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***Quercus macrocarpa var. olivaeformis***  
**Burr Oak, Mossy Cup Oak**  
**Fagaceae (Beech)**

**Type** Tree, woody plant

**Hardy range** 3A to 8A  
**Height** 50' to 75' / 15.20m to 22.80m  
**Spread** 50' to 80' / 15.20m to 24.40m  
**Growth rate** Average  
**Form** Rounded and spreading or horizontal  
**Exposure** Full sun  
**Persistence** Deciduous

**Bloom Color** Brown  
**Bloom Time** Spring

**Native Habitat**

Limestone ridges and dry sandy plains and grasslands of the middle portion of North America. Also appears as a bottomland tree at the fringes of the floodplain in many parts of its range.

**Crown, Branch and Twig**

This plant is symmetrical with a coarse texture and has a dense crown.  
This plant's bark is showy.  
Branches or twigs have a thick and fibrous surface.

This plant typically grows with one trunk.  
This plant has low flammability.

**Culture Notes**

Bur Oak is 'one tough customer'! Well-adapted to alkaline soils, poor drainage, and high clay content, Bur Oak is also very drought-tolerant, perhaps the most drought tolerant of the oaks. The tap root dominates the root system on young trees growing in well-drained soil. As with most trees grown in urban areas, the tap root becomes much less prominent as the tree grows older, giving way to a more shallow, horizontal root system. It appears to be well suited for planting in most areas within its hardiness range including the high plains and Rocky Mountains.

## Oak, Burr

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**Leaf Color** Green  
**Fall Color** Copper and yellow  
This plant has attractive fall colors.

**Leaf Identification**

**Type:** Simple  
**Arrangement:** Alternate  
**Venations:** Pinnate  
**Margins:** Lobed and undulate  
**Shapes:** Oblong and obovate  
**Length:** 4in./10cm to 12in./30cm

**Fruit Color** Brown

The fruit is dry and oval.

**Environment**

This plant tolerates drought, flooding and salt well.  
This plant will grow in very dry to wet or submerged 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**

**Attributes and Features**

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



One trunk should be allowed to develop in the tree. Eliminate competing limbs and trunks with regular pruning when the tree is young. This will greatly reduce the pruning needs later on. This is a long lived tree that compartmentalizes decay well.

This Oak will adapt to various soils where other Oaks sometimes fail but is difficult to transplant from well-drained soil due to the tap root. Well-adapted to alkaline soils, poor drainage, and high clay content, Bur Oak is also very drought-tolerant. It will planted more as it becomes more available in larger quantities and sizes. Acorns are enormous, sometimes the size of golf balls, which pretty much eliminates this tree as a street tree if there are other trees available.

Oak wood is considered ring porous to semi-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.

### **Tree establishment specifications**

Choose good quality trees for planting. The most common cause of young tree failure is planting too deep. In most instances, the point where the top-most root in the root ball originates from the trunk (referred to as the root flare zone or root collar) should be located just above the soil surface. You may have to dig into the root ball to find the root flare. If there is nursery soil over this area, scrape it off. Never place ANY soil over the root ball. The planting hole should be at least twice the width of the root ball, preferably wider because roots grow best in loose soil. In all but exceptional circumstances where the soil is very poor, extensive research clearly shows that there is no need to incorporate any amendments into the backfill soil. Simply use the loosened soil that came out of the planting hole. Simply planting with the topmost portion of the root ball slightly higher than the surrounding soil might still install the tree too deep - be sure to locate the root flare.

Weed suppression during establishment is essential. Apply a 3-inch thick layer of mulch to at least a six-foot diameter circle around the tree. This area should be at least two feet in diameter for each inch of tree trunk diameter and maintained during the establishment period. Apply a thinner layer of mulch directly over the root ball but keep it at least 10 inches from the trunk. This allows rainwater, irrigation and air to easily enter the root ball and keeps the trunk dry. Placing mulch against the trunk and applying too thick a layer above the root ball can kill the plant by oxygen starvation, death of bark, stem and root diseases, prevention of hardening off for winter, vole and other rodent damage to the trunk, keeping soil too wet, or repelling water.

Regular irrigation after planting encourages rapid root growth that is essential for tree establishment. Trees provided with regular irrigation through the first growing season after transplanting require about 3 months (hardiness zones 9-11), 6 months (hardiness zones 7-8), or one year or more (hardiness zones 2-6) per inch of trunk diameter to fully establish roots in the landscape soil. Trees in desert climates may take longer to establish. Trees that are under-irrigated during this establishment period (and most trees are) often require additional time to establish because roots grow more slowly. Be prepared to irrigate through the entire establishment period, especially during periods of drought.

Irrigation also helps maintain and encourage the desirable dominant leader in the tree canopy on large-maturing trees. Instead of a dominant leader, trees that are under-irrigated during the establishment period often develop undesirable, low, co-dominant stems and double leaders that can split from the tree later.

Unlike established plants, which do best with deep, infrequent irrigation, research clearly shows that recently transplanted trees and shrubs establish quickest with light, frequent irrigation. For trees planted in spring or summer, provide one (cooler hardiness zones) to three irrigations (warmer hardiness zones) each week during the first few months after planting. Daily irrigation in the warmest hardiness zones provides the quickest establishment. Following the initial few months of frequent irrigation, provide weekly irrigation until plants are fully established. With every irrigation, apply one (cool climates) to two (warm climates) gallons of water per inch trunk diameter (e.g. 2 to 4 gallons for a 2-inch tree) over the root ball only. In most landscapes that receive more than 30 inches of rain or irrigation annually, if the mulch area is maintained weed-free, irrigation does not need to be applied



outside of the root ball. Never add water if the root ball is saturated.

In cooler hardiness zones, in all but the driest years, irrigation of spring- and summer-planted trees usually can be discontinued once fall color has begun. Irrigation of fall planted trees, however, should be continued until foliage has dropped from the deciduous trees in the region. In warmer climates, irrigate fall-and winter-planted trees as described for the spring- and summer-planted trees.

In drier, desert climates there is benefit to be gained from applying additional irrigation outside of the root ball area. This is best done by making a large diameter berm four to six inches high, then filling it with water so it percolates into the soil. For the first two years, irrigate twice each week through the spring, once per week in summer provided monsoons arrive, and twice each week again in fall if it remains warm. Taper off watering to once or twice each month in winter and resume twice weekly next spring. For years three to five, water twice per month in spring, summer, and fall and once or twice per month in winter. During years five through seven, water once every three weeks in warm weather and once every six weeks in winter. After this, the drought-tolerant desert trees should be able to survive on natural rainfall.

Trees with good, strong structure need no pruning at planting, except to remove broken twigs. Do not remove branches to compensate for root loss - research has shown that this can be detrimental to establishment.

### <<spring transplant best>>

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

**Pests:** None of major concern although the potential list is long. Galls cause homeowners much concern. 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. Potentially resistant to the Asian Longhorn Beetle. Dogwood borer enters the trunk through wounds such as pruning cuts and other mechanical injuries.

**Diseases:** None of major concern although the list of potential problems is long. Anthracnose may be a serious problem in wet weather. 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. This tree is less susceptible to oak wilt than trees in the red oak group, but it has contracted the disease.

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 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.

Most oaks are considered resistant to verticillium wilt.

#### **Special Notes**

This plant has aggressive roots.

