

Good soil is as important to your garden as a good foundation is to your house. There's one big difference, though. With your soil you don't have to be satisfied with what you have. If you find that you don't have ideal--or even good--garden soil, you can improve it.

Gardening is like most hobbies in that you can get as involved as you like. No one is going to say you must thoroughly understand the soil or how plants grow in order to enjoy your garden. If you're at all serious about gardening, though, there are a few things you should know about your soil.

Most garden publications will tell you an ideal garden soil is deep, friable, fertile, well-drained, and high in organic matter. Don't be disappointed if your soil doesn't fit that description. Few garden soils do.

If you find the soil to be less than ideal, you can either leave it as is or try to improve it. Before you start making changes, find out what you have. And even if you decide not to make changes, getting to know your soil will help you decide what plants will grow best on your lot.

In getting to know your soil, you'll need to understand certain physical and chemical characteristics. Physical characteristics include the soil's composition, texture, structure, depth, and drainage. The main chemical characteristics you'll need to be aware of include the pH and the overall fertility level.

Composition

Soil is composed of four primary materials--sand, clay, silt, and organic matter (humus). The type of soil you have and many of its characteristics are determined by the proportion of these four materials present.

The composition of your soil is related to soil texture and soil structure. It is important to know something about the composition of the soil if you attempt to adjust the pH or apply chemicals to your garden, because recommendations generally vary according to soil type. Knowing something about your soil's composition will also give you an idea of how well it will hold fertility and how well it will drain.

Although it would take a laboratory analysis to determine the exact proportions of sand, silt, clay, and organic matter in your soil, you can get a good idea what they are by observing the soil when you work it and by feeling its texture.

The two types that probably would give you the most problems are soils with too much clay and soils with too much sand.

A soil high in clay tends to be sticky. It will stick to your shovel when you're working it. And when it's moist, you can easily squeeze a clayey soil into a tight ball.

Soils with too much clay can cause problems for the gardener because they tend to be wet and difficult to work. Clay particles are small and fit closely together, leaving extremely small pores

for air and water. On the other hand, your soil needs some clay to give it strength and water-holding capacity.

Soils with a high proportion of sand are nearly the opposite. The particles--and the spaces between them--are much larger, so sandy soils are crumbly in texture. If you try to squeeze a handful of your soil into a ball and it always crumbles apart, you have a sandy soil.

Sandy soils are commonly called light soils--and they're very easy to work. They cause problems for gardeners, though, because water and plant nutrients move through them too quickly.

The term soil texture is closely related to soil composition in that it refers to the size of the soil particles. Texture depends on the relative amounts of sand, silt, and clay in the soil and influences porosity, water-holding capacity, drainage, and soil atmosphere.

Soil texture should influence the way you manage your garden. For example, if you have a fine textured clay or silt soil, you need to be especially careful that you don't work the soil when it is too wet.

The term soil structure describes how soil particles are grouped and arranged. Structure also may influence porosity, water-holding capacity, drainage, and soil atmosphere. If soil is crumbly and somewhat porous, but not too lumpy, it has good structure. Adding organic matter (humus-making materials) may improve structure.

Depth

The root zone of plants is wider and deeper than most gardeners realize, so you want a soil that is deep enough to accommodate it. Because roots grow best in topsoil, that soil should be as deep as possible.

Drainage

Soil drainage is important because soil occasionally receives more water than it needs. Plant roots need air as well as water, so if all the soil's pores are filled with water, your plants will suffer. A poorly drained soil often will be too wet and cold for proper plant growth.

Chemical characteristics

Soils have chemical reactions going on all the time, but the only chemical characteristics you need to know about are the pH (the acidity-alkalinity relationship) and the overall level of fertility. The only sure way to determine your soil's pH and fertility is with a soil test. Color, soil texture, and other physical characteristics should not be used to indicate soil fertility.