

## WHITE OAK

*Quercus alba* L.

Plant Symbol = QUAL

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### Alternate Names

stave oak

### Uses

**Wildlife:** Acorns are eaten by squirrels, blue jays, crows, red-headed woodpeckers, deer, turkey, quail, mice, chipmunks, ducks and raccoons.

**Timber:** White oak's wood is strong and durable for staves for barrels, lumber, flooring, and interior woodwork.

**Recreation and Beautification:** White oak is an excellent ornamental tree because of its broad round crown, dense foliage, and purplish-red to violet-purple fall color.

### Status

Please consult the PLANTS Web site and your State Department of Natural Resources for this plant's current status (e.g. threatened or endangered species, state noxious status, and wetland indicator values).

### Description

*Quercus alba* L., white oak, grows from Maine to Minnesota southward to Florida and Texas. It is a large, stately tree that grows up to over 100 feet tall, and 38 to 50 inches in diameter, with a round to wide spreading irregular crown. White oak bark is whitish or light gray, varying from scaly to irregularly platy or ridged and furrowed. Leaves are simple and alternately arranged on the stems; they are 5-6 inches long and have a rounded tip and wedge-shaped base, with evenly notched edges; leaves are bright green above and whitish underneath. Male flowers are green and 2-4 inches long, while female flowers are reddish and they appear as single spikes with the leaves. White oak acorns are oval; about a quarter of the acorn body is covered with a cap which drops off at maturity. There are approximately 120 seeds per pound.

### Adaptation and Distribution

Although found on many soil types, white oak does best on coarse, deep, moist, well-drained, with medium fertility, and slightly acid soils. It is well adapted to heavy soils and north and east-facing slopes. Natural stands are often found in areas with loam and clay soil. White oak is moderately resistant to ice breakage, sensitive to flooding, and resistant to salt spray and brief salt-water submergence. It is sensitive to fire injury, coal smoke, and fly ash deposit on soil surface.

For a current distribution map, please consult the Plant Profile page for this species on the PLANTS Website.

### Establishment

Fall seeding is preferable to spring seeding. White oak acorns have no dormancy and germinate immediately following seeding. Acorns are drilled in rows 8 to 10 inches apart, or broadcast and covered with ¼ inch of firmed soil. In the nursery, seedbed densities of 10 to 35 per square foot are recommended. Fall sown beds should be mulched to protect the seeds and seedlings. Partial shade is beneficial for germination. Seedlings are transplanted after the first year.

Because of its deep root system, white oak is fairly tolerant of a range of soil conditions and fairly drought tolerant when well established; however, because it is taprooted, it is difficult to transplant.

Production in the nursery is difficult as well and growth is slow.

### **Management**

White oak is generally classified as intermediate in its tolerance to shade. Its tolerance decreases as a tree becomes older and larger. Thinning combined with fertilization can boost diameter growth. White oak usually becomes dominant because of its ability to persist for long periods of time in the understory, its ability to respond well after thinning, and its great longevity. Even-aged silviculture is most suitable if oaks are growing in pure or mixed hardwood stands. Reducing both overstory and understory competition is likely to accelerate the growth of seedlings.

### **Pests and Potential Problems**

White oak is attacked by several insects: leaf eaters including gypsy moth (*Lymantria dispar*), orangestriped oakworm (*Anisota senatoria*), oakleaf caterpillar (*Heterocampa manteo*), oak leaf tiers (*Psilocorsis spp.*) and walkingstick (*Diaperomera femorata*); Golden oak scale (*Asterolecanium variolosum*); gall forming insects like Cynipid wasps; and twig pruners, but none of these pose serious insect problems. White oak is also susceptible to perennial cankers induced by bark diseases like *Strumella coryneoides* and *Nectria galligena*; root rot caused by *Armillaria mellea*, *Armillaria tabescens* and *Inonotus dryadeus*; irregular brown areas on leaves and shoots caused by *Gnomonia veneta*; and oak blister caused by *Taphrina caerulescens*. The species has good resistance to oak wilt.

Existing trees are very sensitive to disturbances in their root zones caused by grading, soil compaction, or changes in drainage patterns; if severe, these disturbances can lead to mortality.

### **Cultivars, Improved, and Selected Materials (and area of origin)**

Seeds are commercially available at forest seed companies.

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For more information about this and other plants, please contact your local NRCS field office or Conservation District, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://Plant-Materials.nrcs.usda.gov>>

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