

Soil and Fertilizers



Knowing the characteristics of the soil in your garden will guide your choice of plants, preparation of the ground, your watering schedule, and increase your chances of success.

Type of Soil

- Before you begin planting, dig up a scoop of soil and notice if it is dense, heavy and clumps together when wet, or loose and free flowing, like play sand. Maybe it's somewhere in between, feeling somewhat sticky but crumbling easily.
- All soils are a mixture of mineral particles (clay, sand, and silt), organic matter, water, and air.
 - ◇ Sand is very coarse and visible to the naked eye.
 - ◇ Silt is smaller than sand – about the size of particles of white flour.
 - ◇ Clay particles are very small and can be seen only with a microscope.
 - ◇ Soil texture (relative amounts of sand, silt or clay in the soil) describes how coarse or fine a soil is and its density, drainage rate, and capacity to hold nutrients.
- Nearly all soils have a mixture of particle sizes. A soil with roughly equal sand, silt, and clay particles is called a loam.

Drainage

- Because clay particles are so small, water will drain through clay soils much more slowly than sandy soils. Clay soils are very hard and compacted when dry.
- Water drains quickly through coarse sandy soils.
- Choose plants that will be happy in the type of soil that you have.

Soil test

- Before adding any amendments or fertilizers, it's best to get a soil test to determine soil acidity (pH) and which nutrients are deficient (or excessive) in your soil.
- If you are planting an edible crop such as vegetables or fruits and your home is in a former industrial area, consider a soil test for heavy metals. If you are uncertain, grow any plants you plan to eat in pots or raised beds.
- Most plants like a pH between 6 and 7.5. Soils in our area tend to be more acidic 5.5 to 6.5.
- pH tests are available online or at nurseries. However, they are not as reliable as the soil test done by a laboratory.

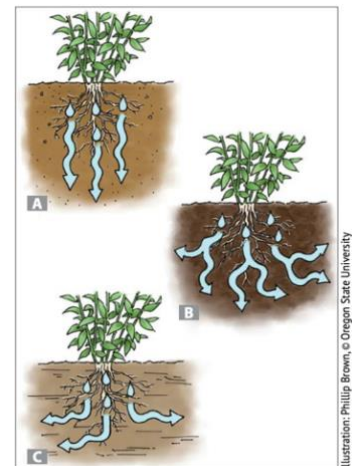


Figure 5. Sandy (A), loamy (B), and clay (C) soil types store and disperse water in different ways.

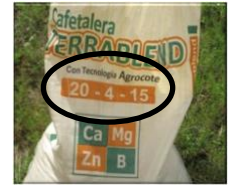
Illustration: Philip Brown, © Oregon State University

Great Gardens in Small Spaces

Washington County Master Gardener™ Association

Fertilizing

- The 3 major nutrients, N-P-K (Nitrogen/Phosphorus/Potassium), must be listed on all packaged fertilizers.
- Look for fertilizers that are high in nitrogen (N) such as ammonium sulfate, urea, blood meal, or feather meal.
- “Balanced” fertilizers such as 16-16-16 most likely are adding excessive nutrients to your soil.
- Soils in our area are often very high in phosphorus (P). Avoid fertilizers with high levels of phosphorus, but do confirm the level of phosphorus with a soil test.



Mulching

- Apply mulches to the surface of the soil to reduce the loss of water through evaporation, protect the soil surface from erosion, reduce compaction, smother annual weeds, and moderate soil temperature.
- Use organic mulches such as compost, bark chips or bark dust. Avoid rubber mulches made from recycled tires.
- You may hear about “lasagna” or sheet mulching. It’s a method of killing weeds and preparing garden beds that is often described in popular literature. Recent research findings suggest this method interferes with water and gas movement in the soil, and we advise against it except in vegetable beds.



Right Help – Even with the right place, the right plant, and the right care, gardening questions arise from time to time. The following resources provide reliable information:

- Master Gardeners <https://bit.ly/MetroMG>
- “Soil 101” 10-Minute University/Clackamas County Master Gardeners™ <https://bit.ly/CCMGSoil101>
- “A Home Gardener's Guide to Soils” <https://bit.ly/WSUSoilGuide>
- Analytical Laboratories Serving Oregon <https://catalog.extension.oregonstate.edu/em8677>