



# **STATE OF OREGON LANDSCAPE CONTRACTORS BOARD**



## **PLANT STUDY GUIDE**

COMPILED BY

RICHARD HOLLENBECK

LCB BOARD MEMBER

11/17/06

## INTRODUCTION

This guide is intended for use in studying for the plant and turf identification portions of the LCB licensing exam. The information can be referenced in the current addition of the Sunset Western Garden Book and from the U.S. Department of Agriculture hardiness zones. Botanical terms that describe foliage and flowers is not included on the exam. For definitions and further information on those types of terms consult the Oregon State University Horticulture website at <http://oregonstate.edu/dept/idplants/>; you will find Landscape Images and the Glossary of Some Technical Terms.

Because of the long life of many plants listed, many over 200 years, we have listed the Mature Size and the Landscape Size. The Landscape size is the approximate size 12-15 years after planting in average conditions.

This list contains several plants that are commonly listed as nuisance or weed plants. It is as important to identify these as it is to know plants that are recommended for use.

## PHOTO CREDITS

Dick Hollenbeck; Oregon State Contractors Board

Oregon State University; <http://horticulture.oregonstate.edu/>

## TABLE OF CONTENTS

PLANT LIST_____	page 3
TREES_____	page 6
SHRUBS_____	page 123
VINES_____	page 222
GROUNDCOVERS_____	page 231
PERENNIALS & GRASSES_____	page 252
TURFGRASS_____	page 263

# PLANT LIST

NOTE: The plants on this list were selected by Subject Matter Experts, licensed landscape contractors and educators, on the LCB Exam Committee and approved by the State Landscape Contractors' Board. They represent a group of plants that are in use from different parts of the state.

TREES .....	6
Abies procera .....	7
Acer negundo 'Variegatum' .....	9
Acer platanoides .....	11
Acer rubrum .....	13
Acer saccharinum .....	15
Betula pendula (syn. B. alba and B. verrucosa) .....	21
Cercidiphyllum japonicum .....	29
Cercis canadensis .....	31
Fagus sylvatica .....	47
Fraxinus angustifolia 'Raywood' (syn. F. oxycarpa) .....	49
Fraxinus latifolia (syn. F. oregana) .....	51
Fraxinus pennsylvanica .....	53
Gleditsia triacanthos .....	55
Ilex aquifolium .....	57
Liquidambar styraciflua .....	59
Liriodendron tulipifera .....	61
Magnolia grandiflora .....	63
Magnolia x soulangeana .....	65
Malus floribunda .....	67
Malus sargentii .....	69
Metasequoia glyptostroboides .....	71
Nyssa sylvatica .....	73
Picea abies .....	75
Picea pungens .....	77
Picea sitchensis .....	79
Pinus contorta .....	81
Pinus densiflora .....	83
Pinus strobus .....	85
Platanus acerifolia .....	87
Prunus cerasifera .....	89
Prunus laurocerasus .....	91
Prunus serrulata 'Shirotae' .....	93
Pseudotsuga menziesii .....	95
Pyrus calleryana .....	97
Quercus rubra (syn. Q. borealis) .....	99
Sciadopitys verticillata .....	101
Sequoiadendron giganteum .....	103
Sequoia sempervirens .....	105
Sorbus aucuparia .....	107

Stewartia pseudocamellia .....	109
Styrax japonicus .....	111
Thuja occidentalis .....	113
Thuja plicata .....	115
Thujopsis dolabrata .....	117
Tilia cordata .....	119
Tsuga heterophylla .....	121
SHRUBS .....	123
Abelia x grandiflora (a cross between A. chinensis and A. uniflora) .....	124
Acer circinatum .....	126
Acer palmatum .....	128
Arbutus unedo .....	130
Aucuba japonica .....	132
Aucuba japonica .....	134
Berberis thunbergii .....	136
Berberis verruculosa .....	138
Camellia sasanqua .....	140
Choisya ternata .....	142
Cornus sericea (syn. Cornus stolonifera) .....	144
Corylus avellana .....	146
Cotoneaster horizontalis .....	148
Cotoneaster apiculatus .....	150
Cytisus praecox .....	152
Cytisus scoparius .....	154
Daphne cneorum .....	156
Euonymus alatus .....	158
Fatsia japonica .....	160
Gaultheria shallon .....	162
Hamamelis mollis .....	164
Hydrangea macrophylla .....	166
Hydrangea quercifolia .....	168
Ilex cornuta .....	170
Ilex crenata .....	172
Juniperus chinensis .....	174
Juniperus chinensis .....	176
Juniperus squamata .....	178
Kalmia latifolia .....	180
Kerria japonica .....	182
Leucothoe fontanesiana .....	184
Magnolia stellata .....	186
Mahonia aquifolium .....	188
Myrica californica .....	190
Nandina domestica .....	192
Pieris japonica .....	194
Pinus mugo mugo .....	196
Prunus laurocerasus .....	198
Pyracantha coccinea .....	200
Raphiolepis indica .....	202
Rhododendron .....	204
Rhus typhina .....	206

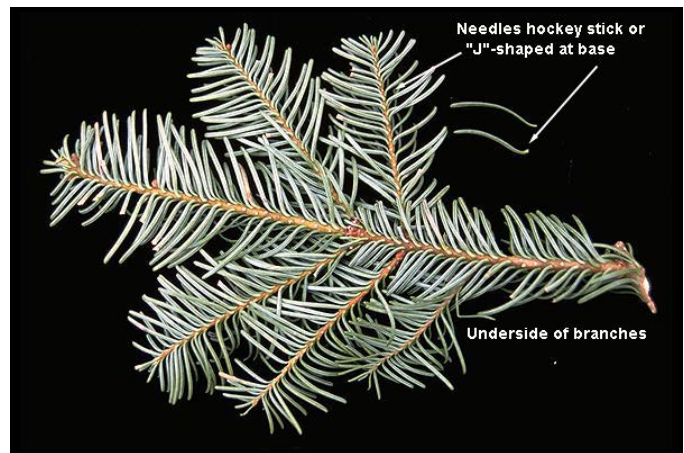


Salix purpurea .....	208
Symphoricarpos albus .....	212
Thuja occidentalis .....	216
Viburnum tinus .....	218
Weigela florida .....	220
VINES .....	222
Actinidia kolomikta .....	223
Clematis armandii .....	225
Clematis montana .....	227
Parthenocissus tricuspidata .....	229
GROUNDCOVERS .....	231
Arctostaphylos uva-ursi .....	232
Ceanothus gloriosus .....	234
Cotoneaster dammeri .....	236
Cytisus x kewensis .....	238
Genista lydia .....	240
Genista pilosa .....	242
Juniperus sabina .....	244
Mahonia repens .....	246
Pachysandra terminalis .....	248
Sarcococca humilis hookeriana .....	250
PERENNIALS .....	252
Festuca ovina .....	253
Hosta sp. ....	255
Miscanthus sinensis .....	257
Phlox subulata .....	259
Senecio cineraria .....	261
TURFGRASS .....	263
Agrostis .....	264
Cynodon dactylon .....	265
Festuca .....	266
Lolium .....	267
Poa pratensis .....	268

# TREES

Botanical Name	<i>Abies procera</i>
Common Name	Noble Fir
Family	Pinaceae
Origin	West slope British Columbia, Washington and Oregon; 3,000-4500'
Type	Evergreen conifer tree
Hardiness	Sunset: A2, A3, 1 – 9, 14 – 17
	USDA: (2) 3 – 7
Growth Rate	Slow when young then moderate
Mature Size	Height: 150-250' Spread: 40-60'
Landscape Size	Height: 10 – 18' , Spread: 3 – 8' Slow in its first 10-20 years
Buds	Brown ovoid, 1/4" or less
Bark & Branches	Dark charcoal, becoming heavily fissured. Young bark gray, smooth with large pitch blisters.
Form	Open layered pyramidal shape when young; old trees oval crowned
Foliage	Needles are arranged on the top of the branch for dense honeycomb effect Needles are stiff & blunt (5/8 – 1" long) with distinct curve at base like a hockey stick; Color: blue green (younger) to dark green (older, especially trees growing in protected sites) with stomatal markings on both sides Clean leaf scar
Cones	Cones are barrel-shaped & upright; Size: 3 – 8" high & 1 – 2 1/2" wide Color: purple reddish brown (mature); Sharp hooked bracts; Cones shatter when ripe
Exposure	Full sun
Soil	Rocky, well-drained soil
Water	Little to no supplemental water in summer. Winter wet, summer dry
Pests	Bowlegged aphid: big (1/4") dark (blends with bark & leaves) sucking insect that releases a toxin that causes knots to form on stems.
Diseases	--
Pruning	Tip-prune to control size & shape
Propagation	Seed
Landscape Use	Specimen conifer for landscape; living Christmas tree
Other	Deep roots; resents transplanting; does not do very well in lower wet elevations

*Abies procera*



US Forest Service  
Pac. Nw. Res. Sta.

Botanical Name:	<u><i>Acer negundo</i></u> 'Variegatum'
Common Name:	Variegated Box Elder or Silver Leaf Box Elder
Family:	Aceracea
Location/Source:	Nursery
Type:	Deciduous tree
Hardiness	Sunset: A2, A3, 1-10, 12-24 USDA: 2-9
Form/Habit:	Oval with horizontal branching
Growth Rate:	Fast
Mature Size:	Height 35-40'; Spread 40-60'
Landscape Size:	Height 16-22'; Spread 24-26'
Branching	Opposite
Twigs/Bark:	Twigs are yellow green, and smooth. Old bark is rough, furrowed, charcoal gray
Foliage:	Leaves are odd pinnately compound, 3"-8" long. 3-5 leaflets have a serrate margin that is cream with a green center. They are 1 ½"-3" long and 1 ½"-2" wide. They turn yellowish in the fall.
Flower:	Not very visible. Greenish flowers in hanging chains
Fruit:	Sterile samaras hang in chains that are 6"-10" long and cream colored
Cultural Requirements	
Exposure:	Full sun
Soil:	Any soil
Water:	Drought tolerant once established
Pruning:	Remove branches that revert back to green leaves.
Pests/Disease:	Variegation is caused by a virus so if the tree is too healthy it starts to revert to green. Aphids.
Propagation:	Grafted
Landscape Use:	Specimen tree or shade tree
Other:	Can also propagate with hardwood cuttings. Tolerates very cold conditions. Tough tree



*Acer negundo* 'Variegatum'



Botanical Name	<i>Acer platanoides</i>
Common Name	Norway Maple
Family	Aceraceae
Origin	Northern Europe (primarily) to western Asia
Type	Deciduous tree
Hardiness	Sunset: A2, A3, 1-9, 14-17
	USDA: 3-9
Growth Rate	Moderate – fast
Mature Size	60-80' H, 60-80' S
Landscape Size	18-22'H, 22-28'S
Branching	Opposite; Terminal bud is large, oval, greenish-red to bright green
Bark	New growth is bright green; Older bark is gray; Old bark is furrowed and black at base
Form	Round crowns
Foliage	Simple, palmate, 5-lobed, leaf (3-6" across) with rectangular shape; generally with 7 veins; Smooth margin on inner part of lobes The petiole is longer than the leaf blade, and it is yellow green; in fall the top of the petiole turns red; Petiole has white, milky sap at the base of the petiole (fall) as does <i>A. macrophyllum</i> ; Grass green color; in fall, leaves turn bright yellow (rarely red)
Flowers	Upright corymbs (2" long) of pale yellow flowers. Showy. Blooms March/April (one of the first trees to flower), before leaves emerge Flower clusters are not as long as those of <i>A. macrophyllum</i>
Fruit	Pair of samaras with 180° spread (almost horizontal), 1½ - 2½" long Samaras start green, and then turn brown; Heavy seeder
Exposure	Shade – sun
Soil	Any; tolerates poor soil
Water	Prefers heavy water but is drought tolerant (leaves will be smaller with less water)
Pests	Aphids!
Diseases	Verticillium Wilt—probably won't kill this vigorous tree immediately, but branches will die
Pruning	Remove dead/damaged wood; <i>Acers</i> don't tolerate heavy pruning, which will stimulate lots of suckering & water sprouts
Propagation	Seed
Landscape Use	Large shade tree, park tree, a tough tree for harsh spots
Problems	Very fibrous, shallow root system lifts pavement; Roots are greedy, and will soak up all water around the tree making life impossible for understory plants; Self-seeds heavily and naturalizes in native areas; nuisance tree

*Acer platanoides*, Norway Maple



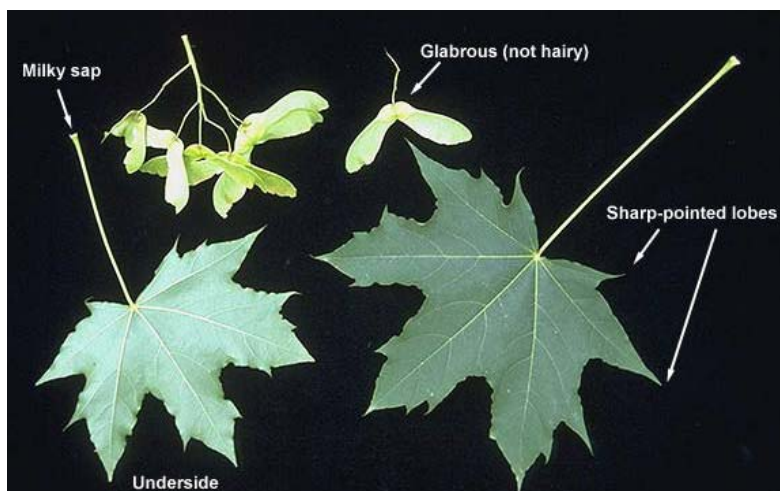
Spring Plant Habit



Autumn Plant Habit



Bark



Leaves



Botanical Name	<i>Acer rubrum</i>
Common Name	Red Maple, Swamp Maple
Family	Aceraceae
Origin	Eastern seaboard: Canada, USA south to Carolinas; usually grows at lower elevations
Type	Deciduous tree
Hardiness	Sunset: 1-9, 14-17, A2, A3
	USDA: 3b-9
Growth Rate	Moderate – rapid
Mature Size	60-80'H, 60-80'S The largest Red Maple is 120'H, 90'S; it's 300-400 years old
Landscape Size	20-30'H, 18-26'S
Branching	Opposite
Bark & branches	Red twigs; buds are small (3/8") and red; Stems are ~ gray Old bark is dark brown to black, rough, shaggy (takes 20-30 years to develop)
Form	Starts ~ upright, and then becomes round
Foliage	Opposite, 3- (5) lobed leaves with entire base margin and serrated lobe margins, 2-4" across; New growth is red; older leaves are dark green with silver undersides; Select trees in fall—color varies (yellow to red), because each tree is genetically different; or plant a cultivar with dependable fall color ('Autumn Flame', 'Red Sunset', 'Morgan')
Flowers	Blooms before leaves emerge; Blooms early spring (one of first to bloom), generally in March in Portland area, for 2-3 weeks Flowers tiny (3/32"), red, round; striking, "soft haze of red"
Fruit	Pair of winged samaras with reddish tint; 3/4" long Wings have distinctive upside down U shape
Exposure	Full sun to fairly heavy shade
Soil	Not fussy; if planted in heavy clay, then the tree will have lots of surface roots; Grow in acidic soil for best fall color
Water	Will tolerate lots of water
Pests	Aphids; yellow jackets attracted to aphid honeydew in fall
Diseases	Verticillium Wilt is usually a problem for maples, but less of a problem for Red Maple because it can tolerate more water.
Pruning	Prune dead/damaged wood; Prune late autumn to mid-winter
Propagation	Seed or grafted
Landscape Use	Street trees, large park trees
Other	Transplants well

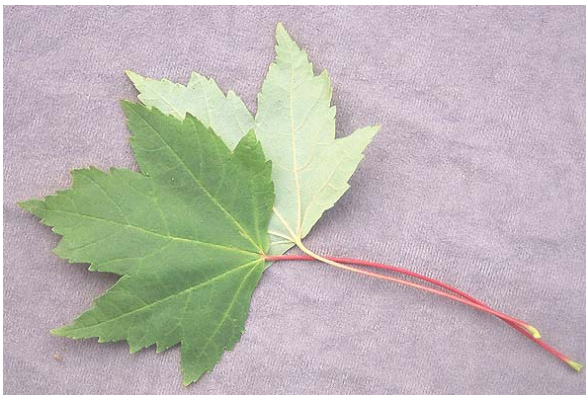
*Acer rubrum*, Red Maple



Flowers



Autumn Leaves



Leaves



Bark

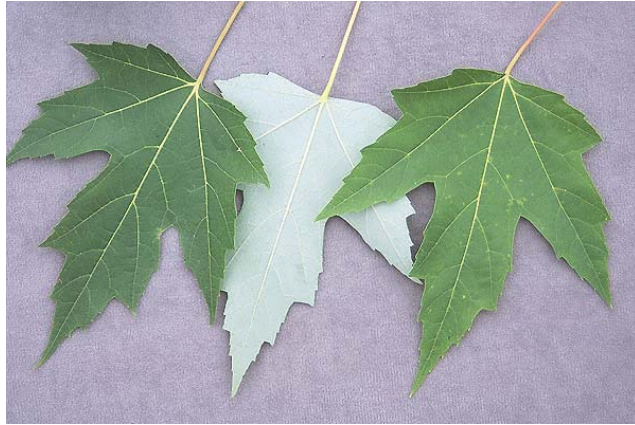
Botanical Name	<i>Acer saccharinum</i>
Common Name	Silver Maple
Family	Aceraceae
Origin	East coast (Canada to Florida, and west to Minnesota & Oklahoma)
Type	Deciduous tree
Hardiness	Sunset: A2, A3, 1-9, 12, 14-24
	USDA: 3-9
Growth Rate	Fast
Mature Size	40-100'H, 55-70' S
Landscape Size	25-35' H, 25-35' S
Branching	Opposite
Bark	Young stems are reddish with small, oval red buds; Older branches/trunk are smooth, silver-gray; Old bark is tightly furrowed, dark gray
Form	Round crown generally with several main scaffold branches Branches are pendulous—they swing down and then up; Branching starts low; Narrow crotches with included bark—brittle, splits easily
Foliage	Opposite, simple leaves (3-6" wide) with 5 deeply-cut lobes & serrate margin; red petiole; Color is grass green on upper surface and silver on the underside; Light yellow fall color
Flowers	Small, green flower buds (1/8") at branch tips look like beads; Yellow-green flowers; Flowers before leafing out
Fruit	Double-winged samaras (1-2" long), green, v-shaped
Exposure	Full sun – shade
Soil	Any
Water	Irrigate during the first season; can survive with/without irrigation after
Pests	Aphids (honeydew & sooty mold mess)
Diseases	-- (can get Verticillium Wilt but it is not common)
Problems	Weak wood is prone to storm damage; Aggressive root system—lots of surface roots that lift sidewalks & driveways and prevent growth of turf
Pruning	Remove dead/damaged wood
Propagation	seed
Landscape Use	Street tree—will grow anywhere & withstand cold winters & hot summers



*Acer saccharinum*, Silver Maple



Autumn Plant Habit



Leaves



Autumn Leaves



Bark

Botanical Name:	<i>Acer saccharum</i>
Common Name:	Sugar Maple
Family:	Aceracea
Location/Source:	Northern US & Canada
Type:	Deciduous Tree
Hardiness	Sunset: 1-10 14-20 USDA: 3-8
Form/Habit:	Strong upright when young, round when older.
Growth Rate:	Slow
Mature Size:	Height 100-120'; Spread 60-90'
Landscape Size:	Height 16-22'; Spread 14-18'
Branching	Opposite
Twigs/Bark:	Branching is opposite. Twigs and terminal buds are brown. Old bark is furrowed with thick plates.
Foliage:	Foliage is opposite. Simple leaves have 5 lobes that have a serrate margin, a long wavy middle tip, long lobes, 3"-6" across. They are medium green and have fire reddish orange fall color.
Flower:	Blooms April. Small yellow green flowers resemble fuzz.
Fruit:	Winged samaras hang down. 1 ½'-2" long, and brown.
Cultural Requirements	
Exposure:	Full Sun
Soil:	Any soil with good drainage
Water:	No irrigation needed once established
Pruning:	Remove dead and damaged wood. Disinfect tools after each cut.
Pests/Disease:	Aphids. Verticillium wilt.
Propagation:	Seed; cultivars grafted
Landscape Use:	Specimen for form and color – large
Other:	Tap root makes it hard to transplant. Slow to become established. Doesn't do well in urban polluted areas. Sap is used for maple syrup.



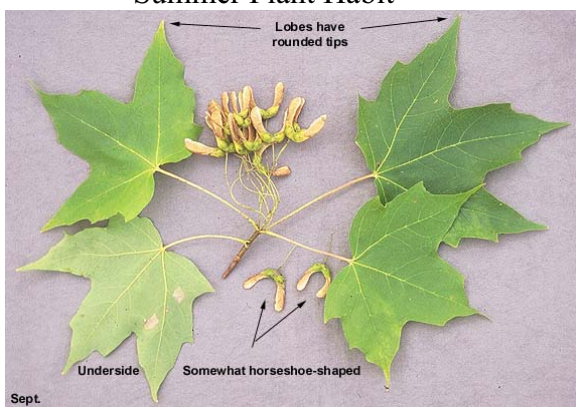
*Acer saccharum*, Sugar Maple



Summer Plant Habit



Autumn Plant Habit



Leaves and Fruit



Autumn Leaves



Bark



Twigs and Buds

Botanical Name:	<i>Arbutus menziesii</i>
Common Name:	Pacific Madrone
Family:	Ericaceae
Location/Source:	Coastal British Columbia south to central California; Siskiyou Mts.
Type:	Evergreen Tree
Hardiness	Sunset: 3-7 14-19 USDA: 6-9
Form/Habit:	Upright oval crown in groves; rounded in open
Growth Rate:	Slow to moderate
Mature Size:	Height 80-100'; Spread 70-80'
Landscape Size:	Height 18-28'; Spread 14-20'
Branching	Alternate
Twigs/Bark:	Twigs hairy reddish brown; old bark peels in strips to shiny smooth red-orange
Foliage:	Simple leaf; oval in shape; heavy cuticle is plastic like, shiny dark green above; dull yellow green below; 3-8" long; 1-2 1/2" wide
Flower:	Late summer bloom; flowers in spike 4-8" long; off-white urn shaped 1/4" flower.
Fruit:	1/2"-5/8" seedy orange to red strawberry like fruit
Cultural Requirements	
Exposure:	Full sun
Soil:	Needs well drained dry soils
Water:	Only during establishment; drought tolerant; avoid nonalkaline water
Pruning:	Remove dead and dying material only
Pests/Disease:	Leaf spot fungus
Propagation:	Seed or tissue culture
Landscape Use:	Native specimen
Other:	Deep taproot and hard to transplant; start small and let grow



*Arbutus menziesii*





Botanical Name	<i>Betula pendula</i> (syn. <i>B. alba</i> and <i>B. verrucosa</i> )
Common Name	European White Birch
Family	Betulaceae
Origin	Europe to Asia minor
Type	Deciduous tree
Hardiness	Sunset: A2, A3, 1-12, 14-24
	USDA: 2-9
Growth Rate	Fast (especially with water)
Mature Size	40-60' H, 20-30' S
Landscape Size	16-22' H, 10-14' S
Branching	Alternate
Bark	New stems are golden brown; Older trunk stays brown for 3-8 years, and then it turns white; The lower part of the trunk becomes fissured & black after 10-12 years
Form	Oval crown; upright branches with weeping branchlets
Foliage	Simple leaves (1½ - 2½" long & wide) with deltoid to rhomboid shape & pointed leaf apex; sharply-toothed margins Glossy dark green color; leaves turn clear yellow in fall
Flowers	Blooms after leaves emerge (May); Catkins: female catkins are fat, tan, & hidden back inside branches; male catkins are green, thin; clustered in pairs; & located at branch tips/tops of trees (wind pollinated)
Fruit	Female catkins produce 1000s of seeds that resemble misshapen sombreros
Exposure	Full sun – heavy shade; best in cool climates
Soil	Not fussy
Water	Regular irrigation
Pests	Leaf miner: adult (¼" black fly); Aphids (!): trees drip with honeydew; Bronze birch borer: bronze-backed adult beetle; larvae eat the inside of branches, girdling the branches and even tops of trees; worse in Midwest
Diseases	--
Pruning	Prune dead/damaged wood; remove lower limbs Prune mid-summer (August); pruning earlier will cause too much bleeding; pruning later will produce a flush of growth that will freeze
Propagation	Seed; grafting for cultivars
Landscape Use	Specimen trees (valued for soft, weeping form); Dramatic planted against background of dark pines; Good in groves
Other	Common in PNW landscapes; young trees do not weep as much
Problems	Water hog: can invade septic tanks & sewer lines; Messy: lots of sticks & leaves to rake; aphid honeydew; Short-lived (80-90 years)

*Betula pendula*, European White Birch



Summer and Winter



Autumn



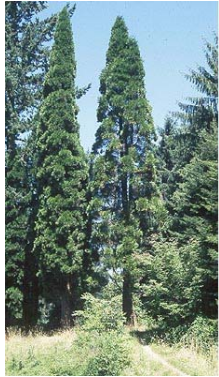
Spring Catkins

Leaves and Bark

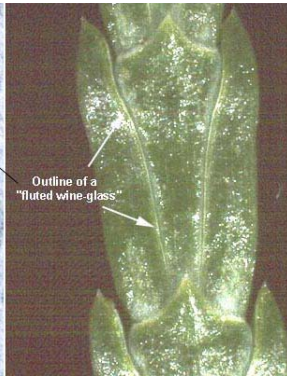
Botanical Name	<i>Calocedrus decurrens</i> (syn. <i>Libocedrus decurrens</i> )
Common Name	Incense Cedar
Family	Cupressaceae
Origin	Mountains of central & southern Oregon, California, west to Nevada & south to northern Baja
Type	Evergreen conifer tree
Hardiness	Sunset: (1) 2 – 12, 14 – 24
	USDA: 3 – 8
Growth Rate	Moderate
Mature Size	100 – 125' H, 30 – 40' S
Landscape Size	18 – 24' H 6 – 10' S
Branching	Randomly branched
Bark & Branches	Red-brown bark peels in vertical flat strips; Trunk flared at base;
Form	Symmetrical, dense, narrow, columnar to pyramidal shape
Foliage	Bright green flattened scales, each longer than wide with 4 pointed ends No stomatal markings; Aromatic when crushed
Cones	Small green bivalve “duck's bill” cones; Color: yellow-to-reddish brown Center splits open when mature “duck’s bill”; Heavy cone set when older
Exposure	Full sun (like hot, dry climates)
Soil	Needs very good drainage (sometimes clay is OK if it has good drainage)
Water	No summer irrigation needed Will tolerate some summer irrigation with good drainage
Pests	--
Diseases	Alternate host for Cedar Apple Rust—looks like jelly cup fungus; affects apples, crabapples
Pruning	Not usually necessary because of neat, symmetrical habit Remove dead/damaged wood
Propagation	Seed
Landscape Use	Large specimen or screen
Other	Tolerates heat, drought, urban pollution and poor soils; Fragrant oil is natural moth repellent; Wood used for cedar-lined chests, boxes



*Calocedrus decurrens*, Incense Cedar



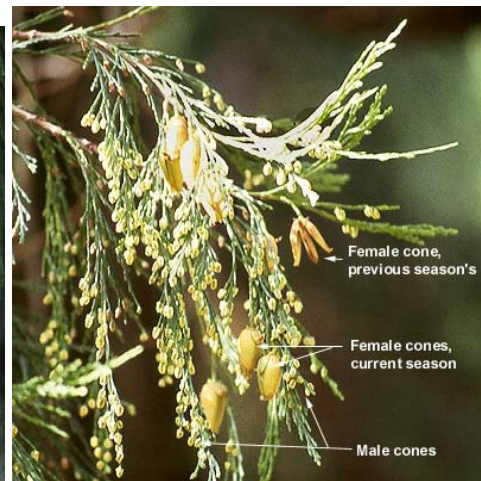
Habit



Leaves



Branchlets and Male Cones



Male and Female Cones



Young Bark



Old Bark

Botanical Name	<i>Cedrus atlantica</i> ‘Glauca’
Common Name	Blue Atlas Cedar
Family	Pinaceae
Origin	Nursery; The straight species came from northern Africa, but few trees are left now. They were logged in pre-biblical times for ships, resulting in desertification of the region.
Type	Evergreen conifer tree
Hardiness	Sunset: 3b – 10, 14 – 24 (tolerates hot, dry climates but not cold ones)
	USDA: 6 – 8
Growth Rate	Moderate (fast)
Mature Size	60 – 80’ H, 40 – 60’ S
Landscape Size	16 – 20’ H, 10 – 16’ S
Branching	~ whorled to irregular
Bark & Branches	New stems/bark are gray-green, smooth Older bark is rough, plated (rectangular plates), charcoal-gray
Form	Young: gangly & open; central leader has irregular, upright branches Older: flat-topped oval; tree becomes denser, rounder
Foliage	2 leaf arrangements: new needles at branch ends are single & whorled; older needles arranged in clusters of 15 – 30 needles on spur shoots; Size: $\frac{3}{4}$ - 1½” long; Color: silver-blue; clustered needles on spur shoots are bluer in color
Cones	*Male: large, reddish-brown catkins, 2½ - 3” long & $\frac{3}{8}$ – ½” wide; resemble caterpillars; Blue forms tend to have fewer catkins *Female cones upright & barrel-shaped, 2½ - 4” long; Resinous, tight, blue-green (immature) to tan (mature); Take 2 –3 years to develop; they shatter when mature, leaving only the central spike on the tree
Exposure	Full sun
Soil	Well-drained!
Water	Irrigate only until established or not at all Very drought & heat tolerant
Pests	Bowlegged Fir Aphid: big black aphid that can cause lots of tip damage; inspect plants weekly, especially in spring
Diseases	--
Pruning	Remove dead/damaged wood; Can pinch tips to get denser form
Propagation	Grafted
Landscape Use	Large specimen conifer, good in hot, dry locations
Other	Wood is brittle, & branches could break in ice storms/heavy snows Deep-rooted but no tap root



