



# Tree Installation: Process and Practices

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## Introduction

Choosing a tree should be a well-informed and planned decision because of the significant investment of money and time it can involve.

Proper selection can provide years of enjoyment as well as increased property value, and create many environmental and economic benefits. On the other hand, an inappropriate tree for your site or location can be a continual challenge and maintenance problem, or even a potential hazard. Some questions to consider when selecting a tree include:

## Tree selection

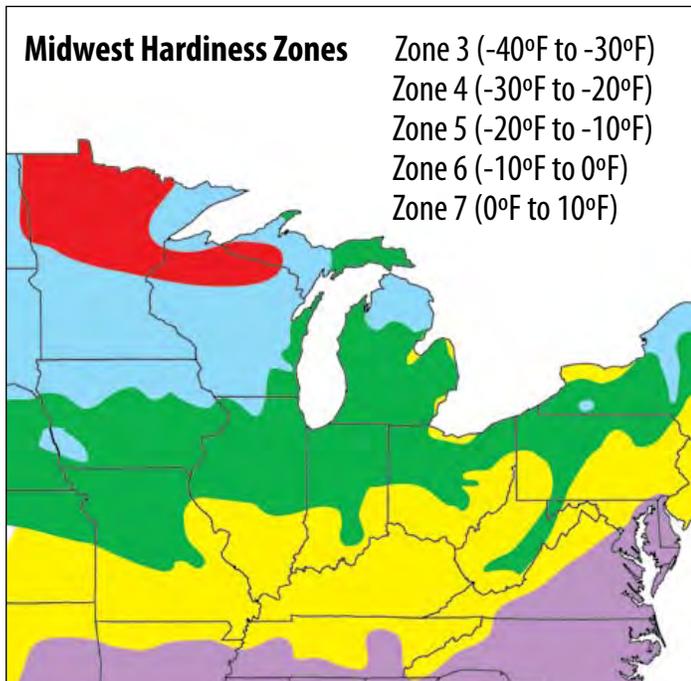
**What purpose will the tree serve?** Trees provide numerous environmental and functional benefits. Consider some basic landscape functions including beautification, screening of sights and sounds, shade and energy conservation, and wildlife habitat. Well-placed shade trees can reduce cooling costs for the home or business, and increase pavement life.

**Does it have ornamental value?** Consider leaf color, texture and/or flowers and fruits during the selection process. Some species provide beautiful displays of color for short periods in the spring or fall. Other species may have foliage that is reddish or variegated

and can add color year-round. Various foliage types and shapes also can add visual interest with coarse and fine textured leaves.

Trees bearing fruits or nuts provide excellent sources of food for many species of wildlife, as well as humans. However, people consider some fruit and nut-bearing trees to be “dirty” or a nuisance around hard surfaces, such as sidewalks, patios and streets. These same trees may pose safety and health issues.

**Is the species appropriate for your area?** Reputable tree nurseries will not sell plant material unsuited to certain areas. However, some mass marketers provide the right trees that are proven hardy for the area. Check with local experts to be certain the tree you choose will survive extreme winter weather. Be aware of microclimates on the site or property, which can be an asset for trees. Microclimates are localized areas where weather conditions may vary from the norm. A “sheltered” lawn may support vegetation not normally adapted to a region. In addition, a north-facing slope may be significantly cooler or windier than surrounding areas, limiting the survival potential of normally well-adapted plants.



The 2003 US National Arboretum “Web version” of the USDA Plant Hardiness Zone Map (USDA Miscellaneous Publication No. 1475, Issued January 1990)

**Go native!** Check the USDA Hardiness Zone Map (<http://usna.usda.gov/Hardzone/ushzmap.html>) for your area. Select trees native to the area and the correct zone. Non-native plants could be more susceptible to environmental stress, which can lead to pest issues and management problems. Avoid exotic trees that can invade other areas, crowd out native plants, and harm natural ecosystems.

