It's All About the Soil

From CPMD Water Conservation Committee

How can you have a better-looking landscape all while saving water and money? The answer is in the soil.

Mother Nature has given many gifts to Castle Pines Village; however, a soil rich in organic matter is not one of them. Our soils are predominately heavy clay or sandy which makes it difficult to manage irrigation systems. Most often poor quality sub soils are used as a base for lawns and ornamental beds. Soil compaction reduces soil air space essential for root growth and development. Many times when plants are not healthy the natural urge is to irrigate. However, this practice is most of the time unwarranted and actually causes more plant damage.

A good soil amendment for our soils should contain high levels of organic matter and is added to existing soil improving physical properties such as water retention, water infiltration, and aeration. Microorganisms naturally present in organic matter aerate soils and make some nutrients more readily available for absorption by plant roots. The goal of adding a proper amount of soil amendment is to create a better environment for roots by providing the right balance between air space, water and nutrient availability.

An organic amendment is one that came from something that was alive, and includes worm compost, mushroom compost, composted manure and other types of compost. Compost is organic matter that has been processed by microorganisms. Sphagnum peat should only be used in small quantities (< 10%) in a soil amendment because when a soil dries out between irrigation cycles, the sphagnum actually becomes hydrophobic and will not rehydrate easily. Drought tolerance is increased by allowing the top two-inches of soil to dry out between irrigation events (except for wetland or riparian plants). Wood chips, grass clippings, straw, manure and other non-composted materials should also be avoided as these materials disrupt the nutrient balance of a good soil amendment and can add to plant health problems. Also, soluble salts may build up and cause additional plant health problems.

The best time to significantly change the soil properties is before the lawn is established. After removing rocks and construction debris, add 4 cubic yards per 1,000 sq. ft. or 1.5 inches of compost on the soil surface. Rototill compost with existing soils thoroughly to a depth of at least 6-8 inches.

Once a lawn is established, amending the soil can be accomplished by core aeration. Core aerate on **two-inch centers**. Aeration machines pull cores on four or six-inch centers, therefore, make two or three passes over lawn areas. Research shows that benefits are only seen when plugs are pulled on **two-inch centers.** Aeration plugs pulled out of the lawn should measure 2-3 inches long. Core aerate in spring and fall. Continue for several years to see measurable changes in soil composition.

Other Tips

- If the soil is very poor, a good top soil can be added. Speak with your landscaper or soil provider to find out what has been done to insure the top soil is relatively free of weed seeds to prevent weed infestation.
- Do not add sand to clay because the combination creates a soil similar to concrete.
- Bio-solids are by-products of sewage treatment and can be used for lawn and ornamental areas, not vegetable gardens.
- Do not use gypsum or sulfur as they are both salts which accumulate in the soil.

During a prolonged drought, it is critical that residents shift their expectations on the quality of their landscapes. Lawns during drought may not be lush, but they will survive and residents will conserve substantial amounts of water.