spade and a bucket.

Sampling in a systematic manner is very important to obtain reliable results. Samples can be collected at any time of year, however, it is best to do this in the late summer or fall preceding the next growing season before soil temperatures drop below 50 degrees. This allow some time to work the soil, adjust the soil acidity/alkalinity (pH) and add organic materials if needed. Organic matter will continue to decompose in the soil over the winter and work up nicely next spring when the bed is turned over and prepared for planting. It also allows time for nutrients in the organic material to leach out so that some nutrient benefit is gained.

Sampling Area

Where to sample and how many samples to take depends upon the area and variation in soil types. If the area is considered to be fairly uniform, collect soil samples in a random manner from several sites. Generally, it is sufficient to collect 3 to 5 samples for every 2000 square feet and mix them into a bucket to form 1 composite sample. This accommodates most medium sized vegetable gardens, flower and landscape beds. For lawns, collect one composite sample from the front yard and one from the backyard. If these areas are larger than 5,000 square feet, then collect an additional composite sample for every 5,000 square feet. Sampling soils around trees and large shrubs should be done so that the sample is collected in the zone of actively feeding roots. Generally, this occurs at the drip line of the outermost branches.

If soil types differ or plant performance is questionable, sample these areas separately. Soil sample results should be interpreted independently for these sites because special treatments may be necessary.

How to Collect a Soil Sample

The depth of which you collect the sample should be in regard to the crop you wish to plant or grow. For general beds which are to be planted with annuals and perennials, samples should be collected at the 6 to 8-inch depth. For turfgrass, samples should be collected at the 3-inch depth. Sampling depth should be 6 to 10 inches in a vegetable bed.

The sampling procedure is simple. Make a hole to the proper depth for the crop being grown with a trowel or spade. Slice a thin wedge of the soil down one side and deposit this into the bucket removing any leaves, roots or other organic materials. Similar samples should be collected from 3 to 5 sites in a 2,000 square foot area and the final sample should be a single composite mixture of all samples. This is done by blending the samples together then drawing out about 2 cups of soil. Next, let the sample air dry by spreading it out on a piece of paper for several days. Do not heat the sample.

Packaging and Mailing

The sample to submit should roughly equal 2 cups in its air dried form. This can be placed in a paper soil-sampling bag, plastic tub or a double-lined plastic bag. Each container should be marked clearly with your name, a sample number and crop to be grown. You may also wish to describe what fertilizer practices have been preformed during the previous season. Next, fill out a soil-sampling sheet noting the sample number and a brief description of sampled area. It may be most useful to map the sampling area for quick reference when the results are received.