**Does it have insect, disease or other issues that may reduce its usefulness?** Certain insects and diseases can be serious problems on desirable species in a region. Invasive pests, such as Emerald Ash Borer or Asian Long-horned Beetle, can devastate an entire tree population or significantly reduce its attractiveness. Depending on the pest, control may be difficult and costly, and could shorten the life expectancy of the tree. Other species such as Silver Maple, Bradford Pear and Callery Pear are genetically predisposed to poor structure and weak stem junctions, and are known to be “weak-wooded” because of their susceptibility to breakage in severe weather.

**How big will it get?** When planting a small tree, it is often difficult to imagine that in as few as 10 years it could be shading an entire yard. Unfortunately, many trees are planted and later removed just when they are attaining a functional size as the tree grows beyond design and intent. Consider mature size before planting. Inspect the area around where a tree will be planted for potential future conflicts with other natural habitat.

**What is the tree’s average life expectancy?** Some trees can live for hundreds of years, while others are considered “short-lived” and may be safe and functional for only 20-30 years. Usually, the faster a tree grows, the shorter its lifespan. Many short-lived trees are smaller ornamental or poor-quality shade species. Better quality, native trees such as oak species can live more than 300 years! Plant for sustainability.

## Placement of trees

Before planting your tree, consider the tree’s “full-grown” size. When the tree nears maturity, will it be too near your house or other structures? Be considerate of neighbors. An evergreen tree planted on a property’s north side may block the winter sun from a next-door neighbor. Will it provide too much shade for vegetable and flower gardens? Most vegetables and many annuals and perennials require considerable amounts of sun. If growing these plants, consider how the placement of trees will affect the gardens. Will it obstruct driveways or sidewalks? Think about the line of sight for street access and signage. Will it cause problems for buried or overhead utilities? Remember: Success can be achieved by planting the right tree in the right place. **Always be aware of utility service lines above and below ground.**



Do not plant trees near overhead utility lines unless approved by a utility forester. This will help eliminate the need for harsh pruning measures as the tree matures.

**How common is this species in the neighborhood or town?** Some species already are over-planted and over-utilized, creating a problematic monoculture with increased management issues. Increasing natural diversity and varying species selections will help limit the opportunity for a single pest to devastate all plantings. In large-scale urban plantings, never plant more of one type of tree than you can afford to lose. Typically, planting no more than 10 percent of an area with a single tree species best supports healthy biodiversity.

**Should evergreen or deciduous tree species be considered?** Evergreen trees will provide foliage cover and sometimes shade year-round. They also may be more effective as a barrier for wind and noise. Deciduous trees give summer shade but provide passive solar gain, allowing the winter sun to shine through to allow indirect heating. Keep this in mind when selecting a planting location. Orientation of structures and tree plantings can have a profound effect on local climate.

**Other considerations** include local regulations and ordinances. Check with local authorities about regulations pertaining to placement of trees. Some communities have ordinances requiring permits for tree planting, particularly in rights of way or on public property. Utility service providers are required to keep tree branches at a safe distance according to their vegetation management plans. Line clearance distances will be imposed by utility regulations as trees mature.

## Planting trees

A well-planted and maintained tree will grow faster and live longer than one improperly planted or maintained. Trees can be planted almost any time of the year as long as the ground is not frozen. Early fall is the optimum time to plant trees in Indiana, because it gives trees a chance to establish new roots before winter arrives and the ground freezes. Late winter and early spring is the second-best time to plant trees. Summer plantings also are fine, although planting in hot summer weather should be avoided unless supplemental irrigation is certain and consistent. Planting in frozen soil is discouraged because it is difficult on tree root systems.

Trees may be purchased in containers, root bags, balled and burlapped (B&B), or as bare root plants. Generally, containers and root bags are the easiest to plant, allowing trees to establish well in any season, including summer.

With container-grown stock, the tree has been growing in a container for a period of time, usually from seed or seedling. When planting “potted” plants, rootball damage is minimized as the plant is transferred to the soil. Container-grown trees range in size from very small plants in 1-gallon pots to large trees in 25-gallon pots. Root control bags are similar to containers in that they are grown in the medium and bag for a period of time, and harvested when desired size is achieved. Planting procedures are very similar and require the container be removed completely.

