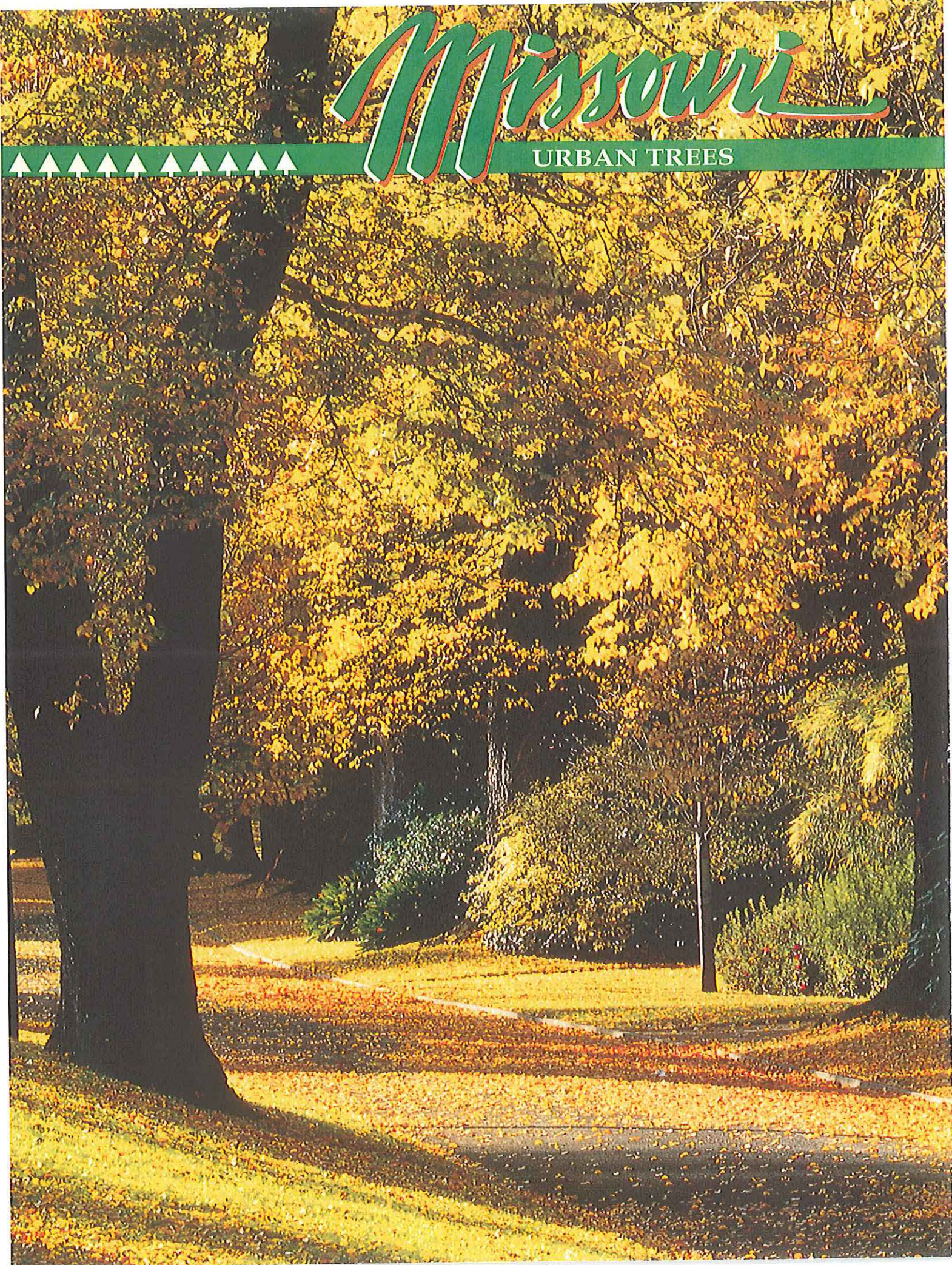
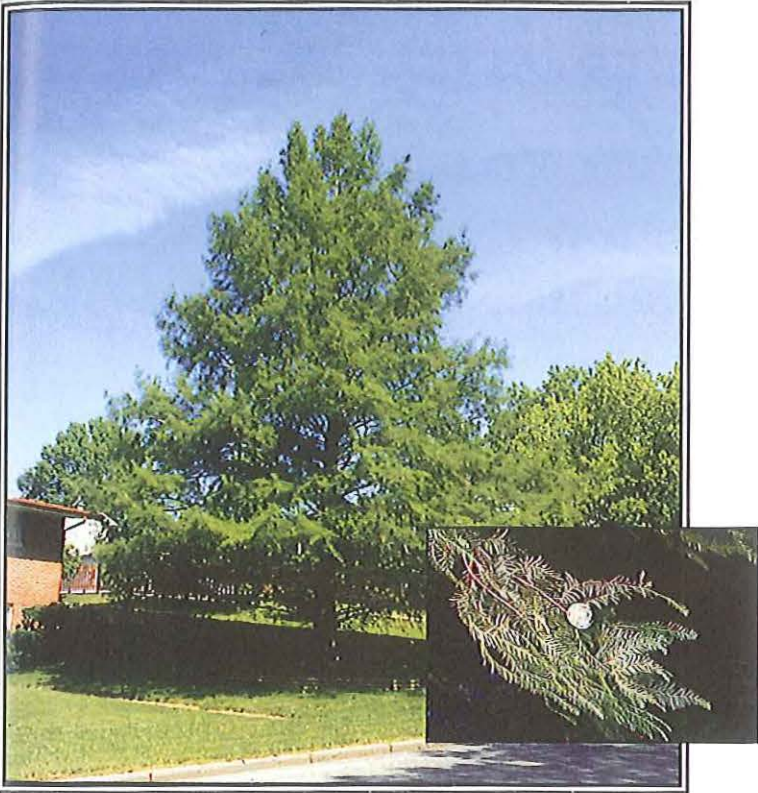


# Missouri

URBAN TREES

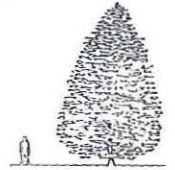




*Taxodium distichum*

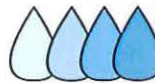
Baldcypress becomes a large tree with fine, fern-like foliage. Although it resembles an evergreen tree in summer, the foliage drops in fall, revealing the stately branch structure. The overall shape of the tree is broadly to narrowly pyramidal. This is the same cypress native to swamps in southeast Missouri, where it forms special root structures called 'knees'. It is adaptable to a wide range of soils and conditions and need not be grown only on wet sites. If a tree produces a few knee-like growths in the lawn, they may be cut off. Male catkins form in late summer and their drooping appearance adds winter interest. The small round cones produced by more mature trees may clutter lawns. Fibrous bark is attractive in all seasons. Baldcypress is easily transplanted and grows best in acid soils. It has no serious pest problems, although spider mites or bagworms may occasionally attack some trees. Fall color is a coppery-bronze.

Hardiness Zones: 5b-10



Form and Scale:

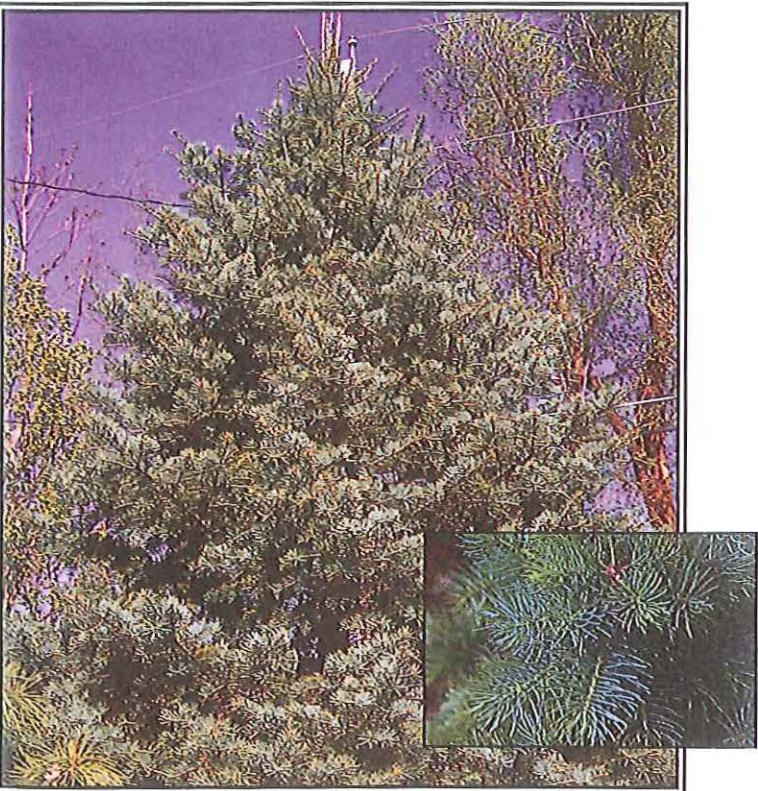
Moisture:



Growth:



Fall Color:



*Abies concolor*

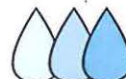
Firs grow best in climates with cool summers. The white fir is the best choice where summers are hot and droughts occur. It develops a formal conical shape for landscape use. Its appearance is similar to spruce, but the needles look softer. It is slow growing, adaptable to many conditions and somewhat pollution tolerant. White fir does not tolerate poor drainage, particularly in heavy soils. While it prefers full sun, it develops well in light shade, which may actually be beneficial to young plants in warmer sections of the state. A number of cultivars have been developed, but most are not readily available. The selection best adapted to warmer areas has blue-green needles rather than the normal gray-green. White fir is a durable evergreen that deserves more landscape use than it has had in the past.

Hardiness Zones: 3-8a



Form and Scale:

Moisture:



Growth:



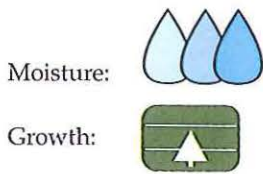
Fall Color:



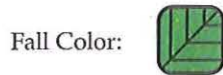
*Tsuga canadensis*

Hemlocks provide a fine-textured foliage that blends well into many garden settings. While hemlocks can be grown in full sun, they are shade tolerant. It is one of the few larger evergreens suitable for planting in moderate shade. Although relatively slow growing, it may be used as a tall evergreen screen where one is needed for varying light conditions. While well-suited to many urban conditions, hemlock is not highly pollution tolerant. Hemlock has a pyramidal growth habit. Ends of branches droop slightly, giving it a relaxed feeling. The small cones hang through the winter for added landscape interest. It is not tolerant of poorly-drained heavy soils. Extended drought can be damaging, so hemlock should not be planted in low maintenance areas where irrigation is impossible. A close relative, the Carolina hemlock, is not common but is also a good evergreen tree for urban settings.

Hardiness Zones: 3-8a



Form and Scale:

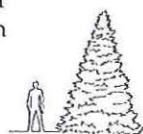
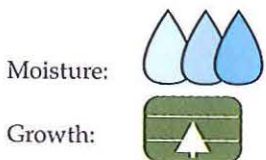


American Holly

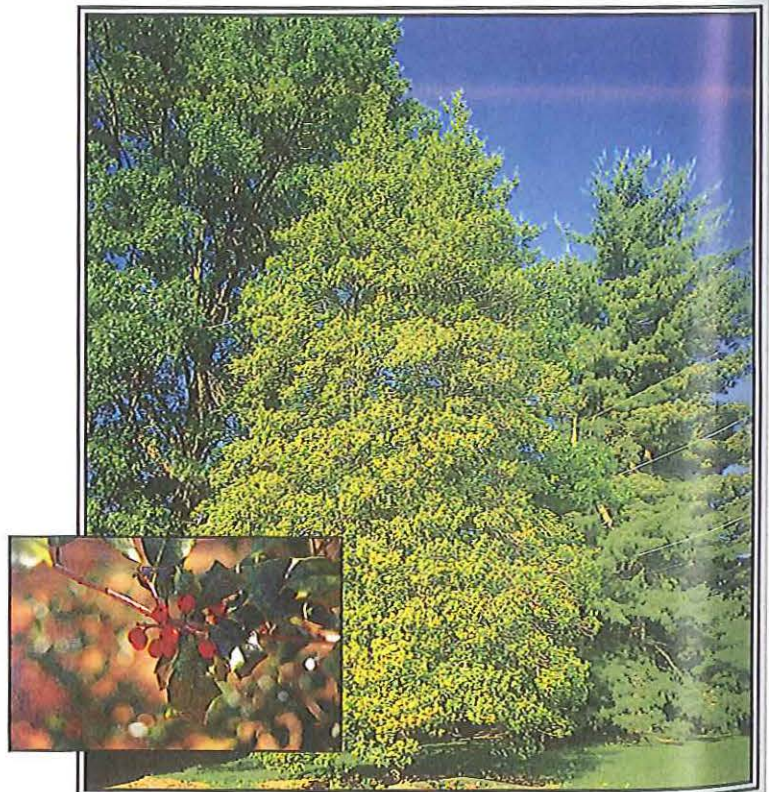
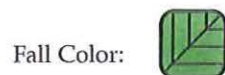
*Ilex opaca*

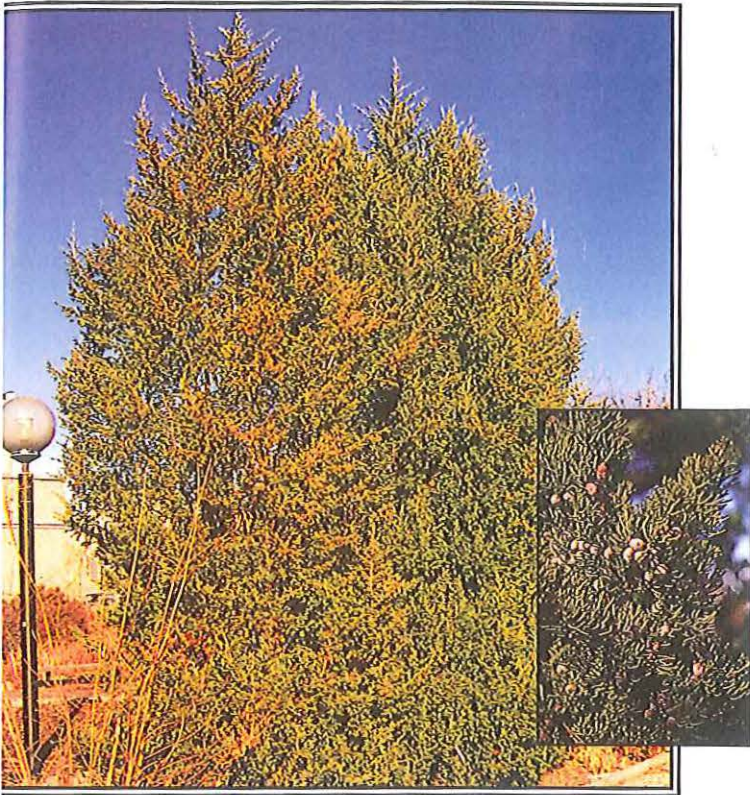
Although American holly can be found as a native tree in the southeastern portion of the state, it benefits from winter wind and sun protection in more northern locations. Still, it is our most durable broad-leaved evergreen tree. American holly grows best in acid, organic soils that are well-drained but have adequate moisture. Holly needs both male and female plants for maximum berry production. Generally, one male tree will provide adequate pollination for four to six female trees. Birds are very fond of holly berries, so berries are seldom found past midwinter. If they do, they remain bright red for most of the winter. American holly cultivars vary considerably. In all of them, leaves are more pale and dull than English holly, which is the species best known for holiday decoration. 'Foster' holly is a popular hybrid which is more upright and finer textured than American holly. Young American holly trees develop a conical shape similar to many needled evergreens. Although growth is slow in our climate, American holly needs space to develop in a tree without pruning.

Hardiness Zones: 5b-9



Form and Scale:

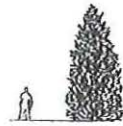




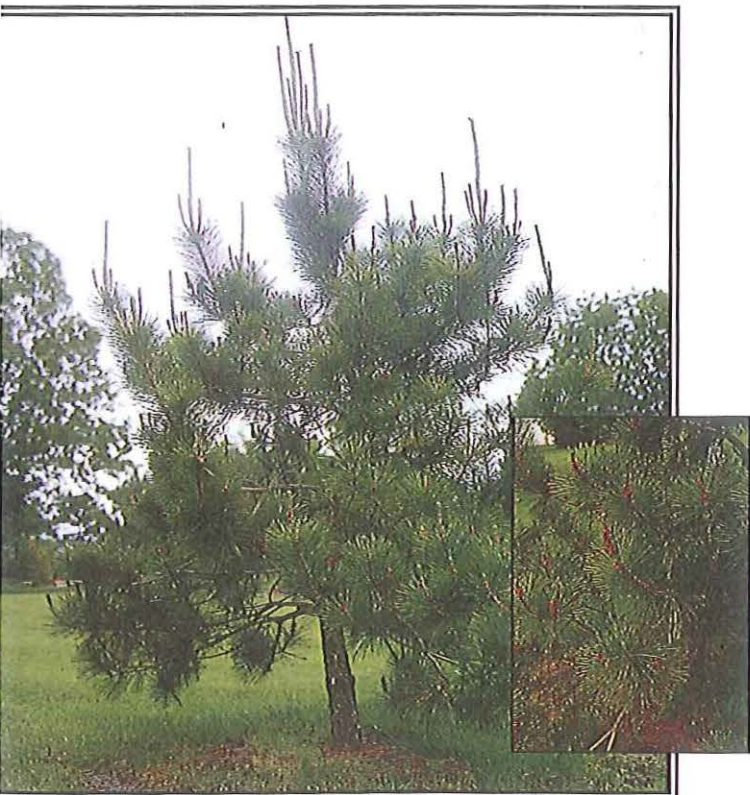
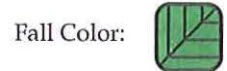
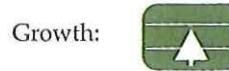
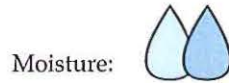
*Juniperus chinensis*

Chinese juniper is a tree species, but because of the profusion of cultivars available, it may be found in many shapes and sizes. The well-known Pfitzer juniper is a Chinese juniper that is low and wide-spreading. The tree-forming varieties are upright and conical. With age they may reach 20 to 30 feet and become a single-trunked tree suited to many landscape conditions and soils. They become most dense in full sun locations. Cultivars with green foliage, as well as different intensities of bluish foliage, are available. Chinese juniper cultivars that develop into small trees include 'Hollywood,' 'Keteleeri,' 'Hetzi Column Juniper,' 'Robusta Green' and 'Wintergreen.' Chinese junipers have few major pests, but tip blight and bagworms may sometimes attack them. These are junipers for many landscape uses, but upright forms are most often used for urban sites where tall evergreen screens are wanted.

Hardiness Zones: 3b-9



Form and Scale:



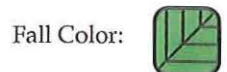
*Pinus thunbergiana*

Japanese black pine is a popular specimen tree because of its loose, informal growth habit. It has been popular for use in Japanese garden designs. It is well adapted to many soils, and has pollution and salt tolerance that make it suitable for many urban sites. Japanese black pine is also tolerant of heat and drought. In spite of these good qualities, damage may result in our climate when rapid temperature changes occur in fall or winter. As a result, needle and twig damage are possible. Japanese black pine grows well in low-fertility soils, but needs full sun. It produces silvery-white elongated candles on the ends of its branches during the fall that give it a distinctive appearance in winter. This pine is without major pest problems, but does not have the cold tolerance of red or white pines.

Hardiness Zones: 5b-8



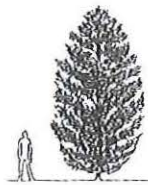
Form and Scale:



*Pinus flexilis*

This pine often was not available for planting in the past, but now it is becoming more widely used. It is a very durable pine suitable for urban landscape use. As the name implies, the flexible branches reduce chances for breakage by high winds or heavy snows. Limber pine adapts to many soil types, even shallow soils, although it grows best in deep, well-drained soils. It should be grown in full sun, but will tolerate some shade. The general appearance is similar to white pine, but needles point forward and growth is a little more open. The most popular cultivar is 'Vanderwolf's Pyramid' that has a denser form. Limber pine does not grow as fast as white pine, but may still produce two feet of growth per year once it is well-established on a good site. Limber pine is subject to the common pests of pines, but none present serious problems.

Hardiness Zones: 4b-7



Form and Scale:

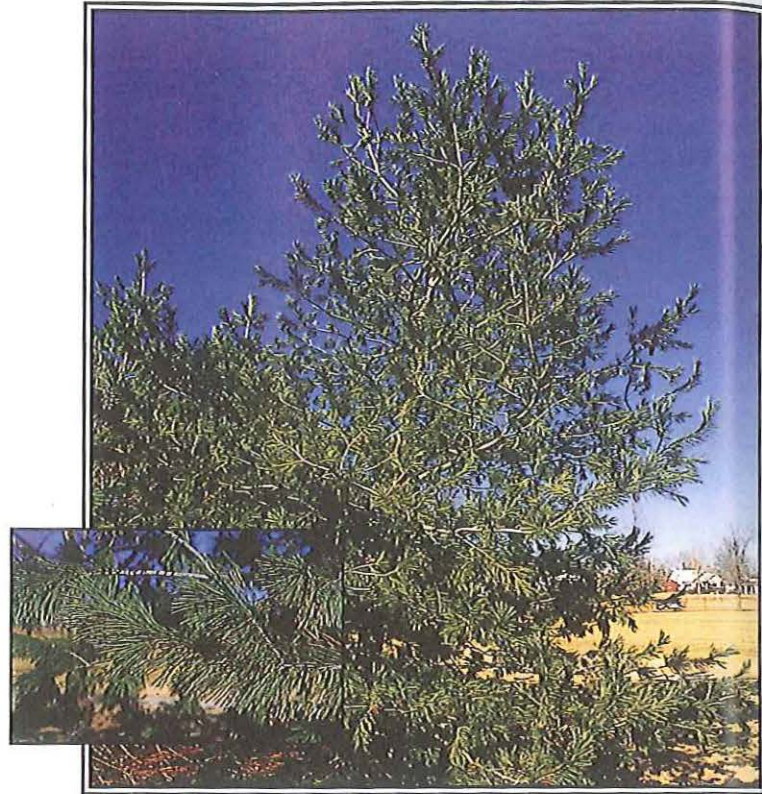
Moisture:



Growth:



Fall Color:



*Pinus resinosa*

Red pine is extremely cold tolerant, but is less heat tolerant. The needles are long and stiffer than white pine. Branching is fairly open, but it has the overall symmetry of many pines. Dark green needles are retained for about four years before the older, inner needles drop. Although a native of the northern United States, it is still tolerant of Missouri growing conditions. It is slower growing in our climate and becomes a tree of only medium size. The bark of pines is not usually ornamental, but this pine develops bark that is orange to reddish on the upper trunk of older trees. The needle appearance of red pine might suggest Austrian pine although it is less coarse. It currently appears to be less susceptible to the tip blight that causes severe damage to Austrian pine in many locations.

Hardiness Zones: 2b-6



Form and Scale:

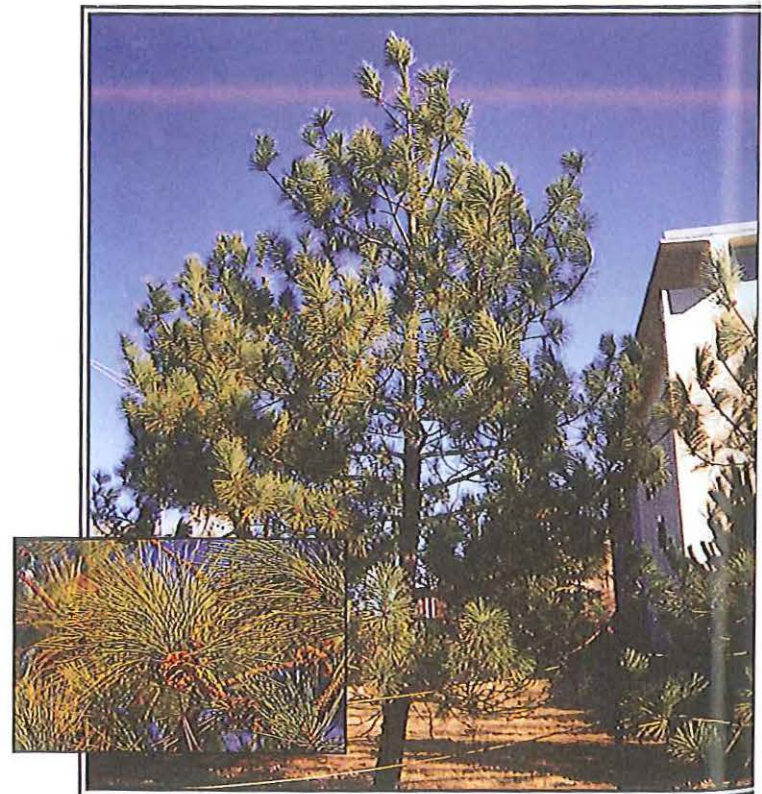
Moisture:

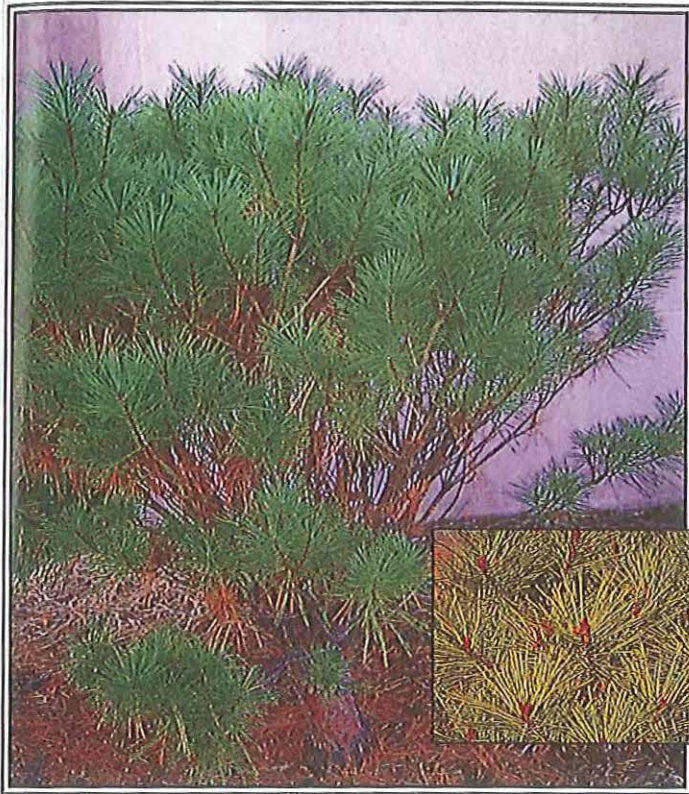


Growth:



Fall Color:





*Pinus densiflora*

Japanese red pine is used as a specimen plant because of its interesting form and decorative bark. The foliage is bright bluish green to olive green. Bark on the trunk and large branches is orange-red, adding interest in all seasons. Trunks are frequently crooked or leaning, branches spread horizontally and the crown is broad and flat. The interesting growth habit and distinctive bark are the main reasons for using this tree in the landscape. This tree is usually free of any insect and disease problems and requires little maintenance. Growth is relatively slow for a pine. Some common cultivars are 'Oculus-draconis,' which has variegated needles with two yellow bands; 'Ubraculifera,' a dwarf form with many branches in a vase-shaped arrangement; and 'Pendula,' a weeping form.

Hardiness Zones: 5b-7b



Form and Scale:

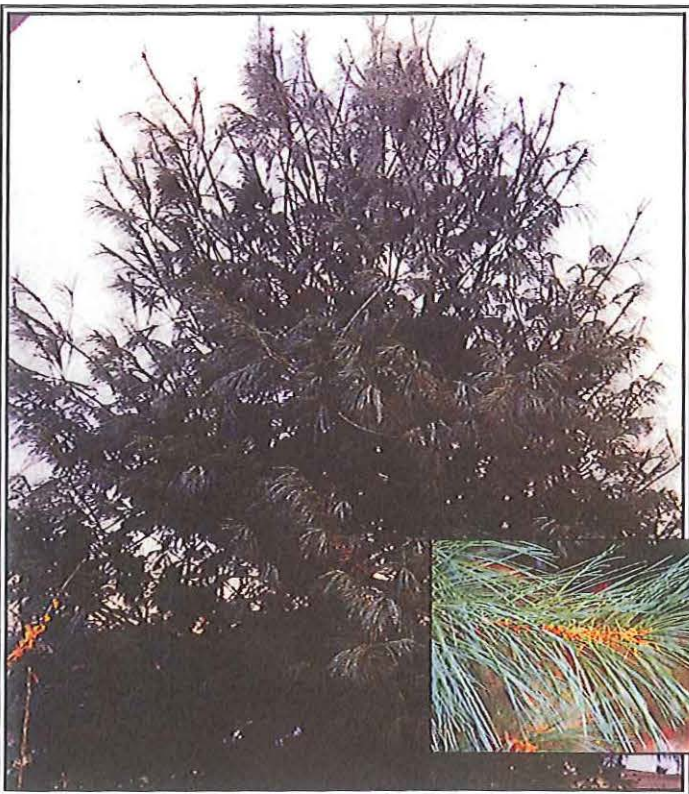
Moisture:



Growth:



Fall Color:



*Pinus strobus*

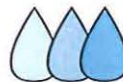
Eastern white pine becomes a large evergreen tree. Its long, soft needles give the tree a graceful look that fits into many settings. It has become more popular recently than Scotch pine because it is less susceptible to pine wilt nematode and environmental stress. White pine is a fast-growing evergreen that can provide a quick accent or screen. Although some white pines are sensitive to air pollutants and salty runoff water, it remains one of the best pines for our climate. Trees grow quite large, and should be used where there is plenty of space so pruning is not needed. Needles of white pine are held only two years, so fall needle-drop is more obvious than needle-drop of many other pines.

