



## TREE PLANTING GUIDE



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**Updated 2019**



<i>Plant</i>	<i>Hardiness Zone</i>	<i>Height/Width</i>
<b>Plum, Pipestone</b> (Prunus salicina 'Pipestone') Immense sized red fruit. Good for fresh use, jam and jelly. Very hardy. Vigorous grower. Prefers well drained soil.	3-7	10'/8'
<b>Plum, Superior</b> (Prunus salicina 'Superior') Sweet and juicy yellow flesh makes this an ideal plum for eating fresh off the tree. Heavy bearing. Often sets fruit the first year. Good for jams/jellies/juices. Vigorous grower. Prefers well drained soil.	4-7	10'/8'
<b>Plum, Toka</b> (Prunus salicina 'Toka') Is one of the best pollinators of all the plums. The skin is reddish bronze, with richly flavored, spicy sweet, apricot-colored flesh. This hardy tree is moderately vigorous and produces heavy crops that ripen in late August into September.	3-7	15'/15'

## EMERALD ASH BORER

The Emerald Ash Borer (EAB) is responsible for the destruction of tens of millions of American ash trees in North America. It was accidentally introduced from Asia into southeastern Michigan in 2002.

EAB was identified in Sioux Falls in 2018 and will eventually make its way to Pierre. This may take 1-2 years or it may take over 10. When it does, this insect will kill all of the ash trees in our community. Some varieties are dead within a few years (green and black ash) while others take a little longer to die. There isn't a protective pre-infection treatment, nor will keeping your ash trees in perfect health protect them. Infected ash trees become very brittle and unsafe calling for their immediate removal once EAB is present.

There are 3 options available to property owners for their existing ash trees:

1. Gradually start replacing your ash trees now, prior to the arrival of the Emerald Ash Borer.
2. Remove your ash trees once they become infected.
3. Chemically inject each ash tree you want to keep once the Emerald Ash Borer is identified in Pierre.

Pierre property owners are legally responsible for all trees on their property from curb to alley, including the boulevard. The EAB insecticide treatment currently costs \$200/tree and needs to be repeated every 2 years. Tree removal can cost from \$200 - \$2,000+ depending on location and size of the tree. Replacement trees can cost from \$75 - \$600 depending on the size and species of tree.

Starting with less desirable and smaller ash trees, a gradual replacement over a number of years allows replacement trees to mature while remaining trees continue to provide summer shade and winter wind breaks. As the remaining ash trees are eventually replaced the first trees will be much bigger and able to quickly provide protection from our summer and winter weather. Spreading the workload, costs of removal, and replacement over years is easier to budget for than a sudden need to remove every ash tree all at once.

A little over 11% of all trees in the Pierre parks and other public areas are green ash trees. That's about 250 trees. On non-public properties the total number of ash trees is much higher. Every one of these trees will need to be removed or injected with insecticide every 2 years for the life of the tree. The choices are, do you pick your favorites and treat them, do you wait and have yours removed when EAB gets here, or do you start a proactive plan of gradual replacement of your ash trees?

Reputable tree care companies or your local garden center can help you identify your existing trees and make suggestions for suitable replacements.

Please do not haul your own firewood for camping and especially, do not transport any wood from a quarantined area. Monitor your ash trees. As you plant new or replacement trees on your property, plant different species. A variety of trees helps create diversity. If one species contracts a disease or a pest, not all your trees will be affected.

If you have an ash tree with a thinning canopy or notice D-shaped holes in the bark please contact:  
*City of Pierre Parks Department at 773-7437.*

*Up to date information regarding EAB can be obtained from the following sources: www.emeraldashborer.info SD Department of Agriculture, Forestry Division, 773-3592; Hughes/Stansley County Extension Office, 223-7730*

## INTRODUCTION

"Trees properly placed around buildings can reduce air conditioning needs by 30 percent, and can save 20-50 percent in energy used for heating" - USDA

"Healthy, mature trees add an average of 10 percent to a property's value." – USDA

The City of Pierre Tree Planting Guide is the result of a coordinated effort of the City of Pierre Arbor Board and the City of Pierre Parks Department. It is funded, by a grant received from the South Dakota Department of Agriculture. It will help residents with their selection, maintenance, installation, and proper utilization of trees in our community. As this is only a guide to tree selection, please consult your local professional for specific varieties and how they will adapt to your location.

## PIERRE STREET TREE ORDINANCES

For Full Text : [www.cityofpierre.org](http://www.cityofpierre.org)

**Section 6-4-101. Location of trees - distance from street corners and fireplugs.** No street tree shall be planted closer than 5 feet of any street corner, measured from the property line extended. No street tree shall be planted closer than 10 feet of any fireplug.

**Section 6-4-102. Shade trees not permitted within limits of the street - unlawful to injure grass, trees, shrubs, flowers and plants - penalty.** Shade trees may be planted between the sidewalk and the curb but not within three feet of the curb.

**Section 6-4-104. Trimming of trees required - city trimming at owner's expense.** The occupant of any private premises or the owner of the same if not occupied, abutting on any public street, road or alley within the city shall keep all trees standing upon such premises or between the same and the center of the adjoining street, road or alley so trimmed that no bough or branch thereof shall be lower than twelve feet above the surface of the street, road or alley or eight feet above the surface of any sidewalk thereon and shall



Limbs over the sidewalk shall have a minimum of an 8' clearance

Limbs over the street shall have a minimum of a 12' clearance at the curb.