B&B plants are grown in the ground with no holding material. The roots/soil balls are harvested with special mechanized equipment or hand-dug and wrapped in burlap and wire baskets. B&B plants can be quite large and provide the largest cultivated tree for purchasing. Typically, these are available year-round, but best selection is in the spring and fall. Of all the cultivation methods, balled and burlapped stock can be the most challenging from a physical standpoint, with the weight of the soil ball posing a serious impediment to planting.



Container-grown trees provide a lightweight method of growing and handling trees. Beware of possible poor root structure, such as “circling” or “diving” roots.

Bare root trees usually are smaller in size and more difficult to obtain. Because there is no soil media on the roots, they should be planted when dormant to prevent desiccation and damage. The roots must be kept moist until planted. Bare root trees often are offered by seed and nursery catalogs or by wholesalers, and usually in the spring. They should be planted as soon as possible upon delivery. Bare root trees are becoming increasingly popular and new planting techniques show promise for planting larger trees with no heavy medium. Be sure to follow the planting instructions that come with the tree.



Root force or air pot containers provide innovative ways to improve root structure and volume for transplanting trees.



Balled and burlapped trees provide an opportunity to plant larger trees in the landscape. However, there are fewer roots to help in establishment.

## Irrigation

For the first year or two, especially after a week or so of unusually dry weather, watch trees closely for signs of moisture stress. Trees should never be allowed to go into severe stress. If a minimum of 1 inch of rain per week is not available, supplemental irrigation is needed. A good rule is to provide water at the rate of 2 gallons for every inch of trunk diameter measured at 6 inches above the root crown. If leaves are wilting or scorching, irrigate the trees slowly enough to allow the water to soak into the tree root system and planting pit. This will encourage deeper root growth. Keep the area under the tree canopy mulched at a depth of 2-3 inches. Check soil with a soil probe, if available, for dampness and drainage. Overwatering can be just as lethal as underwatering. Most importantly, a consistent watering regimen in the fall before the ground freezes is recommended to help ensure a healthy plant in the spring.

**Fertilization** is not recommended for newly planted trees. Depending on soil and growing conditions, fertilizer may be beneficial at a later time, after establishment. Fertilizing a stressed tree can do more harm than good for several reasons. It is important for root growth to dominate during this time and fertilizers containing higher nitrogen ratios will stimulate top growth at the expense of roots.



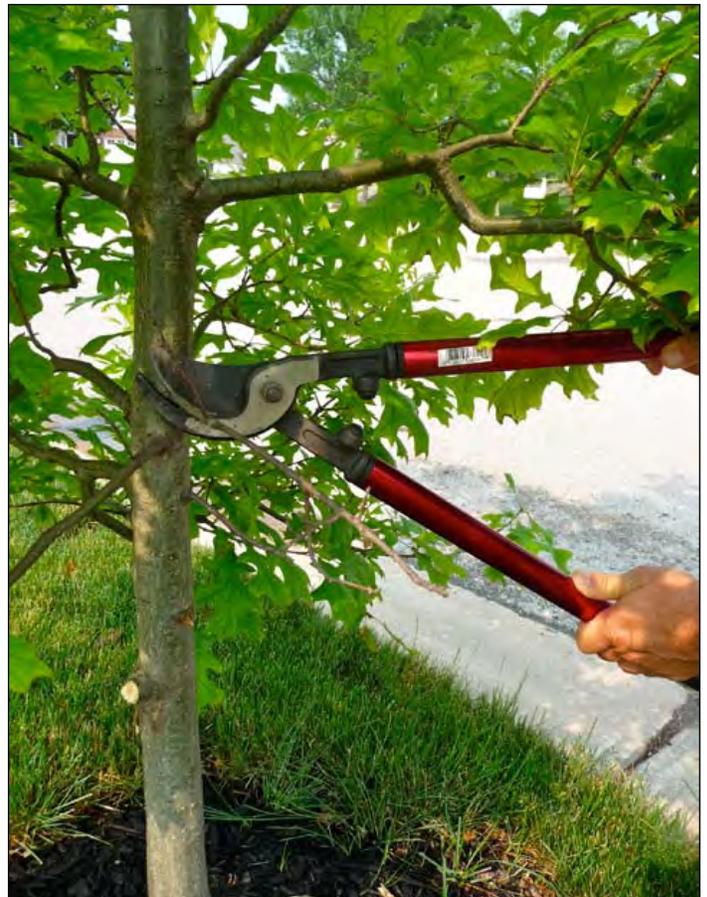
Whenever possible, mulch trees to the dripline of the tree canopy, at the edge of the farthest limbs, at 2-4 inches deep.

