



TREES & SHRUBS

Large Deciduous Trees

no. 7.419

by J.E. Klett and C. Wilson ¹

Everyone enjoys the beauty a shade tree provides. Trees also reduce harsh winds, moderate temperature extremes, and offset poor air quality.

Quick Facts...

Trees provide shade, beauty and protection from harsh winter.

Trees help moderate temperature extremes and offset poor air quality.

Plant trees on the basis of space available, soil conditions, proximity to irrigation lines and water requirements.

Plant trees prone to storm breakage away from buildings, walks, driveways and utility lines.

How to Select a Tree

To select a tree, consider the following factors.

Available space. The location you choose for each tree should have enough space to allow for growth without severe pruning. Check for obstructions of buildings, overhead utility lines and tall fences. If lateral space is limited, select a tree that has a narrow, upright growth habit. Refer to height, branch spread and shape in the tree list shown in Table 1. If overhead lines are near, you may want to choose small trees. (See fact sheet 7.418, *Small Deciduous Trees*.)

Soil conditions. Most trees perform best in well-drained soil. If you have compacted soil that is hard to work, loosen the soil and mix in organic material to a depth of at least 12 inches before planting your tree.

Irrigation lines. If you have an underground irrigation system, plant trees to allow for the tree trunk and basal root flare to expand without encroaching on an irrigation pipe. Otherwise, tree roots may eventually compress the pipe and shut off the irrigation line.

Growth rates vs. brittleness. As a general rule, fast-growing trees tend to be brittle and can be damaged by limb breakage in storms. Plant these trees away from buildings, sidewalks, driveways and utility lines.

Water requirements. Trees vary in water requirements. Do not plant trees that have low water needs in heavily irrigated lawn areas or at the bottom of slopes. Plant trees with high water requirements in locations where supplemental watering is possible and desired. In dry years, fall and winter watering is critical to the health of trees. Trees under drought stress are more susceptible to insect and diseases. For details, see 7.211, *Fall and Winter Watering*. For details on watering after planting, see 7.833, *The Science of Planting Trees*.



Putting Knowledge to Work

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Large Trees for Shade

Table 1 includes trees that will exceed 30 feet in height when fully grown. These trees should not be placed under or near power lines or other overhead structures. Use one-half of branch spread (diameter) indicated below to determine distance from structures.

Description of Tree Shapes

The following tree shapes describe the general outline of the trees in the accompanying tree list. Use this chart in combination with height and branch spread to determine proper location of trees and ensure adequate clearance from obstacles.



Columnar. Sides more or less parallel, much more tall than broad.



Weeping. Branches tend to weep downward.



Broad spreading. A wide vase shape.



Round or globe. About as broad as tall.



Upright spreading. A narrow vase shape.



Conical. Cone-shaped. Broad at base, tapering to a narrow top.



Elliptical. More tall than broad, widest branching at or near the middle.

Table 1: Large deciduous trees for shade.

Plant Name	Mature Size (H x W)	Tree Shape	Growth Rate ¹	Soil Moisture ²	Aesthetic Value and Cultural Hints
<i>Acer x freemanii</i> Freeman maple	45 x 35	rounded	m-f	M	Hybrid of Silver and Red maple.
'Autum Blaze'	45 x 35	rounded	m-f	M	Orange-red fall color. Similar iron chlorosis problems to Silver maple.
<i>Acer plantanoides</i> Norway maple	50 x 40	rounded	m	M	Dark green, dense foliage. Yellow fall color, subject to leaf scorch in dry conditions and limited rooting situations.
'Columnare'	50 x 20	narrow, columnar	m-f	M	Good for tight, narrow locations. Street tree.
'Deborah'	50 x 40	rounded	m	M	Red foliage changes to green in summer. Straight leader.
'Emerald Queen'	50 x 40	rounded	m	M	Dark green foliage with dense branching habit.
'Fairview'	50 x 30	columnar	m	M	New growth deep red-purple maturing to bronze-red
'Royal Red'	40 x 30	rounded	m	M	Dark, glossy red foliage all summer. Similar to Crimson King but more cold hardy.
'Schwedleri'	50 x 40	rounded	m	M	Red foliage in spring changing to bronze and dark green in summer. Street tree.
<i>Acer rubrum</i> Red maple	45 x 40	conical	f	H	Red flowers in early spring. Red fall color. Avoid very alkaline soils.
'Northwood'	45 x 35	rounded	m	H	Hardest red maple. Red-orange fall color. Avoid very alkaline soils.
'Red Sunset'	45 x 40	broad, conical	f	H	Red flowers in early spring. Red fall color. Avoid very alkaline soils.
<i>Acer saccharinum</i> Silver maple	65 x 50	variable	f	H	Bright green foliage with silvery undersides. Tends to be brittle. Yellow fall color. Avoid very alkaline soils.
'Skinner'	50 x 40	rounded	f	H	Deeply cut, feathery leaves. Branches tend to weep in graceful arch. Yellow fall color. Avoid very alkaline soils.
<i>Acer saccharum</i> Sugar maple	40 x 35	oval	s	H	Red-orange fall color. Prefers improved well-drained soils.
'Green Mountain'	40 x 35	oval	s-m	H	Thick waxy leaves resist scorch and retain summer color. Tolerates dry soils. Red-orange fall color.
'Legacy'	45 x 45	oval	s-m	H	Fast growing for a Sugar maple. Thick leaves resist scorch. Red-orange fall color.
<i>Aesculus glabra</i> Ohio buckeye	35 x 20	broad, rounded	m	M	Red-orange-yellow fall color. Cream colored flowers in terminal clusters in spring. Nut-like fruit.
<i>Aesculus hippocastanum</i> Horsechestnut	60 x 45	broad, conical	s	M	Large clusters of white flowers in late spring. Spiny fruit. Best used in large, open lawn areas.
<i>Betula papyrifera</i> Paper birch	40 x 25	elliptical	m	H	Yellow fall color. Peeling bark. Plant in cool, moist sites. Fall and winter watering important.