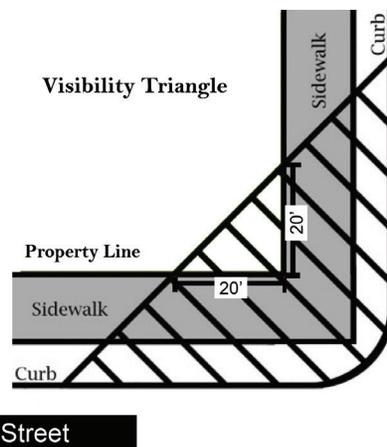
keep all such trees trimmed so that no trunk, limb or branch thereof shall in any way or at any time interfere with the movement of delivery, maintenance, garbage disposal, and emergency service vehicles or come in contact with any street lighting, power, or other electrically charged wire when such wires are lawfully strung on posts located on any public street, road or alley or between the lot lines and curb of any street. Said occupants or owners shall remove all dead, diseased or dangerous trees, or broken or decayed limbs, which constitute a menace to the safety of the public, and shall trim any tree or shrub which interferes with visibility of any traffic control device or signs; provided that upon the failure of any occupant or owner to trim such trees as in this section provided, the commissioner of streets and public property of the city of Pierre shall have the authority to remove them or cause them to be removed under its supervision, whether such trees be growing on privately owned property or on public property. The commissioner may cause the same to be trimmed and the expense charged to the occupant or owner of such property.

**Section 6-4-105. Declaration of policy on removal of trees infected with Dutch Elm disease.**

The City Commission does hereby determine that the health of elm trees within the corporate and territorial limits of the City of Pierre is threatened by a fatal disease known as Dutch Elm disease; and it has further determined that the loss of elm trees growing upon public and private property would substantially depreciate the value of property within said limits and impair the health, safety, general welfare and convenience of the public. It is declared to be the intention of the Pierre City Commission to control and prevent the spread of this disease and this Ordinance is enacted for that purpose.

**Section 6-4-119. Tree Topping.** It shall be unlawful as a normal practice for any person, firm, or city department to top any street tree, park tree, or other tree on public property. Topping is defined as the severe cutting back of limbs to stubs larger than three inches in diameter within the tree's crown to such a degree so as to remove the normal canopy and disfigure the tree. Trees severely damaged by storms or other causes, or certain trees under utility wires or other obstructions where other pruning practices are impractical may be exempted from this ordinance at the determination of the Director of Public Works or by some qualified person acting for him.

**Section 12-2-114. Requirements for wall, hedges and fences to provide unobstructed view at intersections - exceptions.** Except in districts allowing the construction of buildings or structures to the property line, there shall be provided an unobstructed view across the triangle formed by joining points measured 20 feet distant along the property line from the intersection of two streets or 15 feet along both the street and alley line from the intersection of a street and an alley. Within said triangle there shall be no sight obscuring or partly obscuring walls, fence or foliage higher than 30 inches above grade or in the case of trees, foliage lower than 8 feet. Vertical measurement shall be made at the top of the curb on the street or alley adjacent to the nearest side of the triangle or if no curb exists, from the edge of the nearest traveled way. This provision does not apply to chain link fences, on which no obstructions are attached thereto.



**FRUIT TREES**

<i>Plant</i>	<i>Hardiness Zone</i>	<i>Height/Width</i>
<b>Apple, Haredred</b> ( <i>Malus domestica</i> 'Haredred') Produces a medium sized, deep red fruit. This crisp apple has a white, firm, juicy, crisp flesh with a tart flavor. This apple tree is hardy and fire blight resistant. These apples are great for cooking and stores well.	3-7	20'/20'
<b>Apple, Honeycrisp</b> ( <i>Malus pumila</i> 'Honeycrisp') White blossoms. Large, red blushed fruit is over 3 inches in diameter. Texture is crisp and crunchy with a juicy, sweet flavor. Prefers well drained, deep, fertile soil.	3-6	14'/12'
<b>Apple, Winecrisp</b> ( <i>Malus domestica</i> 'WineCrisp') Sweet, juicy and firm fruit is great for all purposes and has been proven to store for 9 months in cold storage. It's disease resistance is second to none and fruit drop is minimal. Dark red fruit ripens in mid-October.	4-7	15'/12'
<b>Apple, HoneyGold</b> ( <i>Malus domestica</i> 'HoneyGold') Pinkish white flowers. Hardy substitute for Golden Delicious. Medium to large golden to greenish fruit. Superior storage qualities. Prefers will drained loamy soil.	4	12'/12'
<b>Apricot, Manchurian</b> ( <i>Prunus mandshurica</i> ) Used as rootstock for other apricot varieties. "Scout" variety is a cultivar which produces fruit, good for canning and jam, will produce more fruit with a pollinator.	3-6	10'/12'
<b>Apricot, Wescot</b> ( <i>Prunus mandshurica</i> 'Wescot') Pink flowers. Yellow fruit with an orange-red blush ripens in late July. Freestone fruit is juicy and is excellent for fresh eating or canning with a mild sweet flavor, 2" diameter at maturity. Self-fruitful, however yields improve with cross-pollination.	3-8	15'/12'
<b>Apricot, Pioneer Chinese</b> ( <i>Prunus armeniaca</i> 'Pioneer') A late blooming apricot, ideal for climates prone to late spring frosts. Golden-yellow fruits have a reddish blush, and are sweet, firm and juicy. Trees bear young and heavily. Called a "sweet pit apricot" as its pit is edible and tastes of almond. Self-fertile, does not require another tree to fertilize.	4-8	10'/12'
<b>Apricot, Scout</b> ( <i>Prunus armeniaca</i> 'Scout') May blooms may be effected by late frost. Yellow fruit with an orange-red blush ripens in late July. Freestone fruit is juicy and is excellent for fresh eating or canning with a mild sweet flavor, 2" diameter at maturity. Self-fruitful, however yields improve with cross-pollination.	3-8	10'/12'
<b>Cherry, Evans Bali</b> ( <i>Prunus cerasus</i> 'Evans Bali') Very popular variety known for its hardiness and abundant fruit production. Self-fruitful. Deep, dark red fruit 1" in diameter and excellent for baking and fresh eating. The fruit is much sweeter than other sour cherries. Extremely hardy buds.	3-8	15'/10'
<b>Cherry, Mesabi</b> ( <i>Prunus cerasus</i> 'Mesabi') Long stemmed, red-fleshed fruits. Blooms in early May. A compact fruit tree. Has a higher sugar content than most "pie" cherries making it more like a "Bing" cherry. The fruits are showy cherry red drupes carried in abundance in mid-summer.	4-8	10'/6'
<b>Cherry, Meteor</b> ( <i>Prunus cerasus</i> 'Meteor') Large, bright red fruit. Mildly acid in flavor. Fine for sauce or pie. Blooms in early May. A compact fruit tree. It produces a nice, tart, juicy, meaty pie cherry. Rare fruit tree that can withstand partial sun.	4-8	10'/6'
<b>Cherry, Sweet Cherry Pie</b> ( <i>Prunus cerasus</i> 'Eubank') Tart cherry that is known for its extremely heavy crop yield. This variety produces a nice quality dark red cherry that is excellent for pies, jams and cobblers. Self-fertile.	4	15'/12'
<b>Peach, Contender</b> ( <i>Prunus persica</i> 'Contender') Pink blossoms. Cold hardy, tolerant to late frosts. Reddish orange fruits mature in August. Self-fertile.	4-8	12'/15'
<b>Peach, Reliance</b> ( <i>Prunus persica</i> 'Reliance') Pink blossoms in April. Golden fruit with reddish blush is medium soft, juicy, sweet freestone flesh. Self-fertile.	4-8	18'/15'
<b>Pear, Parker</b> ( <i>Pyrus communis</i> 'Parker') Large, yellow-bronze fruit. Fine grained, tender and juicy. Upright and vigorous grower. Prefers well drained soil.	4-8	15'/8'
<b>Pear, Summercrisp</b> ( <i>Pyrus communis</i> 'Summercrisp') Free of fire blight. An annual bearer. Fruit is pyriform in shape, 2.5-3" in diameter and 3-3.5" long. Blooms early in May. The fruit should be harvested in mid-August when crisp and still green with a red blush.	3-8	12'/8'
<b>Plum, Mount Royal</b> ( <i>Prunus domestica</i> 'Mount Royal') Blue - European Plum. Good eaten off tree. Excellent for dessert, jam and preserves. Tender, juicy flesh. Considered the best blue cultivar. Prefers well drained soil. Self-fertile.	4-8	8'/6'

