

WHY WELL DRAINED SOILS?

By: Kelly Feehan, Extension Educator

Release: Week of March 30, 2020

When reading about the growing needs of plants in catalogs or on plant tags, it almost always states plants need a well-drained soil. One reason well-drained soils are so important is because plants need oxygen along with water.

The oxygen plants use in metabolic processes is taken up by roots from soil pores. If a soil is not well-drained, and remains saturated for too long after rainfall or irrigation, water displaces oxygen in soil pores and plants are negatively affected.

It is fine root hairs, feeder roots, attached to larger roots that do most of the job of absorbing water and nutrients. Feeder roots are continually dying and being replaced. If soils remain low in oxygen for too long, these fine root hairs reduce or stop functioning and die at a more rapid rate.

We can increase plant growth and health by using soil management practices that improve soil drainage, especially after construction and when installing new lawns and landscape beds. This includes incorporating organic matter and using tillage to relieve compaction.

We can avoid walking on or working wet soils to reduce compaction. Compaction compresses soil pores into smaller sizes and restricts the movement of oxygen into soil. We also need to avoid tilling soils too much or too frequently, especially with rototillers. This harms soil structure and reduces drainage.

We can leave automatic irrigation systems turned off and only turn them on when soil is beginning to dry. We can check soils before irrigating to be sure water is needed. Overwatering is a common issue in residential landscapes dealing with urban soil issues.

A key practice for improving soil drainage is incorporating organic matter like compost or well-rotted manure. Organic matter improves soil structure by increasing soil aggregation which allows for more and varied pore sizes.

Soil aggregates are groups of mineral particles that bind together. Aggregate stability is the ability of soil aggregates to avoid disruption, such as by water. Soils with high organic matter content have greater aggregate stability.

If you have some extra time to read and want to dig deeper, search the internet for soil aggregate stability plus ext for science based articles from Universities. It's more interesting reading than you might think.

When incorporating organic matter, the general rule of thumb for compost is the spread a two to three inch layer over soil and till it in about six inches deep. Avoid over-tilling, especially with a rototiller. Using a rototiller too much or too often breaks down soil aggregates.

A great way to increase organic matter in annual flower beds or vegetable gardens is the use of green manures or cover crops. These are grains, grasses or legumes that are sowed in fall and then tilled under in early spring before they go to seed.

Need another life-long learning goal? Do another search for cover crops for home gardens. You can also ask your local Extension office for this information.

The soil is the foundation of plant health. We can select the best plants for our sites, but if we plant them into soils with poor drainage, we can't expect them to perform well.