

Healthy Soil, Happy Plants



Photo by David W. Marshall, UF-IFAS Leon County Extension: Many plants won't grow well in a compacted soil. Hummingbird plant (Dicliptera suberecta) is one that does fairly well, though it, too, grows better when the soil isn't compacted.

Elizabeth Schmidt is a Master Gardener volunteer with the University of Florida IFAS Extension in Leon County, <http://leon.ifas.ufl.edu> Send your gardening questions to Ask-a-MasterGardener@leoncountyfl.gov

Thursday, April 21, 2011
Tallahassee Democrat

When our plants don't grow so well, we often suspect pest problems, nutrient deficiencies, or some other such malady. However, oftentimes the problem is related to the physical or structural condition of the soil.

Healthy plants begin with healthy soil. Healthy soil is composed of one half organic matter and minerals and one half pore space. The pore space allows room for roots to grow and provides the space for air and water in the soil, both of which are necessary for plant growth.

If a soil becomes compacted, the space for air and water and for root growth is greatly reduced. Furthermore, when it rains a compacted soil may not drain properly. When that becomes the case, water replaces oxygen in the pore spaces that do exist, and the roots suffer even more.

It is important to note that the root zone of a tree extends two to three times as wide as the crown of the tree. The same general rule applies to shrubs, too. Most roots are located in the top two feet of soil. And most of the fine, feeder roots, the ones that take up the moisture and nutrients, are in the top six inches of the soil.

The most common sources of soil compaction are vehicle and foot traffic. During home construction soil is often compacted. Trees won't show the effects of a compacted soil immediately. In some cases, it can take years for trees damaged during construction to die. Riding lawn mowers, parking vehicles on grass and/or under trees, pedestrian traffic across lawns and planting beds, all contribute to soil compaction.

The simplest way to check for soil compaction is with a shovel. If you have trouble getting the shovel into the soil, the soil is compacted. Other indicators of soil compaction are poor water percolation and poor plant growth.

There are measures you can take to combat soil compaction. If your soil isn't covered by plant growth such as lawn or groundcover, cover it with mulch. The mulch helps protect against compaction not only from foot traffic, but also from rain falling on a bare soil. The most readily available mulch material is fallen leaves. That's the natural mulch in a forest, and it serves well in our landscapes and gardens too. Keep one- to three-inch-deep mulch around plants. Don't push the mulch up against the trunk of a plant, though. Leave an air space around the trunk.

Another way to minimize soil compaction is to minimize the amount of foot traffic in planting beds, especially when the soil is wet. Designate footpaths through planting beds and lawns for pedestrian traffic. Use stepping stones to more evenly distribute the weight impact of foot traffic. Don't park vehicles where you wish to grow grass or other plants. Avoid working the soil when it is moist and compacts easily.

If your soil is already compacted (remember the shovel test), cultivate it before planting. When planting, dig a hole two to three times the width of the plant. Don't make the hole any deeper than the root ball of the plant, though. In fact, it is best to leave the plant slightly above the level of the surrounding soil. Remember, you're going to apply a mulch over the root zone to help protect the roots and to retain soil moisture. This mulch will gradually break down and contribute to the soil layer. Mulching, over a prolonged period of time, helps greatly to improve the structure of the soil.

When planting in a compacted soil, choose plants that are naturally adapted to wet, poorly aerated areas. For example, bald cypress is a great choice for a tree. Refer to the list of recommended plants for rain gardens on the TAPP website at <http://www.tappwater.org/raingardens.aspx> Some of the plants that can be used in rain gardens can be used on sites with compacted soils.

Soil is often overlooked as an important gardening element. Soil anchors the plant, and provides access to water, oxygen and nutrients. It takes time and a little effort to improve your soil, but the results are well worth it. Having healthy soil will go a long way toward having a healthy, trouble free landscape.

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