

Pin Oak (*Quercus palustris*)

A deciduous tree from the Beech Family (Fagaceae)



zone

mature spread

mature height

growth rate

sun

tree shape

soil type

4-8

40'

70'

medium to rapid

full partial

pyramidal

moist and acidic



Pin Oak, an Oak distributed from the middle Atlantic states westward to the edge of the Great Plains, and encompassing most of the Midwest, is often seen in the wild in wet areas (an alternative common name is Swamp Oak). In floodplains, wetlands, and low areas, Pin Oak may form nearly pure stands, and is distinctive in its dense growth habit: ascending upper branches, horizontal middle branches, and strongly downswept lower branches.

In urban areas, Pin Oak suffers from a quirk of commercial nursery production, in that most trees originate from southern sources with very acidic soils, and when transplanted to neutral or alkaline soils, suffer tremendously from leaf chlorosis with a resulting loss of vigor. The lesson still not learned is to use local seed sources for growing trees, when there will be a problem of any type.

As a general rule, Pin Oak requires moist and acidic soils to reach its full growth potential, which is a medium to rapidly growing tree (for shade, knotty timber, or quick establishment in naturalized areas). It is probably the favorite Oak to use as a shade tree, because its fibrous root system re-establishes quickly after root pruning, and because of its symmetry and the potential for quick shade with russet fall color. It thrives in full sun to partial sun (but is shade tolerant in youth), is located naturally in zones 4 to 7, but can be grown in zones 4 to 8.

Pin Oak gets its common name from the practice long ago of "pinning together" the timbers of a barn with the tough, resilient branchlets of this tree. Under optimum conditions in the Midwest, Pin Oak may reach 70 feet tall and 40 feet wide when located in the open. As a member of the Red Oak group and the Beech Family, it is related to the Beeches, Chestnuts, and other Oaks.

Planting Requirements - Pin Oak, when found as a native tree in its local ecosystem, is genetically adapted to the pH of the soil in that area. However, acorns, bare root saplings, or balled and burlapped trees often come from non-local sources, and are usually taken from areas with acidic soils. If planted in areas with neutral or alkaline soils, a chlorotic and sickly tree will result.

Potential Problems - Chlorosis is the major problem encountered, due to siting some Pin Oaks into alkaline soils (also referred to as high pH soils, low acidity soils, sweet soils, or calcareous soils). Under these conditions, Pin Oak cannot transport iron from the root zone to the above-ground structures, resulting in poor nitrogen utilization, which results in leaves that cannot synthesize enough chlorophyll (the green pigment of leaves) to conduct efficient photosynthesis, without which sugars, energy, and other biological compounds are not produced. Under these conditions, loss of vigor is a foregone conclusion.

Pin Oak may also exhibit galls due to insect feeding, and may suffer from the usual array of pests and pathogens that can affect many Oaks.

Leaf Identification Features



Pin Oak, when compared to Scarlet Oak, is very similar in many characteristics, including the

shape of its leaves. However, it is known as the Oak with leaves that have U-shaped "open" and spreading sinuses between the lobes, as compared to the "closed" C-shaped sinuses of Scarlet Oak. Unfortunately, variation as well as hybridization occurs, so identification by leaves alone is not sufficient.

The sinuses of Pin Oak vary greatly as to their depth and width, even on the same tree. While some of the alternate, broadly elliptical leaves have shallow sinuses and wide single-bristled lobes, others have deep sinuses, with their lobes having many bristle-tipped teeth.



Fall color of the foliage usually occurs as brown to russet-brown, but sometimes displays delightful shades of red and crimson. Chlorotic leaves and reduced overall vigor will often appear in soils with an alkaline or even neutral pH. Many young pyramidal trees will retain almost all of their dead leaves in winter, but older specimens retain just a few in their lower, innermost canopy.



Pin Oak is monoecious, having chartreuse to golden catkins in mid-spring as the new foliage is just beginning to emerge. By being a member of the Red Oak group, the fertilized miniature female flowers on the same tree take two years to mature as acorns. However, they are not obvious until the second year, when they slowly fill out during the summer and ripen in early to mid-autumn. Pin Oak does not have the circled pattern at the ends of its acorn tips like the closely related Scarlet Oak does on its fruits.



Twigs of all Oaks terminate in a cluster of buds, and those of Pin Oak are generally small, on reddish-brown twigs. Pin Oak is generally regarded as having the thickest succession of branches coming off of its straight trunk of any Oak. It also has the twiggiest branchlets, and the thinnest bark (although Sawtooth, Scarlet, and Shingle Oaks are also thin-barked). As its thin bark matures, it becomes slightly ridged and shallowly furrowed, with the dark gray to gray-brown color that is characteristic of members of the Red Oak group.



Since Pin Oak is often subject to chlorosis in disturbed urban soils of high pH, a short-term remedy for the resulting iron deficiency is to drill holes in the wood and insert iron caplets. The results can be seen in a cross-section of a tree trunk, as the water-conducting elements transmitted the iron upward into the remainder of the tree. This occurred a number of years ago, when the current heartwood was then sapwood, closer to the bark.



The growth habit of young and middle-aged Pin Oaks is characterized by ascending upper branches, horizontal middle branches, and downswept lower branches. This strongly resembles that of Scarlet Oak in its youth, but the upper canopy of Pin Oak is generally not as open and spreading with age as is that of Scarlet Oak.