

# Plant Inspection Guidebook



*Philadelphia*



*Water Department*

# How To Use This Manual:

This manual contains information needed to make informed decisions about plant selection for green stormwater infrastructure projects.

When choosing plants for a green stormwater infrastructure project, the information in this manual can help narrow the choices down to the most appropriate plant for each location. The manual includes information on height, spread, salt tolerance, sun/shade preferences, and soil moisture preferences. Below are some examples of this information can be used.

**Highland/Lowland:** Different species will vary with respect to their tolerance to moisture. Lowland species can tolerate saturated soils and should be placed in the areas of a project that will remain saturated after a storm (e.g. "ponding areas"). Highland species can only tolerate saturated conditions periodically and should therefore be placed around the perimeter of ponding areas.

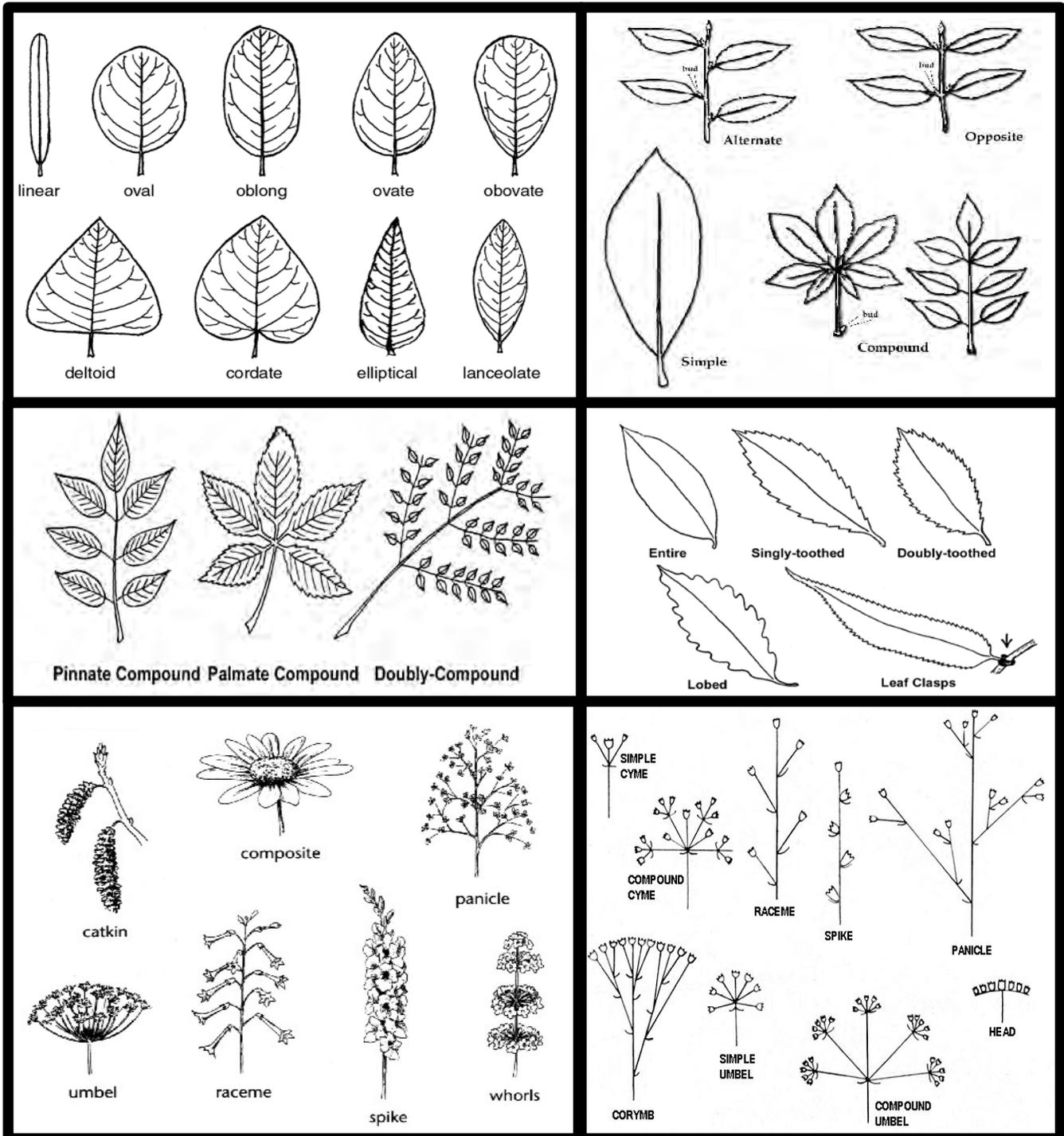
**Sun/Shade:** Different species have varying tolerances to sunlight. Some species can tolerate full exposure to sunlight while other species must be partially shaded to avoid over exposure to sunlight

**Salt Tolerance:** For areas where salt spray or soil contamination is expected, the selected species should have a high or medium tolerance to salt order to ensure their survival under the given conditions.

**Tree Height:** Where proposed tree pit locations are near power lines and wires, tree species with a lower maximum height should be chosen to avoid complications as the tree grows.

**Spread:** Plants with wide spreads should be placed further apart, while plants with a narrow spread can be placed closer together.

# Plant Diagrams



Sources:

<http://www.butler.edu/herbarium/treeid/treeparts.html>

<http://www.nwrc.usgs.gov/fringe/leaf2.html>

[http://www.clemson.edu/extension/natural\\_resources/landowner/youth\\_environ\\_education/terminology.html](http://www.clemson.edu/extension/natural_resources/landowner/youth_environ_education/terminology.html)

<http://www.inhs.uiuc.edu/~kenr/prairieplant.terminology/inflorescences.html>

<http://www.answers.com/topic/inflorescence>

# Glossary of Terms

- **Alternate-** Leaves occurring at different levels on opposite sides of a stem, no two leaves are directly across from each other
- **Catkin-** A dense, scaly spike of flowers that fall after flowering or fruiting
- **Compound-** A leaf that is divided into two or more leaflets
- **Cordate-** Leaf having a heart-shaped outline
- **Corymb-** A flat-topped or dome-shaped flower cluster with the outer flowers opening first
- **Deltoid-** Triangular leaf attached to the stem at the wide end
- **Cyme-** A usually flat-topped or convex flower cluster in which the main axis and each branch end in a flower that opens before the flowers below or to the side of it
- **Doubly compound-** Leaf in which each leaflet of a compound leaf is also made up of secondary leaflets
- **Doubly toothed-** with both small and larger serrations, twice serrated
- **Elliptical-** Leaf broadening at or about the center and narrowing equally toward each end
- **Lanceolate-** Leaf that is long and thin and broadest below the middle, tapering to a point like a lance
- **Linear-** Leaf that is very narrow in relation to its length, with the sides mostly parallel
- **Lobed-** Leaf whose indentations are large, but don't reach the midrib as *compound* leaves do
- **Oblong-** Leaf that is longer than broad, and mostly parallel-sided
- **Opposite-** Leaves which are arranged in pairs, two leaves grow from one *node* directly across from each other on each side of a stem
- **Oval-** see *elliptical*
- **Ovate-** Leaf that is egg-shaped, the broadest part is below the middle
- **Palmate compound-** Leaf having four or more lobes, leaflets, or nerves radiating from a single point, arranged as a hand with outstretched fingers
- **Panicle-** A loosely branched, pyramidal flower cluster
- **Pinnate compound-** A leaf resembling a feather in structure with the parts arranged on both sides of an axis
- **Raceme-** An unbranched inflorescence of stalked flowers
- **Singly toothed-** having a saw like margin with small tooth that can vary in size (from very small to medium), in sharpness (from needle-like to soft) and in shape (from rounded to points)
- **Spike-** Long, narrow, unbranched cluster of *sessile* flowers produced along a central axis
- **Umbel-** A flat-topped or rounded flower cluster, in which each flower's stalk rises from a central point
- **Whorls-** Where three or more organs, such as leaves or petals, arise from the same point and form a circle around it

Sources:

<http://www.botany.com/index.16.htm>

[http://www.cactus-art.biz/note-book/Dictionary/Dictionary\\_C/dictionary\\_compound\\_leaf.htm](http://www.cactus-art.biz/note-book/Dictionary/Dictionary_C/dictionary_compound_leaf.htm)

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[Sedum reflexum 'Blue Spruce' \(Blue Spruce Stonecrop\)](#)  
[Sedum rupestre 'Angelina' \(Stonecrop\)](#)

[Sedum sexangulare \(Tasteless Stonecrop\)](#)  
[Sedum immergrunchen \(Stonecrop\)](#)  
[Sedum kamtschaticum \(Orange Stonecrop\)](#)  
[Sedum x 'Autumn Joy' \(Stonecrop\)](#)

## Noxious Weeds (Illegal in Pennsylvania) (pages 213-224)

[Carduus nutans \(Musk or Nodding Thistle\)](#)  
[Cirsium arvense \(Canada Thistle\)](#)  
[Cirsium vulgare \(Bull Thistle\)](#)  
[Galega officinalis \(Goatsrue\)](#)  
[Heracleum mantegazzianum \(Giant Hogweed\)](#)  
[Polygonum perfoliatum \(Mile-a-minute Weed\)](#)  
[Pueraria lobata \(Kudzu\)](#)  
[Lythrum salicaria \(Purple Loosestrife\)](#)  
[Rose multiflora \(Multiflora Rose\)](#)  
[Sorghum bicolor \(Shattercane\)](#)  
[Sorghum halepense \(Johnson Grass\)](#)

## Other Weeds (pages 225-236)

[Ailanthus altissima \(Tree of Heaven\)](#)  
[Artemesia sp. \(Mugwort\)](#)  
[Daucus carota \(Queen Anne's Lace\)](#)  
[Datura stramonium \(Jimson Weed\)](#)  
[Digitaria sp. \(Crabgrass\)](#)  
[Echinochloa crus-gali \(Barnyard Grass\)](#)  
[Microstegium vimneum \(Japanese Stiltgrass\)](#)  
[Phragmites australis \(Common Reed\)](#)  
[Polygonum cupidatum \(Japanese Knotweed\)](#)  
[Rumex obtusifolius \(Broad Leafed Dock\)](#)  
[Rumex crispus \(Curly Dock\)](#)

## Appendices (pages 237-245)

# Blooms

*Philadelphia*



*Water Department*

Field Inspector's Planting  
Manual

# Achillea milleform

Yarrow, a rapidly-growing groundcover, be easily recognized by its fern-like foliage and small white flowers that grow in dense flat-topped clusters of between 2 to 4". Foliage has a distinct spicy aroma.

Maintenance: Plants may be cut back in late spring to reduce overall height. Clumps should be divided every two to three years to maintain vitality.

Scientific Name: *Achillea milleform*

Common Name: Yarrow

Mature Height: 3'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b282/achillea-millefolium.aspx>

# Agastache rupestris

This woody perennial grows small, tube shaped flowers of a salmon/burnt orange color. The narrow leaves are gray/green and about 2" long. The plant often has a minty or licorice aroma.

Maintenance: Cut sunset hyssop almost to the ground at the beginning of spring to promote stronger and more vigorous growth.

Scientific Name: *Agastache rupestris*

Common Name: Licorice Mint

Mature Height: 1'-3'

Mature Width: 1'-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/y120/agastache-rupestris.aspx>

# Ajuga reptans

Bunglweed is a dense and aggressive groundcover with shiny leaves. Blue-violet flowers bloom on spikes in mid to late spring.

Maintenance: Crown rot can be a problem if soils are too wet and heavy. Plants can be mowed on a high setting after blooming to tidy the appearance.

Scientific Name: *Ajuga reptans*

Common Name: Bunglweed

Mature Height: 6"

Mature Width: 1'



Sources:

[http://plants.usda.gov/java/largeImage?imageID=ajre\\_003\\_ahp.tif](http://plants.usda.gov/java/largeImage?imageID=ajre_003_ahp.tif),

<http://www.missouribotanicalgarden.org/PlantFinder/FullImageDisplay.aspx?documentid=17475>

# Allium

Chives feature thin, tubular, grass-like, dark green leaves which typically grown in dense clumps. Its flowers are pale purple that are in clover-like clusters. German Garlic is noted for its swirling and twisting leaves which are bluish-gray and its compact size. Alliums are bulbs and may only be planted in the fall.

Scientific Name: *Allium cernuum*

Common Name: Nodding Onion

Mature Height: 1'-1.5'

Mature Width: 0.25'-0.50'

Identifying Characteristics: tiny bell-shaped, pink to lilac pink flowers which appear in loose, nodding clusters (umbels)



Scientific Name: *Allium giganteum*

Common Name: Ornamental Onion

Mature Height: 3'-5'

Mature Width: 1.5'-2'

Identifying Characteristics: dense, globular, softball-sized, 5-6" diameter cluster (umbel) of tiny, star-shaped lilac-purple florets.



Scientific Name: *Allium schoenoprasum*

Common Name: Chives

Mature Height: 1'-1.5'

Mature Width: 1'-1.5'

Identifying Characteristics: globular, clover-like clusters of pale purple flowers



Scientific Name: *Allium senescens*

Common Name: German Garlic

Mature Height: 0.5'-1'

Mature Width: 0.5'-1'

Identifying Characteristics: unusual swirling and twisting leaves which are bluish-gray



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=z580>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j250>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j270>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=y720>

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# Amsonia

Amsonia species are useful in a border at a woodland edge, or in a wildflower garden. Most are clump-forming perennials that bear long-lasting, narrowly funnel-shaped blue flowers that resemble small stars. The leaves of some species turn vibrant yellow in the fall, adding another season of interest.

Scientific Name: *Amsonia ciliata*

Common Name: Spring Sky Blazing Star

Mature Height: 2'

Mature Width: 2'

Identifying Characteristics: Clusters of star-like flowers are light blue and bloom in mid-spring.



Scientific Name: *Amsonia tabernaemontana*

Common Name: Eastern Blue Star

Mature Height: 2-3'

Mature Width: 2-3'

Identifying Characteristics: pyramidal clusters of  $\frac{3}{4}$ " of light blue star shaped flowers.



Scientific Name: *Amsonia hubrichtii*

Common Name: Arkansas amsonia /  
Hubrichts amsonia

Mature Height: 2-3'

Mature Width: 2-3'

Identifying Characteristics: powdery blue like flowers, alternate leaves, lily like appearance



Sources:

<http://www.finegardening.com/plantguide/genus/amsonia.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/j310/amsonia-ciliata.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/j320/amsonia-tabernaemontana.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=w810>

# Anemone canadensis

This plant has white, petal-like flowers (2" diameter) that bloom in the spring. It is best for moist areas and can be an aggressive spreader.

Scientific Name: *Anemone canadensis*

Common Name: Meadow Anemone

Mature Height: 1-2'

Mature Width: 2-3'



Sources:

<http://plants.usda.gov/core/profile?symbol=ANCA8>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b330>

# Aquilegia canadensis

This plant can be easily identified by its drooping bell-like flowers that are red and yellow. Each flower is 1-2", has red sepals, yellow-limbed petals, 5 red spurs and a mass of bushy yellow stamens. Columbine is a prolific reseeder.

Scientific Name: *Aquilegia canadensis*

Common Name: Columbine

Mature Height: 3'

Mature Width: 1'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b400/aquilegia-canadensis.aspx>

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# Asclepias

This clump forming plant has small pink/mauve flowers, with five petals and a central crown. The flowers appear in tight clusters on the end of stems. Leaves are narrow and taper to a point. When cut open, seed pods which follow flowers will release a milky sap.

Scientific Name: *Asclepias incarnata*

Common Name: Swamp Milkweed

Mature Height: 3'-4'

Mature Width: 2'-3'

Identifying Characteristics: five reflexed petals and an elevated central crown, appear in tight clusters (umbels)



Scientific Name: *Asclepias syriaca*

Common Name: Common Milkweed

Mature Height: 2'-3'

Mature Width: 1'

Identifying Characteristics: Domed, slightly drooping clusters (umbels) of fragrant, pinkish - purple flowers



Scientific Name: *Asclepias tuberosa*

Common Name: Butterflyweed

Mature Height: 1-2'

Mature Width: 1'

Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=g410>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b480>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b490>

# Aster

This plant is easily recognized by its daisy-like flowers with purple petals and yellow centers, which bloom from late summer to early fall.

Maintenance: Asters may attract fungus. If this occurs, the best strategy is to remove infected plants and apply pesticide to the empty space.

Scientific Name: *Aster novi-belgii*

Common Name: New York Aster

Mature Height: 1'-3'

Mature Width: 2-3'

Identifying Characteristics: purplish-pink flowers



Scientific Name: *Aster turbinellus*

Common Name: Prairie Aster

Mature Height: 3'

Mature Width: 3'

Identifying Characteristics: pale purple flowers



## Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/e165/symphyotrichum-novi-belgii-tiny-tot.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/e835/symphyotrichum-turbinellum.aspx>

# Baptisia

This shrubby perennial features small yellow, blue, or purple flowers which turn into blackened inflated seed pods. Foliage is a blue-green that stays healthy all summer. Plants should be grown in full sun or they will become floppy and require staking.

Scientific Name: *Baptisia australis*

Common Name: Blue False Indigo

Mature Height: 2-3'

Mature Width: 2'

Identifying Characteristics: purple, lupine-like flowers in erect racemes



Scientific Name: *Baptisia tinctoria*

Common Name: Yellow False Indigo

Mature Height: 3'

Mature Width: 3'

Identifying Characteristics: small, bright yellow to cream, pea-like flowers (to 1/2" long) in numerous, sparsely-flowered clusters



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b660>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j500>

# Chelone lyonii

This herbaceous perennial is an upright, clump forming perennial in the figwort family. It grows on square, stiff stems. Hooded snapdragon like petals bloom in tight, spike like terminal racemes.

Scientific Name: *Chelone lyonii*

Common Name: Shellflower or Pink Turtlehead

Mature Height: 2-4'

Mature Width: 1.5-2.5'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b660>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j500>

# Chrysogonum virginianum

This low-growing perennial features star-shaped bright yellow flowers on stems that originate in the leaf axil. Each flower has five, rounded, slightly-notched, yellow petals and a center tuft of yellow disk flowers. Foliage mat is 3-4" tall, and flowering stems bring the height to 8-12".



Scientific Name: *Chrysogonum virginianum*

Common Name: Green and Gold

Mature Height: 0.5-1'

Mature Width: 0.75-1.5'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a250/chrysogonum-virginianum.aspx>

# Coreopsis

*Coreopsis* species are low-maintenance perennials from prairies and woodlands. Many have daisy-like blooms in yellow, orange, or pink are long lasting and occur on carefree plants. Some species have fine, ornamental foliage.

Scientific Name: *Coreopsis grandiflora*

Common Name: Tickseed

Mature Height: 2-3'

Mature Width: 12"

Identifying Characteristics: solitary, yellow, daisy-like, semi-double flowers (to 2" diameter) with yellow rays and darker yellow center disks



Scientific Name: *Coreopsis lanceolata*

Common Name: Lanceleaf Coreopsis

Mature Height: 1-2'

Mature Width: 1-1.5'

Identifying Characteristics: solitary, yellow, daisy-like flowers (1-2" diameter) with eight yellow rays (toothed at the tips) and flat yellow center disks.



Scientific Name: *Coreopsis verticillata*

Common Name: Threadleaf Coreopsis

Mature Height: 2-3'

Mature Width: 1.5-2'

Identifying Characteristics: yellow, daisy-like flowers (1-2" diameter) with yellow untoothed rays and yellow center disks.



Sources:

<http://www.finegardening.com/plantguide/genus/coreopsis.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=f185>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j880>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=n870>

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# Crocus vernus

A bulb that blooms in early spring, the crocus has many cultivars. The flower is chalice- or goblet-shaped and comes in shades of purple or white. Must be planted in early fall.

Scientific Name: *Crocus vernus*

Common Name: Crocus

Mature Height: 6"

Mature Width: 6"



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j940>,

<http://www.bhg.com/gardening/plant-dictionary/bulb/crocus/>

# Echinacea purpurea

This plant can be easily identified by its daisy-like flowers with drooping purple petals around a coppery-orange center. Stems are rigid with dark green leaves that are lance shaped and coarsely toothed. This plant self-seeds.

Scientific Name: *Echinacea purpurea*

Common Name: Purple Coneflower

Mature Height: 4-5'

Mature Width: 1.5-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c580/echinacea-purpurea.aspx>

<http://etc.usf.edu/clippix/picture/echinacea-purpurea.html>

# Eranthis hyemalis

This bulb has cup-shaped bright yellow flowers that bloom in late winter and lobed, basal green leaves. Must be planted in fall.

Scientific Name: *Eranthis hyemalis*

Common Name: Winter Aconite

Mature Height: 6"

Mature Width: 6"



Sources:

<http://plants.ces.ncsu.edu/plants/all/eranthis-hyemalis-e-cilicica/>

[http://www.botanicalgarden.ubc.ca/potd/2007/02/eranthis\\_hyemalis.php](http://www.botanicalgarden.ubc.ca/potd/2007/02/eranthis_hyemalis.php)

# Eupatorium

This perennial can be identified by its small, fluffy, blue/purple flowers that grow in corymbs or clusters. The leaves are toothed and dark green. To promote denser growth, this plant can be cut back in summer.

Scientific Name: *Eupatorium coelestinum*

(aka: *Cococlinium coelestinum*)

Common Name: Blue Mistflower

Mature Height: 2-3'

Mature Width: 2'

Identifying Characteristics: Tiny, fluffy, bluish-purple flowers



Scientific Name *Eupatorium hyssopifolium*

Common Name: Hyssop-Leaved Thoroughwort

Mature Height: 2-3'

Mature Width: 1-2'

Identifying Characteristics: very fine-textured foliage. Flat topped clusters of white fringed flowers



Scientific Name: *Eupatorium maculatum*

Common Name: Spotted Joe-Pye Weed

Mature Height: 5-7'

Mature Width: 3-4'

Identifying Characteristics: leaves grow up to eight inches long. They are thick and green with teeth on the edges.