## LARGE CONIFEROUS TREES

Plant	Hardiness Zone	Height/Width
<b>Douglas Fir</b> ( <i>Pseudotsuga menziesii</i> ) Bluish-green needles, can be a good windbreak and can be used as a living snow fence. Is naturally deer-resistant, will suffer in alkaline soil. Can withstand partial sun.	4-7	40'/12'
<b>Larch, European</b> ( <i>Larix decidua</i> ) Fast grower. Yellow/orange fall color, interesting winter silhouette. Pyramidal form makes a fine, hardy street tree. Soft, fluffy tufts of needles and woody, round cones. Deciduous.	3-6	60'/25'
<b>Pine, Bristlecone Rocky Mountain</b> ( <i>Pinus aristata</i> ) Very slow grower. This picturesque, cold hardy conifer makes an attractive centerpiece for the natural or woodland garden. Irregular, sweeping branches display tight bundles of short dark green needles and purplish-brown cones.	4-7	20'/20'
<b>Pine, Austrian</b> ( <i>Pinus nigra</i> ) Withstands city and seaside conditions and heat and drought. Grows well in clay and alkaline soils. Dense crown makes it ideal for windbreaks.	4-7	50'/20'
<b>Pine, Scots</b> ( <i>Pinus sylvestris</i> ) Adapts to nearly all climates and soil types. Provides excellent windbreak. Features pyramidal form and excellent needle retention.	3-7	60'/40'
<b>Pine, Ponderosa</b> ( <i>Pinus ponderosa</i> ) Develops a deep taproot, making it wind-resistant. Displays dark gray-green to olive needles and cinnamon-colored bark that becomes fire-resistant once mature.	3-7	60'/25'
<b>Spruce, Black Hills</b> ( <i>Picea glauca</i> ) Features bright green needles. Works well as an ornamental or in windbreaks and screens. Offers a denser, more compact habit than the white spruce. Is adapted to cold and is very resistant to winter injury. Requires little pruning.	2-6	30'/15'
<b>Spruce, Colorado</b> ( <i>Picea pungens</i> ) Features unique silvery blue-green color year-round. Known as a very adaptable evergreen, sometimes suffers and dies during hot, dry periods. Is deer-resistant, seldom experiencing severe damage. Provides privacy and a windbreak when planted in a row. Hedge plant that thrives even in the harsh conditions of the prairies. Fast grower, narrow, cone-shaped evergreen displaying bright green foliage all year. Also useful for tall screens.	2-7	50'/10'