*Cedrus atlantica* 'Glauca', Blue Atlas Cedar



Habit



Older Plant Habit



Needle Clusters



Cone and Needles



Male Cones at Pollen Release, Autumn

Botanical Name	<i>Cedrus deodara</i>
Common Name	Deodar Cedar
Family	Pinaceae
Origin	Lower Himalayas
Type	Evergreen conifer tree
Hardiness	Sunset: 3b – 10, 14 – 24
	USDA: 6 – 8
Growth Rate	Fast
Mature Size	75 – 80' H, 50 – 60' S
Landscape Size	25 – 40' H, 25 – 40' S
Branching	Radial
Bark & Branches	Similar to <i>Cedrus atlantica</i> 'Glauca'; New twigs: silver gray; Main trunk: plated, dark gray
Form	Young: broad pyramid with long sweeping branches & weeping top Older (> 80 years): broad, flat-topped vase
Foliage	Younger needles arranged radially on branch tips; Older needles (> 20 needles per cluster) on spur shoots farther back on branch; spurs are farther apart vs. <i>Cedrus atlantica</i> & create more open effect; Needles soft, long (1½ - 2½" long); Color: blue-green (especially at tips) to dark sea green (needles farther back on branch)
Cones	Male: heavy cone set (2½ - 4" long); trees set 100s of cones some years; cones resemble large worms; Female: tan to brown cones (3" long, 2½ wide at base); cones shatter when ripe, leaving a central spike on branch; tree forms cones > 12 – 15 years old
Exposure	Full sun
Soil	Not fussy—but needs good drainage
Water	With or without irrigation
Pests	--
Diseases	--
Problems	Wood is brittle & breaks easily in storms; Foliage burns in cold (east) winds Highly susceptible to 2-4D products (herbicide) that can cause total defoliation
Pruning	Remove dead/damaged wood; Head up, if desired Control spread of tree by cutting new growth of side branches halfway back in spring; this will also make tree denser
Propagation	Seed—easy; seedling variation
Landscape Use	Large specimen conifer for large areas, parks; used as stock plant for grafted cultivars
Other	Deep-rooted



*Cedrus deodara*, Deodar Cedar



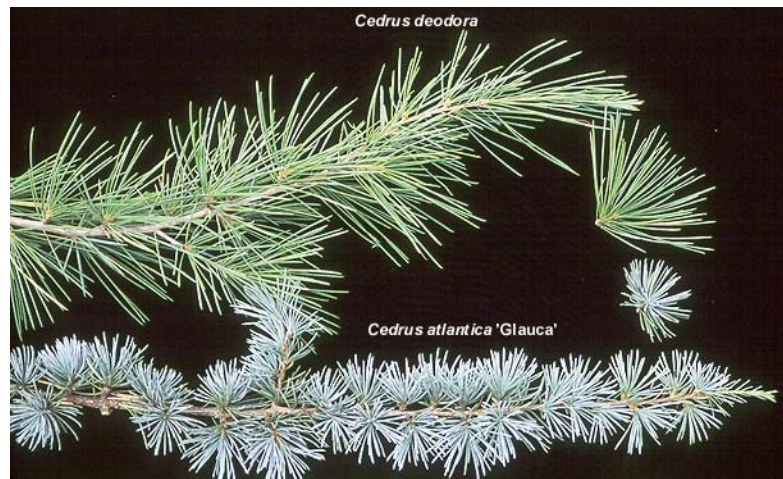
Young and Old Habits



Branch



Bark



Comparison



Botanical Name	<i>Cercidiphyllum japonicum</i>
Common Name	Katsura Tree
Family	Cercidiphyllaceae
Origin	Japan, parts of Korea
Type	Deciduous tree
Hardiness	Sunset: 2b-6, 14-16, 18-20
	USDA: 4-8
Growth Rate	Moderate
Mature Size	40-60' (100') H, 40-60'S (in about 200 years)
Landscape Size	18-24'H, 18-24'S
Branching	Sub-opposite (new buds start opposite, but older leaves become alternate)
Bark	Distinctive: grayish when younger, and then rough, shaggy, peels in vertical strips, dark brown to black
Form	Pyramidal when younger; older tree has rounder form; Nice winter shape
Foliage	Simple, cordate leaf (1½ - 3" across) with crenate margin; Leaf blade hangs at right angle from (reddish) petiole, and leaves hang in nice, even rows from branches; New growth reddish, then it turns grass green; Notable fall color—yellow, apricot, red—depends on sun exposure & water; leaves usually fall by November in Portland area; Leaves smell like burnt sugar/cotton candy, especially heaps of fallen leaves
Flowers	Tiny (1/4"), rose-pink, pea-like flowers in leaf axils; not showy, sparse Bloom in late spring
Fruit	Wavy, black pea pods (¾-1" long) in leaf axils; Forms every 3-4 years; sparse
Exposure	Full sun best (part shade ok)
Soil	Tolerates a wide range of soils; heavy clay is ok if it is not boggy
Water	Some irrigation; with no irrigation, the tree will lose its leaves by October
Pests	Few to no pests
Diseases	Verticillium Wilt (if soil boggy)
Pruning	Little required; remove dead/damaged wood
Propagation	Seed (not common)
Landscape Use	Grown for foliage; small to medium tree often used in commercial landscapes & as specimens in residences
Other	Dioecious ; Variety 'Pendulum' is a weeping form

*Cercidiphyllum japonicum*, Katsura Tree



Spring



Summer



Fall



Branches



Autumn Leaves

Botanical Name	<i>Cercis canadensis</i>
Common Name	Eastern Redbud
Family	Fabaceae
Origin	Eastern USA seaboard (Canada to Mexico)
Type	Deciduous tree
Hardiness	Sunset: 1 –24
	USDA: 4 – 9
Growth Rate	Slow to moderate
Mature Size	25 – 35’ H, 30 – 50’ S
Landscape Size	12 – 16’ H, 14 – 18’ S
Branching	Alternate; Pseudo-terminal bud (zigzag)
Bark	New twigs are reddish; Gray-green branches with magenta flower buds present in fall; Older bark/trunk is black and splits vertically to reveal cinnamon-red bark inside (especially in colder climates)
Form	Broad to horizontal oval crown; ascending branches & somewhat flat top Can have multiple trunks
Foliage	Alternate, simple leaves (2 ½ - 4”); cordate; entire margin; Petiole has conspicuous swelling just below leaf blade; Color: new growth is reddish; mature leaves are medium green; Autumn Color: yellow-orange; not spectacular
Flowers	Clusters of small, pea-like flowers (3/16”); bright pink to magenta Blooms in mid-April, just before or at the time the leaves emerge Flowers last 3 – 4 weeks
Fruit	Flat, black peapod (1½”); Does not set much fruit
Exposure	Full sun
Soil	Well-drained! Does not tolerate clay
Water	Water deeply but infrequently
Pests	--
Diseases	Verticillium Wilt (very susceptible)
Pruning	Little necessary; Remove lower branches (head-up) and dead/dying wood Disinfect pruners after every cut to prevent spread of Verticillium Wilt
Propagation	seed
Landscape Use	Specimen tree
Other	Sensitive root systems—don’t move the tree once it has been planted; don’t fill over root zone; don’t plant underneath tree; leave tree alone. Mulch!; Cultivars: ‘Alba’ with white flowers and ‘Forest Pansy’ with deep purple leaves (sensitive; does not tolerate as much sun as species)



*Cercis canadensis*, Eastern Redbud



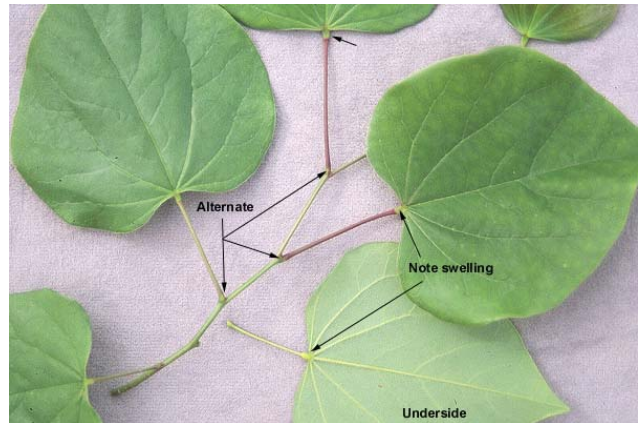
Habit, Spring



Habit, Summer



Flowers



Leaves



Habit, Autumn

Botanical Name:	<i>Cornus florida</i> Var.
Common Name:	Eastern Flowering Dogwood
Family:	Cornaceae
Location/Source:	Eastern United States
Type:	Deciduous Tree
Hardiness	Sunset: 1-9 14-16 USDA: 3-8
Form/Habit:	Round single trunked tree
Growth Rate:	Slow to Moderate
Mature Size:	Height 20-30'; Spread 20-30'
Landscape Size:	Height 12-16'; Spread 12-16'
Branching	Opposite
Twigs/Bark:	Twigs slender gray with small sharply pointed bud; old bark charcoal and plated.
Foliage:	Simple leaf; elliptic in shape; entire margin with pointed apex; 2-4" long 1-2" wide; pinnately arcuate (bowed) venation; medium green above silver green underside; excellent red fall color
Flower:	Bloom April/May; four notched white bracts 1 ½-3" across with small 3/8" green flower cluster in center; lasts 4-5 weeks
Fruit:	5/16 long slender oval red berry; most taken by birds
Cultural Requirements	
Exposure:	Full sun
Soil:	Well drained soil; best if planted on berms in areas of heavy soil
Water:	Little water required once established
Pruning:	Remove dead and dying material; do not prune heavily
Pests/Disease:	Borers; sunburn on young tree trunks; anthracnose and botrytis
Propagation:	Seed and grafting
Landscape Use:	Small specimen trees
Other:	Purchase only B&B or Container grown plants

*Cornus florida*



Botanical Name:	<i>Cornus kousa</i>
Common Name:	Kousa Dogwood
Family:	Cornaceae
Location/Source:	Asia – Japan, Korea, China
Type:	Deciduous tree/shrub
Hardiness	Sunset: 2-9 14-17 USDA: 65B-8
Form/Habit:	Dense spreading horizontal multi-stemmed shrub, delicate
Growth Rate:	Slow
Mature Size:	Height 30-40'; Spread 30-40'
Landscape Size:	Height 10-18'; Spread 8-12'
Branching	Opposite
Twigs/Bark:	Initially smooth and light brown, later exfoliating into small patches forming a tan and brown camouflage pattern.
Foliage:	Medium green leaves, 4"L, rusty brown hairs at base of veins on undersurface. Narrow elliptic 1-2"W with strong bowed veination; red to orange fall color
Flower:	Along top of branches above leaves in late spring or early summer. 2-3"L bracts with slender sharp pointed tips, turn pink along edges. Inconspicuous flowers in center of showy bracts.
Fruit:	Heavy set of 1/2-5/8" pink raspberry like fruit; edible
Cultural Requirements	
Exposure:	Full sun to light shade
Soil:	Well drained, not too fussy
Water:	Regular
Pruning:	Tolerates heavy pruning; continues to sucker at base
Pests/Disease:	Few. Resistant to anthracnose
Propagation:	Seed or cuttings
Landscape Use:	Flowering specimen
Other:	'Chinensis' has larger bracts and foliage



*Cornus kousa*





Botanical Name:	<i>Cornus nuttallii</i>
Common Name:	Pacific Dogwood
Family:	Cornaceae
Location/Source:	Western coast British Columbia, Oregon, Washington to Northern California
Type:	Deciduous Tree
Hardiness	Sunset: 3b-9; 14-20 USDA 5-8
Form/Habit:	Oval crowned in woodland, round headed in open
Growth Rate:	Moderate
Mature Size:	Height: 40-50'; Spread 25-40'
Landscape Size:	Height: 16-22'; Spread: 14-18'
Branching	Opposite
Twigs/Bark:	Twigs smooth gray green; older bark smooth gray; Flower buds button like to ¾" with 4 to six bracts
Foliage:	Simple leaf; flat elliptic to oval 3-5" long; 1-2"+ wide; medium green and pale green underside; heavy bowed veination; yellow to orange fall color
Flower:	Flowers early April; small green flowers in button like cluster ½ to ¾" surrounded by 4-6 pointed pure white bracts; often a second light bloom in fall.
Fruit:	Oval 3/8" red berries; edible; liked by birds
Cultural Requirements	
Exposure:	Full sun to shade; trunk needs protection from full sun
Soil:	Best in rich humus soils with good drainage
Water:	Once established keep on dry side
Pruning:	Dead and dying material only
Pests/Disease:	Very susceptible to anthracnose; be sure of good air circulation
Propagation:	seed
Landscape Use:	Specimen, native flowering tree
Other:	Use only B&B or containerized plants; does not transplant well; cultivars Colrigo Giant and Goldspot with gold splashed leaves

*Cornus nuttallii*



Botanical Name	<i>Cotinus coggygria</i> 'Royal Purple'
Common Name	Royal Purple Smoke Tree
Family	Anacardiaceae
Origin	Nursery
Type	Deciduous shrub/tree
Hardiness	Sunset: 1-3, 10, 11 (and 6 although Sunset does not list it)
	USDA: 4-8
Growth Rate	Moderate (faster than <i>C. coggygria</i> )
Mature Size	16-30+' H, 12-20' S
Landscape Size	12-18' H, 8-12' S (larger than <i>C. coggygria</i> because faster growth rate)
Branching	Alternate
Bark	Blue-gray stems Older bark is gray-brown, slightly rough Dead twig tips are the old flower stems
Form	Upright oval (not as broad as <i>C. coggygria</i> )
Foliage	Alternate (looks whorled because leaves clustered at branch ends) Simple, oval leaves (2½- 3" long; bigger than <i>C. coggygria</i> ) with entire margin; Dark purple color with blood-red edge in Spring & Summer In autumn, the purple color fades, and the leaves turn orange to yellow-orange especially in full sun ; Distinctive fragrance
Flowers	Terminal panicles (6-8" long; larger than <i>C. coggygria</i> ) Individual flowers inconspicuous but the clusters are showy Blooms July-August (in Portland area)
Fruit	Pinkish-purple hairs on flower stems for purple smoke; seeds (small, ovoid, & inconspicuous) are at the end of the stem; Most dramatic August-September (Portland area); Sets seed fast
Exposure	Full sun
Soil	Good drainage!
Water	No summer irrigation after first season
Pests	--
Diseases	Root rot, Verticillium Wilt (especially when gets too much water)
Pruning	Remove dead/damaged wood (disinfect tools between cuts to prevent spread of Verticillium Wilt); Can coppice to get larger leaves (but no flowers)
Propagation	Cuttings (spring; can be difficult); Layering (late winter, early spring; easy)
Landscape Use	Small specimen tree/shrub, grows well in containers
Other	<i>Cotinus coggygria</i> 'Royal Purple' is purple and larger, more vigorous than <i>Cotinus coggygria</i> ., Leaves are greener with shade



*Cotinus coggygria* 'Royal Purple', Royal Purple Smoke Tree



Plant Habit



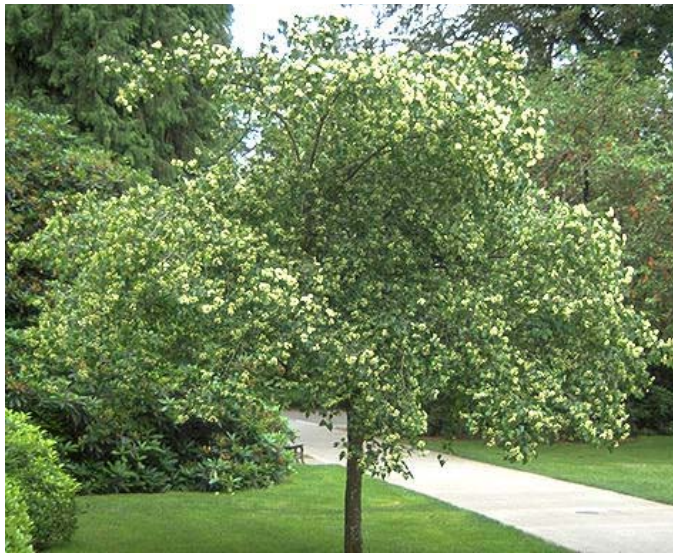
Flowers



Leaves

Botanical Name	<i>Crataegus phaenopyrum</i> (syn. <i>C. cordata</i> )
Common Name	Washington Hawthorn
Family	Rosaceae
Origin	Upper Midwest & southern USA
Type	Deciduous tree
Hardiness	Sunset: 2 – 12, 14 – 17
	USDA: 3 – 8
Form	Nursery: often a single-trunked tree with pyramidal shape Wild seedling: often multi-stemmed
Growth Rate	Slow to moderate
Mature Size	25 – 40' H, 20 – 30' S
Landscape Size	12 – 18'H, 8 – 14' S
Branching	Alternate
Bark & branches	New twigs are reddish Branches are gray-green and have thorns (1 – 4" long, very stiff, reddish)! Barks peels in vertical strips (shaggy), brown
Foliage	Alternate, simple leaves (1½ - 2 (3)" long & wide) with 3 – 5 lobes, rounded base, & serrate margin; looks like a small maple leaf Color: Upper is very glossy, dark green; underside is pale yellow Fall Color: orange & scarlet on same plant; excellent; colors up late
Flowers	Loose corymbs of cream-white flowers (3/8") with 5 white petals & yellow centers (stamens with pink-red anthers) Fly pollinated: flowers ~ smelly Bloom in early May
Fruit	Heavy berry set 20-30 shiny orange-red berries (¼") with persistent sepals Very showy until robins eat them all; attracts birds
Exposure	Full sun
Soil	Any
Water	With or without irrigation; keep on dry side to avoid rank growth
Pests	Tent caterpillar in spring
Diseases	Fire blight & Hawthorn blight are generally a problem for hawthorn, but less of a problem for Washington Hawthorn
Problems	Suckers from roots if roots disturbed Birds plant the seeds, but seedlings are not a big problem
Pruning	Remove dead/damaged wood Can remove lower branches to create higher crown
Propagation	Seed
Landscape Use	Containers; tolerates tight, hot spots (next to buildings/in patios); good bird tree; street or lawn tree





Flowering Habit



Flowers



Leaves and Berries



Autumn Leaves



Winter Habit



Botanical Name:	<i>Cupressus arizonica</i>
Common Name:	Arizona Cypress
Family:	Cupressaceae
Location/Source:	Central Arizona
Type:	Conifer tree
Hardiness	Sunset: 7-24 USDA 5-9
Form/Habit:	Broad pyramidal when young, rounded with age
Growth Rate:	Moderate to fast
Mature Size:	Height: 35-50' Spread: 15-25'
Landscape Size:	Height: 12-20' Spread: 6-12'
Branching	Random
Twigs/Bark:	Twigs, silver gray, scaly; old bark gray green rough plated and pitchy
Foliage:	Small scale like needles on cord like branches, green to silver gray
Flower:	Small male catkin roundish with yellow pollen
Fruit:	Peltate cone like soccer ball, 1" diameter
Cultural Requirements	
Exposure:	Full sun
Soil:	Best in sandy well drained soils
Water:	Very deep rooted and drought tolerant, light irrigation only
Pruning:	None required
Pests/Disease:	Few problems
Propagation:	Seed or cuttings
Landscape Use:	Specimen trees or windbreaks in hot dry areas
Other:	Plant small, 3-4' size or very subject to windthrow

*Cupressus arizonica*



Botanical Name	<i>X Cupressocyparis leylandii</i>
Common Name	Castlewellan Cypress
Family	Cupressaceae
Origin	Nursery
Type	Evergreen conifer tree
Hardiness	Sunset: 3b – 24
	USDA: 6 – 9
Form	Strong pyramid shape with branches to ground even when young Denser than Leyland Cypress
Growth Rate	Fast
Mature Size	30 – 40' + H, 18 – 24' S (ultimate height not known, because it hasn't been around very long)
Landscape Size	15 – 25+’ H, 10 – 25’ S
Bark & Branches	Stringy with vertically peeling bark, brown with reddish highlights (like a cedar)
Foliage	Flattened sprays of foliage (like <i>C. nootkatensis</i> but not droopy) Color: blue-green with NO stomatal markings
Cones	Sets few cones; Peltate with prominent bosses; gray-green; ¼” big; resemble those of <i>C. nootkatensis</i>
Exposure	<b>Full sun</b>
Soil	Best in well-drained soil—no clay
Water	With or without
Pests	--
Diseases	Fungus problems in very humid, damp climates
Pruning	Remove dead/damaged branches; Shear (for 12-foot hedge, shear at 5 – 6')
Propagation	Tip cuttings
Landscape Use	Great hedge (fast & thick) is sheared regularly (2 – 3 times a year) Specimen tree; 'Castlewellan' with yellow branch tips is used more than Leland Cypress
Other	Plant 10' apart for dense hedge—take care with spacing; people usually don't give enough room to this vigorous tree Very dense = high wind resistance; use guy wires for big trees for 5 – 6 years



*Cupressocyparis x leylandii*, Leyland Cypress



Habit



Leaves



Trunk

Botanical Name	<i>Fagus sylvatica</i>
Common Name	European Beech
Family	Fagaceae
Origin	Europe (primary tree in Robin Hood's Sherwood Forest)
Type	Deciduous tree
Hardiness	Sunset: A3, 2b-9, 14-21
	USDA: (3) 4-8
Form	Broad, cone-shaped to broad, round-headed tree
Growth Rate	Slow to start and then moderate
Mature Size	60-100' H, 60-80' (90') S
Landscape Size	16-24' H, 16-24' S
Branching	Alternate; Narrow thin twigs with pseudo-terminal bud (zigzag branch tips) Bright green, pointed terminal bud (5/8 – 1")
Bark	Smooth, gray bark; Buttress roots form when tree is old Bark is wrinkled where scaffold branches emerge from trunk—elephant's skin
Foliage	Simple, elliptic-ovate/oval leaves (1½ - 3" long, 1 – 2" wide); Margin is entire, wavy; in spring, the newly emerging leaves have ciliate margins (silver hairs sparkle in sun); Color is medium green on surface & pale green on the underside; Poor fall color: leaves turn russet-brown, linger on tree (often into winter)
Flowers	Blooms in late spring (April/May in Portland area) with leaves; Inconspicuous, monoecious flowers (males in spherical heads, females in pairs)
Fruit	4-parted, spiny husk (3/4") opens to reveal 2-3 reddish brown, 3-sided nuts Source of flavoring for beech nut chew & beech nut gum
Exposure	Full sun
Soil	Well-drained soil; neutral pH (6-7) best; salts in soil or water stunt growth
Water	Some summer irrigation
Pests	Woolly (beech) aphid—cause little damage to tree but honeydew is messy
Diseases	--
Pruning	Remove dead/damaged wood
Propagation	Seed (stratify)
Landscape Use	Large park or estate trees; generally too big to be good street trees Hedging or pleaching (AHS)
Other	Trees get transplant shock, and will be slow to start growing Large trees are hard to transplant
Problems	Aggressive roots use available water & nutrients; Trees create dense shade Tannins in leaves suppress undergrowth; Honeydew & sooty mold mess from aphids

*Fagus sylvatica*, European Beech



Plant Habit



Leaves, Fruit, and Buds



Autumn Leaves



Botanical Name	<i>Fraxinus angustifolia</i> 'Raywood' (syn. <i>F. oxycarpa</i> )
Common Name	Raywood Ash, Claret Ash
Family	Oleaceae
Origin	Nursery
Type	Deciduous tree
Hardiness	Sunset: 2b – 9, 12 - 24
	USDA: 5 – 8
Form	Narrow, upright oval when young Round head when older
Growth Rate	Moderate
Mature Size	Height: 40 – 60' Spread: 30 – 45'
Landscape Size	Height: 18 – 24' Spread: 14 – 20'
Branching	Opposite Terminal bud is dark, almost black; smaller than other ashes
Bark	Stems are dark brown Old bark is dark gray, fissured
Foliage	Opposite, odd pinnately compound leaves; usually 4-6" long but can be 6-8" (10"). Narrow elliptic to lancolate leaflets with serrate margins (2-2½" long, < ½" wide) Foliage grouped at the ends of the branches in 4s or whorled. Medium green color on surface, paler green beneath; wine red fall color Fine-textured
Flowers	--
Fruit	--
Exposure	Full sun
Soil	Well-drained
Water	Moderate
Pests	Borers
Diseases	Sudden Ash Decline: branch tips start to die, and within 2-3 years the entire tree dies; common; unknown cause
Pruning	Remove dead/damaged wood
Propagation	Cuttings; grafted
Landscape Use:	Specimen tree used for fine texture, small stature, and fall color
Other:	Straight species turns yellow-gold in autumn

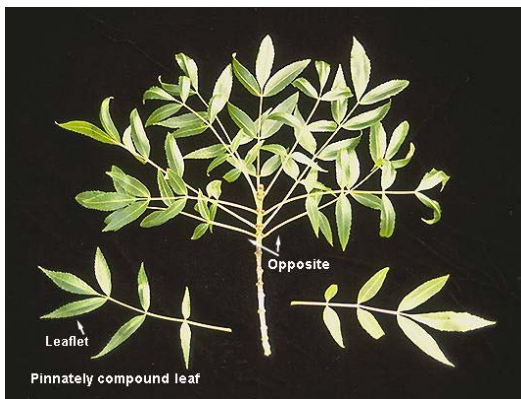
*Fraxinus angustifolia* 'Raywood', Raywood Ash



Plant Habit



Autumn



Leaves



Autumn Leaves



Bark

Botanical Name	<i>Fraxinus latifolia</i> (syn. <i>F. oregana</i> )
Common Name	Oregon Ash
Family	Oleaceae
Origin	Northern BC to Northern CA; greatest number in Puget Trough & Willamette Valley to 2000'; riparian areas
Type	Deciduous tree
Hardiness	Sunset: 3-9, 14-24
	USDA: 4-5 (doesn't grow well in hot summer regions)
Form	Oval crown
Growth Rate	Fast (especially when young) – moderate (depending on water)
Mature Size	Height: 40-80" Spread: 30-50'
Landscape Size	Height: 18-26' Spread: 14-22'
Branching	Opposite: Terminal bud is hairy, dark brown
Bark	New stems are shiny, green-brown; Old wood is tightly furrowed, light to medium gray
Foliage	Odd pinnately compound, opposite leaves (6-10" long) with 3-7 oval leaflets (1½ -3" long, 1-2" wide) ; the uppermost, odd leaflet is often the largest; sparsely serrate – entire margin; The rachis is less wavy than that of other species; Medium green color; Fall color is poor: yellow often with brown specks
Flowers	Dioecious; inconspicuous green flowers; Flowers after leaves emerge (May)
Fruit	Heavy seed set; 4-8" clusters or chains of seeds; Individual seeds are single-winged samaras (2" long), green ⇒tan ⇒brown
Exposure	Full sun to heavy shade
Soil	Normally grows in heavy wet clay
Water	Regular – heavy irrigation; Will tolerate standing water during winter months— even 2-3' deep for up to a month
Pests	aphids
Diseases	--
Pruning	Remove dead/damaged wood
Propagation	Seed (stratify sometimes need double stratification)
Landscape Use:	Riparian restoration; native plantings; heavy wet clay areas
Other:	Ash has nice, white, narrow-grained wood; Presence of OR ash indicates that the water table is at or near the soil surface
Problems	Messy—lots of stem dieback; Self-seeds; Needs lots of water or leaves will scorch



*Fraxinus latifolia*, Oregon Ash



Plant Habit



Plant Habit



Bark



Leaves and Fruit



Autumn Leaf

Botanical Name	<i>Fraxinus pennsylvanica</i> ‘Marshall Seedless’
Common Name	Marshall Seedless Ash
Family	Oleaceae
Origin	Nursery
Type	Deciduous tree
Hardiness	Sunset: 1-6, A1, A2
	USDA: 3-8
Form	Wide, round form; Central leader with outward, horizontal spreading branches
Growth Rate	moderate
Mature Size	Height: 50-60’ Spread: 40-50’
Landscape Size	Height: 18-24’ Spread: 14-18’+
Branching	Opposite; Flattened nodes
Twigs: Bark	Hairy, brown terminal bud; Gray-green twigs; older bark fissured gray
Foliage	Odd pinnately compound leaves (6-10” long) with 5-9 elliptic to lanceolate leaflets (2-3” long, ¾ - 1” wide); Medium-green color; clear yellow fall color early (2-3 weeks before <i>F.</i> ‘Summit’); Leaf is similar to that of <i>F.</i> ‘Summit’ but a bit smaller
Flowers	--
Fruit	--
Exposure	Full sun
Soil	Any soils with good drainage
Water	Light summer irrigation best; Slightly drought tolerant, but moist soils ok with good drainage
Pests	--
Diseases	--
Problems	Leaf scorch will occur in hot, dry summers without irrigation
Pruning	Remove dead/damaged wood
Propagation	Grafted
Landscape Use	Street trees; good lawn tree because it loses leaves early and leafs out late