Hardiness Zones: 3-8



Form and Scale:

Moisture:



Growth:



Fall Color:



*Juniperus virginiana*

Eastern redcedar, the common evergreen growing in roadsides, fencerows and fields, is known to almost everyone. It grows well in a wide range of conditions. It is a tree for full sun although young plants may be found growing in shade. With age, trees in shade will be less dense and are more subject to disease problems. Many cultivars of redcedar have been selected and propagated for landscape use. One of the most common is 'Canaertii,' which produces a loose, upright growth with deep green color through the year. This is a female selection with bluish seeds for fall and winter color. Redcedar is fairly pest free, but twig blight and bagworms may attack them. It is a host for several rust diseases that alternate between infecting cedar and members of the rose family. Redcedars make durable screens, tall hedges or accents. This is the same cedar that produces the wood used for cedar chests and novelties.

Hardiness Zones: 2-9



Form and Scale:



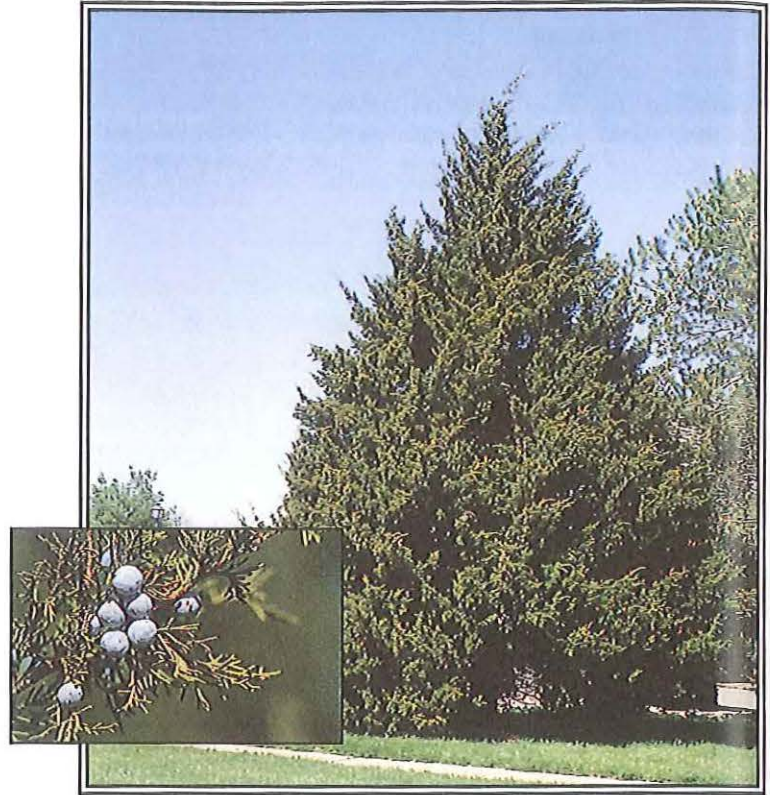
Moisture:



Growth:



Fall Color:

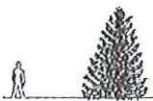


Colorado Spruce, Blue Spruce

*Picea pungens*

Since the most popular Colorado spruce cultivars are those with bluish needles, this tree is best known as blue spruce. It can tolerate Missouri weather, soil and drought conditions better than many other spruce species. The tree develops a formal, conical shape with very stiff branches and needles. Growth is slow, but it gradually forms a 40- to 50-foot tree averaging only about one foot of growth per year. Deep soils with good drainage provide the best growth. It is most useful as a formal specimen plant. It needs full sun and a location with good air circulation, to help avoid Cytospora canker, which kills low branches and inner needles. Several insect pests may attack spruces. Cultivars with the most intense blue color demand the highest prices. Cones are often abundantly produced on older trees, but add little to its landscape value.

Hardiness Zones: 2b-7



Form and Scale:



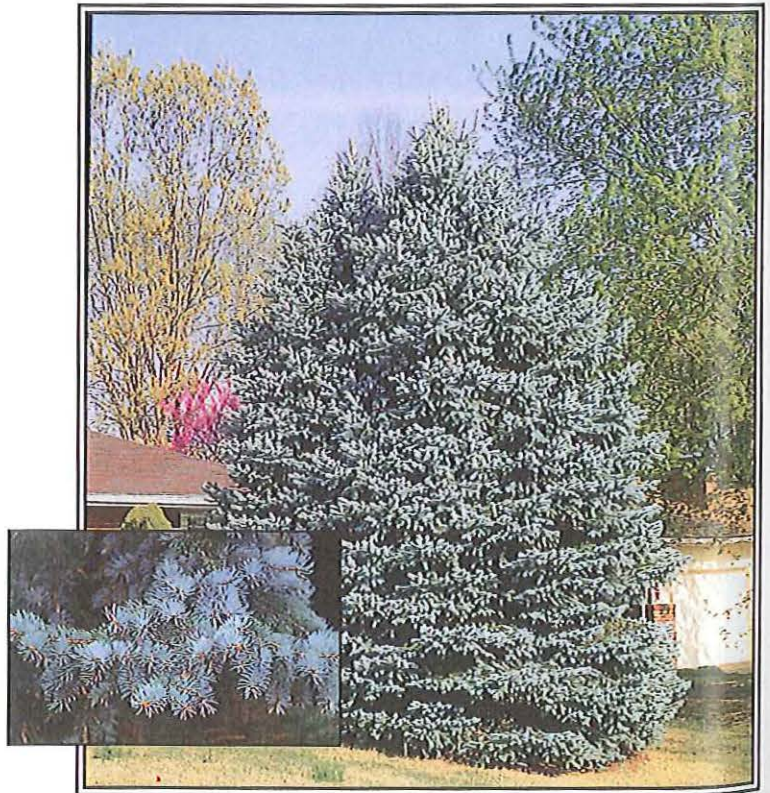
Moisture:

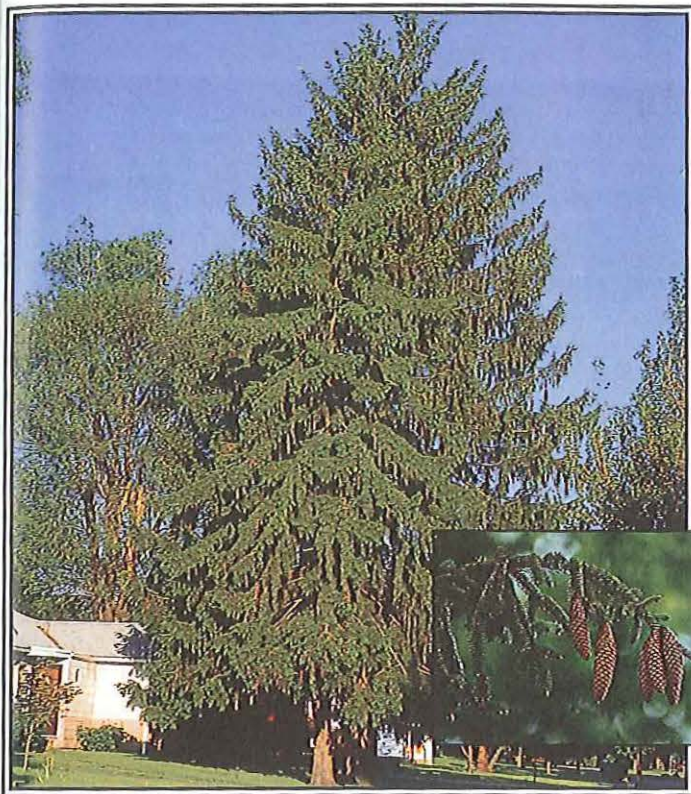


Growth:



Fall Color:





*Picea abies*

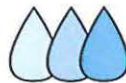
As a young tree, Norway spruce has a pyramidal shape that becomes very broad as it matures. The branches are pendulous, giving the tree a graceful appearance. Needles are light green when young, but develop a rich, deep green color. It may be invaded by spider mites and some other spruce pests, but generally these are not a major problem. It grows very large and should only be used in landscapes where plenty of space is available. Older Norway spruces do not always maintain attractive lower branches, but they may be removed to develop a trunk that accentuates the graceful drooping character of its higher branches. Like all spruces, Norway spruce grows best in deep soils that are well-drained and have constant soil moisture. This tree develops best in full sun but is tolerant of light shade. Norway spruce is fast-growing once established.

Hardiness Zones: 2-7



Form and Scale:

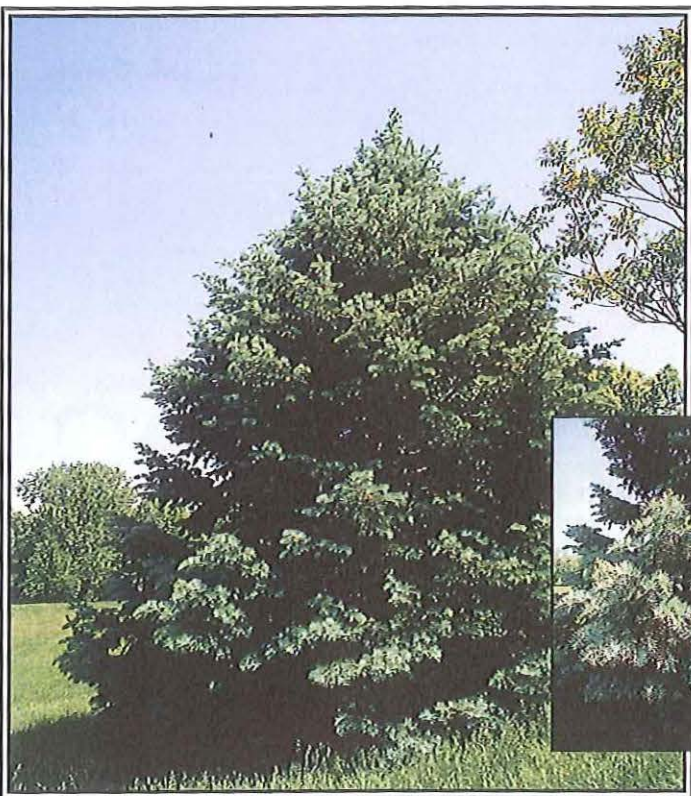
Moisture:



Growth:



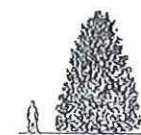
Fall Color:



*Picea glauca*

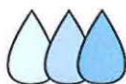
White spruce is most commonly available in the nursery trade as a cultivar. The short, gray-green needles of white spruce produce a fine texture. Although not extremely heat and drought tolerant, it is still a useful plant for urban landscapes. Its most popular form is the variety *conica* known as the dwarf Alberta spruce. This form is usually grown as a shrub. Its growth is very slow, only two to three inches per year. Its dense, stiff, conical shape gives a sheared look, without shearing, that makes it frequently used for a formal vertical accent. Another white spruce variety, *densata*, is known as the Black Hills spruce. It does not grow as slowly as dwarf Alberta spruce, and gradually reaches tree size. It has a rich, deep green color. White spruce is subject to spider mite damage during hot, dry weather. Severe droughts or poor drainage during wet seasons can be damaging, especially to older trees.

Hardiness Zones: 2-6



Form and Scale:

Moisture:



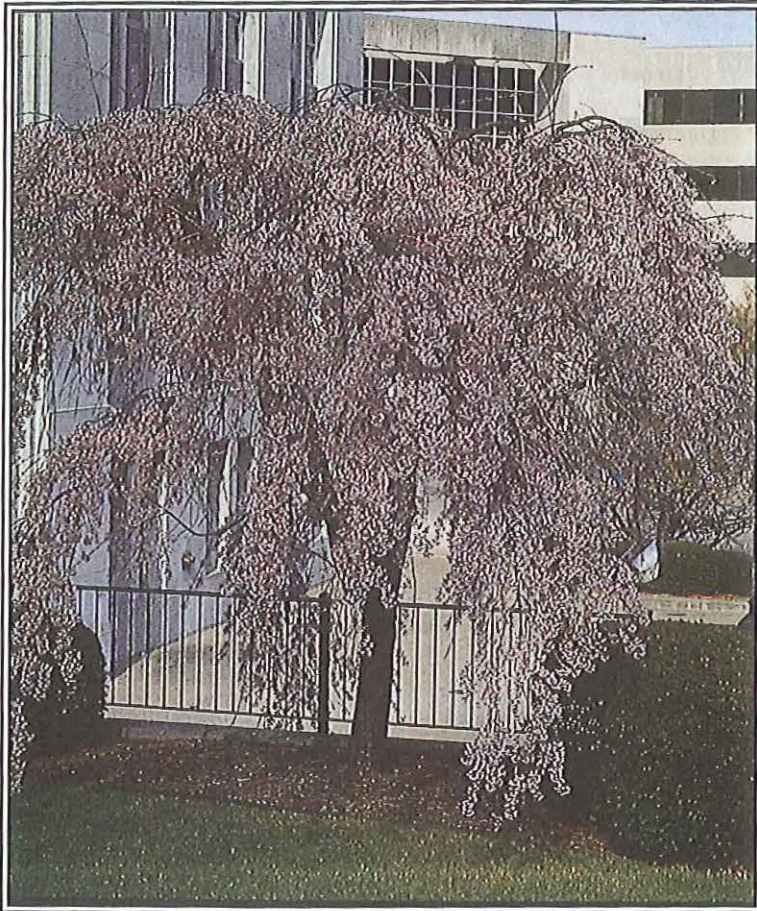
Growth:



Fall Color:







Weeping Higan cherry

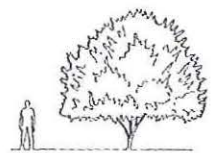


Japanese flowering cherry - *Prunus serrulata*  
 Higan cherry - *Prunus subhirtella*

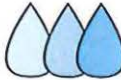
Many species of ornamental cherries exist, but the two most popular and available flowering varieties are the Japanese flowering cherry and Higan cherry. These trees flower prolifically before foliage appears, with a floral display that is spectacular. Because of the many varieties of Japanese flowering cherries that have been developed, plant shapes and flower forms are many. The most common cultivar is probably 'Kwanzan,' which produces double, deep pink flowers. It develops an upright, vase-shaped branching habit, and is one of the most hardy cultivars. Japanese flowering cherries are subject to twig or bark damage during severe winters or rapid temperature changes. Cherries of all types need perfect drainage. If they are wanted where only tight soils or poor drainage exists, their durability may be extended by planting them in raised beds or on mounds.


The most popular Higan cherry is the weeping variety *pendula*, often simply called a weeping cherry. Higan cherries have single pink flowers that are not long lasting. For this reason, cultivars with double flowers, such as 'Pendula Plena Rosea' should be preferred when available. The weeping trees are graceful and broad-spreading, which makes them effective for an accent in bloom and also throughout the seasons. A Higan variety called *autumnalis* also is sometimes available. It flowers in spring, but may again produce some flowers in fall. Unlike the weeping variety and its cultivars, this fall-flowering cherry develops a spreading vase shape with a flat top. Cherries are sometimes produced, which are small and attract birds. A number of pests and diseases may attack cherries, so they are often considered relatively short-lived trees. In our climate, many species begin to decline after about 20 years.

Hardiness Zones: 5-8 (both)



Form and Scale:

Moisture: 

Growth: 

Flower: 

Fall Color: 

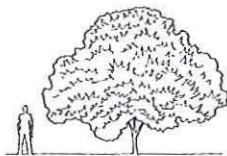
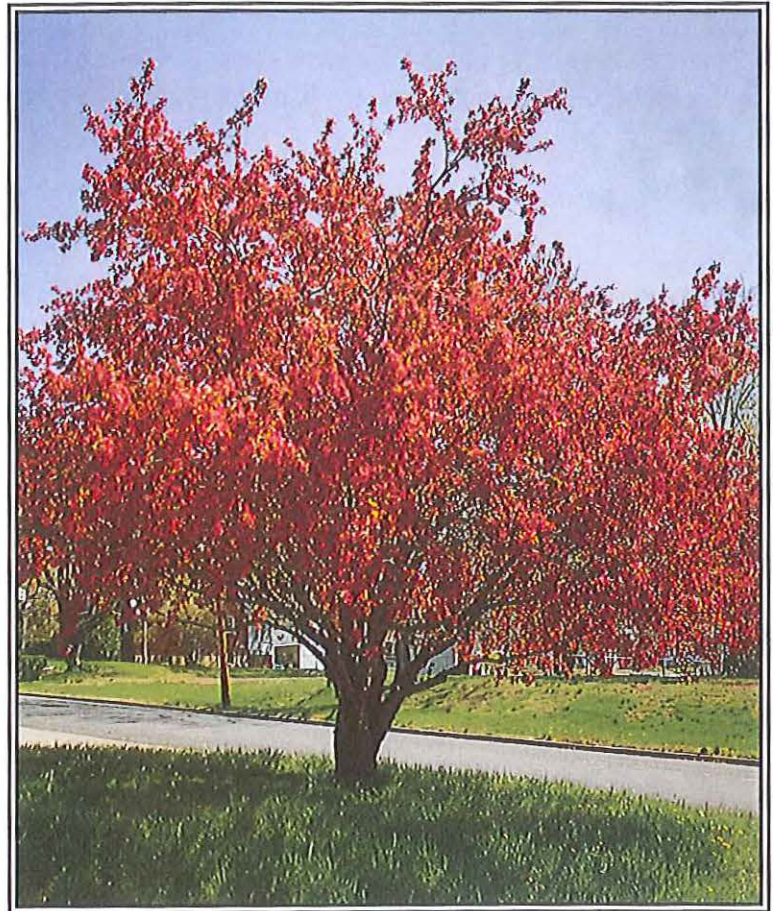
*Malus* species and cultivars

Crabapples in bloom are one of our most spectacular small, flowering trees. They are well-adapted to our soils and environmental conditions. Shapes may be columnar, weeping, oval or rounded. Sizes range from about 10 feet to 40 feet in height, but most will grow to be 15 to 20 feet tall. Flowers may be single, semi-double or double in pink, white or red. Fruits may be red or yellow, large or small, but all are attractive to birds and wildlife. Be sure to select a crabapple for planting based on all of its characteristics.

Unfortunately, several diseases attack flowering crabapples. Therefore, selection of species and cultivars regarding disease resistance is as important as ornamental value. The diseases most likely to attack them are apple scab, which causes gray spots on the leaves and summer defoliation; fire blight, which causes dieback of twigs and branches; rust, which causes orange spots on the leaves; and mildew, which causes powdery white growth on new foliage in spring. Apple scab and fire blight are the most damaging in our climate. A few of the more disease-resistant species and cultivars include 'Adams,' 'Prairifire,' 'Snowdrift,' 'Callaway,' 'Donald Wyman,' 'Indian Summer,' 'Robinson,' 'Sugar Tyme,' 'Professor Sprenger,' 'Liset' and *Malus floribunda*.

For those interested in weeping forms of flowering crabapple, 'Louisa,' 'White Cascade' and 'Red Jade' are possible choices. The dwarf crabapple, *Malus sargentii*, is resistant to apple scab. Those desiring ornamental flowers plus large fruits for making jelly might select 'Dolgo,' although it has only fair disease resistance. Insect pests are not a major problem of crabapples. Aphids or scale may attack trees but they can be controlled by prompt action if an infestation develops. Entire books on crabapples are available for more detailed descriptions and pictures of the many cultivars.

Hardiness Zones: 5-8



Form and Scale:

Flower:



Fall Color:

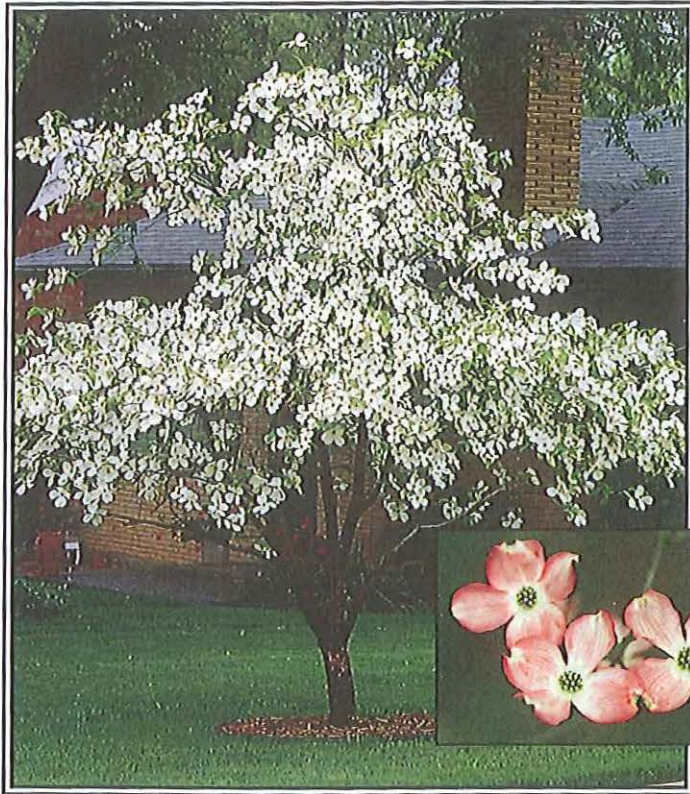


Moisture:



Growth:



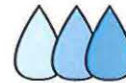


*Cornus florida*

Flowering dogwood is the official state tree of Missouri. From mid- to late-April it provides a show of white or pink flowers. This is a relatively small, spreading tree, and is well-adapted to growing under larger trees where it gets light shade. Although it is an adaptable tree, it is not highly tolerant of pollution or drought. Flower buds form in late summer and fall. If drought or other stress conditions exist during that time, trees will not flower the following spring. Severe stress causes leaf scorch and decline of the trees. Flowering dogwood has attractive horizontal branching, bright red fruits, and good fall color plus its spring flowers. For deeper pink color, the cultivar 'Cherokee Chief' is commonly used. A cultivar with very large flower size is 'Cherokee Princess.' One cultivar that flowers early and more prolifically than most is 'Cloud 9.' Pest problems include leaf spot disease and stem boring insects. Dogwood anthracnose is a disease causing concern in the eastern and southeastern U.S., but has not yet become a major problem in Missouri.

Hardiness Zones: 5b-8

Moisture:



Growth:



Form and Scale:

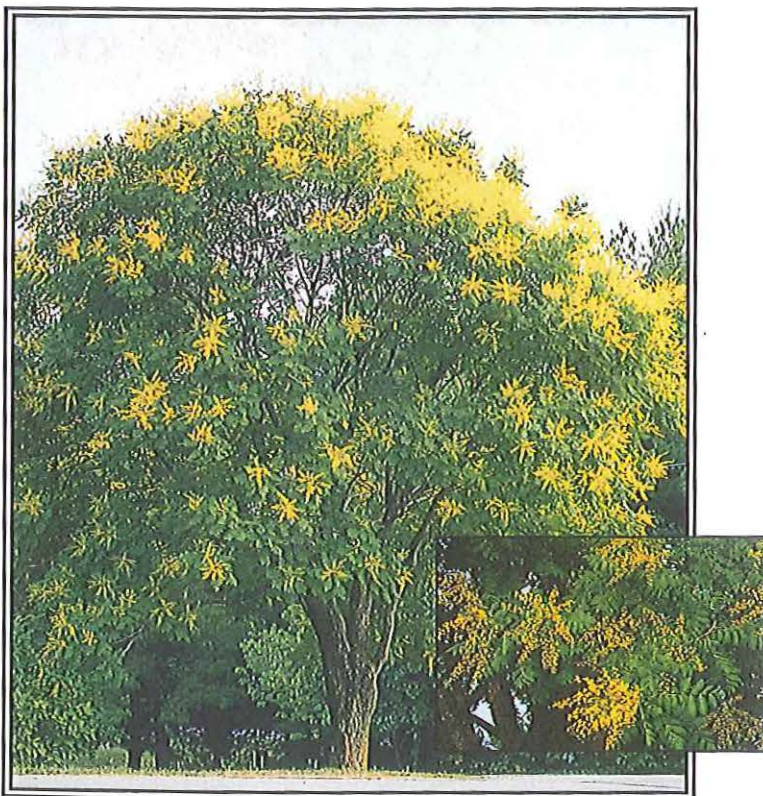
Flower:



Fall Color:



Goldenrain Tree



*Koelreuteria paniculata*

Goldenrain tree is an excellent choice for summer flowers. It grows fast to form a round-headed, wide-spreading tree. The showy large clusters of small yellow flowers are produced when few other landscape trees or shrubs are flowering. Falling flowers inspired its common name. This tree adapts to many climatic conditions, is tolerant of many soil types and endures air pollutants in urban sites. For fall and winter interest, the seed structures are large and showy. These are inflated capsules that turn from green to chartreuse, and finally to brown. Goldenrain tree is pest free and requires little care. Severe winters may cause some twig or bark damage, but trees usually recover well. This tree develops best in a sunny location although it tolerates light shade. Fall leaf color is not outstanding; usually it's dull yellow. Seeds of goldenrain tree germinate readily. It can invade surrounding areas and has the potential to become a pest.

Hardiness Zones: 5-9

Moisture:



Growth:



Form and Scale:

Flower:



Fall Color:



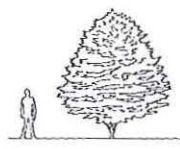
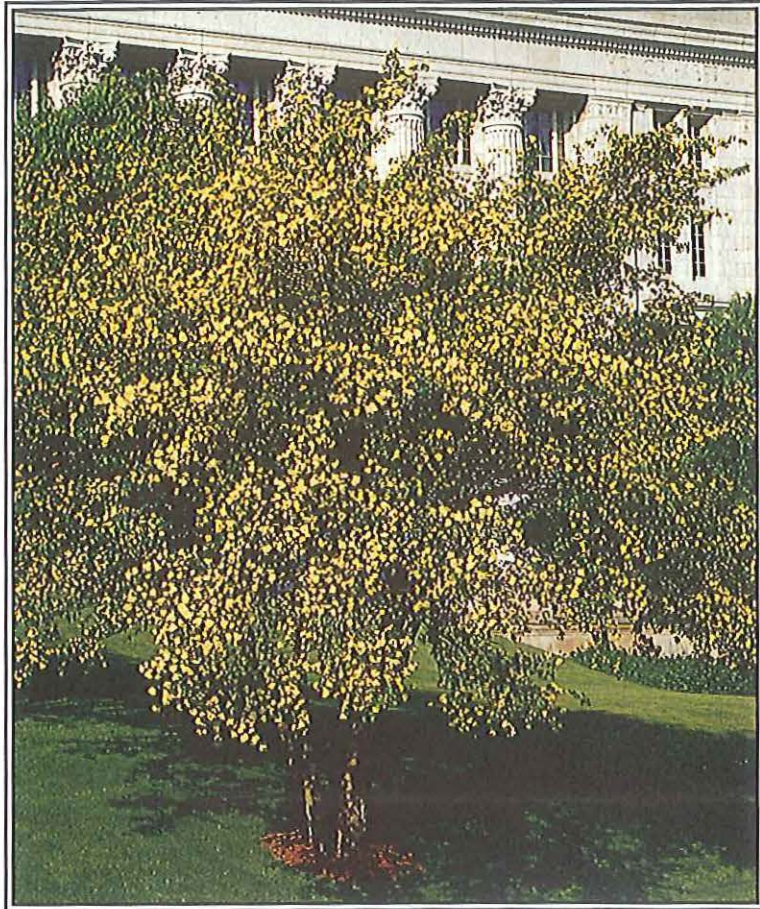
Washington hawthorn - *Crataegus phaenopyrum*  
 Green hawthorn - *Crataegus viridis*

Many species of hawthorn are native to Missouri, and because of the abundance of hawthorns in the natural landscape, it has been named the official state flower. (The species deserving this recognition is downy hawthorn, *Crataegus mollis*.) Insect and disease pests can ruin the ornamental value of many hawthorns, although the trees usually survive. For landscape plantings, the Washington hawthorn and a cultivar of green hawthorn called 'Winter King' have become the most frequently used. Washington hawthorn is somewhat disease resistant but the leaves and fruits of 'Winter King' can be damaged by cedar-quince rust fungus. Lacebug is an insect that may feed on hawthorn leaves, causing serious leaf browning by mid- to late-summer.