Table 1, continued: Large deciduous trees for shade.

Plant Name	Mature Size (H x W)	Tree Shape	Growth Rate¹	Soil Moisture²	Aesthetic Value and Cultural Hints
<i>Betula pendula</i> 'Gracilis' Cutleaf weeping birch	50 x 30	weeping	m	H	Yellow fall color. Plant where soil stays cool and moist. Avoid south and west exposures. White bark. Fall and winter watering important.
<i>Carpinus betulus</i> 'Fastigiata' Columnar hornbeam	35 x 15	narrow, columnar	s	H	Dark green foliage much like elm. Plant where soil stays cool. Avoid south or west exposures. Muscle-like trunk. Air pollution tolerant.
<i>Catalpa speciosa</i> Northern catalpa	50 x 25	narrow, upright	s	M	Showy, white, orchid-like flowers in early summer. Bean-like pods often remain on trees all winter. Large heart-shaped leaves.
<i>Celtis occidentalis</i> Common hackberry	55 x 50	broad, spreading	s-m	L	Adapts to most soils. Yellow fall color. Warty bark. Drought and wind tolerant. Small red to purple fruit.
<i>Cladrastris kentukea</i> (lutea) American yellowwood	35 x 35	round	m	M	Fragrant white flowers in late spring followed by 4 inch seed pods. Tolerant of most soils.
<i>Fraxinus americana</i> American ash 'Autumn purple'	60 x 50 50 x 50	elliptical round	m m	M M	Yellow to purple fall color. Yellow/red-purple fall color. Seedless.
<i>Fraxinus mandshurica</i> 'Mancana'	45 x 25	oval	m	M	Pointed, dark brown buds. Yellow fall color. Seedless.
<i>Fraxinus pennsylvanica</i> Green ash Marshalls Seedless	50 x 30 50 x 35	round elliptical	m m	M M	Yellow fall color. Adapts to wide range of soils. May have seeds. Yellow fall color. Street tree. Seedless.
'Patmore'	50 x 30	elliptical	m	M	One of the hardiest. Seedless.
'Summit'	50 x 25	upright	m	M	Female will produce seed. Yellow fall color.
<i>Fraxinus nigra</i> 'Fall Gold' Black ash	45 x 20	upright	m	M	Hardy, seedless, golden yellow fall color.
<i>Gleditsia triacanthos inermis</i> Thornless honeylocust 'Imperial'	65 x 40 40 x 40	variable rounded	m m	M M	Seedling selection. Not always thornless. Foliage is fern-like and bright green. Thornless. May produce pods.
'Shademaster'	50 x 40	broad, spreading	m	M-F	Dark green, ferny foliage. Podless and thornless. Upright branches.
'Skyline'	45 x 40	broad, conical	m	M	Dark green foliage. Uniform upright branching. Thornless and essentially podless.
'Sunburst'	35 x 35	variable	m	M	Yellow-tipped foliage. May be more prone to diseases. Podless and thornless.
<i>Gymnocladus dioica</i> Kentucky coffeetree	50 x 40	variable	s	L	May be male or female. Female has leathery seed pods. Interesting winter form.
<i>Phellodendron amurense</i> Amur corktree	35 x 30	rounded	m	M	Corky fissured bark. Male trees avoid fruit odor. Tolerates pollution and drought.
<i>Populus x acuminata</i> Lanceleaf cottonwood	50 x 40	elliptical	f	H	Yellow fall color. Shiny, spear-shaped leaves.
<i>Populus alba</i> Silver (white) poplar 'Pyramidalis'	75 x 60 45 x 15	broad, spreading narrow, columnar	f f	H H	Leaves green above and silvery white below. Greenish-white bark. Suckers from roots. Good for fast screen planting. Short-lived due to diseases. Silvery, lobed, maple-like leaves.
Boleana (white) poplar	45 x 15	columnar	f	H	Yellow fall color. Root suckers, thus should be used where it can spread in groves.
<i>Populus angustifolia</i> Narrowleaf cottonwood	55 x 40	columnar	f	H	Yellow fall color. Root suckers, thus should be used where it can spread in groves.
<i>Populus deltoides</i> 'Siouxland' 'Siouxland' Cottonwood	75 x 40	elliptical	f	H	Cottonless. Easily transplanted.
<i>Populus nigra</i> 'Italica' Lombardy poplar	60 x 15	narrow, columnar	f	H	Use as temporary screen planting. Due to diseases, shorter lived than Upright European aspen.
<i>Populus sargentii</i> Plains cottonwood	80 x 50	rounded	f	H	Native of the plains along rivers. Cottonless (male) selections available. Triangular leaves.
<i>Populus tremula</i> 'Erecta' Upright European aspen	40 x 15	upright	f	H	Use as screen planting. More disease-resistant and longer-lived than Lombardy. Yellow/orange-red fall color
<i>Quercus bicolor</i> Swamp white oak	50 x 45	upright, spreading	m	M	Adapts to clay soils and irrigated lawns. Fall color usually yellow.
<i>Quercus macrocarpa</i> Bur Oak	60 x 50	broad, spreading	s	L	Tolerates alkaline soils and drought. Flaky bark. Corky ridged twigs. Fringed cap on acorn.