## Maintenance

Young trees need **protection** against animals, frost cracks, sunscald, lawn mowers and string trimmers. Mice and rabbits frequently girdle small trees by chewing away the bark. Since the tissues that transport nutrients in the tree are located just under the bark layer, a girdled tree often dies in the spring when growth resumes. Weed whackers or string trimmers also are a common cause of girdling. Plastic or vinyl guards are an inexpensive and easy control method. Sunscald and bark cracks occur mostly on the south and southwest sides of smooth-barked trees. Sunscald and frost cracking are caused by the sunny side of the tree expanding at a different rate than the colder, shaded side. This can cause large splits in the trunk and can occur when a young tree in a shady spot suddenly is exposed to direct sunlight. Light-colored tree guards can be used to protect the trunk from sunscald and other tree enemies. Avoid tight-fitting paper or synthetic wraps.

**Pruning** is an important maintenance practice for tree care. However, the only pruning required at planting is corrective pruning to remove any broken, damaged or dead branches, or suckers that sprout from the trunk.

These considerations are important for the success and sustainability of the newly planted tree. The best way to prevent tree problems is to understand the concept of “right tree, right place” and install new trees using the correct planting techniques.



Pruning should be minimal, removing only dead or damaged branches, as needed.

## Proper Tree Planting – The 12-Step Process

### 1) Select the appropriate tree for the location.

Choose a tree that will grow well under local environmental conditions, and provide it with plenty of space to grow and mature. This includes both vertical and horizontal space for the canopy and plenty of room for root growth.

### 2) Dig the planting pit 1½ to two times as wide as the root system.

Wide areas give the roots a place to spread and grow. Dig the hole no deeper than the root system, which includes the soil, to keep the tree from settling too deep. “Rough and score” up the sides of the exposed roots to allow for root penetration into the surrounding soil and help prevent circling roots. Find the root flare and make sure it is not below the soil line.

### 3) Provide proper drainage for tree survival.

Most plants don't like “wet feet” or prolonged wetness around their roots. Be sure the planting pit has good drainage. Know the soil type in the planting area in order to make adjustments to tree selection or planting procedures. If unsure of soil type, try the two-hour test by digging the hole and filling it half full with water. If the water is gone after two hours, drainage is adequate.

### 4) Prune the tree only to remove problems.

Remove dead, broken and diseased branches, and crushed and girdling roots only. Remove water sprouts or suckers.

### 5) Set the tree in the hole with the root collar even or slightly above natural grade.

Planting too deep is a leading cause of mortality for a newly planted tree. Be certain the root flare is visible above the soil line. Do not pick the tree up by the trunk. Always handle by the container or root ball.

### 6) Remove all foreign materials from the root ball.

Remove wires, tags, twine, cords, containers and, especially, non-biodegradable bags. If planting a balled and burlap tree, remove all planting material, if possible. If the tree is too big to move or maneuver, cut and remove the upper one-half of the wire basket, then remove or fold back as much of the burlap as possible.

### 7) Gently back fill the hole with removed soil.

Soil amendments and fertilizers are not necessary. Create a natural soil space environment, not an artificial one with additives. Settle the soil with water and lightly tamp to remove air pockets and ensure good root/soil contact.