The Washington hawthorn grows upright when young, but develops a broad canopy and a rounded form with age. The tree is thorny and sometimes used as a barrier hedge by allowing or encouraging low branching. As single specimens, hawthorn trees may be shaped with single or multiple trunks. Attractive small red-orange fruits are produced in late fall and persist into the winter until severe cold turns them black or birds eat them.

'Winter King' hawthorn develops into a broad, flat-headed tree. It derives its cultivar name because the red-orange fruits persist with good color long into winter, often until March or when waxwings or other birds eat them. Hawthorns are tolerant of urban conditions. They can grow well in many soils and tolerate drought, wind and heat. They do not endure heavy shade or poor drainage.

Hardiness Zones: 4-8 (both)



Form and Scale:



Moisture:



Growth:



Flower:



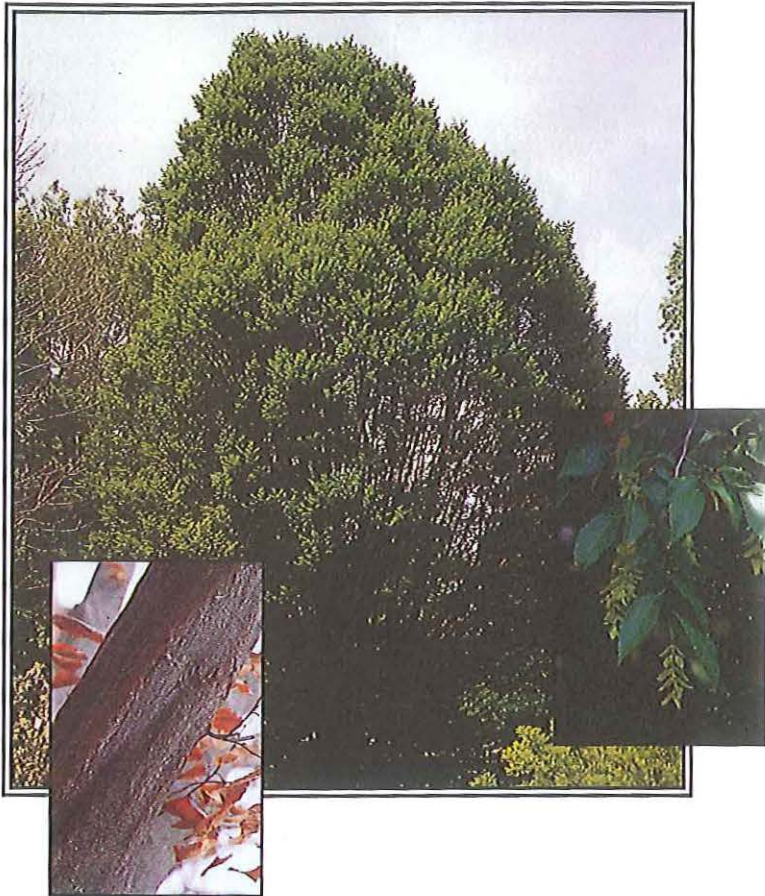
Fall Color:



Downy hawthorn



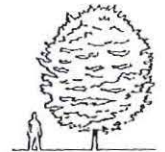
Cockspur hawthorn



*Carpinus betulus*

European hornbeam is a medium-sized tree that often is overlooked for use in stressful climates and urban sites. Besides being very adaptable to different soils and environmental conditions, it is essentially pest free. Leaves are dark green and develop a good yellow fall color. Although several cultivars exist, the most available and most often used is an upright growing form called 'Fastigiata'. It has a dense growth that makes it useful for a tall screen. Small trees planted close together may be used to form a tall hedge since this plant tolerates shearing. Single trees make excellent specimens with low maintenance. A close relative, the American hornbeam or musclewood, *Carpinus caroliniana*, is also a durable and well-adapted tree. It has attractive smooth gray bark and leaves that turn yellow or orange in fall. While not widely available, these trees deserve more use.

Hardiness Zones: 4b-7



Form and Scale:

Moisture:



Flower:



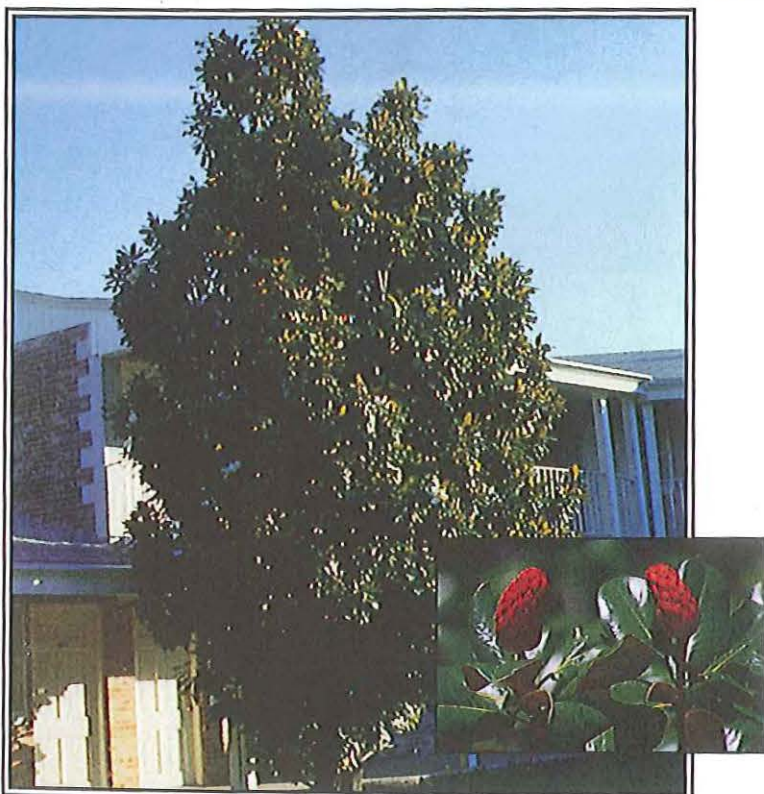
Growth:



Fall Color:



Magnolias

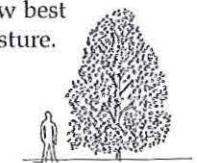


Southern magnolia

Southern magnolia - *Magnolia grandiflora*  
 Saucer magnolia - *Magnolia x soulangiana*  
 Sweetbay magnolia - *Magnolia virginiana*

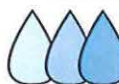
These three magnolias are part of a large group of useful landscape trees and shrubs. The southern magnolia makes an excellent large evergreen specimen tree in the southern portions of the state. In summer it produces huge, white, fragrant flowers. In northern areas it grows smaller and often suffers winter damage. The saucer magnolia can be grown state wide. It is slow growing and eventually forms a small multi-stemmed tree. It flowers very early in spring with lavender or pink tulip-shaped flowers. The slow growth allows its use as a large shrub for many years. Sweetbay, or swamp magnolia, is evergreen in southern areas and deciduous in more northern areas. It also is grown as a multi-stemmed shrub and can reach 15 feet or more in height. Sweetbay magnolia produces fragrant white flowers among the leaves in late spring and early summer. Magnolias grow best in deep, acid soils with adequate soil moisture. They have few pests or problems.

Hardiness Zones: 6-9  
 Hardiness Zones: 4b-8  
 Hardiness Zones: 5b-9



Form and Scale:

Moisture:



Flower:



Growth:



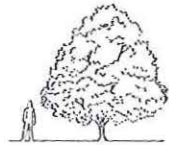
Fall Color:



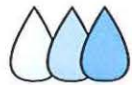
*Sophora japonica*

A good tree for midsummer flowers is the Japanese pagodatree. Its clusters of cream-white pealike flowers provide conspicuous color during the heat of summer. Young plants grow fast to form trees with wide-spreading crowns. Bean-like fruits are tubular and long with swollen sections for each seed. Pods may become a nuisance if trees are planted near walks or drives, but are decorative in other areas. Twigs of this tree remain green to provide winter color, but may be damaged during severe winters or rapid temperature fluctuations. Japanese pagodatree is tolerant of urban conditions, poor soils, heat and drought. The compound leaves are bright green, giving a good summer display, although without colorful fall foliage. It may be attacked by a few insects or diseases, but none serious, so it may be considered essentially pest free.

Hardiness Zones: 4b-8



Form and Scale:



Moisture:



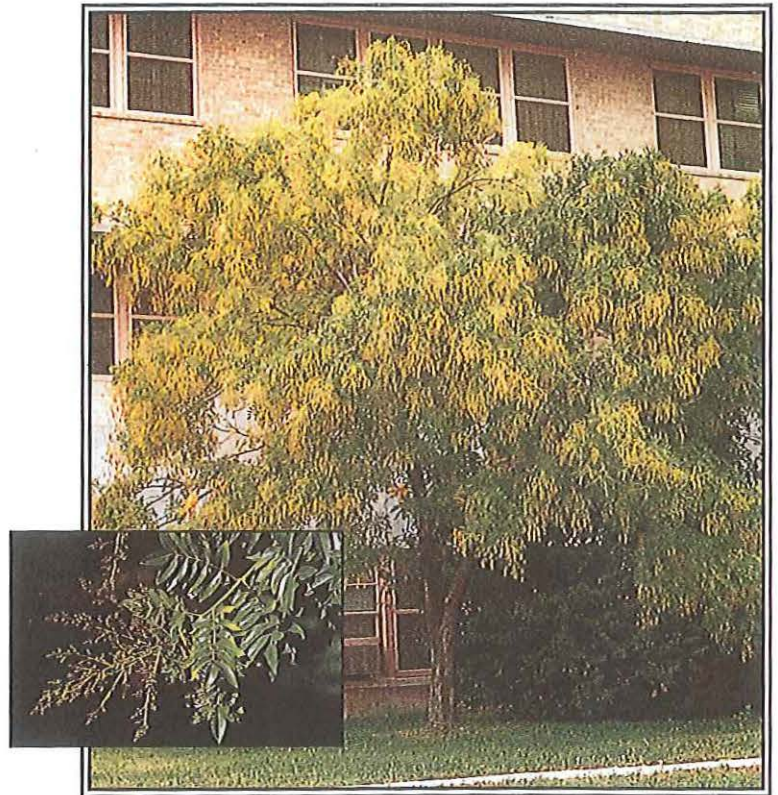
Growth:



Flower:



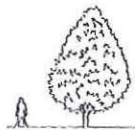
Fall Color:



*Pyrus calleryana*

Sometimes the variety name of a tree becomes so popular that the species is known almost solely by that name. This is the case with the widely planted 'Bradford' callery pear. Other cultivars such as 'Aristocrat', 'Capital', 'Redspire', and 'Cleveland Select' are now available. White flowers are produced abundantly in very early spring. Glossy green leaves turn wine-red in fall. The overall shape of these trees is compact and symmetrical. Callery pears are generally adaptable to a wide variety of growing conditions. The cultivar 'Bradford' gained original popularity because it is resistant to fire blight, a serious disease of pears in our area. Not all newer cultivars are as resistant, although 'Redspire' and 'Cleveland Select' have performed well. The pea-sized pear fruits are not messy in the lawn or garden. 'Bradford' tends to produce heavy limbs with narrow branch unions that may fail under an ice or wind load.

Hardiness Zones: 4-8



Form and Scale:



Moisture:



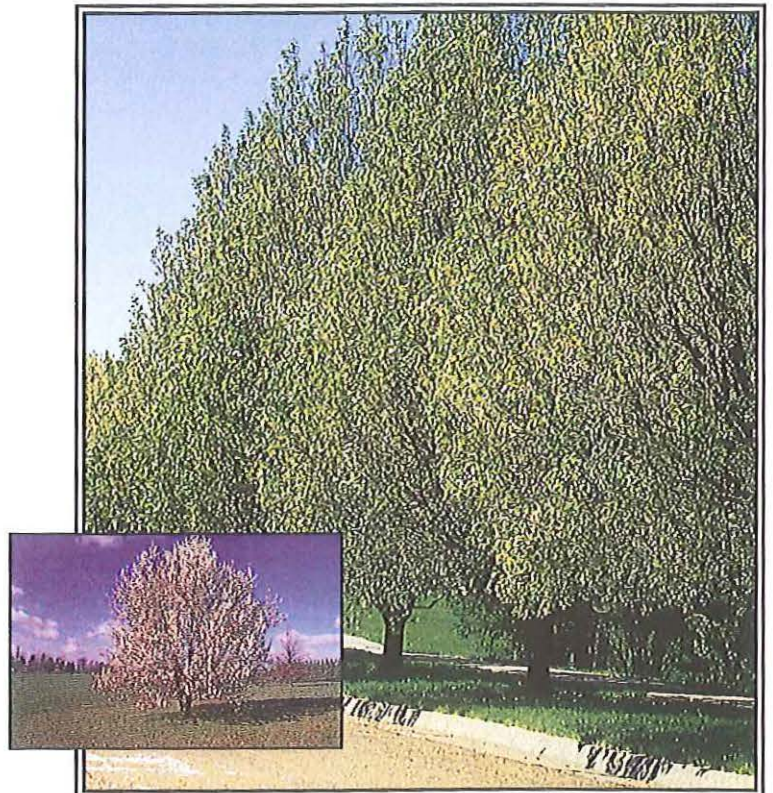
Growth:

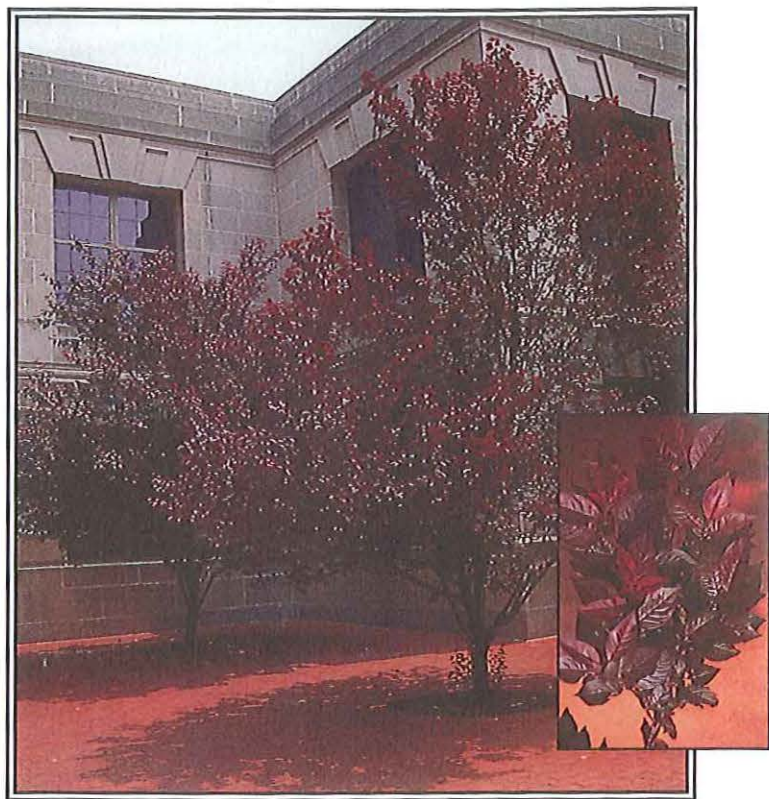


Flower:



Fall Color:

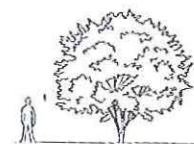




*Prunus cerasifera*

Purple-leaf plum is best known for its dark reddish foliage. Trees are easy to transplant and are tolerant of many soils and growing conditions, including heat and drought. They are not pollution or salt tolerant. Plums are subject to cankers, leaf spots, borers, tent caterpillars and a number of other problems that may make them short-lived. The small, fragrant white to pale pink flowers bloom in early spring and produce small plums that are edible. The small size of the plum gives them another common name, cherry-plum. 'Newport' and 'Thundercloud' are the most popular cultivars because of their vigor and good purple leaf color that is retained well during the summer. These trees are usually small and low branching. The purple-leaf sand cherry, *Prunus x cistena*, is a related plant also used for its purple leaf color.

Hardiness Zones: 5-8



Form and Scale:

Moisture:



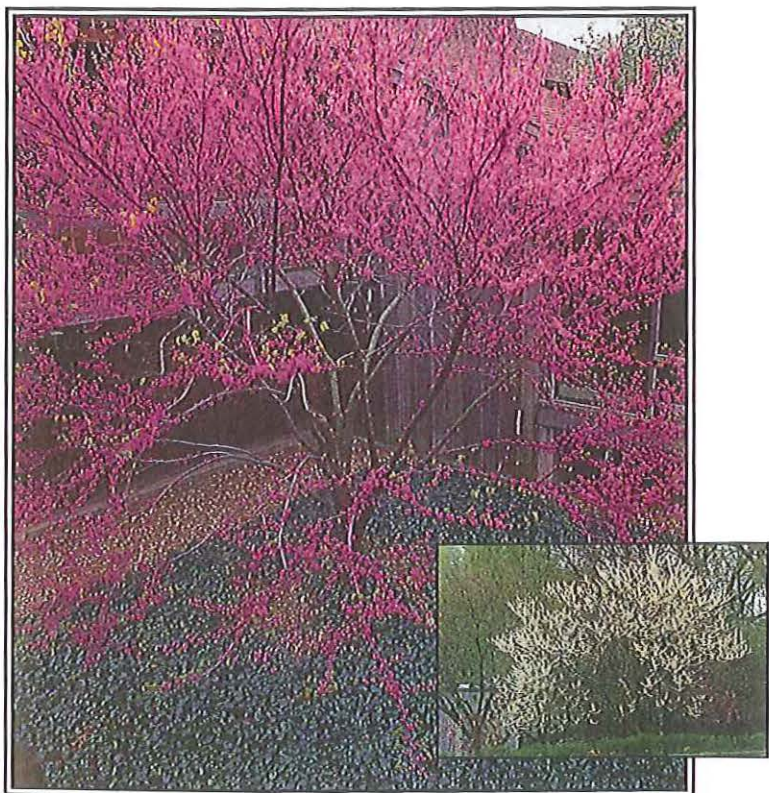
Flower:



Growth:



Fall Color:



*Cercis canadensis*

Eastern redbud is well-known for its rosy-pink spring flowers in Missouri woodlands. It also can be found growing in the open in old fields and fencerows. It grows best in rich soils, but can tolerate poor sites if they are well-drained. Redbud is relatively pest free, although verticillium wilt sometimes shortens the life span. Foliage develops well after flowering, and the pealike pods often persist through the winter. A white variety is available that makes an outstanding specimen against an evergreen or dark background. The cultivar 'Forest Pansy' produces new foliage that is deep red-purple, but later turns green. Redbud trees are abundant seed producers. Many seedling trees may appear in some gardens to the point of being weedy.

Hardiness Zones: 4-9



Form and Scale:

Moisture:



Flower:



Growth:



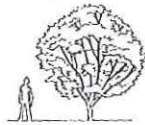
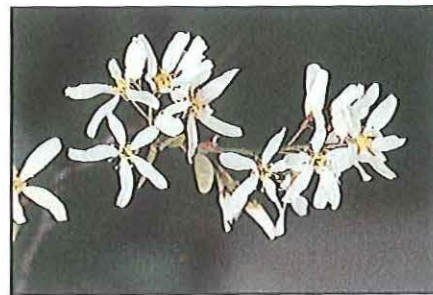
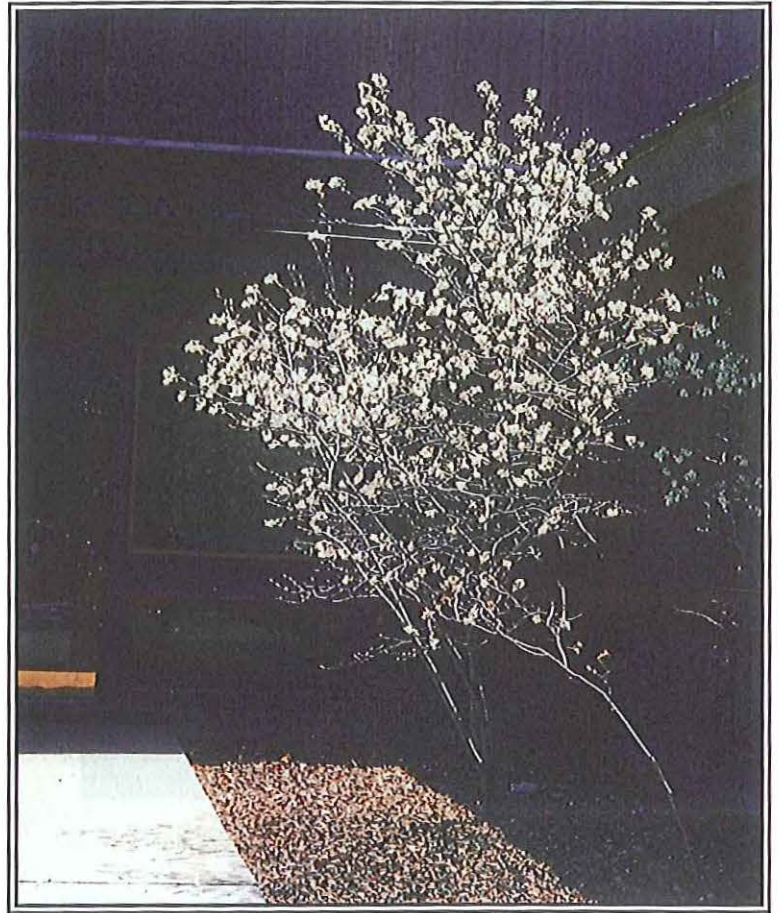
Fall Color:



*Amelanchier arborea*

Among the many species of serviceberries, downy serviceberry is the largest and most tree-like. Most others develop as large shrubs. All the serviceberries make useful small trees. Leaves are gray-green and turn yellow, red or orange in fall. Showy white flowers are produced very early in spring before the leaves. Bark on the trunk is smooth and light gray. Serviceberries tolerate light shade, but flower and fruit best in full sun. They are adapted to many soil types and environmental conditions and are fairly pollution tolerant. Fruits are dark purple with a bluish bloom, with a resemblance to blueberries. Birds are fond of them. They are edible and flavorful, but rather seedy. Cultivars exist, but are not common. 'Autumn Brilliance' is perhaps the most popular, and is grown mainly for its red-orange fall foliage.

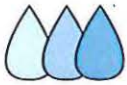
Hardiness Zones: 4-9



Form and Scale:

Flower:

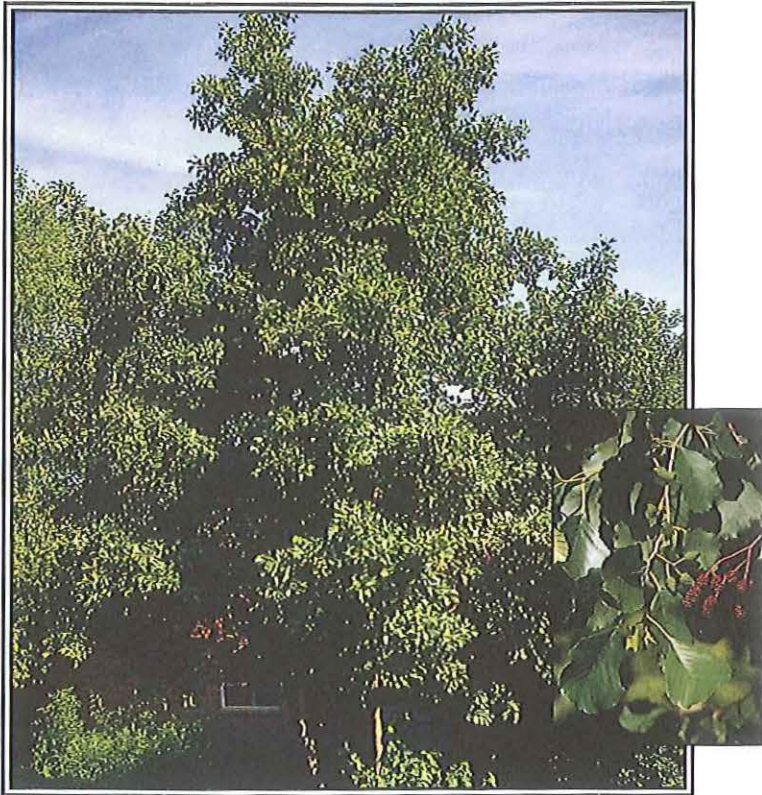
Fall Color:



Moisture:

Growth:





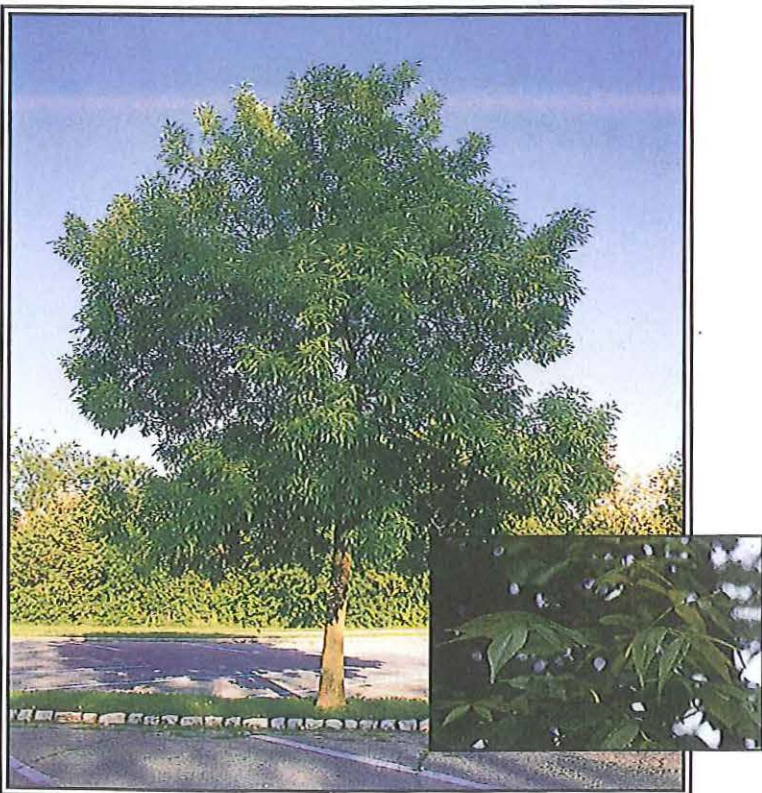
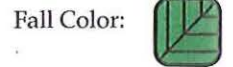
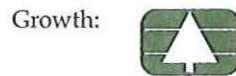
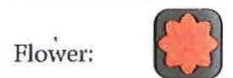
*Alnus glutinosa*

The European alder is a fast-growing tree when young. It usually develops a single trunk with an oval-headed crown. It also may be grown with multiple trunks as a landscape feature. The summer foliage is dark, glossy green and tolerates partial shade. This tree may be planted in wet sites or along waterways, but it also is suitable for drier areas. Alder is a good selection for poor soils since it is able to fix atmospheric nitrogen and tolerates both acid or slightly alkaline conditions. The fruiting structure is a small cone, which adds ornamental value when the tree is dormant. It is not a tree with serious pests, although woolly alder aphid may be one of the most common and damaging insects. Varieties exist with yellow leaves, cut leaves and columnar growth, but they are not readily available:

Hardiness Zones: 3-7



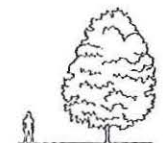
Form and Scale:



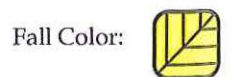
*Fraxinus pennsylvanica*

Green ash grows fairly fast, developing a pyramidal shape when young, but it soon forms into a wide-spreading round-topped tree. Compound leaves give it a medium texture, but the twigs and branching pattern create a coarse effect in winter. As trees age, inner twigs often are shaded out and die. These dead twigs may drop from older trees during storms. Green ash adapts to a wide range of soils and cultural conditions. Ash borer is the most serious insect pest, which may cause branches to die, affecting the tree's ornamental value. Seeds are abundantly produced on female trees. Seedlings may become weedy. For this reason, male selections are preferred. Among the most popular male cultivars are 'Marshall's Seedless,' 'Summit' and 'Patmore'. The yellow fall color lasts a short time since green ash is among the first trees to drop its leaves in fall.