*Fraxinus pennsylvanica* 'Marshall Seedless', Marshall Seedless Ash



Habit in Autumn



Autumn Leaves



Habit in Winter

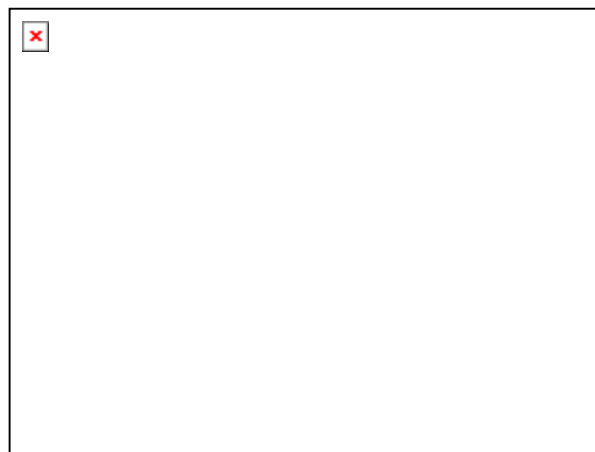
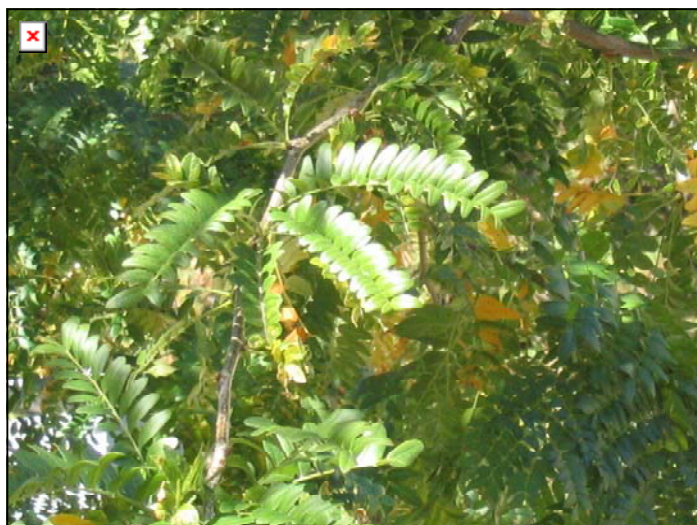
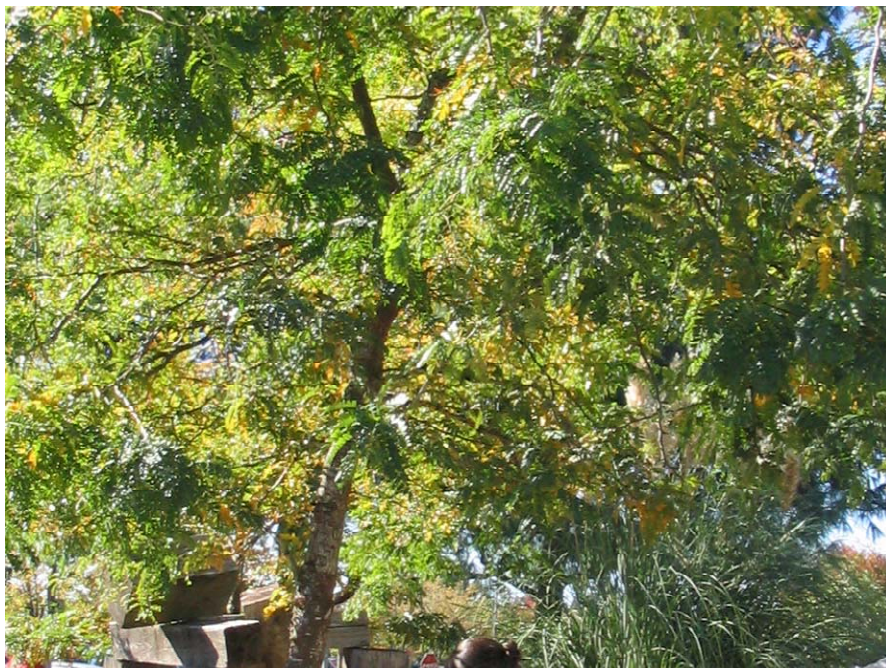


Bark



Botanical Name	<i>Gleditsia triacanthos</i> ‘Sunburst’
Common Name	Sunburst Honeylocust
Family	Fabaceae
Origin	nursery
Type	Deciduous tree
Hardiness	Sunset: 1-16, 18-20
	USDA: 3-9
Form	Upright, vase-shaped form; lacy appearance, especially from a distance
Growth Rate	Moderate-fast
Mature Size	Height: 40-50’ Spread: 25-35’ (40’)
Landscape Size	Height: 16-22’ (24’) Spread: 14-18’+
Branching	Alternate Pseudo-terminal bud—zigzag branch ends
Bark	Twigs are green Older bark is stringy with narrow fissures, dark brown Main trunk has large thorns (9” spikes) starting low on the trunk
Foliage	Both even pinnately (young leaves) and bi-pinnately (older leaves); compound leaves (6-8” long) with 20-30 leaflets (1/3 – 1” long) with elliptic shape and ~ entire margin; Young leaves are bright yellow; mature leaves are pale green; fall color is yellow
Flowers	No flowers
Fruit	No fruit
Exposure	Full sun
Soil	Well-drained soil Tolerant of acidic and alkaline soils
Water	Drought tolerant once established, but it will tolerate more water
Pests	Pod gall aphid
Diseases	--
Pruning	Remove dead/damaged wood
Problems	Yellow color can look anemic unless trees planted near dark green plants Wind breakage
Propagation	Hardwood cuttings, sometimes grafted onto straight species
Landscape Use:	Good lawn tree—drops leaves early and leafs out late, provides filtered light

*Gleditsia triacanthos* ‘Sunburst’



Botanical Name:	<i>Ilex aquifolium</i>
Common Name:	English Holly
Family:	Aquifoliaceae
Location/Source:	Southern and Central Europe, Great Britain
Type:	Evergreen tree or shrub
Hardiness	Sunset: 4-9 14-17 USDA 5-9
Form/Habit:	Dense oval crowned
Growth Rate:	Slow to moderate
Mature Size:	Height: 35-45' Spread: 18-28'
Landscape Size:	Height: 12-16' Spread: 6-10'
Branching	Alternate
Twigs/Bark:	Twigs smooth olive green; old bark tight, brown
Foliage:	Simple leaf, oval in shape, serrate with spine teeth, twisted thick cuticle; 1-3" long; 1-1 1/2" wide; shiny dark green upper surface, underside dull yellow green; petiole yellow green or red.
Flower:	Small greenish white flowers; male and female on separate plants
Fruit:	Berries; 1/4" to 3/8" orange to red
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Well drained slightly acid soils
Water:	Regular irrigation
Pruning:	Tip prune or cut branches for decoration; can be sheared
Pests/Disease:	Holly scale, leaf minor; leaf spot fungus in poor air circulation
Propagation:	Cuttings or seed
Landscape Use:	Small evergreen trees or large hedges; require training
Other:	Many cultivars with variegated foliage and different berry colors



*Ilex aquifolium*; English Holly



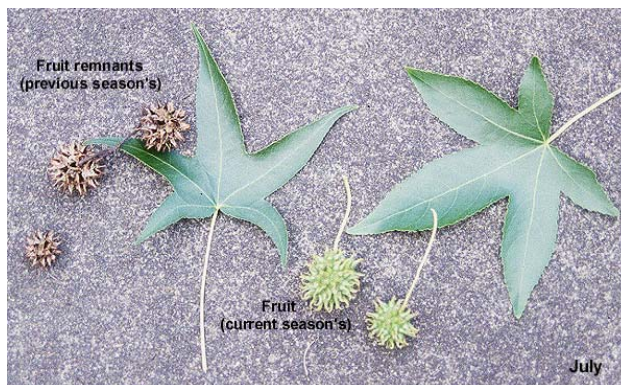
Botanical Name	<i>Liquidambar styraciflua</i>
Common Name	Sweet Gum, American Sweet Gum
Family	Hamamelidaceae
Origin	Eastern USA, Mexico
Type	Deciduous tree
Hardiness	Sunset: 1 – 12, 14 – 24
	USDA: 6 – 9
Form	Pyramidal/broadly conical tree with horizontal branches (brittle) Straight central leader unless damaged
Growth Rate	Moderate
Mature Size	Height: 70 – 90' Spread: 40 – 60'
Landscape Size	Height: 15 – 24' Spread: 10 – 18'
Branching	Alternate
Bark	Twigs are bright green; Young shoots often have corky ridges Old bark is furrowed; Bark leaks amber gum when damaged
Foliage	Alternate, simple, palmately lobed (5-7 lobes) leaves (3 – 7" across) with slightly serrate margin; Blades hang from petiole at right angle; Leaf has distinct fragrance when crushed; Color: glossy, medium green leaves Fall Color: varies from orange, red, to purple; choose tree in fall or choose a named variety with dependable color; color less brilliant in mild climates, mild, late autumns, part sun
Flowers	Inconspicuous yellow-green flowers; monoecious Blooms late spring
Fruit	Clusters of spiky, spherical fruit ( $\frac{3}{4}$ "); heavy seed set; Become hard little rocks that are difficult to mow and walk on—but provides winter interest;
Exposure	Full sun – part sun (fall color better with more sun)
Soil	Prefers moderately fertile, acidic to neutral, well-drained soil Suffers from iron chlorosis in alkaline soils
Water	Some summer irrigation (once or twice a month)
Pests	-- (high oil content protects tree)
Diseases	--
Problems	Surface roots can be a problem in lawns or parking strips Branches are brittle and break easily with rain & snow
Pruning	Little required—prune to shape or to lift crown
Propagation	Seed: sow in cold frame in autumn; Greenwood cuttings: summer
Landscape Use:	Street trees; specimen trees; plant in woodland setting or groves; screens
Other:	Plant from containers or B&B; make sure plants are not root-bound



*Liquidambar styraciflua*, American Sweetgum



Plant Habit, Spring



Leaves and Fruit



Plant Habit, Autumn



Botanical Name	<i>Liriodendron tulipifera</i>
Common Name	Tulip Tree (Sometimes incorrectly called Yellow Poplar in the South)
Family	Magnoliaceae
Origin	SE USA
Type	Deciduous tree
Hardiness	Sunset: 2-12, 14-23
	USDA: 4-9
Form	Strong central leader with relatively short, upright branches and a narrow form <u>if healthy</u> . It often loses the central leader, and then develops many leaders and a broader form; The wood is brittle & flexible, and the high water content in the branches sometimes causes them to curve down before turning upright
Growth Rate	Fast
Mature Size	Height: 60-100' Spread: 30-40'
Landscape Size	Height: 20-30' Spread: 10-14'
Branching	Alternate
Bark	Gray stems Older bark is dark gray, furrowed (after 40-50 years) *Gray-green terminal bud (5/8-1" long), bivalve (2 bud scales) looks like a duck's bill
Foliage	Simple, lyre-shaped leaves (5-6" long, 4-6" wide); Grass green in color; good yellow fall color; Leaves are succulent, and attract aphids. In fall, the aphid honeydew attracts lots of yellow jackets.
Flowers	Solitary, tulip-like flowers (2" long) with yellow-green color; Striking up close, but tend to be blend in with foliage from a distance; Blooms in spring (April – May)
Fruit	Multiple achenes (winged fruit) in smooth, shiny, cone-like pod (1½ - 2½" long) The pods shatter in late winter, scattering the individual seeds.
Exposure	Full sun – part sun
Soil	"Deep, rich, well-drained neutral to slightly acidic soil" (Sunset, 357). Wet soils ok
Water	Summer irrigation is best
Pests	Aphids, followed by yellow jackets
Diseases	--
Problems	Wood breaks easily—do not plant in windy locations; Sooty mold from aphid honeydew—do not plant near a deck; Aphid honeydew attracts yellow jackets
Pruning	Remove dead/damaged wood; Remove lower limbs for tidier standard form Will tolerate heavy pruning
Propagation	Seed: late autumn/early winter; easy; Low seed viability Seedling will flower in 12-15 years
Landscape Use:	Large specimen tree, lawn/park tree; NOT a street tree

*Liriodendron tulipifera*, Tulip Tree



Summer



Autumn



Flowers



Winter Buds



Bark



Leaves



Autumn Leaves

Botanical Name:	<i>Magnolia grandiflora</i>
Common Name:	Southern Magnolia
Family:	Magnoliaceae
Location/Source:	Southeastern United States
Type:	Evergreen tree
Hardiness	Sunset: H1, H2 4-12 14-24 USDA: 7-9
Form/Habit:	Single trunked broad oval crown
Growth Rate:	Slow to moderate
Mature Size:	Height: 60-80' Spread: 40-50'
Landscape Size:	Height: 16-24' Spread: 10-16'
Branching	Alternate
Twigs/Bark:	New is smooth dark olive green to brown
Foliage:	Oval with heavy cuticle, 5-9"L, 2-3"W. Entire, upper surface appears waxy, medium green; underside dull yellow-green.
Flower:	Terminal bud is green 2-3". Flowers mid-July most years. 6 petals form cup, contains distinctive magnolia stamens, 4-8"W. Fragrant, white with yellow center. 15 years to flower from seed, 2-3 years from graft.
Fruit:	Fruit is cone, turning brown 2-4"L, 2"W, containing round orange seeds.
Cultural Requirements	
Exposure:	Full sun to light shade
Soil:	Heavy clay with organic matter is OK – require nutrients
Water:	Regular irrigation
Pruning:	30% or less to control direction of growth. Can thin or head up
Pests/Disease:	Leaf Spot Fungus
Propagation:	From seed or graft (more common)
Landscape Use:	Floral specimen. Poor growth in cold winds.
Other:	Fleshy root systems are easily damaged – don't plant underneath. Continual leaf drop is maintenance problem. Fertilize every 2-3 years – especially in containers. 'Little Gem' – size specimen 20'. 'St. Mary's' – blooms earlier, slightly different foliage with rusty underside



*Magonolia grandiflora*



Plant Habit



Trunk/Bark



Flower/Leaf

Botanical Name:	<i>Magnolia x soulangeana</i>
Common Name:	Saucer Magnolia
Family:	Magnoliaceae
Location/Source:	Asia, Nusrery
Type:	Deciduous tree/shrub
Hardiness	Sunset: 2b-10-12-24 USDA: 5-8
Form/Habit:	Wide spreading vase branched low to ground with multiple trunks or trained to single trunk.
Growth Rate:	Moderate to fast
Mature Size:	Height: 30-40' Spread: 20-30'
Landscape Size:	Height: 12-18' Spread: 10-14'
Branching	Alternate with wedge shaped branch nodes
Twigs/Bark:	Smooth gray green, shiny twigs; rough dark gray bark; tan 1 ½" fuzzy tan terminal buds.
Foliage:	Simple leaf; broad elliptic to oblanceolate, 3-5" long, 1-2" wide; margin entire; dull yellow green; new growth is red
Flower:	March-April for 4-6 weeks; flowers on terminal ends of branches 3-4" tall with 6-8 petals; pinkish with purple stripe on outside and white inside; fragrant
Fruit:	Lumpy 2-3" pinkish cucumber like fruit with orange seeds
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Not fussy
Water:	Regular irrigation
Pruning:	Can be thinned and trained; avoid heavy pruning
Pests/Disease:	Aphids; sensitive roots do not disturb
Propagation:	Seed cuattings or grafting
Landscape Use:	Large flowering specimen shrub or tree
Other:	Several cultivars with white and pink flowers.



*Magnolia soulangeana*; Saucer Magnolia





Botanical Name:	<i>Malus floribunda</i>
Common Name:	Japanese Crabapple
Family:	Rosaceae
Location/Source:	Japan
Hardiness	Sunset: 1-21 USDA: 3-8
Type:	Deciduous tree
Form/Habit:	Rounded crown on wide vase, horizontal oval crown branching low
Growth Rate:	Fast
Mature Size:	Height: 20-30' Spread: 30-40'
Landscape Size:	Height: 12-18' Spread: 18-24'
Branching	Alternate
Twigs/Bark:	Twigs red to grey, older bark brown, rough and stringy. Very dense.
Foliage:	Non-descript – narrow elliptic small teeth, 2-4”L, .5-.75”W, medium green to dull grey underneath.
Flower:	April/May single in heavy clusters. Red round bud 3/16”, soft pink round petals, 1”W. Heavy flower set with nice fragrance.
Fruit:	½” red with yellow cheek apple late Aug/Oct, persistent to Dec.
Cultural Requirements	
Exposure:	Full sun – part shade
Soil:	Not fussy
Water:	With or without after established
Pruning:	Prune at least twice a year to remove suckers from base
Pests/Disease:	Resistance excellent for fireblight, cedar apple rust and powdery mildew. Good for apple scab.
Propagation:	Seed or grafting
Landscape Use:	Birds and wildlife attracted to fruit. Root stock.
Other:	Heavy flowering

*Malus floribunda*



Plant Habit



Flower/Leaf

Botanical Name:	<i>Malus sargentii</i>
Common Name:	Sargent Crabapple
Family:	Rosaceae
Location/Source:	Japan
Type:	Deciduous tree
Hardiness	Sunset: 1-21 USDA: 3-8
Form/Habit:	Low, dense horizontal oval; suckers from base
Growth Rate:	Moderate to fast
Mature Size:	Height: 12-15' Spread: 30-40'
Landscape Size:	Height: 8-12' Spread: 20-25'
Branching	Alternate
Twigs/Bark:	Smooth bright green twigs; bark rough brown and peeling vertically
Foliage:	Simple leaves; new growth often three lobed; older leaf elliptic to oblanceolate; yellow green new to medium green
Flower:	Profuse bloom in April; flowers single white five petaled, ½" with rounded petals; excellent apple blossom fragrance
Fruit:	Small ¼" red crabapple; attracts birds
Cultural Requirements	
Exposure:	Full sun to shade
Soil:	Any
Water:	Irrigate in only hottest areas
Pruning:	Needs regular sucker removal
Pests/Disease:	Fairly resistant to powdery mildew and cedar apple rust; can have problems with apple scab
Propagation:	Seed
Landscape Use:	Specimen flowering tree; pollution tolerant; acts more as large shrub; often used on freeway banks
Other:	Tough flowering tree for poorer planting areas



*Malus sargentii*; Sargent Crabapple



Botanical Name	<i>Metasequoia glyptostroboides</i>
Common Name	Dawn Redwood
Family	Taxodiaceae
Origin	Central China (most recently; was also native to North America)
Type	Deciduous conifer
Hardiness	Sunset: 3 – 10, 14 - 24
	USDA: 5 - 10
Form	Conical tree with ascending branches (turn upward)
Growth Rate	Moderate to fast (fast when young (4 – 6' a year)
Mature Size	Height: 70 – 130' (100 – 150' record), 30 – 40'
Landscape Size	Height: 18 – 24' Spread: 12 – 16' (18')
Branching	Opposite (shoots/needle fronds, leaves, cone scales)
Bark	Fibrous, stringy, orange-brown bark; Deeply fluted, buttressed trunks
Foliage	Opposite, needles ( $\frac{1}{2}$ - $\frac{3}{4}$ " long); two-ranked; feathery; Color: new growth is bright gold-green; mature leaves are bright green with two light green bands beneath; Autumn Color: bronze – russet; drop by mid-November; color is more orange with more sun
Flowers	NA
Fruit	Solitary, ovoid, light brown female cones ( $\frac{3}{4}$ " long) on ends of stalks (terminal); resemble tight, small hornets' nests Pendent, spherical brown male cones ( $\frac{1}{2}$ - $\frac{1}{2}$ " long) in upper crown
Exposure	Full sun – shade
Soil	Prefers well-drained soil with lots of peat moss or leaf mold Tolerant of water-logged soil
Water	Summer irrigation best; Tolerates lawn watering well
Pests	--
Diseases	--
Pruning	Remove dead wood on lower branches as upper branches shade them
Propagation	Seed
Landscape Use:	Specimen tree; street tree; plant in groves; fine in container
Other:	Once difficult to find but more common now; Suffers winter wind damage in cold, dry areas; Hot sunlight and salt can burn leaves; Resistant to oak root fungus; Easy to transplant



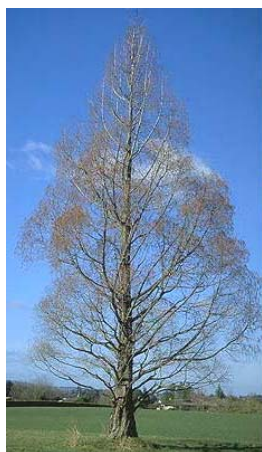
*Metasequoia glyptostroboides*, Dawn Redwood



Plant Habit, Summer



Plant Habit, Autumn



Habit, Winter



Early Spring



Spring



Bark



Branch with Cones



Releasing seeds



Seed and Pollen Cones



Botanical Name	<i>Nyssa sylvatica</i>
Common Name	Black Tupelo
Family	Nyssaceae
Origin	Southeastern USA (swampy areas)
Type	Deciduous tree
Hardiness	Sunset: 2 – 10, 14 – 21
	USDA: 4 – 8
Form	Broad pyramid to irregularly rounded—variable form; Dense, horizontal branches that often droop; Orderly appearance
Growth Rate	Moderate – fast
Mature Size	Height: 50 – 70' Spread: 30 – 50'
Landscape Size	Height: 18 – 28' Spread: 18 – 28'
Branching	Alternate
Bark	Branches are light gray to reddish, very thin Bark is smooth, grayish brown turning blackish with age; ridged at base
Foliage	Alternate, simple leaves (3 – 6" long, 1½ - 2½" wide); Elliptic, ovate to obovate leaves with entire margin but sometimes remotely toothed—variable; Fairly thin, matte or shiny; Color: medium green; Autumn Color: brilliant red, shiny; attractive
Flowers	Dioecious to polygamo-dioecious (wide variety of male, female, or both sexes on one tree); Inconspicuous green flowers with 5 petals & 10 stamens in early summer
Fruit	Need male and female trees to produce fruit; Bright blue, ovoid to oblong drupe ( ½ - 5/8"); Fruit usually hangs in pairs: one ripe & one shriveled one (not fertilized)
Exposure	Full sun to fairly heavy shade
Soil	Prefers moist, deep, acidic, well-drained soil; No sandy soil; tolerates very heavy clay
Water	Some summer irrigation best (in normal PNW conditions); will survive dry conditions but it's not drought tolerant
Pests	--
Diseases	--
Pruning	Remove dead/damaged wood
Propagation	Seed Hardwood cuttings
Landscape Use:	Large specimen or shade tree
Other:	Has deep fibrous roots and a tap root—difficult to transplant when large Shelter from wind

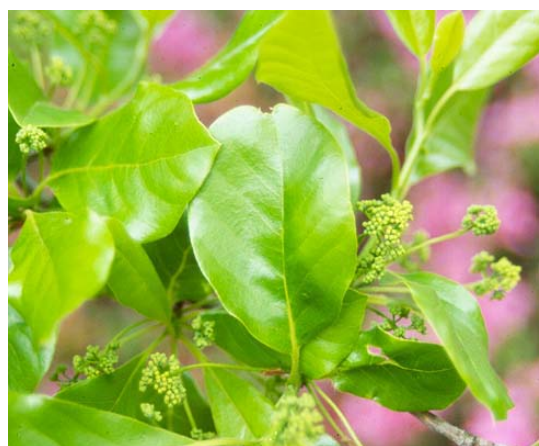
*Nyssa sylvatica*, Black Tupelo



Habit, Summer



Habit, Autumn



Leaves & Unopened Flowers



Leaves & Fruit



Leaves & Fruit, Autumn

Botanical Name	<i>Picea abies</i>
Common Name	Norway Spruce
Family	Pinaceae
Origin	Scandinavia, northern Europe; mountain regions
Type	Evergreen conifer tree
Hardiness	Sunset: A2, A3, 1 – 6, 14 – 17
	USDA: 2 – 7
Form	Radical change in shape & color with age; Young: tight, teardrop shape with upright branches; yellow-green color; Old: oval crown with straight central leader; lower branches die due to shading out from upper branches; branchlets have flat even pattern & are soft, weeping; dark green color
Growth Rate	Moderate to fast
Mature Size	Height: 100 – 150' Spread: 40 – 50'
Landscape Size	Height: 16 – 22' Spread 10 – 16'
Branching	Radial
Bark	Flaky, resinous, charcoal gray bark
Foliage	Single needles radially arranged, & point toward end of branch; New growth is yellow green, ½ - 5/8" long; Older growth is dark green, ¾ - 1¼" long; Needles are stiffer, sharper compared to most other conifers; parallel sided; Needles remain on tree 6 – 8 years
Cones	Immature cones are green & cigar-shaped; green stogie; cones hang off branch ends; Mature cones are tan & papery with fish-like scales (rounded); Cones are 3 – 6" long, & have tight, fish scales for first 2+ years; Trees produce cones after 15 – 20 years; Trees produced lots of cones this years because summer 2002 was hot & dry
Exposure	Full sun to (heavy) shade
Soil	Not fussy
Water	Regular irrigation (how much depends on soil, water table, heat...) Not heat/drought tolerant; might tolerate a summer drought in a cold area
Pests	Tussock Moth & Spruce Bud Worm might be problems
Diseases	Needle Cast: needles brown & then drop from the bottom up; fungal problem; not much can be done about it
Pruning	Remove dead/damaged wood; tolerates heavy pruning Remove part of each year's growth to make denser
Propagation	Seed—easy
Landscape Use:	Large specimen conifer; windbreak; Tolerates pollution, cold temperatures, & cold wind (good in Columbia Gorge)
Other	(Lifespan = 300 – 400 years); Slow to establish & grow; they like regular water, but boggy sites slow down growth; Pancake root system: shallow & wide; Casts heavy shade & needles have lots of tannins, which makes growing an understory difficult; try removing dropped needles & growing acid-loving plants ( <i>Vaccinium</i> & <i>Gaultheria</i> ); Do not plant too close to buildings/sidewalks—they need space



*Picea abies*



Plant Habit



Branches/Cone

Botanical Name	<i>Picea pungens</i> ‘Glauca’
Common Name	Colorado Blue Spruce
Family	Pinaceae
Origin	Rocky Mountains: from MT to NM at high elevations on both sides of the Rockies
Type	Evergreen conifer tree
Hardiness	Sunset: A2, A3, 1 – 0, 14 – 17 (suffers in hot, dry summers)
	USDA: 2 – 9
Form	In native habitat, the young tree is a broad pyramid; the older tree is tall & narrow with horizontal branches
Growth Rate	Moderate (slower in clay)
Mature Size	Height: 70 – 80’ Spread: 25 – 35’
Landscape Size	Height: 16 – 20’ Spread: 10 – 15’ (slow to start)
Branching	Whorled (very even unless damaged)
Bark & Branches	Bark is dark charcoal-colored, very flaky
Foliage	Single needles (1 – 2” long) stand out straight from branch; Peg-like projections; Needles are very stiff, sharp, & pungent; Needles are square in cross-section (4 sides) & roll easily (vs. <i>P. sitchensis</i> , which has 3 sides & doesn’t roll); Color: silvery blue to blue green due to stomatal bloom (seedling variation results in differences in color); Holds needles 6 – 12 years—very dense
Cones	Oval cone (2½ - 5” long) at branch ends; Color: tawny brown with yellow highlights; Papery, rough-looking; Scales are notched (vs. rounded fish scales of <i>P. abies</i> )
Exposure	Full sun
Soil	Well-drained soil best
Water	Prefers infrequent waterings Regular irrigation is ok with good drainage, but no flooding
Pests	Spruce Gall Adelgid: galls with tumor-like growths Spruce Aphid
Diseases	--
Pruning	Remove dead/damaged wood
Propagation	Cuttings
Landscape Use:	Specimen conifer; Xmas trees
Other:	Shallow, fibrous root system



*Picea pungens* var. *Glauca*



Plant Habit



Branch/cones



Botanical Name:	<i>Picea sitchensis</i>
Common Name:	Sitka Spruce
Family:	Pinaceae
Location/Source:	West Coast Alaska to South Central Oregon in coastal fog belt
Type:	Evergreen conifer tree
Hardiness	Sunset: A2, A3 4-6 14-17
	USDA 4-8
Form/Habit:	Broad dense pyramid becoming irregular with age and wind
Growth Rate:	Moderate
Mature Size:	Height: 90-220' Spread: 30-60'
Landscape Size:	Height: 16-26' Spread: 14-20'
Branching	Radial
Twigs/Bark:	Twigs gray green; old bark silver gray, wrinkled
Foliage:	Single needles spirally arranged, 1-2" sharp, flattened needles with stomatal lines and a blue bloom; silver blue color
Flower:	Male catkins rounded, green in upper branches
Fruit:	Cone at branch ends 2-4"; papery light brown scales
Cultural Requirements	
Exposure:	Full sun to heavy shade
Soil:	Best in sandy well drained soil
Water:	Regular; best with moist ground and air
Pruning:	Head up
Pests/Disease:	Cooley Spruce gall adelgid causes cone like growth at branch tips; needle cast can be a problem
Propagation:	Seed
Landscape Use:	Used as large specimen in native coastal plantings
Other:	Not recommended for interior plantings

*Picea sitchensis*; Sitka Spruce



Botanical Name	<i>Pinus contorta</i>
Common Name	Shore Pine, Coast Pine
Family	Pinaceae
Origin	Northern British Columbia/southern Alaska to northern CA
Type	Evergreen conifer tree
Hardiness	Sunset: A3, (1) 4 – 9, 14 – 24
	USDA: (3) 4 – 7
Form	Landscape form is broad & egg-shaped with low branches & a central leader Coastal form is usually wind-pruned & very irregular; sculptural
Growth Rate	Slow to moderate
Mature Size	Height: 30 – 50' Spread: 20 – 30'
Landscape Size	Height: 12 – 18' Spread: 8 – 16'
Branching	Radial
Buds	Terminal bud (candle) is very resinous (as if dipped in candle wax), grayish-white, 1 – 2" long
Bark & Branches	Younger bark is gray, flaky (small flakes); Older bark is charcoal to black, flaky (small flakes)
Foliage	2 needles per fascicle; 1½ - 3" long; Color: bright to dark emerald green (if healthy); Needles are twisted or contorted; Holds needles 3 – 8 years; counts whorls to get age of needles
Cones	Cones lay right against branches & point back to trunk; 1½ - 2" long, reddish brown when closed; Spines; Base of cone is offset
Fruit	Cones turn tan when open, because scales are tan inside Cones persist on tree
Exposure	Full sun
Soil	Good drainage! Usually grow in sand; plant on berm if drainage is a problem
Water	No summer irrigation once established; too much water will increase disease probability
Pests	Ereophid mite: needles on tips of tree turn bright yellow; hard to control—systemic or prune damaged branches; European Shoot Moth: branch tips die & ooze; not common but notify Extension Agent if present; Pine Bark Beetle: 3/8", black borer; will kill tree; Pine Needle Scale
Diseases	Galls—usually a secondary problem that occurs when tree is weakened by pests or other diseases
Pruning	Candle (remove terminal bud) in winter to create denser growth If careful, can shear tips to remove candles/terminal buds Do <u>not</u> prune into old wood or branches will die (no adventitious buds)
Propagation	Seed
Landscape Use:	Firewood; bonsai; native or seaside gardens; restoration; good in small gardens & containers; Will tolerate city conditions;
Other:	Fire adapted: cones remain unopened on tree until fire/heat opens them



