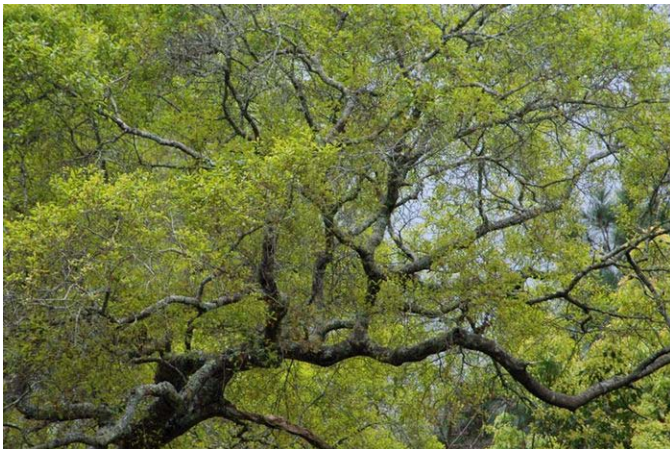


Oak

Oaks (*Quercus species*) are important trees in South Carolina. In general, the deciduous species are more common from the Midlands north, while the evergreens favor conditions in the Coastal Plains. There are many species common throughout the state, but this fact sheet will focus on the following: white oak (*Quercus alba*), water oak (*Q. nigra*), pin oak (*Q. palustris*) and willow oak (*Q. phellos*). There is a brief discussion of southern red oak (*Q. falcata*), black oak (*Q. velutina*), Japanese evergreen oak (*Q. acuta*) and blue Japanese oak (*Q. glauca*).



Mature water oak leafing out in spring
Wendy VanDyk Evans, www.ipmimages.org

General Information on Oaks

Mature Height/Spread: The height and spread varies depending on the species. Sizes range from the smaller Japanese evergreen oak (20 to 30 feet tall) to the massive white oak (50 to 100 feet tall).

Growth Rate: Growth rate depends on the species. **Ornamental Features:** Each species brings its own value to the landscape. The deciduous species are large and often attractive with their massive trunks and limbs, even in winter without

their leaves. Leaves are variable, depending on the species.

Evergreen species have dark, glossy leaves. Acorns are important food for wildlife. Flowers are not showy.

Oaks are divided into two groups. The "red oak" group is characterized by having bristles or points on the leaf and acorns that mature in two growing seasons and sprout in the spring after maturity. This group includes water oak, willow oak, black oak, Japanese evergreen oak, Southern red oak and pin oak. The "white oaks" have leaves with rounded ends and points, with no bristly tips. They bear acorns that mature that same fall. White oak is included in this group.

Landscape Use: Oaks are valuable as shade trees, specimens and street trees. Most oaks need considerable space, and they are generally not well-suited for small home grounds. Evergreens work well in screens and, because they are often smaller, work well on smaller properties. Old oaks are worth preserving.

Problems: Oaks are subject to many pests, depending on the species. Problems include galls, scale insects, borers, leaf spots, bacterial leaf scorch and oak wilt. Oak wilt occurs in only six counties in South Carolina: Chesterfield, Kershaw, Lancaster, Lee, Darlington and Barnwell. Severe mistletoe infestations may damage some oaks. Chlorosis (yellowing of the leaves) can occur from iron deficiency in high-pH soils. Disease and insect control is generally not warranted on large trees. For more information on problems with oaks, refer to the fact sheet [HGIC 2006, Oak Diseases & Insect Pests](#).

White Oak (*Q. alba*)

Mature Height/Spread: White oaks grow 50 to 100 feet tall, with an equal or greater spread. They are pyramidal in youth, with a rounded head in maturity.

Growth Rate: They are slow growers (10 to 15 feet in 10 to 12 years) and can live several hundred years.



White oak leaves showing rounded lobes.
J.S. Peterson. USDA NRCS NPDC. USDA ARS National Arboretum, Washington, D.C. June 13, 2002.

Ornamental Features: Old specimens can become massive, with trunks 6 feet in diameter. The bright green leaves become dark wine-red to purplish in the fall. Brown leaves may cling to the tree until late winter. The brown acorns provide important food for wildlife.

Landscape Use: White oak is most often used as a shade tree or lawn specimen. It does well as a lawn specimen provided it is given plenty of space. It also does well in naturalized areas. When possible, allow the lower limbs to droop to the ground. It grows in sun or partial shade and prefers moist, acidic and well-drained soils, although it is adaptable. It tolerates occasionally wet soils and moderate drought. As white oak is difficult to transplant, move only when the tree is small. For best results, plant only in the spring.

Problems: White oak is more resistant to diseases and insects than other oak trees (disease resistance means that infections are few, do not progress very far or do not occur). It may suffer from chlorosis due to iron deficiency in high-pH soils.

The trunk flares out at the base, so avoid planting this tree near driveways, sidewalks or patios. When attempting to save an old oak on a construction site, leave the area within the drip line totally undisturbed, as white oak is highly sensitive to disturbance. Prune in winter or early spring. Remove dead or damaged wood any time of year.

Water Oak (*Q. nigra*)

Mature Height/Spread: Water oak grows 50 to 60 feet tall and wide.

Growth Rate: A rapid grower, it will grow about 25 feet in 10 years.

Ornamental Features: Leaves are glossy. Young leaves have variable shapes; tips may be rounded or bristle-tipped. Fall leaf color is yellow. Leaves persist late into fall and winter. Acorns are abundant and provide food for wildlife.



Water oak leaves
Clemson University Horticulture Department

Landscape Use: Water oaks are used as shade trees, in buffer strips and along highways. They are adapted to wet, swampy areas, such as along stream banks and ponds, but they tolerate most well-drained sites. They prefer slightly alkaline to acidic soils and sun or partial shade. They transplant easily.