Scientific Name: *Eupatorium purpureum*

Common Name: Joe-Pye Weed

Mature Height: 5-7'

Mature Width: 2-4'

Identifying Characteristics: coarsely-serrated, lance-shaped, dark green leaves (to 12" long)



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j870>

<http://www.delawarewildflowers.org/plant.php?id=0824&mode=F&famid=018>

<http://www.prairiemoon.com/seeds/wildflowers-forbs/eupatorium-maculatum-joe-pye-weed.html>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c740>

# Eupatorium cont.

This perennial can be identified by its small, fluffy, blue/purple flowers that grow in corymbs or clusters. The leaves are toothed and dark green. To promote denser growth, this plant can be cut back in summer.

Scientific Name: *Eupatorium perfoliatum*

Common Name: Boneset

Mature Height: 4-6'

Mature Width: 3-4'

Identifying Characteristics:



Scientific Name: *Eupatorium dubium*

Common Name: Little Joe Pye Weed

Mature Height: 3-4'

Mature Width: 3-4'

Identifying Characteristics: a favorite of butterflies (they are commonly seen drinking its nectar)



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c730>

[http://www.abnativeplants.com/index.cfm/fuseaction/plants.plantdetail/plant\\_ID/74/index.htm](http://www.abnativeplants.com/index.cfm/fuseaction/plants.plantdetail/plant_ID/74/index.htm)

# Eurybia divaricata

Grows in loose clumps with dark sprawling stems. Distinctive leaves are heart shaped and coarsely toothed. Small flowers have white rays and yellow to red center disks.

Scientific Name: *Eurybia divaricata*

Common Name: White Wood Aster

Mature Height: 1-2.5'

Mature Width: 1.5-2.5'

Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=h170>

# Gaillardia

*Gaillardia* species have abundant, brightly colored, daisy-like flowers on long stems. Many can tolerate heat and drought.

Scientific Name: *Gaillardia aristata*

Common Name: Blanket Flower

Mature Height: 18"-24"

Mature Width: 1'

Identifying Characteristics: orange-red daisy-like flowers (to 3" diameter) with yellow tipped rays.



Scientific Name: *Gaillardia x grandiflora*

Common Name: Blanket Flower

Mature Height: 2-3'

Mature Width: 1-2'

Identifying Characteristics: daisy-like flowers (3-4" diameter) in a wide variety of color arrangements, but usually featuring yellow to orange to red rays with maroon to orange banding at the petal bases and dark burgundy center disks.



Sources:

<http://www.finegardening.com/plantguide/genus/gaillardia.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a723>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a579>

# Galanthus nivalis

This bulb blooms in late winter and has white bell-shaped flowers. Must be planted in fall.

Scientific Name: *Galanthus nivalis*

Common Name: Snowdrops

Mature Height: 6"

Mature Width: 6"



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=k300>

# Geranium maculatum

This clump-forming perennial grows in mounds and features pink to lilac saucer-shaped 5-petaled flowers in spring. Leaves are dark green, 5-lobed and palmated. Seed capsules are beaked.

Scientific Name: *Geranium maculatum*

Common Name: Wild Geranium

Mature Height: 1-2'

Mature Width: 1-2'



Sources:

[missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c850](http://missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c850)

# Helenium autumnale

This clump forming perennial grows in moist soils along streams, ponds, ditches and meadows. Stems of this plant are distinctively winged and branch near the top. Flowers are yellow with dull yellow center disks. Petals have a distinct wedge shape and bloom in late summer to autumn.

Maintenance: Benefits from cut back in late summer to prevent flopping.

Scientific Name: *Helenium autumnale*

Common Name: Fall Sneezeweed

Mature Height: 3-5'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c930/helenium-autumnale.aspx>

# Heliopsis helianthoides

Upright clump forming, sunflower like perennial.  
It features daisy like flowers with yellow-orange  
rays surrounding brownish-yellow center cones.

Scientific Name: *Heliopsis helianthoides*

Common Name: Oxeye Sunflower

Mature Height: 3-6'

Mature Width: 2-4'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=g520>

# Hemerocallis

Hemerocallis species includes a large amount of Day Lilies with many types of cultivars. These plants are noted for their colorful, exuberant blooms in a wide range of colors and shapes from spring through summer. It is typically a tough plant that is easy to grow and suited to a wide range of sites.

Scientific Name: *Hemerocallis 'Black Eyed Stella'*

Common Name: Black Eyed Stella Day Lily

Mature Height: 1-3'

Mature Width: 1-3'

Identifying Characteristics: apricot-yellow flowers with deep orange eye-zones



Scientific Name: *Hemerocallis 'Happy Returns'*

Common Name: Happy Returns Day Lily

Mature Height: 1-3'

Mature Width: 1-3'

Identifying Characteristics: ruffled, lemon yellow flowers



Scientific Name: *Hemerocallis 'Rosy Returns'*

Common Name: Rosy Returns Day Lily

Mature Height: 1-3'

Mature Width: 1-3'

Identifying Characteristics: Rose-pink flowers (to 4" wide) appear in clusters in summer



Sources:

<http://www.finegardening.com/plantguide/genus/hemerocallis.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=f142>

<http://www.finegardening.com/plantguide/hemerocallis-blackeyed-stella-daylily.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d120>

# Heuchera richardsonii

This clump forming perennial has heart shaped leaves which show molting or purple blush when young, turn a uniform green color when mature. Greenish, bell-shaped flowers grow on small stems that grow well above the leaves. Both the stems and undersides of leaves are hairy.

Maintenance: For best results, divide clumps in spring every 3-4 years.

Scientific Name: *Heuchera richardsonii*

Common Name: Alumroot

Mature Height: 6'

Mature Width: 1-1.5'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g530/heuchera-richardsonii.aspx>

# Heuchera micrantha

Clump forming perennial which features a basal mound of maple or ivy like long leaves with deep purple or reddish undersides. Foliage may turn bronze in hot summers. Tiny, pinkish, bell shaped flowers may be seen well above the leaves.

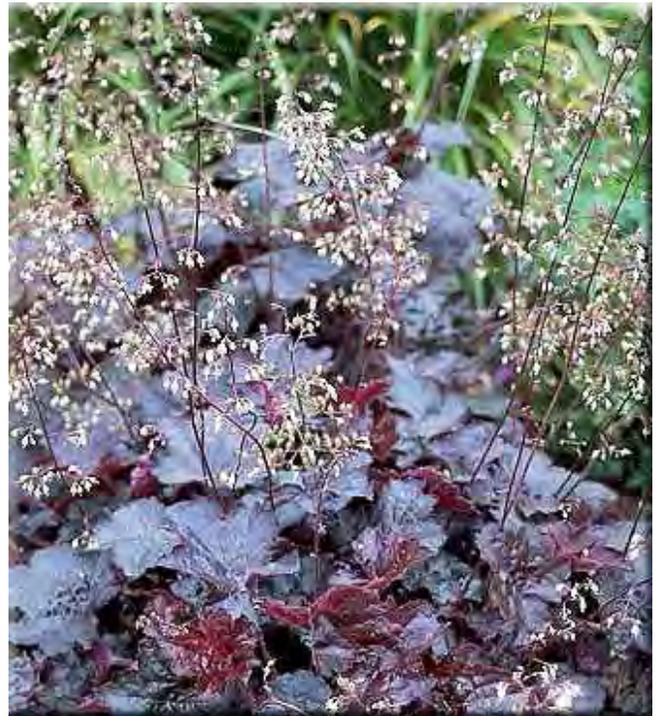


Scientific Name: *Heuchera micrantha*

Common Name: Palace Purple

Mature Height: 1-2'

Mature Width: 1-1.5'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d240>

# Iris versicolor

*Iris* species has many cultivars that are mostly rhizomatous or bulbous perennials . There are beautiful blooms in many color combinations and forms. Excellent in many situations, including borders, beds, wet areas, and rock gardens.

Scientific Name: *Iris pseudacorus* 'Variegata'  
Common Name: Yellow Flag Iris  
Mature Height: 2-5'  
Mature Width: 1.5-2'  
Identifying Characteristics: yellow flag cultivar



Scientific Name: *Iris sibirica* 'Caesar's Brother'  
Common Name: Siberian Iris  
Mature Height: 3-4'  
Mature Width: 2.5-3'  
Identifying Characteristics: deep purple flowers



Scientific Name: *Iris versicolor*  
Common Name: Blue Flag Iris  
Mature Height: 2-2.5'  
Mature Width: 2-2.5'  
Identifying Characteristics: Flowering stalks rise from the clump to 30" tall in late spring, with each stalk producing 3-5 bluish-purple flowers (to 4" wide) with bold purple veining.



## Sources:

<http://www.finegardening.com/plantguide/genus/iris.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=v910>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d560>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c629>

# Leucanthemum x superbum

Scientific Name: *Leucanthemum x superbum*

Common Name: Shasta Daisy

Mature Height: 3-4'

Mature Width: 2-3'

Identifying Characteristics: larger than most other shasta, yellow center disks, coarse lance shaped leaves



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=r550>

# Liatis

This clump forming perennial grows about 2-4' tall in cultivation, with spikes of 6-10". Each spike has a fluffy rounded purple flower of ¾".

Scientific Name: *Liatis spicata*

Common Name: Blazing Star

Mature Height: 3-5'

Mature Width: 0.75-1.5'

Identifying Characteristics: terminal spikes (6-12" long) of sessile, rounded, fluffy, deep purple flower heads



Scientific Name: *Liatis squarrosa*

Common Name: Scaly Blazing Star

Mature Height: 2-4'

Mature Width: 1.5'

Identifying Characteristics: pleasing, loosely formed flowering spike



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d780/liatis-spicata.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d780>

<https://www.prairiemoon.com/seeds/wildflowers-forbs/liatis-squarrosa-scaly-blazing-star.html>

# Lilium philadelphicum

Scientific Name: *Lilium philadelphicum*

Common Name: Wood lily and Philadelphia lily

Mature Height: 1-3'

Mature Width:

Identifying Characteristics: cup shaped flowers, purple spots and red-orange flowers, long leaves arranged in whorls



Sources:

[http://www.wildflower.org/plants/result.php?id\\_plant=LIPH](http://www.wildflower.org/plants/result.php?id_plant=LIPH)

# Lobelia sp.

This perennial typically grows in moist conditions along streams, sloughs, springs, swamps and low wooded areas. Tubular, 2 lipped flowers grow on terminal racemes. The three lobes of the lower lip is more prominent than the two lobes of the upper lip. Leaves are finely toothed and lance shaped.

Scientific Name: *Lobelia sp.*

Common Name: Red/Blue Lobelia

Mature Height: 2-4'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d940/lobelia-cardinalis.aspx>

# Monarda

This coarse, clump forming plant produces tubular flowers that are bright scarlet or lavender. These dense flower heads sit on square stems that are 2-4" tall. Each flower sits on a bract of showy leaves. This plant has a long summer bloom.

Scientific Name: *Monarda didyma*

Common Name: Beebalm

Mature Height: 2-4'

Mature Width: 2-3'

Identifying Characteristics: bright scarlet-red flowers borne in dense, globular, terminal heads



Scientific Name: *Monarda fistulosa*

Common Name: Wild Bergamot

Mature Height: 3'

Mature Width: 2-3'

Identifying Characteristics: Lavender, two-lipped, tubular flowers appear in dense, globular, solitary, terminal heads



Scientific Name: *Monarda punctata*

Common Name: Dotted Horsemint, Spotted Beebalm

Mature Height: 1-3'

Mature Width: 0.75-1'

Identifying Characteristics: Yellow, two-lipped flowers are spotted with purple appear in two or more tiered



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/q250/monarda-didyma.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=q250>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=g560>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=e290>

# Narcissus minor

This bulb features yellow trumpet-like flowers that bloom in spring. There is one flower per stem. Must be planted in fall.

Scientific Name: *Narcissus minor*  
Common Name: Miniature daffodils  
Mature Height: 6"  
Mature Width: 6"



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=259099&isprofile=0&pt=3&tt=1>

# Oenothera

This evening primrose produces clusters of bright yellow flowers. These four-petaled flowers bloom during the day and are short lived, but flowering continues for a two month period. Foliage is green/purple/brown and stems are red.

Maintenance: If foliage withers in summer after flowering, stems may be cut back to the basal rosette.

Scientific Name: *Oenothera fruticosa*  
Common Name: Sundrops, Narrowleaf Evening Primrose  
Mature Height: 1-1.5'  
Mature Width: 1-1.5'  
Identifying Characteristics: yellow cup-shaped flowers



Scientific Name: *Oenothera perennis*  
Common Name: Small Sundrops  
Mature Height: 1-2'  
Mature Width: 1-1.5'  
Identifying Characteristics: flower is about ½–¾" across, consisting of 4 yellow petals



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c802/oenothera-fruticosa-fyrverkeri.aspx>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c802>

[http://www.illinoiswildflowers.info/prairie/plantx/sm\\_sundrops.htm](http://www.illinoiswildflowers.info/prairie/plantx/sm_sundrops.htm)

# Parthenium integrifolium

This perennial features woolly-looking white flower heads with 5 small ray flowers that appear in broad, flat-topped, terminal corymbs from late spring to late summer. Leaves are aromatic, toothed and rough.



Scientific Name: *Parthenium integrifolium*

Common Name: Wild Quinine

Mature Height: 2-4'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g580/parthenium-integrifolium.aspx>

# Penstemon digitalis

This perennial occurs in prairies, fields, wood margins, open woods, and along railroad tracks. Tubular flowers are white, two lipped, and borne in panicles on top of rigid stems. Blooming occurs mid spring to early summer. Basal leaves are elliptic and stem leaves are lance shaped to oblong.

Scientific Name: *Penstemon digitalis*

Common Name: Beardtongue

Mature Height: 3-5'

Mature Width: 1.5-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g590/penstemon-digitalis.aspx>

# Penstemon smallii

Numerous tube shaped flowers are borne on upright branched stalks and have a bush like appearance due to the flowering branches extending down into the stem. Blooming occurs in April, May and June and the flowers are a light lavender color.



Scientific Name: *Penstemon smallii*

Common Name: Smalls Penstemon

Mature Height: 1.5-2.5'

Mature Width: 1.5-2''



Sources:

[http://www.wildflower.org/plants/result.php?id\\_plant=PESM](http://www.wildflower.org/plants/result.php?id_plant=PESM)

# Perovskia atriplicifolia

Russian sage is a woody-based perennial. It has green leaves on stiff, upright, square stems. Its flowers are light blue and tiered in branched, terminal panicles.

Maintenance: For best results, cut back plants almost to the ground in early spring before new growth begins.

Scientific Name: *Perovskia atriplicifolia*

Common Name: Russian Sage

Mature Height: 3-5'

Mature Width: 2-4'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/e540/perovskia-atriplicifolia.aspx>

# Phlox

This spreading, mat forming phlox is noted for its creeping habit. Linear to awl-shaped leaves retain some green in the winter. Flowers are red-purple to violet-purple , pink, or white. Each flower has five, flat, rounded lobes that are distinctively notched.

Maintenance: Watch for spider mites in hot, dry conditions.

Scientific Name: *Phlox subulata*

Common Name: Moss Phlox

Mature Height: 0.25-0.5'

Mature Width: 1-2'



Scientific Name: *Phlox divaricata*

Common Name: Wild Sweet William

Mature Height: 0.5'-1'

Mature Width: 0.5'-1'



Sources''

<http://www.missouribotanicalgarden.org>

# Phlox cont.

This spreading, mat forming phlox is noted for its creeping habit. Linear to awl-shaped leaves retain some green in the winter. Flowers are red-purple to violet-purple , pink, or white. Each flower has five, flat, rounded lobes that are distinctively notched.

Scientific Name: *Phlox paniculata*

Common Name: Garden Phlox

Mature Height: 3-5'

Mature Width: 2-3'



Sources"

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=t260>

# Physostegia virginiana

This plant produces pink/purple, tubular, snapdragon like flowers that grow on stiff, square stems. This plant also has narrow, lance shaped leaves that are sharp-toothed. If an individual flower is pushed in any direction, it will temporarily remain hinged in that direction.

Maintenance: To prevent this plant from becoming floppy, it may be pruned back in early spring.

Scientific Name: *Physostegia virginiana*

Common Name: Obedient Plant

Mature Height: 2'-4'

Mature Width: 3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g620/physostegia-virginiana.aspx>

# Pycnanthemum virginianum

This perennial has narrow, toothless leaves which taper to a point. Terminal clusters of small, white flowers bloom in mid to late summer. This plant smells strongly of mint when any part of the plant is crushed.

Scientific Name: *Pycnanthemum virginianum*

Common Name: Virginia Mountain mint

Mature Height: 2-3'

Mature Width: 1-1.5'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/l880/pycnanthemum-virginianum.aspx>

[http://www.wildflower.org/image\\_archive/320x240/SAW/SAW\\_02955.JPG](http://www.wildflower.org/image_archive/320x240/SAW/SAW_02955.JPG)

# Rudbeckia

This wildflower has rough, hairy leaves that are lance shaped. The stems support daisy like flowers that have brown center disks and golden yellow petals. A prolific self-seeder.

Scientific Name: *Rudbeckia fulgida*  
Common Name: Goldstorm Coneflower  
Mature Height: 2-3'  
Mature Width: 2-2.5'



Scientific Name: *Rudbeckia hirta*  
Common Name: Black-Eye Susan  
Mature Height: 2-3'  
Mature Width: 1-2'  
Identifying Characteristics: Hairy bristles cover leaves and stems



Scientific Name: *Rudbeckia lanciniata*  
Common Name: Cutleaf Coneflower  
Mature Height: 5-7'  
Mature Width: 3-4'  
Identifying Characteristics: bright yellow flowers, and plant can grow very tall



Scientific Name: *Rudbeckia maxima*  
Common Name: Giant Coneflower  
Mature Height: 5-7'  
Mature Width: 3-4'  
Identifying Characteristics: Very large flowers, and tall plant



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a109/rudbeckia-hirta.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c864/rudbeckia-maxima.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d589/rudbeckia-fulgida-city-garden.aspx>

<http://www.finegardening.com/plantguide/genus/rudbeckia.aspx>

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# Rudbeckia (cont)

This wildflower has rough, hairy leaves that are lance shaped. The stems support daisy like flowers that have brown center disks and golden yellow petals. A prolific self-seeder.

Scientific Name: *Rudbeckia subtomentosa*

Common Name: Sweet Coneflower

Mature Height: 3-6'

Mature Width: 1-3'



Scientific Name: *Rudbeckia triloba*

Common Name: Brown Eyed Susan

Mature Height: 2-5'

Mature Width: 1-1.5'

Identifying Characteristics: Smaller flowers and fewer rays per flowerhead



Sources:

<http://www.finegardening.com/plantguide/rudbeckia-subtomentosa-sweet-coneflower.aspx>

<http://www.finegardening.com/plantguide/genus/rudbeckia.aspx>

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# Ruellia humilis

This perennial has bell shaped flowers with five shallow, rounded leaves each. These flowers, which bloom from May to October, are lavender or lilac in color. Both the leaves and stems are hairy.

Scientific Name: *Ruellia humilis*

Common Name: Fringe-Leaf Wild Petunia

Mature Height: 2-3'

Mature Width: 1.5-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/m220/ruellia-humilis.aspx>

# Salvia

This is an erect perennial that has whorls of small, two-lipped, lilac-blue flowers that bloom throughout summer. Its leaves are ovate-triangular, broad, coarse, and medium green in color.

Maintenance: After flowering, plant may be cut back to basal foliage to tidy the plant.

Scientific Name: *Salvia nemorosa*

Common Name: May Night Sage

Mature Height: 1.5-2.5'

Mature Width: 1.5-2.5'

Identifying Characteristics: flower spikes typically purple, but can also be pink or white



Scientific Name: *Salvia verticillata*

Common Name: Meadow Sage

Mature Height: 1.5-2.5'

Mature Width: 1.5-2.5'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a953/salvia-verticillata.aspx>

<http://www.finegardening.com/plantguide/salvia-nemorosa-sage.aspx>

# Senecio aureus

Basal leaves are egg shaped or rounded, bunt toothed, rounded tip, with a heart shaped base. Daily-like flowers bloom in spring and early summer. Both the center disk and petals are yellow.

Scientific Name: *Senecio aureus*  
Common Name: Golden Ragwort  
Mature Height: 0.5-2'  
Mature Width: 6-8"



Sources:  
[http://www.illinoiswildflowers.info/woodland/plants/gold\\_ragwort.htm](http://www.illinoiswildflowers.info/woodland/plants/gold_ragwort.htm)

# Solidago

This plant has small bright yellow flowers that appear on the ends of stiff, alternate-leaved stems. These bloom in the fall from September to October.

Maintenance: Leaf rust is an occasional problem.