*Pinus contorta* var. *contorta*



Plant Habit



Branch/Needle/Cones

Botanical Name	<i>Pinus densiflora</i>
Common Name	Japanese Red Pine
Family	Pinaceae
Origin	Japan, Korea
Type	Evergreen conifer tree
Hardiness	Sunset: 2 – 3, 14 – 17 (do not like hot wind or very cold temperatures)
	USDA: (4) 5 – 7
Form	Single trunk with irregular shape & branching Form varies with environment; easily sculpted by wind; easy to bonsai
Growth Rate	Moderate to fast
Mature Size	Height: 80 – 100' Spread: 30 – 50'
Landscape Size	Height: 20 – 30' Spread: 16 – 22'
Branching	Whorled
Buds	Highly reflexed scales; purplish; smaller than other pines
Bark & Branches	~ Flaky, red-orange bark (similar to <i>P. sylvestris</i> but <i>P. densiflora</i> plates are smaller)
Foliage	2 needles per fascicle; Straight, thin needles, 2 – 3" long; Color: yellow-green; no stomatal markings; Needles held only 1 year—needles clustered on current year's growth at branch tip (rest of branch is bare)
Cones	Cones are oval to oblong, 1½ - 2" long, red-brown; no spines; 5 to 6 cones radiate around branch ends; Cones persist on tree for 1 to 2 years; Sets cones in 10 – 12 years; One of the heaviest cone setters of the pines
Exposure	Full sun
Soil	Good drainage
Water	Best with irrigation
Pests	--
Diseases	--
Pruning	Easy to bonsai, prune into sculptures; Remove dead/damaged wood
Propagation	Seed
Landscape Use	Specimen tree for informal gardens, Japanese gardens; bonsai; containers
Other	Wood is weak, brittle, and easily damaged by storms, wind, ice Deep-rooted but no tap root



*Pinus densiflora*



Plant Habit



Needles/cone



Trunk/Bark



Botanical Name	<i>Pinus strobus</i>
Common Name	Eastern White Pine
Family	Pinaceae
Origin	New Foundland west to Quebec & south to Georgia
Type	Evergreen conifer tree
Hardiness	Sunset: 1 – 6 (prefers cold winters & cool summers)
	USDA: 3 – 8
Form	Crown is generally an oval that becomes rounder with age
Growth Rate	Fast to moderate
Mature Size	Height: 100 – 150’ Spread: 30 – 50’
Landscape Size	Height: 16 – 28’ Spread: 10 – 16’ (smaller than <i>Pinus monticola</i> , Western White Pine)
Branching	Radial
Bark & Branches	Young bark is smooth, gray-green; Older bark is very plated
Foliage	5 needles/fascicle; Very thin & soft, 2½ - 5” long Color: grass-green to yellow-green with stomatal markings on 1 side
Cones	Long, curved cones (3 – 6” long, 1½” wide) with short stalk Very pitchy
Exposure	Full sun (part sun)
Soil	Sandy loam soil, well-drained & slightly acidic The stress of growing in clay can lead to bark beetle infestations
Water	Drought tolerant Water until established & then water no more
Pests	White Pine Adelgid: bad infestation--adelgids release a toxin that can kill the tree in 4 – 6 weeks; Pine Bark Beetle
Diseases	White Pine Blister Rust: rust lesions on branches turn into open cankers that girdle branches & then move down to kill tree; remove & burn any branches with lesions; this can kill the tree
Pruning	Remove dead/damaged branches; head up if desired
Propagation	Seed
Landscape Use	Specimen conifer
Other	Pine Barrens are <i>P. strobus</i> forests; There were once extensive <i>P. strobus</i> forests, but these were logged; Drought in western states grows bigger trees in general

*Pinus strobus*



Plant Habit



Needles/cones



Trunk/Bark

Botanical Name	<i>Platanus acerifolia</i>
Common Name	London Plane Tree
Family	Platanaceae
Origin	British Isles, Western Europe
Type	Deciduous tree
Hardiness	Sunset: 2 – 11, 14
	USDA: 4 – 9
Form	Broad, round head with low branches
Growth Rate	Fast
Mature Size	Height: 100 – 120' Spread: 80 – 100'
Landscape Size	Height: 30 – 40' Spread: 30 – 40'
Branching	Alternate
Bark & Branches	Newest growth has brown pubescence Twigs have slight zigzag (pseudo-terminal bud); yellow orange to brown Exfoliating bark: jigsaw pattern of olive green over cream
Foliage	Simple, alternate leaves (5-10" across) with 3 (5) lobes—maple-like Large petiole base covers lateral buds; Color: Surface is medium green – grass green; underside is pale green with fuzzy brown hair especially in spring (less in summer), which can cause allergic reactions in asthmatics. The hairs catch a great deal of dust, which decreases pollution. Fall Color: poor yellow
Flowers	Inconspicuous green flowers in late spring; monoecious
Fruit	Syncarp of multiple achenes—looks like a spiny golf ball, 1-2" across Turn brown on the tree; Hang in clusters in the top of the tree Persistent
Exposure	Full sun
Soil	Any; tolerates compacted soil
Water	Best with infrequent deep watering in summer; drought tolerant
Pests	--
Diseases	Anthrachnose: very severe in warm wet springs (Portland); leaf tips turn brown with water-soaked spots. Leaves die, and then branches do. Branches become knobby. Rake fallen leaves and dispose of/burn them to reduce spread of anthracnose.
Pruning	Remove dead/damaged wood, and dispose of/burn it to reduce spread of anthracnose
Propagation	seed
Landscape Use	Excellent tree for urban areas: tolerates (and reduces) pollution, compacted soil; Large park tree; now considered to be too big to be a street tree Pollarded in England
Other	If planted too close to buildings, the vigorous roots may damage drains. 'Bloodgood' has some resistance to anthracnose



*Platanus acerifolia*; London Plane Tree



Habit



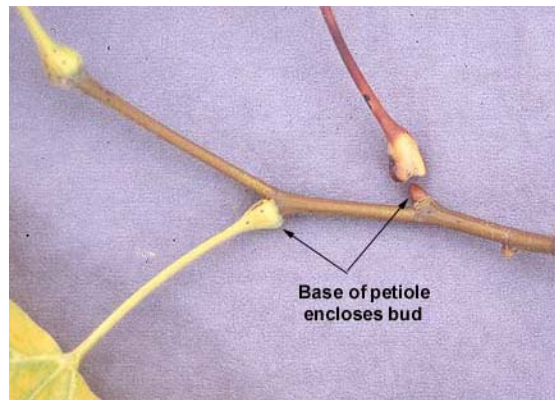
Leaf



Newly Emerging Leaves with Fruit



Branch with Leaves and Fruit



Big Petiole Base

Botanical Name	<i>Prunus cerasifera</i> ‘Thundercloud’
Common Name	Thundercloud Plum
Family	Rosaceae
Origin	Nursery
Type	Broadleaf deciduous tree
Hardiness	Sunset: 3 – 22
	USDA: 4 – 8
Form	Open, broad tree with pyramidal crown
Growth Rate	Fast
Mature Size	Height: 25 – 40’ Spread: 25 – 40’
Landscape Size	Height: 15 – 20’ Spread: 15 – 20’ (now almost always grafted on to 7-foot stock)
Branching	Alternate
Bark & Branches	Twigs are purplish-red Bark is charcoal gray (no horizontal lenticels)
Foliage	Alternate, simple leaves (1½ - 2½” long, 5/8 – ¾” wide) are broadly elliptic to oval & remotely toothed; Leaves emerge when flowers when flowers in bloom; No gland at petiole base; Color: copper red (new growth) to dark purple (mature leaves) to greenish bronze (late summer)
Flowers	Blooms in March for ~ 1 month (depending on weater); Single (5 petals) flowers (¾ – 1¼” wide) are white with rounded petals & yellow center Long, purplish-red peduncle; Rounded, reflexed sepals are purplish-red Light, sweet scent
Fruit	Oval, dark purple to black drupes with purple flesh, ¾ - 1”
Exposure	Full sun (afternoon shade)
Soil	Not fussy—sand to clay
Water	With or without; Drought tolerant when established
Pests	Wooly aphids
Diseases	--
Problems	Plums stain everything a dark purple; Suckers!
Pruning	Do not prune unless necessary, because pruning stimulates suckering (a never-ending problem); If needed, prune in late summer (August)
Propagation	Grafted
LandscapeUse	Small specimen tree grown for leaves, flowers, fruit Street tree (watch the plums!)
Other	‘Atropurpurea’ looks like ‘Thunder Cloud’ but ‘Thunder Cloud’ has white to pink flowers; ‘Krauter’s Vesuvius’ has dark purple leaves & no fruit



*Prunus cerasifera* 'Thundercloud'



Plant Habit



Flowers



Leaves/fruit



Botanical Name:	<i>Prunus laurocerasus</i>
Common Name:	English Laurel
Family:	Rosaceae
Location/Source:	Southeastern Europe to Iran
Type:	Evergreen tree/shrub
Hardiness	Sunset: 4-9 14-24 USDA: 5-9
Form/Habit:	Broad upright oval crown; usually mult-stemmed
Growth Rate:	Fast
Mature Size:	Height: 20-30' Spread: 12-25'
Landscape Size:	Height: 12-18' Spread: 10-16'
Branching	Alternate
Twigs/Bark:	New growth bright yellow green; old bark dark olive to brown
Foliage:	Simple oval to elliptic leaf; 4-8" long, 1-3" wide; thick glossy grass green upper side, lower dull yellow green; crenate margin
Flower:	May bloom with 4-6" spikes on branch ends; flower 5/16" five petaled white with yellow anthers, very fragrant
Fruit:	3/8" oval black cherries
Cultural Requirements	
Exposure:	Full sun to shade
Soil:	Any
Water:	Regular irrigation
Pruning:	Tip prune to control hedge size, head up to train as tree or cut back severely to rejuvenate
Pests/Diseases:	Watch for scale insects; can get leaf spot and root rot in wet soils
Propagation:	Seed or cuttings
Landscape Use:	Large head or trained as evergreen tree
Other:	Do not shear; large leaves sheared look hacked

*Prunus laurocerasus*; English Laurel



Botanical Name:	<i>Prunus serrulata</i> 'Shirotae'
Common Name:	Mt. Fuji Cherry
Family:	Rosacea
Location/Source:	Nursery
Type:	Deciduous flowering tree
Hardiness	Sunset: 2-7, 14-20
	USDA: 5-8
Form/Habit:	Broad flat topped vase
Growth Rate:	Moderate
Mature Size:	Height: 16-28' Spread: 25-40'
Landscape Size:	Height: 10-16' Spread: 14-20'
Branching	Alternate
Twigs/Bark:	Smooth grey with defined horizontal lenticels.
Foliage:	Simple, serrate elliptic, 4-8"L, 2-3"W. Bright green when new; fading to medium green; Nice orange-red fall color; Two glands at leaf base are characteristic of prunus; Doubly serrate leaves with a twisted apex are characteristic of all serrulatas.
Flower:	Mid-March through April; Venus fly trap bud scales; Flower clusters are pendulous. Pink bud followed by white flower 8-15 petals, semi-double, 1-1.5" W. Green sepals; Branched peduncle is green and shiny; No fruit.
Fruit:	NA
Cultural Requirements	
Exposure:	Full Sun
Soil:	Avoid heavy soils; needs good drainage!
Water:	Irrigate deeply and thoroughly for first two seasons then no water
Pruning:	Remove dead or damaged wood; disinfect pruning tools
Pests/Disease:	Subject to Verticillium Wilt, Blossom Blight, Shot Hole Borer, Cherry Tortrix. Tent Caterpillars, grafting incompatibilities
Propagation:	Grafted
Landscape Use:	Large specimen flowering tree.
Other:	Difficult to maintain over long time periods



*Prunus serrulata* 'Shirotae'



Botanical Name	<i>Pseudotsuga menziesii</i>
Common Name	Douglas Fir
Family	Pinaceae
Origin	AK to Monterey, CA; from the coast to the eastern slopes of the Rockies & even in central AZ (these tend to be the Rocky Mountain strain ‘Glauca’)
Type	Evergreen conifer tree
Hardiness	Sunset: A2, A3, 1 – 10, 14 – 17
	USDA: (3) 4 – 9
Form	Pyramidal to teardrop shaped when young; will keep lower branches for 25 – 30 years until upper branches shade them out; Irregular when older with wide spreading branches & some weeping branchlets
Growth Rate	Moderate to fast
Mature Size	Height: 150 – 300’ Spread: 60 – 80’ (in 800 – 1500 years)
Landscape Size	Height: 25 – 35’ Spread: 12 – 18’
Branching	Radial
Buds	Whorled—can be sheared; buds conical (3/16 – 3/8”); reddish brown; shiny When buds break in spring, they release a citrus smell
Bark & Branches	Brown (young) to dark brown or reddish brown (older), deeply furrowed bark
Foliage	Single needles arranged radially (can be two-ranked in shade), ¾ - 1½” long Needles have blunt tip; two white to gray stomatal lines on the underside of the needle; Old needles droop down from branches
Cones	Male or staminate cone is small catkin (1” long) at top of tree) Female or ovulate cone is ½” long when immature & then 2 – 4” long & 1” wide when mature; pendulous, hangs from branches; oval; scales resemble mouse tails
Exposure	Full sun (part sun)
Soil	Good drainage!
Water	With or without irrigation Drought tolerant once established—wet winters & dry summers
Pests	Spruce bud worm: caterpillar feeds on new growth—tree turns brown & dies; cyclical
Diseases	Laminar Root Rot: tree dies from top down, usually occurs when conditions change (clear cut) and tree gets too much water Phytophthora: affects roots & needles
Pruning	Remove dead/damaged wood Can shear—start young Do Not top tree—looks silly & can lead to heartwood rot
Propagation	Seed
LandscapeUse	Large native conifer; restoration; informal screen; remnant trees (leftover from development)
Other	OR state tree; Not a climax tree (dominate for 50 – 60 years and then are replaced by <i>Tsuga heterophylla</i> )



*Pseudotsuga menziesii*



Plant Habit



Needle/bud/branch



Cones in Spring



Botanical Name:	<i>Pyrus calleryana</i>
Common Name:	Callery Pear
Family:	Rosacea
Location/Source:	Asia
Type:	Deciduous Tree
Form/Habit:	Oval to Round Crown
Hardiness	Sunset: 2-9; 14-21 USDA 5-9
Growth Rate:	Moderate
Mature Size:	Height: 30-50'; Spread: 30-50'
Landscape Size:	Height: 20-30'; Spread: 25-35'
Twigs/Bark:	Twigs rough dark brown with spur shoots or red on new growth; vertically plated brown bark
Foliage:	Foliage is alternate. Simple leaves are lanceolate with a serrate margin. They are 2 ½"-4 ½" long and 1 ½"-2 ½" wide. Shiny, dark green with excellent fall color that is brilliant red to orange.
Flower:	Blooms at the end of April to May. Flat topped, branched corymbs are 2 ½"-4" across. Flowers are 5/8-3/4" across with five petals. They are pure white with pinkish brown anthers and they stink
Fruit:	Hangs from spur shoots of older branches. Rounded ¾"-1" pear. Not heavy
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Any
Water:	With or without irrigation once established
Pruning:	Remove dead or damaged limbs
Pests/Disease:	None
Propagation:	Seed or grafting
Landscape Use:	Specimen tree for flowering and fall color
Other	Long branches break with snow or ice load; pollution tolerant; cultivars include Capital with narrow upright form; Bradford with large round head and orange/red fall color; Red Spire with pyramidal head and red fall color; very tough trees

*Pyrus calleryana*; Callery Pear



Plant Habit



Leaf/fruit



Flowers

Botanical Name	<i>Quercus rubra</i> (syn. <i>Q. borealis</i> )
Common Name	Northern Red Oak
Family	Fagaceae
Origin	Upper Mid-west (from Canada and south to OK)
Type	Deciduous tree
Hardiness	Sunset: 1 – 10, 14 – 17, A2, A3
	USDA: 3b – 8
Form	Narrow when young, and then grows into a broad, round head Strong scaffold structure with high branches
Growth Rate	Fast (one agency got the tree to grow 7' a year with fertilizer & root pruning)
Mature Size	Height: 60 – 80' Spread: 60 – 80'
Landscape Size	Height: 30 – 40' Spread: 30 – 40'
Branching	Alternate; Terminal bud (1/4" long) has heavy bud scales; brown often with gray tip
Bark	Stems are green to reddish-brown; Older bark is gray-green Old bark is dark gray and very ridged
Foliage	Alternate, simple leaves (4 ½ - 10" long, 3-6" wide); pinnately lobed—generally 7-9 spiny lobes; shallow sinuses; leaf is wedged-shaped Medium green, slightly shiny; in fall, leaf color varies from russet orange to bright red
Flowers	Small, inconspicuous catkins
Fruit	Acorns (¾ - 1"), reddish brown with shallow brown cup; generally grow in pairs in 2 to 3 year cycles; Squirrels and scrub jays eat the acorns
Exposure	Full sun
Soil	Well-drained soil; Prefers acidic soil; likely to yellow in alkaline soil
Water	Little water once established
Pests	Aphids
Diseases	--
Pruning	Little needed; remove dead/damaged wood
Propagation	Seed
Landscape Use	Large shade trees often in parks because the trees are so large
Other	Pollution tolerant; Deep roots—pavement destruction is not a problem Red oak group has spiny lobe tips; white oak group has rounded lobe tips



*Quercus rubra*, Northern Red Oak



Plant Habit in Summer



Autumn



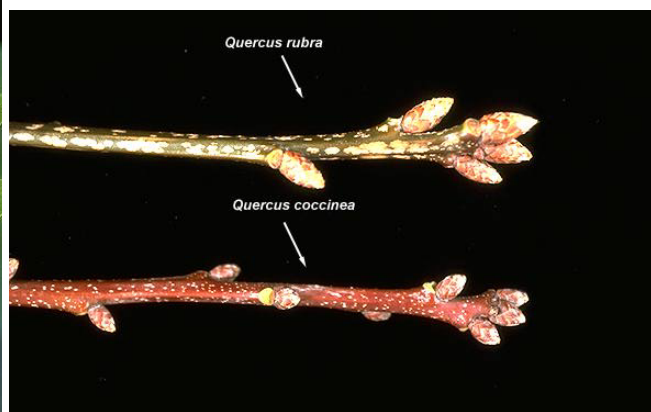
Bark



Leaves



Acorns



Winter Twigs

Botanical Name:	<i>Sciadopitys verticillata</i>
Common Name:	Japanese Umbrella Pine
Family:	Sciadopityaceae
Location/Source:	Japan
Type:	Evergreen Conifer tree
Hardiness	Sunset: 4-9 14-24
	USDA: 5-9
Form/Habit:	Oval crown
Growth Rate:	Slow
Mature Size:	Height: 25-40' Spread: 25-30'
Landscape Size:	Height: 8-14' Spread: 4-8'
Branching	Radial
Twigs/Bark:	New twigs bright green, bark fissured; charcoal gray
Foliage:	Needles whorled at branch ends; 3-5" single needles with 20-40 needles in each cluster. Bright glossy green above with edges rolled under; white stomatal lines underneath.
Flower:	1-1 ½' red brown male catkin
Fruit:	Cones 1 ½-3z" with leathery brown scales.
Cultural Requirements	
Exposure:	Best with afternoon shade
Soil:	Rich well drained neutral soil
Water:	Regular irrigation
Pruning:	Can be bosaied
Pests/Disease:	Spider mite
Propagation:	Seed or usually cuttings
Landscape Use:	Small collectors' specimen; good container conifer
Other:	Requires regular care and fertilization; not pollution tolerant



*Sciadopitys verticillata*; Japanese Umbrella Pine





Botanical Name	<i>Sequoiadendron giganteum</i>
Common Name	Giant Redwood, California Big Tree
Family	Taxodiaceae
Origin	CA: Kings Canyon, Sierra Nevada Range & parts of Yosemite
Type	Evergreen conifer tree
Hardiness	Sunset: (A1), A2, 1 – 9, 14 – 23 (more cold-hardy than Sequoia sempervirens)
	USDA: 3 – 8
Form	Pyramidal when young; heads itself up for very large trunk
Growth Rate	Fast (not as fast as Sequoia sempervirens—about 2 – 3' per year; slow to start growing due to transplant shock)
Mature Size	Height: 275 – 325' Spread: 50 – 70'
Landscape Size	Height: 18 – 30' Spread: 14 – 20'
Bark & Branches	Red-brown bark (not as red as Sequoia sempervirens); thick (insect & fire-resistant)
Foliage	All needle-like growth—angular & awl-like, ¼ - ½" long (shorter than Sequoia sempervirens); Very prickly—can cause rashes Color: blue green
Cones	Held at branch ends; Oval, red-brown, 2 – 3" (larger than Sequoia sempervirens)
Exposure	Full sun
Soil	Deep, well-drained soil Plant on a berm in heavier soil
Water	Infrequent, deep irrigation
Pests	--
Diseases	Can be subject to fungal diseases outside native habitat
Problems	Soil compaction will harm trees—lots of visitors to parks have compacted soil & damaged trees; the park has put a fence around the trees to protect them
Pruning	Remove dead/damaged wood
Propagation	Seed—easy to get seed
Landscape Use	Large specimen conifer for large area
Other	More successful in colder, inland climates than in coastal climates One of the largest, single-bodied living things in the world 3000 to 4000 year life span; bluer color & awl-like growth indicate a drier climate (vs. Sequoia sempervirens); Very deep roots (tap root)—do not buy plants > 6 feet; best to start small; Suffer with pollution

*Sequoiadendron giganteum*



Plant Habit



Branchlet/male cones

Botanical Name	<i>Sequoia sempervirens</i>
Common Name	Coast Redwood
Family	Taxodiaceae
Origin	CA coast (& a tiny bit of southern OR); The larger trees grow between ridges at valley bottoms where they're protected from wind.
Type	Evergreen conifer tree
Hardiness	Sunset: 4 – 9, 14 – 24
	USDA: 7 – 9
Form	Generally upright with pyramidal shape; trunk becomes more flared with age.; Currently the world's tallest tree; only some Eucalyptus in Australia come close to its height
Growth Rate	Fast (up to 5' a year with good conditions)
Mature Size	Height: 300 – 350' Spread: 60 – 70' (2000 – 3000 years old)
Landscape Size	Height: 25 – 45' Spread: 18 – 30'
Branching	Radial
Bark & Branches	Bark is stringy, thick (can be 12 – 15" thick to protect tree from fire), dark red-brown (darkens with age), and decay-resistant
Foliage	Single needles (1/4 – 1 1/4" long) are flat with sharp points; Base twists & wraps around stem—effect is very feathery; Color: green with light stomatal bands on undersides of needles; The needles vary in size according to the season: small leaves during the dry summers & larger leaves during the wet winters. Trace the rainfall pattern along a branch.
Cones	Small (1 – 1 1/2"), oval, dark reddish brown, peltate cones at branch ends; Seeds are small & brown; Trees generally set cones > 30 years unless stressed
Exposure	Full sun to shade
Soil	Prefer loamy soil
Water	Summer irrigation
Pests	--
Diseases	--
Problems	Coast Redwoods are vulnerable to wind—wind thrown & burning. Protect from wind!; Troubles generally associated with poor site conditions: too little water; too much dry heat; too much shade/competition; Lack of iron makes needles turn yellow in summer—apply iron
Pruning	Will tolerate heading up well (but many people prefer to leave them be) Top trees once a year if being used as hedge
Propagation	Seed, burls, cuttings—easy
Landscape Use	Large specimen conifer; good in groves; good near lawn since it benefits from lawn water; Hedge—plant 3 – 4' apart, and top them once a year
Other	When a tree falls, it acts as a nurse log for younger trees; This is a big, fast tree—give it room to grow; Broad, shallow roots—can be knocked down by wind & floods; 'Aptos Blue' has dense blue-green foliage; 'Filoli' is very blue (as blue as Blue Spruce)



*Sequoia sempervirens*



Plant Habit



Branches/ seed cones



Trunck/Bark

Botanical Name:	<i>Sorbus aucuparia</i>
Common Name:	European Mountain Ash
Family:	Rosaceae
Location/Source:	Europe, Western Asia, Siberia
Type:	Deciduous Tree
Hardiness	Sunset: A1-A3, 1-10; 14-17 USDA: 3-7
Form/Habit:	Oval crowned, rounded with age
Growth Rate:	Slow to moderate
Mature Size:	Height 40-60' Spread, 25-40'
Landscape Size:	Height 15-22'; Spread 10-16'
Branching	Alternate
Twigs/Bark:	Twigs smooth reddish brown; older bark becoming gray-brown; well defined lenticels; buds hairy, tan 5/8"-1"
Foliage:	Pinnately compound; leaf 5-9" long; 9-15 leaflets; leaflet elliptic 3/4-2 1/2" long 1/4"-1/2"; serrate margin, dull green above gray green below; yellow to orange fall color.
Flower:	3-5" flat corymbs in April and May; flowers five petaled 1/4-3/8"; off-white, pinkish brown stamens, malodorous
Fruit:	Large clusters of 1/4" orange red berries ripen August to September
Cultural Requirements	
Exposure:	Full sun
Soil:	Not fussy over Ph, moist well drained soil
Water:	Moderate to regular water
Pruning:	Remove dead and damaged wood
Pests/Disease:	Cankers, fireblight a problem
Propagation:	Seed and grafting
Landscape Use:	Specimen flowering tree and bird attractant
Other::	Best in drier areas with cold winter chill



*Sorbus aucuparia*; European Mountain Ash





Botanical Name:	<i>Stewartia pseudocamellia</i>
Common Name:	Japanese Stewartia
Family:	Styraceae
Location/Source:	Japan
Type:	Deciduous tree
Hardiness	Sunset: 4-6, 14-17, 20-21
	USDA: 4-7
Form/Habit:	Upright oval; low-branching
Growth Rate:	Slow
Mature Size:	Height: 20-40' Spread: 18-30'
Landscape Size:	Height: 12-16' Spread: 5-9'
Branching	Alternate with pseudoterminal bud
Twigs/Bark:	Twigs zig-zag; Grey; orange and red-brown bark becomes jigsaw pattern, very attractive.
Foliage:	Simple, lanceolate serrate, 2 1.2-4"L, $\frac{3}{4}$ -1 $\frac{1}{2}$ " W, medium green turning to nice deep red fall color.
Flower:	July/August, round 5/8" bud opens to flower like a single camellia – flat rounded petals, snow white with orange center. 6-8 weeks.
Fruit:	Beaked nut fruit, green, 5/8" seed. Strongly double dormant – two seasons of perfect weather or scarify to start.
Cultural Requirements	
Exposure:	Full sun ideal, part shade OK
Soil:	Loamy
Water:	Regular summer irrigation
Pruning:	None required
Pests/Disease:	None
Propagation:	Seed with difficulty
Landscape Use:	Excellent small specimen tree
Other:	Doesn't transplant well – biggest problem

*Stewartia pseudocamellia*



Botanical Name:	<i>Styrax japonicus</i>
Common Name:	Japanese Snowdrop Tree or Japanese Snowbell
Family:	Styraceae
Location/Source:	Japan
Type:	Deciduous tree
Hardiness	Sunset : 4-9, 14-24
	USDA: 5-8
Form/Habit:	Broad oval to round
Growth Rate:	Slow
Mature Size:	Height: 20-30' Spread: 20-30'
Landscape Size:	Height: 10-15' Spread: 8-14'
Branching	Alternate
Twigs/Bark:	Twigs smooth bright green; older bark tight olive green to brown
Foliage:	Oval scallop-edged dark green 3"L. Red or yellow in fall; Leaves angle upward.
Flower:	Small clusters of ¾" White, bell like flowers pendulous on short side branches, slightly fragrant.
Fruit:	Oval, hard green drupe; ½-5/8"; strong double dormancy
Cultural Requirements	
Exposure:	Full sun to part shade; best in afternoon shade
Soil:	Well drained, not alkaline
Water:	Regular irrigation
Pruning:	Remove dead and/or damaged wood
Pests/Disease:	Few
Propagation:	Seed
Landscape Use:	Small flowering specimen
Other:	Nice to look up into – leaves point up forming one layer, flowers hang down forming a second layer; 'Pink Chimes' with pink flowers



*Styrax japonicus*



Botanical Name:	<i>Thuja occidentalis</i> ‘Emerald Green’
Common Name:	Emerald Green Arborvitae
Family:	Cupressaceae
Location/Source:	Nursery
Type:	Conifer tree/shrub
Hardiness	Sunset: 1-9 15-17 21-24 A2, A3, H1, H2 USDA: 2-9
Form/Habit:	Narrow fastigiata dense conifer
Growth Rate:	Slow to moderate
Mature Size:	Height: 15-25’ Spread: 3-5’
Landscape Size:	Height: 8-15’ Spread: 2-3’
Branching	Radial
Twigs/Bark:	Bark rough peeling vertically gray-brown
Foliage:	Flattened sprays with scales flat and no stomatal markings; blister like bump at base of scale; Emerald Green bright green throughout year; may turn red in coldest areas
Flower:	NA
Fruit:	Small 3/16” upright green cone turning brown
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Best in well drained soils
Water:	Needs regular irrigation
Pruning:	None: can be topped into hedge and sheared lightly
Pests/Disease:	Spider mite
Propagation:	Cuttings
Landscape Use:	Used as narrow accents or formal screen hedges
Other:	Species burns badly in cold winter areas; not at best in climates with low humidity