Hardiness Zones: 2-9



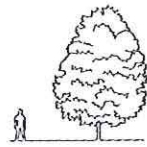
Form and Scale:



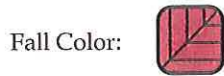
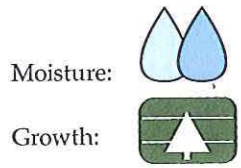
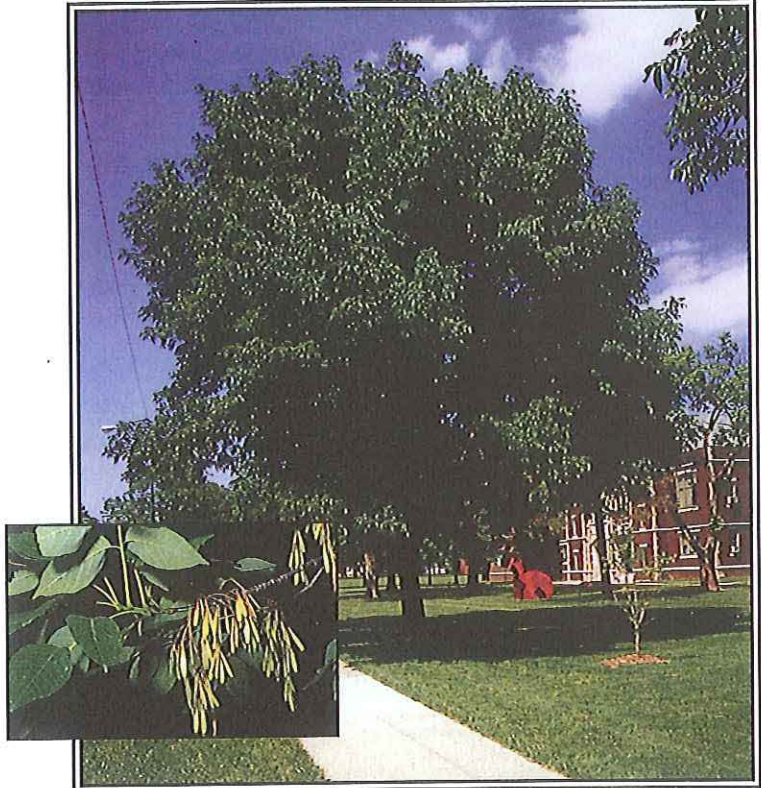
*Fraxinus americana*

White ash has many characteristics of green ash, but trees tend to develop into an oval rather than round shape. Growth is not quite as rapid as green ash. Trees are easy to establish, and adapt to a wide range of conditions. White ash has a distinctive purple to maroon fall color. White ash varieties are selected primarily for fall color and are among the first trees to turn, lasting two to three weeks. Among the most popular cultivars are 'Autumn Purple' and 'Rosehill.' White ash is susceptible to the same pests as green ash, but ash borer is sometimes more damaging, possibly because growth is slightly slower. Ash flower gall, caused by a mite, attacks male flowers, resulting in abnormal growth. Unattractive galls persist, making the tree less ornamental. White ash is worth considering when a moderately fast growing tree is wanted.

Hardiness Zones: 2-9



Form and Scale:



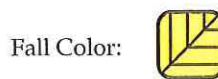
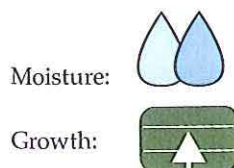
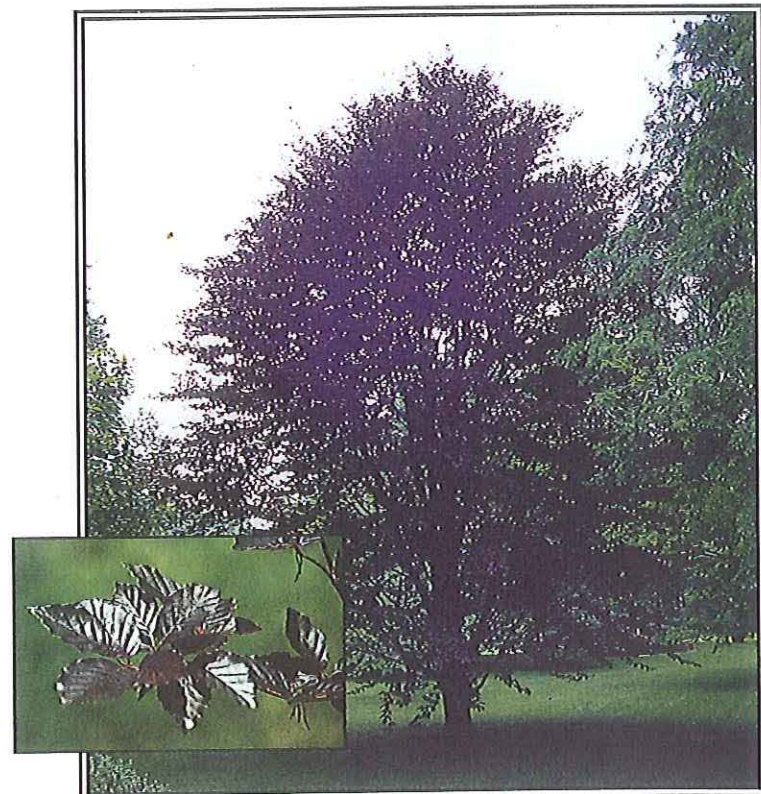
*Fagus sylvatica*

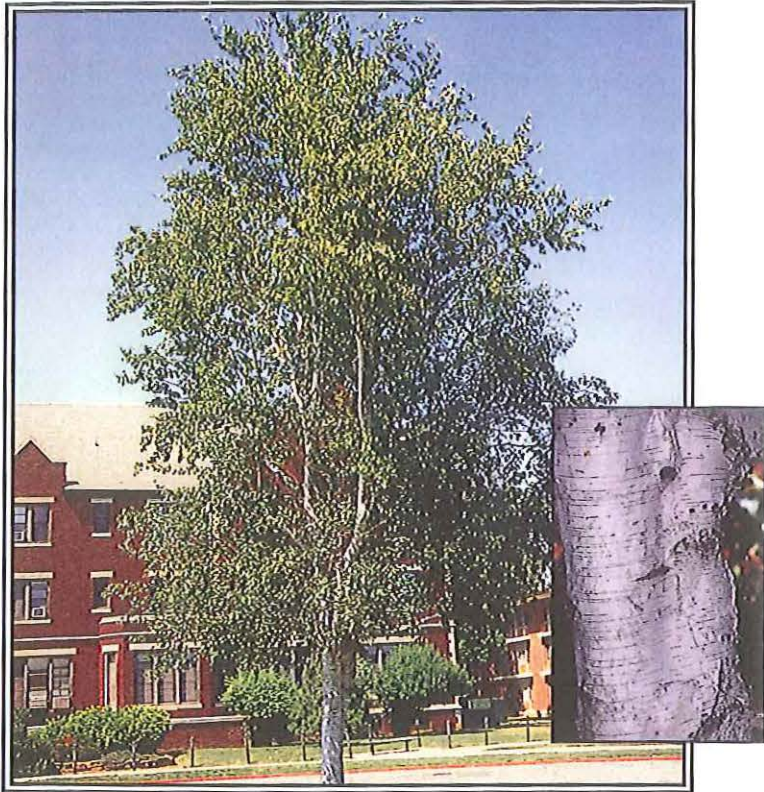
The European beech becomes a large shade tree in moist, moderate climates. Hot summers and rapid temperature fluctuations in winter will limit its growth in most of Missouri. Planting should be limited to protected sites, light shade or landscapes where irrigation is available during hot, dry periods. The glossy foliage with wavy margins, smooth gray bark and densely pyramidal to oval crown make it a useful accent tree. Because beech is so popular in many areas of the world, many cultivars exist. Some more commonly available cultivars include 'Asplenifolia,' which has cut leaves; 'Atropunicea' or 'Purpurea,' the purple-leaf beech; and 'Purpurea Tricolor' or 'Rosea-marginata' known as tricolor beech. Sun scald of the bark, along with leaf scorch, are common environmental problems of beeches during hot or dry weather. European beech should not be ignored, but limited in its use.

Hardiness Zones: 4-6



Form and Scale:





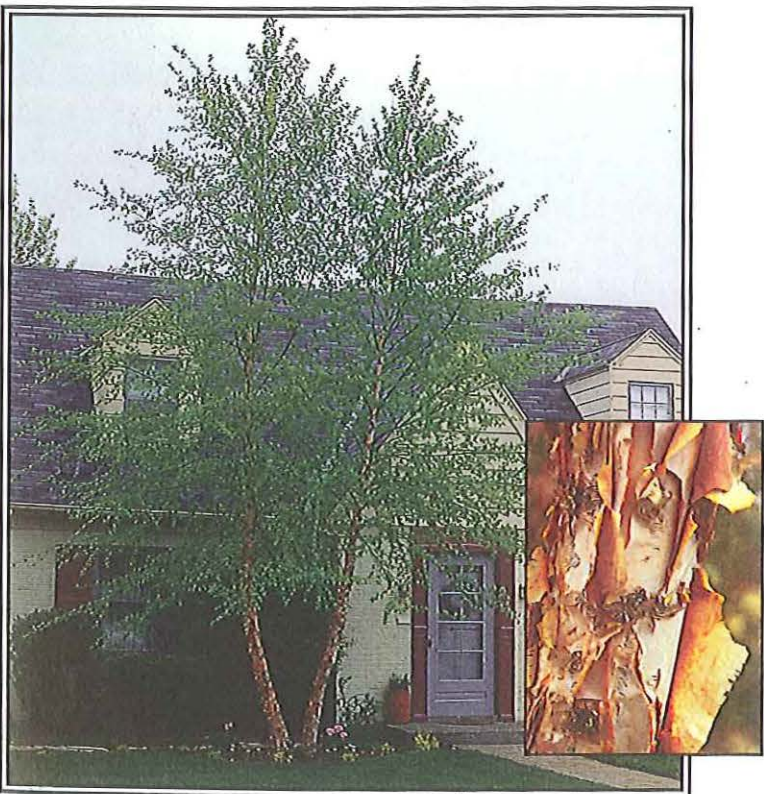
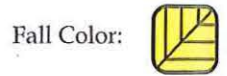
*Betula papyrifera*

Although paper birch is a tree suited to northern states with cool summers, it is being planted more frequently since it seems resistant to insect pests. It is resistant to the bronze birch borer, which has almost eliminated European white birch in parts of Missouri. Paper birch is also tolerant of a broader range of soil pH than the native river birch. Where constant moisture is available and soils are good, it is a fast-growing tree. It should not be used extensively, but may make an interesting accent or small grove. Its most outstanding feature is the chalky, white peeling bark. It has a clear yellow fall color. Because of the environmental stresses of our climate, it tends to be rather short-lived, a reason for limited use. This is a tree for full sun, but it also tolerates light shade. Paper birch is not pollution tolerant.

Hardiness Zones: 2-6



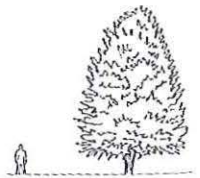
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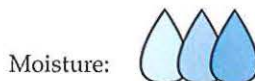
*Betula nigra*

River birch is a native that has gained popularity for planting because of its rapid growth, unique peeling bark and resistance to bronze birch borer. It transplants easily and makes a useful shade tree with either single or multiple trunks. Shade is light, so turf can be grown beneath it. It cannot be considered a replacement for the European white birch because it does not produce chalky white bark. However, the cultivar called 'Heritage' is sometimes used with this idea, since the bark peels off young trunks and limbs to show a white to pinkish-white coloring beneath. In addition, this cultivar appears more resistant to leaf spot, a disease that can cause early defoliation. It is an excellent tree for wet locations, but should not be planted in alkaline soils.

Hardiness Zones: 4-9



Form and Scale:



*Nyssa sylvatica*

Blackgum, also known as sour gum or tupelo, is native to the southeastern third of the state. Foliage is glossy, deep green and matures to outstanding fall color from orange to deep scarlet. Flowers are not showy and the blue-black fruits in fall are ornamental for only a short time before birds and other wildlife eat them. The shape of a young tree is pyramidal, which becomes oval on older trees. Blackgum is sometimes slow to become established after transplanting, so after-planting care is important. Once established, trees require little care other than watering during drought. Although a slow-growing tree, blackgum deserves to be planted more often. Blackgum can be considered essentially pest free, since the few pests that may attack it are not serious. It tolerates urban growing conditions.

Hardiness Zones: 3b-9



Form and Scale:



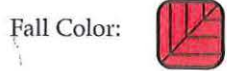
Moisture:



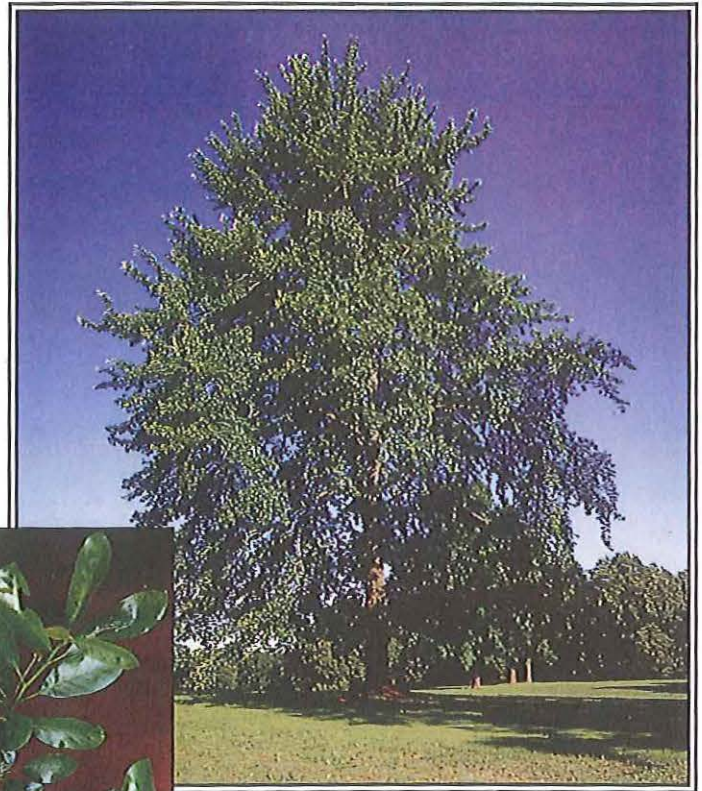
Flower:



Growth:



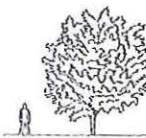
Fall Color:



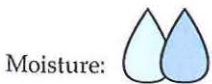
*Gymnocladus dioica*

Kentucky coffeetree is a native tree well-suited to large open spaces. Branches and twigs are coarse, making it distinctive and easily identified in winter. The small leaflets give the tree a medium texture in summer. Mature trees are broad-spreading with an almost rounded form, but young trees are more upright and oval. Although it grows best in rich soil, it is adapted to many soil types and conditions. It also withstands city conditions and pollution. Female trees produce fruit that resembles extra large lima bean pods that hang on the tree through the winter. The main leaf stem of each compound leaf may be two feet long and drops from the tree after the leaflets. Kentucky coffeetree breaks dormancy late in the spring. Fall color is yellow, but not usually long lasting. Overall, the tree is durable and long-lived.

Hardiness Zones: 3-8



Form and Scale:



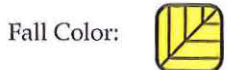
Moisture:



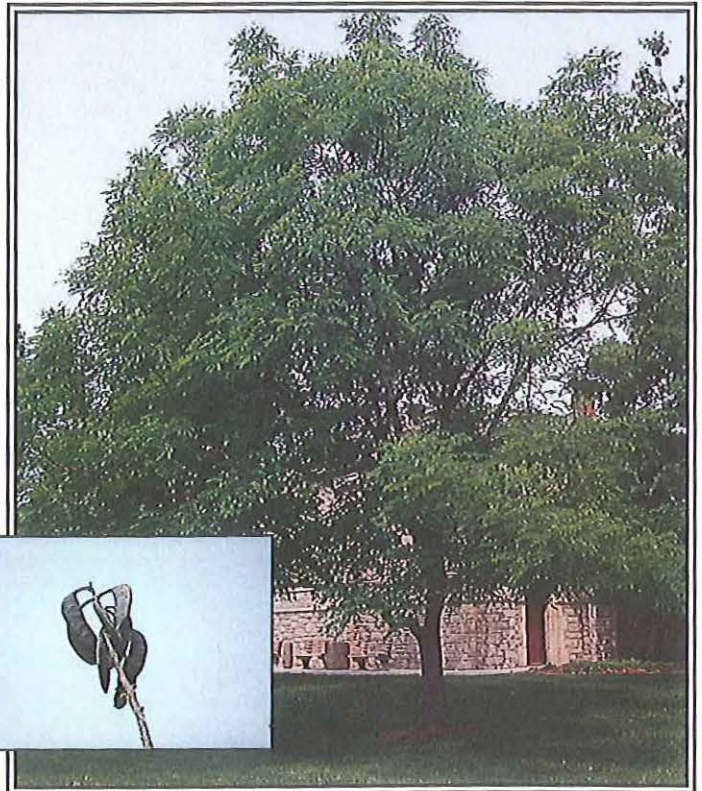
Flower:



Growth:



Fall Color:



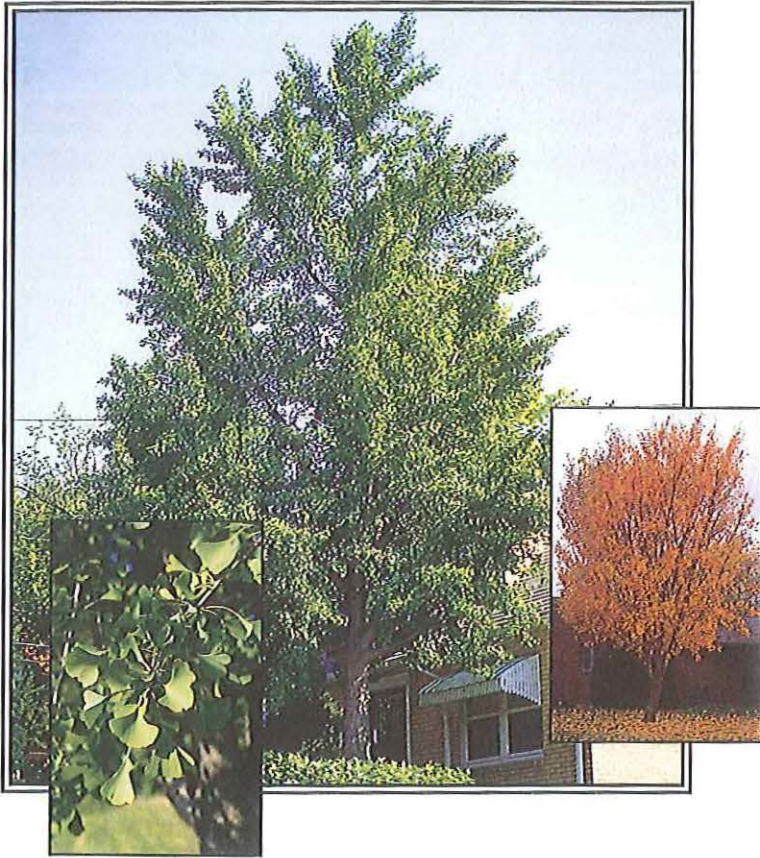
## Ginkgo

## LARGE SHADE TREES

### *Ginkgo biloba*

Ginkgo is an outstanding city tree because of its pollution and salt tolerance. It has open branching which allows enough sunlight to penetrate to maintain a lawn. Young trees usually have a pyramidal shape, but old trees can be very wide-spreading. It is tolerant of many soil conditions, although best growth occurs in well-drained soils with adequate moisture. Apricot-colored fruit is produced by female trees and is considered objectionable because it is messy and produces an undesirable odor. When grown from seed, there is no means of identifying a tree's sex until it begins flowering, which may require 20 years. 'Autumn Gold' is an excellent male cultivar with a pyramidal shape. Known cultivars should be used whenever fruit would be objectionable or where uniform growth form is needed.

Hardiness Zones: 3b-9



Form and Scale:

Moisture:



Growth:



Fall Color:

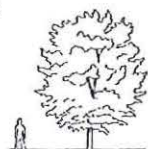
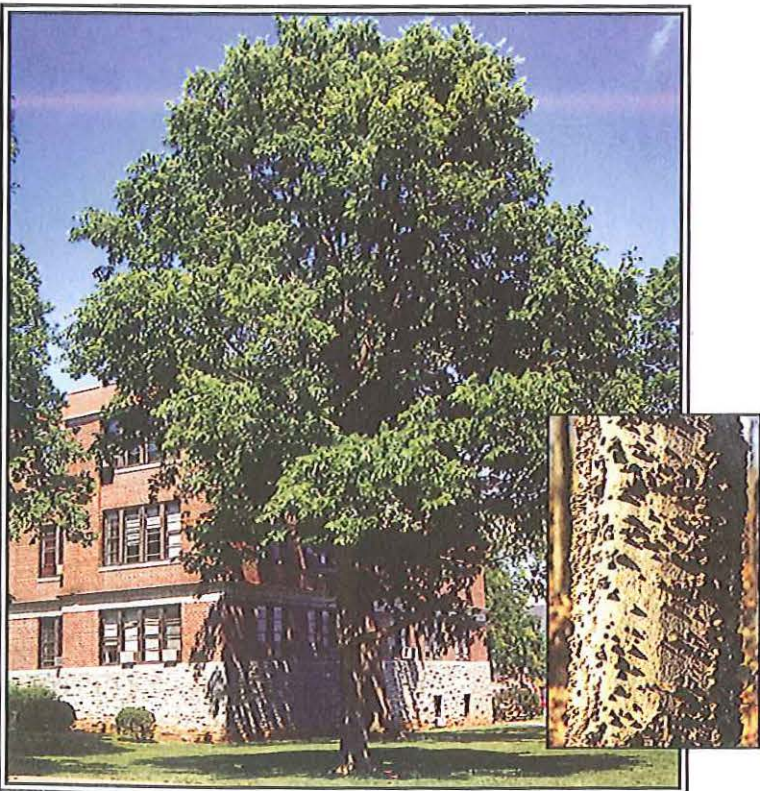


## Common Hackberry

### *Celtis occidentalis*

Common hackberry is extremely tolerant of adverse conditions, but is not one of our best landscape trees. Trees become large and wide-spreading with an elm-like habit that is vase-shaped with drooping branches. The bark is grayish and corky. Red-orange fruits are produced in fall, but are not long-lasting since birds eat them quickly. Its durability makes it a worthy selection for difficult sites. It is easily transplanted and tolerates clay, rocky or sandy soils. Unlike many trees, it also tolerates persistent winds. Hackberry is attacked by a wide range of pests, but they are not serious. Two of the most disfiguring are witches' broom, which causes clusters of twiggy growth, and nipple gall that can cover leaves with large bumps. A cultivar with more compact growth and glossy green foliage is called 'Prairie Pride.' A smooth-barked hackberry, sugarberry or sugar hackberry, *Celtis laevigata*, is a good choice for planting from zone 5b southward. It is more tolerant of low, wet areas than common hackberry. 'All Seasons' sugarberry is reportedly not susceptible to witches' broom and nipple gall.

Hardiness Zones: 2-9



Form and Scale:

Moisture:



Growth:



Fall Color:



*Gleditsia triacanthos var. inermis*

Honeylocust has long been a commonly used tree for urban planting. The open, spreading crown with very small leaflets creates filtered sunlight. The light shade it produces allows a lawn to be grown beneath it. It is very tolerant of many soil conditions, and has salt tolerance for use near highways. The long, curved pods can litter the ground. Cultivars with mainly male flowers therefore essentially podless should be used. Only cultivars that are thornless are commercially available. 'Moraine' has been one of the most popular cultivars, and has no thorns or seed pods. Other cultivars include 'Imperial,' 'Shademaster' and 'Skyline'. A cultivar called 'Sunburst' with yellow foliage that gradually turns green is available, but can be severely attacked by mimosa webworm and stem cankers. Several insects and diseases may affect honeylocust trees. Therefore, the tree should be used only where control measures may be applied if necessary.

Hardiness Zones: 3-9



Form and Scale:

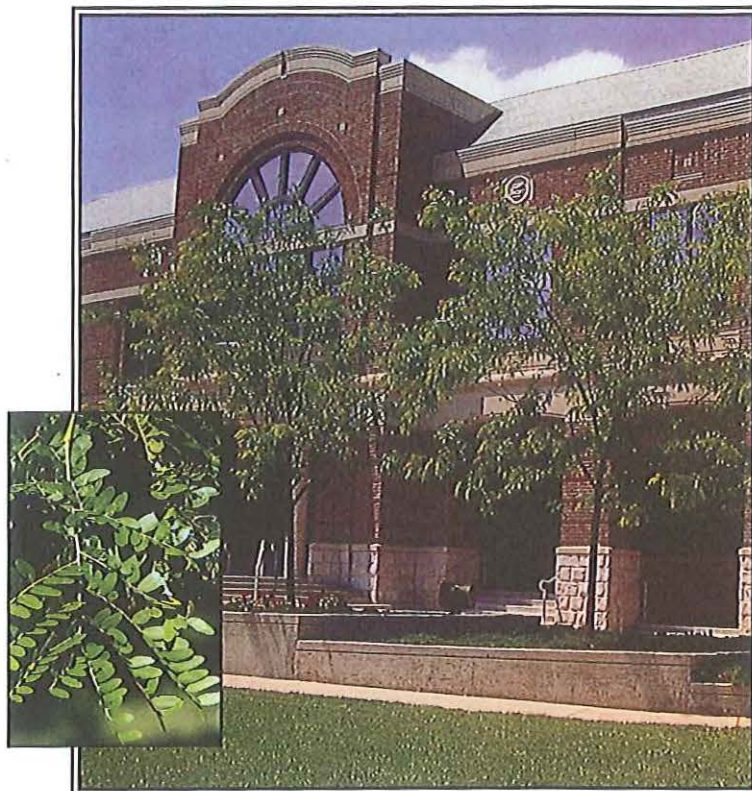


Moisture:



Growth:

Fall Color:



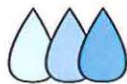
*Tilia cordata*

Littleleaf linden's dark green leaves and dense pyramidal growth make it a suitable choice when a formal-looking tree is desired. Lindens may be damaged during a summer of extreme heat and drought. However, they recover well and are suitable for street trees as well as mall parking lots and other difficult sites. Growth is slow when they are planted in such areas, and watering during stress periods is important. Fragrant summer flowers are attractive to bees. Individuals sensitive to bees should not plant lindens near an outdoor living area. Several insects and diseases may attack lindens and require control. Many good cultivars exist. 'Greenspire' is one of the most popular and best. Other species of linden are sometimes available, but generally are no better than the littleleaf linden.

Hardiness Zones: 3b-7a



Form and Scale:



Moisture:

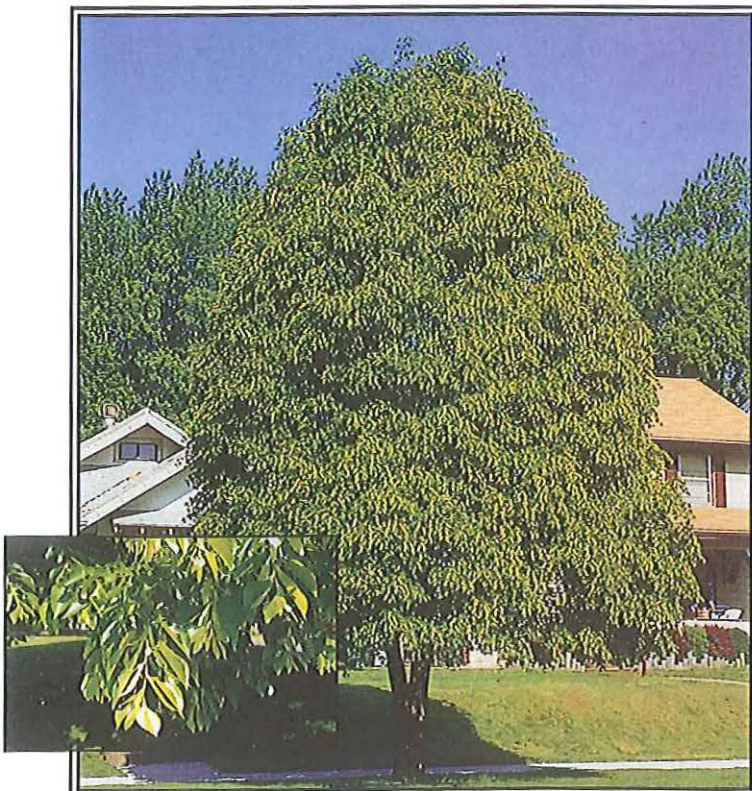


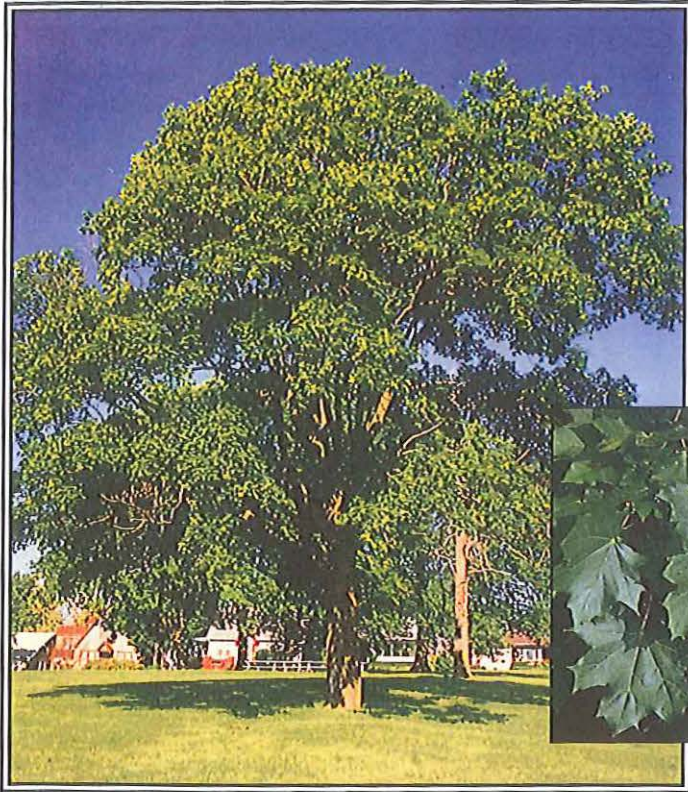
Growth:

Flower:



Fall Color:

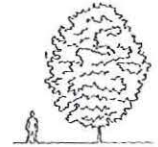




*Acer platanoides*

Norway maple forms a round canopy of dark green, dense foliage that produces heavy shade. The combination of shade and a shallow root system will not allow good turfgrass to grow beneath it. Norway maple is extremely pollution tolerant. Leaves may sometimes scorch under hot, dry conditions. Although it endures our summer heat, trees are at their best in climates where summers are cooler. This tree is easy to transplant and tolerates many soil types and conditions. There are many cultivars of this plant, but only a few are commonly available. These should be preferred since selections with better heat tolerance are often more attractive. 'Summershade,' 'Emerald Queen' and 'Cleveland' are good choices. The best known maroon-leaf cultivar is called 'Crimson King.' Red-leaved cultivars are slow growing and not as well adapted as those with green leaves. Norway maples need plenty of space to develop properly.

