WASHINGTON STATE UNIVERSITY
ISLAND COUNTY EXTENSION

Soil Testing and Soil Improvement

The best way to know what your soil needs is to test it every two or three years. Soil tests that are commonly offered include:

pH - determines the acidity of your soil and estimates how much lime is needed to adjust the pH to an optimal level.

Nutrients - determines the levels of available plant nutrients. Often, labs don't bother to test for nitrogen, since this test is often misleading. In this area, you can assume your soil needs moderate inputs of nitrogen every year. Some labs test for calcium. This is unnecessary too, since you will be adding lime (calcium carbonate) for pH balance anyhow.

Organic Matter - determines the percentage of organic material in your sample.
Soil Texture - determines the percentages of sand, silt and clay in the soil and classifies it by texture according to the USDA system (for example, silty loam). Since your soil texture is not going to change, you need to request this test only once.

Heavy Metals - determines whether your soil contains abnormally high levels of toxic heavy metals. Sometimes the test is strictly for lead, the most common garden heavy metal contaminate. Usually if levels are elevated, recommendations will be included on steps to take to counteract the danger.

How to Take a Soil Sample
Call the lab you intend to use for an order form and specific instructions. However, following are general instructions on taking and submitting soil samples.

Whatever test you do, the procedure for taking the sample is the same. Each area where the soil looks different or has been treated differently should be tested separately. Don't sample in abnormal spots like right next to a fence, driveway, sidewalk or building. Don't sample a soil that has just been fertilized or limed. Make sure your shovel and bucket are not contaminated from the last time you fertilized. Any of these things could throw the results way off.

There will be variations even within a rather homogeneous area, so the sample you send should be a mix of several samples. Using a clean trowel or spade, take thin vertical slices of soil from about 10 locations within the area they are to represent. Put them in a clean bucket and mix thoroughly. From this, take the cup or whatever amount your lab requests. For most purposes you will want to sample the top 6-8 inches. For growing fruit you should go down to 8-10 inches. Knowing exactly what your soil needs helps prevent over applying fertilizer. This saves you money and protects the quality of our surface and groundwater.

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Organic Fertilizer Requirements
The results of standard soil tests do not always translate easily into recommendations for using organic fertilizers. In addition to managing nutrient levels, organic growing methods rely on practices such as crop rotation, green manure and compost applications, and the use of cover crops and microbial inoculants. As a result, data on biological soil health as well as mineral composition is necessary for managing soil fertility. Some soil tests offer data on biological parameters, such as organic matter content and microbial activity.

A Few Tips

- Be sure you understand what units of measure, parts per million (ppm) or pounds per acre, the soil lab you choose uses.
- Results from soil tests do not always translate easily into actions to take. Ask your soil testing lab if it offers advice or interpretation of results.
- Be careful with home soil testing kits. Often these kits are not very sophisticated and offer only information on relative levels of nutrients or acidity. The chemicals in home tests have a limited life span and can be inactive by the time you use them.

If You Can't Get a Soil Test Before You Plant
If you can't get a soil test done before you plant, here are some general recommendations based on average soil needs in our area. Clay soils and silt soils can take more fertilizer and lime than sandy soil, but sandy soils need it applied more often.

All amendments should be mixed thoroughly in the top 8-12 inches of soil.

Lime
Per 100 square feet use: (100 square feet equals four 4-foot by 6-foot beds.)

Sandy Soil – 4 pounds (4 pints) every 2 years
Loam – 6 pounds (6 pints) every 2 years
Clay Soil – 8 pounds (8 pints) every 3 years

Compost
About 2 wheelbarrow loads (ten 5-gallon buckets per 100 square feet). New gardens may need more.

Aged horse, cow, or chicken manure or ZooDoo
Decomposed yard and kitchen wastes
Aged sawdust. Do not use fresh sawdust because it will draw nitrogen from the soil.

Fertilizer
Fertilizers usually contain three primary nutrients – nitrogen, phosphorous, and potassium. They are listed on the label in that order. The numbers on a bag of processed fertilizer indicate the percent of each nutrient in the product and the guaranteed amount of available nutrients. For example, 5:10:10 means 5% nitrogen, 10% phosphorous, and 10% potassium. The analysis for organic fertilizers represents the total amount of nutrients rather than available nutrients. This is because organic fertilizers are released slowly and the amount of immediately available nutrients is less than the total.

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Different plants require different fertilizers. Some, such as woody landscape plants, generally require none at all. Find out what type of fertilizer your plants need and apply according to the instructions on the label. Use recommended amounts only.
More is not better!

Soil Testing Labs
The following list of soil testing labs in our area is representative and not exhaustive.
No endorsement is intended of any businesses listed, nor is criticism implied if a business is not included. Call before sending samples to verify costs and parameters and to ask questions. *All the labs listed process samples from home gardens.*

A & L Western Agricultural Laboratories
10220 SW Nimbus Avenue, Building K9, Portland OR 97223 * 503-968-9225

Agri-Check, Inc.
323 Sixth Street, P.O. Box 1350, Umatilla OR 97882 * 800-537-1129

Cascade Analytical * e-mail:cascade@nwi.net, Web site: cascadeanalytical.com
3019 GS Center Road, Wenatchee WA 98801 * 800-545-4206

Columbia Analytical Services, Inc. * e-mail: contact@caslab.com, Web site: caslab.com
1317 South 13th Avenue, P.O. Box 479, Kelso WA 98626 * 800-695-7222 menu choice 07

KUO Testing Labs * e-mail: kuotest@atnet.net, Web site: kuotesting.com
337 South First Avenue, Othello WA 99344 * 509-488-0112

Ribeiro Plant Lab, Inc. * e-mail: fungispore@aol.com, Web site: ribeiroplantlab.com
10744 NE Manitou Beach Drive, Bainbridge Island WA * 206-842-1157

Soil Foodweb, Inc. * e-mail: info@soilfoodweb.com, Web site: soilfoodweb.com
728 SW Wake Robin Avenue, Corvallis OR 97333 * 541-752-5066

Soiltest Farm Consultants, Inc.
e-mail: dan@soiltestlab.com, Web site: www.soiltestlab.com
2925 Driggs Drive, Moses Lake WA 98837 * 800-764-1622

Twiss Analytical Lab * e-mail: btwiss@twisslabs.com, Web site: twisslabs.com
26276 Twelve Tree Lane, C, Poulsbo WA 98370 * 360-779-5141

Not in our area, but a great resource -
University of Massachusetts Soil Testing Laboratory
e-mail: soiltest@psis.umass.edu
Web site: http://www.umass.edu/plsoils/soiltest
West Experiment Station, Amherst MA 01003 * 413-545-2311

Adapted from the King County Master Gardener Program Community Horticulture Fact Sheet #6

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