### 8) Stake the tree, if necessary.

Support systems for trees are not recommended. However, trees sometimes require additional support to maintain stability and provide protection in challenging areas. Consult an ISA Certified Arborist if staking or guying is required. Stakes and guying should not be left in place longer than one year. If support systems are left in place too long, serious damage to the tree can occur by girdling the plant.

### 9) Mulch the planting area.

Mulch around the tree to at least the drip line – 2-4 inches deep – and up to but not smothering the trunk. Do not overlap or mound the mulching materials.

### 10) Water the tree for at least the first year; don't drown it.

A newly planted tree should have adequate water for growth and survival. A thorough soaking is much better than light, frequent watering. One inch of water per week, from rainfall and/or supplemental watering, is preferred. Check the soil periodically to ensure good water movement through the soil.

### 11) Protect the tree from animals and humans.

Plastic, expanding tree wraps are ideal for protection against tree enemies. Deer and other furry creatures can damage a tree if it is not protected. String trimmers and mowers likely will be fatal to a tree if allowed to harm the bark.

### 12) Avoid fertilization during the first growing season.

Too much nitrogen can burn tender roots, slowing growth and delaying establishment. Stressed plants should never be fertilized, including during the planting period.



Finding the root flare during the tree transplanting process is critical. Regardless the type of nursery stock, the root flare can be hidden or covered by soil media or fibrous roots, which will need to be removed.



Know what's below.  
**Call** before you dig.

**BEFORE DIGGING**, call Indiana Underground Plant Protection Service at 811 for line location information. Also, consider aboveground utility lines, as well.

