



## FOOD &amp; FARMS

## LIVESTOCK

## GARDENING

- Master Gardeners
- Gardening Resources
- Annual Plant Sale

WATERSHEDS  
& ENVIRONMENT

## FORESTRY

## HEALTHY FAMILIES

## NUTRITION

## 4-H YOUTH

## KING COUNTY HOME

## Community Horticulture Fact Sheet #06

### 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. Around our 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 (ex. silty loam). Since your soil texture is not going to change, you have to request this test only the first time.

**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.

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 fruit you should go down to 8-10 inches.

WSU closed its soil testing facility many years ago, so we suggest that you check with private, local labs. Make sure that their basic soil test package includes the tests you want and that they interpret the numbers into fertilizer recommendations for you. Alternatively the [University of Massachusetts](#) offers the tests most gardeners need at a very reasonable price. The standard test is for pH nutrients and heavy metals. 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:

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.)

Compost to Use:

Aged horse or cow manure (not chicken) or zoodoo

Decomposed yard and kitchen wastes

Aged sawdust (fresh sawdust must have lots of nitrogen fertilizer added. A 1-inch layer over 100 square feet needs 10 pounds of ammonium sulphate or 4 pounds of ammonium nitrate.)

Also see fact sheet on Composting.

**FERTILIZER:**

Use recommended amounts only! More is not always better. Fertilizer may be mixed into soil or "banded" in furrows 2-3 inches deep and 2-3 inches away from rows of plants. For larger plants (tomatoes, squash), fertilizer may be placed beneath each plant - 1 tablespoon 5:10:10 per plant or 1/4 cup of organic fertilizer.

Per 100 square feet\* or 100 feet of row. Use one of the below:

5:10:10, 4 cups (2 pounds)

or 10:20:20, 2 cups (1 pound)

or chicken manure, 20 pounds

or complete organic fertilizer:

4 cups blood meal (or 7 cottonseed)

and 4 cups bonemeal

and 4 cups kelp meal (or 8 greensand or wood ash)

\*NOTE: 100 square feet equals four 4-foot by 6-foot beds.

For more information about soil and soil testing, visit:

[WSU Puyallup REC Soil Resources](#)

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