

How To Improve Different Types Of Soil For Planting



Posted by Brent Wilson on 6/22/2016 to How To Articles

When planting shrubs, trees and other ornamental and herbaceous plants in landscape or garden beds the quality of soil can mean the difference between success and failure.

Basically speaking, there are four different types of soil, and various sub-types within each of these. Below you'll find descriptions of each soil type and suggestions for improving the soil if necessary.

Whether or not or how much you'll need to amend a soil will depend on several factors including the needs of the specific type of plant you intend to grow and the consistency of soil.

Other factors such as sunlight and climate are important as well, however, in this article we'll be focusing on the basic soil types and how you might improve them for better growing success.

Clay Soil

Clay soil is defined as soil that is composed of mostly clay particles. Soil that consists of over 50% clay particles is referred to as "heavy clay." Most likely, you probably already know if you have clay soil. That said, if you're unsure as to the type you can do some simple tests. If your soil sticks to shoes and garden tools like glue, forms big clods that aren't easy to separate, and crusts over and cracks in dry weather, you have clay. Also, if you squeeze your soil in your hand and it molds instead of falling apart when you open your hand you probably have clay.

Clay soil is prevalent in many parts of the world. So, don't feel like you're all alone if that's what you have in your garden. If you have clay soil, you know it can be a real pain to dig in and for plant roots to grow through. While many trees and shrubs grow well in clay, the roots of annuals, perennials, vegetables and other herbaceous just aren't strong enough to make their way through.

Heavy clay soil, absent of sand or organic matter, tends to hold a lot of water, particularly in winter when there is less evaporation. This can cause problems for specific types of plants that don't like wet feet (soggy or wet soil). That said, during warmer months of the year, particularly when there is prolonged dry weather, clay soil can become dry and hard as a brick.

The good news is, with the addition of the right soil amendments and a little effort on the gardener's part, clay soil can be turned into a richer, more loose soil that plants will thrive in.

The Positives

- Retains moisture well

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- Tends to be more nutrient-rich than other soil types. The reason for this is that the particles that make up clay soil are negatively charged. They attract and pick up positively charged particles, such as calcium, potassium, and magnesium.

The Negatives

- Slow draining
- Slow to warm in the spring
- Compacts easily, making it difficult for plant roots to grow
- Tendency to heave in winter
- Tendency to be acid, which some shrubs appreciate

Improving Clay Soil

If you have sandy clay soil that crumbles after being squeezed in your hand, there might not be a need to improve the structure of the soil. That said, you might need to add some organic matter to enhance the nutritional value of the soil.

On the other hand, if you have heavy clay soil, which molds like modeling clay and turns hard as a brick during dry summers, improving your clay soil by adding organic matter, such as composted manures or other aged compost, will take a bit of work. The good news is that the work you do will instantly improve the structure of your soil, make it easier to work with, improve soil drainage, and your plants will love you for the nutritional benefits.

Herbaceous Plants

When mass planting a flower or vegetable garden, or when planting groundcover plants in mass, it's best to improve the entire planting area all at once. Thereafter, in flower and vegetable gardens you can improve soil between each growing season by simply tilling or turning in a little organic matter, such as composted manures or your own homemade compost. Adding sand can help, but it's the organic matter that offers the best advantages, including increased water and nutrient hold capabilities, and improved aeration as well.

How much organic matter to add? Mix organic matter (compost, straw, fine wood bark, leaves) at a 25-50% ratio with the clay. The heavier and harder the clay the higher percentage of organic matter. This might mean you would add 1.5 to 3 inches of organic matter to the top 6 inches of the soil, or 3 to 6 inches if you're tilling to 12-inch depth.

When finished, your garden bed will be several inches higher than it was originally, which is often called a "raised bed." Many plants, especially those that don't like wet feet, appreciate growing in raised beds because there is better drainage.

Woody Ornamental Plants

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1. Improve the soil in the entire planting area. Use same method as described above for herbaceous plants.
2. If your planting area is large, and tilling or turning the soil in the entire area is more than you can or want to handle, you can amend the clay soil during the planting process by adding organic matter as you prepare the planting hole for each plant. Thoroughly mix organic matter to the soil removed from the planting hole at a 25-50% ratio. The amount you add will depend on the consistency of the clay.

