Bartlett Tree Research Laboratories

PLANT HEALTH CARE REPORT

Blue Oak

Blue oak (*Quercus douglasii*) is an ideal specimen tree on dry slopes of interior valleys throughout California. This low-branching tree reaches heights in excess of 50 feet with a nearly equal branch spread. It provides multi-seasonal interest with bluish leaves in the summer and attractive fall colors of yellow and pastel oranges and pinks. The bark can be furrowed, scaly, or smooth light gray.

Blue oak
Photo courtesy of Wikipedia

Blue oak is well adapted to dry grassland sites. It resists the effects of drought by several means, including the production of a waxy layer on the top surface of the leaf. This layer reduces water loss and provides the bluish color. In extremely hot and dry years, leaves may drop while the tree enters dormancy. This dormancy usually lasts until the next spring.

Blue oak is generally considered a low maintenance tree. It typically requires only occasional pruning to correct structural problems and remove dead branches. With proper care of the root system, including fertilization to correct nutrient deficiencies, and avoiding injury, specimens can live over 100 years.

Blue oak acorns are an important food source
Photo courtesy of Wikimedia

Problems associated with excess irrigation are the leading killers of established blue oaks in the landscape. This species is well adapted to receive only 15–30” of

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rain per year with little of it falling in the summer. When irrigated in the summer, a wide array of activated soilborne fungi attack the roots and root collar of the tree.

In extreme drought years, irrigation can avert early dormancy; however, water must be applied away from the stem with at least four weeks between moderate drenchings. Young or newly planted trees may need more frequent watering. Planting water-demanding species such as turfgrass, azaleas, or impatiens may introduce *Phytophthora* or other root diseases as well as create a moisture regime that will escalate disease development. It is best to grow blue oaks with only native grasses or mulch below the crown.

Soil disturbances within the dripline may reduce tree vigor by damaging the nutrient-storing root system and predisposing blue oak to infection by decay fungi. Soil or mulch against the lower stem or root collar of the tree provides an environment favorable for the development of *Armillaria*, the oak root fungus. *Armillaria* may also infect roots damaged by machinery near the tree.

Another decay fungus that kills blue oak is *Inonotus andersonii*. This pathogen infects both the bark of the tree causing a canker and the wood of the stem. Maintaining tree vigor through fertilization, correcting other soil problems, and irrigating only when necessary, prevents *Inonotus* infection. Often trees with severe internal decay need to be removed for safety reasons before they die.

Monitoring and Treatment Considerations for Blue Oak

Winter

Expose and inspect root collar for problems; add mulch as needed. Sample soil for nutrient and pH levels. *Fertilize, adjust pH, and amend soil according to soil analysis.

Early spring

Apply fungicide treatment to suppress anthracnose and twig blight in wet years or if tree has a history of foliage disease. Monitor for oakworm, scale insects, and other pests; treat as needed.

Mid-spring

Apply second fungicide treatment to suppress anthracnose and twig blight in wet years or if tree has a history of foliage disease.

Late spring

Apply third fungicide treatment to suppress anthracnose and twig blight in wet years or if tree has a history of foliage disease.

Summer

Apply fungicide treatment to suppress powdery mildew as needed. Monitor for leaf-feeding insects; treat as needed. Monitor soil moisture; only irrigate once a month if needed. *Remove dead, dying, diseased, and broken branches. *Reduce or remove branches to promote appropriate structure, but prune conservatively.

Anthracnose is a foliage disease that can cause premature defoliation. Spores of the fungus are spread by splashing water when leaves are tender and expanding. Powdery mildew infects foliage and can lead to deformed growth and early defoliation. If extensive, powdery mildew will reduce the tree's ability to photosynthesize.

In the spring, various leaf-feeding insects attack blue oak. Vigorous trees can withstand several defoliations from these insects; however, weakened trees can be killed by one severe defoliation. The California oakworm (*Phryganidia californica*) is the most serious defoliator.

Approximately 50 gall-forming insects may infest blue oaks. Twenty-five of these insect species have been found in a single tree. They form galls of many shapes, sizes, and colors. Some of the galls cut off the nutrient flow to leaves, causing dieback of twigs and branches. Many of these galls are caused by a group of small wasps—the Cynipids.

Aphids, mealybugs, scale insects, and whiteflies attack blue oak. A common symptom is the production of honeydew that forms a sticky layer on surfaces below the tree. This honeydew is often colonized by “sooty mold” fungi that turn the surfaces black. Mites extract nutrients from the leaves causing a speckled appearance called stippling.

Fall

Monitor for insects or mites; treat as needed.

*Fertilization and pruning may be done during other seasons if necessary.