Hardiness Zones: 3-7a



Form and Scale:

Moisture:



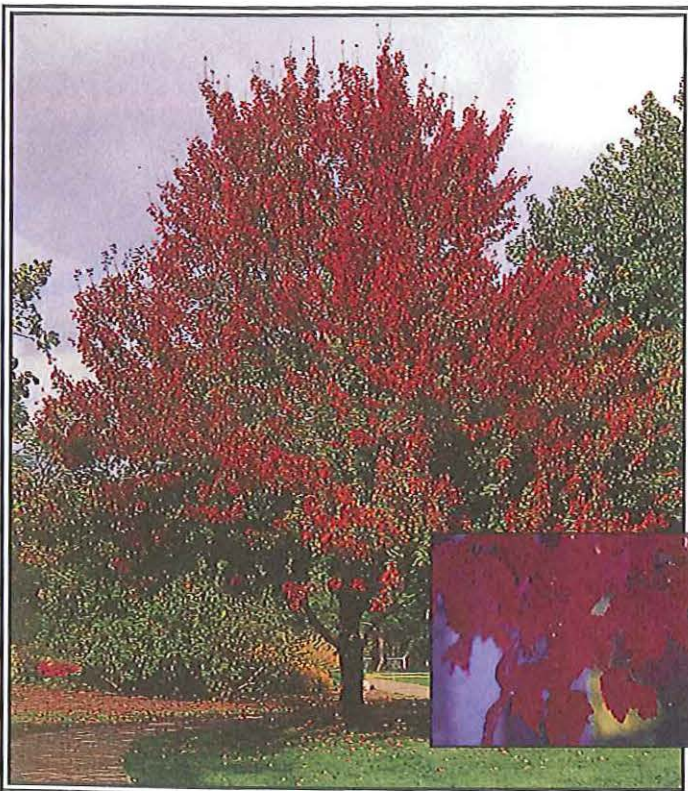
Flower:



Growth:



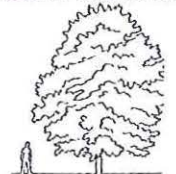
Fall Color:



*Acer rubrum*

Red maple is most often planted for its spectacular orange and red fall color. Many cultivars of red maple are available in the nursery trade. Tree shape is oval when young, but becomes wider spreading with age. Red maple is easy to transplant and tolerant of many soil conditions. This is a tree suitable for poorly-drained sites as well as drier soil conditions. Alkaline soils cause stunted growth and pale yellow leaves with green veins. Leaf scorch may be a problem without irrigation during hot, dry summers. Red maple has a tolerance to urban pollutants such as ozone and sulfur dioxide. The small, early spring red flowers are not highly showy, but are a welcoming sign of spring. The bark of the tree is a smooth gray-brown. 'Red Sunset,' 'Autumn Flame' and 'October Glory' are some popular cultivars developed for fall color. 'Autumn Blaze' is a red-silver maple hybrid with red-orange fall foliage. Red maples without cultivar names may produce only dull yellow fall foliage.

Hardiness Zones: 3-9



Form and Scale:

Moisture:



Flower:



Growth:



Fall Color:



*Acer saccharum*

Sugar maple becomes a very large shade tree that is well-known for fall colors ranging from yellow to orange to shades of red. It is less pollution tolerant than red maple, especially to de-icing salts along roadways. Sugar maple thrives in deep, rich soils. It tolerates poor sites with good drainage, but grows slowly. It needs plenty of space and therefore should be used in large yards, parks, golf courses or similar locations. In shallow soils and other poor sites, leaf scorch may develop during dry periods. Its dense shade and shallow roots prevent a good lawn from growing beneath it. Sugar maple is tolerant of shade and can be used near taller trees or buildings. Many cultivars exist to provide a variety of shapes, fall color and drought tolerance. These should be selected when available. Some are 'Green Mountain,' 'Legacy,' 'Bonfire,' and 'Caddo.' Sugar maples grown from seed are much less predictable.

Hardiness Zones: 4-8



Form and Scale:



Moisture:



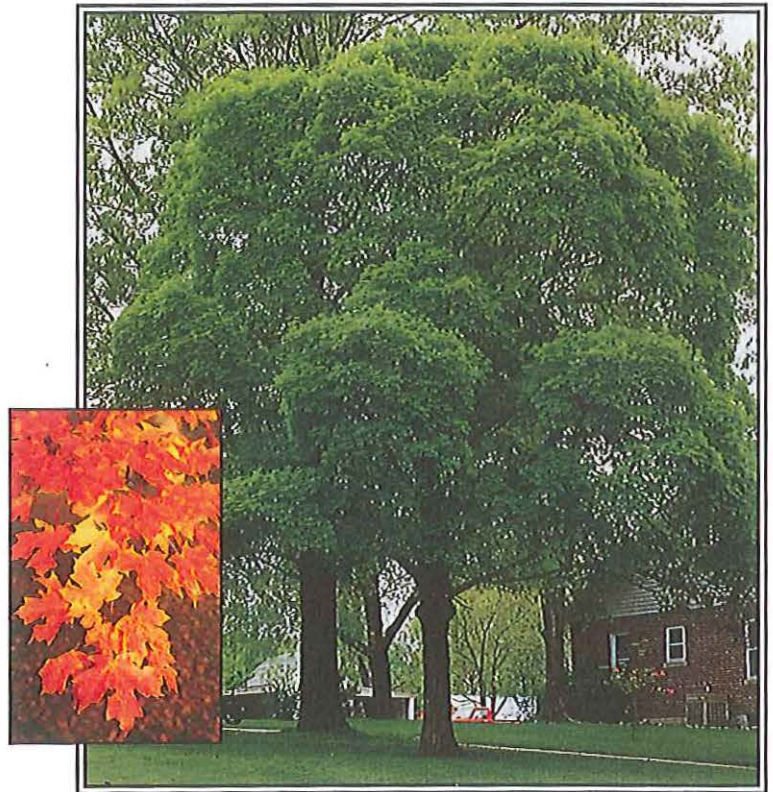
Flower:



Growth:



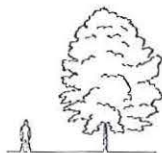
Fall Color:



*Quercus macrocarpa*

Bur oak is a native species that grows statewide on both upland and bottomland soils, although its best growth is on moist, well-drained soils. It can grow in dry soils and is more tolerant of urban conditions than most other oaks. It is slow growing and difficult to transplant. Irrigation and fertilization can speed growth of younger trees. Insect and disease problems are minor. Bur oak produces the largest acorn of any of the oaks: up to 1 1/2 inches in diameter. The large acorns are loved by wildlife but may be a nuisance in lawns. The mature size of bur oak may be too large for the average home landscape, but it makes an excellent tree for parks or other areas where it has room to grow.

Hardiness Zones: 3a-9a



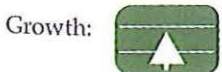
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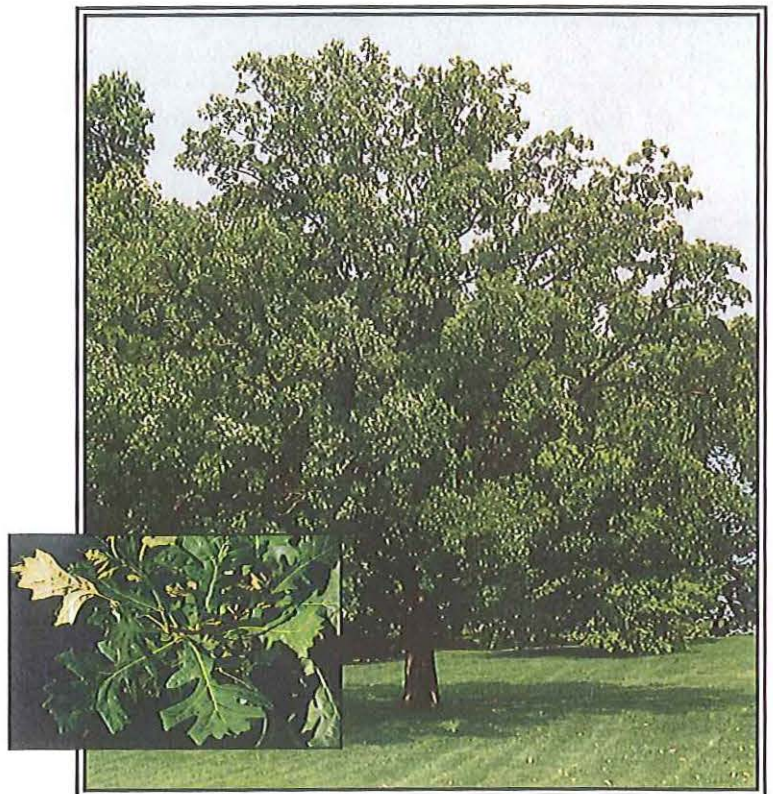
Moisture:



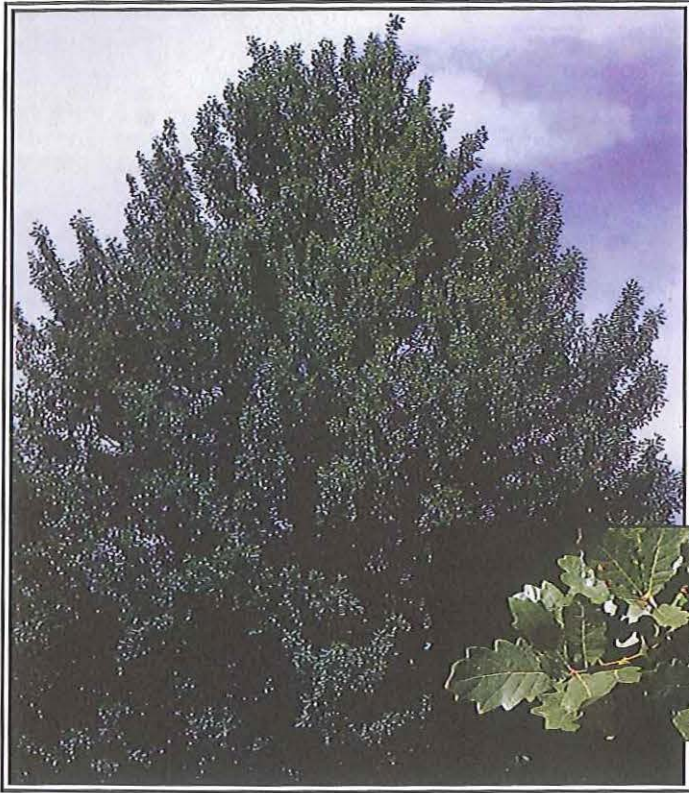
Fall Color:



Growth:





*Quercus robur*

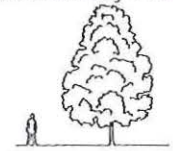
English oak has gained popularity primarily because of the more upright and columnar cultivars that are available. For a tall, narrow screen, these upright selections are more durable choices than upright poplars. The crown of the more typical English oak is pyramidal when young, but becomes rounded with age. Leaves are dark green with rounded lobes somewhat like our native white oak. English oak is easy to transplant, and adapts to many soil conditions, but must have good drainage. Fall foliage is not colorful. Brown leaves are often held through the winter. Pests are not a major problem although mildew can cover leaves in late summer and fall. Acorns are produced freely, so this oak should not be planted where branches hang over walks, driveways or streets. Several cultivars have been developed for predictable shape and mildew resistance, but they are not readily available.

**Hardiness Zones: 4-8**

Moisture:

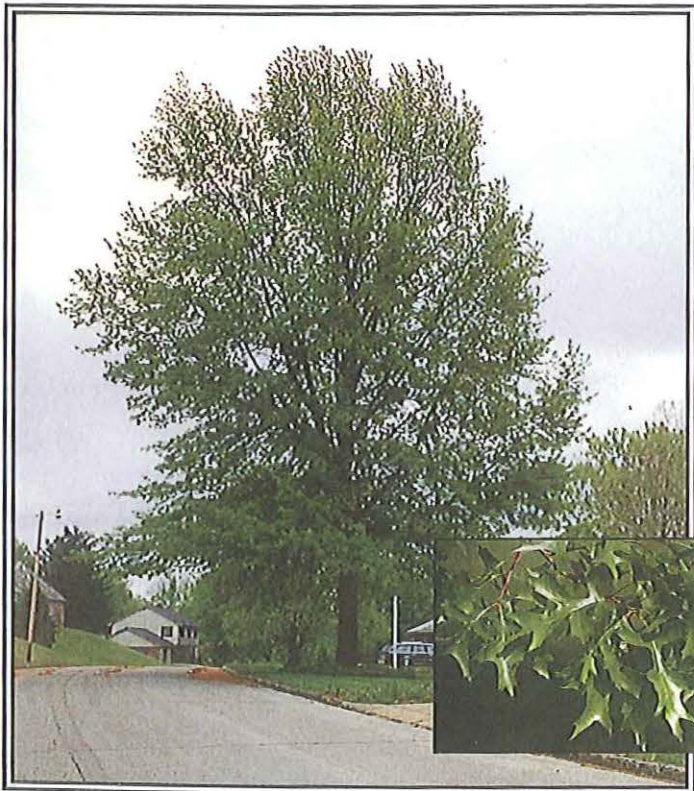


Growth:



Form and Scale:

Fall Color:

*Quercus palustris*

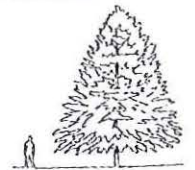
The predictable, symmetrical form and fast growth of pin oak has made it a popular tree for yard and park plantings. Young trees are pyramidal but become oval at maturity. Upper branches are upright to horizontal but lower limbs will droop. This branching pattern makes identification easy. Pin oak is easy to grow because it tolerates many soil conditions. It is intolerant of alkaline soils, which causes stunted growth with pale yellow leaves. Pin oak has few pest problems other than leaf galls and some general pests that seldom need control measures. It is not a good choice for planting near walks, driveways or streets because drooping branches will continually interfere with clearance below the tree. Even when lower branches are cut off, higher ones will begin to droop to take their place. Other oaks without this growth habit are better selections for such locations. Acorns are small enough so they do not become a major nuisance in the lawn. Fall color is reddish.

**Hardiness Zones: 4-8**

Moisture:



Growth:



Form and Scale:

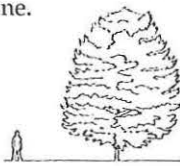
Fall Color:



*Quercus rubra*

An outstanding oak for landscape use is the northern red oak. It becomes a large tree with a rounded, wide-spreading crown. As a mature tree it is among the most majestic of the oaks. Since it grows large, it needs plenty of space. Northern red oak is easy to get established and it is tolerant of urban pollution. Unlike pin oak, which is more widely planted, it is not as sensitive to soil conditions and is less likely to suffer leaf yellowing and poor growth. It is fast growing and ideal for parks, golf courses and other large areas. Leaf galls or leaf feeding insects may attack it, but most pests are not serious. All species in the red oak group are susceptible to a very destructive fungus disease called oak wilt, for which there is no cure. In fall northern red oak produces leaf colors in shades of red, scarlet and wine.

Hardiness Zones: 4-8



Form and Scale:

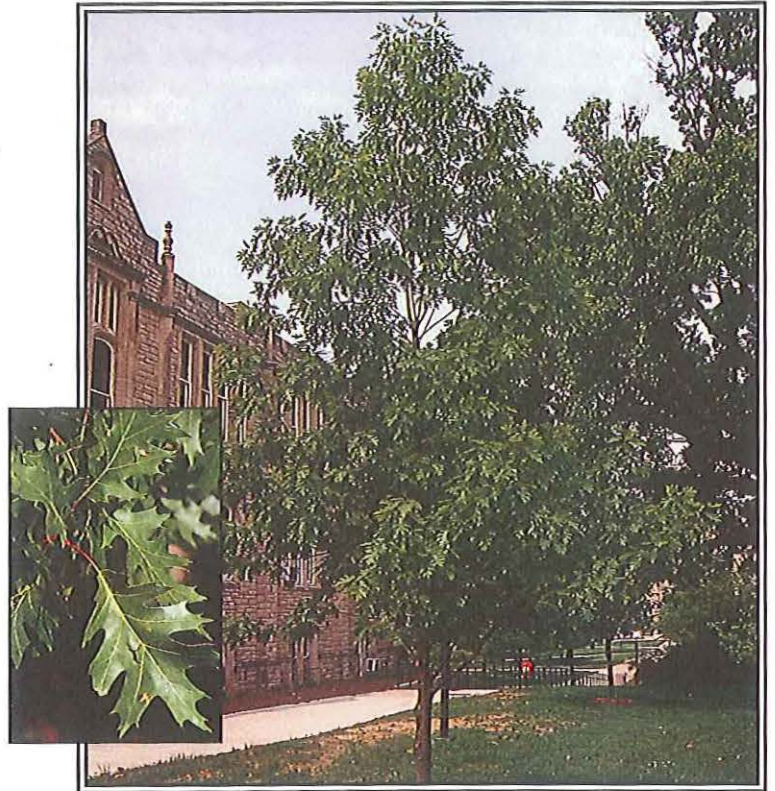
Moisture:



Growth:



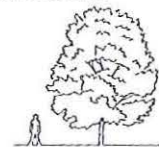
Fall Color:



*Quercus coccinea*

Although scarlet oak has been relatively uncommon for landscape planting, it is gaining popularity and is more available. It is pyramidal to oval when young and the canopy broadens with maturity. The main reason for planting this oak is its spectacular scarlet fall color. It is somewhat slower to establish than pin oak and red oak. It is tolerant of many conditions but is not as pollution tolerant as red oak. As an older tree, the branch structure becomes open as smaller branches are shaded out, sometimes giving a twiggy character to the inner trunk. Since this oak becomes quite large, it is best used in areas with plenty of space. Scarlet oak has no serious pest problems, but it is subject to many of the same pests that attack other oaks. While it grows most rapidly on deep, moist soils, it is also very tolerant of dry conditions.

Hardiness Zones: 4-8



Form and Scale:

Moisture:

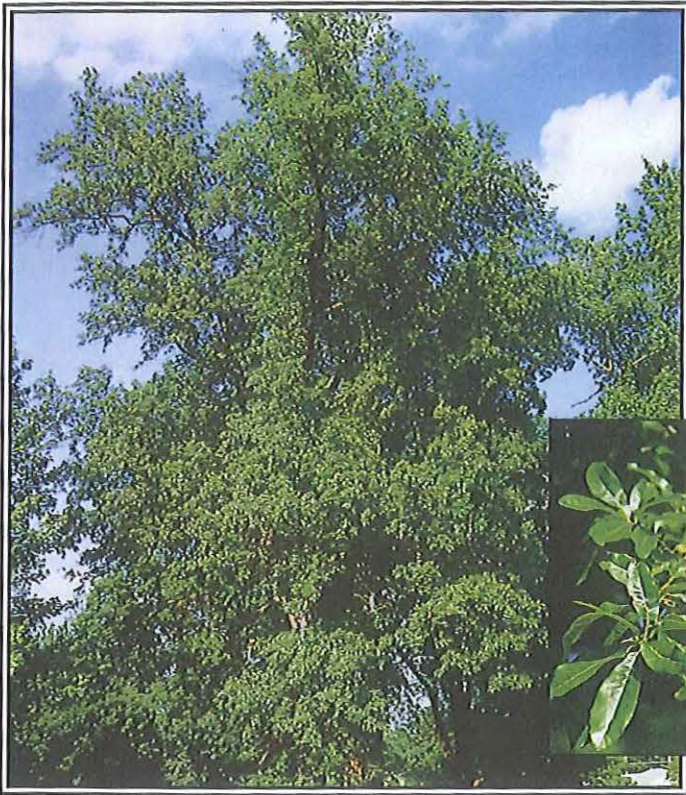


Growth:



Fall Color:

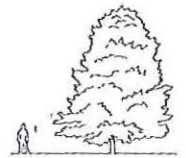




*Quercus imbricaria*

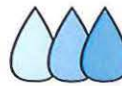
Shingle oak is a native tree once used to make shingles, and is common in many parts of Missouri. It is less used in home landscapes and, like pin oak, it has a tendency to droop its lower branches, making it less desirable near streets or walks where clearance is needed. Foliage is dark, glossy green, but without dramatic fall color. Leaves usually turn brown late in fall and many hang on the tree through the winter. With this quality, it is a tree that can provide winter screening and windbreak. Many people object to the brown winter look for a shade tree. Winter leaf retention requires leaf clean up in spring as new growth is about to start. Shingle oak is a durable and adaptable tree that could be used more frequently for large landscapes. Twig galls will affect some trees and disfigure them.

Hardiness Zones: 4-8



Form and Scale:

Moisture:



Growth:



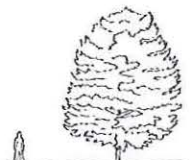
Fall Color:



*Quercus shumardii*

Shumard oak is one of the least common of the oaks used in landscape plantings. It becomes a large tree with similarities to pin, scarlet and red oak, and like them is most useful in large open areas. Growth when young is like pin oak, but mature structure is more like scarlet oak. The leaves are variable and might be confused with pin, red or scarlet oak. Fall color is shades of red and scarlet. It is tolerant of many soils and environmental conditions. Because of good drought tolerance, it is well-suited to the low maintenance landscape where irrigation of any type is not possible during drought periods. It has no serious pest problems, but is subject to general pests of the other oaks.

Hardiness Zones: 5b-9



Form and Scale:

Moisture:



Growth:



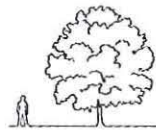
Fall Color:



*Quercus alba*

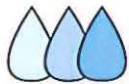
White oak is an important lumber tree in Missouri but also makes a beautiful shade tree. It is found on many types of soil but makes its best growth on deep, moist, well-drained soils. Foliage is blue-green to dark green in summer and turns to a reddish-purple in fall. White oak is sensitive to grade changes and other construction damage, so large specimens are not commonly found on developed sites. It is somewhat difficult to transplant because of its deep tap root. Small trees should be transplanted as balled and burlapped stock. Its slow growth can be increased by fertilization and irrigation during dry periods. Insect and disease problems are minor. White oak is more resistant to oak wilt than the red oaks. White oak should receive high priority for protection during home construction since it is very sensitive to disturbances.

Hardiness Zones: 4b-9a



Form and Scale:

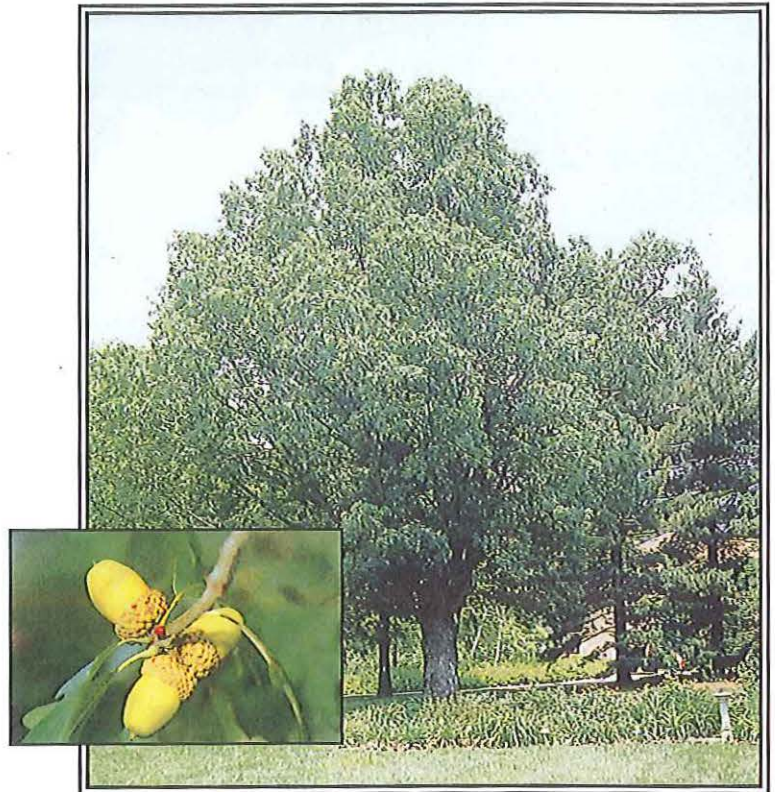
Moisture:



Growth:



Fall Color:



*Quercus bicolor*

The swamp white oak is a native tree that becomes quite large and spreading. Most oaks within the white oak group are difficult to transplant, but swamp white oak is one of the least difficult. As the name implies, it is well adapted to low, moist conditions and bottomlands. In spite of this quality, this tree is able to endure drought conditions once it's well established. Leaves are dark green above and soft gray on the underside. It grows best in deep soils, but is adapted to many soil types and conditions including dense urban clay soils. Alkaline soils will cause leaf yellowing and growth problems. Fall color is a weak yellow and not outstanding. This oak, like most oaks, is subject to attack by many leaf-feeding insects, leaf galls, powdery mildew, and other diseases. Pests are not serious enough to discourage planting, but controls sometimes may be needed to maintain attractiveness.

Hardiness Zones: 3-8



Form and Scale:

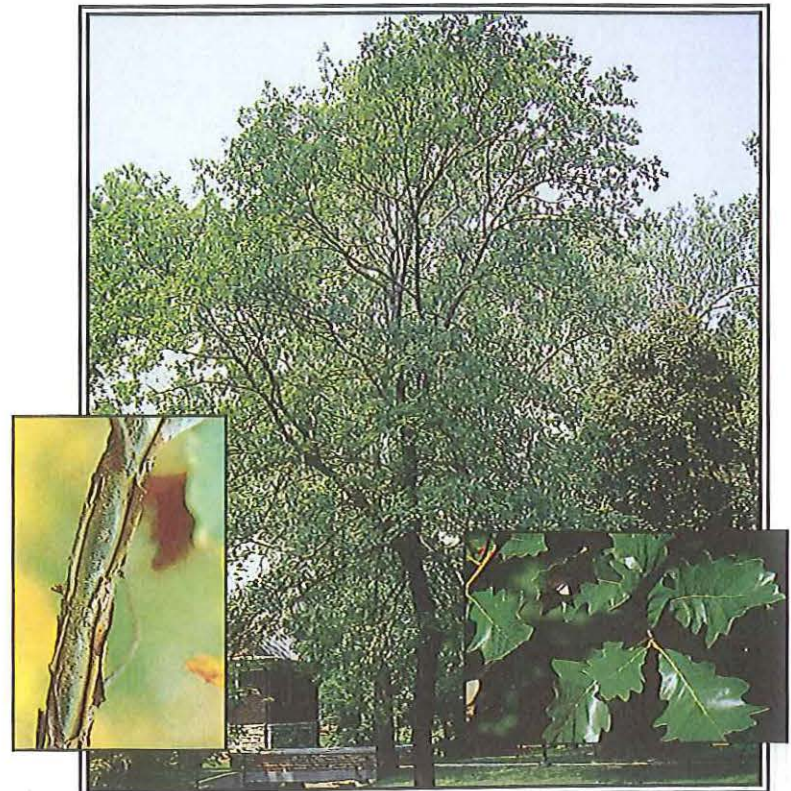
Moisture:

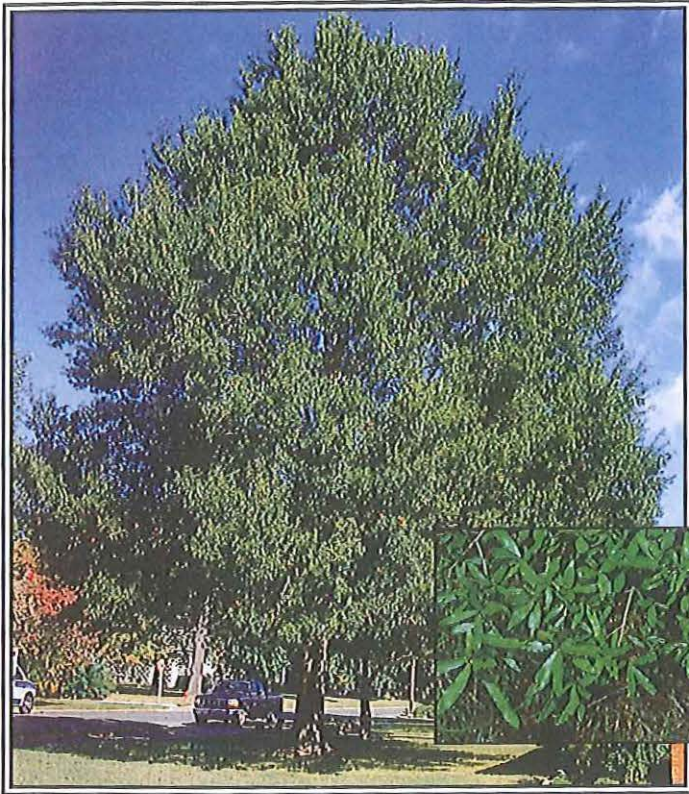


Growth:



Fall Color:



*Quercus phellos*

Willow oak has not been a common landscape tree, but continues to gain popularity. Small leaves produce a fine texture for an oak. The small acorns are not a serious litter problem. This oak is less hardy than most other species, but can be grown throughout the state. In more northern locations twig damage might be expected after very severe winters. Young trees have a pyramidal shape that is maintained for many years until it approaches maturity. It then becomes a wide-spreading tree with a rounded crown. Transplanting it is easy. In colder climates it should be planted in spring so it becomes well-established before winter cold arrives. It is suited to many soils and sites and is fairly drought tolerant.