*Thuja occidentalis* 'Emerald Green'





Botanical Name	<i>Thuja plicata</i>
Common Name	Western Red Cedar
Family	Cupressaceae
Origin	South central Alaska coast to northern CA on the western slopes, in wet/boggy areas or streamsides
Type	Evergreen conifer tree
Hardiness	Sunset: A3, 1 – 9, 14 – 24
	USDA: 5 – 9
Form	Pyramidal when young; branches to ground until upper branches shade out and kill them; Pyramidal when old with flared trunk
Growth Rate	Moderate
Mature Size	Height: 150 – 20’ Spread: 50 – 70’
Landscape Size	Height: 18 – 24’ Spread: 12 – 18’
Branching	Radial
Bark & Branches	Stringy (reddish) brown bark that peels vertically
Foliage	Needles in flattened sprays of scale-like segments; sprays are vertical Color: dark green most of the year; winter winds can turn the branches red (can look dead); Underside has stomatal markings that look like butterflies High oil content—decay resistant; can cause allergic reaction in some people
Cones	Male cones are small (1/8”), dark to reddish at branch tips; Female cones are tucked back into tree & stand upright on branch; woody, green to brown, 5/16”; Cones look like bowl of smoker’s pipe when closed and a rose when open; point back toward trunk; Seeds are dark brown
Exposure	Full sun to heavy shade
Soil	Generally boggy; indicates high water table or boggy soil
Water	Regular irrigation (especially in FS) Drought/too little irrigation will cause tip burn, dieback, spider mites Can tolerate some standing water if temporary (2 – 3 weeks)
Pests	--
Diseases	--
Pruning	Remove dead/damaged wood Shear as hedge (very dense)
Propagation	Seed; cuttings
LandscapeUse	Screen; restoration; hedge
Other	Long-lived (2000 years); > Douglas Fir; Thuja used for baskets, clothing, houses, even food in times of scarcity; Reddish wood with yellow tinges ‘Hogan’ is a narrow, upright form used as a screen; Thuja occidentalis is arborvitae

*Thuja plicata*



Plant Habit



Branches and Cones



Comparison of Branchlets



Trunk/bark

Botanical Name:	<i>Thujaopsis dolabrata</i>
Common Name:	Staghorn Cedar or Hiba False Arborvitae
Family:	Cupressaceae
Location/Source:	Japan
Type:	Conifer tree
Hardiness	Sunset: 3B-7 14-17 USDA:
Form/Habit:	Dense pyramidal shape
Growth Rate:	Moderate
Mature Size:	Height: 30-50' Spread: 15-25'
Landscape Size:	Height: 12-15' Spread: 6-10'
Branching	Radial
Twigs/Bark:	Twigs and stem with closely adpressed scales appear braided; bright yellow green. Old bark peeling vertically, stringy brown
Foliage:	Wide flattended scales; leathery bright green above, large triangular white stomatal markings underneath
Flower:	
Fruit:	Cones oval brown, to ½"
Cultural Requirements	
Exposure:	Full sun
Soil:	Not fussy over soils; no standing water
Water:	Regular irrigation
Pruning:	Can tip prune to shape
Pests/Disease:	Few problems; may yellow; fertilize
Propagation:	Cuttings
Landscape Use:	Collector's specimen conifer
Other:	Slow growth, especially when young makes it a good container plant



*Thujaopsis dolabrata*; Staghorn Cedar



Botanical Name	<i>Tilia cordata</i>
Common Name	Littleleaf Linden
Family	Tiliaceae
Origin	Northern Europe (Great Britain)
Type	Deciduous tree
Hardiness	Sunset: 1 – 17
	USDA: 3b – 7
Form	Broad pyramid when young; Round head when older & solitary; oval head when planted in groves
Growth Rate	Moderate – fast
Mature Size	Height: 80 – 90' Spread: 50 – 70'
Landscape Size	Height: 18 – 26' Spread: 18 – 26'
Branching	Alternate Pseudo-terminal bud is shiny green (~ red), even, 3/8"; ends of branches have slight zigzag
Bark	stems are dark, greenish-brown; old bark is shallowly ridged, brown
Foliage	Alternate, simple leaves (to 3" long), cordate, base often oblique, coarsely serrate margin; Dull green color; yellow fall color—leaves often spotted with black from sooty mold
Flowers	Axillary branched cymes of small (3/8"), cup-shaped, yellow-green flowers; very fragrant (fresh, citrus-like); Cymes have long stalks, which are fused to elliptic, membranous bracts or wings, 2-3" long; Flowers midsummer (May? July?) after leaves have emerged; Flowers attract honeybees
Fruit	Dry, nut-like fruit look like tiny limes (3/8 – 1/2"), gray-green fruit Bract persists, tan, 2-3" long
Exposure	Full sun
Soil	Not fussy Prefers deep, rich soil that is alkaline – neutral, but will tolerate acidic soil
Water	Prefers regular water
Pests	Aphids! Followed by sooty mold
Diseases	--
Pruning	Remove dead/damaged wood
Propagation	Seed
LandscapeUse	Lawn tree, shade tree; honeydew mess restricts use as street tree
Other	Deep, fibrous root system; Medicinal: flowers picked in summer & dried; mucilaginous, diuretic, expectorant, nervine, lowers blood pressure, diaphoretic, relaxes spasms—good for feverish colds, flu, excess respiratory mucus, migraine, headaches (especially those associated with tension)



*Tilia cordata*, Littleleaf Linden



Plant Habit



Leafy Shoots



Flowers



Fruit



Winter Twigs



Botanical Name	<i>Tsuga heterophylla</i>
Common Name	Western Hemlock
Family	Pinaceae
Origin	Native along coast from AK to northern CA, inland to northern ID & MT
Type	Evergreen conifer Tree
Hardiness	Sunset: 1 – 7, 14 – 17
	USDA: 6 – 8
Form	Narrow, pyramidal crown with drooping leader & somewhat drooping branchlets with fine-textured foliage; Very long, sweeping branches
Growth Rate	Fairly fast (2½' per year; trees sit for a while after planting)
Mature Size	Height: 200 – 250' Spread: 75'-80'
Landscape Size	Height: 16 – 24' Spread: 14 – 18'
Buds	Very small
Bark & Branches	Twigs are brownish-gray with long brown hairs Cracked, purple-brown bark
Foliage	Blunt, round-tipped needles (¼ - ¾" long) are narrowly elliptic-oblong & finely toothed Color: glossy, dark green to yellow-green with 2 whitish bands underneath Fine-textured, fern-like
Cones	Many small (¾ - 1") ovoid cones hang from branch tips
Exposure	Full sun to shade
Soil	Best in slightly acidic, moist but well-drained soil
Water	Best with regular water & high summer humidity
Pests	Hemlock Adelgid
Diseases	--
Pruning	Shear hedge once a year in early to late summer; Easy to tip prune & shape
Propagation	Seed—seedlings can grow in total shade
Landscape Use	Large conifer for background use, hedges, screens
Other	Protect from wind; Climax tree for western side of PNW forests Second most-used lumber tree in USA (Douglas Fir is #1)

*Tsuga heterophylla*



Plant Habit



Branches/Cones



# SHRUBS



Botanical Name	<i>Abelia x grandiflora</i> (a cross between <i>A. chinensis</i> and <i>A. uniflora</i> )
Common Name	Glossy Abelia
Family	Caprifoliaceae
Origin	Nursery
Type	Semi-evergreen shrub (in Portland area, it tends to lose its leaves for only 3-4 weeks when the temperature drops low)
Hardiness	Sunset: 4-24
	USDA: 6-9
Form	Strong arching form
Growth Rate	Fast
Mature Size	Height: 10-12' Spread: 15-20'
Landscape Size	Height: 4-6' Spread: 6-10'
Branching	Opposite, sometimes whorled (3-4 leaves)
Bark	New stems are red; Old bark is reddish with gray strips at base
Foliage	Simple leaves (5/8-1" long, 3/8 – 5/8" wide at base); broad, lanceolate Margin is entire at base, but the leaf has widely spaced, shallow teeth along tip of leaf margin; New growth is reddish; mature leaves are dark green; in Fall & Winter the leaves turn a deep mahogany red; the leaves are very glossy
Flowers	Light pink to white tubular flowers (3/4 – 1" long) in clusters of 4-5 flowers Flowers on new wood at branch tips and leaf axils; Sepals are 5-pointed stars, reddish to purple, and persistent: "persistent purple sepals"; Blooms July – November (in Portland area); Slightly fragrant—flowers attract lots of bees
Fruit	Brownish seed
Exposure	Full sun to light shade
Soil	Any
Water	Light summer irrigation best
Pests	-- (sometimes aphids are a slight problem)
Diseases	--
Pruning	Shear for formal hedge or prune selectively for informal hedge; To rejuvenate, prune the biggest canes to base during winter every 3-4 years. The plant will grow to 3' in a couple of years. Cutting canes to base will result in more graceful, arching form
Propagation	Cuttings: spring – late spring; easy
LandscapeUse	Single specimen; formal or informal hedges
Other	4 <i>x grandiflora</i> is the species most often grown; Suckers readily; the entire plant including roots must be removed to get rid of the plant 'Edward Goucher' has smaller, pink flowers; 'Prostrata' is a low-growing form (18-20" H); uncommon

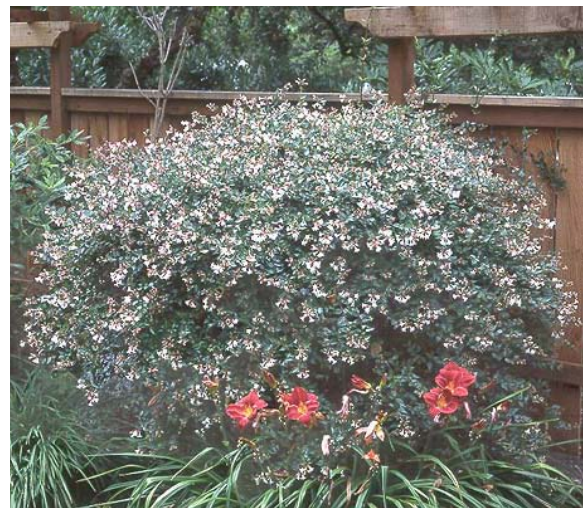
*Abelia x grandiflora*, Glossy Abelia



Flowers and sepals



Leaves



Plant Habit

Botanical Name	<i>Acer circinatum</i>
Common Name	Vine Maple
Family	Aceraceae
Origin	British Columbia to northern California, on the west & east sides of the Cascades; native to moist woods
Type	Deciduous tree/shrub
Hardiness	Sunset: A3, 1 – 6, 14 – 17
	USDA: 3 – 7 (8)
Form	Generally an upright, vase-shaped plant, but form varies; Individual grown from a seedling: low-branched with oval crown; Individual in sun: bushy, dense; Groups in shadier settings: multi-stemmed, vine-like, sprawling
Growth Rate	Moderate to fast
Mature Size	Height: 20 – 40' Spread: 12 – 20'
Landscape Size	Height: 8 – 16' Spread: 4 – 10'
Branching	Opposite
Bark & branches	Terminal bud in pairs with tuft of tan hair at base—hoof ; Twigs & branches are bright green & fade to gray; Gray bark
Foliage	Opposite, simple leaves (2 – 6" across) with (5) 7 – 9 (11) lobes, incised (cut ~ 1/3 to center); orbicular (rounded) shape & heart-shaped base; serrate margin; Color: new growth sometimes tinged red; mature leaves are medium green; Fall Color: moist sun—yellows & oranges; dry sun—oranges, scarlet, & reds; shade—bright yellow
Flowers	Pendent umbels of small reddish flowers (1/8 – 3/32") Blooms April – May with leaves
Fruit	Samaras start green & mature to tan; bow-tie samaras; Samaras wings stick out straight (180°); Mature mid-August – mid-September
Exposure	Prefers part sun to shade, but will tolerate full sun
Soil	Not fussy (best with well-drained soil)
Water	With or without (native to moist woods)
Pests	Occasionally black aphids
Diseases	Verticillium wilt
Pruning	Wood is very dense & hard to cut—need loppers & handsaw
Propagation	Seeds (best to collect mid-August – mid-September, otherwise seed must be stratified)
Landscape Use	Espallier against shady wall; screen; specimen; native gardens; good with backdrop of conifers.
Other	Be careful buying trees that were collected from wild; inspect the root ball. Trees collected from groups could have few roots (big roots often cut) & should sit in the nursery for a year to grow/die. If collected, take the individuals, which have fibrous roots & a better root ball. Or better yet, buy trees propagated from seeds at the nursery.



*Acer circinatum*, Vine Maple



Habit in Landscape



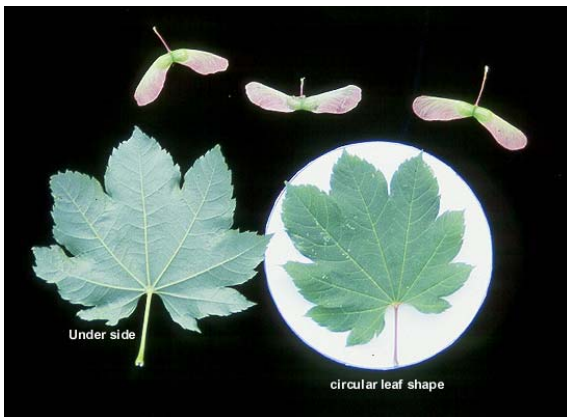
Habit in Woods



Multi-stemmed Habit



Leaves and Flowers



Leaf and Fruit Portrait



Autumn Leaves

Botanical Name	<i>Acer palmatum</i>
Common Name	Japanese Maple
Family	Aceraceae
Origin	Japan, parts of Korea
Type	Deciduous shrub/tree
Hardiness	Sunset: A3, (1) 2-10, 12, 14-24
	USDA: 5-8
Form	Broad vase-shaped tree with fine twigs
Growth Rate	Moderate with occasional fast spurts
Mature Size	Height: 15 – 30' Spread: 20 – 40'
Landscape Size	Height: 10 – 16' Spread: 10 – 16'
Branching	Opposite
Bark	Twigs are reddish to bright green; fine Older bark is ~ smooth, bright green to green-brown, brown
Foliage	Opposite, simple leaves (1½ - 3" across), palmately lobed (5 – 9 lobes; generally 7), finely cut; serrated margin; Petiole is short; Leaf color: bright green; Fall color: orange to red on same tree; notable
Flowers	Clusters of small (1/4") red flowers Flowers in late March – April before leaves emerge
Fruit	Small (5/8 – ¾" long) paired samaras that stand out at right angles Green to reddish (with sun); Great seedling variation—seeds from the same tree can produce very different plants
Exposure	Filtered shade best; Part sun – full sun
Soil	Well-drained, loamy soil (generally planted on berms/raised beds in Portland area)
Water	Regular water
Pests	Black aphids can be a big problem some years; watch for them and control early
Diseases	Verticillium wilt
Problems	Delicate leaves scorch easily in full sun and hot or strong wind Young trunks will scald in sun; protect them during the summer with tree wrap
Pruning	Prune to accentuate form; Prune to maintain size, but never cut more than 1/3 of the tree at one time; Mid-summer (August) or winter (if not freezing) are the best times to prune
Propagation	Seed
Landscape Use	Small specimen trees, container gardens, Japanese gardens, groves
Other	Protect from hot afternoon sun and wind Do not plant a bare-root tree—plant only B&B or containers



*Acer palmatum*, Japanese Maple



Spring Plant Habit



Summer Plant Habit



Autumn Plant Habit



Leaves and Fruit



Botanical Name	<i>Arbutus unedo</i> 'Compacta'
Common Name	Compact Strawberry Tree
Family	Ericaceae
Origin	Nursery (species is native to British Isles)
Type	Broadleaf evergreen shrub/small tree
Hardiness	Sunset: (4) – 24 (at temperature < 10F, the top will freeze to the ground; cut it down, and it will grow again like a perennial)
	USDA: 8 – 10
Form	Multistemmed with oval crown
Growth Rate	Moderate (fast)
Mature Size	Height: 14 – 18' Spread: 8 – 14'
Landscape Size	Height: 6 – 10' Spread: 3 – 6'
Branching	Alternate
Bark & branches	New growth is red to bright green, smooth; new twigs often have short, bristly hairs; Bark is reddish, peels in vertical strips; attractive
Foliage	Alternate, simple leaves (2½ - 4" long, 5/8 – 1" wide), elliptic to lanceolate Thick, leathery, serrate (small sharp teeth; Color: upper surface is dark, shiny green' underside is pale gray-green; Red petioles Little leaf drop—random, not messy
Flowers	Terminal clusters of urn-shaped flowers (3/32"); White – pinkish; stand out against the dark green foliage; Blooms late summer – fall (September – December)
Fruit	Spherical, warty fruit starts green & ripens to red with yellow flesh (3/4-1") Strawberry-like fruit; Fruit & flowers on tree at same time; Fruit persists until ~ January; Edible but mealy; Somewhat attractive to big birds
Exposure	Full sun
Soil	Prefers dry, loose soil; Tolerates clay (but no standing water)
Water	Little water needed—drought tolerant; Regular irrigation in container
Pests	--
Diseases	Leaf spot in very wet/humid springs
Problems	Freeze damage—clean line of black leaves; remove dead leaves
Pruning	Tolerates heavy pruning: tip prune to make denser; cut to base; spalier Head up to see bark
Propagation	Cuttings
Landscape Use	Specimen shrub; screen; container plant
Other	Bigger with dry heat; Needs protection from freezes

*Arbutus unedo* 'Compacta', Compact Strawberry Tree



Habit in Summer



Fall Habit with Flowers



Leaves



Leaves and Flowers



Leaves and Fruit

Botanical Name	<i>Aucuba japonica</i>
Common Name	Japanese Aucuba
Family	Cornaceae
Origin	Japan, eastern Asia
Type	Broadleaf evergreen shrub
Hardiness	Sunset: 4 – 24
	USDA: 7 – 9 (10)
Form	Multi-stemmed shrub with upright, oval form
Growth Rate	Moderate to slow
Mature Size	Height: 10 – 15' Spread: 8 – 12'
Landscape Size	Height: 4 – 6' (8') Spread: 3 – 5'
Branching	Opposite
Bark & Branches	Twigs are yellow-green; Branches are dark green, smooth & shiny Bark is smooth & gray
Foliage	Opposite, simple leaves (3 – 8" long, 1½ - 2" wide); Cuneate (wedge-shaped) with very coarsely toothed apex; Color: upper surface is very shiny/glossy, dark green; underside is pale yellow; Leaves persist for long time—dense; Foliage tends to hang down
Flowers	Dioecious; Blooms in February; Tiny maroon flowers (1/16 – 3/32") with 4 petals; Not showy; Cultivars tend to be self-fertile (male & female plants grafted together)
Fruit	Ripens early fall & persists through winter Cherry-red, oval-shaped fruit (5/8")
Exposure	Part shade (afternoon shade) to deep shade
Soil	Best with ~ acidic, very loamy soil with lots of organic matter Will tolerate clay
Water	Best with some irrigation
Pests	--
Diseases	--
Problems	Temperatures below 10 12°F & strong east winds cause tip burn
Pruning	Tip prune to keep to size; Don't shear—leaves too big Don't give heavy pruning—it won't recover well
Propagation	Seed; Semi-hardwood cuttings
Landscape Use	Large, strong background shrub; Tub plant for shady patio Try as indoor plant



*Aucuba japonica*



Plant Habit



Leaves

Botanical Name	<i>Aucuba japonica</i> ‘Golddust’
Common Name	Golddust Laurel
Family	Cornaceae
Origin	Nursery
Type	Broadleaf evergreen shrub
Hardiness	Sunset: 4 – 24
	USDA: 7 – 9 (10)
Form	Multi-stemmed shrub with upright, rounder form
Growth Rate	<b>Moderate to fast—tends to be more vigorous than species</b>
Mature Size	Height: 12 – 18’ Spread: 12 – 16’
Landscape Size	Height: 5 – 6’ (8’) Spread: 6 – 8’
Branching	Opposite
Bark & Branches	Twigs are shorter than species & yellow; Branches are dark green, smooth & shiny; Bark is smooth & gray
Foliage	Opposite, simple leaves are bigger than species (4 – 8” long, 2 – 3½” wide) Cuneate (wedge-shaped) with very coarsely toothed apex; Color: upper surface is very shiny/glossy, dark green & splattered with yellow dots; underside is pale yellow; Leaves persist for long time—dense Foliage tends to hang down
Flowers	Dioecious; Blooms in February; Tiny maroon flowers (1/16 – 3/32”) with 4 petals; Not showy; Cultivars tend to be self-fertile (male & female plants grafted together)
Fruit	Ripens early fall & persists through winter; Cherry-red, oval-shaped fruit (5/8”)
Exposure	Part shade (afternoon shade) to deep shade Tolerates more sun than species, but best with less
Soil	Best with ~ acidic, very loamy soil with lots of organic matter Will tolerate clay
Water	Best with some irrigation
Pests	--
Diseases	--
Problems	Temperatures below 10 12°F & strong east winds cause tip burn
Pruning	Tip prune to keep to size; Don’t shear—leaves too big Don’t give heavy pruning—it won’t recover well
Propagation	Semi-hardwood cuttings
Landscape Use	Large, strong background shrub to brighten dark corners of gardens & courtyards; Tub plant for shady patio; Try as indoor plant
Other	Cultivars tend to be used more than species

*Aucuba japonica* “Golddust”



Plant Habit



Leaves/ Flower



Botanical Name	<i>Berberis thunbergii</i> ‘Atropurpurea’
Common Name	Red Leaf Japanese Barberry
Family	Berberidaceae
Origin	Nursery
Type	Deciduous shrub
Hardiness	Sunset: 1 – 24
	USDA: 3 – 9
Form	Dense, rounded form; Flat-topped, multi-stemmed bowl shape
Growth Rate	Moderate (sometimes fast)
Mature Size	Height: 4 – 6’ Spread: 8 – 10’
Landscape Size	Height: 3 – 4’ Spread: 3 – 4
Branching	Alternate
Bark & branches	Twigs & branches are reddish purple Spines in leaf axils (generally single) are very sharp & 1/3 to 1/2” long
Foliage	Whorled (2-3 leaves) simple, spatulate leaves ( 3/4 - 1” long, 3/8” wide) Color: deep purple all year; Fall color: bronzy red
Flowers	Cluster of 2 – 4 orange-yellow flowers (1/3”); look like mini roses Blooms with leaves in early April; showy (purple & orange) Heavy, musky fragrance
Fruit	Oblong, shiny red berries (1/4 - 3/8” long); Attract birds
Exposure	Full sun (leaves turn bronzy-red with less sun)
Soil	Prefers well-drained soil, but will tolerate any
Water	Tolerates drought & lots of water
Pests	-- sometimes web worms on branch tips
Diseases	--
Pruning	Will tolerate heavy pruning, even shearing
Propagation	Cuttings
Landscape Use	Specimen; hedge
Other	Good plant for birds: habitat, escape, & food ‘Rose Glow’ has pink variegation caused by a virus that often affects ‘Atropurpurea’ causing its purple leaves to become variegated. Because variegation is caused by a virus, giving too much fertilizer & care can cause the plant to revert to plain color.

*Berberis thunbergii* 'Atropurpurea', Red Leaf Japanese Barberry



Spring Habit with Flowers



Branch



Branch with Flowers



Branch in Autumn

Botanical Name	<i>Berberis verruculosa</i>
Common Name	Warty Barberry
Family	Berberidaceae
Origin	China, other parts of Asia
Type	Broadleaf evergreen shrub
Hardiness	Sunset: 4 – 9, 14 – 24 (ok to 0°F)
	USDA: 5 – 9
Form	Strong mounding habit with branches arching at ends; dense
Growth Rate	Slow to moderate
Mature Size	Height: 4 – 6' Spread: 8 – 12'
Landscape Size	Height: 2½ - 3' (4') Spread: 3 – 6'
Branching	Alternate
Bark & Branches	Stems are olive-green; smooth; stems droop at ends; 3 spines at leaf axils Older bark is dark (forest) green to brown; smooth
Foliage	Simple, whorled leaves (generally 4 at the leaf axil); each whorl is 1 – 1½" apart; Leaves (5/8 – ½" long, 3/8" wide) are stiff, ~ contorted, elliptic, with wide-spaced teeth & single yellow spine (1/4") at tip; Color: dark green with pure white underside; Winter Color: leaves turn glowing red with pure white underside; Holds leaves for long time—dense; 3 spines at leaf axils are yellowish, very sharp, & ½ - 5/8" long
Flowers	Heavy bloom in early April; Flowers in dense clusters under the leaf axils Each flowers resembles a tiny rose (3/16"), yellow-orange Heavy musk scent—attracts honeybees
Fruit	Oval, coal-black berries; Attract (& shrub protects) ground-feeding birds
Exposure	Full sun to relatively heavy shade
Soil	Wet sloppy clay (does well) to sand
Water	Drought tolerant in soils that hold water (clay), but needs irrigation in sandier soils
Pests	--
Diseases	--
Pruning	Easy to control size with pruning (keep to 1½' tall) Can shear for formal hedge
Propagation	Cuttings—fairly easy; Seed
Landscape Use	Habitat for ground-feeding birds; barrier hedge; specimen; low screen; good in front of rhododendrons
Other	Spines make clean-up & pruning difficult Inner bark (cambial layer) is bright orange & used as dye



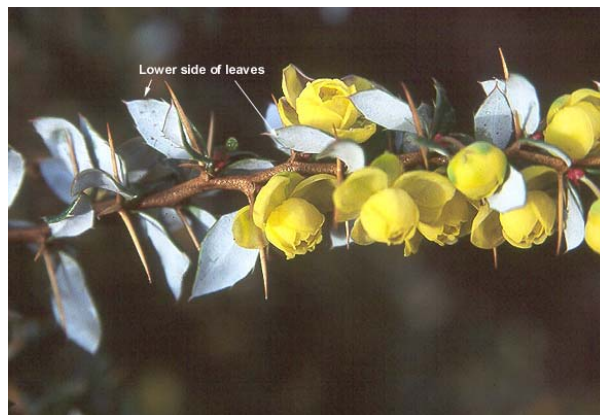
*Berberis verruculosa*



Plant Habit



Branches/Flowers



Flower/Thorns

Botanical Name:	<i>Camellia sasanqua</i>
Common Name:	Sasanqua Camellia
Family:	Theaceae
Location/Source:	Eastern and Southern Asia; mostly nursery
Type:	Evergreen shrubs
Hardiness	Sunset: 4-9, 12, 14-24 USDA 4-9
Form/Habit:	Mounded to upright ovals; dense
Growth Rate:	Slow to moderate
Mature Size:	Depends on cultivar: Height: 1 ½'-12' Spread: 1 ½'-8'
Landscape Size:	Height: 1-4' Spread: 1-6'
Branching	Alternate
Twigs/Bark:	Twigs smooth red to dark green; old bark brown
Foliage:	Simple, elliptic leaf; 1-2 ½" long; ¾-1" wide; crenate margin, thick glossy dark green above; dull yellow green below.
Flower:	Single, semi-double and double flowers; 2-3" across in whites, pinks, reds; many fragrant, bloom in late Fall to early Winter
Fruit:	Usually none
Cultural Requirements	
Exposure:	Full sun to fairly heavy shade
Soil:	Well drained and rich in organic matter, slightly acid preferred
Water:	Best with regular water; some cultivars somewhat drought tolerant
Pruning:	Tip prune to size; can be espaliered and trained
Pests/Disease:	Camellia scale and aphid
Propagation:	Cuttings
Landscape Use:	Specimen shrubs for winter bloom interest
Other:	Smaller and fewer disease problems than Japanese Camellia

*Camellia sasanqua*





Botanical Name:	<i>Choisya ternata</i>
Common Name:	Ternate Mexican Orange
Family:	Rutaceae
Location/Source:	Mexico
Type:	Evergreen shrub
Hardiness	Sunset: 7-9 14-24 4-6 borderline USDA: 8-12
Form/Habit:	Rounded mound
Growth Rate:	Moderate
Mature Size:	Height 6-8'; Spread 6-8'
Landscape Size:	Height 2 ½'-3'; Spread 3-5'
Branching	Alternate
Twigs/Bark:	Twigs smooth shiny green, older bark olive green
Foliage:	Trifoliate compound glossy green leaf 2-4"; leaflets oval ¾" to 1 ½"
Flower:	Clusters of ¾" five petaled pure white flowers; very fragrant; bloom March through April
Fruit:	Small ¼" round greenish fruit; seldom in Northwest
Cultural Requirements	
Exposure:	Full sun on coast shade inland with no afternoon sun
Soil:	Difficult in alkaline soils
Water:	Water infrequently but deeply
Pruning:	Tip prune to prevent leggy look
Pests/Disease:	Aphids
Propagation:	Cuttings
Landscape Use:	Specimen shrub used for flower fragrance
Other:	Freezes in exposed areas of Willamette Valley