## Indiana Native Tree List - Suggested for Urban Landscapes

Latin Name	Common Name	Shade Tolerance	Flood Tolerance	Habitat
<i>Acer rubrum</i>	Red Maple	Tolerant	Tolerant	Lowland wet
<i>Acer saccharinum</i>	Silver Maple	Intermediate	Tolerant	Lowland wet
<i>Acer saccharum</i>	Sugar Maple	Very tolerant	Intolerant	Upland mesic
<i>Aesculus glabra</i>	Ohio Buckeye	Intermediate	Intermediate	Lowland wet-mesic
<i>Amelanchier canadensis</i>	Shadblow Serviceberry	Very tolerant	Intolerant	Upland mesic
<i>Amelanchier laevis</i>	Allegheny Serviceberry	Very tolerant	Intolerant	Upland mesic
<i>Betula nigra</i>	River Birch	Tolerant	Tolerant	Lowland wet
<i>Carpinus caroliniana</i>	American Hornbeam	Very tolerant	Intolerant	Upland mesic
<i>Carya illinoensis</i>	Pecan	Intolerant	Intermediate	Lowland wet-mesic
<i>Carya laciniosa</i>	Shellbark Hickory	Intolerant	Tolerant	Lowland wet-mesic
<i>Carya ovata</i>	Shagbark Hickory	Intermediate	Intolerant	Upland mesic-dry
<i>Celtis occidentalis</i>	Common Hackberry	Intermediate	Intermediate	Lowland wet-mesic
<i>Cercis canadensis</i>	Eastern Redbud	Tolerant	Intermediate	Lowland wet-mesic
<i>Cladrastis lutea</i>	American Yellowwood	Tolerant	Intolerant	Upland mesic
<i>Cornus alternifolia</i>	Pagoda Dogwood	Very tolerant	Intermediate	Lowland wet-mesic
<i>Cornus florida</i>	Flowering Dogwood	Very tolerant	Very intolerant	Upland mesic
<i>Crataegus crusgalli</i>	Cockspur Hawthorn	Intolerant	Intermediate	Upland dry
<i>Crataegus mollis</i>	Downy Hawthorn	Intolerant	Intermediate	Upland dry
<i>Crataegus phaenopyrum</i>	Washington Hawthorn	Intolerant	Intermediate	Upland dry
<i>Diospyros virginiana</i>	Common Persimmon	Intolerant	Intermediate	Lowland wet-mesic
<i>Euonymus atropurpureus</i>	Eastern Wahoo	Tolerant	Intermediate	Lowland wet-mesic
<i>Fagus grandifolia</i>	American Beech	Very tolerant	Very intolerant	Upland mesic
<i>Gleditsia triacanthos</i>	Honey Locust	Intolerant	Intermediate	Lowland wet-mesic
<i>Gymnocladus dioica</i>	Kentucky Coffeetree	Intolerant	Intermediate	Lowland wet-mesic
<i>Juniperus virginiana</i>	Eastern Red Cedar	Very intolerant	Intolerant	Upland dry
<i>Liquidambar styraciflua</i>	American Sweetgum	Intolerant	Tolerant	Lowland wet-mesic
<i>Liriodendron tulipifera</i>	Tulip Poplar	Intermediate	Very intolerant	Upland mesic
<i>Nyssa sylvatica</i>	Black Tupelo	Intolerant	Intermediate	Lowland wet-mesic
<i>Ostrya virginiana</i>	Hophornbeam	Very tolerant	Very intolerant	Upland mesic-dry
<i>Pinus strobus</i>	Northern White Pine	Intermediate	Intolerant	Upland mesic
<i>Platanus occidentalis</i>	American Sycamore	Intermediate	Intermediate	Lowland wet-mesic
<i>Prunus americana</i>	American Plum	Intolerant	Very intolerant	Upland dry-mesic
<i>Quercus alba</i>	White Oak	Intermediate	Intolerant	Upland mesic-dry
<i>Quercus bicolor</i>	Swamp White Oak	Intermediate	Tolerant	Lowland wet
<i>Quercus borealis (rubra)</i>	Northern Red Oak	Tolerant	Intolerant	Upland mesic-dry
<i>Quercus imbricaria</i>	Shingle Oak	Intermediate	Intermediate	Lowland wet-mesic
<i>Quercus macrocarpa</i>	Bur Oak	Intolerant	Intermediate	Wet-mesic
<i>Quercus muhlenbergii</i>	Chinkapin Oak	Intolerant	Very intolerant	Upland dry
<i>Quercus shumardii</i>	Shumard's Oak	Intolerant	Tolerant	Lowland wet-mesic
<i>Rhus aromatica</i>	Fragrant Sumac	Very intolerant	Very intolerant	Upland dry
<i>Rhus glabra</i>	Smooth Sumac	Very intolerant	Intolerant	Upland mesic-dry
<i>Rhus typhina</i>	Staghorn Sumac	Very intolerant	Intolerant	Upland dry
<i>Sassafras albidum</i>	Common Sassafras	Intolerant	Very intolerant	Upland dry
<i>Staphylea trifolia</i>	American Bladdernut	Very tolerant	Intermediate	Lowland wet-mesic
<i>Taxodium distichum</i>	Bald Cypress	Intolerant	Tolerant	Lowland wet-mesic
<i>Tilia americana</i>	Basswood	Very tolerant	Intolerant	Upland mesic
<i>Tsuga canadensis</i>	Eastern Hemlock	Very tolerant	Very intolerant	Upland mesic-dry

**HABITAT KEY**

**Lowland wet:** River margin and streamside floodplain depressions, areas subject to frequent and violent inundation due to cyclic flooding in late winter and spring, high water tables, lake margin and swamp, slow draining flats and depressions, sluggish streams, areas of poor internal or surface drainage supporting standing water much of the time, cool areas with high humidity and high water table.

**Lowland wet-mesic:** Alluvial bottomlands and elevated terraces of major streams, where soil moisture supply is in excess of that falling as rain; areas of intermittent yearly flooding of short duration, characterized by excess surface wetness in winter and spring to nearly xeric conditions during midsummer low water stages.

**Upland mesic:** Wet ravines and sheltered coves, moist but well-drained slopes and uplands, generally north- and east-facing slope aspects. Protection from direct sun exposure and to prevailing dry winds, together with cool air drainage into these areas, maintains a regime of greater available soil moisture, reduced evaporation stress and stable temperature near the ground.

**Upland mesic-dry:** Dry slopes and upland flats, generally warmer south and facing slope aspects, upland ridges and ravines. Direct sun exposure accelerates evaporation stress, reduces available soil moisture and greatly increases temperature near the ground.