Scientific Name: *Solidago rugosa*  
Common Name: Rough Goldenrod  
Mature Height: 3'  
Mature Width: 2'  
Identifying Characteristics: yellow flowering spikes, less dense flowers than the Seaside Goldenrod



Scientific Name: *Solidago sempervirens*  
Common Name: Seaside Goldenrod  
Mature Height: 1-8'  
Mature Width: 3-4'  
Identifying Characteristics: taller than that Rough Goldenrod



Scientific Name: *Solidago sphacelata*  
'Golden Fleece'  
Common Name: Goldenrod  
Mature Height: 1-1.5'  
Mature Width: 1-1.5'  
Identifying Characteristics: Compact



Scientific Name: *Solidago* x 'Little Lemon' (also 'Dansolitlem')  
Common Name: Goldenrod  
Mature Height: Less than 1'  
Mature Width: Less than 1'



Identifying Characteristics: Very compact

Sources:  
<http://www.missouribotanicalgarden.org/>

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# Symphotrichum

This perennial is a stout, leafy plant that grows in a robust upright manner. In late summer to early fall, there is a profuse bloom of daisy-like asters that have yellow centers and purple rays.

Maintenance: After flowering, plants may be cut back to the ground for a tidy appearance.

Scientific Name: *Symphotrichum cordifolius*

Common Name: Blue Wood Aster

Mature Height: 2-5'

Mature Width: 1.5-2'



Scientific Name: *Symphotrichum novae-angliae*

Common Name: New England Aster

Mature Height: 3'-6'

Mature Width: 2'-3'



Scientific Name: *Symphotrichum novi-belgii*

Common Name: New York Aster

Mature Height: 3'-6'

Mature Width: 2'-3'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a788>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b540/symphotrichum-novae-angliae.aspx>

<http://www.northcreeknurseries.com/plantName/Aster-novi-belgii->

# Symphotrichum cont.

This perennial is a stout, leafy plant that grows in a robust upright manner. In late summer to early fall, there is a profuse bloom of daisy-like asters that have yellow centers and purple rays.

Maintenance: After flowering, plants may be cut back to the ground for a tidy appearance.

Scientific Name: *Symphotrichum laeve*

Common Name: Smooth Blue Aster

Mature Height: 2-4'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=g420>

# Talinum calycinum

This perennial occurs mostly in rocky soils and rocks. It features pink to red, 5-8 pedaled flowers in cymes atop leafless stems. Its flowers open at noon and remain open until mid-afternoon.

Scientific Name: *Talinum calycinum*

Common Name: Fameflower

Mature Height: 0.5-0.75'

Mature Width: 0.75-1'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/m500/talinum-calycinum.aspx>

# Thymus

A creeping perennial, thyme is comprised of thin woody stems that form a mat of glossy blue-green leaves. Leaves are aromatic. It features pink-purple flowers in the spring.

Maintenance: Stems may be cut back as desired to maintain plant appearance.

Scientific Name: *Thymus spp.*

Common Name: Thyme

Mature Height: 6"

Mature Width: 6"



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a294>

# Verbena hastata

This perennial commonly occurs in wet meadows, and stream banks. It has purplish-blue flowers which appear over a long July-September bloom period. Flowers bloom from bottom to top. Its leaves are green and sharply toothed.

Scientific Name: *Verbena Hastata*

Common Name: Blue Vervain

Mature Height: 2-6'

Mature Width: 1-2.5'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/z370/verbena-hastata.aspx>

# Vernonia noveboracensis

This perennial commonly occurs in wet meadows, and stream banks. Features numerous tiny and fluffy composite flowers in loose clusters. Leaves alternate. Flowers give way to rusty seed clusters and stems are very tough.

Scientific Name: *Vernonia noveboracensis*

Common Name: New York Ironweed

Mature Height: 4-6'

Mature Width: 3-4'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=g160>

# Vinca minor

Periwinkle or vinca is an evergreen groundcover with lavender blue flowers (up to 1 inch in diameter) that bloom in the spring, throughout the summer and into the fall. Can spread aggressively.

Scientific Name: *Vinca minor*

Common Name: Periwinkle

Mature Height: 6"

Mature Width: 2'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=u760>

# Zizia aurea

This plant features flat-topped clusters of small yellow flowers that appear in the late spring. Leaves are toothed. This plant attracts butterflies.

Scientific Name: *Zizia aurea*

Common Name: Golden Alexanders

Mature Height: 3'

Mature Width: 1.5-2'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g710/zizia-aurea.aspx>

# Grasses & Groundcover

*Philadelphia*



*Water Department*

Field Inspector's Planting  
Manual

# Acorus

Often found at the edge of water or filling boggy areas, this hardy perennial has sweet and spicy scented leaves. Leaves are blade-like, generally  $\frac{3}{4}$ " wide. Flowers appear in late spring, growing 2-4" long.

Scientific Name: *Acorus americanus*

Common Name: Sweetflag

Mature Height: 2-4'

Mature Width: 1-2'



Scientific Name: *Acorus calamus*

Common Name: Sweet flag

Mature Height: 2'

Mature Width: 1-2'



Sources:

[http://www.northcreeknurseries.com/index.cfm/fuseaction/plants.plantDetail/plant\\_id/490/index.htm](http://www.northcreeknurseries.com/index.cfm/fuseaction/plants.plantDetail/plant_id/490/index.htm)

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plantfinder-results/basicsearch/acorus/displayview/profile.aspx>

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# Ammophila breviligulata

This leafy beach grass is often found stabilizing sand dunes. There can be up to 100 stems produced per clump. The long narrow leaves can roll or fold when experiencing intense heats, sunlight or winds.

Scientific Name: *Ammophila breviligulata*

Common Name: American Beach Grass

Mature Height: 2'-3'

Mature Width: 6-10'



Sources:

[http://plants.usda.gov/factsheet/pdf/fs\\_ambr.pdf](http://plants.usda.gov/factsheet/pdf/fs_ambr.pdf)

# Andropogon

This is a native perennial, warm season grass associated with prairies. It is generally taller and grows upright with a clumping habit. Leaves are flattened and may change to a reddish tone in the fall.

Scientific Name: *Andropogon gerardi*

Common Name: Big Bluestem

Mature Height: 3'-5'

Mature Width: 3'-5'



Scientific Name: *Andropogon glomeratus*

Common Name: Bushy Beardgrass

Mature Height: 3-6'

Mature Width: 3'



Scientific Name: *Andropogon scoparius*

Common Name: Little Bluestem

Mature Height: 3'

Mature Width: 3'



Scientific Name: *Andropogon virginicus*

Common Name: Broomsedge

Mature Height: 2-4'

Mature Width: 1-2'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/v260/andropogon-glomeratus.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g720/andropogon-gerardii.aspx>

# Calamagrostis acutiflora

This grass is valued for its early bloom and its ability to grow in wet soils. It features erect, slightly arching, slender clump of narrow, stiff, rich green leaves. In June, purplish-green flowers that turn golden in late summer appear.

Scientific Name: *Calamagrostis acutiflora* 'Karl Foerster'

Common Name: Karl Foersters Feather Reed  
Grass Dwarf Fountain Grass

Mature Height: 3-5'

Mature Width: 1.5-2.5'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b810/calamagrostis-x-acutiflora-karl-foerster.aspx>

# Carex

A perennial, Carex or sedge, is a lower-growing grassy plant with a clumping habit. Leaves have a blade with edges and a sheath that encloses part of the stalk. Flowers are very small and may be combined into spikes that hold many flowers.

Scientific Name: *Carex elata*  
Common Name: Bowles Golden Sedge  
Mature Height: 24"  
Mature Width: 1.5-2.5'  
Identifying Characteristics: Yellow color



Scientific Name: *Carex emoryi*  
Common Name: Emory's Sedge  
Mature Height: 2'  
Mature Width: 12-18"  
Identifying Characteristics: Straw-colored leaves that are bright green at the top



Scientific Name: *Carex flacca*  
Common Name: Blue Sedge  
Mature Height: 6"-1'  
Mature Width: 1-2'  
Identifying Characteristics: Light blue color



Scientific Name: *Carex laxiculmis*  
Common Name: Spreading Sedge  
Mature Height: 1'  
Mature Width: 2'  
Identifying Characteristics: thicker leaves, blue color



Sources: <http://plants.ces.ncsu.edu/plants/all/carex-elata>  
<http://www.northcreeknurseries.com/>  
<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d113#AllImages>

# Carex (cont.)

Scientific Name: *Carex pensylvanica*  
Common Name: Pennsylvania Sedge  
Mature Height: 8-10"  
Mature Width: 1-2'



Scientific Name: *Carex morrowii*  
Common Name: Japanese Sedge  
Mature Height: 2'  
Mature Width: 1'



Scientific Name: *Carex stricta*  
Common Name: Tussock Sedge  
Mature Height: 2-3'  
Mature Width: 1-2'



Scientific Name: *Carex vulpinoidea*  
Common Name: Fox Sedge  
Mature Height: 1-3'  
Mature Width: 6"-2'



Sources:  
<http://www.missouribotanicalgarden.org/>

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# Chasmanthium latifolium

This clump forming ornamental grass is most distinguished by the flat, drooping seed heads that hang in terminal clusters on the thread-like pedicils from slightly arching stems. These seed heads emerge green but turn purplish bronze by the end of summer. Bright green leaves turn a coppery color after frost and brown by winter.

Scientific Name: *Chasmanthium latifolium*

Common Name: Indian Wood- Oats

Mature Height: 2-5'

Mature Width: 1-2.5'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a240/chasmanthium-latifolium.aspx>

# Cyperus esculentus

This plant is known for having a triangular stem and have distinctive spikelet's with oval seeds that are surrounds by leaf like bracts. The foliage is very tough and fibrous making it mistakable for grass.

Scientific Name: *Cyperus esculentus*

Common Name: Yellow Nutsedge

Mature Height: 3'

Mature Width: 1/8-1/2"



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/help-for-the-home-gardener/advice-tips-resources/pests-and-problems/weeds/yellow-nutsedge.aspx>

[http://en.wikipedia.org/wiki/Cyperus\\_esculentus](http://en.wikipedia.org/wiki/Cyperus_esculentus)

# Dennstaedia punctilobula

This fern is identified by the fragrance it will emit when brushed with the hand, crushed or bruised, which is similar to that of fresh mown hay. Fronds turn yellow in fall.

Scientific Name: *Dennstaedia punctilobula*

Common Name: Hay-scented fern

Mature Height: 1-2'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a752#AllImages>,

<http://www.prairienursery.com/store/ferns/hayscented-fern-dennstaedia-punctilobula>

# Deschampsia cespitosa

Clump forming cool season grass which may be grown as an ornamental. It usually forms a low dense tussock of very thin and arching grass blades with dark green color. Flowers turn yellowish-tan after bloom. Hair like blades of grass.

Scientific Name: *Deschampsia cespitosa*

Common Name: Tufted Hair Grass

Mature Height: 2-3'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c450>

# Deschampsia flexuosa

Clump forming cool season grass which may be grown as an ornamental. It usually forms a low dense tussock of very thin and arching grass blades.

Scientific Name: *Deschampsia flexuosa*

Common Name: Crinkled Hair Grass

Mature Height: 2-3'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=285198&isprofile=0&>

# Elymus canadensis

Clump forming cool season grass which may be grown as an ornamental, noted for its arching wheat like spikes that bloom in the summer. Green flowers form in arching bristly spikes.

Scientific Name: *Elymus canadensis*

Common Name: Canada Wild Rye

Mature Height: 2-5'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=285198&isprofile=0&>

# Elymus hystrix

Occurs in dry woodland areas. Forms loose upright tufts of narrow-bladed, rough textured medium green leaves. Greenish, bristly flower heads are well above the foliage.



Scientific Name: *Elymus hystrix*

Common Name: Bottlebrush grass

Mature Height: 2.5-3'

Mature Width: 1-1.5'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=k610>

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# Elymus virginicus

This cool season grass can be variable, so it is tricky to identify. Varying from green to silver to blue, this bunch grass has seed heads of 2-6". These appear in late spring and early summer.

Scientific Name: *Elymus virginicus*

Common Name: Virginia wild-rye

Mature Height: 2.5-4'

Mature Width: 1-2'



Photo by Matthew C. Perry



Sources:

[http://www.northcreeknurseries.com/index.cfm/fuseaction/plants.plantDetail/plant\\_id/602/index.htm](http://www.northcreeknurseries.com/index.cfm/fuseaction/plants.plantDetail/plant_id/602/index.htm)

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# Eragrostis spectabilis

This bunchgrass has flat, coarse, basal green leaves that grow up to 10" long. Soft reddish-purple flowers grow in loose, open inflorescences in August. Flowers turn brown by October.

Scientific Name: *Eragrostis spectabilis*

Common Name: Purple Love Grass

Mature Height: 1-2'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d593/eragrostis-spectabilis.aspx>

# Festuca sp.

This grass performs best with other cool season grasses and tolerates a lot of heat stress. They are also known to be the most shade tolerant grass. They also tolerate most diseases such as Red Thread and Net Blotch.

Scientific Name: *Festuca sp.*  
Common Name: Fine Fescue  
Mature Height: 1.5-2.5"  
Mature Width: 1/8"



Sources:  
<http://horticulture.oregonstate.edu/content/fine-fescues>

# Festuca glauca

Short lived, low growing, semi evergreen, clump forming grass. Its foliage forms a dome like shape and has needle like blades. Clumps do not spread outward very much.

Scientific Name: *Festuca glauca*

Common Name: Blue Fescue

Mature Height: .75-1'

Mature Width: .5-.75'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c760>

# Ipomoea purpurea

This vine is easily grown on average, however, it requires a support for the vine to grow on. This plant is usually grown indoors and then brought to the outdoors. Does not survive in winter climates very well.

Scientific Name: *Ipomoea purpurea*

Common Name: Morning Glory

Mature Height: 6-10'

Mature Width: 3-6'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b754>

# Helictotrichon sempervirens

This clump forming grass has stiff, spiky blue leaf blades that are up to ½" wide. The ends taper to a sharp tip. These plants benefit from getting cut back to the ground in late winter each year.

Scientific Name: *Helictotrichon sempervirens*

Common Name: Blue Oat Grass

Mature Height: 2-3'

Mature Width: 1.5-2'

Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/x720/helictotrichon-sempervirens-saphirsprudel.aspx>

# Juncus

With round upright stems, this plant is made up of basal clumps. Small yellowish-green to pale brown flowers grow in clusters from the sides of stems during the summer time. Foliage is brown during the winter and yellow in the fall.

Scientific Name: *Juncus effusus*  
Common Name: Soft (Common) Rush  
Mature Height: 3'  
Mature Width: 2-4'



Scientific Name: *Juncus tenuis*  
Common Name: Rush  
Mature Height: 3'  
Mature Width: 2-4'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c262/juncus-effusus.aspx>

# Juniperus horizontalis

Creeping juniper is a procumbent evergreen shrub . It forms a low ground cover that generally rises to 6-18" tall but spreads by long trailing branches with abundant short branchlets to form an often-dense, 4-10' wide mat. Foliage is primarily scale-like (adult) with some awl-like (juvenile) needles appearing usually in opposite pairs.

Scientific Name: *Juniperus horizontalis*  
Common Name: Creeping Juniper  
Mature Height: 0.75-1'  
Mature Width: 5-6'



Sources:  
<http://www.hort.uconn.edu/plants/j/junhor/junhor1.html>

# Liriope muscari

This tufted, tuberous rooted, grass-like perennial, grows in clumps. Leaves are 1" wide, glossy, and dark green. Spikes with tiered violet flowers grow above the leaves during the summer time. Black berries follow the flowers into the winter.

Scientific Name: *Liriope muscari*

Common Name: Big Blue or Lily Turf

Mature Height: 1-1.5'

Mature Width: 0.75-1'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/l100/liriope-muscari.aspx>

# Matteuccia struthiopteris

Clump forming, upright arching, deciduous fern.  
Finely dissected and medium green fronds.  
These fronds depreciate as the summer goes on. The inner fronds are dark-brown and remain that color year round.

Scientific Name: *Matteuccia struthiopteris*

Common Name: Ostrich Fern

Mature Height: 3-6'

Mature Width: 5-8'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=e180>

# Muhlenbergia capillaris

This clump forming grass has attractive foliage in the summer, and large flowers in the fall. Thread like, glossy leaves and stems grow about 2' tall. In the summer, pink/red flowers grow in loosely branched inflorescences.

Scientific Name: *Muhlenbergia capillaris*

Common Name: Pink Muhly Grass

Mature Height: 3'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b457/muhlenbergia-capillaris.aspx>

# Osmunda cinnamomea

This fern normally occurs on moist and boggy bluffs. Typically grows in clumps. Separate spore bearing fronds appear in Spring and then quickly turn brown. "Fiddle-heads" appear and unfurl into sterile fronds.

Scientific Name: *Osmunda cinnamomea*

Common Name: Cinnamon Fern

Mature Height: 2-3'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=i570>

# Osmunda regalis

This fern normally occurs on moist bluffs and ledges along streams. Typically grows in clumps. Broad fronds have large, well-separated leaflets that give the plant a pea like appearance. Fronds turn yellow to brown in autumn.

Scientific Name: *Osmunda regalis*

Common Name: Royal Fern

Mature Height: 2-3'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/l320/osmunda-regalis.aspx>

# Panicum

This grass has stiff, columnar blades which form clumps when growing. These medium green leaves turn yellow/orange in fall, and beige in the winter. Pink tinged flowers grow on branched flower panicles in mid summer.

Scientific Name: *Panicum amarum*  
Common Name: Coastal Panic Grass  
Mature Height: 2'-4'  
Mature Width: 2-3'



Scientific Name: *Panicum virgatum*  
Common Name: Switchgrass  
Mature Height: 4-8'  
Mature Width: 2-3'



Scientific Name: *Panicum rigidulum*  
Common Name: Redtop Panic Grass  
Mature Height: ¾"-1.75'  
Mature Width: ½"



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/1460/panicum-virgatum.aspx>

<http://plants.ifas.ufl.edu/node/309>

# Parthenocissus quinquefolia

This vine is a woody vine that appears in open areas. A vigorous tendril-climber that needs no support for growth. Compound leaves emerge purplish in spring and change to purple/red in autumn. Small greenish-white flowers appear in the upper leaf axils in late spring to early summer.

Scientific Name: *Parthenocissus quinquefolia*

Common Name: Virginia Creeper

Mature Height: 30-50'

Mature Width: 5-10'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=l490>

# Pennisetum

This ornamental grass typically grows in spreading clumps. It features narrow, medium to deep green leaves in summer that change to golden yellow in the fall. The oriental species has showy, fluffy, pinkish-white flower spikes that arch upward and outward from the foliage clump. Foliage changes to yellow-ish tan in the fall and remains attractive throughout the winter.

Scientific Name: *Pennisetum alopecuroides*

Common Name: Fountain Grass

Mature Height: 2.5-5'

Mature Width: 2.5-5'



Scientific Name: *Pennisetum orientale*  
Common Name: Oriental Fountain  
Grass

Mature Height: 2-3'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/e500/pennisetum-alopecuroides.aspx>

<http://www.ksuturf.org/index.php/publications-a-resources/for-homeowners/84-ornamental-grasses/167-pennisetum-alopecuroides-hameln>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a775/pennisetum-orientale-karley-rose.aspx>

# Schizachyrium scoparium

This grass grows in upright clumps of slender leaves that are ¼" wide. These green leaves have a tinge of blue at the base. In August, purple/bronze flowers appear above the foliage in 3" long racemes on branched stems. In the fall, the foliage become bronze/orange in color.

Scientific Name: *Schizachyrium scoparium*

Common Name: Little Bluestem

Mature Height: 3'

Mature Width: 1.5-2'



Sources: <http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f510/schizachyrium-scoparium.aspx>

# Securigera varia

Crown vetch has small clusters of white flowers from summer to fall. It is a tough and aggressive spreading plant that will crowd out its neighbors. It has thick roots great for erosion control.



Scientific Name: *Securigera varia*

Common Name: Crown Vetch / Purple Crown Vetch

Mature Height: 1-2'

Mature Width: .5"



Sources: [http://en.wikipedia.org/wiki/Securigera\\_varia](http://en.wikipedia.org/wiki/Securigera_varia)

# Solanum lycopersicum

Tomato plants are vines, initially decumbent, typically growing six feet or more above the ground if supported, although erect bush varieties have been bred, generally three feet tall or shorter. Indeterminate types are "tender" perennials, dying annually in temperate climate.



Scientific Name: *Solanum lycopersicum*  
Common Name: Tomato  
Mature Height: 3-10'



Sources:  
<http://en.wikipedia.org/wiki/Tomato>

# Sorghastrum nutans

This grass is easily identified by its upright form and blue-green foliage. Leaves form in clumps, and turn yellow/orange in the fall. Vertical flowering stems are topped with narrow, feathery, light brown flowers with yellow stamens.

Scientific Name: *Sorghastrum nutans*

Common Name: Indiangrass

Mature Height: 3'-6'

Mature Width: 1-2'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g780/sorghastrum-nutans.aspx>

# Sporobolus heterolepis

This perennial grass has fine textured, hair like medium green leaves. Flowers grow on slender stems that rise well above the foliage. Flowers are most easily identified by their fragrance of coriander and are pink/brown tinted.

Scientific Name: *Sporobolus heterolepis*

Common Name: Prairie Dropseed

Mature Height: 1-2'

Mature Width: 2-3'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f680/sporobolus-heterolepis.aspx>

# Tradescantia

This plant features purple-blue flowers that are borne in terminal clusters. Individual flowers open only a few at a time in each cluster. Leaves are folded lengthwise, forming a groove.

Scientific Name: *Tradescantia ohiensis*

Common Name: Ohio Spiderwort

Mature Height: 2-3'

Mature Width: 1.5-2.5'



Scientific Name: *Tradescantia 'Sweet Kate'*

Common Name: 'Sweet Kate' Spiderwort

Mature Height: 0.75-1'

Mature Width: 0.75-1'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a737/tradescantia-andersoniana-group-sweet-kate.aspx>

<http://www.extension.iastate.edu/newsrel/2004/jun04/jun0416.html>

# Tridens flavus

This densely tufted grass has loose, wide-branching clusters of brownish to rose-purple flowers. These leaves are thin blades that are typically 3/8" wide.