*Choisya ternate*; Ternate Mexican Orange



Botanical Name	<i>Cornus sericea</i> (syn. <i>Cornus stolonifera</i> )
Common Name	Redtwig Dogwood, Red-Osier Dogwood
Family	Cornaceae
Origin	Alaska to California (both sides of the Cascades, up to 5000-6000' and down to the coast; usually along streams)
Type	Multi-stemmed deciduous shrub
Hardiness	Sunset: A1, A2, 1-9, 14-21
	USDA: 2-9
Form	Wide, vase-shaped clump; very twiggy and upright
Growth Rate	Fast
Mature Size	Height: 15-20' Spread: 15-20' (will spread by stolons to form bigger clumps)
Landscape Size	Height: 4-8' Spread: 4-8'
Branching	Opposite Terminal bud (3/8 – 1/2") is gray and pointed (two points)
Bark	Red twigs; If not pruned, the old bark is gray-brown
Foliage	Opposite, simple leaves (4-6") with pinnately arcuate venation; Widely toothed – entire margin; Color: upper side is medium – dark green; underside is light, silvery green; Fall Color: bright, purplish-red Leaf test: when carefully torn in half, <i>Cornus spp.</i> have silky hairs holding split leaf together
Flowers	Small (3/16") white flowers borne in terminal cymes (2-4" across); Flowers have 4 petals/no bracts; Long, heavy bloom (late June – October); Bloom on new wood
Fruit	Clusters of bluish-white berries (1/8 – 3/16"); Cyclic—usually bear fruit every other year; Birds eat the fruit, which is usually gone by winter
Exposure	Full sun to heavy shade
Soil	Tolerates heavy wet clay
Water	Regular to no water (tolerates summer drought if it gets winter wet)
Pests	--
Diseases	--
Pruning	Best to prune in late winter/early spring; will tolerate pruning at other times Coppice; or cut a third to half of the branches halfway down, and another third to the base to stimulate new growth (more color, fewer flowers) and to control overall size of shrub; A coppiced shrub will have whippy stems and will need "two years before it looks good again."; Prune stolons with sharp spade to control spread of plant
Propagation	Cuttings (easy); seed
Landscape Use	Riparian restoration; native plantings; specimen shrub; informal screen; freeway plantings
Other	Pollution tolerant; <i>Cornus alba</i> 'Sibirica' has redder stems



*Cornus sericea*, Redtwig Dogwood



Winter Habit



Stem



Winter Twigs

Botanical Name:	<i>Corylus avellena</i> ‘Contorta’
Common Name:	Harry Lauder’s Walking Stick
Family:	Betulaceae
Location/Source:	Nursery
Type:	Deciduous shrub
Hardiness	Sunset: 2-9 14-20
	USDA: 3-8
Form/Habit:	Mounded habit with twisting crooked branches
Growth Rate:	Moderate to fast
Mature Size:	Height: 8-12’ Spread: 10-15’
Landscape Size:	Height 4-6’ Spread: 6-8’
Branching	Alternate with strong pseudoterminal bud
Twigs/Bark:	Twigs brown, hairy and twisted; bark dark brown to charcoal
Foliage:	Simple, broad oval leaf with strong unequal base; 2-3” across; rough gray green with hairy petiole, light yellow fall color
Flower:	Male catkins 2-5” long at branch ends; yellowish green; heavy pollen set in January and February
Fruit:	Usually none; if present a beaked, 3/8-1/2” nut; tannish brown
Cultural Requirements	
Exposure:	Full sun
Soil:	Not fussy over soil conditions
Water:	Light irrigation
Pruning:	Thin to reveal branches
Pests/Disease:	Highly susceptible to Filbert blight: <b>Planting of filberts of all types in ornamental gardens is prohibited in Oregon to protect commercial filbert orchards</b>
Propagation:	Grafted
Landscape Use:	Specimen shrub for winter interest
Other:	Recommend removal and burning in existing plantings

*Corylus avellana* 'Contorta'; Harry Lauder's Walkingstick





Botanical Name	<i>Cotoneaster horizontalis</i>
Common Name	Rockspray Cotoneaster
Family	Rosaceae
Origin	China
Type	Deciduous arching shrub
Hardiness	Sunset: 1 – 11, 14 – 24
	USDA: 5 – 7
Form	Arching habit with stiff, angular growth pattern (herring bone)
Growth Rate	Moderate
Mature Size	Height: 4 – 6' Spread: 15 – 20'
Landscape Size	Height: 3 – 4' Spread: 4 – 6'
Branching	Alternate
Bark	Reddish-brown, smooth
Foliage	Alternate, simple leaves ( $\frac{1}{4}$ - $\frac{1}{2}$ "); Rounded to broadly elliptic; Color: dark, glossy green; Fall Color: Red; generally deciduous for only short time
Flowers	Pinkish-white, cup-shaped flowers ( $\frac{1}{8}$ ") in leaf axils Blooms in early summer
Fruit	Bright reddish-orange berries ( $\frac{1}{4}$ "); Develop late summer to fall Persistent; Attract birds
Exposure	Full sun to part sun
Soil	Not fussy; No standing water
Water	Drought tolerant once established
Pests	--
Diseases	Root rot with too much water
Pruning	Pruning to accentuate form best; Prune out portions of oldest growth & awkward/dead branches each year; Tolerates heavy pruning—down to the base; Heavy pruning should not interfere with next year's flowers much
Propagation	Cuttings: easy; Seed: less common because cuttings so easy & efficient
Landscape Use	Rockerries, walls, near water features; grown for cascading effect, fall color, habitat for birds, and arching form
Other	Best when given room to spread; can be ugly when cut along a straight edge

*Cotoneaster horizontalis*, Rockspray Cotoneaster



Habit



Branch Habit



Autumn Leaves



Winter Branches

Botanical Name:	<i>Cotoneaster apiculatus</i>
Common Name:	Cranberry Cotoneaster
Family:	Rosaceae
Location/Source:	China, Himalayas, Northern India
Type:	Deciduous shrub
Hardiness	Sunset: A3 2-24 USDA: 3-8
Form/Habit:	Dense, rounded shrub; wider than tall
Growth Rate:	Slow to moderate
Mature Size:	Height: 3-5' Spread: 5-8'
Landscape Size:	Height: 18-30" Spread: 2-4'
Branching	Alternate
Twigs/Bark:	Twigs smooth shiny reddish to dark green; old bark brown
Foliage:	Simple orbicular (round) leaf; 1/2" to 3/4" across; shiny dark green; good deep red fall color
Flower:	Small 3/16-1/4" five petaled white flowers in April
Fruit:	5/16-1/2" cranberry red berries
Cultural Requirements	
Exposure:	Full sun to afternoon shade
Soil:	Not fussy
Water:	Light irrigation once established
Pruning:	None required; can be tip pruned to maintain size
Pests/Disease:	Cotoneaster webworm; leaf spot fungus in humid planting areas
Propagation:	Seed or cuttings
Landscape Use:	Specimen shrub or mass planted for color and fruit
Other:	Does best in cold winter areas

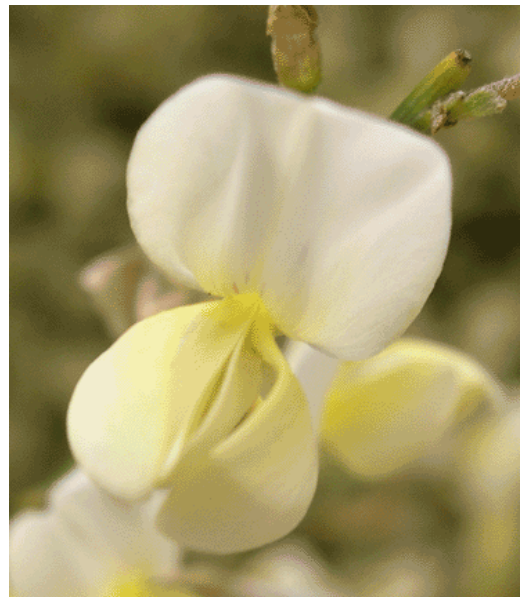


*Cotoneaster apiculatus*; Cranberry Cotoneaster



Botanical Name:	<i>Cytisus praecox</i>
Common Name:	Warminster Broom
Family:	Fabaceae
Location/Source:	Europe
Type:	Deciduous shrub
Hardiness	Sunset:2-9, 14-22 USDA: 5-8
Form/Habit:	Multi-stem, branched low
Growth Rate:	Moderate
Mature Size:	Height: 6-9' Spread:10-15'
Landscape Size:	Height: 3-4' Spread 6-8'
Branching	Alternate
Twigs/Bark:	Grey-green angular
Foliage:	Narrow oval leaf; ½-5/8" long; 1/16" wide; gray green and hairy
Flower:	Heavy set pea flower ½" cream-yellow-white 6-8 weeks, pungent.
Fruit:	Hairy grey-green peapod curved silver hairs. 1- 1½"L pods pop when ripe and throw seed 20'. Seed viable 80-100 years, but only a few germinate.
Cultural Requirements	
Exposure:	Full sun
Soil:	Grow in anything but standing water
Water:	Drought tolerant
Pruning:	Can shear but stays even and tight
Pests/Disease:	None
Propagation:	Seed
Landscape Use:	Freeway interchanges, banks. Pollution tolerant.
Other:	Terrible for allergies.

*Cytisus praecox*; Warminster Broom





Botanical Name:	<i>Cytisus scoparius</i>
Common Name:	Scotch Broom
Family:	Fabaceae
Location/Source:	Europe, Scotland
Type:	Deciduous shrub
Hardiness	Sunset: 2-9 14-22 H1 USDA: 5-9
Form/Habit:	Upright vase shape
Growth Rate:	Fast
Mature Size:	Height: 10-15' Spread: 8-12'
Landscape Size:	Height: 5-8' Spread: 4-6'
Branching	Alternate
Twigs/Bark:	Twigs angular bright green; old bark stringy brown
Foliage:	Leaf gray green narrow oval with entire margin 1/2" x 1/16"
Flower:	Heavy flowering March to September, pea like, 1/2" yellow flowers often with red lines in center. Heavy fragrance
Fruit:	1-2" gray green pea pod; heavy
Cultural Requirements	
Exposure:	Full sun to light shade
Soil:	Any
Water:	Drought tolerant
Pruning:	None
Pests/Disease:	None
Propagation:	Seed: seed viable 60-80 years
Landscape Use:	Species a nuisance weed, use only cultivars known to not seed down
Other:	On many cities nuisance plant list with eradication favored

*Cytisus scoparius*; Scotch Broom



Botanical Name:	<i>Daphne cneorum</i>
Common Name:	Rock or Garland Daphne
Family:	Thymelaeaceae
Location/Source:	Central and southern Europe
Type:	Broadleaf evergreen shrub
Hardiness	Sunset: 2b-9 14-17 USDA: 4-7
Form/Habit:	Dense low mound
Growth Rate:	Slow
Mature Size:	Height: 1-1 ½' Spread: 3-4'
Landscape Size:	Height: 8-16" Spread: 1-2'
Branching	Alternate
Twigs/Bark:	Fleshy gray green twigs; older bark gray
Foliage:	Simple narrow elliptic leaf; 1-2" long x 3/16-1/4" wide; entire margin
Flower:	May, June bloom time, tight clusters of 3/8" tubular rosy pink flowers at branch ends; very fragrant
Fruit:	¼" oval red berries
Cultural Requirements	
Exposure:	Full sun; afternoon shade in hottest areas
Soil:	Well drained loamy soils
Water:	Regular but light irrigation
Pruning:	Little needed
Pests/Disease:	Subject to root rot in heavy wet soils
Propagation:	Cuttings
Landscape Use:	Specimen shrub in rockeries; used for fragrance
Other:	All parts, especially fruit, are toxic; roots very sensitive, do not transplant easily



*Daphne cneorum*; Rock or Garland Daphne



Botanical Name	<i>Euonymus alatus</i> ‘Compacta’ (syn. <i>E.</i> ‘Ciliodentatus’)
Common Name	Compact Winged Euonymus, Burning Bush
Family	Celastraceae
Origin	Nursery
Type	Deciduous shrub
Hardiness	Sunset: A2, (1) 2 – 10, 14 – 16
	USDA: 4 – 9
Form	Even, bowl-shaped form with branching starting near ground; often flat-topped when older; looked sheared without pruning; dense crown.
Growth Rate	Slow – moderate
Mature Size	Height: 10 – 15’ Spread: 10 – 15’
Landscape Size	Height: 4 – 6’ Spread: 4 – 6’
Branching	Opposite
Bark	Stems are green to brown with corky wings that are grayish-brown. Because wings vary in size, select plants at the nursery for large wing size.
Foliage	Opposite, simple leaves (1½ - 3” long, 5/8 – 1” wide), lanceolate – elliptic with serrate margin; Leaves hang down from branch in even pattern; Leaf color: dark green upper surface with gray-green underside; Notable fall color: in full sun, the leaves turn scarlet red; with more shade, the leaves turn reddish pink.
Flowers	Branched cyme with generally 3 small (3/16”), green flowers; not showy; Bloom in late spring (May – June) after the leaves have emerged.
Fruit	Fruit is lobed (3/8”), reddish-pink; it looks like a miniature pumpkin; It splits open to reveal 1 bright orange, oval seed (3/16” aril).
Exposure	Full sun to shade
Soil	Clay – sand; not fussy
Water	Best with some summer irrigation; will tolerate heavy irrigation.
Pests	--
Diseases	--
Pruning	Little required aside from removing dead/damaged wood, but it will withstand heavy pruning.
Propagation	cuttings
Landscape Use	Hedge, single specimen grown for bright red color.
Other	<i>Euonymus alatus</i> is from China, and it grows 25’ H, 45’ S



*Euonymus alatus* 'Compacta', Compact Winged Euonymus



Summer



Autumn



Leaves



Fruit



Wings



Botanical Name:	<i>Fatsia japonica</i>
Common Name:	Japanese Aralia
Family:	Araliaceae
Location/Source:	Japan, Korea
Type:	Evergreen shrub
Hardiness	Sunset: 4-9 14-20 H1, H2
	USDA 5-9
Form/Habit:	Multi-stemmed oval shrub
Growth Rate:	Moderate to fast
Mature Size:	Height: 15-20' Spread: 10-15'
Landscape Size:	Height: 6-10' Spread: 6-8'
Branching	Alternate
Twigs/Bark:	Twigs thick, 1-1 ½", green; old stems brown with heavy leaf scars
Foliage:	Simple, lobed leaf with 9-15 lobes, large 9-16" across and equal petiole length; glossy dark shiny green above; dull yellow green underneath.
Flower:	Loose, large panicle to 14" tall with 8-10 1 ½" clusters of off white flowers; blooms in late winter and early spring
Fruit:	Light set of ¼" black berries
Cultural Requirements	
Exposure:	Best with afternoon shade to full shade
Soil:	Any soil
Water:	Regular irrigation
Pruning:	Removal of dead and damaged stems or remove tallest stems to rejuvenate and control size
Pests/Disease:	Snails and slugs
Propagation:	Seed, division or cuttings
Landscape Use:	Tropical looking specimen or large container plant
Other:	If leaves yellow and iron to soil

*Fatsia japonica*; Japanese Aralia



Botanical Name	<i>Gaultheria shallon</i>
Common Name	Salal
Family	Ericaceae
Origin	AK (on both slopes of the Cascades & Coast Range) to CA
Type	Evergreen broadleaf shrub (groundcover)
Hardiness	Sunset: 4 – 7, 14 – 17
	USDA: 4 – 9
Form	Mounded habit with many upright stems; Spreads slowly by runners
Growth Rate	Slow especially to start)
Mature Size	Wet habitat: Height: 8 – 16' Spread: 12 – 20'
Landscape Size	Dry & sunny habitat: Height: 2 – 4' Spread: 4 – 5' (or shorter in very dry areas)
Branches	Zigzag twig (pseudo-terminal bud); Bright green to red twigs with fine brown hairs
Foliage	Alternate simple leaves (1½ - 4" long, 1 – 2½" wide); Very broad & oval with either widely-spaced coarse teeth or entire; Color: yellow green (full sun) to dark green & glossy (shade) with dull, pale underside; Very thick cuticle; feels like plastic
Flowers	Urn-shaped flowers on spikes with 10 – 15 flowers per spike; White to pink, small (3/8 – ½"); Generally blooms around Portland area in early spring – early summer; Amount of bloom depends on conditions of a particular year
Fruit	Big (5/16 – ½") berries, black with gray bloom; Edible but bland & mealy; Berries used in pemmican & as black dye; Berries attract ground birds
Exposure	Full sun to shade
Soil	Loose, acidic (pH 5) soils high in organic matter
Water	With or without
Pests	Root weevils—holes in leaves <u>without</u> black margins
Diseases	Leaf spot fungus—holes in leaves <u>with</u> black margin
Problems	Hard to establish—slow-growing, miccorhizal relationship
Pruning	Prune dead/damaged parts; Neglected plantings can be cut back in April—remove dead wood, mulch with leaf mold
Propagation	Seed—difficult
Landscape Use	Groundcover in small areas; good with rhododendrons & other acid-loving plants; native landscapes
Other	Probably has strong miccorhizal relationship; Grows with <i>Tsuga heterophylla</i> & <i>Rubus spectabilis</i> and <i>Vaccinium ovatum</i> & <i>Acer circinatum</i>



*Gaultheria shallon*



Plant Habit



Leaf/Flower



Flower

Botanical Name	<i>Hamamelis mollis</i>
Common Name	Chinese Witch Hazel
Family	Hamamelidaceae
Origin	China—middle range mountain plant
Type	Deciduous shrub
Hardiness	Sunset: 2b – 7, 15 – 17 (doesn't like heat & flowers better with ~ cold winters)
	USDA: 5 – 8
Form	Upright narrow to broad vase shape, either branched at ground or multi-stemmed
Growth Rate	Moderate to slow
Mature Size	Height: 20 – 30' Spread: 16 – 24'
Landscape Size	Height: 8 – 10' Spread: 6 – 10'
Branching	Alternate
Buds	Pseudoterminal bud (zigzag) is round to oval (1/2" long), gray-green
Bark & Branches	Twigs are gray-green; Bark is rough & gray
Foliage	Alternate, simple leaves () with rounded tips & oblique bases; coarsely toothed; Color: upper surface is dull green; underside is gray & fuzzy Fall Color: clear yellow; Usually begins to leaf out in March (after flowers) Petiole is reddish brown & hairy
Flowers	Bloom mid-January through February (~ 6 weeks) before leaves; Each flower (3/4 – 1" across, 1/8" wide) has 4 thin petals (yellow) & reddish brown calyx full of nectar; Tiny flowers in showy clusters—blooms at leaf points for fine spidery effect; Very Fragrant
Fruit	Small (1/4") beaked nutlet (like filbert) Birds & other animals usually eat them before we see them
Exposure	Full sun to part sun
Soil	Not fussy (prefers moderately fertile, moist but well-drained soil)
Water	Best with light summer irrigation (1/2 – 3/4" per week)
Pests	--
Diseases	--
Pruning	Easy: shorten selected branches in December; force the flowers inside & use cut stems in flower arrangements; Pull away stock suckers
Propagation	Grafted—H. vernalis is sometimes used as a stock plant & it suckers; Cuttings
Landscape Use	Background specimen with winter interest & fragrance
Other	'Goldcrest' bears large flowers, flushed red at the base of the petals, from midwinter to spring; H. x intermedia cultivars are more common in the trade; they vary in color & fragrance; H. virginiana (Common or American Witch Hazel blooms in fall & its flowers are lost in leaves)

*Hamamelis × intermedia*



Plant Habit



Leaves- Summer



Flowers- Winter



Botanical Name	<i>Hydrangea macrophylla</i>
Common Name	Bigleaf Hydrangea
Family	Hydrangeaceae
Origin	Japan
Type	Deciduous shrub
Hardiness	Sunset: 2 – 9, 14 – 24
	USDA: 6 – 9
Form	Rounded habit, generally multi-stemmed
Growth Rate	Moderate
Mature Size	Height: 4 – 6 (12)’ Spread: 6 – 8’
Landscape Size	Height: 4 – 6’ Spread: 4 – 6’
Branching	Opposite
Bark	Smooth, reddish-brown
Foliage	Opposite, simple leaves (up to 8” long, 2 – 6” across); Broadly ovate, coarsely toothed, glossy; Color: medium to dark green; Fall Color: yellowish; not spectacular
Flowers	Flattened corymbs/balled cluster (2 – 6” across) of sterile flowers; Color depends on soil acidity: acidic soil produces blue flowers; alkaline soil produces pink flowers; Blooms in mid-summer – early fall on new wood
Fruit	--
Exposure	Part sun (best) to full shade; Leaves burn with too much sun
Soil	Rich, well-drained soil Add peat moss or leaf mold
Water	Regular water
Pests	Few problems; slugs occasionally munch new, lower-growing leaves
Diseases	--
Pruning	Prune old canes selectively (by thirds is best) to ground or halfway to ground; The entire plant can be cut to the ground; mulch to protect from damage from freezing/hard rain; Prune in early spring
Propagation	Cuttings: easy; Air-layering
Landscape Use	Specimen, shady shrub border; cut flower source; best as understory shrub
Other	Hortensia type = mophead hydrangea; Lacecaps have both fertile (small flowers in center of inflorescence) & sterile flowers (larger flowers surrounding fertile ones); Protect from east wind

*Hydrangea macrophylla*, Bigleaf Hydrangea



Habit



Nikko Blue Bigleaf Hydrangea

Botanical Name:	<i>Hydrangea quercifolia</i>
Common Name:	Oakleaf Hydrangea
Family:	Hydrangeaceae
Location/Source:	Southeastern US
Type:	Deciduous shrub
Hardiness	Sunset Zones: 2b-23
	USDA: 3-8
Form/Habit:	Loose upright oval
Growth Rate:	Slow to moderate
Mature Size:	Height 6-9'; Spread 4-6'
Landscape Size:	Height 3-4'; Spread 3-4'
Branching	Opposite
Twigs/Bark:	Twigs- gray green tomentose; old- peeling, shaggy, gray brown over cinnamon
Foliage:	Simple leaf, opposite, long oval, 4-8"L, 3-4"W, lobed w/ spine tip, 5-7 lobes, felty gray green, silver green underside, red in fall in full sun
Flower:	mid summer, July/Aug., dense pannicle, dome shaped, 3-8"L/W, small fertile flowers, 3/16", off white; sterile flowers, 5/8-1", 4 petals, white to pink purple
Fruit:	Small brown seed
Cultural Requirements	
Exposure:	Full Sun (6 hrs)- Part Shade
Soil:	Acidic, any
Water:	Regular irrigation
Pruning:	None, remove seedheads
Pests/Disease:	--
Propagation:	Cutting
Landscape Use:	
Additional Notes:	'Alice' red in fall, 'Snow Queen' lrg flower, 'Snow Flake' double flower; Sensitive roots, needs wide rootball to transplant



*Hydrangea quercifolia*; Oakleaf Hydrangea



Botanical Name	<i>Ilex cornuta</i> 'Berries Jubilee'
Common Name	Berries Jubilee Holly
Family	Aquifoliaceae
Origin	Nursery (straight species from China)
Type	Broadleaf evergreen shrub
Hardiness	Sunset: 4 – 24
	USDA: (6) 7 – 9
Form	<b>Broad, flattened, round form—wider than tall; denser than 'Burfordii'; Better behaved &amp; better shape than 'Burfordii'</b>
Growth Rate	<b>Slow to moderate</b>
Mature Size	Height: 6 – 8' Spread: 6 – 8'
Landscape Size	Height: 2 – 3' Spread: 3 – 5'
Branching	Alternate
Bark & Branches	New growth is bright green to yellow; Bark is dark olive green
Foliage	Alternate, simple leaves (2 - 3" long, 1½ - 2" wide) with thick, stiff cuticle (plastic); 5 <i>Spines</i> — <i>shape is ~ rectangular</i> ; Color: upper surface is dark green (less glossy than 'Burfordii'); underside is pale yellow-green; Holds leaves for a long time—dense & little leaf drop
Flowers	Very inconspicuous green flowers in late spring; Tends to be self-fertile (& therefore doesn't require male & female plants to produce fruit)
Fruit	Big, bright red berries (3/8") in winter; Heavier berry set than 'Burfordii'; Birds don't eat the berries until after they've fermented
Exposure	Full sun to shade
Soil	Prefer moderately rich & slightly acidic soil with lots of organic matter & mulch
Water	Best with summer irrigation
Pests	Spider mites sometimes
Diseases	--
Pruning	Tip-prune back to crotch every year or every other year
Propagation	Cuttings
Landscape Use	Specimen plant used for foliage, form, winter interest
Other	Shallow roots—easy to transplant; Needs long warm season to set fruit—but not baking hot sun or it suffers; 'Berries Jubilee' & 'Dazzler' have replaced 'Burfordii' in usage

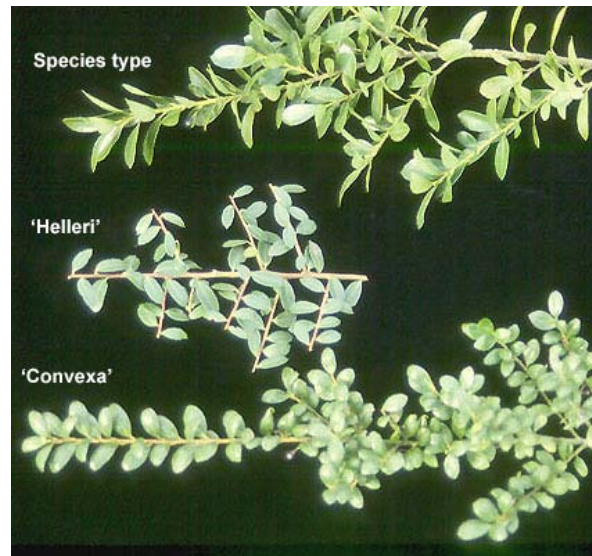
*Ilex cornuta* “Burfordii”





Botanical Name	<i>Ilex crenata</i> 'Convexa' (often sold as <i>I. c. bullata</i> )
Common Name	Convexleaf Japanese Holly
Family	Aquifoliaceae
Origin	Nursery (straight species comes from Japan, Korea)
Type	Broadleaf evergreen shrub
Hardiness	Sunset: 3 – 9, 14 – 24
	USDA: 5 – 8
Form	Broadly spreading shrub with flat top; branches low to ground, multi-stemmed, dense, fine-textured (small leaves)
Growth Rate	Moderate
Mature Size	Height: 6 – 8' Spread: 10 – 14'
Landscape Size	Height: 2 – 4' Spread: 3 – 5' (6')
Branching	Alternate
Buds	Very tiny, dark brown
Bark & Branches	Young bark/stems are smooth, bright yellow-green to reddish (with more sun); Older bark is smooth, olive-green
Foliage	Alternate, simple leaves (5/8 – 3/4" long, 1/4 - 3/8" wide); Oval with generally entire to slightly crenate margin with occasionally tiny teeth at leaf apex Convex leaf (cupped downward); Thick cuticle (~ plastic), very shiny Color: medium green, shiny upper surface; dull, yellow-green underside Holds foliage well, dense
Flowers	Dioecious; Very inconspicuous, tiny tubular flowers in leaf axils
Fruit	Coal-black, shiny, berries (3/16") right against stem; Produces few berries; grown for foliage; Birds eat berries, but they're toxic to humans Not invasive
Exposure	Part sun (afternoon shade) to shade; Leaves will become puny & yellow-green with too much sun
Soil	~ acidic best with mulch
Water	Regular irrigation (but not a lot of water needed)
Pests	Root Weevil: edge of leaf notched; beneficial nematodes eat the young & reduce the problem; Spider Mites: ~ common especially when the plant is stressed or grown next to other susceptible plants ( <i>Skimmia</i> ); mites punch lots of tiny holes into the leaves & turn them a ghostly yellow; use neem to control (still difficult & neem is broad spectrum) or prevent attack with good care
Diseases	--
Pruning	Little pruning needed, but can shear as hedge
Propagation	Cuttings (easy)
Landscape Use	Background evergreen; hedge
Other	'Sky Pencil' is good for small, narrow, formal hedges; moderate growth rate English Holly has toxins in its leaf spines

*Ilex crenata* 'Convexa'



Botanical Name	<i>Juniperus chinensis</i> 'Pfitzeriana'
Common Name	Pfitzer Juniper
Family	Cupressaceae
Origin	Nursery
Type	Evergreen conifer shrub (infill shrub)
Hardiness	Sunset: A2, A3, 1 – 24, H1, H2
	USDA: (2) 3 – 9
Form	Grows from central point & sends out shoots with feathery ends
Growth Rate	Fast
Mature Size	Height: 6 – 8' Spread: 18 – 22'
Landscape Size	Height: 3 – 5' Spread: 6 – 10' (12')
Bark & Branches	Very heavy trunk (can be 6" in diameter) is not visible because the foliage is so dense; Bark is scaly, dark reddish-brown
Foliage	Both scale-like (older growth) & sharp needle-like/awl-like (tips of branches); Color: sea-green; Strong fragrance; Very irritating—juniper rash
Fruit	Gray-green berries (5/16") are hidden by foliage
Exposure	Full sun
Soil	Well-drained
Water	No water—drought tolerant
Pests	Tip Midge: more common with Pfitzer than Tam juniper
Diseases	Twig Blight: stunts branch growth & leaves are clumped like coral; more common with Pfitzer than Tam juniper & more common when stressed
Problems	Gets bigger than people expect
Pruning	No shearing—try to remove entire branch when pruning
Propagation	Cuttings
Landscape Use	Freeway interchanges; commercial plantings—very common
Other	Very deep-rooted—need a big truck & chainsaw to remove



*Juniperus chinensis* 'Pfitzeriana'



Botanical Name	<i>Juniperus chinensis</i> 'Torulosa' (syn. 'Kaizuka')
Common Name	Hollywood Juniper
Family	Cupressaceae
Origin	Nursery (species from China, Korea)
Type	Evergreen conifer large shrub/small tree
Hardiness	Sunset: 1 – 24, H2
	USDA: 3 – 9
Form	Irregular upright, dense oval with twisted appearance; dense foliage along stiff strongly upsweeping branches
Growth Rate	Fast—especially with good growing conditions
Mature Size	Height: 20 – 35' Spread: 18 – 24'
Landscape Size	Height: 12 – 15' Spread: 8 – 12'
Branching	Spiral; dense foliage along stiff strongly upsweeping branches
Bark & Branches	Pitchy, red-brown with scaly surface
Foliage	Stiff needle-like foliage pressed along stem; foliage made up of very small; round, smooth scale-like segments; Color: bright to dark green
Cones	Staminate cone is round, at branch tips; lots of pollen released
Fruit	Steel blue with whitish bloom (3/16"); very fragrant
Exposure	Full sun (will tolerate some light shade); Like hot, dry climates
Soil	Good drainage; Not fussy
Water	NO summer irrigation
Pests	Juniper Tip Midge: feeds on tips of scales
Diseases	Twig blight: causes branch dieback; Root rot in moist sites without good drainage
Pruning	Tolerates pruning well—can train, shape, espalier; Tip prune to control size
Propagation	Seed
Landscape Use	Large, strong accent tree or screen for hot, dry sites
Other	Berries used in cooking & to make gin; Very deep rooted; plant where it will stay (doesn't transplant well)

*Juniperus chinensis* 'Torulosa'





Botanical Name	<i>Juniperus squamata</i> ‘Blue Star’
Common Name	Blue Star Juniper
Family	Cupressaceae
Origin	Nursery
Type	Evergreen conifer shrub (groundcover in small areas but doesn’t spread well)
Hardiness	Sunset: (A3), 1 – 24
	USDA: 3 – 7
Form	Dense, oval mound—looks like a pincushion
Growth Rate	Slow (grows $\frac{3}{4}$ - 2” per year)
Mature Size	Height: 2 – 3’ Spread: 3 – 5’
Landscape Size	Height: 14 – 20” Spread: 16 – 24”
Bark & Branches	Gray-green, flaky—not visible because the foliage is so dense
Foliage	All needle-like foliage— $\frac{1}{4}$ – $\frac{1}{2}$ ” long; Color: steel blue; stomatal bloom on all surfaces
Flowers	Large ( $\frac{3}{8}$ ”) gray-green berries; Sets few berries
Exposure	Full sun
Soil	Well-drained soil
Water	No water—drought tolerant
Pests	--
Diseases	Root rot in heavy soils
Pruning	No pruning needed—plant stays dense by itself
Propagation	Cuttings
Landscape Use	Rockery specimen; mass plantings in hot areas with reflected heat; good with ornamental grasses; bonsai
Other	Only 3 – 4 cultivars of <i>J. squamata</i>

*Juniperus squamata* 'Blue Star'



Plant Habit – more than one plant



Branchlets

Botanical Name:	<i>Kalmia latifolia</i>
Common Name:	Mountain Laurel
Family:	Ericaceae
Location/Source:	Eastern North America
Type:	Evergreen shrub
Hardiness	Sunset Zones: 2-7, 16, 17 - hardy below 0 degrees Fahrenheit USDA: 4-8
Form/Habit:	As tall as wide mounded shrub/ A small tree or shrub with many twisted stems.
Growth Rate:	Slow
Mature Size:	Height: 6-8' Spread: 10-12'
Landscape Size:	Height: 3-5' Spread: 4-8'
Branching	Alternate
Twigs/Bark:	Twig: Generally forked and twisted, green when young, later brownish-red. Bark: Thin, dark brown to red in color, shredding.
Foliage:	Glossy, leathery oval leaves are 3-5"L, dark green on upper surface, yellowish green beneath.
Flower:	Late spring, blossom clusters to 5". Flowers are 1"W, light pink or white opening from darker pink buds. Sometimes slightly contrasting color in throat and/or contrasting stamens. Small bud resembles fluted turban (Sunset).
Fruit:	Round, brown dehiscent capsule, 1/4 inch long, splitting into 5 valves when dry; releasing very small seeds. Maturing in September and October.
Cultural Requirements	
Exposure:	Part shade (varies)
Soil:	Acid, humus-rich
Water:	Regular
Pruning:	For shape after flower
Pests/Disease:	Leaf spot fungus; forms target shape
Propagation:	Cuttings
Landscape Use:	Specimen floral shrub
Other:	Many color and form varieties – 'Peppermint', 'Pinwheel', 'Carousel', and 'Bullseye' for color. 'Elf' is dwarf.