**Upland dry:** High banks, calcareous waterworn cliffs, steep rocky land, excessively drained sandy soils or shallow stoney soils over rock outcrop.

**REFERENCES**

Deam, C. 1940. "Flora of Indiana."

Hightshoe, G. 1988. "Native Trees, Shrubs, and Vines for Urban and Rural America: A Planting Design Manual for Environmental Engineers."

Tungesvick, Spence Nursery

## Utility-Friendly Tree List

The following list includes overhead utility friendly (low-growing) tree species which may be compatible in areas of overhead utility lines. This list is not all-inclusive. Other species may be acceptable and each selection should be considered for mature size in relationship to the height of the overhead lines. Consult a utility forester or your provider for assistance. Be sure to comply with local regulations and ordinances. Size noted is typical for urban conditions; mature sizes should be less than 20 feet in most applications.

Species	H'	W'	Shape	Light	Description
<b>Paperbark Maple</b> ( <i>Acer griseum</i> )	25	20	Upright, oval to rounded	Full sun to part shade	Trifoliate leaves, bright red and orange fall color; cinnamon brown to reddish brown exfoliating bark.
<b>Shadblow Serviceberry</b> ( <i>Amelanchier canadensis</i> )	20	20	Oval to rounded	Full sun to part shade	White flowers in spring; red to purple fruit; yellow mixed with a little orange fall color.
<b>Apollo Maple</b> <i>Acer saccharum</i> "Barrett Cole"	25	10	Narrow, columnar	Full sun to part shade	Unique narrowness, dense branching and compact form make this dwarf and columnar Sugar Maple ideal for limited spaces. Dark green foliage withstands summer heat.
<b>Autumn Brilliance Serviceberry</b> ( <i>Amelanchier x grandiflora</i> "Autumn Brilliance")	20	20	Rounded	Full sun to part shade	White flowers in spring; red to purple fruit; orange to red fall color.
<b>Allegheny Serviceberry</b> ( <i>Amelanchier laevis</i> )	20	20	Upright, irregular	Full sun to part shade	White flowers in spring; red to purple fruit; late yellow to orange fall color.
<b>Eastern Redbud</b> ( <i>Cercis Canadensis</i> )	25	25	Upright, spreading	Full sun to part shade	Early pink flowers along twig before foliage; heart-shaped leaves.
<b>Pagoda Dogwood</b> ( <i>Cornus alternifolia</i> )	20	20	Rounded	Full sun to part shade	Horizontal branching; creamy-white flowers followed by blue-black fruit; red to purple fall color.
<b>Cornelian Cherry Dogwood</b> ( <i>Cornus mas</i> )	20	15	Rounded	Full sun to part shade	Early yellow flowers before foliage; bright red fruit in summer.
<b>Cockspur Hawthorn</b> ( <i>Crataegus crus-galli</i> )	20	20	Broad, rounded	Full sun	Showy, white flowers; red fruit; glossy foliage; thorny; attracts birds.
<b>Thornless Cockspur Hawthorn</b> ( <i>var. inermis</i> )	20	20	Broad, rounded	Full sun	Thornless; other characteristics same as species.
<b>Washington Hawthorn</b> ( <i>Crataegus phaenopyrum</i> )	25	25	Upright, spreading	Full sun	White flowers; showy, orange-red fruit; red-orange fall color; narrow thorns.
<b>Royal Star Magnolia</b> ( <i>Magnolia kobus var. stellata</i> "Royal Star")	15	15	Oval to rounded	Full sun to part shade	White flowers with pink in early spring before leaves.
<b>Crabapple</b> ( <i>Malus spp.</i> ) "Sugar Tyme" "Centurion" "Donald Wyman" "Indian Summer" "Snow Drift" "Prairiefire"	20 20 20 15 20 20	15 15 25 15 15 20	Upright, oval Upright Broad, rounded Rounded Rounded Upright, rounded	Full sun Full sun Full sun Full sun Full sun Full sun	Pink buds; white flowers; red fruit. Pink to red flowers; red fruit; red to bronze foliage. Pink to red buds open to white flowers; red fruit. Red buds; rose-red flowers; red fruit. Red bud; white flowers; small red fruit. Pink flowers; red fruit.
<b>Ivory Silk Japanese Tree Lilac</b> ( <i>Syringa reticulata</i> )	20	15	Rounded	Full sun	Creamy panicles of fragrant flowers in late spring; red-brown shredding bark.
<b>Techny Arborvitae</b> <i>Thuja occidentalis</i>	15	6	Upright, pyramidal	Full sun to part shade	Fast growing and dark green. Excellent for screens and tall sheared hedges. Good in sun or light shade. Very winter hardy.
<b>Keteleeri Juniper</b> <i>Juniperus chinensis</i> "Keteleeri"	20	10	Upright, pyramidal	Full sun	Dense evergreen tree with medium green, mostly scale-like foliage which is attractive year-round. This is a female cultivar that produces profuse, grayish-green, berry-like cones.
<b>Hetz Columnar Juniper</b> <i>Juniperus chinensis</i> "Hetzi Columnar"	15	8	Upright, pyramidal	Full sun	Multi-stemmed evergreen tree with bright green foliage and abundant bluish-green berries.