Scientific Name: *Tridens flavus*

Common Name: Purpletop

Mature Height: 2-4'

Mature Width: 1.5-2.5



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g790/tridens-strictus.aspx>

# Typha latifolia

Spreads using rhizomes to form dense colonies in water. Features narrow swordlike, linear, green leaves. Yellowish male flowers are located at the top of the plant with greenish female flowers located underneath.

Scientific Name: *Typha latifolia*

Common Name: Cattails

Mature Height: 4-6'

Mature Width: 4-6'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a407>

# Shrubs

*Philadelphia*



*Water Department*

Field Inspector's Planting  
Manual

# Aesculus pavia

The Red buckeye is a clump-forming shrub or small tree with an irregular rounded crown. During spring and early summer leaves are shiny and dark green. Seed capsules are smooth, light brown, and globular.

Scientific Name: *Aesculus pavia*

Common Name: Red buckeye

Mature Height: 15-25'

Mature Width: 15-25'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/1460/panicum-virgatum.aspx>

# Alnus

Leaves are egg-shaped or broadly oval, rounded to slightly heart-shaped at the base, pointed at the tip. Margins are unevenly double-toothed. Flowers are in a cylindrical cluster.

Scientific Name: *Alnus rugosa*  
Common Name: Speckled Alder  
Mature Height: 20'  
Mature Width: 15'  
Identifying Characteristics:



Scientific Name: *Alnus serrulata*  
Common Name: Smooth Alder  
Mature Height: 8-20'  
Mature Width: 6-10'  
Identifying Characteristics:



Sources:  
<http://www.borealforest.org/shrubs.shrub3.htm>

# Amelanchier

White flowers grow in drooping clusters which appear before the leaves emerge in early spring. Flowers give way to small, round, green berries which turn red to purplish-black in early summer.

Scientific Name: *Amelanchier arborea*

Common Name: Serviceberry

Mature Height: 6-25'

Mature Width: 4-20'

Identifying Characteristics:



Scientific Name: *Amelanchier canadensis*

Common Name: Shadblow Serviceberry

Mature Height: 6-20'

Mature Width: 4-20'

Identifying Characteristics:



Scientific Name: *Amelanchier laevis*

Common Name: Allegheny Serviceberry

Mature Height: 15-25'

Mature Width: 4-20'

Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h290/amelanchier-arborea.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/j290/amelanchier-canadensis.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b250/amelanchier-laevis.aspx>

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# Aronia

Deciduous shrub with rounded spreading. Clusters of 5-petaled white flowers in spring. Dark green foliage turns a purplish red in autumn. Typically grows in a vase-shaped form. Clusters of white to light pink 5-petaled flowers.

Scientific Name: *Aronia arbutifolia*

Common Name: Red Chokeberry

Mature Height: 6-10'

Mature Width: 3-4'

Identifying Characteristics:



Scientific Name: *Aronia melanocarpa*

Common Name: Black Chokeberry

Mature Height: 3-6'

Mature Width: 3-6'

Identifying Characteristics:



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Baccharis halimifolia

This is a semi-evergreen to deciduous shrub with soft gray-green leaves. The white appearance is from the silky hairs on its flowers.

Scientific Name: *Baccharis halimifolia*

Common Name: Groundsel Tree

Mature Height: 6-12'

Mature Width: 6-12'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Buxus sempervirens

*Buxus sempervirens* is a rounded to broad-rounded shrub. Small, elliptic to oval to oblong leaves (1/2" to 1 1/2" long) are simple, opposite, smooth-margined and evergreen. Leaves are dark glossy green above and yellowish-green below. Inconspicuous, apetalous flowers in axillary clusters are pale green to yellow to creamy white.



Scientific Name: *Buxus sempervirens*

Common Name: Boxwood

Mature Height: 5-15'

Mature Width: 5-15'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=e223>

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# Callicarpa americana

The Beautyberry is a loose open shrub that needs minimal care once its roots are established. Its leaves are medium green. This shrub has light lavender-pink flowers that have new growth from June to August. Also present are violet to magenta fruits.

Scientific Name: *Callicarpa americana*

Common Name: Beautyberry

Mature Height: 3-6'

Mature Width: 3-6'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print.  
<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/j580/callicarpa-americana.aspx>

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# Cephalanthus occidentalis

This deciduous shrub has creamy white flowers that are crowded in globular heads. Flower heads mature into hard spherical ball-like fruits. The fruit of this shrub is a nutlet that is present throughout winter. It is best adapted to moist situations.

Scientific Name: *Cephalanthus occidentalis*

Common Name: Buttonbush

Mature Height: 3-10'

Mature Width: 4-8'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print.  
<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g830/cephalanthus-occidentalis.aspx>

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# Chionanthus virginicus

The fringetree is a deciduous shrub or small tree that occurs in rich, moist woods and hillsides. Its spring-blooming flowers are slightly fragrant. Petals are a creamy white color. Female flowers give way to clusters of olive-like fruits that turn dark to bluish black in late summer once ripened. Leaves are spear-shaped that turn yellow in autumn.



Scientific Name: *Chionanthus virginicus*

Common Name: Fringetree

Mature Height: 12-25'

Mature Width: 12-20'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c120/chionanthus-virginicus.aspx>

# Clethra alnifolia

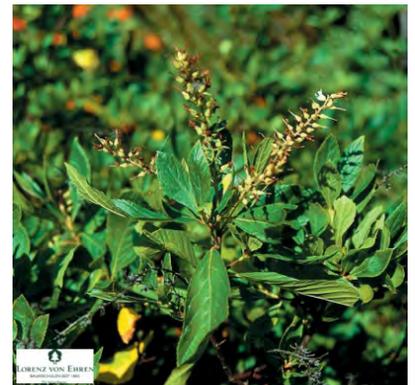
The Pink Flowering Somersweet has bottle brush-like white to pink flowers that are very fragrant. It blooms for 4-6 weeks in mid to late summer. Leaves are glossy and dark green which turn yellow in autumn. Its flower spikes give way to spikes of dark brown seed capsules usually present until winter.

Scientific Name: *Clethra alnifolia*

Common Name: Pink Flowering Somersweet

Mature Height: 4-8'

Mature Width: 4-6'



Sources:

<http://www.missouribotanicalgarden.org/>

[www.naturallandscapesnursery.com](http://www.naturallandscapesnursery.com)

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# Comptonia peregrina

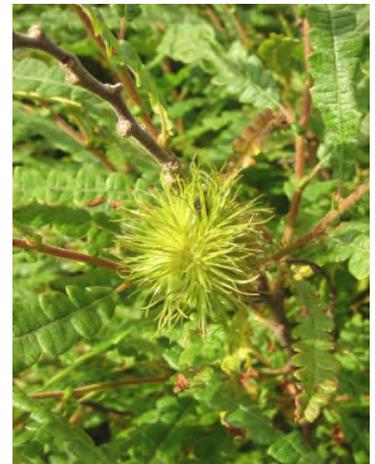
This deciduous shrub has alternate leaves that are simple. These leaves resemble those of ferns that are dark green in summer and green or greenish brown in autumn. A nutlet of 1/5" long that is olive-brown is typically present.

Scientific Name: *Comptonia peregrina*

Common Name: Sweet Fern

Mature Height: 2-5'

Mature Width: 4-8'



## Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print.

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c240/comptonia-peregrina.aspx>

# Cornus

This deciduous shrub features white flowers. Many species also have distinctive red stems. After flowers have dropped berries form.

Scientific Name: *Cornus alba*  
Common Name: Tatarian dogwood  
Mature Height: 4-8'  
Mature Width: 5-10'  
Identifying Characteristics:



Scientific Name: *Cornus alternifolia*  
Common Name: Alternate-leaved Dogwood  
Mature Height: 15-25'  
Mature Width: 25'  
Identifying Characteristics:



Scientific Name: *Cornus amomum*  
Common Name: Silky Dogwood  
Mature Height: 6-12'  
Mature Width: 8'  
Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/j930/cornus-racemosa.aspx>

# Cornus (cont)

Scientific Name: *Cornus racemosa*

Common Name: Gray Dogwood

Mature Height: 10-15'

Mature Width: 10-15'

Identifying Characteristics:



Scientific Name: *Cornus sericea*

Common Name: Redtwig Dogwood (Redosier)

Mature Height: 7-9'

Mature Width: 8-12'

Identifying Characteristics:



Scientific Name: *Cornus sericea*

Common Name: Dwarf Red Twig Dogwood

Mature Height: 4'

Mature Width: 4'

Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/j930/cornus-racemosa.aspx>

# Corylus americana

The American Hazelnut has alternate leaves that range from 2 ½ to 6" long and 1 ½ 2 ½" wide. The leaves are heart-shaped or rounded at base. Leaf color is dark green in summer, muddy yellow/green in fall, sometimes with a reddish tint. This shrub has ½" long nuts that mature in September-October.

Scientific Name: *Corylus americana*

Common Name: American Hazelnut (Filbert)

Mature Height: 10-16'

Mature Width: 8-13'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Dasiphora fruticosa (*Potentilla fruticosa*)

Dasiphora fruticosa is shrubby . The bark is shreddy. The leaves are pubescent, compound and nearly palmately so. The leaflets are linear and are entire. The flowers are bright yellow and have bracts behind the calyx.

Scientific Name: *Dasiphora fruticosa* OR  
*Potentilla fruticosa*

Common Name: Bush Cinquefoil

Mature Height: 1-3'

Mature Width: 3-5'



Sources:

[http://www.wnmu.edu/academic/nspages/gilaflorea/dasiphora\\_fruticosa.html](http://www.wnmu.edu/academic/nspages/gilaflorea/dasiphora_fruticosa.html)

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# Diervilla lonicera

The Dwarfbush Honeysuckle has yellow flowers that bloom from June to August. Its flowers usually won't bloom if its habitat is too dry. Its leaves are opposite, simple and sometimes pinnately compound.



Scientific Name: *Diervilla lonicera*  
Common Name: Dwarfbush Honeysuckle  
Mature Height: 1-4'  
Mature Width: 1-4'



Sources:  
<http://www.treeplantflowerid.com/Diervilla-ionicera.php>

# Fothergilla gardenii

This shrub is compact and slow-growing. It is usually as tall as it is wide. In the spring fragrant flowers bloom that are bottlebrush-like and ivory white in color. Its leaves are leathery, dark green which turn varying shades of red, orange and yellow in the fall.

Scientific Name: *Fothergilla gardenii*

Common Name: Dwarf Fothergilla

Mature Height: 2-3'

Mature Width: 2-4'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a430/fothergilla-gardenii.aspx>

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# Gaylussacia baccata

The Black Huckleberry has rich green leaves that turn reddish in the fall; leaf undersides are lighter and resin-dotted. Its flowers are red and grow in small, drooping racemes that are followed by rounded, black edible fruits.

Scientific Name: *Gaylussacia baccata*

Common Name: Black Huckleberry

Mature Height: 1.5-3'

Mature Width: 1.5-3'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Hamamelis virginiana

Witch Hazel has alternate, simple, medium to dark green leaves with 5 to 7 pairs of veins. Flowers are perfect, yellow and fragrant with four, strap-like crumpled petals. When placed in full sun this shrub becomes large and rounded with great stability.

Scientific Name: *Hamamelis virginiana*

Common Name: Witch Hazel

Mature Height: 20-30'

Mature Width: 15-20'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Hibiscus moscheutos

Rose Mallow is a fast growing, deciduous, perennial shrub that forms three foot clumps and can grow four to eight feet tall in a single season.

They have large, slightly heart shaped, green leaves, with soft, hairy undersides.

From mid summer until mid fall, they produce huge, 5"-12" flowers with deep red or burgundy centers and distinctive yellow stamens. The single flowers only last one day, but they are prolific bloomers.

Scientific Name: *Hibiscus moscheutos*

Common Name: Rose mallow

Mature Height: 4-6'

Mature Width: 5-12"



Sources:

<http://www.thegardenhelper.com/hibiscus.htm>

# Hydrangea

They are grown for their large, showy flowerheads, which are comprised of small, fertile flowers and larger, infertile flowers. On some, the wide range of flower colors is affected by pH (producing pink flowers over 6.0, and blue, below). Many species produce attractive foliage and interesting peeling bark with maturity.

Scientific Name: *Hydrangea arborescens* L.

Common Name: Wild Hydrangea

Mature Height: 3-5'

Mature Width: 3-5'



Scientific Name: *Hydrangea quercifolia*

Common Name: Oakleaf Hydrangea

Mature Height: 3-5'

Mature Width: 3-5'



Sources:

<http://www.finegardening.com/plantguide/genus/hydrangea.aspx>

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d380>

# Hypericum

These shrubs can be difficult to distinguish from each other as they are very similar. A key difference is shown in their height and width. Flowers on the Shrubby St. John's Wort are borne in axillary and terminal few-flowered cymes where the Dense Hypericum exhibits flowers borne in 5 to 15 flowered corymbs.

Scientific Name: *Hypericum densiflorum*

Common Name: Dense Hypericum

Mature Height: 4-6'

Mature Width: 5'

Identifying Characteristics:



Scientific Name: *Hypericum prolificum*

Common Name: Shrubby St. John's Wort

Mature Height: 1-4'

Mature Width: 1-4'

Identifying Characteristics:



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Ilex

*Ilex glabra* is a broadleaf evergreen shrub. It has spineless, flat, ovate to elliptic, glossy, dark green leaves up to 1.5" long. *Ilex opaca* is an evergreen tree with a narrow, pyramidal crown. Greenish white flowers appear in May. *Ilex verticillata* is a deciduous holly with an upright-rounded habit. It has elliptic to obovate toothed, dark green leaves 2-3" long. Maintenance: Prune to shape in early spring just before new growth begins.

Scientific Name: *Ilex glabra*  
Common Name: Inkberry Holly  
Mature Height: 6-8'  
Mature Width: 6-10'



Scientific Name: *Ilex opaca*  
Common Name: American Holly  
Mature Height: 40-50'  
Mature Width: 20-40'



Scientific Name: *Ilex verticillata*  
Common Name: Winterberry Holly  
Mature Height: 6-10'  
Mature Width: 3-12'



Sources:  
<http://www.hort.uconn.edu/plants/a/aesfla/aesfla1.html>

# Itea virginica

This deciduous shrub occurs in swamps, low wet woods and along spring branches. It features fragrant, small white flowers borne in cylindrical, drooping racemes which cover the shrub with blooms in early summer. Oval, dark green leaves turn red in autumn.

Scientific Name: *Itea virginica*

Common Name: Virginia Sweetspire

Mature Height: 3-5'

Mature Width: 3-5'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/k720/itea-virginica.aspx>

# Iva frutescens L.

The Marsh Elder is a perennial, deciduous shrub with succulent leaves. Its leaves are egg-shaped to narrowly lance-shaped and oppositely arranged. Also present are many greenish-white flower heads that appear on terminal stems.

Scientific Name: *Iva frutescens* L.

Common Name: Marsh Elder

Mature Height: 2-10

Mature Width: 6-12'



Sources:

[http://plants.usda.gov/factsheet/pdf/fs\\_ivfr.pdf](http://plants.usda.gov/factsheet/pdf/fs_ivfr.pdf)

# Juniperus conferta

Dense, low spreading plant that spreads by creeping, branched stems over time. Good ground coverage and blue coloring. Spiny pointed blue-green needles.

Scientific Name: *Juniperus conferta*

Common Name: Shore Juniper

Mature Height: .5-1'

Mature Width: 4-6'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c254>

# Kalmia latifolia

This broadleaf evergreen is often found in rocky or sandy woods. The Mountain Laurel has spring flowers that appear in terminal clusters. Each flower is cup shaped with five sides and ranges in color from rose to white with purple markings inside.

Scientific Name: *Kalmia latifolia*  
Common Name: Mountain laurel  
Mature Height: 7-15'  
Mature Width: 5-12'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c798/kalmia-latifolia.aspx>

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# Lagerstroemia indica

The Crapemyrtle has clusters of deciduous blooms from mid-to-late summer in various shades of pink. Matures at 15-20 feet or may be pruned for an informal hedge. Does best in full sun and moist, well-drained soil.

Scientific Name: *Lagerstroemia indica*

Common Name: Crapemyrtle

Mature Height: 15-25'

Mature Width: 6-15'



Sources:

<http://www.arboday.org/treeguide/treeDetail.cfm?ID=167>

# Lindera benzoin

Spicebush is a deciduous shrub that has clusters of tiny greenish-yellow flowers that bloom along branches in early spring. The female flowers give way to bright red drupes that mature in fall. Leaves are thin, light green and turn an attractive yellow in autumn.

Scientific Name: *Lindera benzoin*

Common Name: Common Spicebush

Mature Height: 6-12'

Mature Width: 6-12'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d890/lindera-benzoin.aspx>

# Morella/Myrica pensylvanica

Bayberry is a branching deciduous shrub native to North America. Its leaves are leather, glossy and grayish-green in color. If female flowers are pollinated they become attractive clusters of tiny, grayish-white fruits in late summer that can persist through the winter.

Scientific Name: *Morella/myrica pensylvanica*

Common Name: Northern Bayberry

Mature Height: 3-12'

Mature Width: 3-12'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/e310/myrica-pensylvanica.aspx>

# Physocarpus opulifolius

This shrub typically occurs along streams, rocky banks and in moist thickets. It is noted for its exfoliating bark that reveals several layers of reddish to light brown inner bark. Flowers are pink or white with five petals. Flowers give way to drooping cluster of reddish fruit.

Maintenance: Prune as needed immediately after bloom. Plants may be cut to the ground in winter to rejuvenate.

Scientific Name: *Physocarpus opulifolius*

Common Name: Ninebark

Mature Height: 10'

Mature Width: 4-6'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g840/physocarpus-opulifolius.aspx>

# Prunus maritima

This shrub has elliptical, dull green leaves that have serrated leaf margins and are 2-3" long. Half inch, white flowers are borne singly and bloom in May. These give way to dull purple fruit that ripen in August and are edible.

Scientific Name: *Prunus maritima*

Common Name: Beach Plum

Mature Height: <6'

Mature Width: <6'



Sources:

<http://www.hort.uconn.edu/plants/p/prumar/prumar1.html>

# Rhododendron

Rhododendron's typically have alternate, simple evergreen leaves that are elliptic to oblong in shape. The different species can be distinguished through their varying colors. True rhododendrons have 10 or more stamens and leaves are often scaly.

Scientific Name: *Rhododendron maximum*

Common Name: Rosebay Rhody

Mature Height: 25'

Mature Width: 25'

Identifying Characteristics:



Scientific Name: *Rhododendron nudiflorum*

Common Name: Pinxterbloom Azalea

Mature Height: 3-6'

Mature Width: 4-7'

Identifying Characteristics:



Scientific Name: *Rhododendron viscosum*

Common Name: Swamp Azalea

Mature Height: 5-8'

Mature Width: 6-12'

Identifying Characteristics:



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print

# Rhus

The Smooth Sumac has large, compound pinnate, shiny, dark green leaves with a fern like appearance. The Staghorn Sumac is noted for its reddish-brown hairs that cover the young branchlets. The Fragrant Sumac has trifoliate, medium green leaves turn attractive shade of orange, red and purple in autumn. The Winged Sumac has leaflets that are untoothed and leaf midribs have leafy ridges or wings.

Scientific Name: *Rhus aromatica*  
Common Name: Fragrant Sumac  
Mature Height: 2'-4'  
Mature Width: 6'-10'  
Identifying Characteristics:



Scientific Name: *Rhus copallina* L.  
Common Name: Winged Sumac  
Mature Height: 7-15'  
Mature Width: 10-20'  
Identifying Characteristics:



Scientific Name: *Rhus glabra* L.  
Common Name: Smooth Sumac  
Mature Height: 9'-15'  
Mature Width: 9'-15'  
Identifying Characteristics:



Scientific Name: *Rhus typhina*  
Common Name: Staghorn Sumac  
Mature Height: 15'-25'  
Mature Width: 15'-25'  
Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/I990/rhus-glabra.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c337/rhus-typhina.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/I980/rhus-aromatica.aspx> <https://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/g850/rhus-copallinum.aspx>

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# Rosa

*Rosa carolina*- Features single 5-petaled pink flowers that bloom in May. *Rosa palustris*- Each leaf typically has 7 (sometimes 5, but rarely 9) broad-elliptic, finely-toothed, dark green that are pointed at both ends. Flowers are followed by pea-sized red hips. *Rosa virginiana* is a very hardy shrub with bright pink, fragrant flowers with large hips that can persist into winter.

Scientific Name: *Rosa carolina*

Common Name: Pasture Rose

Mature Height: 4-6'

Mature Width: 5-10'

Identifying Characteristics:



Scientific Name: *Rosa palustris*

Common Name: Swamp Rose

Mature Height: 6'

Mature Width: 4-6'

Identifying Characteristics:



Scientific Name: *Rosa virginiana*

Common Name: Virginia (Wild) Rose

Mature Height: 4-6'

Mature Width: 3-5'

Identifying Characteristics:



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/e834/rosa-palustris.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f370/rosa-carolina.aspx>

<http://www.gardenvines.com/shop/climbing-roses-2/rosa-virginiana-359.html>

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# Rubus allegheniensis

The common blackberry has alternate leaves. It has white broad flowers with 5 distinct petals and many stamens. Its fruit is shiny dark purple to black.