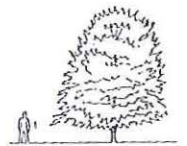
Hardiness Zones: 5b-9



Moisture:



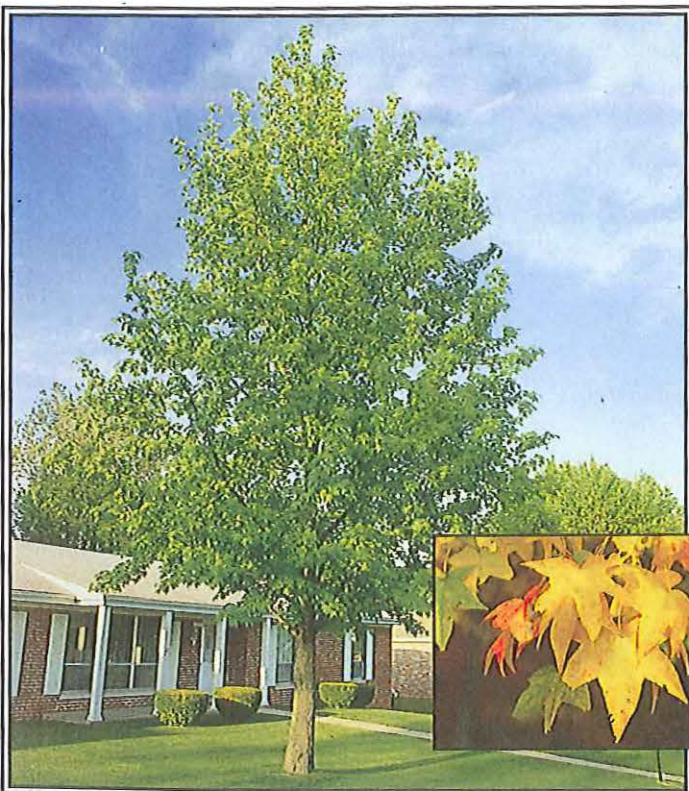
Growth:



Form and Scale:



Fall Color:

*Liquidambar styraciflua*

Sweetgum, which is native to the southern United States, has been widely planted as a yard and park tree. It grows slowly after planting, but grows more rapidly once established. Sweetgum adapts to many conditions, but grows best in deep, moist soils. The spiny, round seed capsules can be produced heavily in some years, so this tree should not be used near walks, drives or play areas where the 'gumballs' may become a problem. A seedless cultivar has been developed, but is still not generally available. Sweetgum develops pyramidal growth with glossy, starlike leaves. Fall color is variable. Leaves may become yellow, orange or shades of red. Some trees never develop fall color. Sweetgum is relatively pest free, but a few insects may feed on leaves. A problem called bleeding necrosis may attack the trunks or branches of older trees. Severe winters may cause some twig damage and contribute to sun scalding of the trunk.

Hardiness Zones: 5b-9



Moisture:



Growth:



Form and Scale:



Fall Color:

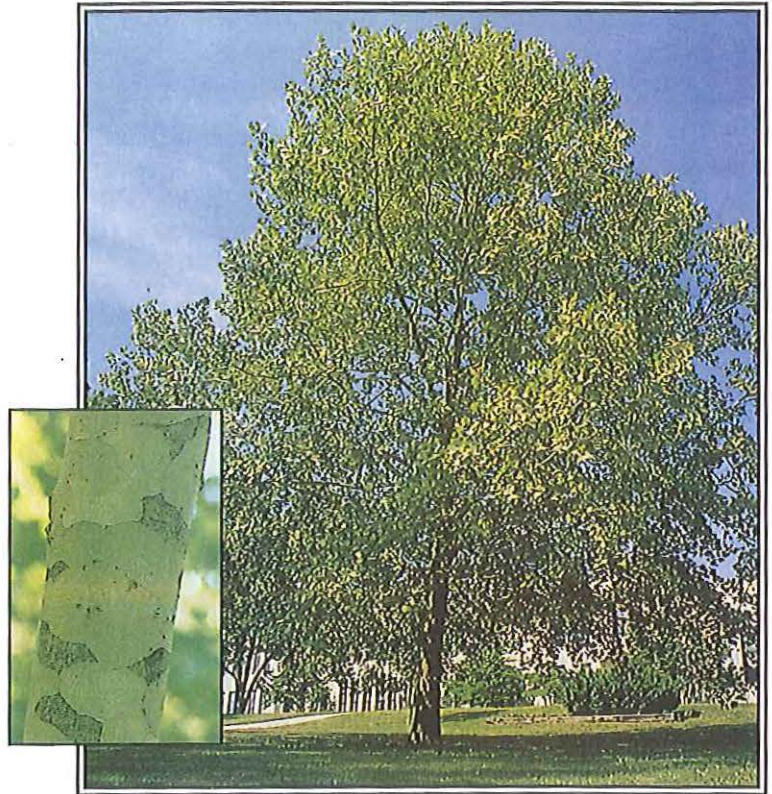
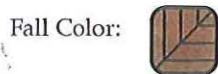
*Platanus occidentalis*

American sycamore is one of our largest native trees. For that reason it never should be planted unless it has plenty of growing space. Peeling bark reveals white, cream or gray areas along the trunk or branches. This is a tree best suited to naturalistic landscapes. It may drop leaves during the summer, as well as twigs and seed balls, causing a need for constant clean-up. Although many pests attack sycamore, only one, sycamore anthracnose, is really serious. Anthracnose causes leaves and twigs to die in spring. It is most serious in cool, wet springs and in low, wet areas. The London planetree, a hybrid between the American and Oriental sycamore is more resistant to this disease. Where the look of a planetree is desired, the London planetree is preferred to the American sycamore. 'Bloodgood,' 'Columbia' and 'Liberty' are disease resistant cultivars of London planetree.

Hardiness Zones: 4-9



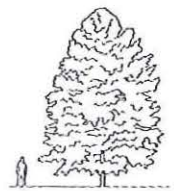
Form and Scale:



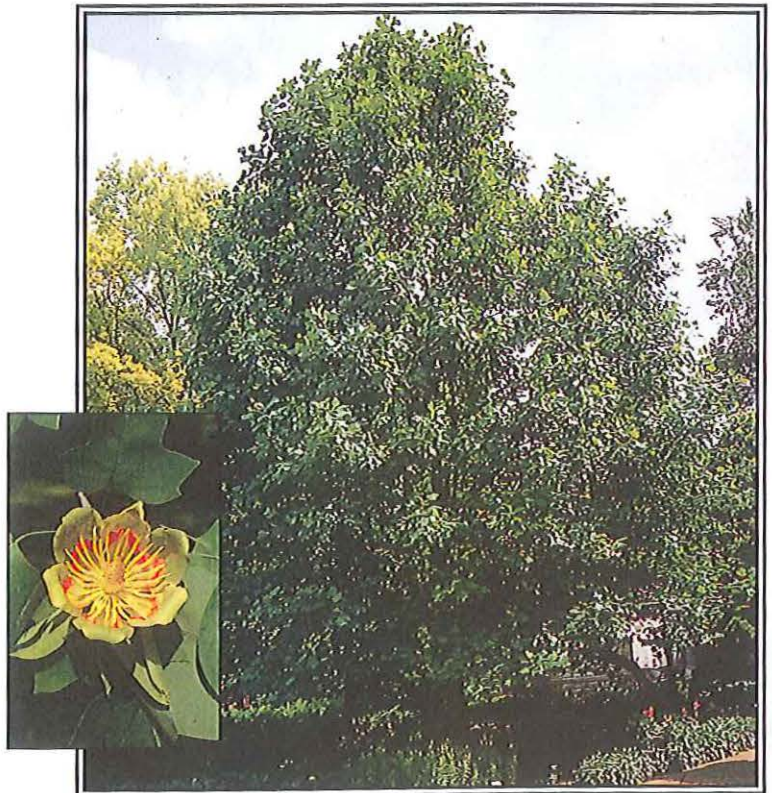
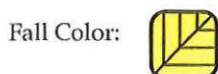
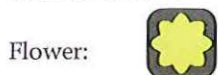
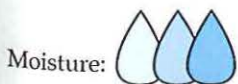
*Liriodendron tulipifera*

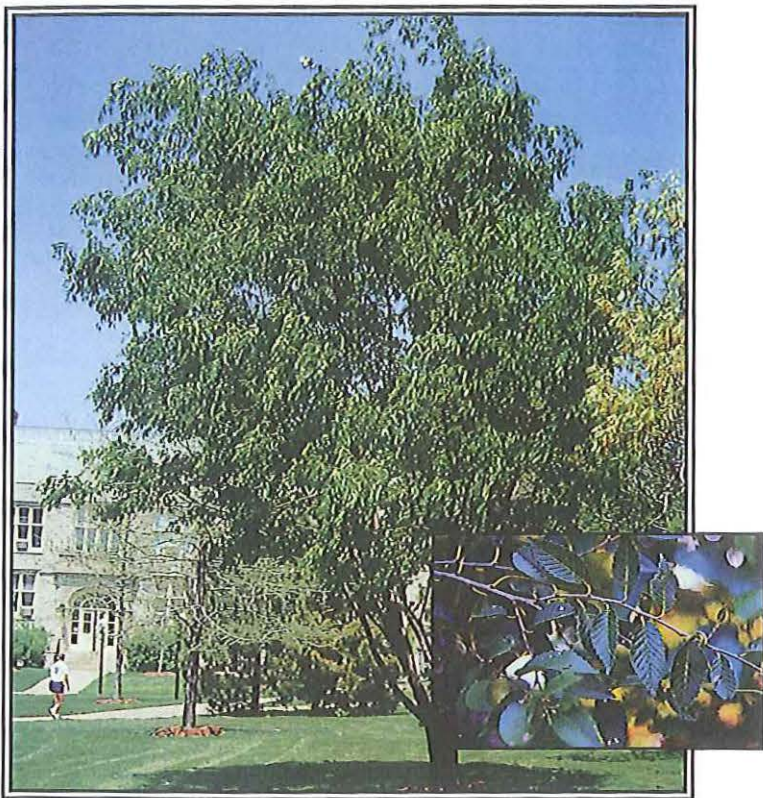
Tuliptree is native to deep, moist soils of southeast Missouri. It is sometimes called tulip magnolia because the flowers are tulip-shaped, and because it is related to the magnolia family. It is also called yellow-poplar or tulip-poplar due to its fast poplar-like growth, although it is not related to poplar. Shape is pyramidal in young trees, becoming more irregular in older trees. Growth is very rapid when young. It is not suited to shallow, rocky soils. Severe drought can cause substantial damage without irrigation. Several insects may attack it, but do not usually cause serious damage. Aphids cause abundant leaf drop that can be unsightly on the lawn and require extra clean-up. Branches are somewhat weak, so storm damage is possible, but not common. The flowers are beautiful, but because they are greenish-yellow and hidden in the leaves, they often go unnoticed.

Hardiness Zones: 4b-9



Form and Scale:



*Zelkova serrata*

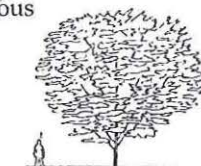
Since the American elm first succumbed to Dutch elm disease, there has been a search for a replacement. Zelkova is not a perfect replacement, but is a relative with a vase-shaped form resembling American elm. Leaves are dark green and held late into the fall, essentially without fall color. Zelkova's angular branching allows its use along walks, streets or other areas where low branching is undesirable. It has good pollution, wind and drought tolerance. Although it is closely related to elms, it appears to be fairly resistant to Dutch elm disease. Because many gardeners are unfamiliar with zelkova, it has been used very little, but it is gaining popularity and becoming more available. Several cultivars have been developed, but are not widely distributed. One outstanding cultivar is 'Green Vase', which features vigorous growth and bronzy-red fall foliage.

**Hardiness Zones:** 5b-8

Moisture:



Growth:



Form and Scale:

Fall Color:



## RECOMMENDED TREES BUT NOT COMMONLY AVAILABLE

The trees in this section have many good qualities and are recommended for urban planting much like the trees in Section 1. However, these trees are not normally grown in quantity by nurseries, which may make them difficult to locate in a local garden center. Homeowners wanting any of these species should look for sources that specialize in unusual plants.

	Page
Conifers.....	40
Small Trees and Flowering Trees.....	40
Large Shade Trees .....	44



## Douglas-fir

## CONIFERS



### *Pseudotsuga menziesii*

Douglas-fir is an important timber tree that also may be used as an ornamental. Adequate soil moisture and humidity are important since dry conditions can damage or kill it. Growth is dense and pyramidal when young, becoming looser and more open with age. Missouri's hot summers and low humidity suppress rapid growth and may cause browning. It is most successful when planted where larger trees or buildings provide shade during hot summer afternoons.

**Hardiness Zones: 4-7a**

## Ohio Buckeye

## SMALL TREES & FLOWERING TREES



### *Aesculus glabra*

The lower branches of buckeyes often bend down, giving them a rounded form. The compound leaves create a somewhat coarse texture. White, trumpet-shaped flowers in upright spikes are found in the foliage in spring. Buckeyes grow best in full sun, but will flower in light shade. They develop leaf scorch easily on dry sites or in drought, so locations with adequate summer soil moisture are best. As with other buckeyes and horsechestnuts, leaf blotch disease often ruins Ohio buckeye's late summer foliage.

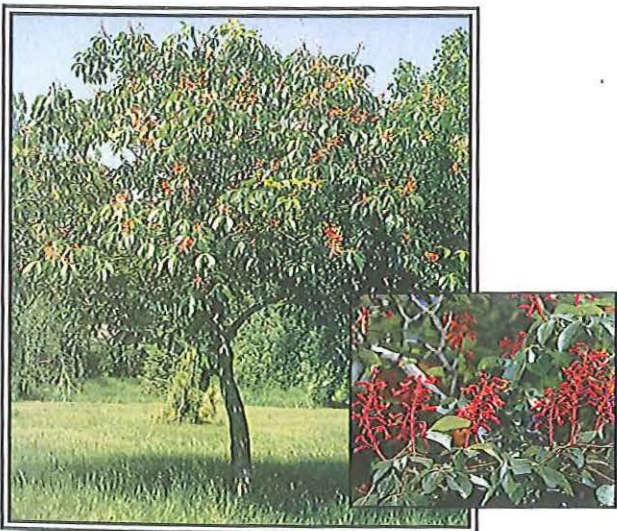
**Hardiness Zones: 3b-7**

## Red Buckeye

### *Aesculus pavia*

The red buckeye is a small tree with single or multiple trunks. The light red flowers in upright panicles are produced in early spring and are a source of unusual spring color. Summer leaves have a bright green color, but drop early in fall without significant color. Leaf blotch is a common disease that attacks buckeyes in late summer and may add to early defoliation. This tree is easily grown, but fairly slow growing.

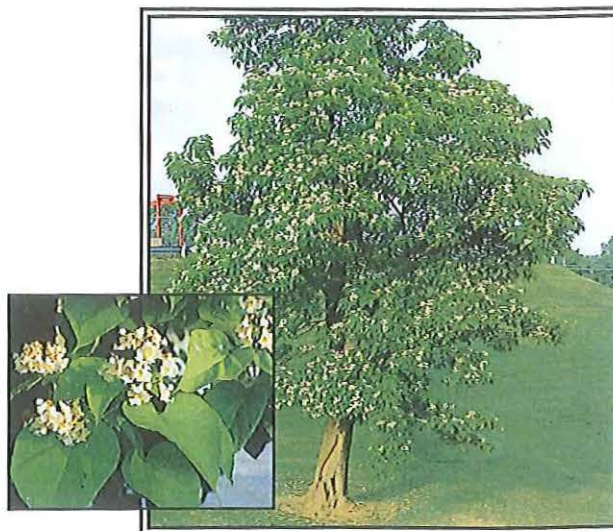
**Hardiness Zones: 6-9**



*Catalpa speciosa*

Catalpa does not rank high among landscape trees because of its coarse appearance, bean pods and feeding by the catalpa sphinx moth larvae. Nevertheless, for difficult sites with poor soils, a variety of light conditions, hot weather and low humidity, catalpa has a place. Tubular white flowers with yellow spots are produced in upright spikes in late spring and are very showy. Catalpa develops a large oval-shaped crown. Fall color is a dull yellow.

**Hardiness Zones: 4-8**



## Amur Corktree

*Phellodendron amurense*

Amur corktree develops into a medium-sized tree with a very broad, rounded crown and dark green foliage. Ridged, corky bark that develops with age becomes a unique characteristic. It is basically free of pests and adapts to many soil conditions as well as pollution and drought. Trees may be either male or female and can be identified easily in fall when female trees have clusters of black berries. Old trees with massive branches and attractive bark develop a sculptured look.

**Hardiness Zones: 4-7**

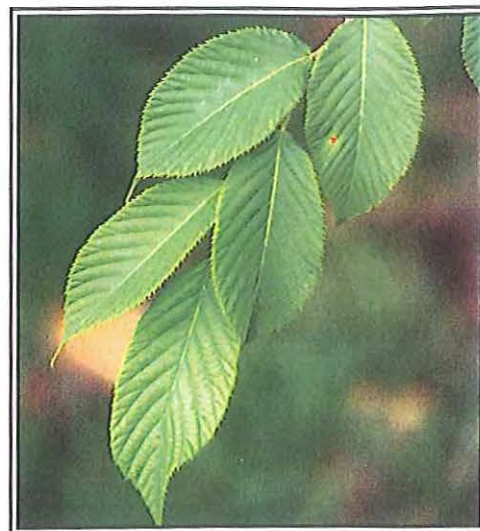


## Hophornbeam

*Ostrya virginiana*

The hophornbeam, also known as ironwood, is well-suited to urban conditions. It grows as a small- to medium-sized tree tolerant of dry, rocky soils. The fruit is papery, white and resembles hops, which is the reason for its name. These are showy against the dark green leaves in summer. It is free of any major pests and tolerates some shade. Hophornbeam is a slow growing tree, suited to almost any area.

**Hardiness Zones: 3b-9**



## Horsechestnut

## SMALL TREES & FLOWERING TREES

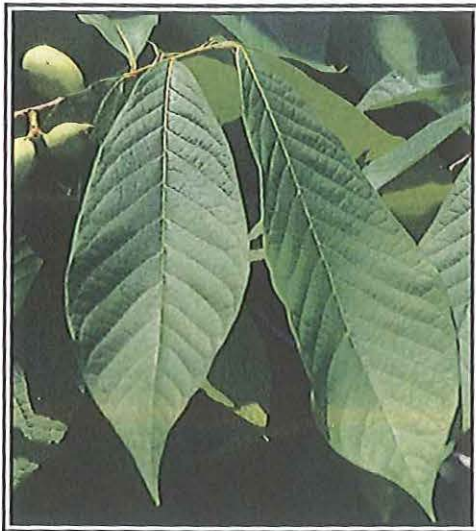


### *Aesculus hippocastanum*

Horsechestnut and buckeye are close relatives that require about the same conditions and are affected by the same problems. Horsechestnut has larger leaves and grows more upright with an oval shape. Flowers are white in upright panicles backed by the foliage. They need moisture in the heat of summer and can be damaged by drought. The fruit can be a litter nuisance. The cultivar 'Baumannii' has double flowers and does not produce fruit. Hybrids combining horsechestnut and buckeye are also sometimes available.

**Hardiness Zones: 3b-7**

## Pawpaw

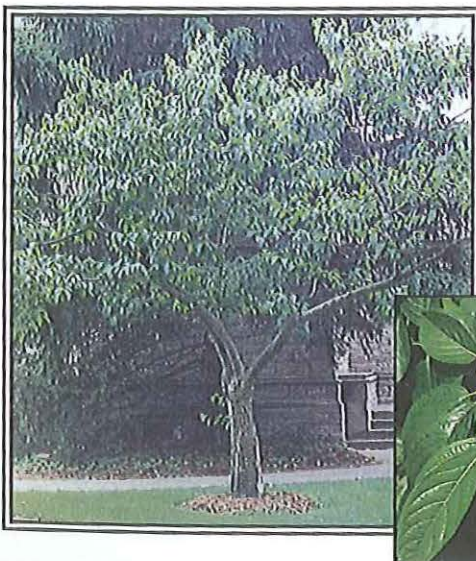


### *Asimina triloba*

Pawpaw is a small native tree that may be grown in full sun or in shade. It is generally not available because establishing it is difficult. It should be transplanted when small in moist, acid soils. The large, long leaves create a somewhat tropical look. Pawpaw has a tendency to grow multiple stems. Flowers are an unusual blackish purple but not easily seen. Fruits are edible and are sometimes called Missouri bananas because they have a longish shape. Consistency is somewhat custard-like when ripe.

**Hardiness Zones: 5b-8**

## Hardy Rubbertree



### *Eucommia ulmoides*

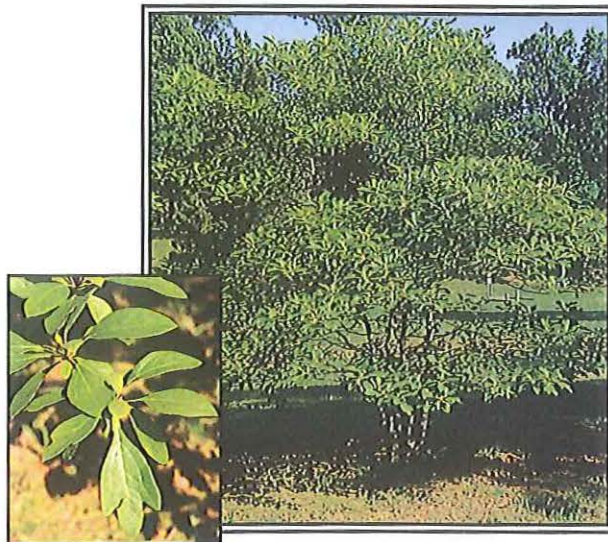
The hardy rubbertree develops into a wide-spreading shade tree. It should be planted only in the southern portion of the state or in protected areas since low winter temperatures or rapid temperature changes may cause damage. Rubbertree is pest free, but not extremely pollution tolerant. It is suited to many different soil types with good drainage and full sun. It can endure drought conditions well and leaves do not scorch easily. Hardy rubbertree is a very uncommon tree that could be planted more.

**Hardiness Zones: 5b-7**

*Sassafras albidum*

The native sassafras grows naturally as a single specimen or in a grove. It is sometimes hard to establish, so transplant when the tree is young. Yellow-green flowers are produced before leaves and are fragrant but not very showy. Trees develop a rather loose, irregular shape that could be considered artistic. Sassafras needs acid soil with full sun or partial shade. Its outstanding quality is the fall color that may be yellow, orange, scarlet or a blend of these. Fruits in fall are dark blue and attract birds.

Hardiness Zones: 5-9

*Halesia carolina*

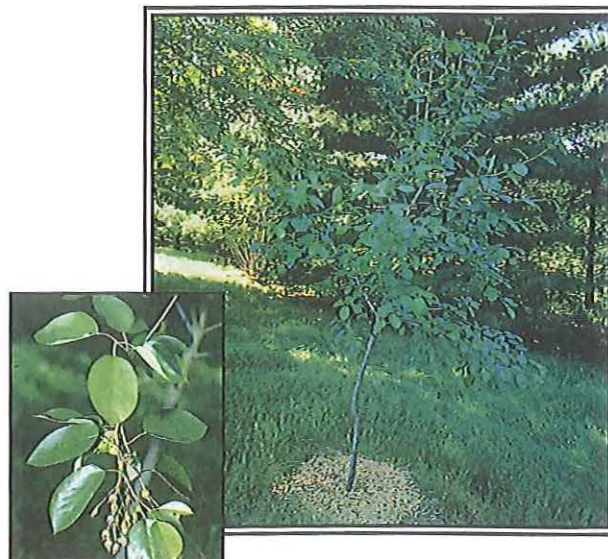
When in bloom, the hanging bell-shaped white flowers of silverbell are hard to equal. This small tree should be planted on protected sites in light shade where there is plenty of moisture, good drainage and acid soils. General growth of the young tree is somewhat upright, but growth spreads as it develops. Silverbell has no significant pest problems and makes a good understory tree for the edge of a wooded area.

Hardiness Zones: 5-8

*Oxydendrum arboreum*

Sourwood is a small- to medium-sized forest tree of the eastern United States that is not commonly planted in Missouri. It should be moved at a small size and planted in partial shade in acid soils. Drought can be damaging, so in our climate it may require irrigation. Because of the drooping clusters of white flowers in midsummer, the tree is also called Lily-of-the-Valley Tree. Flowers and seed structures contrast well with the foliage. Fall color develops early and leaves turn an outstanding bright red to crimson.

Hardiness Zones: 5b-9



## Yellowwood

## SMALL TREES & FLOWERING TREES



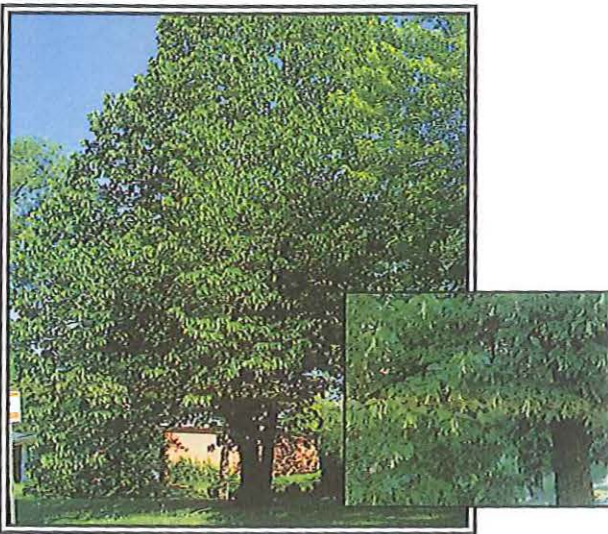
*Cladrastis kentukea*

Yellowwood is a medium-sized shade tree native to southwest Missouri. The white, pealike flowers hang in long panicles similar to a wisteria bloom. It does not have serious pest or disease problems. It should be planted in full sun where there is adequate moisture. Leaves will scorch or drop under drought conditions. Yellowwood grows well in many soil types and appears able to tolerate low fertility soils. The bark is an unusual, smooth light gray that is distinctive in all seasons.

Hardiness Zones: 4-8

## American Basswood

## LARGE SHADE TREES



*Tilia americana*

American basswood, or linden, is a native tree that becomes quite large. It is best in naturalistic settings, parks, or similar large areas. Basswood and other lindens have dense, pyramidal crowns. It adapts to many soil types and conditions, but without adequate moisture leaves may scorch in summer. Several insects and diseases may attack it, causing leaves to drop or be eaten. A hybrid cultivar of American basswood called 'Redmond' linden is a better selection, which has a pronounced pyramidal form.