## SMALL CONIFEROUS TREES

Plant	Hardiness Zone	Height/Width
<b>Arborvitae, Brandon</b> ( <i>Thuja occidentalis</i> 'Brandon') Excellent hedge plant that thrives even in the harsh conditions of the prairies. Fast grower, narrow, cone-shaped evergreen displaying bright green foliage all year. Also useful for tall screens.	3-8	12'/6'
<b>Arborvitae, Rushmore</b> ( <i>Thuja occidentalis</i> 'Rushmore') Deep, dark green foliage forms a dense upright plant which is ideal for creating a hedge or screen as well as framing entrances. An especially hardy form whose foliage is resistant to winter burn and very wind tolerant.	4-8'	12'/3'
<b>Arborvitae, Techny</b> ( <i>Thuja occidentalis</i> 'Techny') A broadly based pyramidal form having dense foliage that maintains its handsome dark green coloring all year. A slow grower, excellent for medium to tall hedges or screens. Can withstand partial sun, growing but very hardy and requires little care once established. Very effective planted en masse, as a tall groundcover or low growing hedge.	3-8	12'/6'
<b>Cedar, Eastern Red</b> ( <i>Juniperus virginiana</i> ) A finely textured evergreen shrub with arching branches clothed in soft, silver-gray foliage. Slower growing but very hardy and requires little care once established. Very effective planted en masse, as a tall groundcover or low growing hedge.	4-9	40'/20'
<b>Juniper, Maney</b> ( <i>Juniperus chinensis</i> 'Maneyi') A semi-erect, spreading, bushy juniper with a blue cast to its foliage. Handsome appearance, medium sized for any planting. Grey green berries and one of the hardiest evergreens for the landscape. Salt tolerant.	3-8	5'/6'
<b>Spruce, Fat Albert</b> ( <i>Picea pungens</i> 'Fat Albert') A superb evergreen conifer with rich blue needles on a densely branched, naturally pyramidal form. An outstanding landscape specimen. A very slow grower that will become quite large over time, in ideal conditions. A wonderful choice for use as a living Christmas tree.	2-8	40'/20'

## PLANTING BALLED OR POTTED TREES

### FIRST AND FOREMOST:

Before digging, contact 811 or OneCall, to locate underground utilities. A two business day period is required to allow the locating to be performed so plan ahead before starting to dig. This not only is the law but also a safety measure that could prevent injury or death.

Ideally, the tree planting site should be dug approximately two to three times the diameter of the root ball. This prepared soil will encourage root growth beyond the root ball and result in a healthier tree.

Beware that sometimes soil is heaped up over the roots in the tree nursery. Make sure you scrape or dig away the soil at the top of the root ball until you encounter the root flare, where actual roots flare out from the base of the stem. Measure the height of the root ball from that point to the bottom, and dig the hole for the tree in the middle of your prepared area for that depth.

Mounding soil up to the root collar will be better for the tree than digging it too deep and leaving a basin. The hole should have sloped sides and enough width to allow you to easily work around it.

In transplanting, be sure to keep soil around the roots. Always handle your tree by the ball, not by the trunk or branches. Don't let the root ball completely dry out.

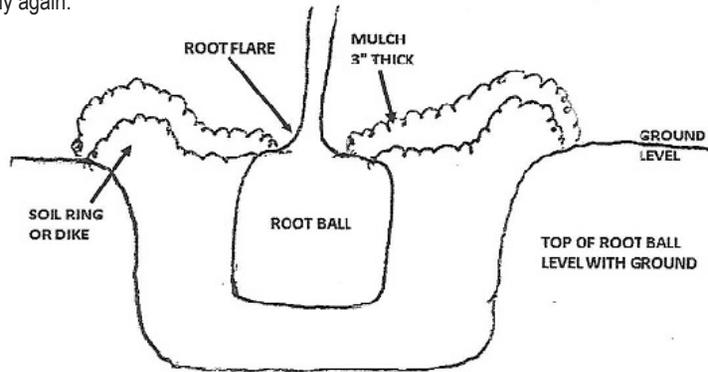
Remove the plant from the container at the planting site while trying to not disturb the root ball as much as possible. Root balls can usually be freed most easily by tipping trees and larger shrubs on their side and rolling them while gently pulling the pot away from the plant. Cutting the pot off is also an option but in doing so make sure to avoid cutting into the root ball. If roots are sticking out of the bottom of the pot and you can't get the roots to slide back through the holes, it's much better for the plant to cut the pot off rather than to cut the roots off.

If the roots are tightly bundled (root bound) or follow the contours of the pot wrapping around the plant, use your fingers and hands to gently pry the roots away from the root ball. The more root bound a plant is the more the root ball should be disturbed before planting. However never completely break up the root ball as individual roots are easily damaged. Only in the case where a root is encircling the trunk or where there is obvious physical damage to a root caused by mechanical means or insects should roots be cut off.

Trees that come balled and burlaped have a burlap fabric and wire basket holding the soil to the roots. Keep the wire and burlap around the roots when lowering into the hole. Then cut the top couple of wires if the wires extend upwards past the mid-point of the root ball and leave the lower parts of the wire. Next cut and remove all burlap and twine away from the top of the root ball, then back fill around the root ball as you would with a containerized plant.

Once the plant is in the hole, hold the trunk erect and straight, even if that means the root ball is crooked. Make sure the trunk or stem is centered in the hole and straight from all sides. If there are roots that you pried away from the root ball, try to place them radiating away from the center of the root ball. With few exceptions all plants should have the beginning of their root flare showing just above ground level. Once the plant is properly placed, begin backfilling around the root ball using the original soil or a soil mix as mentioned above.

As you fill the hole, backfill evenly around the plant to keep air pockets to a minimum. It's good to check periodically that the plant is staying straight in all directions while backfilling. Once your planting hole is backfilled approximately 3/4th full, water the plant thoroughly to eliminate air pockets in the backfill. Correct the plant for straightness during and after this watering. Once the water subsides, complete filling the holes and with extra soil build a circular ring or dike around the plant. This dike should be 2-6" high depending on the size of the plant, and extend slightly beyond the edge of the hole's sidewall. This will help keep water over the roots of the plant and the loosened soil around the roots, and prevent water runoff. Then finish the planting by watering in thoroughly again.