I recommend digging your planting hole to a width of 3 to 4 times the diameter of the root ball of the plant and maybe a little deeper than the root ball.

TIP: For more detailed planting instructions on specific plants click on the Planting tab on any plant page in WilsonBrosGardens.com

Loam Soil

Loam is considered to be the most desirable medium for growing vegetable crops, flowers, shrubs, trees and many other types of ornamental plants.

Loam is considered ideal for gardening and agricultural uses because it retains nutrients well and retains water while still allowing the water to flow freely. It is found in a majority of successful farms in regions around the world known for their fertile land. Loam soil feels soft and rich and is easy to work over a wide range of moisture conditions.

Loam is soil composed of sand, silt, and clay in relatively even concentration (about 40-40-20% concentration respectively). Loam soils generally contain more nutrients and humus than sandy soils, have better infiltration and drainage than silty soils, and are easier to till than clay soils. Loams are gritty, moist, and retain water easily.

Different proportions of sand, silt, and clay give rise to types of loam soils: sandy loam, silty loam, clay loam, sandy clay loam, silty clay loam, and loam. A soil dominated by one or two of the three particle size groups can behave like loam if it has a strong granular structure, promoted by a high content of organic matter. However, a soil that meets the textural definition of loam can lose its characteristic desirable qualities when it is compacted, depleted of organic matter, or has clay dispersed throughout its fine-earth fraction.

Many gardeners complain of their garden soil being compacted and/or poorly drained. Good news is, just about any soil, even compacted clay, can be modified to loam by adding in a good amount of organic matter, such as compost, composted manures, or organic mulch materials.

Likewise, a poor quality loam can be enhanced by simply adding organic matter. How much you add will depend on the fertility of your soil. For example, in a vegetable or flower garden this can be done between each planting season as the soil is worked.

Sandy Soil

A soil in which sand predominates is classified, logically enough, as a sand-textured soil, or simply a sandy soil. Sandy soils are coarse in texture. Some plants and trees love growing in sandy soils, while others can't tolerate it.

The Positives

- Drains easily and quickly after a rain
- Is easily worked, and warms up quickly in the spring.

The Negatives

- It has a lower moisture-holding capacity than other soil types and therefore must be watered more frequently.
- It has a lower nutrient-holding capacity than a other soil types and must be fertilized more often.
- When vegetative cover is lacking, it is subject to wind and water erosion.

Improving Sandy Soils

As mentioned above, some plants, such as palms and cycads, prefer growing in a sandy soil. These plants will usually have roots that penetrate deeply to find water way beneath the surface. Other types of plants don't have this ability and sandy soil will have to be improved to grow them.

Sandy soils can be enormously improved by the generous addition of organic matter such as topsoil, mushroom compost, composted manure, or peatmoss. Spread a layer of organic matter 3 to 4 inches thick on the surface of the area to be improved, and then thoroughly incorporate into the soil. If you do not incorporate the organic matter, water will not percolate well and thus plants will grow poorly.

Keep in mind that excessive amounts of manure, especially if fresh, can raise nutrient and salt levels to a degree that may be toxic and therefore restrict plant growth

Silt Soil

Silt soil is finer than sand, but still feels gritty. Silt is commonly found in floodplains and is the soil component that makes mud. Soils with a lot of silt make excellent farm land, but erode easily. This is the soil blown away in dust storms and carried down stream in floods.

Silt soil is similar to loam soil but contains smaller ratios of both sand and clay particles. Silt soil feels smooth and silky. Silt soil retains water well but may drain slowly depending on the exact clay-silt-sand ratio. Because of this, gardeners usually amend silt soil. mixing in mulches, fertilizers, drainage assistance particles, such as sand, or other soil additives to solve drainage issues and

provide the proper growth medium for most plants.

Amending Silt Soil

When amending silt soil, till to a depth of at least 1 foot. Then add a layer of any soil amendments (sand, aged compost, etc) over the tilled soil. Till the amendments into the soil. If the procedure is conducted in the fall, the improvements should be apparent by the following spring.

Other Helpful Tips

Specific types of plants like certain ranges of soil pH. For example, azaleas, rhododendrons, camellia and gardenia prefer an acid soil. Other plants prefer a neutral or alkaline soil. So it's always a good idea to test soil pH.

[Learn More About Soil pH And How To Test And Adjust It >](#)