Problems: Water oaks are subject to several disease and insect problems, including galls, leaf spots, scale insects and borers. Mistletoe can become severe and damage the tree.

It is more weak-wooded than most oaks and prone to damage from wind, snow and ice. It does not resist decay well, and damaged wood will begin to decay and decline. Trunks often rot by the time a water oak is 50 years old. Shallow, spreading root systems compete for water and nutrients in the soil, causing problems with grass or other plants planted beneath a water oak. In warmer climates leaves drop all winter, making raking a constant task.

Train this tree to a central trunk, pruning to keep the main branches spaced 2 feet or more apart. Prune regularly to avoid making large pruning wounds that may cause decay. Lower branches droop as trees grow older. Prune as needed for clearance.

Pin Oak (*Q. palustris*)

Mature Height/Spread: Pin oak grows 60 to 70 feet tall and 25 to 40 feet wide. It has a pyramidal shape usually with a central trunk.

Growth Rate: A rapid grower, pin oak will grow about 18 inches per year.



Pin oak foliage
Chris Evans, University of Georgia, www.ipmimages.org

Ornamental Features: The pin oak has a straight trunk and small, well-attached branches. The lower branches droop, the middle branches grow horizontally, and the upper branches are upright. The glossy, dark green leaves change to bronze or red in the fall. Some brown leaves cling to the tree throughout the winter.

Landscape Use: This very popular tree is used for street tree plantings, lawn specimens and shade trees. Remove lower branches when locating this tree in high-traffic areas. Persistent lower branches can be attractive in lawn settings.

Pin oaks grow in sun or partial shade and require acid soils that are moist, rich and well-drained. They do not tolerate high-pH soils. They are easy to transplant and grow.

Problems: The most common problem is chlorosis due to iron deficiency in soils with a pH greater than 7.0. Chlorosis may not become evident until several years after planting the tree. Bark is thin and easily damaged by mechanical impact.

Other problems may include galls, oak wilt, cankers, bacterial leaf scorch, two-lined chestnut borer and orange-striped oakworm.

In winter or early spring, prune drooping branches to allow clearance beneath the tree. Remove dead or damaged wood any time of year.

Willow Oak (*Q. phellos*)

Mature Height/Spread: Willow oak is pyramidal in youth and rounded in maturity. It grows 60 to 75 feet tall and 40 to 60 feet wide.

Growth Rate: A rapid grower, it grows 25 feet in 12 years.



Willow oak leaves
Clemson University Horticulture Department

Ornamental Features: The dark green leaves are narrow and willow-like. They change to yellow-brown in the fall. The acorns are not as messy as other oaks.

Landscape Use: The willow oak is often used as a shade tree or street tree, in buffer strips and along highways. A tough tree that adapts well to urban

conditions, it does not tolerate high-pH soils where it can develop chlorosis due to iron deficiency. It thrives in constantly wet-to-moist acidic soil, and yet tolerates drought. It grows best in full sun. While this tree transplants easily, it should be transplanted while dormant, in late winter, as it reportedly does not transplant well in fall.

Problems: Willow oak has few major problems. Root rot can be a problem in small urban spaces. Other problems include borers, orange-striped oakworm, trunk canker and iron chlorosis.

Other Common Deciduous Oaks

Black Oak (*Q. velutina*): Black oak grows 50 to 60 feet tall. The spread is variable; it can be narrow or wide-spreading. This oak can live 150 to 200 years. It grows in sun to partial shade, and while it prefers moist, rich, well-drained acid soils, it tolerates poor, dry, sandy soils. Black oak is difficult to transplant. Less attractive than many other native oaks, it is seldom used as an ornamental. It is, however, worth preserving on site developments.

Southern Red Oak (*Q. falcata*): Southern red oak is common in South Carolina, especially in the Piedmont. It grows 70 to 80 feet tall. A moderately fast grower, it can grow about 25 feet in 20 years. This oak grows in the poorest soils in the South. Seldom used as an ornamental, it is worth preserving on site developments.

Evergreen Oaks

Japanese Evergreen Oak (*Q. acuta*): Japanese evergreen oak is best adapted to the Coastal Plains, although it will survive in protected areas up through the Piedmont. It is small for an oak (20 to 30 feet tall and 15 to 20 feet wide) with a shrubby growth habit. It prefers sun to partial shade and moist, rich, acid, well-drained soils. This oak works well in screens, as a lawn specimen and shade tree.

Blue Japanese Oak or Ring-Cupped Oak (*Q. glauca*): Blue Japanese oak is best adapted to the Coastal Plains, although it will survive in protected areas up through the Piedmont. It grows 25 to 40 feet tall and 25 to 35 feet wide. This oak grows best in full sun and prefers moist, acid, well-drained soils. It works well in groupings and screens.

Note: Chemical control of diseases and insects on large trees is usually not feasible since adequate coverage of the foliage with a pesticide cannot be achieved.

Prepared by Debbie Shaughnessy, HGIC Information Specialist, and Bob Polomski, Extension Consumer Horticulturist, Clemson University. (New 06/99. Images added 11/06.)

This information is supplied with the understanding that no discrimination is intended and no endorsement by the Clemson University Cooperative Extension Service is implied. All recommendations are for South Carolina conditions and may not apply to other areas. Use pesticides only according to the directions on the label. All recommendations for pesticide use are for South Carolina only and were legal at the time of publication, but the status of registration and use patterns are subject to change by action of state and federal regulatory agencies. Follow all directions, precautions and restrictions that are listed.