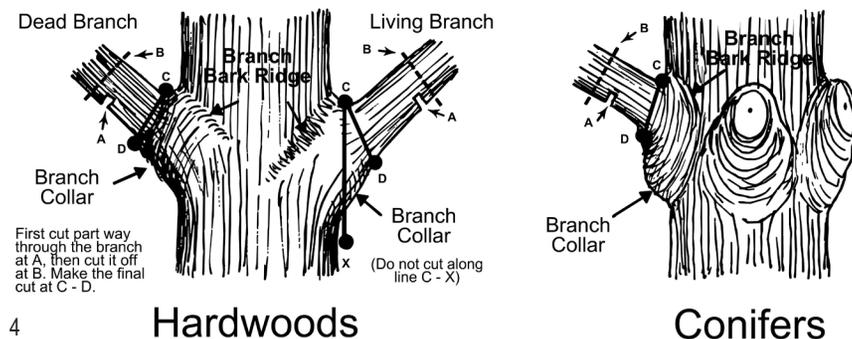
## PRUNING GUIDELINES

As a reminder, City of Pierre ordinances require trees to be trimmed to a height not less than eight feet above sidewalks and twelve feet above the street level. When pruning your trees it is important to follow these guidelines to ensure minimal damage to your tree and to allow the best chance to heal.

The best time to prune trees or shrubs is late winter to early spring, before the leaves break bud. Any time when they are dormant is better than summer months. However, any dead, dying, or broken limbs should be pruned immediately.

Always use sharp, well maintained tools. Never top trees, consult a certified arborist if you are considering a canopy reduction. Do not apply any paint or other compounds to tree wounds. Trees can seal their wounds. Applying a sealant to the wound can actually inhibit the natural healing process.

To prevent further damage, such as bark tearing on larger limbs, follow the illustration below. In this example the branch collar is visible. You should always make the cut along the branch collar when visible.



## SMALL DECIDUOUS TREES

Plant	Hardiness Zone	Height/Width
<b>Chokecherry, Canada Red Select</b> ( <i>Prunus virginiana</i> 'Shubert Select')	2-6	20'/10'
New foliage starts green turns to a red/purple for the remainder of the year. Clumps of small white flowers, small black fruit produced in early fall, big favorite of birds. Suckers from root.		
<b>Crabapple</b> (flowering crab) <i>Malus</i> var.	4-7	15'-20'/10'-20'
Spectacular spring (usually May) blooms in white to deep reds and purples depending on variety. Some produce inedible fruit favored by birds and animals. Mildly susceptible to fire blight. Can be a pollinator for fruiting apples. Reliable varieties include: Prairiefire, Purple Prince, Spring Snow		
<b>Dogwood, Pagoda</b> ( <i>Cornus alternifolia</i> )	3-7	15'/20'
Pale yellow flowers in May, followed by blue-black fruit, maroon red leaves in the fall. Branches grow in irregular tiers, forming a somewhat horizontal, layered look to the plant. Needs humid conditions until established.		
<b>Hawthorn, Thornless Cockspur</b> ( <i>Crataegus crus-galli</i> var. <i>inermis</i> )	4-7	15'/15'
Abundant white flowers in June, small bright red persistent fruit in autumn. Prefers moist conditions, but is drought tolerant once established.		
<b>Lilac, Ivory Silk</b> ( <i>Syringa reticulata</i> 'Ivory Silk')	3-8	20'/15'
More compact, oval growth habit than Japanese tree lilac. A small flowering tree with cherry-like bark, bears large creamy white flower clusters in early July. Performs best in full sun.		
<b>Lilac, Japanese Tree</b> ( <i>Syringa reticulata</i> )	3-7	25'/20'
Very showy in spring, one of the last flowering trees to bloom. Cones of aromatic small white flowers. Attractive bark, has a well formed branching pattern that keeps shape with little to no pruning.		
<b>Magnolia, ('Butterflies')</b>	5-9	15'/8'
Abundant, 4-5" buttery yellow blooms in spring before leaf out. Distinctive 6" pear shaped leaves, great specimen plant. Tender roots makes it hard to successfully transplant once established. Likes heavy mulch around base, can be pruned as a single or multi trunk. Needs winter wind protection in zone 4.		
<b>Maple, Amur</b> ( <i>Acer ginnala</i> )	3-7	15'/15'
Prefers neutral pH soils but tolerates alkaline soils. Very cold hardy, slender branches produce a graceful if irregular, appearance. Solid red fall color.		
<b>Maple, Tatarian</b> ("hot wings") ( <i>Acer tataricum</i> 'GarAnn')	3-6	20'/18'
Produces seeds in the spring that have purple/red wings that stay colored and on the tree for 1 - 2.5 months. Drought tolerant, easy to grow, can be multi-stemmed. Yellow/red fall colors.		
<b>Mountain Ash, European</b> ( <i>Sorbus aucuparia</i> )	3-7	20'/20'
Nice formed tree that doesn't need much pruning. White flowers in spring, attractive inedible orange/red berry clusters for m in the fall, favored by birds. Young trees have an upright shape, older tend to become rounded. Susceptible to sunscald, young trees susceptible to fire blight. Avoid planting in soil with pH of 8 or above.		
<b>Olive, Russian</b> ( <i>Elaeagnus angustifolia</i> )	2-6	20'/20'
Needs regular trimming to look best, can be used as a large shrub or small tree. Silver-gray leaves bring rare color to landscapes, has small, highly fragrant flowers in spring with attractive silver-yellow berries in the fall. An excellent xeriscape plant, it is often used in windbreaks, and is salt and drought tolerant. Has some thorns on trunk and limbs.		
<b>Pear (ornamental), Autumn Blaze</b> ( <i>Pyrus calleryana</i> 'Autumn Blaze')	4-8	30'/15'
Showy white spring flowers similar and at the same time as flowering crabapples. More rounded form than any other ornamental pear. Dark, glossy leaves turn to fall red and purple colors.		
<b>Pear (ornamental), Mountain Frost</b> ( <i>Pyrus ussuriensis</i> 'Baifrost')	3-6	20'/15'
Vigorous, upright growth habit. White flowers cover the tree in spring, backed by dark green, leathery foliage. 3/4" fruit is sparsely produced in late summer.		
<b>Plum (ornamental), Newport</b> ( <i>Prunus cerasifera</i> 'Newport')	4-8	15'/10'
Dark purple-green leaves, clusters of attractive white flowers in the spring usually produce limited numbers of edible fruit. Drought and cold hardy, short lived.		
<b>Redbud, Eastern</b> (MN strain) ( <i>Cercis canadensis</i> )	4-9	20'/15'
Numerous attractive pink spring flowers appear before leaves, are usually one of the first trees to flower in the spring. Can be shaped with a single or multiple trunks. Prefers well drained, average moisture soil, cannot tolerate salt well.		
<b>Serviceberry, Autumn Brilliance</b> ( <i>Amelanchier x grandiflora</i> 'Autumn Brilliance')	3-8	20'/15'
Blossoms in early spring with white flower clusters, followed by edible which produce purplish-blue fruit later summer, a favorite of birds. Can be multiple stemmed or single trunked.		
<b>Serviceberry, Standing Ovarations</b> ( <i>Amelanchier alnifolia</i> 'Obelisk')	2-8	15'/4'
Covered in white flowers each spring, sometimes turn into edible berries in June. Almost circular leaves start as dark green, change to red and orange in autumn. Upright oval growth form. The uniform habit makes it great for use as a hedge.		