Scientific Name: *Rubus allegheniensis*

Common Name: Common Blackberry

Mature Height: 3-6'

Mature Width: 6-12'



Sources:

[http://www.missouriplants.com/Whitealt/Rubus\\_allegheniensis\\_page.html](http://www.missouriplants.com/Whitealt/Rubus_allegheniensis_page.html)

# Sambucus

The common elderberry has leaves that are opposite, oval shaped and that have 5 to 11 usually 7 leaflets, each 2-6" long and ½ to 2 1/2 " wide. Leaves are dark green in summer and yellow-green in the fall. The flowers on the elderberry are perfect, white or a yellowish-white, growing in 5-rayed flat-topped clusters.

Scientific Name: *Sambucus canadensis*

Common Name: Common Elderberry

Mature Height: 5-12'

Mature Width: 3-10'



Scientific Name: *Sambucus nigra*

Common Name: Black Lace Elderberry

Mature Height: 8-20'

Mature Width: 8-20'

Soil Moisture: lowland

Sun/Shade: Sun/Partial

Salt Tolerance: No



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f470/sambucus-canadensis.aspx>

# Spiraea latifolia

The broad-leaved meadowsweet is frequently found in bogs, moist woods and swamps. It has purple-brown or red-brown twigs. Its leaves are typically 2-3 times longer than they are wide. Spiraea has white flowers on elongate panicles.

Scientific Name: *Spiraea latifolia*

Common Name: Broad-leaved

Meadowsweet

Mature Height: 3-5'

Mature Width: 3-5'



Sources:

Dirr, Michael A. *Manual of Woody Land Plants*. Champaign: Stipes Publishing L.L.C., 2009. Print.

# Taxus baccata

Common yew is a long-lived evergreen. They have lustrous, flat-needled, two-ranked, dark green foliage (needles to 1 1/2" long) is attractive year round. Young shoots emerge light green. Although classified as a conifer, female yews (plants are dioecious) do not produce cones, but instead produce red, ornamentally-attractive, berry-like fruits, each having a single seed almost completely surrounded by a fleshy red aril.

Scientific Name: *Taxus baccata*

Common Name: Yew

Mature Height: 2-20'

Mature Width: 4-20'



Sources:

<http://www.luontoportti.com/suomi/en/puut/common-yew>.

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d948>

# Vaccinium

Blueberries are flowering shrubs that may be either low-growing (*Vaccinium angustifolium*) or erect (*Vaccinium corymbosum*). New shoots grow from the crown under the soil. Flowers are bell-shaped. Leaves are glossy and ovate. In fall, leaves turn reddish; in winter, leaves fall off.

Scientific Name: *Vaccinium angustifolium*

Common Name: Lowbush Blueberry

Mature Height: 1-3'

Mature Width: 2'

Identifying Characteristics: Low-growing; finely toothed leaves.



Scientific Name: *Vaccinium corymbosum*

Common Name: Highbush Blueberry

Mature Height: 6-12'

Mature Width: 8-12'

Soil Moisture: lowland

Sun/Shade: Sun/Partial/Shade

Salt Tolerance: Yes

Identifying Characteristics: Upright branching; leaves are entire.



Sources:

<http://www.hort.uconn.edu/plants/v/vacang/vacang1.html>

<http://www.hort.uconn.edu/plants/v/vaccor/vaccor1.html>

# Viburnum

*Viburnum* shrubs have leaves that are opposite, simple and entire, toothed or lobed. Flowers are in corymbs (clusters), each flower white to cream or pink, small with five petals.

Scientific Name: *Viburnum acerifolium*  
Common Name: Maple-leaved Viburnum  
Mature Height: 4-6'  
Mature Width: 2-4'  
Identifying Characteristics: serrated leaves



Scientific Name: *Viburnum cassinoides*  
Common Name: Witherod Viburnum  
Mature Height: 5-6'  
Mature Width: 5-6'  
Identifying Characteristics: no teeth



Scientific Name: *Viburnum dentatum*  
Common Name: Arrowwood viburnum  
Mature Height: 5-7'  
Mature Width: 6-12'  
Identifying Characteristics: teeth are coarse



Scientific Name: *Viburnum lantana*  
Common Name: Wayfaring tree  
Mature Height: 7-8'  
Mature Width: 7-10'  
Identifying Characteristics: serrated leaves



Sources:  
<http://www.hort.uconn.edu/plants/>

# Viburnum (cont.)

Scientific Name: *Viburnum lentago*

Common Name: Nannyberry

Mature Height: 15-18'

Mature Width: 6-12'

Identifying Characteristics: leaves have a distinctly acuminate (pointed) tip



Scientific Name: *Viburnum nudum*

Common Name: Possumhaw

Mature Height: 6-10'

Mature Width: 6'

Identifying Characteristics: smooth leaf margins; colorful berries



Scientific Name: *Viburnum prunifolium* L.

Common Name: Black-haw Viburnum

Mature Height: 15-20'

Mature Width: 6-12'

Identifying Characteristics: upright stiff habit



Scientific Name: *Viburnum trilobum*

Common Name: American Cranberrybush

Mature Height: 8-12'

Mature Width: 8-12'

Identifying Characteristics: 3-lobed leaves, red fruit



Sources:

<http://www.hort.uconn.edu/plants/>

<http://wisplants.uwsp.edu/scripts/detail.asp?SpCode=VIBNUDvCAS>

# Xanthorhiza simplicissima

The yellow root is a woody groundcover that is multi-stemmed and forms a dense carpet. It has alternate leaves that are clustered at the end of stems. They usually occur in leaflets of 3 to 5, 1 ½ to 2 ¾" long. The outer bark of this shrub is yellowish brown with the inner bark being yellow. Brownish-purple flowers that are star-shaped are borne in long racemes that occur before leaves in March- April.

Scientific Name: *Xanthorhiza simplicissima*

Common Name: Yellowroot

Mature Height: 1-3'

Mature Width: 2'



Sources:

<http://www.mtcubacenter.org/plant-finder/details/xanthorhiza-simplicissima/>

<http://plants.usda.gov/>

# Trees

*Philadelphia*



*Water Department*

Field Inspector's Planting  
Manual

# Acer

*Acer* species have opposite, lobed leaves. Buds are resinous and often sticky. All maples bear winged seeds called samaras. Most have striking fall color. Some can be ornamental.

Scientific Name: *Acer buergerianum*  
Common Name: Trident Maple  
Mature Height: 20-25'  
Mature Width: 20-25'  
Identifying Characteristic: exfoliating bark



Scientific Name: *Acer campestre*  
Common Name: Hedge Maple  
Mature Height: 25-35'  
Mature Width: 25-35'  
Identifying Characteristic: lobbed leaves



Scientific Name: *Acer griseum*  
Common Name: Paperbark Maple  
Mature Height: 20-30'  
Mature Width: 15-25'  
Identifying Characteristics: exfoliating reddish bark



Scientific Name: *Acer rubrum*  
Common Name: Red Maple  
Mature Height: 35-60'  
Mature Width: 30-50'  
Identifying Characteristics: leave lobes have toothed margins pointed tips; red fall color



Sources:

<http://www.britannica.com/EBchecked/topic/363558/maple>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b972>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b973#AllImages>

[http://www.phytoimages.siu.edu/imgs/Cusman1/r/Aceraceae\\_Acer\\_griseum\\_40416.html](http://www.phytoimages.siu.edu/imgs/Cusman1/r/Aceraceae_Acer_griseum_40416.html)

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j170#AllImages>

# Acer (cont)

Scientific Name: *Acer rubrum* 'Armstrong'  
Common Name: Fastigiata Red Maple  
Mature Height: 50-60'  
Mature Width: 15-25'  
Identifying Characteristic: columnar type tree



Scientific Name: *Acer saccharum*  
Common Name: Sugar Maple  
Mature Height: 40-80'  
Mature Width: 30-60'  
Identifying Characteristic: dense rounded crown, yellow-orange leaves



Scientific Name: *Acer saccharum* 'Goldspire'  
Common Name: Goldspire Maple  
Mature Height: 40-50'  
Mature Width: 12-15'  
Identifying Characteristics: yellow fall color



Scientific Name: *Acer tataricum*  
Common Name: Triterian Maple  
Mature Height: 15-20'  
Mature Width: 15-20'  
Identifying Characteristics: small clusters of yellowish white flowers in the Spring



Sources:

<http://davesgarden.com/guides/pf/showimage/315407/>

<http://www.missouriherbarium.org/PlantFinder/PlantFinderDetails.aspx?kempercode=h240#AllImages>

[http://plants.plantcrazy.ca/11110001/Plant/1866/Goldspire\\_Sugar\\_Maple](http://plants.plantcrazy.ca/11110001/Plant/1866/Goldspire_Sugar_Maple)

<http://www.missouriherbarium.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d367#AllImages>

# Acer (cont)

Scientific Name: *Acer truncatum*

Common Name: Purpleblow Maple

Mature Height: 20-25'

Mature Width: 15-20'

Identifying Characteristic: small rounded shape, leaves reddish purple in the Spring



Scientific Name: *Acer x freemanii*

Common Name: Freeman Maple

Mature Height: 40-60'

Mature Width: 20-40'



Scientific Name: *Acer x freemanii* 'Celebration'

Common Name: Celebration Hybrid Maple

Mature Height: 35-60'

Mature Width: 20-35'

Identifying Characteristics: low canopy



Scientific Name: *Acer x freemanii* 'Scarlet Sentinel'

Common Name: Scarlet Sentinel Hybrid Maple

Mature Height: 40-45'

Mature Width: 20-25'

Identifying Characteristics: columnar growth habit



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a343#AllImages>

<http://www.kramertree.com/blog/tree-week-freeman-maple-acer-freemanii/>

[http://plants.oaklandnursery.com/12130001/Plant/616/Celebration\\_Maple](http://plants.oaklandnursery.com/12130001/Plant/616/Celebration_Maple)

[http://search.shelmerdine.com/11050002/Plant/615/Scarlet\\_Sentinel\\_Maple](http://search.shelmerdine.com/11050002/Plant/615/Scarlet_Sentinel_Maple)

<http://www.moonnurseries.com/Trees?nid=2146>

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# Aesculus

*Aesculus* species have opposite, palmately divided leaves, often very large. Buds are resinous and often sticky. Flowers are showy and usually globose. Species may be deciduous or evergreen.

Scientific Name: *Aesculus flava*  
Common Name: Yellow Buckeye

Mature Height: 50-75'

Mature Width: 30-50'

Identifying Characteristics: Fruit husk is smooth (not spined)



Scientific Name: *Aesculus hippocastanum*

Common Name: Horse Chestnut

Mature Height: 50-75'

Mature Width: 30-50'

Identifying Characteristics: Fruits are most spiny of all *Aesculus*



Scientific Name: *Aesculus x carnea*

Common Name: Red Horsechestnut

Mature Height: 30-40'

Mature Width: 25-35'

Identifying Characteristics: Smaller and rounder form. Terminal bud not as sticky. Leaves smaller and darker green.



Sources:

<http://www.hort.uconn.edu/plants/a/aesfla/aesfla1.html>

<http://www.hort.uconn.edu/plants/a/aeship/aeship1.html>

<http://www.hort.uconn.edu/plants/a/aescar/aescar1.html>

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# Amelanchier

*Amelanchier* species are a flowering shrub or small tree typically with small white flowers. Often used ornamentally. Sprouts reddish to purple black fruit after flowering.

Scientific Name: *Amelanchier canadensis*  
Common Name: Canadian Serviceberry  
Mature Height: 20-30'  
Mature Width: 15-20'  
Identifying Characteristic: typically multi-stem, gold fall color



Scientific Name: *Amelanchier x grandiflora*  
Common Name: Serviceberry  
Mature Height: 15-25'  
Mature Width: 15-25'  
Identifying Characteristic: orange to red fall color



#### Sources:

<http://www.britannica.com/EBchecked/topic/19112/Amelanchier>

<http://www.hort.uconn.edu/plants/a/amecan/amecan1.html>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b240#AllImages>

# Betula

*Betula* species are broadleaved and deciduous . Many have ornamental barks. Most leaves are serrated on the margins and live in cooler climates. Many prefer more moist soils.

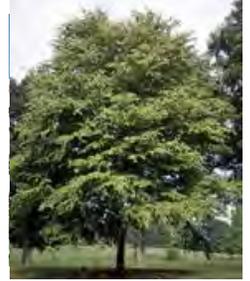
Scientific Name: *Betula lenta*

Common Name: Black Birch

Mature Height: 40-55'

Mature Width: 35-45'

Identifying Characteristic: leaves alternate, ovate, serrated on margins



Scientific Name: *Betula nigra*

Common Name: River Birch

Mature Height: 15-25'

Mature Width: 15-25'

Identifying Characteristic: whitish, brownish exfoliating bark



Sources:

<http://www.britannica.com/EBchecked/topic/66360/birch>

[http://ohiodnr.com/trees/birch\\_blk/tabid/5338/Default.aspx](http://ohiodnr.com/trees/birch_blk/tabid/5338/Default.aspx)

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=x800#AllImages>

# Carpinus

Small hardwood trees commonly referred to as hornbeam, ironwood, musclewood, or blue-beech. Leaves are deciduous, alternate and simple with serrated margins. The shape of the bud is an identifying characteristic between the European Hornbeam and American Hornbeam.

Scientific Name: *Carpinus betulus*  
Common Name: European Hornbeam  
Mature Height: 40-60'  
Mature Width: 30-40'  
Identifying Characteristics: Curved bud.



Scientific Name: *Carpinus betulus* 'Columnaris'  
Common Name: Columnar European Hornbeam  
Mature Height: 20-35'  
Mature Width: 20-35'  
Identifying Characteristics: Dense, teardrop form. Has a strong central leader.



Scientific Name: *Carpinus betulus* 'Fastigiata'  
Common Name: Upright European Hornbeam  
Mature Height: 30-40'  
Mature Width: 20-30'  
Identifying Characteristics: Dense, pyramidal with symmetry. Lacks true central leader. Most common in the landscaping industry.



Scientific Name: *Carpinus caroliniana*  
Common Name: American Hornbeam  
Mature Height: 20-35'  
Mature Width: 20-35'  
Identifying Characteristics: Straight bud.



Sources:

[http://www.tuckahoenurseries.com/Photo\\_Library.html](http://www.tuckahoenurseries.com/Photo_Library.html)

[http://www.heritageseedlings.com/page\\_187\\_40/carpinus-betulus-columnaris-nana](http://www.heritageseedlings.com/page_187_40/carpinus-betulus-columnaris-nana)

<http://davisla.wordpress.com/2011/04/09/plant-of-the-week-carpinus-betulus/>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=h540#AllImages>

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# Carya

Hickory trees have several long, narrow leaves that grow from each stalk. Leaves may be from 2-8 inches long and have serrated edges. Each stalk has 5-7 leaves in oppositional pairs. Bark forms ridges in a vertical pattern. Nuts have a hard outer shell.

Scientific Name: *Carya glabra*

Common Name: Pignut Hickory

Mature Height: 50-65'

Mature Width: 30-40'

Identifying Characteristics: 5 sharply pointed, dark green shiny leaflets; bark is scaly but does not flake at plate edges



Scientific Name: *Carya ovata*

Common Name: Shagbark Hickory

Mature Height: 70-90'

Mature Width: 50-70'

Identifying Characteristics: 5-7 light green leaves, thick scaly bark gives the tree a shaggy appearance



Sources:

[http://courses.missouristate.edu/pbtrewatha/pignut\\_hickory.htm](http://courses.missouristate.edu/pbtrewatha/pignut_hickory.htm)

<http://www.hort.uconn.edu/plants/c/carova/carova1.html>

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# Celtis

*Celtis* species have green elm-like leaves, which typically have three prominent veins. Most have pea sized fruit. Bark sometimes have corky, bumpy appearance.

Scientific Name: *Celtis laevigata*

Common Name: Sugarberry

Mature Height: 60-80'

Mature Width: 60-80'

Identifying Characteristic: elongate leaves, coarsely toothed



Scientific Name: *Celtis occidentalis*

Common Name: Common Hackberry

Mature Height: 40-60'

Mature Width: 40-60'

Identifying Characteristic: orange reddish berries, grayish corky bark



## Sources:

<http://www.britannica.com/EBchecked/topic/250971/hackberry>

<http://www.carolinanature.com/trees/cela.html>

<http://www.hort.uconn.edu/plants/c/celocc/celocc1.html>

<http://www.missouriherbarium.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a858#AllImages>

# Cercidiphyllum japonicum

This tree is an overall, very attractive tree. Leafing is opposite or partially alternate. Heart shaped leaves grow to 2-3 ½ inches long. Small dry, red pods occur in clusters and mature in fall. Bark, which is initially smooth, darkens and splits into thin, curling strips later in life. This tree is often seen with multiple trunks.

Scientific Name: *Cercidiphyllum japonicum*

Common Name: Katsura Tree

Mature Height: 40-50'

Mature Width: 20-30'

Identifying Characteristic: dense rounded habit



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=276>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=j710#AllImages>

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# Cercis canadensis

This tree has pink pea-like flowers which bloom on bare branches and even mature trunks. Heart shaped leaves are 3-5" across and may turn yellow in the fall. The trunk often has branches close to the ground which results in a spreading, flat-topped or rounded crown.



Scientific Name: *Cercis canadensis*

Common Name: Eastern Redbud

Mature Height: 20-30'

Mature Width: 25-35'

Identifying Characteristic: Purplish-pink flowers along braches before leaves emerge



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/h550/cercis-canadensis.aspx>

# Chamaecyparis thyoides

Evergreen and scaly, lateral pairs of leaves have pointed, spreading tips. Facial pairs are closely pressed. In spring, female flowers are small and green, while male flowers are small and are red to yellow. Cones are  $\frac{1}{4}$  in in diameter, blue or purple, and mature in fall. This tree grows as a slender column when young and spire-like when older.

Scientific Name: *Chamaecyparis thyoides*

Common Name: Atlantic White Cedar

Mature Height: 50'

Mature Width: 20'

Identifying Characteristic: Columnar deciduous



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=96>

<http://www.hgtvgardens.com/trees/white-cypress-chamaecyparis-thyoides>

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# Chionanthus

*Chionanthus* species have long, fringy, now-white flowers that droop downwards. Several have dark-blue fruits that are oval. Many have spear like leaves

Scientific Name: *Chionanthus retusus*

Common Name: Chinese Fringetree

Mature Height: 10-20'

Mature Width: 10-20'

Identifying Characteristic: fragrant white flowers, often multi-stem



Scientific Name: *Chionanthus virginicus*

Common Name: Common Hackberry

Mature Height: 12-25'

Mature Width: 12-20'

Identifying Characteristic: olive-like fruit which ripen to a bluish black in late summer



Sources:

<http://www.britannica.com/EBchecked/topic/220405/fringe-tree>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?taxonid=282979&isprofile=0&letter=c#AllImages>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c120/chionanthus-virginicus.aspx>

# Cladrastis kentukea

This low branching tree has oblong leaflets with a green upper surface and paler underside. In late spring to early summer, pea-like white flowers grow on 8-14" long hanging clusters. In early fall, flat brown pods 2-4" long and 1/2 " wide appear. Bark is smooth, thin, gray, and often wrinkled.

Scientific Name: *Cladrastis kentukea*

Common Name: American Yellowwood

Mature Height: 30-50'

Mature Width: 40-55'

Identifying Characteristic: compound leaves



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=278>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a270#AllImages>

# Cornus

*Cornus* species much of the time have ornamental flowers ranging in color from white or pink to yellow. Most are deciduous small trees or shrubs. Most have untoothed leaves with veins that curve towards the margin. Most leaves have an opposite orientation.

Scientific Name: *Cornus florida*  
Common Name: Flowering Dogwood  
Mature Height: 20-25'  
Mature Width: 15-30'  
Identifying Characteristic: deep reddish, auburn leaves in the fall



Scientific Name: *Cornus kousa*  
Common Name: Kousa Dogwood  
Mature Height: 15-30'  
Mature Width: 15-30'  
Identifying Characteristic: upright branching, flowers surrounded by 4 large pointed bracts



Scientific Name: *Cornus mas*  
Common Name: Corneliancherry Dogwood  
Mature Height: 15-25'  
Mature Width: 15-20'  
Identifying Characteristics: exfoliating bark



Scientific Name: *Cornus officinalis*  
Common Name: Japanese Cornel Dogwood  
Mature Height: 15-25'  
Mature Width: 10-25'  
Identifying Characteristics: oblong red fruits



Sources:

<http://www.britannica.com/EBchecked/topic/168017/dogwood>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c280#AllImages>

<http://www.hort.uconn.edu/plants/c/corkou/corkou1.html>

<http://www.bestplants.org/plantdetail.pl?ScientificName=Cornus%20mas>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=b995#AllImages>

# Cornus (cont)

Scientific Name: *Cornus x rutban*

Common Name: Auora Dogwood

Mature Height: 15-25'

Mature Width: 15-25'

Identifying Characteristic: rounder bracts than *Cornus kousa*



Sources:

<http://www.waverlyfarm.com/catalog-plant.html?code=CORHBRT>

# Crataegus

*Crataegus* species typically have simple toothed or lobed leaves with white or pink flowers in clusters. Some have red or blue/black apple-like fruits. Much of the time are ornamental and have horizontal branching.