*Kalmia latifolia*; Kalmia or Mountain Laurel



Botanical Name:	<i>Kerria japonica</i> ‘Pleniflora’
Common Name:	Double Japanese Kerria
Family:	Rosaceae
Location/Source:	Japan, Asia
Type:	Multi-stemmed deciduous shrub
Hardiness	Sunset Zones 2-23 USDA: 4-9
Form/Habit:	Multistemmed arching habit (allow room for display)
Growth Rate:	Moderate to fast
Mature Size:	Height: 8-12’ Spread: 8-12’
Landscape Size:	Height: 4-6’ Spread: 4-6’
Branching	Alternate
Twigs/Bark:	Twigs and bark smooth shiny bright green
Foliage:	Serrate, oblanceolate, leaf looks folded or pleated along veins. 2-4” L, ¾-1” base.
Flower:	Blooms on new wood against stems, heavy set mid-March through May. Good in shade flower 1-1.5”W. Fully double flower; species with single, five petaled flower.
Fruit:	No fruit.
Cultural Requirements	
Exposure:	Afternoon shade to full shade
Soil:	Not fussy
Water:	Light summer irrigation
Pruning:	Remove 30-40% of canes all the way to ground – rejuvenates lateral bloom. Prune after flower.
Pests/Disease:	
Propagation:	Cuttings – produces clumps of stems from roots
Landscape Use:	Specimen focal point for ruffled flowers and color
Other:	Good winter interest. Can be used as cut flowers. Green branches are commonly used in Japanese winter floral arrangements.



*Kerria japonica* 'Pleniflora'; Double Flowered Japanese Kerria





Botanical Name:	<i>Leucothoe fontanesiana</i> (racemosa)
Common Name:	Drooping Leucothoe/Swamp Sweetbells
Family:	Ericaceae
Location/Source:	Southwest US and Mexico
Type:	Evergreen shrub
Form/Habit:	Arching multi-stemmed shrub
Hardiness	Sunset Zones: 4-7; 15-17 USDA: 5-8
Growth Rate:	Moderate
Mature Size:	Height: 4-6' Spread: 6-10'
Landscape Size:	Height: 2-3' Spread: 4-6'
Branching	Alternate
Twigs/Bark:	Slender, green (may have some red); small buds with visible scales, may have visible catkin like flower clusters in winter. Older bark smooth light brown; larger stems may become finely scaly.
Foliage:	Simple, sharply but finely serrated; 1 1/2 to 3 inches long, ovate to lance shaped; deciduous, shiny green above, paler below.
Flower:	White bell-shaped flowers (1/4 inch long) in curving hanging racemes (2 to 4 inches long) from base of new branches; appearing in April to May.
Fruit:	Dry brown capsules each 1/4 inch long in hanging one sided clusters; mature in early fall.
Cultural Requirements	
Exposure:	Full to part sun (full sun in cooler climates only)
Soil:	Deep, acid, humus-rich
Water:	Little to moderate
Pruning:	Prune oldest stems to ground occasionally
Pests/Disease:	Aphids; root weevil; leaf spot fungus; scorch in full sun heat
Propagation:	Seed or cuttings
Landscape Use:	Flowering specimen or native/woodland plantings.
Other:	Best in masses. Keep out of dry winds.

*Leucothoe fontanesiana(walteri)*; Drooping Leucothoe



Botanical Name:	<i>Magnolia stellata</i>
Common Name:	Star Magnolia
Family:	Magnoliaceae
Location/Source:	Japan
Type:	Deciduous shrub
Hardiness	Sunset: 2b-9 14-24 USDA: 4-8
Form/Habit:	Branches low to ground with dense oval crown
Growth Rate:	Moderate
Mature Size:	Height: 12-20' Spread: 14-20
Landscape Size:	Height: 4-8' Spread: 4-10'
Branching	Alternate with wedge shaped nodes
Twigs/Bark:	Twigs, stiff and gray; old bark gray
Foliage:	Simple leaf; oval to oblanceolate with wavy margin; 3-4" long, 1-2" wide; dull yellow green; new growth reddish
Flower:	Flowers before leaves March to April 6-8 weeks; flowers at branch ends; bud to 1", fuzzy tan color, flower 3-5" across, 8-12 pure white, narrow petals
Fruit:	1 ½-2" lumpy pinkish fruit with orange seeds
Cultural Requirements	
Exposure:	Full sun to heavy shade
Soil:	Not fussy
Water:	Regular irrigation
Pruning:	Can be trained to single trunk; will tolerate heavier pruning than other magnolias
Pests/Disease:	Problems with root rot, sensitive roots and late frost damage to Flowers
Propagation:	Seed and cuttings
Landscape Use:	Specimen shrub
Other:	Manolia with youngest age to bloom



*Magnolia stellata*; Star Magnolia



Botanical Name:	<i>Mahonia aquifolium</i>
Common Name:	Oregon Grape
Family:	Berberidaceae
Location/Source:	Western United States
Type:	Evergreen shrub
Hardiness	Sunset: 1-21 USDA: : 4-8
Form/Habit:	Upright vertical in shade, dense and wide in sun
Growth Rate:	Slow to moderate
Mature Size:	Height: 4-6' Spread: 10-40'
Landscape Size:	Height: 3-5' Spread: 5-8'
Branching	Alternate
Twigs/Bark:	Grey-green new, brown-grey older
Foliage:	Pinnately compound 6-10"L with broad elliptic leaflets wavy serrate margin, spine-toothed. Flat petiole, thick shiny dark green upper side, dull yellow-green underside. 1-2"L, 5/8-1"W leaflet. Turns red in winter
Flower:	March to mid-May on flower spikes 3-6+"L, 2-2 1/2"W. 3/8-1/4" orange-yellow flowers
Fruit:	3/8" dark blue berries with powdery bloom.
Cultural Requirements	
Exposure:	Full sun best, deep shade OK
Soil:	Loose, organic, slightly acid
Water:	With or without
Pruning:	Tolerates heavy pruning; tip prune to thicken plant
Pests/Disease:	Root weevil; leaf scorch
Propagation:	Runners/root cuttings, seed
Landscape Use:	Native plantings
Additional Notes:	Inner bark used for dyes; Oregon State flower



*Mahonia aquifolium*; Oregon Grape





Botanical Name:	<i>Myrica californica</i>
Common Name:	Pacific Wax Myrtle
Family:	Myricaceae
Location/Source:	Washington to Southern California in coastal valleys
Type:	Evergreen shrub
Hardiness	Sunset: 4-9 14-24 USDA 5-9
Form/Habit:	Multistemmed, upright oval; dense
Growth Rate:	Moderate to fast
Mature Size:	Height: 20-30' Spread: 20-30'
Landscape Size:	Height: 10-14' Spread 10-14'
Branching	Alternate
Twigs/Bark:	Smooth yellow green twigs; old bark smooth brown
Foliage:	Simple leaf, narrow elliptic to oblanceolate; serrate margin, medium shiny green above, dull yellow green below
Flower:	Small greenish flower clusters on new growth
Fruit:	Small waxy, purplish nutlets
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Not fussy
Water:	Somewhat drought tolerant except for hotter areas
Pruning:	Can be headed up to small tree or tip pruned to control size
Pests/Disease:	Few problems
Propagation:	Seed or cuttings
Landscape Use:	Good small evergreen tree or background screen
Other:	Pollution tolerant; often used on freeway banks

*Myrica californica*; Pacific Wax Myrtle



Botanical Name:	<i>Nandina domestica</i>
Common Name:	Heavenly Bamboo
Family:	Berberidaceae
Location/Source:	China, Japan
Type:	Semi-evergreen shrub
Hardiness	Sunset: 4-24 H1, H2 USDA: 5-9
Form/Habit:	Upright mult-stemmed shrub
Growth Rate:	Slow to moderate
Mature Size:	Height: 6-12' Spread: 6-8' (clumps spread slowly)
Landscape Size:	Height: 4-6' Spread: 3-4'
Branching	Alternate
Twigs/Bark:	New growth green to reddish; cane like olive green stems
Foliage:	Bi-pinnately compound, leaf 8-14" long, 4-8" wide; narrow lanceolate to elliptic leaflets 1-2" blue green color; new growth in some cultivars red; some with red fall and early winter color; leaf drop at 10 degrees F.
Flower:	Loose panicles at branch ends, 4-8" tall in early to mid summer; small pinkish to white flowers
Fruit:	Berry, 1/8" to 3/16" orange to red
Cultural Requirements	
Exposure:	Best with afternoon sun
Soil:	Prefers rich soil conditions; mulch
Water:	Regular irrigation
Pruning:	Remove 1/3 or more of older canes to ground each winter
Pests/Disease:	Few problems
Propagation:	Division or cuttings
Landscape Use:	Delicate specimen shrubs
Other:	Many cultivars for leaf color, berry color and size



*Nandina domestica*; Heavenly Bamboo



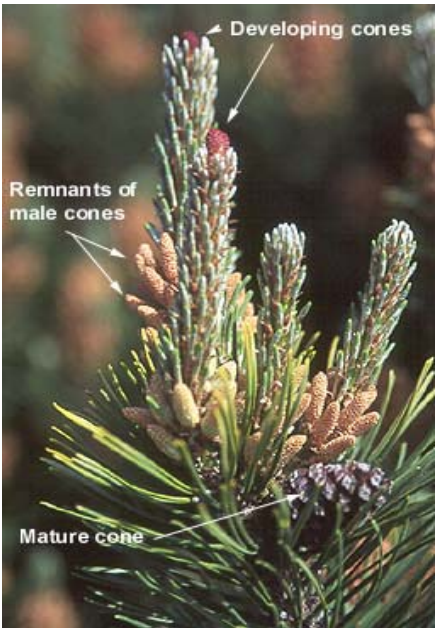
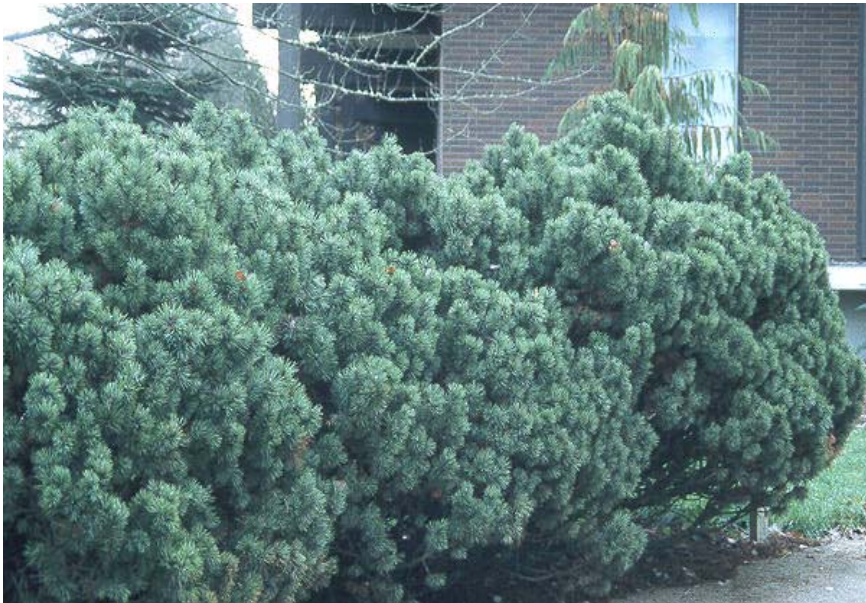
Botanical Name	<i>Pieris japonica</i>
Common Name	Pieris, Lily-of-the-Valley Shrub
Family	Ericaceae
Origin	Japan
Type	Broadleaf evergreen shrub or tree (with training)
Hardiness	Sunset: 2b – 9, 14 – 17
	USDA: 5 – 9
Form	Multi-branched down low with oval head that can be headed up for small tree or left alone for shrub
Growth Rate	Moderate
Mature Size	Height: 12 – 18' Spread: 10 – 16'
Landscape Size	Height: 4 – 6' Spread: 2½ - 3'
Branching	Alternate
Bark & Branches	New growth varies in color—from yellow to red; Bark is dark brown & peels vertically; attractive
Foliage	Alternate, simple leaves (2 – 4" long, ½ - 5/8" wide) are narrowly elliptic with serrate margins; Leaves hang down toward ground; Color depends on exposure: full sun—washed-out yellow-green; part shade/shade—glossy green; New Growth: bronzy pink; New growth appears during or just after bloom
Flowers	Blooms early (mid-January – March) for long time (~ 3 months); Blooms on new growth in 3 – 4 chain-like clusters at terminal end of branch; Flowers are urn-shaped, papery, pinkish-white, ¼"; Fragrant up close Blooms better with shade
Fruit	Small (1/8"), oval fruit with spike at end; Green (immature) to brown (mature); Persistent—but easy to remove if you have the time
Exposure	Part sun to shade (best with afternoon shade); Full sun ok in cool, humid climates
Soil	Prefers slightly acidic soil with lots of organic matter; Do not tolerate soil high in salts
Water	Best with summer water
Pests	Spider mites if stressed
Diseases	--
Pruning	Tolerates heavy pruning; Head up for small tree; Remove spent flowers/seeds
Propagation	Cuttings
Landscape Use	Specimen shrub or tree; container
Other	Many cultivars: 'Flamingo' has pink flowers; 'Nana' is 14" tall... Protect from wind Long-lived (> 100 years) with good care <i>Pieris floribunda</i> is a compact, rounded species that can handle more sun







Botanical Name	<i>Pinus mugo mugo</i>
Common Name	Mugho Pine
Family	Pinaceae
Origin	Naturally occurring variety from the mountains of Spain to northern Europe
Type	Evergreen conifer shrub
Hardiness	Sunset: A1, A3, 1 – 11, 14 – 24
	USDA: 2 – 8
Form	Lots of seedling variation; Flat-topped, multi-trunked shrub
Growth Rate	Varies: slow to moderate if grafted
Mature Size	Grafted: Height: 3 – 4' Spread: 3 – 4' Seed: Height: 10 – 15' Spread: 10 – 15'
Landscape Size	Grafted: Height: 3 – 4' Spread: 3 – 4' Seed: Height: 0 – 15' Spread: 10 – 15'
Branching	Radial
Buds	Pitchy bud—looks like <i>Pinus contorta</i> but it's narrower
Bark & Branches	Very dark gray bark with fine small flakes
Foliage	2 needles/fascicle; Needles are 1 – 2½ (3)'' long; Color: bright green, occasionally with stomatal lines; Holds needles 3 years
Cones	Sessile, rounded cones (1 – 1½''), dark brown; Cones have some scattered spines when immature, but then lose spines when mature
Exposure	Full sun
Soil	Needs good drainage, but otherwise not fussy
Water	With or without irrigation
Pests	Pine Needle Scale: needles turn sickly yellow & die; very susceptible
Diseases	Root Rot where conditions too wet
Pruning	Candle by hand to get dense foliage
Propagation	Seed: great variability; Grafted
Landscape Use	Rockeries; specimen conifer; container
Other	<i>Pinus mugo</i> , Swiss Mountain Pine grows 3 – 4' H, 4 – 6' S; 'Pumila' is a prostrate form, 16'' H, 3 – 4' S; Suffers with too much dry heat



Botanical Name:	<i>Prunus laurocerasus</i> ‘Otto Luyken’
Common Name:	Otto Luyken Laurel
Family:	Rosaceae
Location/Source:	Nursery
Type:	Evergreen shrub
Hardiness	Sunset: 4-9 14-24 USDA 7-9
Form/Habit:	Bowl shaped
Growth Rate:	Fast
Mature Size:	Height: 4-8’ Spread: 8-14’
Landscape Size:	Height: 2.5- 4’ Spread: 3-5’
Branching	Alternate
Twigs/Bark:	Twigs yellow-green, older dark shiny brown
Foliage:	Elliptic, entire, shiny dark green upper, dull yellow-green underside. Leaves all point upward.
Flower:	Blooms on new wood, 8 weeks April to May on flower spike, 3-6”L, long yellow-white stamens, ¼” off-white. Heavy sweet fragrance.
Fruit:	Light set black cherries ¼”.
Cultural Requirements	
Exposure:	Full sun to full shade
Soil:	Not fussy, heavy clay and sand OK
Water:	Light summer – do not allow to be waterlogged
Pruning:	Can shear/prune to size.
Pests/Disease:	Root rot, Leaf Spot Fungus, Scale
Propagation:	Semi-hardwood cuttings
Landscape Use:	Dense evergreen shrub/tree. Not a great sheared hedge because leaf too big, but sometimes used as such. Good for commercial uses because so tough.
Other:	Fertilize every other year. Foliage slightly toxic



*Prunus laurocerasus* 'Otto Luyken'; Otto Luyken Laurel



Botanical Name:	<i>Pyracantha coccinea</i> 'Lalandei'
Common Name:	Laland Firethorn
Family:	Rosaceae
Location/Source:	Nursery
Type:	Evergreen shrub
Hardiness	Sunset: 2-24 USDA 3-9
Form/Habit:	Stiff upright branches with short horizontal branches – broad upright vase
Growth Rate:	Moderate/fast
Mature Size:	Height: 16-30'+ Spread: 10-20'
Landscape Size:	Height: 8-12' Spread: 6-8'
Branching	Alternate
Twigs/Bark:	Stiff branches and twigs with red pseudo-thorns very sharp (branch ends) with acid so does burn if pricked
Foliage:	Elliptic/lanceolate widely spaced serrate, very shiny bright green new growth, older is blue-green 1.5-3"L, 3/8-5/8"W.
Flower:	Late May in wide flat-topped 3-5" flower clusters. Some years a solid mass of flowers. Off white, five-petal 1/4", poor fragrance.
Fruit:	Fruit is attractive, 20-50 berries in clusters. 1/8" orange red.
Cultural Requirements	
Exposure:	Full sun
Soil:	Not fussy
Water:	With or without
Pruning:	Regular to control and shape, rangy otherwise. Commonly espaliered.
Pests/Disease:	Fire blight
Propagation:	Cuttings
Landscape Use:	Narrow small planters south and west facing, extreme heat OK. Barrier hedges. Fruit specimen.
Other:	Wildlife loves berries and habitat (thorns)



*Pyracantha coccinea* 'Leylandii'; Leland Firethorn





Botanical Name:	<i>Raphiolepis indica</i>
Common Name:	Indian Hawthorn
Family:	Rosaceae
Location/Source:	China
Type:	Evergreen shrub
Hardiness	Sunset: 8-10 12-24 H1, H2; 4-7 with risk of freeze damage USDA: 5-9
Form/Habit:	Rounded dense shrub
Growth Rate:	Slow to moderate
Mature Size:	Height: 4-5' Spread: 4-6'
Landscape Size:	Height: 2-3' Spread: 3-4'
Branching	Alternate
Twigs/Bark:	Twigs reddish to gray; old bark smooth gray
Foliage:	Simple obovate to oblanceolate leaf 1-3" long, $\frac{3}{4}$ -1" wide; crenate margin; thick leaf dark glossy green above dull yellow green below
Flower:	Summer bloom; flowers in loose spikes at branch end; $\frac{1}{2}$ - $\frac{5}{8}$ " five petaled flowers; white tinged pink
Fruit:	$\frac{3}{8}$ " blue black berry
Cultural Requirements	
Exposure:	Full sun
Soil:	Well drained soil important
Water:	light irrigation
Pruning:	Tip prune to control size
Pests/Disease:	Root rot in heavy wet soils, leaf spot fungus in cool wet springs
Propagation:	Cuttings
Landscape Use:	Evergreen shrub often used as specimen in commercial plantings
Other:	Best in drier climates; salt spray tolerant; pollution tolerant; many cultivars for size and flower color

*Raphiolepis indica*; India Hawthorn



Botanical Name:	<i>Rhododendron</i> 'Unique'
Common Name:	Unique Rhododendron
Family:	Ericaceae
Location/Source:	Nursery
Type:	Evergreen shrub
Hardiness	-5 degrees F.; -21 degrees C.
Form/Habit:	Dense horizontal oval shrub
Growth Rate:	Slow to moderate
Mature Size:	Height: 6-10' Spread: 12-15'
Landscape Size:	Height: 2 ½- 3' Spread: 3-5'
Branching	Alternate
Twigs/Bark:	Smooth shiny green; old bark smooth gray
Foliage:	Simple very even oval shape; entire margin; 2-4" long, ¾-2" wide; glossy medium green
Flower:	Ball shape truss in April-May; truss to 6" across; flowers apricot pink in bud open pale yellow tinged pink and mature yellow with reddish spots in throat; 1 ½-2 ½"
Fruit:	Greenish oval fruit should be dead-headed
Cultural Requirements	
Exposure:	Full sun to shade; protect from high heat in full sun
Soil:	Well drained slightly acid soils
Water:	Regular irrigation
Pruning:	Should be dead-headed to maintain flowering vigor
Pests/Diseases:	Root rot in heavy wet soils; watch for root weevil
Propagation:	Cuttings
Landscape Use:	Specimen shrub for flower and even textured foliage
Other:	Plant high and mulch roots for best results



*Rhododendron* 'Unique'; Unique Rhododendron



Botanical Name	<i>Rhus typhina</i>
Common Name	Staghorn Sumac
Family	Anacardiaceae
Origin	Europe
Type	Large deciduous shrub
Hardiness	Sunset: A1, A3, 1 – 10, 14 – 17
	USDA: 3 – 9
Form	Vase-shaped form, multi-stemmed; Taller than wide but sometimes trained wider than tall
Growth Rate	Moderate to size, and then slow
Mature Size	Height: 15 – 20' potential but usually 10 – 20' in Portland area, Spread: 10 – 20'
Landscape Size	Height: 8 – 12' Spread: 6 – 10' (spread depends on suckering)
Branching	Alternate
Bark	Young branches are covered with velvety short brown hairs that looks like antlers; branches are wooly and stout (3/8 – 1/2" thick) ; Stem exudes milky white sap when broken; Older bark is grayish
Foliage	Alternate, odd pinnately compound leaves (12-20" long) with 17-29 leaflets. Leaflets are oblong to lanceolate (2 1/2 - 5" long, 1/2 - 1 1/2" wide) & serrate; leaflets hang down from rachis; Petiole is pubescent; Color: medium green to dark green upper surface, silvery green underside; Fall Color: red (outside) to reddish orange (inside) to orange (deep inside)
Flowers	Terminal erect conical panicle (2 1/2 - 6" tall) of tiny (1/16") yellow-green flowers; usually produce male and female flowers on separate plants. Blooms in June/July
Fruit	Fuzzy, crimson fruit (1/8 – 1/4") = small, dry drupes tightly packed in dense, hairy panicles; Females have showy, reddish brown seed heads that persist through winter
Exposure	Full sun
Soil	Well-drained soil best
Water	Light irrigation; drought tolerant; Can tolerate some irrigation if the soil has good drainage
Pests	--
Diseases	Verticillium Wilt: doesn't kill the plant; the plant responds by suckering; more prone to Verticillium Wilt in heavy, irrigated soil
Pruning	Remove suckers every year to keep plant from spreading too far; easy
Propagation	Suckers—easy; Seed
Landscape Use	Bank cover; individual specimen; containers; informal screen
Other	Very similar to <i>R. glabra</i> , but <i>R. typhina</i> has velvety stems; Sap can cause contact dermatitis in sensitive individuals; Ethnobotanic: Native Americans harvested fruit to make lemonade; others smoked leaves with tobacco; others boiled the roots to make a yellow dye



*Rhus typhina*, Staghorn Sumac



Habit, Summer



Habit, Autumn



Leaves & Fruit, Early Autumn



Leaves & Fruit, Autumn



Botanical name	<i>Salix purpurea</i>
Common name	Purple Osier Willow or Blue Arctic Willow
Family	Salicaceae
Origin	northern Europe, northern Africa, central and east Asia
Type	deciduous shrub
Hardiness	Sunset: A2, A3, 1-11
	USDA: 2-7
Form	multi-stemmed, mounded, dense, many fine twigs, suckers from base, spreads slowly
Growth rate	fast
Mature size	Height: 14-20' Spread 10-15+'
Landscape size	Height: 4-6' + Spread: 6-12'
Branching	alternate
Bark	twigs are red purple, older bark is smooth dark olive green
Foliage	alternate, simple, narrow oval to elliptic, dense, serrate with tiny teeth, 1 ½-3" long, 3/8-1/2" wide, blue gray green, underside is silver
Flowers	rarely, blooms early Spring, rounded pussy willow male catkins, 1"
Fruit	cotton-like seed heads that are carried by wind
Exposure	full sun to heavy shade
Soil	any
Water	regular irrigation
Pests	tent caterpillar – appear Fall or Spring, remove in early morning or evening
Diseases	tip blight – die back to 1", treat with copper fungicide
Pruning	none needed, thin, rejuvenate every 4-5 years
Propagation	cuttings
Landscape Use	perennial beds, background plantings, fine texture

