Caring for Old Native Oaks

The BRITTON Fund
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Oak trees are beloved throughout the world, with more than 600 species found in the northern hemisphere. In the West, they occur throughout California and Arizona, from coastal climates to the mountains – in almost all ecosystems with the exception of the high desert.

Mature specimens are prized and add substantial value to a home or commercial property. Yet too often we see a stately giant in a slow state of decline. How can arborists make sure that these priceless treasures survive and thrive?

As a general rule, less is more. ***The closer a tree's native surroundings can be simulated, the better off it will be.*** Keep in mind that the tree's most active roots are close to the surface of the soil—no deeper than one to three feet, with absorbing roots prolific in the top six to 12 inches. Roots can also extend far beyond the "drip line" or canopy of the tree—an astounding two to three times the distance in optimum conditions.

PRESERVATION DURING CONSTRUCTION

Preserving mature oaks starts before any construction project, with a plan and design that keeps the trees' needs in mind. Provide room for leaves and mulch to accumulate on an undisturbed root system. ***Traffic should be directed away from specimen trees when possible, and raising or lowering existing grades avoided***. Placing soil on top of the roots will literally suffocate them, while scraping away the soil will destroy absorbing roots.

Chain link fence is preferable to orange plastic fencing to protect oaks during construction. Photo courtesy: HortScience, Inc.

Once construction begins, the area beneath the tree(s) should be fenced off and strictly off-limits to vehicles, equipment and personnel. Chain link fence is preferable to the commonly seen orange plastic fencing, which can be easily breached. ***Fencing should extend beyond the trees' canopies if possible***. Mulching with a thick layer of wood chips also helps protect the root zone. The site should be monitored and any restrictions enforced immediately.

LANDSCAPING UNDER OAKS

Once the building construction is complete, landscape construction is the next challenge. Again, caring for oaks starts at the design phase. If at all possible, ***landscaping and planting under established oaks should be kept to a minimum***.

If supplemental landscaping is necessary, try to limit plantings to accent plants, rather than blanketing the soil surface beneath the trees' canopies. Aim to disturb the roots as little as possible.

Turfgrass should be avoided, as should plants that require copious summer water such as azaleas, rhododendrons and the like. Ornamental grasses and native, drought-tolerant plants such as *Mahonia* or *Heuchera* (coral bells) are suggested.

IRRIGATION ISSUES

When rainfall is at normal levels, native oaks do not need supplemental irrigation. If landscape plantings require irrigation, use drip lines with emitters placed at each plant rather than sprinkler systems that flood the root zone. Avoid sprays on the tree's trunk at all costs.

During drought years, oaks will benefit from supplemental irrigation, especially during the normal rainy season. If the winter has been dry, irrigate during early spring. Irrigation can continue into summer, but limit cycles to once a month or less. During warmer months take care not to irrigate near the base of the tree as this can exacerbate any possible oak root fungus infections.

The "irrigation zone" should be approximately half way between the tree's drip line and the trunk and extend a few feet beyond the canopy. Irrigate deeply. A soil probe should be used to test the soil moisture content. Avoid woody roots when inserting the probe. The soil should be moist to the depth of approximately 12 inches. Proper irrigation at a slow

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rate can take several hours per tree to avoid runoff and ensure that the water penetrates deeply.

It was long thought that younger mature oak trees would adapt to frequent irrigation. This is false. Although young trees tolerate irrigation, their lives will be shortened if root diseases set in.

PRESERVING ROOT ZONE BIOTA

Oak trees require organic matter around their root systems. ***Do not remove leaf litter if at all possible.*** Fallen leaves provide nutrients slowly as they decompose, help moderate soil temperatures, prevent water loss and encourage earthworms and other beneficial insects in the soil. Oaks are unique in that they can absorb forms of nitrogen in organic litter that other trees cannot uptake.

Mushrooms at a tree's base are a sign that Oak Root Fungus is present. Photo courtesy: Jim Downer.

With sufficient mulch and water, oaks should not require supplemental fertilization. However, if they are located where leaf litter is regularly removed or there is extensive landscaping, supplemental nitrogen might be required.

Broadcast one to three pounds of actual nitrogen per 1,000 square feet in the irrigation zone and water in. Calculate the actual nitrogen in a fertilizer by multiplying the weight of the bag by the percentage nitrogen.

Do not fertilize stressed or declining trees in the mistaken notion that fertilizer is curative. Determine the cause of the stress and make corrections.

COMMON PESTS AND DISEASES

Oak trees are highly susceptible to root and crown rots. When carelessly irrigated, a seemingly healthy tree can suddenly topple over with no warning. Examining the failure will show no visible roots past the trunk.

The two major oak diseases are Crown Rot (*Phythophthora* spp.) and Oak Root Fungus (*Amillaria mellea*). In both cases, signs include slow or reduced growth, dieback, premature leaf drop and general symptoms of decline. ***By the time symptoms such as trunk cankers, canopy dieback, or defoliation occur, it is usually too late to save the tree.***

The best treatment for these oak-destroying diseases is to avoid them in the first place. ***Improper irrigation, root cutting and fill over the root ball are primary predisposing factors for oak diseases.*** Although a variety of insects can appear on oaks, treatment is usually not recommended or necessary with the exception of ambrosia beetles in Northern California and Oak bark beetles and polyphagous shot hole borers in Southern California, which can destroy weakened oaks.

PROPER PRUNING PRACTICES

Oaks need pruning to structure their canopies as young trees in urban settings. ***Mature oaks need little pruning and old specimens require little or no pruning.*** Pruning removes leaves and stored carbohydrates in wood that mature oaks depend on for annual growth. Even deadwood removal is not necessary if that deadwood can become a part of the litter/mulch under the tree.

Mature oak canopies shade the main stem or bole of the tree and rely on that shade to prevent stress. Do not "skirt up" oaks as this places them in higher stress. Let branches provide shade as much as the site will allow.

Many oaks are also reliant on their inner canopies of "shade" leaves which continue to transpire and function during hot summer months. Crown cleaning is deleterious to most oaks if green leaves are removed.

Most oaks are easily attacked by decay fungi and so large cuts should be avoided. Frequent light prunings as the trees reach maturity will ensure good structure. As trees enter old age, respect for their canopies and litterfall zones will ensure their survival.

Further Reading/Links:

Compatible Plants Around Oaks
http://www.californiaoaks.org/ExtAssets/CompatiblePlantsUnder&AroundOaks.pdf

California Oak Disease and Arthropod (CODA) host index database
http://phytosphere.com/coda/

A Field Guide to Insects and Disease of California Oaks
http://www.fs.fed.us/psw/publications/documents/psw_gtr197/psw_gtr197.pdf

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