Scientific Name: *Crataegus crus-galli*

Common Name: Cockspur Hawthorn

Mature Height: 20-25'

Mature Width: 25-35'

Identifying Characteristic: white flowers



Scientific Name: *Crataegus flava*

Common Name: Yellowleaf Hawthorn

Mature Height: 20-30'

Mature Width: 25-30'

Identifying Characteristic: unique fruit



Scientific Name: *Crataegus laevigata*

Common Name: English Hawthorn

Mature Height: 15-20'

Mature Width: 15-20'

Identifying Characteristics: dark pink & white flowers



Scientific Name: *Crataegus phaenopyrum*

Common Name: Washington Hawthorn

Mature Height: 25-30'

Mature Width: 25-30'

Identifying Characteristics: bright red fruits



Sources:

<http://www.britannica.com/EBchecked/topic/257588/hawthorn>

<http://www.hort.uconn.edu/plants/c/cracru/cracru1.html>

[http://hort.ifas.ufl.edu/treesandpowerlines/crataegus\\_flava\\_pics.shtml](http://hort.ifas.ufl.edu/treesandpowerlines/crataegus_flava_pics.shtml)

<http://www.moonnursery.com/Trees?nid=2194>

<http://www.missouriobotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a861#AllImages>

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# Crataegus (cont)

Scientific Name: *Crataegus punctata*

Common Name: Dotted Hawthorn

Mature Height: 20-30'

Mature Width: 20-30'

Identifying Characteristic: white flowers



Scientific Name: *Crataegus virdis*

Common Name: Green Hawthorn

Mature Height: 20-35'

Mature Width: 20-35'

Identifying Characteristic: small, crab-apple-like fruit



Scientific Name: *Crataegus x lavalleyi*

Common Name: Lavalley Hawthorn

Mature Height: 15-25'

Mature Width: 10-18'

Identifying Characteristics: layered bark



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=d725#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c410#AllImages>

<http://woodyplants.nres.uiuc.edu/plant/crali>

# Cryptomeria japonica

A slender, pyramidal, evergreen conifer, this tree has horizontal branching. It has sharply-pointed fragrant green to blue-green needles that are spirally arranged. Foliage is soft to touch.

Scientific Name: *Cryptomeria japonica*

Common Name: Japanese Cryptomeria

Mature Height: 50-60'

Mature Width: 20-30'



Sources:

<http://www.hort.uconn.edu/plants/c/cryjap/cryjap1.html>

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# Eucommia ulmoides

This shade tree has 3-8 inch attractive glossy green leaves. Flowers are fairly inconspicuous. The tree is low-branching and has a rounded spreaded crown. No fall color. Tear a leaf or peel bark and a stringy sap appears.

Scientific Name: *Eucommia ulmoides*

Common Name: Hardy Rubber Tree

Mature Height: 40-60'

Mature Width: 30-50'



Sources:

[http://www.atreeaday.com/atreeaday/Eucommia\\_ulmoides.html](http://www.atreeaday.com/atreeaday/Eucommia_ulmoides.html)

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# Fagus sylvatica 'Fastigiata'

An extremely narrow form with a "fastigate" habit (branches sloping upwards more or less parallel to the main stem). The beech has dark green, shiny foliage and smooth grey bark.

Scientific Name: *Fagus sylvatica* 'Fastigiata'

Common Name: Pyramidal Beech

Mature Height: 50-75'

Mature Width: 25-35'



Sources:

[http://www.smith.edu/gardens/bgilib/web/imageFrameset.php?latin\\_name=Fagus+sylvatica+%27Fastigiata%27&cat=3](http://www.smith.edu/gardens/bgilib/web/imageFrameset.php?latin_name=Fagus+sylvatica+%27Fastigiata%27&cat=3)

# Ginkgo

*Ginkgo* species are pyramidal in shape and have unique fan-shaped leaves, rounded with 2 veins. Leaves are light green/yellowish. Most have fissured grayish bark. Female species have unpleasant smell when fruit drops in fall.

Scientific Name: *Ginkgo biloba* (male only)

Common Name: Maidenhair Tree

Mature Height: 40-50'

Mature Width: 25-30'

Identifying Characteristic: fan-like leaves



Scientific Name: *Ginkgo biloba* 'Magyar'

Common Name: Magyar Upright Ginkgo

Mature Height: 40-60'

Mature Width: 20-30'

Identifying Characteristic: upright form



Scientific Name: *Ginkgo biloba* 'Princeton Sentry'

Common Name: Princeton Sentry Ginkgo

Mature Height: 40-50'

Mature Width: 20-30'

Identifying Characteristics: upright form, leaves have 1 lobe as opposed to 2 lobes.



Sources:

<http://www.britannica.com/EBchecked/topic/233931/ginkgo>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=z990#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c881#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=k360#AllImages>

# Gleditsia triacanthos inermis

This thornless and seedless variety of honey locust is smaller than the thorned variety. This variety has a pyramidal growth scheme with a central leader. Flowers are greenish yellow/white and appear in racemes in late spring.

Scientific Name: *Gleditsia triacanthos inermis*

Common Name: Thornless Honey Locust

Mature Height: 35-45'

Mature Width: 25-35'

Identifying Characteristic: pinnate to bipinnate dark green leaves with ovate leaflets



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d412/gleditsia-triacanthos-f.-inermis-skyline.aspx>

# Gymnocladus dioicus

Kentucky coffeetree is a large deciduous tree with upright to irregular branching and an obovate shape. Leaves are arranged alternatively, are binnately compound and 3' long and 2' wide. Fruit has a leathery texture and ripens in October.

Scientific Name: *Gymnocladus dioicus*

Common Name: Kentucky Coffeetree

Mature Height: 60-80'

Mature Width: 40-55'



Sources:

<http://www.hort.uconn.edu/plants/g/gymdio/gymdio1.html>

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# Halesia tetraptera

A small to medium-sized tree known for its white, bell-shaped flowers, Carolina Silverbell blooms in early May. The tree has yellow-green autumn foliage. Its summer foliage is a dark green color. Leaves are alternate, deciduous and simple ovate or elliptic shape. The margin is slightly serrate. Bark is smooth muscle-like.



Scientific Name: *Halesia tetraptera*

Common Name: Carolina Silverbell

Mature Height: 30-40'

Mature Width: 20-35'



Sources:

<http://www.hort.uconn.edu/plants/h/haltet/haltet1.html>

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# Juniperus virginiana

This evergreen often has two types of leaves on the same tree; scale like dark green leaves 1/16" long with 4 sides held tightly to the twig and longer, and dark blue-green needles. Berry like cones appear in spring, turning from light green to dark blue. Bark is red/brown and has long, fibrous strips. Do not plant near apples, hawthorns or crabapples



Scientific Name: *Juniperus virginiana*

Common Name: Eastern Red Cedar

Mature Height: 40-50'

Mature Width: 8-12'

Identifying Characteristic: reddish brown shredding bark



Sources:

<http://www.hort.uconn.edu/plants/j/junvir/junvir1.html>

# Koelreuteria

*Koelreuteria* species have compound foliage and bladder-like seedpods. Flowers are yellow and grow in a showy terminal cluster. Greenish pods appear after flowers and contain black seeds.

Scientific Name: *Koelreuteria paniculata*

Common Name: Goldenrain Tree

Mature Height: 20-40'

Mature Width: 15-35'

Identifying Characteristic: pinnate or bipinnate, feathery, compound leaves



Scientific Name: *Koelreuteria paniculata*  
'Fastigiata'

Common Name: Fastigiata Goldenrain Tree

Mature Height: 20-30'

Mature Width: 4-7'

Identifying Characteristic: upright form



## Sources:

<http://www.britannica.com/EBchecked/topic/237829/goldenrain-tree>

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=296>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a550#AllImages>

<http://www.bluebellnursery.com/catalogue/trees/Koelreuteria/K/1555>

# Liquidambar styraciflua

Leaves of this deciduous shade tree are 4-7" across, deep green and have toothed margins. Each leaf has 5-7 pointed, star shaped lobes. Falls color is a mix of yellows, oranges, purples and reds. Female, non showy flowers give way to 1.5", bristly fruiting cluster gum balls which mature to dark brown and stay on the tree through the winter.



Scientific Name: *Liquidambar styraciflua*  
Common Name: Sweetgum  
Mature Height: 60-80'  
Mature Width: 40-60'  
Identifying Characteristic: unique fruit



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c116#AllImages>

# Maackia amurensis

This tree is distinguished by its white flowers that are in large clusters and its curly shedding amber-colored bark. The leaf is compound, odd-pinnate, and dark olive green. There are 7-13 leaflets per leaf. The flower is 4-6 inches long and a white in color.

Scientific Name: *Maackia amurensis*

Common Name: Amur Maackia

Mature Height: 20-30'

Mature Width: 20-30'



Sources:

<http://phillytreemap.org/treekey/species/78/>

<http://www.hort.uconn.edu/plants/m/maaamu/maaamu1.html>

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# Magnolia virginiana

This tree has alternate leaves that are narrow and 3-5" long. They are shiny dark green on the top with silvery white undersides. In the late spring, creamy white flowers with 9-12 petals appear that are 2-3" in diameter. Bark is smooth, reddish brown and often mottled.

Scientific Name: *Magnolia virginiana*

Common Name: Sweetbay Magnolia

Mature Height: 30-40'

Mature Width: 15-25'

Identifying Characteristics: typically multi-stem, cup shaped flowers



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=334>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=e110#AllImages>

# Malus spp.

Apple trees are smaller trees with twisted trunks and low branches. Leaves are long, alternate, simple, elliptical to ovate, 1-1/2 to 3 inches long and have finely serrated margins. The flowers bloom in the Spring and have five petals which may be white, pink, or red. Fruit is yellow to red. Bark is generally smooth when young and thin and scaly when mature.

Scientific Name: *Malus spp.*

Common Name: Crabapple

Mature Height: 10-25'

Mature Width: 10-25'



Sources:

[http://www4.nau.edu/arboretum/Womack/crab\\_apple.html](http://www4.nau.edu/arboretum/Womack/crab_apple.html)

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=59>

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# Metasequoia glyptostroboides

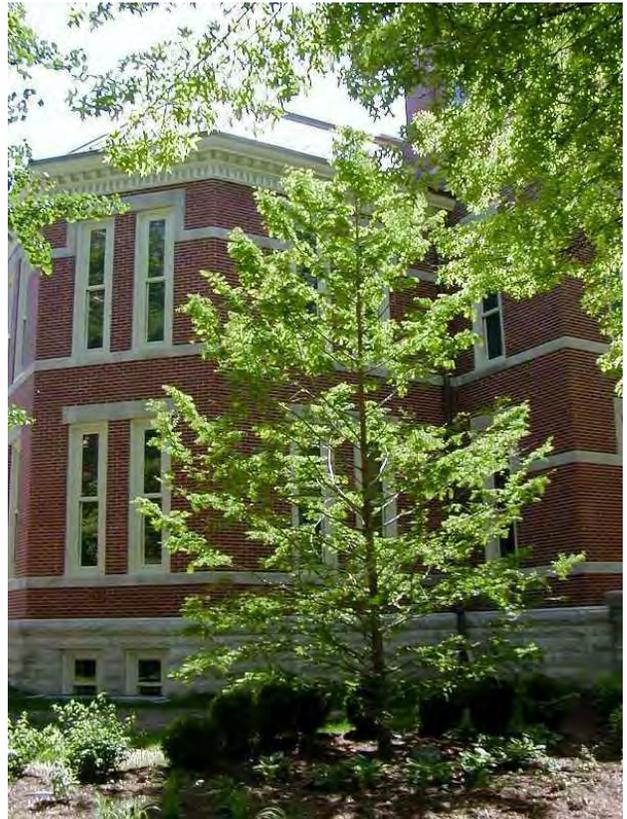
Dawn Redwood is both a deciduous and a conifer tree. It has linear, feathery and fern-like foliage that is soft. Foliage is light green in the spring, turning to deep-green in summer and red-bronze in fall-winter. Trees may be male or female with males having bell-shaped cones and females having oval cones. Twigs, needles and cone scales are in opposite pairs. The tree trunk features grooves as the tree ages.

Scientific Name: *Metasequoia glyptostroboides*

Common Name: Dawn Redwood

Mature Height: 70-100'

Mature Width: 15-25'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a396>

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# Nyssa sylvatica

This tree has alternate leaves which are oblong to ovate in shape and 3-5" long. Flowers are light green in color and hang from slender stalks in clusters. Fruit is dark and purplish blue in color and ripens in the late spring and early fall. Bark is gray/brown and has shallow furrows.

Scientific Name: *Nyssa sylvatica*

Common Name: Blackgum

Mature Height: 30-60'

Mature Width: 20-30'

Identifying Characteristics: bright red fall color



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=60>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a670#AllImages>

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# Ostrya virginiana

This deciduous tree features birch-like oval to lance-shaped, sharply serrated, dark yellowish green leaves. Leaves turn yellow in autumn and drop early. Flowers are not particularly showy.

Scientific Name: *Ostrya virginiana*

Common Name: Hop Hornbeam

Mature Height: 25-40'

Mature Width: 20-30'

Identifying Characteristics: birch-like, oval to lance-shaped, sharply-serrated, dark yellowish-green leaves



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/l330/ostrya-virginiana.aspx>

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# Oxydendrum arboreum

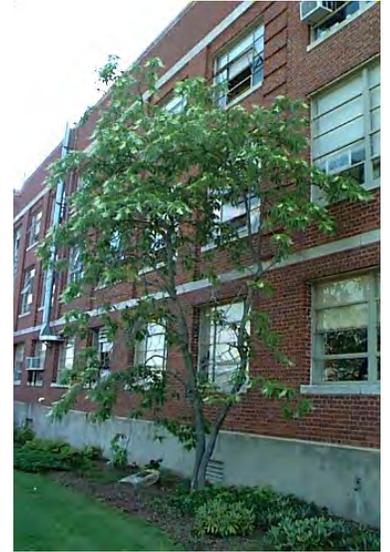
Sourwood is a deciduous understory tree. It has gray bark that is ridged and scaly. The leaves are finely toothed and 5-8" long, having a sour taste. Fall color is a vibrant red. Flowers are waxy and white and grow on drooping one-sided panicles, 4-8" long.

Scientific Name: *Oxydendrum arboreum*

Common Name: Sourwood

Mature Height: 20-50'

Mature Width: 10-25'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a887>

# Parrotia persica

Persian ironwood is a small deciduous tree. Flowers are small and have a dense red stamen. Leaves are oval to oblong (to 4" long) and are reddish-purple in spring, medium to dark green in summer, and yellow, orange, or red in the fall. The bark of a mature tree will exfoliate to green, white or tan patches beneath.

Scientific Name: *Parrotia persica*

Common Name: Persian Ironwood

Mature Height: 20-40'

Mature Width: 20-30'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=l480>

# Phellodendron amurense

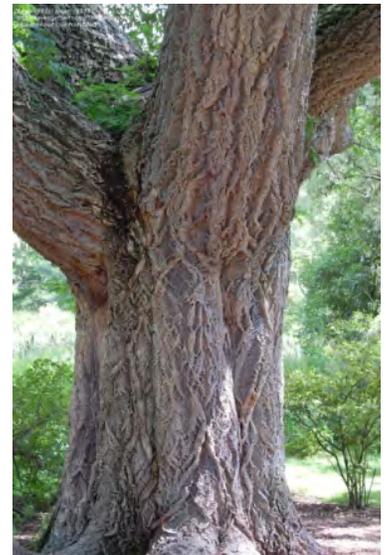
This tree typically has a short trunk and low horizontal branching. Yellowish green leaves have 5-11 leaflets which turn yellow in fall. Non showy yellowish green flowers appear in panicles in May/June. These give way to pea sized fruits which mature to black in fall.

Scientific Name: *Phellodendron amurense*

Common Name: Amur Cork Tree

Mature Height: 30-45'

Mature Width: 30-60'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a889/phellodendron-amurense.aspx>

# Platanus

*Platanus* species are often very large trees reaching up to 100'. The peeling bark is a notable feature that distinguishes it from other species. Most have palmately lobed leaves, and globose heads of lower and seed.

Scientific Name: *Platanus occidentalis*  
Common Name: American Sycamore  
Mature Height: 75-100'  
Mature Width: 75-100'  
Identifying Characteristics: camouflage-like bark, fruit hang singularly



Scientific Name: *Platanus x acerfolia*  
Common Name: London Planetree  
Mature Height: 75-100'  
Mature Width: 60-75'  
Identifying Characteristics: camouflage-like bark, fruit hang in twos or threes.



## Sources:

<http://www.britannica.com/EBchecked/topic/462985/plane-tree>

<http://growinghistory.wordpress.com/2012/03/13/london-planes-and-american-sycamores/>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a891>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a892>

# Prunus

Prunus trees are easy to identify in the spring when they have eye-catching five-petaled blossoms that are white or pink. The fruit is fleshy (like a prune) with a single large seed. Leaves are simple and alternate.

Scientific Name: *Prunus maacki*  
Common Name: Amur Chokeberry  
Mature Height: 20-30'  
Mature Width: 18-25'  
Identifying Characteristics: vein along midline of leaf is hairy, bark is a rich bronze and peeling



Scientific Name: *Prunus sargentii*  
Common Name: Sargent Cherry  
Mature Height: 20-30'  
Mature Width: 20-30'  
Identifying Characteristics: bluish leaf underside



Scientific Name: *Prunus serrulata*  
Common Name: Japanese Cherry or Tibetan Cherry  
Mature Height: 15-30'  
Mature Width: 15-20'  
Identifying Characteristics: Bark is glossy, purple-brown and peeling; leaves hairless and serrated; flowers individual or small clusters



Sources:

<http://wp.nres.uiuc.edu/plant/pruma70>

[http://www.smith.edu/gardens/bgilib/web/imageFrameset.php?latin\\_name=Prunus+sargentii+%27Columnaris%27&cat=3](http://www.smith.edu/gardens/bgilib/web/imageFrameset.php?latin_name=Prunus+sargentii+%27Columnaris%27&cat=3)

<http://www.hort.uconn.edu/plants/p/pruerr/pruerr1.html>

# Prunus cont.

Scientific Name: *Prunus subhirtilla*  
Common Name: Higan Cherry  
Mature Height: 20-30'  
Mature Width: 15-25'  
Identifying Characteristics: double, serrated leaves; double pink flowers



Scientific Name: *Prunus virginiana*  
Common Name: Common Chokeberry  
Mature Height: 20-30'  
Mature Width: 15-20'  
Identifying Characteristics:



Scientific Name: *Prunus x yedoensis*  
Common Name: Yoshino Cherry  
Mature Height: 30-40'  
Mature Width: 30-40'  
Identifying Characteristics: round, black fruit



## Sources:

<http://www.hort.uconn.edu/plants/p/prusub/prusub1.html>

<http://www.cas.vanderbilt.edu/bioimages/species/prvi.htm>

<http://pittcountyarboretum.blogspot.com/2012/01/beauty-in-bark.html>

# Prunus cont.

Scientific Name: *Prunus laurocerasus*

Common Name: Cherry Laurel

Mature Height: 10-18'

Mature Width: 20-25'

Identifying Characteristics: broad evergreen shrub/tree, foliage is evergreen, tiny cup shaped cream white flowers



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c335>

# Pyrus calleryana

This is an upright-branched ornamental tree. It begins as pyramidal to columnar but becomes oval to spreading with age. This tree is noted for its oval glossy dark green leaves, which turn a reddish purple in fall, and five petaled, creamy white flowers that grow in dense corymbs in early spring.

Scientific Name: *Pyrus calleryana*

Common Name: Callery Pear

Mature Height: 25-35'

Mature Width: 13-16'



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a720/pyrus-calleryana-chanticleer.aspx>

# Quercus

*Quercus* species often are characterized by alternate, simple, deciduous or evergreen leaves with lobes, toothed, or entire margins. Most have acorns and unique leaves that separate this species from others.

Scientific Name: *Quercus acutissima*

Common Name: Sawtooth Oak

Mature Height: 35-55'

Mature Width: 30-60'

Identifying Characteristics: oblong to lance-shaped leaves have bristle-tipped marginal teeth at the terminal point of each parallel vein



Scientific Name: *Quercus alba*

Common Name: White Oak

Mature Height: 50-80'

Mature Width: 50-80'

Identifying Characteristics: deep rounded lobed leaves, oval acorns



Scientific Name: *Quercus bicolor*

Common Name: Swamp White Oak

Mature Height: 50-60'

Mature Width: 50-60'

Identifying Characteristics: dark shiny leaves on top and silvery underneath



Scientific Name: *Quercus coccinea*

Common Name: Scarlet Oak

Mature Height: 60-70'

Mature Width: 40-50'

Identifying Characteristics: long and deeply cut with bristle-tipped, pointed lobes



Sources:

<http://www.britannica.com/EBchecked/topic/423415/oak>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a898>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=l930#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=q330>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=r700>

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# Quercus (cont)

Scientific Name: *Quercus imbricaria*  
Common Name: Shingle Oak  
Mature Height: 40-60'  
Mature Width: 40-60'  
Identifying Characteristics: rounded acorns, narrow, oblong, smooth-margined, glossy dark green leaves



Scientific Name: *Quercus lyrata*  
Common Name: Overcup Oak  
Mature Height: 40-60'  
Mature Width: 40-60'  
Identifying Characteristics: bur-like acorn cup



Scientific Name: *Quercus macrocarpa*  
Common Name: Bur Oak  
Mature Height: 60-80'  
Mature Width: 60-80'  
Identifying Characteristics: bur covered acorns



Scientific Name: *Quercus muehlenbergii*  
Common Name: Chinkapin Oak  
Mature Height: 40-60'  
Mature Width: 50-70'  
Identifying Characteristics: narrow, oblong-lanceolate, shiny green leaves have coarse marginal teeth.