Hardiness Zones: 3-8

## American Beech



*Fagus grandifolia*

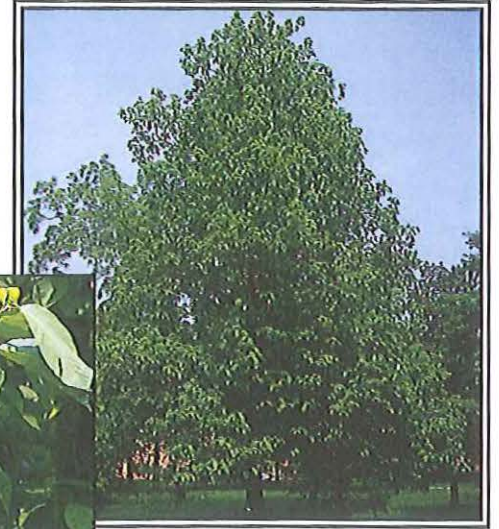
American beech is a large-growing tree native to forests of the eastern United States and to the Crowley's Ridge portion of southeast Missouri. It is more heat tolerant than the European beech on areas where soils are sandy and internally well-drained. It is not adapted to clay soils. Open grown trees become very dense with noticeable surface roots. The glossy leaves and smooth gray bark are outstanding landscape qualities. Fall color is often a golden yellow.

Hardiness Zones: 3-8

*Magnolia acuminata*

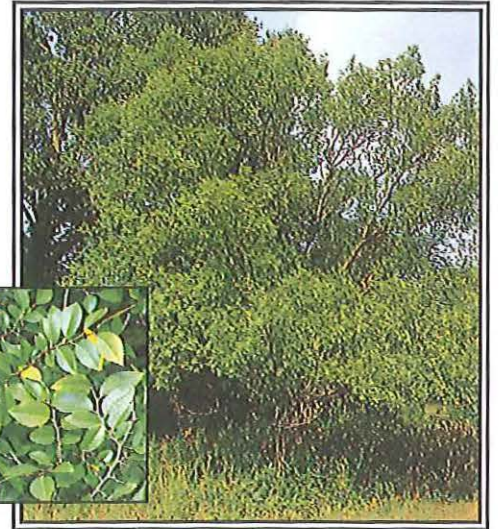
Often called the cucumbertree magnolia, this is an impressive large, broad-spreading shade tree native to southern Missouri. Leaves are large and provide dense shade. It does not survive drought or polluted conditions well, however. Greenish-white flowers are produced in late spring among the leaves, followed by fruit that looks somewhat like cucumbers. It is pest free, but should be used in landscapes or parks where summer care and watering is possible.

Hardiness Zones: 4-8

*Ulmus parvifolia*

Chinese or lacebark elm is often confused with the undesirable Siberian elm. Chinese elm forms a graceful round crown with mottled gray, green, orange and brown bark. It tolerates a wide range of soil conditions and is suited for urban situations. Chinese elm is resistant (but not immune) to Dutch elm disease and is not as seriously affected by elm leaf beetles and similar problems as the other elms.

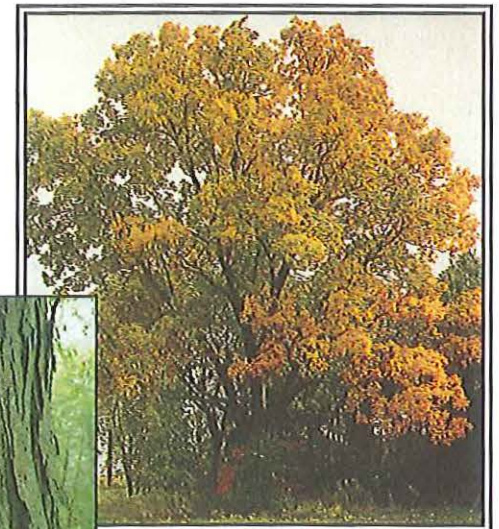
Hardiness Zones: 5b-9a



Shellbark hickory - *Carya laciniosa*  
Shagbark hickory - *Carya ovata*

While there are a number of species of native hickory, shellbark and shagbark are occasionally used for plantings. Hickory, however, is not an important landscape tree because all species are difficult to transplant and the nuts cause clutter in lawns. They are well adapted to soils in both the lowlands and uplands. Hickories are among the first trees to develop a yellow fall color that is not long lasting. They are more likely to survive construction disturbances than many other native trees.

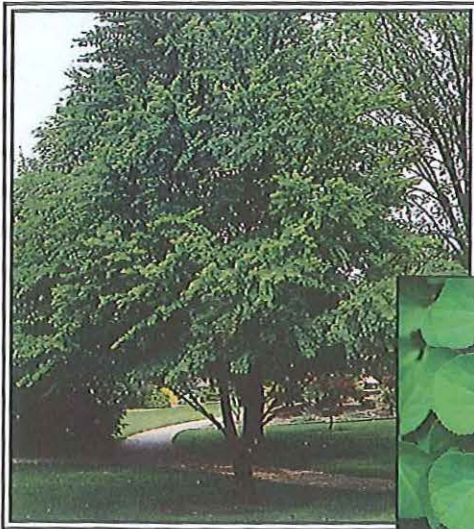
Hardiness Zones: 5-8 (both)



Shagbark hickory

## Katsura

## LARGE SHADE TREES

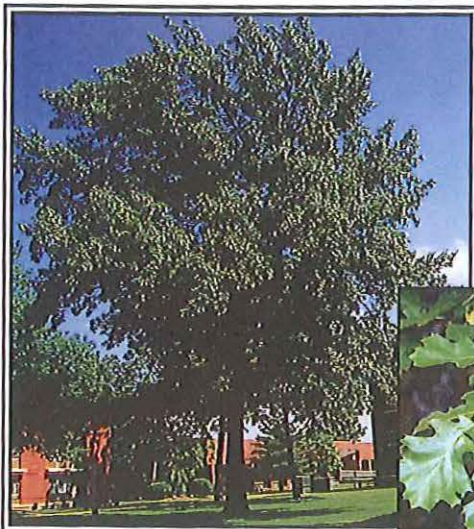


### *Cercidiphyllum japonicum*

This is a relatively unknown species to home gardeners which forms a medium to large shade tree with unique bluish-green leaves. It is adaptable to many soil types and environmental conditions. It grows best in deep, moist soils. Summer moisture is important while trees are young. Katsura is slow to become established after transplanting, but once established it grows fairly fast. It is essentially free of any insect or disease problems. Fall color is yellow to apricot.

**Hardiness Zones: 5-8**

## Black Oak

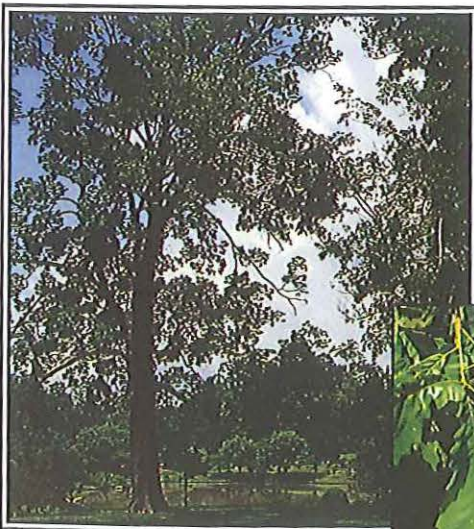


### *Quercus velutina*

Black oak becomes a wide-spreading tree with large, glossy, dark-green leaves. It is not easily transplanted and therefore is most likely to become part of a landscape where it grew as a native tree. Black oak is tolerant of many soil types and can be found statewide. Fall color is yellow but generally not outstanding. It is drought and stress tolerant, although it does grow best in deep moist soils.

**Hardiness Zones: 3-9**

## Chestnut Oaks



### Swamp chestnut oak - *Quercus michauxii* Chestnut oak - *Quercus prinus*

These two oaks are very similar, but chestnut oak does better as an ornamental tree because it adapts well to many soil types and upland conditions. Swamp chestnut oak grows larger and should be selected for landscapes in low, wet areas. Leaf color is light green. Trees develop oval to rounded canopies. Fall color is usually yellow to yellow-brown. These oaks are very useful for attracting wildlife that are fond of acorns.

**Hardiness Zones: 4-8 (both)**

Swamp chestnut oak

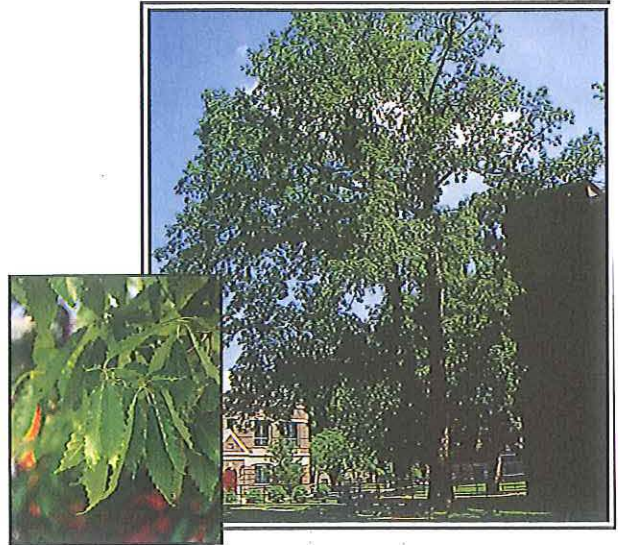
## LARGE SHADE TREES

## Chinkapin Oak

### *Quercus muehlenbergii*

Chinkapin oak is most suitable for planting in central and southern Missouri. Like many oaks in the white oak group, transplanting it is difficult. It is more tolerant of alkaline soil conditions than most oaks, but also grows well in acid soils. It is seldom available for sale, but should be preserved on developed sites. Fall color is generally yellow.

Hardiness Zones: 5b-7

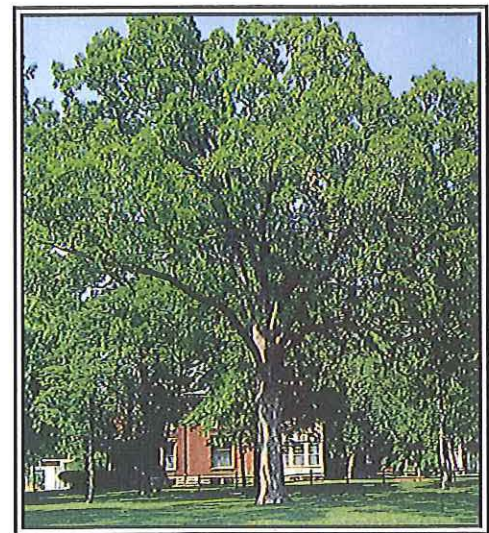


## Post Oak

### *Quercus stellata*

Post oak is seldom planted but is often found as a native tree in southern Missouri. The foliage is dark green and forms a dense, rounded crown. Post oak grows on dry, gravelly soils and on rocky ridges. When it is found in those conditions, it is usually the best species suited for that site and should be preserved. In good years, fall color is yellow-brown.

Hardiness Zones: 6a-9a



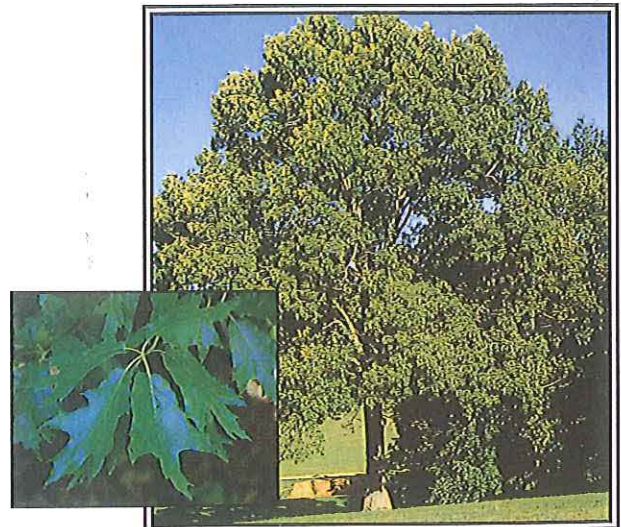
## Southern Red Oaks

### Southern red oak - *Quercus falcata*

### Cherrybark oak - *Quercus falcata* var. *pagodifolia*

These oaks are not commonly available for sale, but are native to southeast Missouri. They become large shade trees with broad, rounded canopies. Leaves are a lustrous, deep green that makes them stand out in summer. Fall color is usually not showy in these trees. In central Missouri winter damage is possible, but they are excellent oaks for southern areas. They can endure poor, dry soils.

Hardiness Zones: 6b-9 (both)

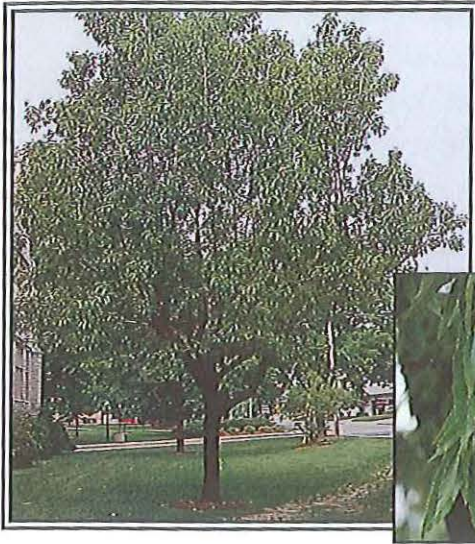


Southern red oak



## Sawtooth Oak

## LARGE SHADE TREES

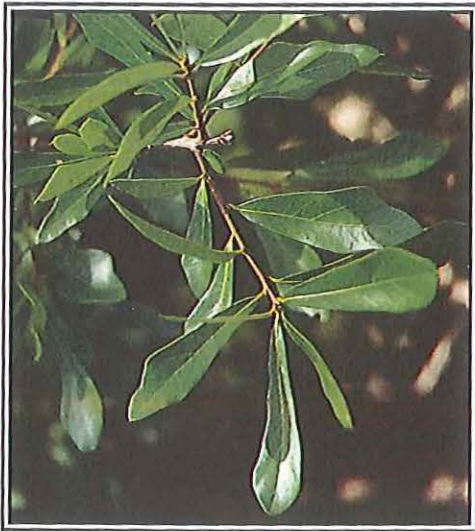


### *Quercus acutissima*

This oak is becoming more available because transplanting it is easy and it grows in a wide range of soil types and climatic conditions, although it would probably do best in southern Missouri. Growth is somewhat pyramidal when young, but broadens with age. Lustrous dark green leaves add to summer beauty, and once established, this oak is fast growing. It develops into a medium-sized tree suitable for many urban places. Fall color may be yellow, but usually it is not showy.

**Hardiness Zones: 5b-9**

## Water Oak

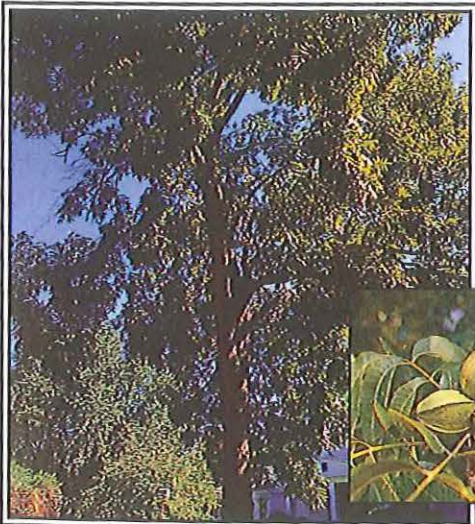


### *Quercus nigra*

Water oak is suitable only for the southern part of the state. It is easy to transplant and is best adapted to low sites with moist or wet soil conditions. It is fast growing but the wood is more subject to storm and ice breakage than many other oaks. Leaves are held long into the fall and fall color is not significant. Since there are better oaks for upland conditions, its use should be reserved for low wet areas where most other oaks will not grow.

**Hardiness Zones: 6b-9**

## Pecan



### *Carya illinoensis*

Pecans make attractive large-spreading landscape trees. Their only landscape disadvantage may be litter from nut husks. Since these nuts are edible, however, many homeowners are willing to accept this clutter during harvest. Like other hickories they develop a taproot that makes transplanting difficult. Southern varieties will fill nuts well in most of the state, so more northern varieties should be selected. A few of these are 'Hardy Giant,' 'Major' and 'Colby'.

**Hardiness Zones: 5b-9**

## TREES UNDESIRABLE FOR LANDSCAPE PLANTING

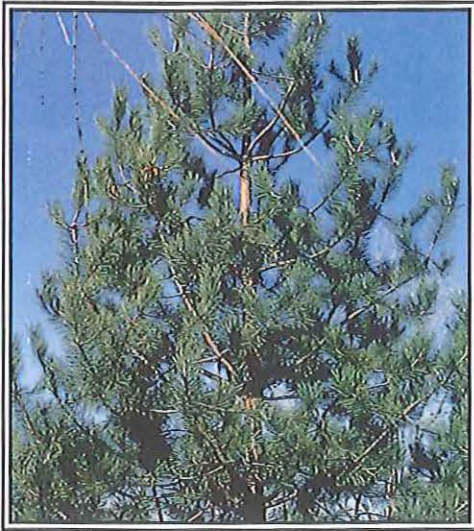
Many trees listed in the following section have been planted in urban areas and may have useful qualities for some applications. However, each tree has one or more problems that usually makes it undesirable for planting. These problems may include brittle wood and structural weaknesses, serious insect or disease problems, nuisance fruits or nuts, or general messiness.

Undesirable characteristics are noted in each species description.

	Page
Conifers.....	50
Small Trees and Flowering Trees.....	50
Large Shade Trees .....	51

## Austrian Pine

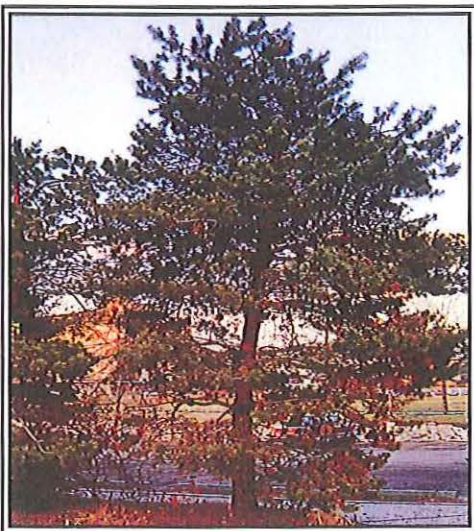
## CONIFERS



*Pinus nigra*

This pine has been popular for yard and public plantings for many years. However, a serious needle disease called Diplodia tip blight has infected many trees, causing die-back of branches and, at times, death of trees. Large infected trees are almost impossible to cure with fungicides. Scotch pine is also susceptible to this problem.

## Scotch Pine

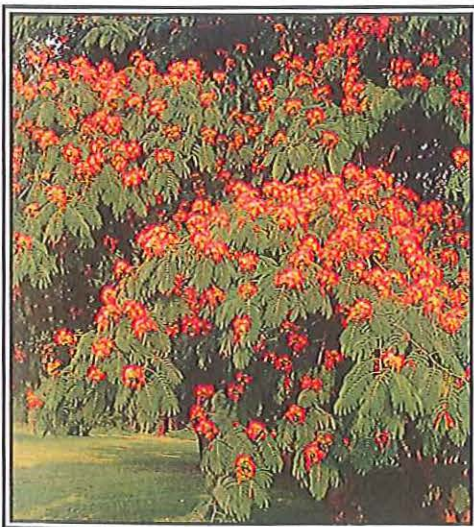


*Pinus sylvestris*

This pine is well-known for use as a Christmas tree, and also has been widely planted for a screen or specimen tree. Unfortunately, it is very susceptible to the pine nematode that has spread through the region in recent years. The nematode has no control and is spread by insects to attack other pines, so dead and dying trees should be promptly removed. Stress conditions such as heat and drought can prompt nematode damage.

## Mimosa

## SMALL TREES & FLOWERING TREES

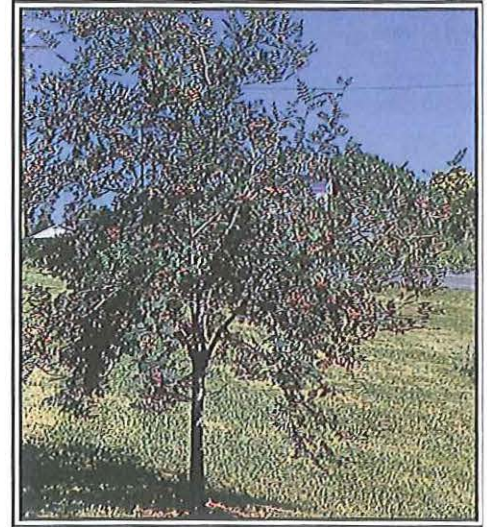


*Albizia julibrissin*

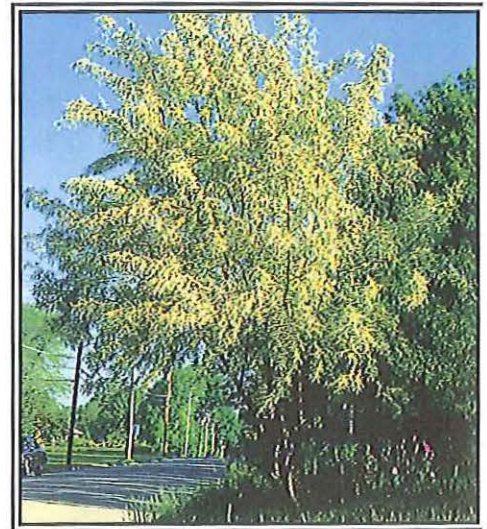
Mimosa's most outstanding feature is its showy, fluffy pink summer flowers. Throughout Missouri, except in southern areas, twigs and branches may be killed by winter cold. Sometimes entire trees die back to the ground. A prolific seed producer, the seedlings may become weedy. It also is subject to a vascular disease known as mimosa wilt that may kill trees. Several insect pests, such as mimosa webworm, can ruin its ornamental value in summer.

*Sorbus aucuparia*

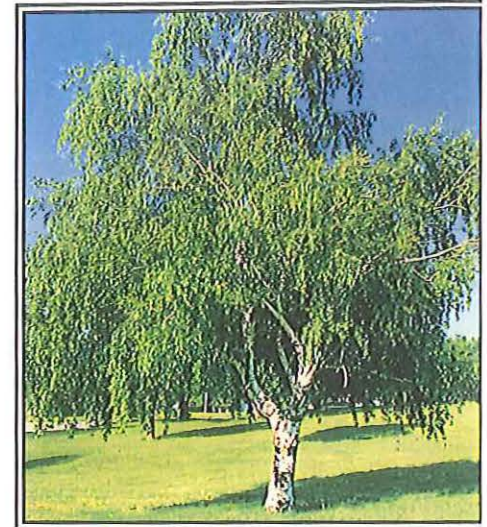
This small tree is common in cooler climates, but suffers from Missouri heat and drought. It is bothered by several pests and diseases, the most damaging of which is fire blight. This bacterial disease causes serious dieback and cankers that may disfigure or kill mountainash.

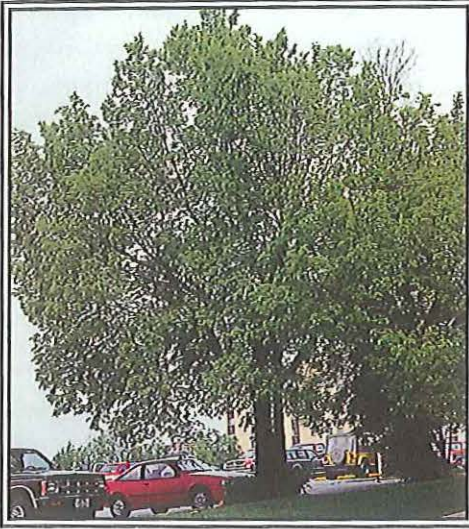
*Elaeagnus angustifolia*

Russian olive has been a popular tree for many years. Its single most distinguishing characteristic is its silvery-gray foliage. It is useful in drier climates, but several diseases have caused problems that make it undependable in Missouri. Canker diseases of the trunk and branches are most devastating, causing dieback that may kill entire trees.

*Betula pendula*

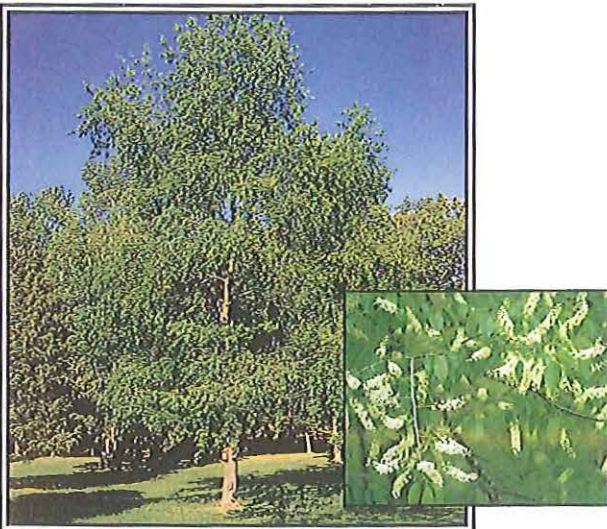
European white birch was once very popular due to its showy white bark. Its popularity has been lessened by an insect called the bronze birch borer. This pest moves into the tops of trees and works downward. It can be controlled by frequent use of insecticides, but most home gardeners cannot keep up with the frequency needed. Some beautiful trees still exist in isolated areas, but planting this species for long term survival is questionable.



*Acer negundo*

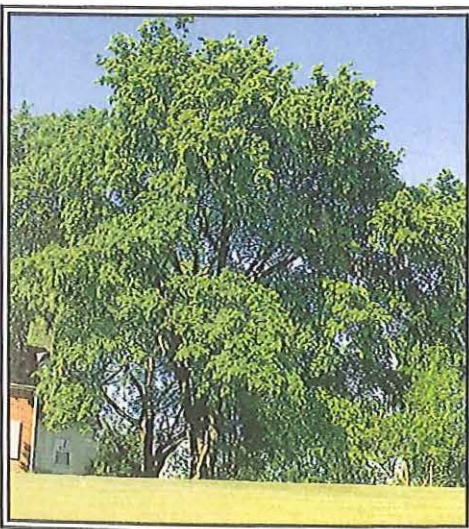
Boxelder is a fast-growing invader species that is weak-wooded and breaks up easily in wind storms or under ice and snow weight. It attracts an insect called the boxelder beetle that is not damaging to the tree, but finds hiding places in homes during the fall and winter and can become a nuisance. Some trees are heavy seed producers.

## Black Cherry

*Prunus serotina*

Black cherry is a common native tree. Birds are very fond of the fruit and spread the seeds. In yards and parks, its abundant fruit and seed production may be a disadvantage because of fruit mess and weediness. This is an important timber tree and can be a very useful tree for naturalistic areas. The oval crown has drooping branches that give it a graceful look. Fall color is often an excellent wine or red. It may be attacked by tent caterpillars.

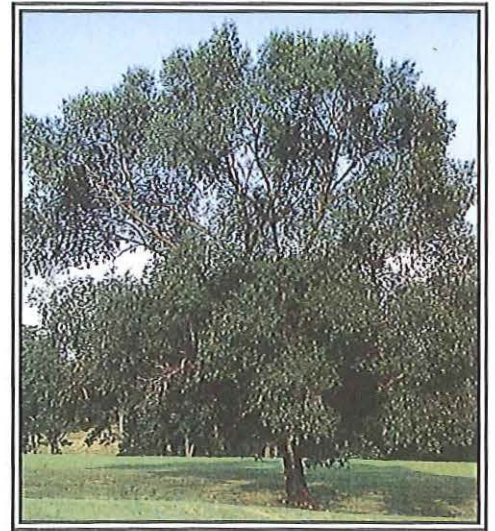
## American Elm

*Ulmus americana*

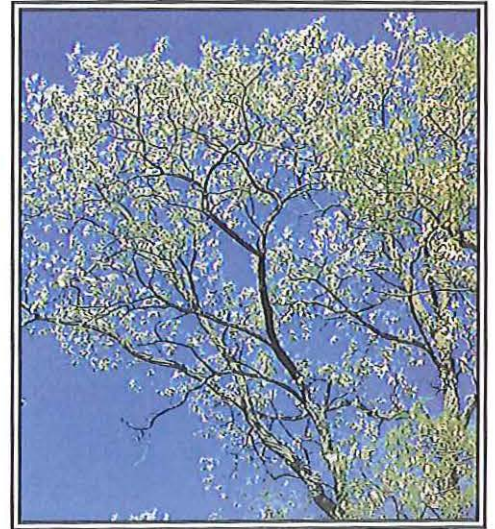
During the 1950s and 1960s, Missouri and the rest of the nation were ravaged by Dutch elm disease. It is still present and American elms that appear as seedlings or are planted will likely be attacked and killed. American elm also is affected by several other pests and diseases, but Dutch elm disease is the primary reason for not planting it. Disease resistant cultivars have been developed and are being introduced.