<b>Plant</b>	<b>Hardiness Zone</b>	<b>Height/Width</b>
<b>Ironwood</b> (American Hophornbeam) ( <i>Ostrya virginiana</i> ) Native to Black Hills and extreme southeast corner of SD. Slow growing, hop-like fruits develop late summer. Very hard wood, resists damage from ice and snow. Very pest tolerant. Tolerates drought and clay soils. Yellow fall colors, can drop leaves early in hot summers.	3-9	30'/20'
<b>Kentucky Coffee Tree</b> ( <i>Gymnocladus dioica</i> ) Medium growth rate, tolerates heat, drought, and cold. Prefers moist soil, yellow fall color, produces 4-6" flat seed pods that remain on the tree through winter. Great light or dappled shade producing trees.	4-8	40'/30'
<b>Linden, American</b> (basswood) ( <i>Tilia americana</i> var.) Native to extreme eastern SD. No serious diseases or pests, some varieties strikingly conically shaped without trimming. Boulevard linden has late spring produced fragrant flower clusters. Several appropriate varieties Frontyard, Redmond, Boulevard. Popular replacement to green ash to the point of being overplanted.	3-8	40'-50'/20'-35'
<b>Linden, Littleleaf</b> ( <i>Tilia cordata</i> ) ('Greenspire') Native to Europe. Glossy dark foliage and fragrant pendulous flowers in early summer. Virtually disease free and very adaptable, does well in poor soil and very winter hardy. May struggle in hot, dry weather and get leaf scorch. 'Harvest Gold' is a littleleaf linden hybrid more resistant to sunscald than Greenspire.	4-7	30'-20'
<b>Locust, Purple Robe</b> ( <i>Robinia pseudoacacia</i> 'Purple Robe') Fast growing, nice shape with little pruning. Drought tolerant once established. Striking pink/purple spring flowers, yellow fall colors.fall. Fast growing.	3-8	50'/30'
<b>Maple, Boxelder</b> ( <i>Acer negundo</i> ) Fast growing, can grow multiple trunks to form an almost impenetrable barrier. Tough and adaptable to different conditions, red fall color, attracts boxelder bugs, needs pruning at mature stage, limbs break easily in strong winds.	3-6	30'/20'
<b>Maple, Sienna Glen</b> ( <i>Acer</i> x freemianii 'Sienna') Fast growing, well shaped tree with uniform branching, withstands strong winds without breaking, does not need a lot of pruning. Tolerates high alkaline soils, beautiful red fall foliage. Popular replacement to green ash to the point of being overplanted.	3-7	40'/30'
<b>Maple, Sugar</b> ( <i>Acer saccharum</i> ) Nice full tree, yellow-red fall colors. Suffers in alkaline soils, requires regular iron injections to stay healthy in high alkaline soils. Medium fast grower, good heat tolerance, prefers moist soils.	3-7	40'/30'
<b>Oak, Bur</b> ( <i>Quercus macrocarpa</i> ) Native to SD, one of slowest growing oaks. Interesting bark, unique branching pattern. Can be extremely long lived. Produces acorns.	3-8	45'/40'
<b>Oak, Crimson Spire</b> ( <i>Quercus</i> 'Crimschmidt') Dark green leaves turn a bright reddish hue for fall. Fast growing for an oak, with a tight, upright habit. Adaptable to a wide range of growing conditions. Columnar form makes it a favorite for limited spaces as a screen or boulevard tree.	4-8	40'/15'
<b>Oak, Heritage</b> ( <i>Quercus</i> x macdanielii 'Clemons') Cross between the English and Bur Oaks, it has glossy, dark green leaves with good mildew resistance. Moderate growth rate, good cold tolerance, yellow-brown fall color, will produce acorns. Adapts well to different soil conditions, may require extra watering for the first few years after planting.	4-8	40'/30'
<b>Oak, Northern Red</b> ( <i>Quercus rubra</i> ) Fastest growing of the oaks, can withstand tough conditions once established. Native to Missouri and eastern North America, deep red fall colors. Prefers well draining, loamy soils, can become chlorotic in high pH soils.	3-8	40'/40'
<b>Oak, Prairie Stature</b> ( <i>Quercus</i> x bimundorum 'Midwest') Deep green, thick leaves produce nice red/purple fall colors. Thick, pyramidal shape, slow growing.	3-8	35'/25'
<b>Oak, Swamp White</b> ( <i>Quercus bicolor</i> ) Quicker growing than most oaks, prefers moist soils, especially when getting established.	4-8	40'/30'
<b>Walnut, Black</b> ( <i>Juglans nigra</i> ) Native to extreme southeast SD. Long taproot, tolerates clay and dry soils, tolerated high water tables. One of the last trees to leaf out in the spring, produces a nut in autumn.	4-8	50'/30'
<b>Willow, Golden Curls</b> ( <i>Salix</i> 'Golden Curls') Prefers moist soils, irregular shape does not weep as much as prairie cascade. Has very interesting twisty branches and leaves. Golden colored bark, yellow fall color.	4-8	30'/20'
<b>Willow, Prairie Cascade</b> ( <i>Salix</i> 'Prairie Cascade') Weeping branches where ends touch the ground. Yellow fall color, prefers moist soils. Large surface root system, do not plant near sidewalks.	3-6	35'/35'

