

Arboretum Review



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LEON C. SNYDER

Oaks

The genus *Quercus*, to which the oaks belong, is one of the largest in total number of distinct species. Approximately 50 species are native in North America. Even more inter-specific hybrids are reported. Although the oaks have never been planted extensively in landscape plantings, we should make every effort to preserve native specimens in landscape settings. Certainly there is no more stately or beautiful tree than a well grown white oak. Even the bur oak is appreciated for its sturdy branching habit. Part of the problem in using oaks for landscaping has been the general feeling that oaks are slow growing and difficult to transplant.

In our trials here at the arboretum we have not experienced any difficulty in establishing oaks that were nursery grown and properly root pruned. The rate of growth has been comparable to other commonly planted shade trees.

Another problem that might deter one from planting an oak is the fear of oak wilt, a disease that takes a heavy toll of our native oaks. This disease is most severe on the red oaks. It spreads easily through underground root grafts. In nature, where oak trees are growing closely together, the disease can spread rapidly with devastating results. In landscape plantings, where oaks are spaced properly and interspersed with other tree species, the losses from oak wilt are minimal. The following oak species are in our arboretum collection.

***Quercus acutissima* (Sawtooth Oak)**—This native of China, Korea, and Japan has not proven to be very hardy under our conditions. Trees planted in 1963 killed back each winter and were removed in 1972. Trees planted in 1970 are still alive and came through their first winter with no injury. Further testing is needed to determine whether this tree has any merit.

***Quercus alba* (White Oak)**—The sturdy branches of one of our most beautiful native trees form a spreading open crown. The bright green leaves with rounded lobes turn a deep vinous-red or violet-purple color in the fall. The bark is shallowly fissured. Occasionally an anthracnose disease affects the leaves in a wet spring, but there appears to be no permanent injury to the tree. The white oak prefers a well drained soil and does best on the heavier soil types. We are fortunate to have many fully grown white oaks in the arboretum.

***Quercus bicolor* (Swamp White Oak)**—The swamp white oak is native throughout the northeastern United States, barely getting into the Twin Cities area. Although it grows in wet soils it will grow better on a well drained site. The tree is rather narrow with a dense rounded crown. The leaves are a dark, glossy green above, and light colored beneath. The grayish-brown bark is deeply furrowed. A tree on the Madison campus of the University of Wisconsin is quite striking with its glossy green foliage. The trees planted in the arboretum are growing well and show no signs of winter injury. The rusty brown fall color of leaves is not striking. No study has been made of the root system but plants growing in wet soils do not develop a characteristic tap root. This may account for the relative ease of transplanting this oak.



Quercus bicolor (Swamp White Oak)

***Quercus coccinea* (Scarlet Oak)**—Our trees, received from an eastern nursery in 1963, failed to grow but sprouted from the base. A single sprout was selected on each tree and these are now about 12 feet tall indicating a satisfactory rate of growth. No winter injury has been observed. The scarlet oak is quite similar to our native red oak and develops an open crown. This oak develops a brilliant scarlet coloration in the fall. It probably will be desirable to transplant this oak with a ball of soil and not try to move too large a tree.

***Quercus ellipsoidalis* (Northern Pin Oak)**—This is the common oak on the acid sandy soils of north central Minnesota and is often confused with the preceding species which does not occur naturally within the state. Where the fertility is low, the tree is shrub-like. On better soils it often grows to a height of 50 feet. The leaves are deeply lobed, and the lobes are pointed. The fall color on this oak is usually a good reddish brown. This oak is seldom planted and like the red oak it is susceptible to the oak wilt. A few trees are native in the arboretum.

***Quercus gambelii* (Gambel Oak)**—This is a mountain oak native in the mountains of Colorado, southwestern Wyoming, Utah, and southward. The trees in their native habitat are usually quite scrubby, seldom reaching more than 15 or 20 feet. In our trials the Gambel's oak has not done well. The trees kill back each winter and are little larger now than they were in 1963 when they were planted. It is doubtful whether this oak will be of any value in this area.

