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## Quercus rubra

**Leaf Color** Green

**Fall Color** Red

This plant has attractive fall colors.

**Fruit Color** Brown

The fruit is dry, oval and round.

### Environment

This plant tolerates drought and salt well.

This plant will grow in very dry soil.

Suitable soil is well-drained/loamy, sandy or clay.

The pH preference is an acidic to slightly alkaline (less than 6.8 to 7.7) soil.

### Landscape Uses

- Street tree

**Quercus rubra** syn. *Quercus borealis*

Red Oak, Northern red Oak

**Fagaceae (Beech)**

Nomenclature: Royal Hort. Society

### Attributes and Features

- Attracts birds
- Inconspicuous blooms
- Inconspicuous fruit
- Fruit can be a litter problem
- Fruit attracts animals
- Ozone tolerant

**Type** Tree, woody plant

**Hardy range** 3B to 8A

**Height** 50' to 75' / 15.20m to 22.80m

**Spread** 50' to 75' / 15.20m to 22.80m

**Growth rate** Fast

**Form** Rounded

**Exposure** Full sun

**Persistence** Deciduous

**Bloom Color** Brown

### Native Habitat

Best growth is on deep, moist well-drained silts and loams in eastern North America on northern and eastern middle to lower slopes and valleys. It grows at elevations to 3500 feet in the north and 5500 feet in the south.

### Additional Notes

This plant typically grows with one trunk.

This plant has low flammability.

National champion is 134 x 81 feet in North Carolina. At one time, the champion resided in my (Dr. Gilman) home town of West Orange, NJ.

### Culture Notes

Red Oak is one of the most commonly planted large shade trees in America. It is widely adapted to many areas of the country, including the high plains and Rocky Mountains, tolerating pollution, drought and compacted soil fairly well. Best growing conditions are a well-drained soil with an acid pH. Chlorosis often develops if the soil pH is above about 7.5. Moderate tolerance to salt spray makes it a good choice for planting near the ocean but certainly not on the beach or along the beach road. Locate it at least several hundred feet back (preferably farther) from the direct spray from the ocean. It tolerates high soil salt concentrations (up to 8 mmhos/cm) originating from de-icing salt applications better than many other plants.

This is the state tree of Iowa and New Jersey. Trees are very tolerant of urban conditions and have survived and grow well along streets.

The tree withstands city conditions well but not high pH soils. Despite this it is better in high pH soils than the chlorosis-susceptible Pin or Willow Oak. Moderately drought-tolerance in most soils, Red Oak is well-suited as a street tree and in other areas with at least fair soil. It recovers best when transplanted in the spring, not the fall. Trees produce an allelopathic chemical that retards growth of Sweetgum. Trees compartmentalize decay well.

Existing trees are often left near new homes and other buildings in new developments. Roots damaged by construction equipment decay quickly. This can leave the plant with few supporting roots in the years following construction despite a green canopy. The tree could fall over as a result. In addition, branches that are suddenly exposed to unlimited light when nearby trees are removed begin to grow rapidly. As a result, they could become too long and break. Keep them shortened with reduction cuts to help prevent breakage.

Wood weighs about 63 pounds per cubic foot. Oak wood is considered ring porous.

### **Maintain adequate mulch area**

Clear all turf away from beneath the branches and mulch to the drip line, especially on young trees, to reduce competition with turf and weeds. This will allow roots to become well established and keep plants healthier. Prune the tree so trunks and branches will not rub each other. Remove some secondary branches on main branches with included bark. This reduces the likelihood of the main branch splitting from the tree later when it has grown to become an important part of the landscape. Locate the tree properly, taking into account the ultimate size, since the tree looks best if it is not pruned to control size. The tree can enhance any landscape with its delightful spring flush of foliage. It can be the centerpiece of your landscape if properly located.

Due to the coarse root system, the tree is often raised in fabric containers in field soil, is regularly root pruning in the field, or is grown in air root-pruning or copper root-pruning containers. The container systems allow for less circling roots along the edge of the root ball; the field systems may result in a greater portion of the root system harvested.

### **Spring transplanting best**

Balled-and-burlapped and bare root trees recover best when transplanted in late winter or early spring in the cooler portions of North America. This usually corresponds to the initiation of root growth.

### **Pests, Diseases and Damaging Agents**

**Pests:** The potential list is long. Galls cause homeowners much concern but usually are of little consequence. Scales of several types can infest twigs. Aphids cause distorted growth and deposits of honeydew on lower leaves. Boring insects are most likely to attack weakened or stressed trees. Many caterpillars feed on Oak. Where they occur, gypsy moth caterpillars are extremely destructive on Oaks. Fall cankerworm has been a problem in some years. Twig pruner causes twigs to drop off in the summer. Lace bugs occasionally suck juices from leaves causing them to look dusty or whitish gray. Leaf miners cause brown areas in leaves. Dogwood borer enters the trunk through wounds such as pruning cuts and other mechanical injuries.

**Diseases:** Anthracnose may be a serious problem in wet weather. Bacterial leaf scorch causes leaf scorch, premature browning, and gradual decline of trees. There is often a yellow line or hollow separating the scorched tissue from green tissue. This disease can be devastating, especially if a street or property is planted in a monoculture. Infection probably spreads by root grafts and certainly by leafhoppers, spittlebugs and sharpshooters. Pruning tools are not likely to spread the disease. Neither fertilization nor pruning have any effect on treatment of the disease. There may be chemical treatment that can reduce symptoms but nothing will cure an infected tree. Bacterial leaf scorch can kill trees in several years. Chipped branches from infected trees can be used as mulch without danger of spreading the disease.

Canker diseases attack the trunk and 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. A large number of fungi cause leaf spots but are usually not serious. Powdery mildew coats leaves with white powdery growth and is generally harmless. Shoestring root rot attacks the roots and once inside moves upward, killing the cambium. Oak wilt kills Red Oak trees.

Most oaks are considered resistant to verticillium wilt.

This genus is sensitive to fluoride air pollution, sources of which include glass and brick manufacturing plants and other facilities that heat or treat with acid materials containing fluoride. Symptoms due to fluoride injury are more prominent on the side of the plant facing the pollution source. In deciduous plants, symptoms include leaf browning along the margins of the leaves. A dark brownish band may appear along the boundary between healthy green tissue and the affected brown tissue. Eventually, the entire leaf may turn brown. In conifers, the tips of the current year's needles turn reddish brown. Older needles are typically unaffected. If you suspect fluoride has injured this plant, look in the neighborhood for gladiolus plants. They serve as indicator plants for fluoride air pollution damage because they

are very sensitive to it. Other sensitive plants include ash, maple, oak, white pine, poplar, and redbud. Plants that resist injury include birch, flowering cherry, dogwood, hawthorn, American linden, juniper, pear, spirea and sweet gum.

**Special Notes**

This plant has aggressive roots.

