**Introduction**

White oak is a long-lived, slow-growing tree, reaching 60 to 100 feet in height with a spread of 50 to 80 feet in its native bottomland soil. Old specimens can be massive, growing to be several hundred years old. Since trunks can be six feet in diameter leave plenty of room for this tree in the landscape. The trunk flares out at the base lifting sidewalks and curbing if planted in tree lawns less than eight feet wide. The red fall color is fairly reliable year to year and is outstanding among the oaks in USDA hardiness zones 8a and colder areas. Brown leaves may be held on the tree into the early part of the winter.

**General Information**

- **Scientific name:** *Quercus alba*
- **Pronunciation:** KWERTK-us AL-buh
- **Common name(s):** White oak
- **Family:** Fagaceae
- **USDA hardiness zones:** 3B through 8B (Figure 2)
- **Origin:** native to the eastern half of the United States, and southern Quebec and Ontario, Canada
- **UF/IFAS Invasive Assessment Status:** native
- **Uses:** specimen; parking lot island > 200 sq ft; tree lawn > 6 ft wide; highway median; shade
Description

Height: 60 to 100 feet
Spread: 50 to 80 feet
Crown uniformity: irregular
Crown shape: pyramidal, round
Crown density: moderate
Growth rate: slow
Texture: medium

Foliage

Leaf arrangement: alternate
Leaf type: simple
Leaf margin: lobed, parted
Leaf shape: obovate, oblong
Leaf venation: pinnate

Leaf type and persistence: deciduous
Leaf blade length: 2 to 8 inches
Leaf color: blue green and shiny on top, paler green to almost white underneath with slight pubescence
Fall color: red
Fall characteristic: showy

Flower

Flower color: male – yellow-green; female – reddish-green
Flower characteristics: not showy; male – 2 to 4 inch long catkins; Female – spike that emerges from leaf axils
Flowering: mid spring, with the leaves

Fruit

Fruit shape: oval
Fruit length: ½ inch
Fruit covering: dry or hard pubescent acorn; cap is bowl-shaped, thin, flattened, slightly pubescent, and covers 1/3 to 1/2 of the nut
Fruit color: orange-brown
Fruit characteristics: attracts squirrels/mammals; not showy; fruit/leaves a litter problem
Fruiting: early fall

Trunk and Branches

Trunk/branches: branches droop; showy; typically one trunk; no thorns
Bark: whitish, scaly, and flaking in irregular blocks or plates with age, smooth patches are also common
Pruning requirement: little required
Breakage: resistant
Current year twig color: brown
Current year twig thickness: medium, thick
Wood specific gravity: 0.68
**Quercus alba: White Oak**

**Culture**

**Light requirement:** full sun to partial shade  
**Soil tolerances:** clay; sand; loam; acidic; moist but well-drained  
**Drought tolerance:** moderate  
**Aerosol salt tolerance:** high

**Other**

- **Roots:** not a problem  
- **Winter interest:** yes  
- **Outstanding tree:** no  
- **Ozone sensitivity:** tolerant  
- **Verticillium wilt susceptibility:** resistant  
- **Pest resistance:** resistant to pests/diseases

**Use and Management**

White oak has a stately silhouette all year long. It is one of the best-looking oaks in the winter due to the light grey, platey bark and open crown. The trunk is straight with main branches well-attached to the tree making this a long-lived, durable tree for large, wide-open landscapes. Best to leave the area within the drip line totally undisturbed if attempting to save an existing tree on a construction site.

Transplant white oak when the trees are young since the deep-growing tap root in well-drained soil can make transplanting very difficult. White oak grows in sun or partial shade and prefers an acid, moist, well-drained soil. Unfortunately, it is not readily available in the nursery trade. Not adapted to dry areas. Supply new transplants with plenty of water and mulch the area beneath the canopy to eliminate grass competition.

Propagation of oaks by seed is the most common, but horticulturists are developing techniques for vegetative propagation.

**Pests**

None normally serious. In spite of a long list of pests found on the oaks, white oak is long-lived and durable if given enough room to develop.

Galls cause homeowners much concern. There are many types and galls can be on the leaves or twigs. Most galls are harmless so chemical controls are not suggested.

Scales of several types are usually controlled with sprays of horticultural oil.

Aphids cause distorted growth and deposits of honeydew on lower leaves. On large trees, naturally-occurring predatory insects will often bring the aphid population under control.

Boring insects are most likely to attack weakened or stressed trees. Newly planted young trees may also be attacked. Keep trees as healthy as possible with regular fertilization and water during dry weather.
Many caterpillars feed on oak. Large trees tolerate some feeding injury without harm. Trees repeatedly attacked, or having some other problem, may need spraying. Tent caterpillars form nests in trees then eat the foliage. The nests can be pruned out when small. Where they occur, gypsy moth caterpillars are extremely destructive on oaks, especially white oak. Fall cankerworm has been a problem in some years.

Twig pruner causes twigs to drop off in the summer. The larvae ride the twig to the ground. Rake up and destroy fallen twigs.

Lace bugs occasionally suck juices from leaves causing them to look dusty or whitish gray. They are usually not serious.

Leaf miners cause brown areas in leaves. To identify leaf miner injury tear the leaf in two across the injury. If the injury is due to leaf miner, upper and lower leaf surfaces are separate and black insect excrement will be seen.

**Diseases**

None normally serious. In spite of a long list of pests found on the oaks, white oak is long-lived and durable if given enough room to develop.

Anthracnose may be a serious problem in wet weather. Infected leaves have dead areas following the midrib or larger veins. These light brown blotches may run together and, in severe cases, cause leaf drop. Trees of low vigor, repeatedly defoliated, may die. Trees defoliated several years in a row may need spraying, to allow the tree to recover.

Canker diseases attack the trunk and branches. Keep trees healthy by regular fertilization. Prune out diseased or dead branches.

Leaf blister symptoms are round raised areas on the upper leaf surfaces causing depressions of the same shape and size on lower leaf surfaces. Infected areas are yellowish-white to yellowish-brown. The disease is most serious in wet seasons in the spring but it usually does not need to be treated.

A large number of fungi cause leaf spots but are usually not serious. Rake up and dispose of infected leaves.

Powdery mildew coats leaves with white powdery growth but is not a serious problem.

Shoestring root rot attacks the roots and once inside moves upward, killing the cambium. The leaves on infected trees are small, pale or yellowed and fall early. There is no practical control. Healthy trees may be more resistant than trees of low vigor.

Chlorosis due to iron-deficiency occurs on high pH soil.

**Additional References**