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a899#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=e717#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a902#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a903#AllImages>

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# Quercus (cont)

Scientific Name: *Quercus palustris*

Common Name: Pin Oak

Mature Height: 50-70'

Mature Width: 40-60'

Identifying Characteristics: upper branches are ascending, middle branches are somewhat horizontal and lower branches are descending



Scientific Name: *Quercus palustris* 'Pringreen'

Common Name: Green Pillar Pin Oak

Mature Height: 50'

Mature Width: 15'

Identifying Characteristics: columnar form



Scientific Name: *Quercus phellos*

Common Name: Willow Oak

Mature Height: 40-60'

Mature Width: 25-50'

Identifying Characteristics: willow-like leaves



Scientific Name: *Quercus prinus*

Common Name: Chestnut Oak

Mature Height: 50-70'

Mature Width: 50-70'

Identifying Characteristics: Obovate, coarsely-toothed, almost leathery leaves are dark green above and pubescent gray-green beneath



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a904#AllImages>

<http://www.greatplantpicks.org/plantlists/view/1274>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a191#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c139>

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# Quercus (cont)

Scientific Name: *Quercus robur*

Common Name: English Oak

Mature Height: 40-70'

Mature Width: 40-70'

Identifying Characteristics: Short-stalked, dark green leaves with 3-7 blunt lobes per side are blue-green beneath. Small auriculate lobes at the leaf bases distinguish this species from others



Scientific Name: *Quercus robur* 'Fastigiata'

Common Name: Columnar English Oak

Mature Height: 50-60'

Mature Width: 10-20'

Identifying Characteristics: columnar form



Scientific Name: *Quercus robur* x *alba*  
'Crimschmidt'

Common Name: Crimson Spire Oak

Mature Height: 45'

Mature Width: 15'

Identifying Characteristics: columnar form



Scientific Name: *Quercus rubra*

Common Name: Red Oak

Mature Height: 50-75'

Mature Width: 50-75'

Identifying Characteristics: Dark, lustrous green leaves (grayish-white beneath) with toothed lobes which are sharply pointed at the tips



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a905#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c138#AllImages>

<http://www.jfschmidt.com/introductions/crimsonspire/index.html>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=i760#AllImages>

# Salix nigra

This tree has alternate leafing of lanceolate shaped leaves 3-6" in length. Leaves are dark and shiny on top and light green underneath. Small green flowers on catkins appear in early summer. Cone shaped capsules form which split at maturity mid summer. Bark is brown to gray/black , with thick, scaly ridges and deep furrows.

Scientific Name: *Salix nigra*

Common Name: Black Willow

Mature Height: 30-50'

Mature Width: 25'-35'



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=86>

# Salix alba

This tree is an upright, fast growing , deciduous tree that typically forms a broad, loose, open crown. Yellowish brown bark. Male catkins are usually showy having tiny flowers with yellowish anthers and 2 stamens. Female catkins are smaller and non-showy, with greenish flowers.

Scientific Name: *Salix alba*

Common Name: Golden Willow

Mature Height: 50-75'

Mature Width: 50-75'



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c144>

# Sorbus aucuparia 'Fastigiata'

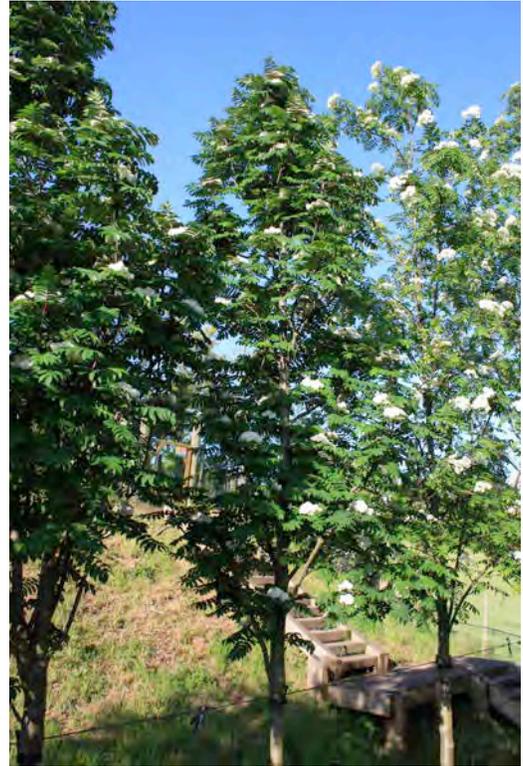
This narrow, columnar tree features clusters of showy white flowers in the spring and berries in the winter, with compound leaves that turn red in fall.

Scientific Name: *Sorbus aucuparia* "Fastigiata"

Common Name: Upright Mountainash

Mature Height: 20'

Mature Width: 7'



Sources

[http://search.millcreeknursery.ca/11050005/Plant/1409/Pyramidal\\_Mountain\\_Ash](http://search.millcreeknursery.ca/11050005/Plant/1409/Pyramidal_Mountain_Ash):

# Stewartia

*Stewartia* has a very distinctive smooth orange to yellow-brown bark that peels in fine flakes. Leaves are alternately arranged, simple, and serrated. Flowers are large with 5 white petals.

Scientific Name: *Stewartia koreana*

Common Name: Korean Stewartia

Mature Height: 20-30'

Mature Width: 15-25'

Identifying Characteristics: very showy bark shows a patchwork of green, gray, brown, rust, terra-cotta and cream



Scientific Name: *Stewartia monadelphica*

Common Name: Tall Stewartia

Mature Height: 20-25'

Mature Width: 15-25'

Identifying Characteristics: smooth cinnamon colored bark



Sources:

<http://www.hort.uconn.edu/plants/s/stekor/stekor1.html>

<http://www.phillytreemap.org/treekey/species/51>

# Styrax japonicus

Japanese Snowbell features pendulous white flowers in the Spring that hang below the foliage. Flowers are in groups of 3-6 and are 0.75" wide, 5 lobed with yellow stamens. The tree has gray-brown bark with a hint of orange underneath its shallow fissures. The bark may be somewhat fluted and twisted.

Scientific Name: *Styrax japonicus*

Common Name: Japanese Snowbell

Mature Height: 20-30'

Mature Width: 20-30'



Sources:

<http://www.hort.uconn.edu/plants/s/styjap/styjap1.html>

# Syringa reticulata

This small tree has elliptic to ovate dark green leaves and attractive reddish-brown bark. Creamy white, fragrant flowers are arranged in terminal clusters up to 12" long. Blooms later than most other species of lilac.

Scientific Name: *Syringa reticulata*

Common Name: Japanese Tree Lilac

Mature Height: 20-25'

Mature Width: 15-20'

Identifying Characteristics: showy white lilac-like flower



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f810/syringa-reticulata-ivory-silk.aspx>

# Taxodium distichum

Trunks of this tree are buttressed at the base, and when growing in water, often develop knobby root growth and protrude above the water surface around the tree. Foliage is soft and yellow/green, turning orange/brown in the fall. Rounded, wrinkles, 1 inch cones begin purplish/green and mature to brown.



Scientific Name: *Taxodium distichum*

Common Name: Bald Cypress

Mature Height: 45-70'

Mature Width: 20-45'

Identifying Characteristics: pyramidal conifer



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/m510/taxodium-distichum-var.-distichum.aspx>

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# Thuja occidentalis

Trunks of this tree are buttressed at the base, and when growing in water, often develop knobby root growth and protrude above the water surface around the tree. Foliage is soft and yellow/green, turning orange/brown in the fall. Rounded, wrinkled, 1 inch cones begin purplish/green and mature to brown.



Scientific Name: *Thuja occidentalis*

Common Name: American arborvitae or Eastern White Cedar

Mature Height: 20-40'

Mature Width: 10-15'

Identifying Characteristics: no flowers, narrow pyramidal, often single trunked



Sources:

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=c246>

# Tilia

*Tilia* species often are often ornamental or shade trees. Most have coarsely toothed leaves; fragrant cream-colored flowers; and small globular fruit hanging from a narrow leafy bract.

Scientific Name: *Tilia americana*

Common Name: Basswood

Mature Height: 50-80'

Mature Width: 30-50'

Identifying Characteristics: fragrant pale yellow flowers



Scientific Name: *Tilia cordata*

Common Name: Littleleaf Linden

Mature Height: 50-70'

Mature Width: 35-50'

Identifying Characteristics: small pale yellow flowers



Scientific Name: *Tilia tomentosa*

Common Name: Silver Linden

Mature Height: 50-70'

Mature Width: 30-50'

Identifying Characteristics: glossy green leaves above and silvery-white below



Sources:

<http://www.britannica.com/EBchecked/topic/341849/linden>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a917#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a918#AllImages>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=a919>

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# Ulmus

This tree has alternate leafing of ovate to oblong, 3-5" serrated leaves. Rounded, flat, papery samaras ripen in the spring. Bark is dark, ashy gray with ridges for americana and molted green, gray and orange for parvifolia.

Scientific Name: *Ulmus americana*

Common Name: 'Valley Forge' American Elm

Mature Height: 60-80'

Mature Width: 40-60'



Scientific Name: *Ulmus parvifolia*

Common Name: Chinese (lacebark) Elm

Mature Height: 50-60'

Mature Width: 40-50'



Sources:

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=41>

<http://dendro.cnre.vt.edu/dendrology/syllabus/factsheet.cfm?ID=90>

# Zelkova serrata

Japanese Zelkova has alternately arranged deciduous dark green simple leaves with toothed margins and an elliptical shape. The bark is gray with patches of exfoliation showing an orange inner bark.

Scientific Name: *Zelkova serrata*

Common Name: Japanese Zelkova

Mature Height: 40-60'

Mature Width: 40-50'



Sources:

<http://www.hort.uconn.edu/plants/z/zelser/zelser1.html>

# Sedums



# Sedum

*Sedum* species are in the succulent family. Most have unique foliage and sometimes showy flowers. Many are low-growing and are popular in rock gardens, rock walls, or edges/borders of gardens. Most are very drought tolerant.

Scientific Name: *Sedum acre* 'Gold Moss'

Common Name: Goldenmoss

Mature Height: 3"

Mature Width: 10"

Identifying Characteristics: small yellow flowers



Scientific Name: *Sedum album* 'Coral Carpet'

Common Name: White Stonecrop

Mature Height: 0.25-0.5'

Mature Width: 0.5-0.75'

Identifying Characteristics: small pink flowers, reddish green foliage



Scientific Name: *Sedum album* 'Murale'

Common Name: White Stonecrop

Mature Height: 0-0.25'

Mature Width: 0.25-0.75'

Identifying Characteristics: flowers more clustered and darker foliage than 'Coral Carpet'



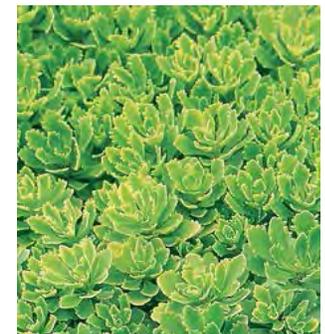
Scientific Name: *Sedum immergrunchen*

Common Name: Stonecrop

Mature Height: 2-3"

Mature Width: 1'

Identifying Characteristics: bright green foliage with yellow flowers



Sources:

<http://www.britannica.com/EBchecked/topic/532345/sedum>

<http://www.greenroofplants.com/catalog/plant-catalog/viewplant/?plantid=482>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/t620/sedum-album-coral-carpet.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b885/sedum-album-subsp.-teretifolium-murale.aspx>

<http://www.greengatefarms.com/plantname/Sedum-hybridum-Immergrunchen>

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# Sedum (cont)

Scientific Name: *Sedum kamtschaticum*  
Common Name: Orange Stonecrop  
Mature Height: 0.25-0.5'  
Mature Width: 0.25-1'  
Identifying Characteristics: clusters of yellow flowers



Scientific Name: *Sedum reflexum* 'Blue Spruce'  
Common Name: Blue Spruce Stonecrop  
Mature Height: 8"  
Mature Width: 8"  
Identifying Characteristics: bluish-green foliage



Scientific Name: *Sedum rupestre* 'Angelina'  
Common Name: Stonecrop  
Mature Height: 0.25-0.5'  
Mature Width: 1-2'  
Identifying Characteristics: red, orange, yellow, and green foliage



Scientific Name: *Sedum sexangulare*  
Common Name: Tasteless stonecrop  
Mature Height: 0.25-0.5'  
Mature Width: 1-2'  
Identifying Characteristics: spiral-like foliage with yellow flowers



## Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a147/sedum-kamtschaticum-var.-floriferum-weihenstephaner-gold.aspx>

<http://www.greenroofplants.com/catalog/plant-catalog/viewplant/?plantid=702>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/c655/sedum-rupestre-angelina.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f492/sedum-sexangulare.aspx>

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# Sedum (cont)

Scientific Name: *Sedum spurium* 'Fuldaglut'  
Common Name: Caucasian Stonecrop  
Mature Height: 0-0.25'  
Mature Width: 0.25-1.5'  
Identifying Characteristics: reddish-green foliage



Scientific Name: *Sedum spurium* 'John Creech'  
Common Name: Caucasian Stonecrop  
Mature Height: 0-0.25'  
Mature Width: 0.25-1'  
Identifying Characteristics: small, scalloped green leaves. Pink flowers appear above foliage in fall.



Scientific Name: *Sedum spurium* 'Red Carpet'  
Common Name: Caucasian stonecrop  
Mature Height: 0.25-0.5'  
Mature Width: 1-2'  
Identifying Characteristics: thick, succulent, opposite, obovate, flattened, red leaves that are toothed at the end.



Scientific Name: *Sedum spurium* 'Tricolor'  
Common Name: Caucasian stonecrop  
Mature Height: 0.25-0.5'  
Mature Width: 1-1.5'  
Identifying Characteristics: tricolor leaves that feature green in the center with white margins tinged with pink.



Sources:

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/a148/sedum-spurium-fuldaglut.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/b228/sedum-spurium-john-creech.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/d482/sedum-spurium-red-carpet.aspx>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f504/sedum-spurium-tricolor.aspx>

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# Sedum (cont)

Scientific Name: *Sedum takesimensis* 'Golden Carpet'

Common Name: Golden Carpet

Mature Height: 8"

Mature Width: 18"

Identifying Characteristics: dense yellow flowers, fast growing



Scientific Name: *Sedum ternatum*

Common Name: Woodland Stonecrop

Mature Height: .3-6'

Mature Width: .5"

Identifying Characteristics: small fleshy like leaves, purplish stamens, leaves appear in whorls of three



Scientific Name: *Sedum x*

Common Name: 'Autumn Joy' Stonecrop

Mature Height: 1.5-2'

Mature Width: 1.5-2'

Identifying Characteristics: clump forming perennial features masses of small, star like flowers that begin as pink then gradually turn to deep red and eventually coppery-rust.



Sources:

<http://www.greenroofplants.com/catalog/plant-catalog/viewplant/?plantid=482>

<http://www.missouribotanicalgarden.org/PlantFinder/PlantFinderDetails.aspx?kempercode=m310>

<http://www.missouribotanicalgarden.org/gardens-gardening/your-garden/plant-finder/plant-details/kc/f560/hylotelephium-herbstfreude-autumn-joy.aspx>

# Noxious Weeds

*Philadelphia*



*Water Department*

Field Inspector's Planting  
Manual

# Carduus nutans

Musk thistle has sharply spiny stems and leaves. The leaves are dark green and compound in arrangement, smooth and waxy. There are sharp yellow-brown to white spines at the tips of the lobes.

The plant has red-purple flower heads, each containing hundreds of tiny flowers. The flowers commonly droop, earning the plant the name “Nodding thistle.”

Plants should be removed before the flowers produce seed; one single plant may produce up to 120,000 seeds.

Scientific Name: *Carduus nutans*

Common Name: Musk or Nodding Thistle

Mature Height: 1-6'



Sources:

<http://plants.usda.gov/core/profile?symbol=canu4#>

# Cirsium arvense

Canada thistle is a perennial. Leaves have spiny toothed edges and are oblong and deeply lobed.

Canada thistle should be removed immediately before it crowds out desired species.

Scientific Name: *Cirsium arvense*

Common Name: Canada Thistle

Mature Height: 2-3'

Mature Width: 1-2'



Sources:

<http://plants.usda.gov/core/profile?symbol=ciar4>

# Cirsium vulgare

Bull thistle spreads by seed, so it is important to remove the plant soon after it flowers. The plant can be identified by its pink-purple flower or feathery pappus hairs. The leaves are stoutly spined, grey-green and deeply lobed. The upper stem has smaller leaves.

Scientific Name: *Cirsium vulgare*

Common Name: Bull Thistle

Mature Height: 3-5'



Sources: <http://plants.usda.gov/core/profile?symbol=civu>

# Galega officinalis

Goatsrue has purple to white flowers, less than 0.5 inches long and clustered on stalks. Leaves are ompound with 5-8 pairs of leaflets. Leaflets are oval to lance-shaped, 0.5-1.5 inches and are smooth. This plant spreads by seed.

Scientific Name: *Galega officinalis*

Common Name: Goatsrue

Mature Height: 2-5'



Sources: [http://agri.nv.gov/Noxious\\_Weed-Goatsrue/](http://agri.nv.gov/Noxious_Weed-Goatsrue/)

# Heracleum mantagazzianum

Giant hogweed is in the carrot family. It has hollow ridged stems with dark reddish-purple spots. Flower heads are white.

Do not touch this plant! Its sap can cause severe skin and eye irritation.

Scientific Name: *Heracleum mantagazzianum*

Common Name: Giant hogweed

Mature Height: 6-14'



Sources:  
<http://www.invasive.org/browse/subthumb.cfm?sub=4536&start=1>

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# Polygonum perfoliatum

Mile-a-minute is a branching, vine-like herb. The stems, leaf blades, and veins under the leaves have prickles. Leaves are triangular, 0.5-3 inches long and light green or reddish. Flowers are concealed among upper leaves. Fruits are a metallic blue and berry-like.

Scientific Name: *Polygonum perfoliatum*

Common Name: Mile-a-minute Weed



Sources:

<http://www.fs.fed.us/database/feis/plants/vine/polpef/all.html>

# Pueraria lobata

Kudzu is a climbing perennial vine in the pea family. It has three broad leaflets up to 4 inches across. Leaflets may be entire or deeply 2-3 lobed with hairy margins. Flowers are a ½ inch long.

Once established, kudzu plants grow rapidly with massive tap roots 7 inches or more in diameter. As many as thirty vines may grow from a single root crown.



Scientific Name: *Pueraria montana*

Common Name: Kudzu

Mature Height: 100'

Mature Width: 100'



Sources: [https://plants.usda.gov/java/largeImage?imageID=pumol\\_004\\_avp.tif](https://plants.usda.gov/java/largeImage?imageID=pumol_004_avp.tif)

# Lythrum salicaria

Flower spikes have flowers with five or six pink-purple petals surrounding small, yellow centers. Leaves have smooth edges. They grow in opposite pairs on the stalk and or in groups of three. Stalks are square.

Scientific Name: *Lythrum salicaria*  
Common Name: Purple Loosestrife  
Mature Height: 3-7'



Sources:  
<http://www.invasive.org/search/action.cfm?q=purple%20loosestrife>

# Rosa multiflora

Multiflora rose is a multi-stemmed shrub, sometimes climbing vine with recurved thorns. Leaves are divided into five to eleven sharply toothed leaflets. Flowers are clusters of showy, fragrant, white to pinkish, 1 in, blooming in springtime. Plant also has small bright red fruits in the summer through winter.

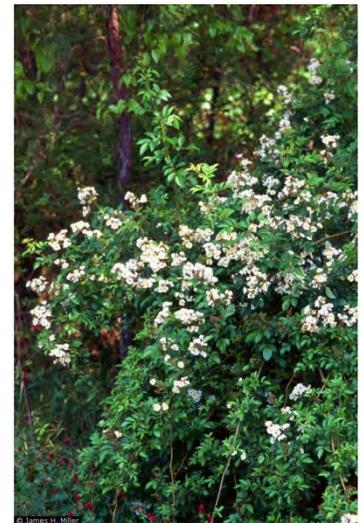
While it may be confused with other shrubs, only multiflora rose has upright arching stems and fringed stipules.

Scientific Name: *Rosa multiflora*

Common Name: Multiflora rose

Mature Height: 10-15'

Mature Width: 9-13'



Sources:

<http://plants.usda.gov/core/profile?symbol=ROMU>

# Sorghum bicolor

This plant can be identified by its spikelets that are reddish brown or green in appearance. The stem is smooth and the leaves are 1-2.5 inches wide with midveins. It is similar to johnsongrass but has wider leaf blade and tighter panicles (tufts). It is characterized by aggressive, rapid growth and competes with other plants.

Scientific Name: *Sorghum bicolor*

Common Name: Shattercane

Mature Height: 12' or more



Sources:  
<http://www.invasive.org/search/action.cfm?q=sorghum%20bicolor>

# Sorghum halepense

A coarse, clumping grass, Johnson grass is extremely aggressive. The Johnson grass seedling resembles a young corn seedling, but has football- to egg-shaped, dark reddish-brown to black seeds, which stay attached after the seedling is removed from the soil. The first leaf blade is parallel to the ground. Leaf blades are hairless with smooth edges.



Scientific Name: *Sorghum halepense*

Common Name: Johnson Grass

Mature Height: 6-7'

Mature Width: 1'



Sources:

<http://plants.usda.gov/core/profile?symbol=SOHA>

# Other Weeds

*Philadelphia*



Field Inspector's Planting  
Manual

# Ailanthus altissima

Tree of heaven has smooth, light grey bark. The bark often has some roughness from tan-colored fissures. Leaves are compound and alternate, 1-4' long. Leaflets are teardrop shaped with pointed ends, each 2-7" long. Tree of heaven is common in urban areas. It spreads by seed and vigorous re-sprouting. It can be mistaken with native staghorn sumac, ash or walnut.

Scientific Name: *Ailanthus altissima*

Common Name: Tree of heaven

Mature Height: 55-90'



Sources: <http://www.invasive.org/search/action.cfm?q=Ailanthus%20altissima>

# Artemesia sp.

Mugwort has spikes of small greenish flowers. The leaves are alternate, green on top and fuzzy white on the bottom. The leaves are scented. Stems are semi-woody.

