



United States Department of Agriculture
Natural Resources Conservation Service
Plant Materials Program

'Lippert' Bur Oak

Quercus macrocarpa Michx.

A Conservation Plant Release by USDA NRCS Manhattan Plant Materials Center, Manhattan, Kansas



Figure 1. Photograph of bur oak foliage and acorn production. Photographed by Alan Shadow, East Texas Plant Materials Center in Nacogdoches, Texas.

'Lippert' Bur oak (*Quercus macrocarpa* Michx.) is a cultivar released in 1994 in cooperation with Kansas State and Extension Forestry.

Description

Bur oak is a medium to tall statured, deciduous tree that is quite widespread in the eastern half of the continental United States. This spreading tree is capable of 80 to 100 foot height on good soil sites. Dark green, lustrous mature foliage is slightly pubescent on its upper surface with the lower leaf surface whitish green and densely pubescent. Leaves are simple, alternately attached and deeply lobed. Individual leaves are large from 6 to 10 inches long and 4 to 6 inches wide. Flowers are monoecious and arrive in late April with initial leaf expansion. Staminate (male) catkins arise from the base of new growth or from buds near the tip of old growth. Pistillate (female) flowers are located in clusters of 1 to 4 in the leaf axils on new growth wood. Acorns are produced in approximately 10 to 15 years after the oaks are planted in a managed production situation. In nature, bur oaks commonly produce acorns at 35 years of age. Acorns are attached to the stem directly or by short stalks. Acorns consist of a fringed cup that surrounds the nut and can cover from half to two thirds of the nut. Nuts are broad and ovoid, 1 to 1.5 inches long and an inch or slightly more in diameter. Bur oaks main trunk is massive with low hanging large branches. The bark is thick, gray-brown and deeply furrowed with long, flat topped ridges. The wood is hard, heavy, durable, pale brown with narrow pale sapwood.

Source

Lippert was selected from a collection of four bur oak accessions assembled and evaluated at the Manhattan Plant Materials Center (PMC) from 1972-1989. The original collection of the germplasm was made by Robert D. Lippert and W.C. Young in Payne County, Oklahoma. The Lippert selection was based on its overall vigor, superior growth rate, excellent form, and seedling vigor.

Conservation Uses

Lippert is a multiple use tree which includes tall, deciduous component of windbreaks, trees for riparian buffer protection, plantings for farmsteads and parks and use by wildlife for food and shelter. Acorns are consumed by white tail deer, turkeys, squirrels, wood ducks and other wildlife species. With maturity trees provide many bird species with roosting, perching, and nesting sites.

Area of Adaptation and Use

Lippert's survival and adaptation range is from the panhandle of Texas, to central Oklahoma, then north to Manhattan, Kansas. The known area of adaptation is all of Oklahoma and eastern Nebraska and Kansas. Some plantings in western Kansas have proven hopeful for a westward expansion of its adaptation range.

Establishment and Management for Conservation Plantings

Planting site should be fallowed a year prior to planting Lippert bur oak seedlings. Container grown, two year old stock cultivated in tall, narrow pots is the preferred type of planting stock. Plant dormant stock in the spring after frost has left the soil and high moisture content remains. Initial growth is normally slow for the first two to five growing seasons and then more moderate as the seedlings become established. Seedlings produce a vigorous taproot that allows this species to utilize sub-surface moisture and provides some drought tolerance. Protection from wildlife is encouraged for all bur oak plantings since deer and rabbits can cause damage or mortality to seedlings. Its slow initial growth warrants the use of weed fabric or other forms of vegetative suppression of fast growing, annual weed species. Supplemental water can improve seedling survival, especially on droughty sites. However, supplemental fertility is probably not necessary for most conservation plantings. Mulching of newly planted stock will conserve moisture and inhibit weed growth for juvenile bur oak seedlings.

Ecological Considerations

Reported insect problems include oak webworms (*Archips ferveridona*) whose larval stage feeding causes major leaf damage. The oak lacebug (*Corythucha arcuata*) can cause leaf yellowing and eventual defoliation in drought situations. Lacebugs complete an egg to adult lifecycle in 30 to 45 days and can produce several generations in a year. This high rate of reproduction can cause serious problems in confined shelterbelt situations. Coleoptera of the genera *Conotrachelus* and *Curculio* usually cause the most damage to acorns. Other insect pests associated with bur oak are leaf miners, leaf rollers, June beetles and variable oakleaf caterpillars. Two known fungal pathogens of bur oak are oak wilt (*Ceratocystis fagacearum*) and Strumella canker (*Strumella coryneoidea*). Oak wilt is a vascular disease that causes wilted foliage in individual branches in the crown of the tree. The eventual death of individual branches over several years leads to a stag-headed appearance in the crown of bur oaks. Some bur oak trees may die from this disease, but a third to half of the infected trees may recover and grow normally. Root grafts between infected and healthy trees are a major route of dispersal for the fungal pathogen. Control of the spread of this disease is focused on the prevention or elimination of root grafts between trees. Not a very practical solution in forest or shelterbelt situations.

Seed and Plant Production

Seedlings of Lippert bur oak are easy to propagate from seed; the average germination rate exceeds 90 percent. Plant the acorns by conventional nursery methods in 8 to 10 inch rows at a depth of 0.25 to 1.0 inch in the fall of the year to ensure good germination. Desirable seedbed densities are 10 to 15 seedlings per square foot. Fall seeded beds should be mulched to protect the seeds and seedlings. Partial shade is considered beneficial to germination. Usually seedlings are lifted and transplanted after the first year's growth. Year old seedlings average 12 to 20 inches tall. Bur oak acorn harvest and storage for extended periods of time are not recommended. However, acorn moisture levels are paramount when it comes to maintaining the seed unit's health and viability in storage.

Bur oak acorn viability is significantly affected by moisture content and optimum germination will occur for acorns stored at 44% moisture levels. Optimum storage temperature is 34° F although acorns can tolerate subfreezing temperatures of 28° F with little loss of viability. The interval of 2 to 3 years between good seed crops is standard for bur oak and there are approximately 75 acorns per pound of seed. There are 30 to 35 pounds of seed per bushel of acorns. Oaks are generally difficult to propagate vegetatively.

Availability

For conservation use: Lippert is not available in the commercial nursery trade.

For seed or plant increases: The Manhattan Plant Materials Center maintains breeder or foundation seed or seedlings of Lippert bur oak.

For more information, contact:
Manhattan Plant Materials Center,
3800 South 20th Street
Manhattan, Kansas 66502
(785) 539-8761 FAX (785) 539-2034
<http://www.plant-materials.usda.nrcs.gov>

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For additional information about this and other plants, please contact your local USDA Service Center, NRCS field office, or Conservation District <<http://www.nrcs.usda.gov/>>, and visit the PLANTS Web site <<http://plants.usda.gov>> or the Plant Materials Program Web site <<http://www.plant-materials.nrcs.usda.gov>>

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