*Ulmus pumila*

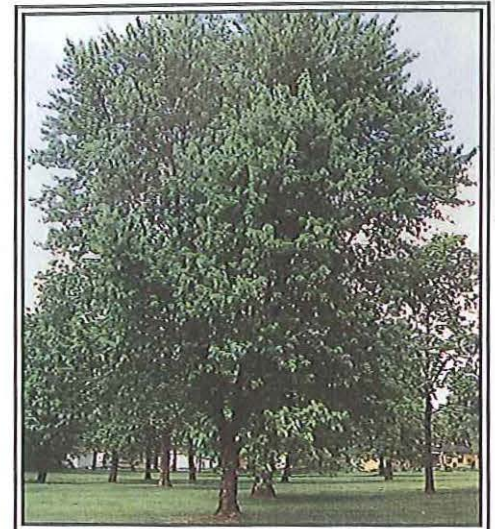
This fast-growing elm, incorrectly called Chinese elm, was once introduced as a replacement for the American elm because it is resistant to Dutch elm disease. It is seriously attacked by both larvae and adult forms of elm leaf beetles which give the tree a perpetually unattractive appearance throughout most of the summer. Its very weak wood breaks up easily in storms or under the weight of ice. If that is not enough, it is also a prolific seeder. Don't plant it.

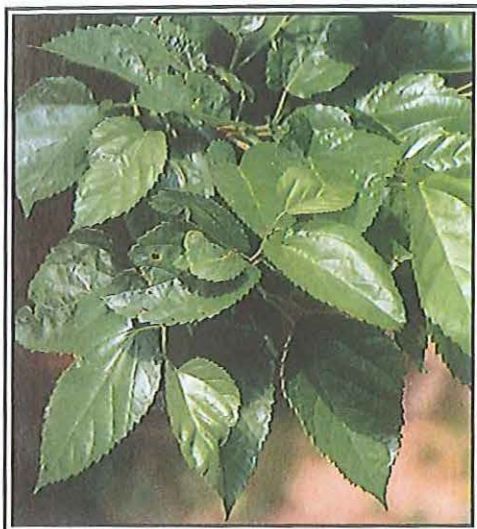
*Robinia pseudoacacia*

Black locust produces pendulous clusters of fragrant white flowers that attract attention in spring. It also has value for growing on very poor soils. A disadvantage is that it has brittle wood and breaks up easily in storms. It also tends to root sucker and become somewhat weedy. Black locust is short-lived because of attacks by borers and other pests.

*Acer saccharinum*

This maple may be the best-known of trees in Missouri because it can be found on streets and in yards statewide. Seedlings and volunteer trees appear almost anywhere. It grows rapidly and becomes too large for most urban spaces. Its greatest problem is its tendency to grow weak branch unions that split and break easily during wind storms or under winter ice and snow. Trees are frequently topped, causing even more problems.



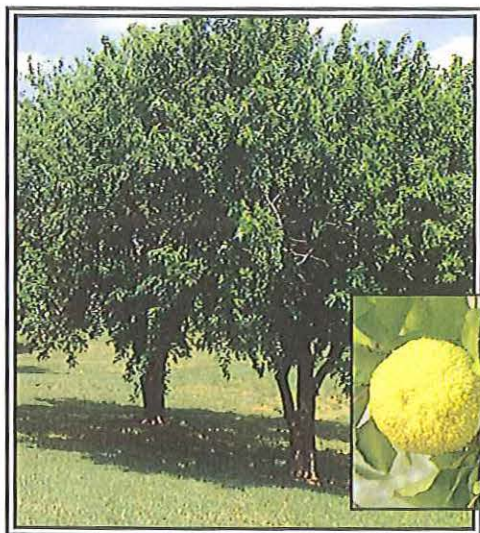


White mulberry

White mulberry - *Morus alba*  
Red mulberry - *Morus rubra*

Both mulberries may be found growing in the wild, but white mulberry is most common. Their major landscape problems are messiness of the fruits and weedi-ness. Fruitless male cultivars of white mulberry are sometimes found. Weeping forms of these trees have been more widely accepted for planting.

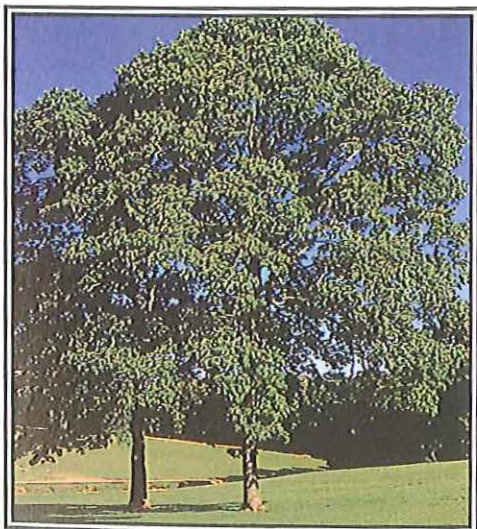
## Osage-orange



*Maclura pomifera*

This tough, durable tree was once commonly used for hedgerows to contain live-stock and for wind erosion control. In urban areas it is less desirable, primarily because of the large fruits, low-hanging branches and thorns. Thornless, fruitless cultivars have been developed but are not generally available.

## Persimmon

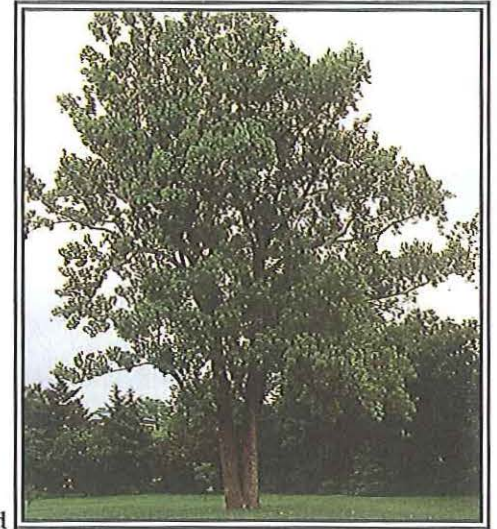


*Diospyros virginiana*

Persimmon is a native tree found most often in fencerows and old pastures. The leaves are a shiny, dark green and the bark on older trees breaks into attractive black, squarish blocks. The fruit, which is consumed by wildlife and humans alike, is messy and the major reason for not planting persimmon around homes. It also is difficult to transplant.

Eastern cottonwood - *Populus deltoides*  
Lombardy poplar - *Populus nigra* 'Italica'

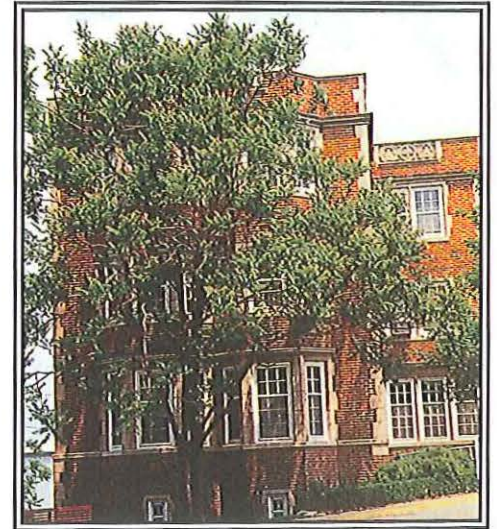
These poplars, as well as their relatives the aspens, are fast growing trees that are weak-wooded and relatively short-lived on most growing sites. Canker diseases of the branches and trunk, such as Dothichiza canker and Cytospora, can be the most serious. Female cottonwoods produce "fuzz" in the spring that can be a nuisance. Cottonwood is sometimes planted for a park tree in areas susceptible to flooding.



Eastern cottonwood

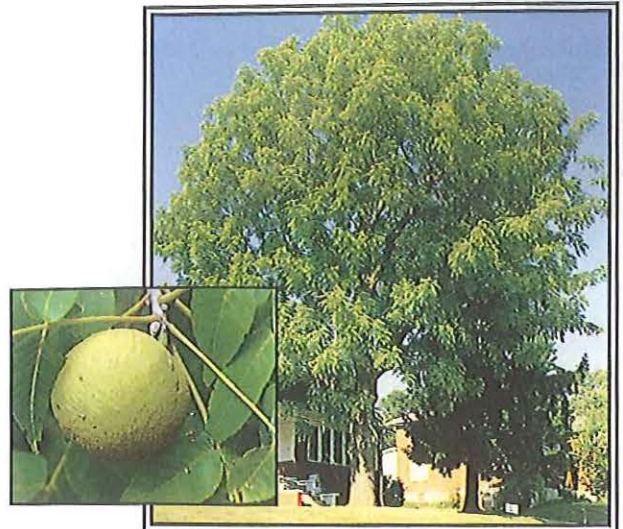
*Ailanthus altissima*

Tree-of-Heaven is a rapid-growing exotic that has become common in urban areas. It is not normally grown for sale. Because of its weediness and brittle wood, it is not recommended for planting. Some people also experience skin irritations after coming into contact with this tree.

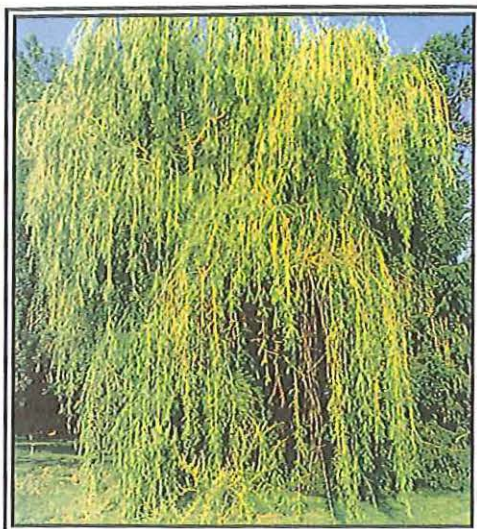


*Juglans nigra*

Although black walnut is a useful timber and nut tree, it is not desirable as a shade tree for several reasons. It is one of the last trees to leaf in the spring, and one of the first to shed foliage in fall. Walnut exudes a chemical called juglone from the roots that can retard the growth of adjacent plants. The nuts clutter lawns and the hulls can cause serious allergic reactions in some people. Walnut anthracnose often causes trees to be defoliated in August, ruining the late summer shade. Leaf spots also may add to the problem. Fall color is yellow.







Weeping willow

*Salix spp.*

Willows are fast-growing but usually short-lived trees that grow naturally in wet areas. White willow, weeping willow, pussy willow and contorted willow are a few of the popular willows. The most damaging diseases are cankers, which cause twig branch and trunk die-back. Black canker and the same disease that causes canker in poplar, *Cytospora*, are common in all areas. Willows' brittle wood breaks easily in ice or wind.

## TREE SPECIES SUITABLE FOR SPECIAL CONDITIONS

**Trees for Very Moist and Wet Sites**

- European Alder
- Green Ash
- Baldcypress
- River Birch
- Ohio Buckeye
- Northern Catalpa
- Sweetbay Magnolia
- Red Maple
- Pin Oak
- Swamp Chestnut Oak
- Swamp White Oak
- Water Oak
- Willow Oak
- White Spruce
- Sugarberry
- American Sycamore

**Trees Tolerant of Dry Conditions**

- Green Ash
- Northern Catalpa
- Flowering Crabapple
- Goldenrain Tree
- Common Hackberry
- Hawthorn
- Shagbark Hickory
- Thornless Honeylocust
- Black Oak
- Chinkapin Oak
- Pin Oak
- Post Oak
- Scarlet Oak
- Shingle Oak
- Southern Red Oak
- Swamp White Oak
- Willow Oak
- Japanese Black Pine

- Limber Pine
- Eastern Redcedar
- Hardy Rubbertree
- American Sycamore

**Trees Tolerant of Light Shade**

- European Alder
- American Basswood
- American Beech
- European Beech
- Blackgum
- Ohio Buckeye
- Red Buckeye
- Flowering Dogwood
- White Fir
- Canadian Hemlock
- American Holly
- Hophornbeam
- European Hornbeam
- Saucer Magnolia
- Southern Magnolia
- Sweetbay Magnolia
- Sugar Maple
- Pawpaw
- Eastern Redbud
- Serviceberry
- Silverbell
- Sourwood
- Norway Spruce
- White Spruce
- Yellowwood

**Trees Most Tolerant of Urban Conditions**

- Green Ash
- White Ash
- Baldcypress
- River Birch
- Blackgum

- Northern Catalpa
- Kentucky Coffeetree
- Amur Corktree
- Chinese Elm
- Ginkgo
- Goldenrain Tree
- Common Hackberry
- Thornless Honeylocust
- Hophornbeam
- Chinese Juniper
- Katsura
- Littleleaf Linden
- Norway Maple
- Northern Red Oak
- Pin Oak
- Sawtooth Oak
- Shumard Oak
- Swamp White Oak
- Willow Oak
- Japanese Pagodatree
- Callery Pear
- Japanese Black Pine
- Limber Pine
- London Planetree
- Eastern Redbud
- Eastern Redcedar
- Hardy Rubbertree
- Japanese Zelkova

**Trees Suitable for Street Planting**

- Green Ash
- White Ash
- Baldcypress
- American Beech
- European Beech
- River Birch
- Blackgum
- Amur Corktree
- Chinese Elm

- Ginkgo
- Goldenrain Tree
- Common Hackberry
- Thornless Honeylocust
- Hophornbeam
- European Hornbeam
- Katsura
- Littleleaf Linden
- Norway Maple
- Red Maple
- Bur Oak
- English Oak
- Northern Red Oak
- Sawtooth Oak
- Scarlet Oak
- Shumard Oak
- Swamp White Oak
- Willow Oak
- Japanese Pagodatree
- London Planetree
- Eastern Redbud
- Sugarberry
- Japanese Zelkova

## SUMMARY OF TREE CHARACTERISTICS

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>CONIFERS</b>									
Baldcypress	5b-10	50-70	20-30	Not Showy	Coppery-Bronze	Moist to Wet	Full Sun	Medium	Tolerant
Douglas-fir	4-7a	40-60	10-20	Not Showy	Green	Moist	Full Sun to Light Shade	Slow to Medium	Intolerant
White Fir	3-8a	40-50	15-30	Not Showy	Green	Moist	Light Shade	Slow	Intolerant
Canadian Hemlock	3-8a	40-60	20-30	Not Showy	Green	Moist	Full Sun to Light Shade	Slow	Intolerant
American Holly	5b-9	30-50	15-30	Not Showy	Green	Moist	Light Shade	Slow	Intermediate
Chinese Juniper	3b-9	40-60	15-25	Not Showy	Green	Average	Full Sun	Slow to Medium	Intolerant
Austrian Pine	4-7	50-60	25-30	Not Showy	Green	Average	Full Sun	Medium	Intolerant
Japanese Black Pine	5b-8	30-60	20-40	Not Showy	Green	Wide Range	Full Sun	Medium	Intolerant
Limber Pine	4b-7	30-50	20-30	Not Showy	Green	Average	Full Sun	Medium	Intolerant
Red Pine	2b-6	40-60	25-40	Not Showy	Green	Wide Range	Full Sun	Medium	Intolerant
Japanese Red Pine	5b-7b	40-60	40-60	Not Showy	Green	Average	Full Sun	Slow	Intolerant
Scotch Pine	3-7	30-50	20-40	Not Showy	Green	Average	Full Sun	Medium	Intolerant
Eastern White Pine	3-8	60-80	30-40	Not Showy	Green	Moist to Average	Full Sun	Fast	Intolerant
Eastern Redcedar	2-9	30-50	10-25	Not Showy	Green	Average	Full Sun	Medium	Intolerant
Colorado Blue Spruce	2b-7	30-50	15-25	Not Showy	Green	Average	Full Sun	Slow	Intolerant
Norway Spruce	2-7	50-70	30-45	Not Showy	Green	Moist to Average	Full Sun to Light Shade	Medium	Intolerant
White Spruce	2-6	30-50	10-20	Not Showy	Green	Moist	Full Sun to Light Shade	Slow	Tolerant

## SUMMARY OF TREE CHARACTERISTICS

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>SMALL TREES &amp; FLOWERING TREES</b>									
Ohio Buckeye	3b-7	20-40	15-30	Greenish White	Yellow	Moist to Average	Full Sun to Light Shade	Slow	Intermediate
Red Buckeye	6-9	10-20	10-20	Red	Yellow-Green	Moist to Average	Full Sun to Light Shade	Slow	Intermediate
Northern Catalpa	4-8	40-60	20-30	White	Yellow-Green	Wide Range	Full Sun to Light Shade	Fast	Tolerant
Flowering Cherry	5-8	20-30	15-25	White to Lt. Pink	Yellow-Bronze	Moist	Full Sun to Light Shade	Medium	Intolerant
Amur Corktree	4-7	25-40	25-45	Yellow-Green	Yellow	Moist to Average	Full Sun	Medium	Intolerant
Flowering Crabapple	5-8	10-20	8-20	White, Pink, Red	Yellow	Average	Full Sun	Medium	Intolerant
Flowering Dogwood	5b-8	15-25	10-30	White, Pink, Red	Red	Moist to Average	Light Shade	Slow	Intolerant
Goldenrain Tree	5-9	25-50	25-40	Yellow	Yellow	Wide Range	Full Sun to Light Shade	Medium	Intolerant
Hawthorn	4-8	20-30	15-30	White	Scarlet	Average	Full Sun to Light Shade	Medium	Intermediate
Hophornbeam	3b-9	30-40	20-30	Red-Brown	Yellow	Average	Full Sun to Light Shade	Slow	Intolerant
European Hornbeam	4b-7	40-60	20-40	Red	Yellow-Green	Average	Full Sun to Light Shade	Medium	Intolerant
Horsechestnut	3b-7	40-60	25-50	White	Yellow	Moist	Full Sun to Light Shade	Medium	Intolerant
Saucer Magnolia	4b-8	20-30	15-30	Pink Shades	Yellow-Brown	Moist	Full Sun to Light Shade	Slow	Intermediate
Southern Magnolia	6-9	40-80	20-50	White	Green	Moist	Full Sun to Light Shade	Medium	Intermediate
Sweetbay Magnolia	5b-9	10-30	8-15	White	Green	Moist To Wet	Full Sun to Light Shade	Medium to Fast	Tolerant
Mimosa	6-9	15-25	20-30	Pink	Brown	Average	Full Sun	Fast	Tolerant
Mountainash	3-6	20-30	15-20	White	Yellow	Moist	Full Sun to Light Shade	Medium	Tolerant

## SUMMARY OF TREE CHARACTERISTICS

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>SMALL TREES &amp; FLOWERING TREES</b>									
Russian Olive	2-7	15-25	15-25	White	Green	Wide Range	Full Sun	Medium to Fast	Intolerant
Japanese Pagodatree	4b-8	30-50	30-50	Cream to Lt. Yellow	Green	Moist	Full Sun	Medium	Intolerant
Pawpaw	5b-8	15-25	10-20	Deep Purple	Yellow	Moist	Full Sun to Light Shade	Medium	Intolerant
Callery Pear	4-8	30-50	20-35	White	Deep Red	Average	Full Sun	Fast	Intolerant
Purple-leaf Plum	5-8	15-25	10-25	Pale Pink	Purple	Average	Full Sun	Fast	Intolerant
Eastern Redbud	4-9	20-30	15-30	Pink, White	Yellow	Moist to Average	Light Shade	Medium	Intermediate
Hardy Rubbertree	5b-7	30-50	20-30	Not Showy	Green	Average	Full Sun	Medium	Intolerant
Sassafras	5-9	30-50	20-30	Yellow	Orange to Scarlet	Wide Range	Full Sun to Light Shade	Medium	Intolerant
Downy Serviceberry	4-9	15-30	10-20	White	Red-Orange	Moist	Full Sun to Light Shade	Medium	Intolerant
Silverbell	5-8	30-40	15-25	White	Yellow	Moist	Full Sun to Light Shade	Medium	Intolerant
Sourwood	5b-9	20-30	15-20	White	Scarlet	Moist	Full Sun to Light Shade	Slow	Intolerant
Yellowwood	4-8	30-50	20-35	White	Yellow	Moist to Average	Full Sun	Medium	Intolerant

## SUMMARY OF TREE CHARACTERISTICS

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>LARGE SHADE TREES</b>									
European Alder	3-7	40-60	20-30	Red-Brown	Green	Moist to Wet	Full Sun to Light Shade	Fast	Tolerant
Green Ash	2-9	40-50	20-40	Not Showy	Yellow	Wide Range	Full Sun	Fast	Tolerant
White Ash	2-9	50-60	35-40	Not Showy	Reddish-Purple	Average	Full Sun	Medium	Intermediate
American Basswood	3-8	50-75	25-40	Light Yellow	Yellow	Moist	Full Sun to Light Shade	Medium	Intolerant
American Beech	3-8	40-60	35-60	Not Showy	Yellow-Bronze	Moist	Full Sun to Light Shade	Slow	Intolerant
European Beech	4-6	40-50	30-40	Not Showy	Yellow-Bronze	Average	Full Sun to Light Shade	Slow	Intolerant
Paper Birch	2-6	50-70	25-40	Not Showy	Yellow	Moist	Full Sun	Medium to Fast	Intolerant
River Birch	4-9	40-60	30-50	Not Showy	Yellow	Moist	Full Sun	Medium to Fast	Tolerant
European White Birch	3a - 5b	40-50	25-35	Not Showy	Yellow	Moist	Full Sun	Medium to Fast	Intermediate
Blackgum	3b - 9	40-60	20-30	Greenish White	Orange to Scarlet	Wide Range	Full Sun to Light Shade	Slow	Intermediate
Boxelder	2b - 9	30-50	20-40	Not Showy	Yellow-Green	Wide Range	Full Sun	Fast	Tolerant
Black Cherry	3-9	50-60	40-50	White	Yellow to Red	Average	Full Sun to Light Shade	Medium	Intolerant
Kentucky Coffeetree	3-8	60-75	40-60	Greenish White	Yellow	Average	Full Sun	Medium	Intermediate
Eastern Cottonwood	2-9	75-90	50-75	Red	Yellow	Moist to Average	Full Sun	Fast	Tolerant
Cucumbertree	4-8	50-60	40-60	Greenish White	Yellow-Green	Moist	Full Sun to Light Shade	Medium	Intolerant
American Elm	2-9	70-80	40-70	Not Showy	Yellow	Moist	Full Sun	Medium	Intermediate
Chinese Elm	5b - 9a	40-50	40-50	Not Showy	Yellow	Moist	Full Sun	Medium	Intermediate

## SUMMARY OF TREE CHARACTERISTICS

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>LARGE SHADE TREES</b>									
Siberian Elm	3-9	50-60	40-50	Not Showy	Brown	Average	Full Sun to Light Shade	Fast	Intermediate
Ginkgo	3b - 9	50-60	30-40	Not Showy	Bright Yellow	Average	Full Sun to Light Shade	Medium to Slow	Intolerant
Common Hackberry	2-9	45-70	45-70	Not Showy	Yellow	Wide Range	Full Sun	Medium to Fast	Intermediate
Shagbark Hickory	5-8	60-80	30-50	Not Showy	Yellow	Wide Range	Full Sun	Slow	Intolerant
Shellbark Hickory	5-8	60-80	30-50	Not Showy	Yellow	Moist	Full Sun	Medium	Intermediate
Thornless Honeylocust	3-9	30-60	25-50	Not Showy	Yellow	Wide Range	Full Sun	Fast	Intermediate
Katsura	5-8	40-60	25-50	Not Showy	Yellow	Moist	Full Sun to Light Shade	Medium	Intolerant
Littleleaf Linden	3b - 7a	50-70	25 - 40	Yellow-Green	Yellow-Green	Moist	Full Sun to Light Shade	Slow to Medium	Intolerant
Black Locust	4-9	40-60	20-30	White	Yellow	Wide Range	Full Sun	Fast	Intolerant
Norway Maple	3-7a	40-50	30-50	Yellow-Green	Yellow	Wide Range	Full Sun	Medium	Intolerant
Red Maple	3-9	40-70	30-50	Red	Red to Yellow	Moist	Full Sun to Light Shade	Medium to Fast	Tolerant
Silver Maple	3-9	60-75	40-75	Yellow-Green	Yellow	Wide Range	Full Sun	Fast	Tolerant
Sugar Maple	4-8	60-80	40-60	Yellow-Green	Yellow to Red	Moist to Average	Full Sun to Light Shade	Slow to Medium	Intolerant
Red Mulberry	5b-9	40-60	40-60	Not Showy	Yellow	Moist	Full Sun	Fast	Intermediate
White Mulberry	4-9	30-50	20-40	Not Showy	Yellow-Green	Moist to Average	Full Sun to Light Shade	Fast	Intermediate
Black Oak	3-9	50-60	50-60	Not Showy	Yellow-Brown	Wide Range	Full Sun	Medium	Intolerant
Bur Oak	3a - 9a	70-80	70-80	Not Showy	Yellow-Brown	Wide Range	Full Sun	Slow	Intermediate

**SUMMARY OF TREE CHARACTERISTICS**

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>LARGE SHADE TREES</b>									
Swamp Chestnut Oak	4-8	50-70	40-70	Not Showy	Yellow-Brown	Moist to Average	Full Sun	Medium	Intermediate
Chinkapin Oak	5b-7	40-60	50-60	Not Showy	Yellow-Brown	Dry	Full Sun	Medium	Intolerant
English Oak	4-8	40-60	10-40	Not Showy	Brown	Average	Full Sun	Medium	Intermediate
Pin Oak	4-8	60-80	30-50	Not Showy	Bronze or Red	Wide Range	Full Sun	Fast to Medium	Tolerant
Post Oak	6a-9a	40-50	40-50	Not Showy	Yellow-Brown	Dry	Full Sun	Slow	Intolerant
Northern Red Oak	4-8	60-80	60-80	Not Showy	Russet to Red	Average	Full Sun	Fast to Medium	Intolerant
Southern Red and Cherrybark Oak	6b-9	50-70	40-70	Not Showy	Brown	Moist	Full Sun	Medium	Intermediate
Sawtooth Oak	5b-9	30-40	30-40	Not Showy	Yellow-Brown	Wide Range	Full Sun	Medium	Intermediate
Scarlet Oak	4-8	60-80	30-50	Not Showy	Russet to Red	Average	Full Sun	Medium	Intolerant
Shingle Oak	4-8	50-60	50-70	Not Showy	Yellow-Brown	Moist	Full Sun	Slow to Medium	Intermediate
Shumard Oak	5b-9	50-75	40-75	Not Showy	Russet to Red	Average	Full Sun	Medium	Intolerant
Water Oak	6b-9	50-75	35-60	Not Showy	Green	Moist to Wet	Full Sun to Light Shade	Fast to Medium	Tolerant
White Oak	4b-9a	70-90	50-80	Not Showy	Reddish-Purple	Moist To Dry	Full Sun	Slow	Intolerant
Swamp White Oak	3-8	50-80	40-70	Not Showy	Yellow	Moist	Full Sun	Medium	Tolerant
Willow Oak	5b-9	50-70	40-60	Not Showy	Yellow-Brown	Wide Range	Full Sun	Medium	Tolerant
Osage-orange	4-9	20-40	20-40	Not Showy	Yellow	Wide Range	Full Sun	Fast	Intermediate
Pecan	5b-9	50-70	40-70	Not Showy	Yellow	Moist	Full Sun	Slow	Intermediate

## SUMMARY OF TREE CHARACTERISTICS

PLANT NAME	HARDINESS ZONE	HEIGHT FEET	SPREAD FEET	FLOWER COLOR	FALL COLOR	SOIL MOISTURE	LIGHT REQUIREMENTS	GROWTH RATE	FLOOD TOLERANCE
<b>LARGE SHADE TREES</b>									
Persimmon	5b-9a	40-60	20-40	Yellow	Yellow	Average	Full Sun	Slow	Intermediate
London Planetree	6a-9a	70-90	55-70	Not Showy	Yellow-Brown	Wide Range	Full Sun to Light Shade	Medium	Intermediate
Lombardy Poplar	3-9	50-80	10-15	Not Showy	Yellow	Moist	Full Sun	Fast	Intermediate
Sugarberry	6a-9a	60-80	60-80	Not Showy	Yellow	Wide Range	Full Sun	Medium	Tolerant
Sweetgum	5b-9	60-75	40-60	Not Showy	Yellow to Red	Moist	Full Sun	Medium	Tolerant
American Sycamore	4-9	70-100	60-80	Not Showy	Brown	Moist	Full Sun	Fast	Intermediate
Tree-of-Heaven	4-8	30-50	20-40	Yellow-Green	Brown	Average	Full Sun to Light Shade	Fast	Intermediate
Tuliptree	4b-9	70-100	35-50	Yellow-Green	Yellow	Moist	Full Sun	Fast	Intolerant
Black Walnut	4-9	50-75	40-60	Not Showy	Yellow	Moist to Average	Full Sun	Medium	Intermediate
Willow	(3)4-9	30-60	30-60	Not Showy	Yellow	Wet to Moist	Full Sun	Fast	Tolerant
Japanese Zelkova	5b-8	40-60	40-60	Not Showy	Yellow-Brown	Moist	Full Sun	Medium	Intermediate