Scientific Name: *Artemesia sp.*

Common Name: Mugwort

Mature Height: 4-6'



Sources: <http://www.invasiveplantatlas.org/subject.html?sub=5148>

# Datura stramonium

This plant is a member of the nightshade family. It has a distinct, foul smell, is erect and freely branching. The stem is stout and smooth, forking off into branches. Each fork forms a leaf and a single flower. Leaves are 3-8 inches long, smooth and toothed. Flowers are fragrant, trumpet-shaped and white or violet, 2 ½-3 ½ inches long.

Scientific Name: *Datura stramonium*

Common Name: Jimson weed



Sources:

<http://www.invasive.org/browse/subinfo.cfm?sub=5521>

# Daucus carota

The leaves alternate and are divided with narrow segments. The flowers are small, white and in an umbrella shaped cluster. The fruit on Queen Anne's Lace is dry and ribbed with bristly hairs.



Scientific Name: *Datura stramonium*  
Common Name: Queen Anne's Lace  
Height: 1-4'  
Width: 3-4"



Sources: <http://plants.ces.ncsu.edu/plants/all/daucus-carota/>

# Digitaria sp.

Crabgrass is a tufted grass with rhizomes. Leaf blades are flat, green to purple and have silky, shiny hairs on both sides. The flower cluster has spike-like branches in a spreading fashion.

Scientific Name: *Digitaria sp.*

Common Name: Crabgrass



Sources: <http://www.invasive.org/browse/TaxThumb.cfm?fam=395&genus=Digitaria>

# Echinochloa crus-gali

Barnyard grass produces tens of thousands of seeds each year and depletes the soil of nitrogen, killing other plants around it. It is a tufted grass, tall with flat smooth and hairless long leaves. Spikelets are pale green to dull purple.

Scientific Name: *Echinochloa crus-gali* sp.

Common Name: Barnyard grass

Mature Height: 5'



Sources:

<http://plants.usda.gov/core/profile?symbol=ECCR>

# Microstegium vimineum

Invasive species that spreads through water, gravel, people, animals. It has hidden self-fertilizing flowers. Resembles small, delicate bamboo. Leaves are pale green and lance shaped. Forms dense patches.

Scientific Name: *Microstegium vimineum*

Common Name: Japanese Stiltgrass

Mature Height: 2-3'

Mature Width: 3"



Sources:

<http://www.nps.gov/plants/alien/pubs/midatlantic/mivi.htm>

# Phragmites australis

This grass species has woody hollow stems. Flowers are brownish-orange spikelets with many tufts of silky hair like feathers. Leaves are flat and smooth. It can be distinguished from the native *phragmites* by its higher stem density, denser flower clusters, and tan (not brown) stem color.

Scientific Name: *Phragmites australis*  
Common Name: Common reed  
Height: Up to 9'



Sources:  
<http://www.invasiveplants.net/phragmites/phrag/morph.htm>

# Polygonum cuspidatum

Japanese knotweed has thick and tough leaves, 2-7 inches long and about two-thirds as wide, shaped like spades with a narrowed leaf tip. There are no hairs on the leaf undersides. Flowers are creamy white to greenish white and grow in plume-like clusters.

Scientific Name: *Polygonum cuspidatum*

Common Name: Japanese knotweed



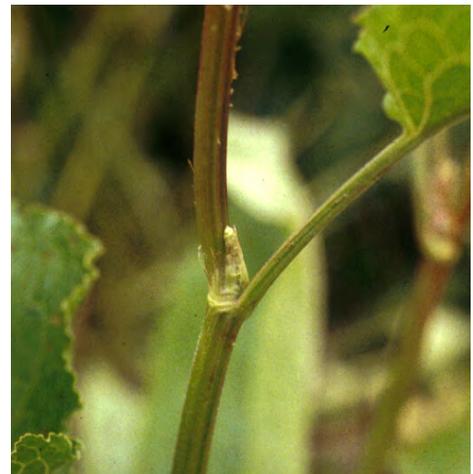
Sources: <http://www.kingcounty.gov/environment/animalsAndPlants/noxious-weeds/weed-identification/invasive-knotweeds/japanese-knotweed.aspx>

# Rumex obtusifolius

This plant is recognized by very large oval leaves with heart-shaped bases and rounded tips. The edges of the leaves are slightly wavy. Stems are tough, often reddish. The flower clusters are has large with small greenish or red flowers.

Scientific Name: *Rumex obtusifolius*

Common Name: Broad leafed dock



Sources: <http://www.oardc.ohio-state.edu/weedguide/singlerecord.asp?id=220>

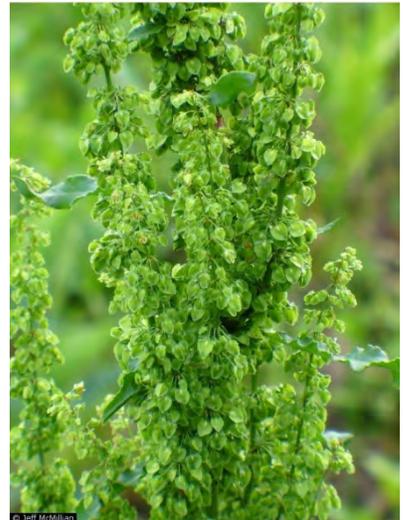
# Rumex crispus

Leaves grow in a circular arrangement at the ground with long, oblong to lance-shaped un-toothed leaves. Stem leaves decrease in size up the stalk. Stems are round. Flowers do not have petals, but are small, green, papery amid three-sided.

Scientific Name: *Rumex crispus*

Common Name: Curly Dock

Mature Height: 3'



Sources:

<http://plants.usda.gov/core/profile?symbol=RUCR>

# Appendices



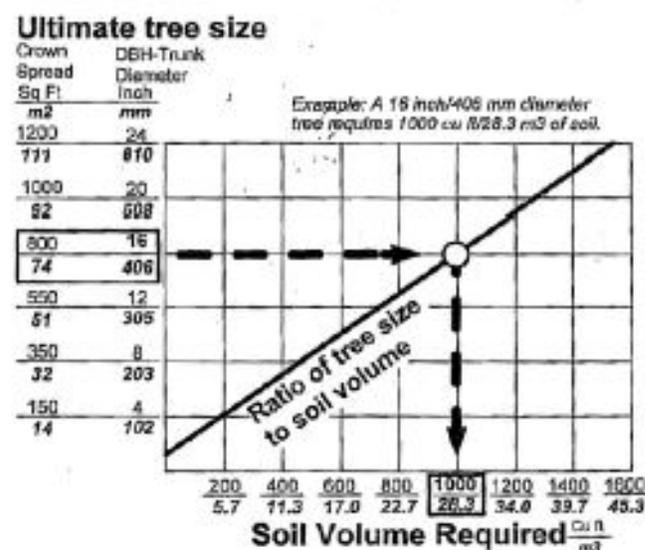
# Soil for Urban Tree Planting

*E. Thomas Smiley, Ph.D.*

When installing trees in a city setting such as an urban plaza, downtown sidewalk, street median or other location where the native soil will not support plant growth, it is important to specify and install a soil that meets the specific cultural needs of the tree species. The following are guidelines for the development of a soil that will allow sustainable growth of most woody landscape plants. This soil is also suitable for the installation in new planting beds in suburban areas, but is not intended for roof top gardens.

**Soil volume requirements.** The amount of soil installed will in large part determine the maximum size that the tree will achieve during its usable life span. To determine soil volume required see the table below that was prepared by James Urban (*Up by Roots*, ISA Press, 2008). Only the upper three feet of soil should be used for calculations in this table. The example illustrated shows that to achieve a trunk diameter of 16 inches (40 cm), 1000 cubic feet (28 m<sup>3</sup>) of soil are needed.

Table 2.4.1. Tree size to soil volume relationships (Urban 1992).



**Soil Depth.** Tree soil should have a minimum depth of 3 feet (1 m). The soil can be composed of topsoil and subsoil layers. When installing the soil it should be installed in lifts or layers of  $\leq 12$  inches (30 cm). A subsoil mix should be installed first and this should be covered with a topsoil mix with a depth of at least 12 inches (30 cm). When installing lifts, the base soil surface should be tilled or scarified with the teeth of an excavator bucket initially and between each lift to break up any compaction that occurred.

**Soil specification.** The top soil and subsoil may be from either a naturally occurring soil or soil that has been mixed to achieve the requirements.

**Texture.** Both top and subsoil should be a sandy loam soil with 50-80% medium and coarse sand (<25 % fine sand), 5-20% clay, 5-35% silt.

**Stones and rocks.** No stones larger than 1 inch in the longest dimension are permitted. Stones ranging from 0.5 to 1 inch (1.25 to 2.5 cm) shall not exceed 5% of the soil volume, and gravel ¼ to ½ inches (0.6 to 1.25 cm) shall not exceed 5% of the soil volume.

**Debris content.** Particles greater than 1 inch in the longest dimension are not allowed. This includes fragments of brick, concrete, wood, glass, metal, stone and plastic. The total volume less than 1 inch long should not be more than 5% of the soil volume.

**Contaminants.** The soil should have no herbicides, heavy metals, biological toxins, or hydrocarbons that will impact plant growth or are at levels exceeding the EPA's standards for soil contaminants.

**Clod size.** Mixed soils often contain soil clods with a high clay content. While smaller soil peds are desirable from a soil drainage perspective, larger clods are not. Therefore, it is permissible to have unlimited amount of peds that are less than 1 inch long, but clods from 1-3 inches (2.5-7.5 cm) should make up less than 10% of the soil volume and clods 3-6 inch (7.5-15 cm) should be < 5%.

**Organic matter content.** Organic matter (OM) is important for retaining water, maintaining stable soil aggregates, promoting biological diversity and providing nutrients for tree growth. The top soil shall have 4-6% OM by weight. If additional organic matter is needed, compost can be added to the soil. A well composted yard waste or wood chips compost can be used, as long as there is 10% OM by volume in the compost. No soil mix should contain more than 15% compost by volume so as to avoid settling/subsidence problems. Subsoil should have between 1-3% OM, but higher levels are not detrimental.

**Density** Soil density needs to be high enough to avoid settling, yet low enough to allow root growth. Top soil should have a density of 1.0 to 1.4 g/cc and subsoil 1.2 to 1.5 g/cc. A vibrating plate compactor should be used between lifts to settle the soil. Number of passes required needs to be determined on site. A starting point is two passes of a 20 inch (55 cm) impact plate vibrating compactor on a moist (not wet) soil to achieve the desirable density.

**Drainage.** Water should readily drain from the soil. Percolation rates of 1-2 inches (2.5-5 cm) per hour are preferred, if irrigation will be installed. A drainage system should be installed if the native subsoil has a drainage rate less than 1 inch (2.5 cm) per hour. Corrugated, slotted pipe should be used for drainage. Slots must only be on the bottom half of the pipe. If pipe has slots on the top, plastic sheeting should be taped to the top to prevent soil contamination of the pipe. Drain pipe should be surrounded with coarse sand and should *not* be wrapped with filter fabric to avoid future clogging problems. The coarse sand trench should be at least 12 inches (30 cm) wide and 10 inches (25 cm) deep, with the pipe in the center. The pipe must go downhill to an appropriate drainage area.

**Soil pH** Soil pH determines the availability of nutrients in the soil. The exact pH range is dependent on the tree species to be planted. Generally, the most desirable pH range is 5.5-6.6 in humid regions (Eastern North American, western OR, WA and BC) and 6.0 to 7.4 in arid regions (TX, AZ, CA). Optimal pH is highly dependent on the tree species to be planted and should be tested and adjusted based on species prior to planting.

**Nutrients.** Plant available nutrients should be tested prior to soil installation. If they are found to be at levels that are listed as “medium” or less on the soil analysis report the soil should be amended with the appropriate fertilizers. If nitrogen is required, the nitrogen fertilizer shall contain at least 50% of the total N applied in a water insoluble (WIN) form.

**Soluble salt content** shall be less than 2 dS/m.

**Water** is an essential component of keeping new transplants alive and thriving. Soil moisture should be monitored regularly and irrigation applied when needed to assure adequate moisture. Excess irrigation can also harm plants so over irrigation should be avoided. Installation of soil moisture sensors at the time of soil installation is highly recommended.

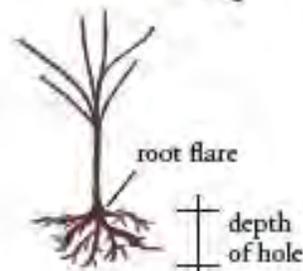
With any new planting, the trees and soil moisture should be monitored regularly. Pest can do serious damage to new transplants and are most easily managed before populations build to damaging levels. An Integrated Pest Management (IPM) program is an effective means for protecting new transplants.

## HOW TO PLANT A BARE ROOT TREE

- 1 Lay the bare root tree gently down on its side**
- Inspect for: dead, damaged and crossing branches
  - If these conditions are found, prune appropriately



- 2 Hold tree upright**
- Remove any plastic wrapped around the tree or root system
  - Carefully untangle and spread out the roots away from the trunk



- 3 Identify the root flare**
- Measure the distance from the root flare down to the deepest tip of the roots
  - This will determine the depth for planting the bare root tree

- 4 For trees being planted in tree pits along streets and sidewalks**
- Find the center of the tree pit for placement, but make sure there is 3' between the curb and the tree's trunk (to prevent car doors from swinging open and damaging the trees)
  - Align the longest tree branches parallel with the curb



- 5 Dig a hole for planting the bare root tree**
- The shape of the hole you dig should match the shape the tree roots form when spread out from the trunk



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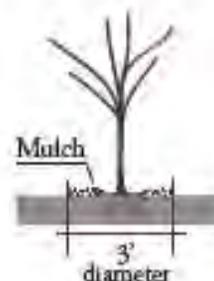
- 6 Place the tree in the hole**
- Make sure the trunk is held in position vertically, the roots are spread out, and the root flare is slightly above the existing ground level



- 7 Backfill the hole**
- Make sure the tree doesn't move out of alignment when filling in the hole
  - Avoid air pockets by breaking up clumps of soil and tamping soil in around the roots
  - When the hole is 3/4 full, add water, then tamp to remove remaining air pockets
  - Add soil to fill, **do not bury the root flare**

- 8 Stake the tree (optional)**
- 

- 9 Add mulch**
- Mulch with clean, organic material using the 3-3-3 method: 3 inches of mulch in a three-foot ring around the tree, leaving a three-inch gap between the mulch and trunk



- 10 Watering the bare root tree**
- Water thoroughly until the entire planting hole is completely saturated
  - Water 15 gallons once a week, increasing to twice a week during drought
  - A deep weekly watering for its first two years is essential to establish a new tree

ENJOY YOUR NEW TREE

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3 states, 13 counties, 1 tree at a time.



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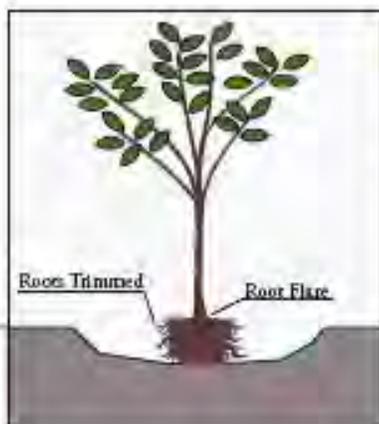
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## HOW TO PLANT A CONTAINER-GROWN TREE

- 1 Be sure to handle your tree by the container; never carry or move a tree by the trunk or branches.
- 2 Remove all tags and twine.
- 3 Prune any dead or broken branches. Removing healthy branches, especially during the first year, adds to the stress of a newly planted tree, so restrict your pruning to dead and broken branches only.
- 4 Now you are ready to remove the tree from its container. Hold the edge of the pot and gently pull the tree upward from the base of the trunk. If the tree doesn't lift out easily, lay it down and press on the sides of the container to loosen the root ball. If roots have grown through the bottom of the pot, you may have to cut the container off.

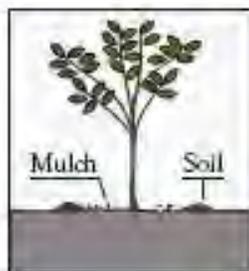


- 5 To encourage healthy root development, use a pruning saw (or serrated kitchen knife) to shave 1-2" from the sides and bottom of the root ball to remove any encircling roots.
- 6 Next, locate the root flare. This is where the trunk begins to widen and change into the root structure. You may need to gently scrape away soil in order to find the flare. The aim is to position the root flare slightly above ground level.

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- 7 Dig a hole at least twice the width of the root ball. It is critical that the depth of the hole puts the root flare slightly above level ground.
- 8 To prevent settling, make sure the bottom of the root ball sits on undisturbed soil. If you dig too deep, return some soil to the hole and pack it down before placing the tree into the hole.
- 9 Make sure the tree is straight and stable before you begin to backfill the hole. Tamp down the soil as you go to remove air pockets.



- 10 Now use soil to form a ring around the tree pit to help retain water.
- 11 Mulch inside the ring with clean, organic material using the 3-3-3 method: three inches of mulch in a three-foot ring around the tree, leaving a three-inch gap between the mulch and trunk.
- 12 Water thoroughly until the entire planting hole is completely saturated. And remember, the most important factor in successfully establishing a tree is **deep weekly watering for its first two years**. Water 15 gallons once a week, increasing to twice a week during drought.



ENJOY YOUR NEW TREE

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# Mulch—Your Tree's Best Friend

Mulching is one of the most valuable things a homeowner can do for a tree's health. Mulch is any material placed on the soil to conserve moisture and improve growing conditions. Common materials include wood chips, bark, pine needles and compost.

However, if mulch is applied too deeply or the wrong material is used, it actually can harm trees and other plants. Take a few minutes to read this flyer, and you'll be well on your way to improving your tree's health and appearance.

## Proper mulching

- Check soil drainage in the area to be mulched. Determine if there are trees or plants that may be affected by the type of mulch. Most organic mulches work well in most landscape situations. Some plants may benefit from mulches such as pine needles or bark that acidify the soil.
- Apply a 2- to 4-inch layer of mulch over well-drained soils. Use a thinner layer on poorly drained soils. The wider the mulch ring, the greater the benefit. Mulch out to the tree's drip line, if possible.
- Do not pile mulch against the tree trunk. Pull mulch back several inches from the trunk so the base of the trunk and root crown are exposed. The mulch-ring shape should resemble a "doughnut," not a "volcano."
- If mulch is already present, check the depth. Do not add more if a sufficient layer is already in place. Break old mulch to break up matted layers and improve its appearance.
- Organic mulches are preferred to inorganic materials. Organic mulches should be well-aerated and composted. Avoid sour-smelling mulch.

## If a little is good, then ...

Over-mulching your tree or piling mulch against the trunk can create the following problems:

- Promote excessive soil moisture and root rot
- Cause inner bark tissue to die
- Lead to insect and disease problems
- Create habitat for rodents that chew the bark and girdle the stem
- Lead to anaerobic conditions that produce alcohols and organic acids toxic to young plants
- Cause imbalances in soil pH



*A properly mulched tree will have a 2- to 4-inch layer of mulch in a doughnut-shaped ring. The ring should extend out to the tree's drip line, if possible.*



*A mulch "volcano" sets the stage for insect and disease problems, root rot and tree decline.*

## Quick Guide: Caring for Your Tree

### Water

*Water is crucial for your tree's survival, particularly during the first year after planting.*

- Water your tree when the soil is dry beneath the mulch. Apply approximately 15-20 gallons of water a week from March until mid November and up to 30 gallons a week during hot and dry weather.
- Trickle water onto the soil surface using a hose, or allow water to seep from a bucket with small holes in the bottom. Watering slowly and deeply is best.

### Weed and Clean

*Weeds and trash can prevent water from reaching your tree's roots, and cause a decline in your tree's health. Substances like motor oil, de-icing salt, detergent, and urine can kill your tree.*

- Weed and clean the area around your tree periodically and prevent toxic substances like dog urine, leaking garbage, car oil or de-icing salt from entering the soil.

### Protect

*Tree roots require water and air for survival. Compacted soil and cemented pits prevent water and air from reaching tree roots.*

- Avoid compacting the soil: don't pile trash, walk, or drive around the tree's roots.
- Never cement over the surface of your tree pit.

*Bark is necessary for protecting the trunk and maintaining tree health.*

- Keep car doors, dogs, string trimmers and bicycles away from the trunk to avoid potential bark wounds.
- If you lay dry brick or stone around your tree, keep the material at least 6 inches away from the trunk and check each year to maintain this space (pavers placed too close to the trunk can strangle the bark as the trunk gets wider).

### Remove Stakes and Straps

*Straps left on your tree for longer than a year may cut into the bark and strangle the tree.*

*Remove and discard stakes and straps one year after planting. On newly planted trees, prune only to remove broken branches.*

### Cultivate

*Loosening the soil surface around your tree encourages water and air to enter the soil.*

- Spring is a good time to cultivate the soil around your tree
- If the soil surface around your tree becomes compacted, loosen the first few inches of soil and break up any large clumps. Avoid damaging any large woody roots.

### Mulch

*Mulch helps conserve water, controls weeds, keeps roots cooler in the summer and warmer in the winter, prevents lawn mower damage and prevents soil compaction.*

- Maintain a 2-4" layer of mulch around your tree, taking care NOT to pack it against the trunk. Recommended mulches include: wood chips, composted leaves and pine needles.
- Always remember to weed and cultivate the soil, before mulching.

### Plant Flowers

*As flowers wilt in the summer heat, they will remind you to water your tree. Unlike grass they won't compete with your tree, such as impatiens, begonias, marigolds, and vincas.*