***Quercus imbricaria* (Shingle Oak)**—This oak is native from New Jersey, Michigan, and Iowa southward. Plants obtained from Missouri in 1969 were planted in the arboretum in 1971. Some tip kill occurred each of the two winters that it has been planted but the plants made good growth in 1972. This is a beautiful oak

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that is pyramidal when young but opens up when mature. The leaves are of a uniform size and a lustrous green color on the upper side. The fall color is a rich yellow to russet. Donald Wymen, Arnold Arboretum, Boston, Massachusetts, considers this to be one of the most beautiful of the oaks. We should look for the hardiest seed source of this oak if our present selections prove to be not hardy. Good specimens of this species are growing at Northfield.

Quercus macrocarpa (Bur Oak)—This is one of our most rugged native oaks. The deeply furrowed bark and corky twigs are quite characteristic. There is no brilliant fall coloration on this oak, the leaves turn a rusty brown before dropping in the fall. Although one would probably not plant this oak, every effort should be made to preserve existing trees in a landscape setting.

An upright form of the bur oak has been selected from a native stand near Aitkin by Al Johnson of our staff. Grafted plants have been planted in the arboretum. An upright oak would be unique among our native oaks.

Quercus mongolica (Mongolian Oak)—This oak is a native of eastern Siberia, northern China, Korea, and northern Japan. Our plants were obtained from the Morden Experiment Station at Morden, Manitoba. Trees planted in 1955 are now about 20 feet tall. This is a very hardy, sturdy tree. The habit of growth and the leaves resemble a miniature bur oak.

Quercus palustris (Pin Oak)—This is the most widely planted oak in the midwest. Its symmetrical pyramidal form makes it quite popular for boulevard plantings. This oak requires an acid soil and its use in Minnesota will be limited. There are a few very fine specimens in the Twin Cities and plantings in the arboretum are doing well. This is one of the most picturesque of the oaks because of its habit of growth. The upper branches are upright, the middle ones horizontal, and the lower ones drooping, thus giving the tree a beautiful pyramidal form. This is one of the easier oaks to transplant due to its fibrous root system. The fall color is a scarlet red. The 'Sovereign' pin oak is a recent selection that maintains its branches in an upright position. Our specimens have not done as well as the species.

Quercus prinoides (Dwarf Chinkapin Oak)—This is a shrub type oak that seldom reaches a tree form. It is an eastern species but has been reported from southeastern Minnesota. The leaves are oblong with a wavy margin. Our plants, obtained from the Morton Arboretum, Lisle, Ill., have not performed particularly well. Seedlings planted in 1958 have all died and a seedling started in 1963, although still alive, has made little growth. An effort should be made to locate a native stand and grow plants from it.

Quercus prinoides var. acuminata (Yellow Chestnut Oak)—This oak grows throughout the eastern United States, into southern

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Agricultural Extension Service
Institute of Agriculture
University of Minnesota
St. Paul, Minnesota 55101

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Quercus rubra (Red Oak)

Ontario, and westward to Iowa and southeastern Minnesota. Our plants came from seed collected at Bagley, Wisconsin, in 1969. Our plants showed some tip kill this spring but this was probably due to the plants not being fully established rather than to a lack of hardiness.

Quercus prinus (Chestnut Oak)—This is another eastern species that develops a rounded crown. The leaves have toothed margins. The fall color is reported to be a rich crimson but our specimen develops a brown fall coloration. Our specimen was grown from seed collected in Massachusetts. The tree, planted in 1969, is now about 12 feet tall.

Quercus robur (English Oak)—This oak is of borderline hardiness. Of a dozen or more seedlings planted in 1961, only three are still living. The largest of these is 12 feet tall and growing quite well. The leaves have rounded lobes and develop a yellowish-brown fall color. A narrow, upright form, 'Fastigiata' has failed in two separate attempts. A plant of the fastigiata form is growing near the Minnesota river in a sheltered location. Our failures may be due to the condition of the plants when received.

Quercus rubra (Red Oak)—This, one of our common native species, grows to be a very large tree. The leaves have pointed lobes and a good dark green color. The fall color can be an attractive red but some years the leaves merely turn a yellowish-brown color before dropping. Dead branches often appear on mature trees, necessitating frequent pruning. Where trees are now growing an effort should be made to preserve them, but due to their susceptibility to oak wilt this is not the best species to plant.

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