

Soil Testing for Home Gardeners

Many home gardening books recommend a soil test each year to determine nutrient needs for plants being grown. As a home gardener, you may wonder “Should I do a soil test?” It turns out that this is a difficult question to answer.

What a soil test will tell you:

The purpose of a soil test is to determine the existing level of fertility in a given soil to provide guidance in fertilizing your garden. Depending on the package chosen from the analytical lab, it will measure primary nutrients (*nitrogen, phosphorus, and potassium*), secondary nutrients (*sulfur, calcium, and magnesium*) and micro nutrients (*zinc, iron, copper, manganese, boron, molybdenum, and chlorine*). Different labs use different methods for analyzing nutrients, for example phosphorus. A soil test may also measure the pH and often the cation exchange capacity (*CEC*) which will tell you how well the soil will hold and release mineral nutrients.

In smaller growing spaces (*usually those of a home gardener*), the cost of a soil test can be much more than the cost of all the soil amendments that will be needed for at least one growing season. However, there may be some cases when you will want to perform a soil test.

When you might want to perform a soil test:

- If you are investing a lot of money in a new project and want to make sure the new plants have correct fertility.
- If you have been gardening for a long time and have been regularly applying fertilizer, you may be able to reduce the use of additional fertilizer. A one-time soil fertility test will be able to determine if existing fertility levels are adequate, high, or deficient.
- When starting a new vegetable garden, a soil test will establish a baseline and if fertility is high or adequate, you can then have another analysis done 3-4 years later. This may help to determine where deficiencies exist and help to prevent excessive buildups of some nutrients.

If you see plant symptoms indicative of nutrient deficiency or toxicity, you may want to perform a soil test and possibly a plant tissue analysis. One publication from University of Minnesota Extension may help in diagnosing nutrient disorders can be found at:

http://www.extension.umn.edu/garden/fruit-vegetable/nutrient-management-for-commercial-fruit-and-vegetables-in-mn/docs/5886_29-31.pdf

If you decide to have soil fertility test performed:

Soil Sampling:

Correct soil sampling is the first step in the process. Some of the important points of soil sampling are:

- Sample where the plant will be grown, and the depth to which the roots will grow.
- Divide the area into smaller sub-regions depending on soil type, crop grown, amendments used, etc.
- Take 10-20 subsamples from throughout each region, mix in a clean bucket and take a sub-sample.
- Avoid unusual areas such as wetlands, former manure piles, etc.
- Avoid contaminating the sample; use clean sampling tools.

Find publications with more directions on soil sampling:

- Video: How to Collect a Soil Sample http://puyallup.wsu.edu/soils/video_soilsampling (WSU)
- <http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/42799/ec628.pdf> (OSU)
- <http://www.cals.uidaho.edu/edcomm/pdf/ext/ext0704.pdf> (UI)

Soil Analysis:

Washington State University no longer performs soil tests. University labs that are available for soil testing are the University of Idaho Analytical Sciences Laboratory (<https://www.uidaho.edu/cals/analytical-sciences-laboratory/services/soil-chemical-and-physical>) and University of Massachusetts (<http://soiltest.umass.edu/>). Both of these labs perform analysis using procedures that will be accurate for soils in western Washington and will provide recommendations.

Several commercial labs are available in the Pacific Northwest. Labs can be found in a publication from Oregon State University: <http://ir.library.oregonstate.edu/xmlui/bitstream/handle/1957/20037/em8677.pdf>

For best results, choose a lab wisely the first time a soil test is done and continue using that lab for subsequent tests. Check out the lab's Web site and contact the lab before sending the sample to make sure that they will provide the service that you require. Different labs use different methods for analyzing some nutrient levels, for example Phosphorus. Having a conversation with the lab personnel is advised to make sure that you will be getting the correct analysis done for your region and requirements. Some labs provide recommendations for soil fertility; this is useful when using your results to determine nutrient requirements.

More Resources:

- Washington State University Extension: Home Gardener's Guide to Soils and Fertilizers: <http://cru.cahe.wsu.edu/CEPublications/eb1971e/eb1971e.pdf>
- Washington State University Extension: Home Vegetable Gardening in Washington (*Home Garden Series*): <https://pubs.wsu.edu/ListItems.aspx?CategoryID=319>
- WSU Soils and Soil Testing: <http://puyallup.wsu.edu/soilmgmt/Soils.html>
- Oregon State University Extension – Soil Test Interpretation Guide: http://extension.oregonstate.edu/sorec/sites/default/files/soil_test_interpretation_ec1478.pdf
- Ray A. McNeilan and Micheline Ronnengen. *Pacific Northwest Guide to Home Gardening*. 1989. Timber Press, Portland.
- Steve Solomon. *Growing Vegetables West of the Cascades*. 2007. Sasquatch Books, Seattle.

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