## Tree Planting Detail

(Not to scale)

Install approved attachment devices to stabilize tree. Materials should be flexible and allow for movement so that trunk taper develops correctly.

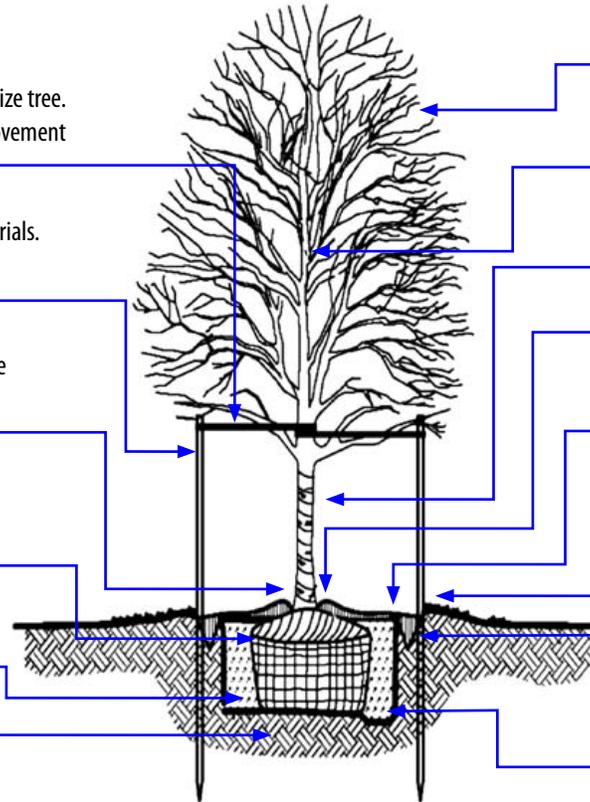
Stake trees only if needed, using sturdy materials. Attach at the lowest branches, or no higher than 2/3 the height of the tree.

Excavate soil or media to expose the root flare just above the uppermost roots, to identify proper planting depth.

Remove container or, if B&B, remove upper 1/3-1/2 of wrapping material and wire basket.

Backfill planting pit with native soil material. Do not use any amendments.

Place tree on undisturbed subgrade or compact, if disturbed.



Prune only dead or damaged branches.

Remove all tags, ties, strings, twine, wire, wrapping, etc.

Wrap smooth bark trees, if necessary. Use a light-colored, flexible wrapping material.

Locate root flare slightly above finish grade.

Excavate planting pit 1½-2 times the size of the root ball, maintaining vertical sides.

Create a mulch ring to slightly exceed the diameter of the tree's drip line, forming a saucer for watering.

Apply suitable mulching materials 2-4 inches deep. Avoid mounding against trunk.

Water thoroughly after planting.

## PURDUE AGRICULTURE

06/11

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