## CARE AFTER PLANTING, MULCHING

Plants benefit from mulching in many ways. A 3" layer of mulch will help retain soil moisture, reduce wide fluctuations in soil temperatures throughout the day and the year, and stop most weeds from germinating. Removing lawn grass around the plant also eliminates the risk of mechanical injury to the plant by mowers and trimmers. The mulch should cover an area at least as wide as the water retaining dike around the hole you dug. Mulch can be organic (shredded bark, bark chunks, ground tree parts, coco liner discs) or inorganic (rubber mats, rock, or the like). Do not pile mulch directly against the stem or trunk of the plant. Keep mulch a double finger width away from the stem or trunk to prevent moisture build-up against the bark or allow harmful insects protective cover all the way to the plants.

Weed barrier fabric placed beneath the mulch will help prevent weed growth but the fabric must be porous to allow water and gasses to pass through. Do not use plastic sheeting as it does not allow for this movement and can result in the suffocation of the plant's root system.

Staking a tree can help it stay straight as it establishes itself in the ground. Trees will become stronger without staking so if it's possible avoid staking. However, if the tree is planted in an open, unprotected area that undergoes a lot of wind, it's best to stake it. When staking a tree avoid damaging the roots by driving the stakes into the ground well outside the existing root ball. Plan to use 3 stakes placed equally around the tree rather than 2 as 3 will hold the tree better from any wind direction. Whatever material that is used to circle the tree trunk should be at least 3/4" wide and made from a soft material such as nylon strapping or wide rubber hose. Do not use wire or thin rope that has the potential to dig into the bark as this can eventually girdle the tree thereby killing it. The line holding the straps to the stakes should be slightly taut so that the tree does not rock in the wind. Check the stakes, line, and straps periodically to make sure nothing has loosened up or that the straps have dug into the bark. Plan to remove the stakes after 1 year or less. If the tree is deciduous (loses it's leaves in the winter) a good time to think about removing the stakes is late fall when the tree has no leaves. A tree without leaves has much less wind resistance than a fully leafed one and much less likely to need the support staking provides.

## CARE AFTER PLANTING, WATERING

After planting, the most important thing is for the plants to receive regular watering. DO NOT RELY ON LAWN SPRINKLER SYSTEMS TO ADEQUATELY WATER TREES AND SHRUBS! There is not a set schedule for watering frequency and how much you should water as environmental conditions (soil type, sun exposure, topography, daytime and nighttime temperatures, wind, and humidity) combined with botanical conditions (type of plant, amount of leaves on the plant, size of the plant roots, age of the plant, etc.) all determine how quickly the plant uses the water available to it and when it needs watering.

Never water automatically without first checking the soil to determine if watering is needed. To do this, stick a finger in the ground as far as you can. If you find the soil is dry or only slightly damp, the plant should be watered. Plants in sandy soils will need to be watered more frequently than those in clay soils. DO NOT RELY ON LAWN SPRINKLER SYSTEMS TO ADEQUATELY WATER TREES AND SHRUBS! Roots will grow best where oxygen and water are most available. Short (15 minute), frequent (2-3 times per week) watering will result in the development of a shallow root system, trees need deeper watering than that. Watering deeply, thoroughly, and only as needed will encourage a deep and healthy root system that enables plants to withstand environmental stresses.

To properly water trees and shrubs the water must be concentrated around the plant. Soaker hoses, drip irrigation systems, specialized water bags, dedicated hose sprinklers (that attach to the hose end, NOT the underground lawn irrigation system), or hoses dribbling water can be used. Opinions vary but a favored method is the dedicated hose sprinkler because it usually can cover the entire root area at once, it's easy to move from plant to plant, and you can measure exactly how much water the plants are getting (see below). Drip systems are favored by some because they distribute the water right to the plants and the convenience that the whole system stays in place.

As the plant matures and depending on what type of plant it is the watering regime may change. For instance, cactus or succulents have very different moisture needs compared to most ferns or any other plant that requires moist conditions. Plants in sandy soils require more water than the same plants planted in clay soils. For the first several weeks if not months after planting, all plants will need regular watering attention and the only way to tell if your newly planted plant needs water is to check with your finger.

For established trees, deposit two inches of water each time. To measure watering depth using a dedicated hose sprinkler, place several empty containers, like tin cans or plastic cups, in the radius of your lawn sprinkler. When the average depth in the containers is two inches, you've adequately watered your tree and encouraged strong root growth.

And if we haven't said it before, we'll say it now: DO NOT RELY ON LAWN SPRINKLER SYSTEMS TO ADEQUATELY WATER TREES AND SHRUBS!

### CARE AFTER PLANTING, FERTILIZING

Established plants may benefit from fertilization. Spring is generally the time of the year when plants have their greatest flush of growth and therefore their greatest need for nutrients. Fertilizer comes in many forms and can be applied through root feedings or surface applications. Because fertilizer can draw moisture away from the plant, it's a good idea to water thoroughly both before and after the application if weather conditions are dry.