Table 1, continued: Large deciduous trees for shade.

Plant Name	Mature Size (H x W)	Tree Shape	Growth Rate ¹	Soil Moisture ²	Aesthetic Value and Cultural Hints
<i>Quercus robur</i> English oak	50 x 40	rounded	m	M	Broad, stout, spreading branches. Glossy, dark green leaves that turn brown and persist into winter.
'Fastigata'	45 x 15	columnar	m	M	Narrow form for small spaces. Brown fall color.
<i>Quercus rubra</i> Red oak	40 x 50	broad, spreading	m	M	Often broader than tall. Fall color usually maroon-red. Avoid very alkaline soils.
<i>Salix alba</i> 'Tristis' Niobe weeping willow	50 x 50	rounded, weeping	f	H	Yellow fall color, brittle twigs. Best sited near water.
<i>Salix matsudana</i> 'Navajo' Navajo globe willow	35 x 35	globe	f	H	Formal globe shape. Brilliant green foliage in spring. May suffer freeze injury in some areas. Widely used on Western Slope.
<i>Sophora japonica</i> Japanese pagodatree	50 x 40	rounded	m	M	Creamy flowers in midsummer. Pinched, pea-like pods in fall. Olive green twigs.
<i>Tilia americana</i> American linden	60 x 50	broad, conical	m	M	Large heart-shaped leaves. Fragrant flowers in early summer. Yellow fall color. May sucker near base.
'Redmond' Redmond linden	45 x 25	conical	m-f	M	Striking reddish bark/twigs in winter.
<i>Tilia cordata</i> Littleleaf linden	45 x 30	conical	m	M	Dense foliage. May sucker near base. Creamy-yellow fragrant flowers. Attracts bees.
'Greenspire'	45 x 25	conical to oval	m	M	Neat formal appearance. Glossy, dark green leaves. Cinnamon colored bark. Yellow fall color.
'Glenleven'	45 x 30	open, conical	m	M	Vigorous, open habit.
¹ Growth rate:	s = slow m = moderate f = fast	² Soil moisture:	H = heavy water needs; more than normal lawn watering. M = moderate water needs; normal lawn watering. L = low water needs; can withstand drought.		

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