Trees in drought

All throughout Sonoma County homes and streets are graced by many different species of trees. City streets and homes are shaded by large London planes, while many small gardens are decorated with crape myrtle and beautiful fruit trees. Now that "drought" is officially accepted in California, what will happen to the trees if we stop watering? What are the best trees to plant for drought conditions? How can we best manage trees in the landscape and orchard?

When a Certified Arborist* is asked these questions, she has to consider several different aspects of tree-dom: species (what kind of tree is it?), root condition and location.

And instead of "drought," we should be thinking in terms of a permanent change. "Drought" is considered to last a limited number of years. "Climate change," on the other hand, is a more permanent condition beyond a human lifetime. Fifty years ago in Sonoma County four months, from June through September, were dry; now the period without rain is six months or more.

Trees naturally store water. They retain water in all the cells of their structures: roots, trunk, branches and leaves. In dry periods trees reveal many survival mechanisms. The baobab tree in Africa has almost no branches and a trunk swollen with water. Some trees such as the California buckeye drops its leaves when soils become dry. Leaves contain special cells which breathe and release moisture to the air, thus pulling more moisture from roots. When trees defoliate, the need for water is sharply reduced.

Water requirements for trees vary by the species, and where the specific tree evolved. The tree's requirements do not change when the tree is transported out of its area and planted in a different climate. Trees that originated on the east coast of the United States where the water comes from the sky in the summer, like red maple, still need water in the summer in Sonoma County. Trees that originated in the desert like acacia and African sumac naturally require less water. Other trees evolving in the Mediterranean basin, such as olive trees also require less water.

A curious fact is that coast redwood trees harvest water from fog. In their natural habitat, fog supplies one third of their water.

Roots of trees are roughly divided into surface "feeder" roots and tap roots that penetrate deeply into the earth. Roots grow horizontally out as well as vertically down. Roots will extend beyond the "drip line," the imaginary line descending from the edge of the leaf canopy. Trees planted in sidewalk strips grow their roots under the sidewalk and into the garden.

California natives that do well in the summer, like coast live oak, are able to survive because they have roots going many feet into the earth. In the summer, their surface roots become dormant and they depend on their deep roots.

While some California natives are adapted to summer dry conditions by going dormant in extended dry weather, other California natives need water. Such trees naturally grow near streams and lakes where the roots are in wet soil. Examples of such "riparian" trees are sycamore and poplar.

The location of a tree can be critical to its survival during lengthy dry periods. Much of Sonoma County was originally marshlands. Hills surrounding the valleys are watersheds for streams and rivers which pass under Petaluma and Santa Rosa. Trees in these cities and similar areas might have roots in water either from streams or from a water table not far beneath the surface.

When it does rain, leaves and branches reduce the force of the water and allow it to infiltrate gradually into the soil, reducing runoff and erosion, and recharging the water table.

To determine water requirements first determine the species and the natural root boundaries. Be aware that roots grow well beyond the canopy.

Don't worry about reasonably watering your trees during dry weather. The benefits in water retention, air purification, shade, soil stabilization and the ecosystem far outweigh the costs. On the other hand it makes sense to replace trees with high water requirements with more drought tolerant species.

Trees are part of an ecosystem, and as such provide living creatures with many benefits. They cool our streets and houses. They provide food and shelter for many animals and insects as well as an environment for life in the soil. They retain water, allow water to infiltrate the soil, and they stabilize the soil.

*Tree-wise, Water-wise, Earth-wise.*

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*Certified Arborists have professional education and are certified by the International Society of Arboriculture.