Unless the plant is suffering from a diagnosed nutrient deficiency, never apply nitrogen (the first of the three numbers on fertilizer containers) after mid-summer. Nitrogen promotes new growth and in fall or early winter new growth is particularly susceptible to winter damage and could cause the plant to not harden for winter as it normally should. On the other hand, phosphorus and potassium (the 2nd and 3rd numbers on fertilizer containers, respectively) can be applied in the fall to help the plant both survive winter better and prepare for spring.

In problem situations, a soil test to determine your soil type, pH, and nutrient levels is tremendously helpful. This can enable you to identify and treat a specific problem affecting the health of your plant instead of guessing at what might be wrong. County extension offices can provide information and instruction on soil testing options in your area.

In South Dakota starting somewhere east of the Pierre area and extending westward, native soils tend to be very alkaline (high pH). High alkaline soils produce several problems for plants that grow very well in neutral or slightly acidic soils. Chlorosis, indicated by a yellowing of the leaves while the veins remain green, is a common high alkaline caused problem in some maples, oaks, magnolias, river birch, and other plants as well. In these cases the plants lack iron and even if iron is abundant in the native soil it's unavailable to the plants due to the high pH level. Several solutions exist to either provide iron directly to the plants or to decrease the soil pH thereby making the existing iron in the soil available to the plants. If your plants do turn chlorotic, there are several treatment options.

Fencing for deer and tree tubes for rabbits are recommended for overwinter protection against the damage these animals can inflict.

**If a tree is planted correctly, it will grow twice as fast and live at least twice as long as one that is incorrectly planted.**

### Short Note on Hardiness Zone:

The USDA Plant Hardiness Zone Map is the standard by which gardeners can determine which plants are most likely to survive through the winter at a location. The map calculates Hardiness Zones based on the average annual minimum winter temperature. Within Pierre in protected areas, the Hardiness Zone is 5 (down to -20 Fahrenheit), elsewhere it is zone 4 (-30). Make sure plants you choose can survive the winter season by making sure it is zoned for your area.

## LARGE DECIDUOUS TREES

Plant	Hardiness Zone	Height/Width
<b>Amur Corktree</b> (Phellodendron amurense) Can be invasive, native to E Asia. Male plants only to prevent messy fruits and unwanted reproduction. Tolerant of a wide variety of soils including alkaline. Shallow, widespread root system, low branching pattern should not be planted near sidewalks.	3-7	35'/25'
<b>Aspen, Quaking</b> (Populus tremuloides) Quick growing, leaves tremble in light winds creating a nice effect. Can suffer in alkaline soils. Attractive green & white bark, yellow fall color, older individuals need pruning of dead limbs. Can become a colonizer in open areas if conditions are right and left alone.	2-7	45'/20'
<b>Birch, Paper</b> (Betula papyrifera) Prefer cool, moist soil, lawn irrigation helps with moisture. Vulnerable to bronze birch borer if trees get too hot. Distinctive papy white bark, looks good as a solitary tree or planted 3-5 in a clump. Golden fall color contrasts well with the white bark.	2-7	30'/20'
<b>Birch, Parkland Pillar</b> (Betula platyphylla 'Jefpark') Narrow, upright, dense habit with white bark and dense, dark green foliage that turns a uniform gold in late fall. Fast growing, tolerant of heat, drought, and alkaline soils. Columnar form makes it a favorite for limited spaces as a screen or boulevard.	3-7	30'/6'
<b>Birch, River</b> (Betula nigra) Attractive bronze colored bark, nice contrast to dark green leaves. Does better in areas where paper birch suffers from too much heat.	4-8	40'/20'
<b>Buckeye, Ohio</b> (Aesculus glabra) Native to S Iowa and eastward, southward down into TX. Rounded form, nut produced in fall, under planted tree.	3-7	40'/30'
<b>Catalpa, Northern</b> (Catalpa speciosa) Relatively fast growing. Large heart-shaped leaves, one of the last trees to leaf out in the spring. Large showy white flowers in spring produce 12-18" long seed pods that stay on through winter. Adaptable to high alkaline soils, no important disease threats.	4-7	40'/20'
<b>Cottonwood, Siouland</b> (Populus deltoides 'Siouland') Native to SD, seedless (cottonless) variety, quick growing, prefers moist soils. Max 70 year lifespan, can live longer in perfect conditions. Yellow fall color, older trees need regular trimming to remove dead branches. Roots on the surface, tend to push up sidewalks.	3-7	60'/60'
<b>Elm</b> (Ulmus spp.) New Dutch elm disease resistant variety being introduced almost yearly. Usually need staking when young, nearly all need regular pruning to maintain shape, especially when young. Fast growing, tolerate wide variety of soils, very cold tolerant and adaptable to a wide range of conditions. Several appropriate varieties. Princeton, Valley Forge, Prairie Expedition, Discovery, Cathedral, Triumph, Accolade, Frontier, New Horizon, Vanguard.	3-9 var.	50'/40'
<b>Ginkgo (male only)</b> (Ginkgo biloba 'Autumn Gold') Native to China, slow growing, extremely long lived. Seedless, deep roots, prefers acidic soil but can tolerate alkaline conditions if watered and soil is well draining. Unique fan-shaped leaves, golden yellow fall color, tends to drop all leaves within 1-5 days.	4-8	40'/35'
<b>Hackberry</b> (Celtis occidentalis) Native to SD. Bark very ridged, arching limb habit, roots somewhat invasive. Yellow fall color, host to a wasp that creates galls on leaves that are harmless to the tree. Tolerates urban areas very well.	2-7	50'/30'
<b>Honeylocust, Thornless</b> (Gleditsia triacanthos, var. Inermis) Fast growing, strong trunk, big limbs in mature trees can break in high winds. Some seedless varieties, rest develop numerous pods that drop in the fall. Great dappled shade producing trees, very good natural branching patterns. Several appropriate varieties, Skyline, Shademaster, Northern Acclaim Sunburst.	4-7	40'/20'