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Why Trees Die

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Trees are vital to our survival. They give us oxygen, store carbon, stabilize the soil, provide food, cool the air, and materials that have enabled humans to develop civilization. However, trees like all living things will eventually die. Few will die of old age. In fact, most trees die from the accumulated misfortunes of exposure to the stress of wind, disease, insects, pollution, soil erosion, soil compaction, weather, and people.

Trees have growth, reproduction, and survival phases just like other organisms and their life spans can vary greatly. Fruit and ornamental trees typically live for 15 to 50 years. Olive trees have average life span of 500 years. Redwoods and Bristlecone pines can live for 3,000 to 5,000 years.

If a tree was somehow elevated above the soil, imagine we would see a structure shaped like glass with a flat base, stem, and a rounded, triangular, or columnar shape. Think of a stemmed wine glass, martini, or flute! Depending on the type of tree, the top will have leaves (or needles) of different shapes, sizes, and color.

At the flat base of our imaginary stemmed glass are the roots of the tree. The roots of the tree, besides anchoring the tree, provide the tree with water and nutrients from the soil. The roots have a symbiotic relationship with the microorganisms in the soil which allow the roots to efficiently draw nutrients. In return, the tree roots also release food into the soil to feed the microorganisms.

Tree roots rarely extend more than 30 *inches* down into the soil and support the tree by spreading out over a large area of soil beneath the tree. The relatively shallow depth of the tree roots is one reason why trees are so prone to damage by drought, soil compaction, or chemicals

October 21, 2018

added to the soil. On average, the tree roots extend from five to seven times the circumference of the trunk of the tree. So a tree with a 12 inch circumference can have a root base that extends out five to seven feet from the base of the tree. A large oak tree living in your front yard can have a root system that extends across your entire yard!

In addition, tree roots store about 75 percent of food made in the leaves to allow the tree to survive when sunlight is not readily available. Thus any activity which disturbs the soil around the roots such as digging trenches or compacting the soil can destroy the tree's ability to absorb water or store food.

The entire structure of the tree from roots to branches is covered by a thin skin commonly known as the bark. This bark contains miles of conduit which transport water, food, and nutrients throughout the tree. Supporting all of this is the skeleton of the tree which is made up of earlier years of bark which die, and become what is known as the heartwood. It is the heartwood of a tree that we manufacture into lumber, or burn as firewood.

In general, tree death is often caused by anything that interferes with the ability of the tree to perform the life functions that allow it to survive. But we can narrow these down to five primary causes.

- Adverse environments such as under or over-watering, or poorly draining soils.
- Harmful insects or diseases which interfere with either the tree's ability to make food or circulate food, water, and nutrients to the entire tree.
- Catastrophic events such as fires or hurricane-force winds.
- Human intervention which in many cases is beneficial for humans, but not so much for the trees.
- Finally, the accumulated effects of old age which effect all living organisms.

“Landscaping with Trees and Shrubs” is the upcoming Master Gardener public education class on Saturday, November 3, 9:00 a.m. to noon at the Government Center, Building C – Hearing Room, 2850 Fairlane Circle, Placerville. The discussion will include which trees and shrubs work best in our foothills with an emphasis on drought tolerant plants, including perennials and ground covers.

On November 14, the UCCE Master Gardeners of El Dorado County will be hosting a free public education class, “Turning Dirt into Gold” to help us understand these concepts in much greater detail. Please join us to learn how the ochre clay soil that keeps our oaks and pines happy can be remodeled into black gold that will make even a red pepper smile. Class will be at the Cameron Park Community Center, 2502 Country Club Drive, Cameron Park, 9:00 a.m. to noon.

UCCE Master Gardeners of El Dorado County are available to answer home gardening questions Tuesday through Friday, 9:00 a.m. to noon, by calling [\(530\) 621-5512](tel:5306215512). Walk-ins are

October 21, 2018

welcome at our office, located at 311 Fair Lane in Placerville. Visit us at the Sherwood Demonstration Garden, located at 6699 Campus Drive in Placerville, behind Folsom Lake College – El Dorado Center. The garden is open the second Saturday each month, 9:00 a.m. to noon, till April 2019.

For more information about our public education classes and activities, go to our UCCE Master Gardeners of El Dorado County website at <http://mgeldorado.ucanr.edu>. Sign up to receive our online notices and e-newsletter at http://ucanr.edu/master_gardener_e-news. You can also find us on Facebook.