Are your Plant Roots Drowning?

Gardening in the foothills can be a bit of a challenge. Summers are very warm and dry, and some winters can be extremely wet. In addition, much of our soil is heavy and poorly drained. This time of year, many of your plants may be struggling with saturated soil. Generally, if the upper foot of soil is saturated for no more than a few days at a time, there will be little or no damage to most plants.

Because water fills up air pockets in the soil, shutting off the oxygen supply to plant roots and the microorganisms that live in the soil, the soil eventually becomes anaerobic. This doesn't happen immediately, but occurs after numerous heavy rain events. However, nearly all of the oxygen in the soil can eventually be depleted. Then, plants that need plenty of oxygen for root respiration are going to be stressed, and eventually will die.

When the soil becomes anaerobic (lacking oxygen), the microorganisms that require oxygen will also begin to die, and a different population of anaerobic microorganisms takes over. Anaerobic processes of decomposition are less efficient however, so organic carbon levels tend to accumulate in soils that are often wet for long periods of time. That's why wet soils often have blacker colors to greater depths than in better drained soils and can have a very bad odor.

What can you do to improve areas of soil that seem to be chronically wet?

- Add plenty of organic matter, which opens pores in the soil and allows water to flow deep rather than puddle on top.
- Plant landscape plants that can tolerate wet conditions. Don't choose plants that need quick drainage for a spot that tends to have standing water in the winter. Olives, for example, are particularly sensitive to wet soil conditions, whereas Birch are much more tolerant. Some plants, such as ash, have special mechanisms to provide oxygen to roots during wet times and can thrive in soggy soil.
- For plants such as fruit trees, which must have dry feet, plant in berms, raised beds or planters. Build the beds high enough to settle and still be above the flood.
- If your soil remains wet into the spring, you should delay tilling and planting. Working wet soil can create hard, impermeable clods, and seeds are more likely to rot in cold, soggy soil.
- Use structures and ground covers to slow runoff and topsoil loss, or provide surface drainage with shallow ditches if your garden area has a natural slope.

Areas of your property that are fairly level and have dense layers of clay will always have difficult drainage problems and are good spots to build raised beds. Otherwise, just wait for warm weather and soft breezes to carry off the excess moisture.

This article adapted from Cooperative State Research, Education and Extension Service, USDA. Please contact Ken Churches at cdcalaveras@ucdavis.edu or (209) 754-6475 with your agricultural questions. To speak with a Certified Master Gardener: Calaveras (209) 754-2880, Tuolumne (209) 533-5696, Amador (209) 223-6837, El Dorado (530) 621-5543.