*Salix purpurea*; Purple Osier Willow



Botanical Name	<i>Skimmia japonica</i>
Common Name	Skimmia
Family	Rutaceae
Origin	Asia (Japan)
Type	Broadleaf evergreen shrub
Hardiness	Sunset: 4 – 9, 14 – 22
	USDA: 6 – 8
Form	Mounded habit; Female: dense & low; Male: open & tall
Growth Rate	Slow to moderate
Mature Size	Male: Height: 4 – 7' Spread: 6 – 10'; Female: Height: 3 – 4' Spread: 4 – 6'
Landscape Size	Male: Height: 4 – 6' Spread: 4 – 8'; Female: Height: 3 – 4' Spread: 3 – 4'
Branching	Alternate
Bark & Branches	New growth is yellow-green; Bark is dark green to brown
Foliage	Alternate leaves are crowded so that they look whorled; Leaves are elliptic, simple; Male leaves: larger (3 – 6" long & 1 – 1¼" wide), paler with more yellow, less shiny; Female leaves: smaller (2 ½ - 4 long, 5/8 – ¾"); glossy, dark green upper surface & dull yellow underside; Broken leaf is aromatic
Flowers	Dioecious – male & female plants don't need to be very close (¼ mile) to produce fruit; Blooms February/March; Female flower cluster (½") at terminal end of branch is tight & rounded; each flower is white with pinkish-red stems; never fully open; Male flower cluster at terminal end of branch is a loose spike (1½ - 2" long) with same flowers that the female has Not showy but fragrant
Fruit	Shiny, red berries (3/8"); Ripen in July & persist until following July (present when plant blooming)
Exposure	Part sun to shade (no sun)
Soil	Best in loose, slightly acidic, organic soil; Tolerates clay well if clay doesn't become brick-dry
Water	Regular summer water!
Pests	Mites! Usually because of drought stress; keep plants healthy; use neem to clear up infestation; Thrips
Diseases	--
Pruning	Remove dead/damaged parts
Propagation	Cuttings
Landscape Use	Background/specimen shrub
Other	S. j. reevesiana: naturally-occurring variety resembles female skimmia in form; dwarf (2 – 3' H & 2½ - 4'S); self-fertile





tanical Name	<i>Symphoricarpos albus</i>
Common Name	Snowberry
Family	Caprifoliaceae
Origin	North America (from Alaska to the Sierras, east & west of the Cascades)
Type	Deciduous shrub
Hardiness	Sunset: A3, 1 – 11, 14 – 21
	USDA: (2) 3 – 7
Form	Open, loose, delicate shrub with fine twigs
Growth Rate	Moderate
Mature Size	Height: 4 – 6' Spread: 6 – 10'
Landscape Size	Height: 2 – 3' Spread: 2 – 3'
Branching	Opposite
Bark & branches	Twigs are fine & gray; lacy in winter; tiny opposite buds
Foliage	Opposite, simple leaves with 2 different leaf types; -leaves on older wood are oval & entire, 1–2" long, $\frac{3}{4}$ - 1" wide, blue-green; -leaves on new wood/suckers are lobed, , 1–2" long, $\frac{3}{4}$ - 1" wide, blue-green Fall Color: ~ clear yellow; holds leaves late
Flowers	Pairs of bell-shaped, pink flowers (< 1/8") on undersides of branches Blooms late spring – early summer
Fruit	Clusters of smooth, white berries ( $\frac{1}{4}$ - $\frac{1}{2}$ "); Persist to mid-January More berries in colder areas; Attract birds but not excessively
Exposure	Full sun – shade (usually grow along forest edges in PS, & produce more berries with morning shade/afternoon sun)
Soil	Prefers fertile, reasonably well-drained soil
Water	With/without water; tolerates drought & irrigation
Pests	--
Diseases	Powdery mildew; anthracnose
Pruning	Remove dead/damaged wood
Propagation	Root cuttings—easy; take cuttings of roots/rhizomes around nodes
Landscape Use	Native gardens; good shrub under conifers; erosion control
Other	Can sucker & spread slowly over large areas; Fine twigs with berries used in floral arrangements; Flowers on older wood; Tolerates neglect & pollution; Fruit causes mild stomach upset if ingested; S. x chenaultii is coralberry

*Symphoricarpos albus*, Snowberry



Habit



Leaf Variation



Flowers and Leaves



Fruit



Botanical Name:	<i>Taxus baccata</i>
Common Name:	English Yew
Family:	Taxaceae
Location/Source:	Europe, North Africa, Eastern Asia
Type:	Conifer shrub/tree
Hardiness	Sunset: 3-9 14-24 A1 USDA: (5)6-9
Form/Habit:	Broad vase shaped crown
Growth Rate:	Moderate
Mature Size:	Height: 25-40' Spread: 15-25'
Landscape Size:	Height: 8-15' Spread: 8-12'
Branching	Radial
Twigs/Bark:	Brown twigs; old bark stringy peeling vertically; brown in color
Foliage:	Needles base wraps around stem; 1" length, pointed dark green with two bright stomatal lines
Flower:	Male and female on separate trees; small greenish flower clusters
Fruit:	Aril, oval red fleshy looking
Cultural Requirements	
Exposure:	Full sun in cooler areas, part shade to shade
Soil:	Prefer slightly alkaline soil; good drainage a must
Water:	Regular water
Pruning:	Can take heavy shearing; used in hedges and topiary
Pests/Disease:	Scale and root weevil, root rot in heavy wet soils
Propagation:	Seed; cuttings in cultivars
Landscape Use:	Used for large hedges; cultivars for informal and formal plantings
Other:	Most common: <i>Taxus baccata</i> 'Repandens' use for low spreading habit and <i>Taxus baccata</i> 'Stricta'- Irish Yew used as a vertical accent

*Taxus baccata*; English Yew



Botanical Name:	<i>Thuja occidentalis</i> ‘Tom Thumb’ (‘Globosa’)
Common Name:	Globe or Tom Thumb Arborvitae
Family:	Cupressaceae
Location/Source:	Nursery
Type:	Conifer shrub
Hardiness	Sunset: 1-9 15-17 21-24 A2, A3, H1, H2 USDA: 2-9
Form/Habit:	Dense round conifer
Growth Rate:	Slow
Mature Size:	Height: 10-14’ Spread: 10-14’
Landscape Size:	Height: 3-4’ Spread: 2-3’
Branching	Radial
Twigs/Bark:	Bark rough peeling vertically gray-brown
Foliage:	Flattened sprays with scales flat and no stomatal markings; blister like bump at base of scale; Emerald Green bright green throughout year; may turn red in coldest areas
Flower:	NA
Fruit:	Small 3/16” upright green cone turning brown
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Best in well drained soils
Water:	Needs regular irrigation
Pruning:	None
Pests/Disease:	Spider mite; will suffer from cold winter burn
Propagation:	Cuttings
Landscape Use:	Conifer accent
Other:	Burns badly in cold winter areas; not at best in climates with low humidity



*Thuja occidentalis* 'Tom Thumb'



Botanical Name:	<i>Viburnum tinus</i>
Common Name:	Laurustinus Viburnum
Family:	Caprifoliaceae
Location/Source:	Mediterranean
Type:	Evergreen shrub
Hardiness	Sunset: 4-10 14-24 USDA: 6-9
Form/Habit:	Upright oval form; multi-stemmed
Growth Rate:	Moderate
Mature Size:	Height: 15-18' Spread: 20-25'
Landscape Size:	Height: 6-10' Spread: 6-10'
Branching	Opposite
Twigs/Bark:	Twigs green to reddish; smooth olive green bark; naked buds
Foliage:	Simple leaf with entire margin; broad oval, 1 ½-3" long, ¾-1 ½" wide; thick leaf medium glossy green above dull yellow underside
Flower:	Flowers late February to late April and again lightly in September; flowers in 2-3" flat umbel like corymbs; buds are red-pink and 5/16" flower is pinkish white; sweet fragrance
Fruit:	Oval shaped berry 3/16" bright metallic blue
Cultural Requirements	
Exposure:	Full sun to shade
Soil:	Not fussy
Water:	Light irrigation
Pruning:	Can be tip pruned to hedge
Pest/diseases:	Leaf spot fungus
Propagation:	Cuttings
Landscape Use:	Specimen or hedge type screen; do not shear because of leaf size
Other:	Smaller cultivars are more commonly used

*Viburnum tinus*; Laurustinus Viburnum





Botanical Name:	<i>Weigela florida</i>
Common Name:	Weigela
Family:	Caprifoliaceae
Location/Source:	Korea, China, Japn
Type:	Deciduous shrub
Hardiness	Sunset: 1-11 14-21 USDA: 3-9
Form/Habit:	Multi-stemmed arching shrub
Growth Rate:	Moderate to fast
Mature Size:	Height: 6-10' Spread: 10-14'
Landscape Size:	Height: 3-5' Spread 4-8'
Branching	Opposite
Twigs/Bark:	Twigs reddish; branches with stringy brown bark
Foliage:	Simple, lanceolate leaf with serrate margin, 2-4" long, 1-2" wide; thin yellow-green; no fall color
Flower:	Flowers bloom on old wood in leaf axils in pairs; tubular 1 1 ½" flowers pale pink with whitish center and large white pistil
Fruit:	Narrow oval fruit capsule, 5/8" turns brown and persists
Cultural Requirements	
Exposure:	Full sun to shade
Soil:	Not fussy
Water:	Regular irrigation or a lot of twig dieback
Pruning:	Remove 1/3 of older canes to ground and prune back remaining branches to base flowering; best after bloom
Pests/Disease:	Spittle bug
Propagation:	Cuttings
Landscape Use:	Background specimen shrubs
Other:	Many cultivars with dark ruby flowers, variegated foliage; white flowers etc.

*Weigela florida*; Weigela



# VINES



Botanical Name:	<i>Actinidia kolomikta</i>
Common Name:	Variegated Kiwi, Manchurian Gooseberry
Family:	Actinidiaceae
Location/Source:	Eastern Asia/Nursery
Type:	Deciduous vine
Hardiness:	Sunset Zones: A1-A3, 1-9, 14-17 USDA: 5-8
Form/Habit:	Vine
Growth Rate:	Moderate
Mature Size:	Height: 15'+ Spread: 30-40'
Landscape Size:	Same
Branching	Alternate
Twigs/Bark:	Twigs pubescent green; bark gray
Foliage:	Heart shaped elongated 3-5" solid green splashed with pink/white/green or. Both male and female have better foliage in cool weather.
Flower:	Small; greenish: Flowers are fragrant in early summer.
Fruit:	Females produce small green fruits
Cultural Requirements	
Exposure:	Full sun or partial shade
Soil:	Not fussy
Water:	Moderate to regular
Pruning:	Train new stems onto sturdy support. Thin out growth in late dormant season
Pests/Disease:	Few
Propagation:	Cuttings
Landscape Use:	Foliage specimen
Other:	Best with afternoon shade

*Actinidia kolomitka*; Hardy Kiwi



Botanical Name:	<i>Clematis armandii</i>
Common Name:	Evergreen Clematis
Family:	Ranunculaceae
Location/Source:	China and parts of Asia
Type:	Vine - Evergreen Woody Climbing
Hardiness	Sunset: 4-9; 14-24 USDA: 6-9
Form/Habit:	Twisting vine
Growth Rate:	Fast to 15-20' per year
Mature Size:	Height 50'-200'
Landscape Size:	Height 30-40'
Branching	Curling tendrils; opposite
Twigs/Bark:	Twigs shiny yellow-green; bark stringy brown
Foliage:	Trifoliate compound; 5-8" across; leaflets lanceolate 3-6" long 1-2" wide; prominently 3 veined; new glossy yellow-green old dark green
Flower:	Early March 3-4 Weeks
Fruit:	No fruit
Cultural Requirements	
Exposure:	Roots in shade plant in sun
Soil:	Not fussy best with mulch
Water:	Regular irrigation
Pruning:	Prune regularly to control size
Pests/Disease:	Cold scorch
Propagation:	Cuttings
Landscape Use:	Ornamental vine for flower and fragrance
Other:	Bee pollinated; does not do well in cold winds



*Clematis armandii*; Evergreen Clematis



Botanical Name:	<i>Clematis montana</i>
Common Name:	Anemone Clematis
Family:	Ranunculaceae
Location/Source:	Asia
Type:	Climbing woody vine
Sunset Zones:	3b-9, 14-17, 21-23
USDA:	6-9
Form/Habit:	Vigorous vine completely covers support structure
Growth Rate:	Fast (3-10' year)
Mature Size:	Height:/Spread 100'+
Landscape Size:	Height:/Spread: 20-40'
Branching	Alternate
Twigs/Bark:	Stringy brown with reddish new stems
Foliage:	Trifoliately compound, 3-4" cuneate leaflets, red new growth
Flower:	Second week of April through June, sometimes a few flowers in fall too. 2.5-3"W pink clematis flowers.
Fruit:	Silvery, feathery seed head
Cultural Requirements	
Exposure:	Roots in shade, top in sun
Soil:	Mulch to keep roots cool
Water:	Regular
Pruning:	As needed – vigorous growth should be controlled, shaped
Pests/Disease:	Few
Propagation:	Cuttings
Landscape Use:	Specimen floral vine, require support structure. (Eventually will strangle trees.) Great for hiding ugly fences.
Other:	

*Clematis montana*; Anemone Clematis





Botanical Name	<i>Parthenocissus tricuspidata</i>
Common Name	Boston Ivy
Family	Vitaceae
Origin	Japan & China
Type	Deciduous climbing vine
Hardiness	Sunset: all; northern or eastern walls only in zones 12 & 13
	USDA: 4 – 8
Form	Climbing habit
Growth Rate	Fast (up to 20' a year with good conditions)
Mature Size	Height:/Spread: 300 – 400'
Landscape Size	Height:/Spread: 60 – 70'
Branching	Alternate
Bark	Dark, cinnamon bark
Foliage	Alternate, 3-lobed entire to 3-ovate leaflets (1½ - 3"/up to 8" across) Deeply toothed; Leaves opposite tendrils; short tendrils with terminal adhesive discs; Color: dark, glossy green; Fall color: brilliant red to purple; spectacular; leaf blades often drop before petioles, creating a curious effect Leafless stems create beautiful patterns on walls
Flowers	Flat-topped umbel (1½ - 3" across) of greenish-white flowers with 4-5 thick petals; not showy; Blooms in summer
Fruit	Blue – black berry (3/8") in small clusters of 3 to 4 berries Attract birds; berries may cause stomach upset in humans if ingested
Exposure	Full sun – part sun
Soil	Prefers rich, well-drained soil, but it's not fussy; No standing water
Water	Prefers regular water but will tolerate drought
Pests	--
Diseases	--
Problems	Destroy wood: the roots and then the stems will crack open wood & hold moisture causing rot; Can be very aggressive—be careful when planting The roots will not harm concrete, but they will leave dots where the vines were removed
Pruning	Prune in early winter and again in summer if necessary
Propagation	Seed; Cuttings
Use	Cover fences, walls, sheds...anything
Other	Young plants need training; older plants adhere to wall with terminal adhesive discs on tendrils; Cold-tolerant; 'Lowii' has small, deeply-lobed leaves; 'Purpurea' has reddish-purple leaves all summer

*Parthenocissus tricuspidata*, Boston Ivy



Habit in Summer



Habit in Autumn



# GROUNDCOVERS



Botanical Name	<i>Arctostaphylos uva-ursi</i>
Common Name	Kinnikinnick, Bearberry
Family	Ericaceae
Origin	Northern CA to Alaska & other sub-polar northern latitudes
Type	Broadleaf evergreen groundcover
Hardiness	Sunset: A1, A3, 1 – 9, 14 – 24
	USDA: 2 – 8
Form	Spreading mat-like growth with glossy fine textured foliage; sometimes mounds in center
Growth Rate	Slow-moderate; can be slow to establish
Mature Size	Height: 18-36" Spread: 20-30'
Landscape Size	Height: 6-12" Spread: 4-6'
Branching	Alternate
Bark & Branches	Bark/woody stems are dark reddish brown
Foliage	Simple, alternate leaves ( $\frac{3}{4}$ - 1" long, $\frac{1}{4}$ - $\frac{3}{8}$ " wide); oval shape with entire margin Color: medium green, glossy; turn red or purplish in winter Distinctive netted venation
Flowers	White to pink urn-shaped flowers Blooms mid-spring over 2-3 month period
Fruit	Tomato-red berries ( $\frac{1}{8}$ - $\frac{3}{16}$ ") Strong berry setter, but berries not around long because birds eat them.
Exposure	Full sun
Soil	Good drainage necessary—avoid clay otherwise not fussy
Water	No summer irrigation once established; drought tolerant
Pests	Root weevil
Diseases	Root rot from overwatering—don't irrigate, provide good drainage Leaf spot—no overhead watering Leaf gall—common but doesn't usually kill the plant
Pruning	Prune selectively to control spread Remove dead/damaged wood
Propagation	Cuttings—slow to start (best with bottom heat)
Use	Evergreen groundcover; native plantings; attracts birds
Other	'Massachusetts' resists leaf spot, leaf gall 'Point Reyes' grows best in PNW & northern CA Mulch until plants form weed-suppressing mats (Sunset)
Identifying Characteristics	Mat-like growth Alternate, simple leaf: medium green, glossy, oval, entire, & distinctive netted venation; reddish purple tint to leaves in winter Urn-shaped pinkish flowers Bright red berries with "spike" at end

*Arctostaphylos uva-ursi*



Botanical Name:	<i>Ceanothus gloriosus</i>
Common Name:	Point Reyes Ceanothus
Family:	Rhamnaceae
Location/Source:	Central California coast
Type:	Evergreen groundcover shrub
Hardiness:	Sunset Zones:5-9, 14-24 USDA:6-9
Form/Habit:	Low arching
Growth Rate:	Fast (esp. in good growing conditions)
Mature Size:	Height: 3-4' Spread: 10-18'
Landscape Size:	Height: 24-30" Spread 4-8'
Twigs/Bark:	Woody stems, new twigs red; alternate
Foliage:	Stiff spine-toothed leaves, cuneate/oblanceolate with prominent veins, 5/8-1"L, 5-16-5/8"W, medium shiny green upper, more dull underneath, thick (like <i>Osmanthus delavayi</i> leaf but <i>Osmanthus</i> is oppositely branched
Flower	On older wood in leaf axils. Round flower clusters. 3weeks April. 1-1 1/2" cluster of <1/16" flowers. Lilac blue. Bee pollinated. Fragrant.
Fruit:	Small woody brown capsule rarely sets, <1/16".
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Rocky sandy soils
Water:	None – keep dry
Pruning:	Little, but can cut back to control spread
Pests/Disease:	Highly susceptible to freeze damage <10 degrees. Also root rot.
Propagation:	Cuttings
Landscape Use:	For foliage and flower. Good on banks.
Other:	Also known as Wild Lilac



*Ceanothus gloriosus*; Point Reyes Ceanothus



Botanical Name:	<i>Cotoneaster dammeri</i>
Common Name:	Bearberry Cotoneaster
Family:	Rosaceae
Location/Source:	Asia
Type:	Evergreen groundcover
Hardiness:	Sunset Zones: 2-24 USDA: 5-8
Form/Habit:	Low spreading groundcover with long trailing branches
Growth Rate:	Moderate
Mature Size:	Height:     Height: 6-10" Spread: 8-10'
Landscape Size:	Height:     Height: 6-10" Spread: 2-3'
Branching	Alternate
Twigs/Bark:	Red new twigs, dark brown smooth older bark
Foliage:	Cuneate, with pinnate venation often notched at tips. 5/8-1"L, 3/8=1/2"W, younger leaves sometimes pointed. Entire margin (unless notched tip/heart shaped). Lie flat. Some red fall color.
Flower	April – June, 6-8 weeks. Pure white pearl-like buds open to white 3/8" flower with yellow center.
Fruit:	Red berry-like fruit, 3/32" with 5-pointed sepals on outside of fruit
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Likes humus, but fairly tolerant
Water:	Once established fairly drought tolerant. Average water.
Pruning:	Can cut back quite hard to limit growth.
Pests/Disease:	Cotoneaster Web Worm, Leaf Spot Fungus
Propagation:	Cuttings; seed
Landscape Use:	Excellent groundcover for cascading over walls. Small area; groundcover, but takes a while to fill in. Plant gallon size at 16" on center.
Other:	Must hand weed among stems first 2-3 years, before fills in.

*Cotoneaster dammeri*; Bearberry Cotoneaster





Botanical Name:	<i>Cytisus x kewensis</i>
Common Name:	Kew Broom
Family:	Fabaceae
Location/Source:	Nursery hybrid
Type:	Deciduous groundcover
Hardiness	Sunset: 2-6 16, 17 USDA 4-9
Form/Habit:	Low circular spreading mat
Growth Rate:	Moderate
Mature Size:	Height: 1' Spread: 10-15'
Landscape Size:	Height: 6-10" Spread: 4-8'
Branching	Alternate
Twigs/Bark:	Angular gray green twigs and bark
Foliage:	Trifoliate compound, ½" leaf; Narrow oval 5/16" leaflet; gray green and tomentose
Flower:	Heavy bloom late April, pea like pale yellow ½" flowers with darker yellow upper lips
Fruit:	If any, flattened gray green hairy pea pod; ¾-1"
Cultural Requirements	
Exposure:	Full sun
Soil:	Well drained neutral soils
Water:	Drought tolerant; little to no water
Pruning:	None required
Pests/Disease:	Few
Propagation:	Cuttiings
Landscape Use:	Hot bank groundcover
Other:	Not long lived

**NO PICTURES AVAILABLE**

Botanical Name:	<i>Genista lydia</i>
Common Name:	Lydia Broom
Family:	Fabaceae
Location/Source:	Eastern Europe
Type:	Deciduous shrub/groundcover
Hardiness:	Sunset Zones: 4-6, 14-17 USDA: (5) 6-9
Form/Habit:	Arching, mounded
Growth Rate:	Moderate
Mature Size:	Height: 2.5-3.5' Spread: 6-10'
Landscape Size:	Height: 16-30" Spread: 3-4'
Branching	Alternate
Twigs/Bark:	Wiry grey-green stems (see more of stems than foliage)
Foliage:	Simple, narrow oval 1/8-3/8"L, 1/16"W, grey-green color.
Flower	Mid to late May. 3/8-1/2" pea-shaped heavy bloom of brightest sun yellow (without fragrance of Brooms). Last 6- 8weeks, then 5/8" green peapods (also doesn't seed down).
Fruit:	
Cultural Requirements	
Exposure:	Full sun – prefers hot/dry not getting too cold
Soil:	Well drained
Water:	None after established. Drought tolerant
Pruning:	Can cut back/shear if growing too large, otherwise little
Pests/Disease:	Die out after 15-25 years, but few pests/diseases.
Propagation:	Cuttings
Landscape Use:	Full sun ground cover for drought tolerance and flower. Excellent in banks and rockeries
Other:	Stems are woody, so doesn't like foot traffic



*Genista lydia*; Lydia Broom



Botanical Name:	<i>Genista pilosa</i>
Common Name:	Woadwaxen
Family:	Fabaceae
Location/Source:	South Central Europe
Type:	Deciduous groundcover
Hardiness	Sunset:2-22
	USDA:5-9
Form/Habit:	Low spreading mat
Growth Rate:	Slow to moderate
Mature Size:	Height: 10-12" Spread: 10-12'
Landscape Size:	Height: 6-10" Spread 3-5'
Branching	Alternate
Twigs/Bark:	Green woody stems look evergreen
Foliage:	Simple, oval to roundish 3/16-5/16"L, hairy edge and grey hairy underside, dark green color..
Flower:	Late May. 3/8" pea-shaped bright sun yellow (without fragrance of Brooms).
Fruit:	Little fruit (doesn't seed down), 3/4" green peapods.
Cultural Requirements	
Exposure:	Full sun
Soil:	Well drained
Water:	Light irrigation only
Pruning:	Tip prune to control size
Pests/Disease:	Few
Propagation:	Seed or usually cuttings
Landscape Use:	Drought tolerant flowering groundcover
Other:	Relatively short lived; not good for foot traffic; prone to damage from fire do not use where smokers gather.



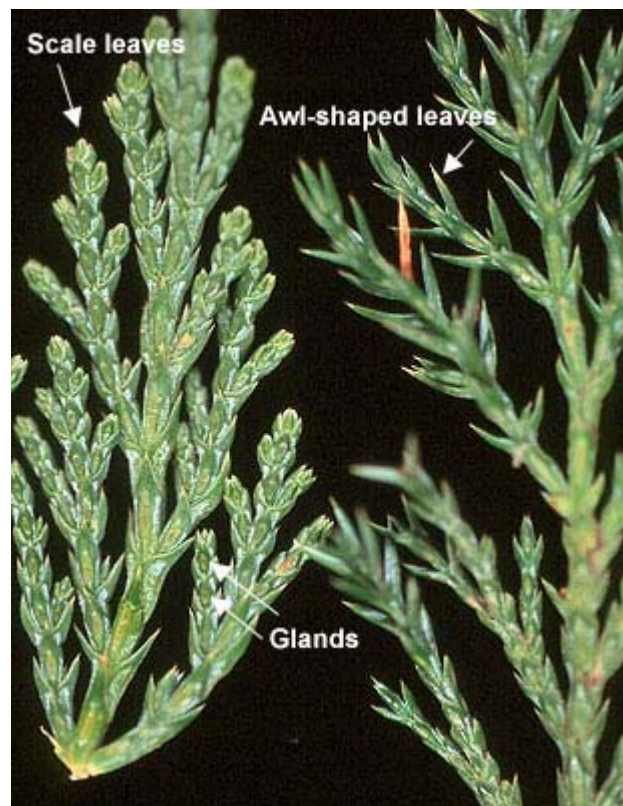
*Genista pilosa*; Woadwaxen





Botanical Name	<i>Juniperus sabina</i> ‘Tamariscifolia’
Common Name	Tam Juniper
Family	Cupressaceae
Origin	Nursery (straight species from Asia)
Type	Evergreen conifer groundcover
Hardiness	Sunset: A2, A3, 1 – 24
	USDA: 3 – 7
Form	Mounds up in middle and spreads out; Branches are long, & side branches form a V; Very dense
Growth Rate	Fast
Mature Size	Height: 10 – 15’ Spread: 40 – 60’
Landscape Size	Height: 2 – 3’ Spread: 8 – 15’
Bark & Branches	<b>Reddish-brown, flaky bark—not visible because foliage covers it; Very thick stems &amp; trunk</b>
Foliage	More needle-like foliage than scale-like—very prickly; Color: sea-green to blue-green; Smells like cat urine; Feathery appearance
Fruit	Gray-blue, small (3/8”); Sets few berries, & those are usually hidden beneath the foliage
Exposure	Full sun
Soil	Sandy, well-drained soil
Water	Drought tolerant—water at planting, & never again
Problems	Tam Juniper is often planted in the wrong place—in clay, in an area that’s too small & gets irrigation. Its life span in clay is 10 – 14 years; with irrigation, it’s 6 – 10 years.
Pests	<b>Juniper Tip Midge: little black flies whose larvae feed on leaf tips, causing dieback</b>
Diseases	<b>Phomopsis Tip Blight: fungal blight that kills branches</b> Root rot in heavy soil
Pruning	Remove dead/damaged branches; Prune outer branches to control spread
Propagation	Cuttings—easy
Use	<b>Fast-growing groundcover for hot, dry situations’; Usually so cheap that could be &amp; is planted as expendable groundcover to be replaced in 8 yr</b>
Other	<b>Pruning Tam Juniper without wearing protective clothing can result in Juniper Rash; Very deep-rooted—need pickup truck &amp; chainsaw to remove; Plant gallons in rows 6’ apart, &amp; 10’ apart from each other</b>

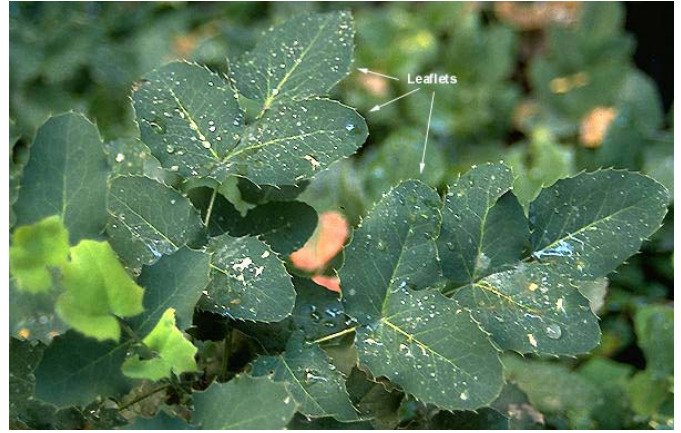
*Juniperus sabina* 'Tamariscifolia'



Botanical Name:	<i>Mahonia repens</i>
Common Name:	Creeping Mahonia
Family:	Berberidaceae
Location/Source:	British Columbia to Northern California on East slopes
Type:	Evergreen groundcover
Hardiness	Sunset: 2b-9 14-24 USDA: 3-9
Form/Habit:	Slow spreading groundcover; spreading by rhizomes
Growth Rate:	Slow
Mature Size:	Height: 10-14" Spread: 2-3'
Landscape Size:	Height: 6-8" Spread: 1-2'
Branching	Alternate
Twigs/Bark:	Twigs and bark reddish
Foliage:	Pinnately compound, leaf 6-9" long with 5-7 oval 1-2" leaflets; some with small spined teeth; blue green with bronzy or pinkish winter color
Flower:	April, May bloom with 4-5" flower spikes; flowers rose like 5/16" orangish yellow.
Fruit:	1/4" powdery blue berries
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Well drained soils best
Water:	Little irrigation and/or drought tolerant in cool summer areas
Pruning:	None
Pests/Disease:	Leaf spot fungus
Propagation:	Divisions or root cuttings
Landscape Use:	Native area groundcover
Other:	Very slow to establish; requires patience



*Mahonia repens*; Creeping Oregon Grape



Botanical Name:	<i>Pachysandra terminalis</i>
Common Name:	Pachysandra/Japanese Spurge
Family:	Buxaceae
Location/Source:	Japan
Type:	Evergreen groundcover
Hardiness	Sunset Zones: 2-10, 14-21 USDA: 5-9
Form/Habit:	Upright stems
Growth Rate:	Slow
Mature Size:	Height: 8-10" Spread: 4-6'
Landscape Size:	Height: 8-10" Spread: 24"
Branching	Opposite
Twigs/Bark:	Yellow-green twigs
Foliage:	Opposite, clustered at branch ends. Cuneate, 1-2.5"L, 3/4-1"W, dark green glossy upper, dull yellow green underside
Flower:	March/April, <1/8"W tubular white flowers, 1/2" L
Fruit:	
Cultural Requirements	
Exposure:	Most are in too much sun – needs shade to be green – full shade
Soil:	Humus slightly acid. Fertilize every 3 months first 18 months
Water:	Regular
Pruning:	Dead and damaged wood only
Pests/Disease:	Spider mite
Propagation:	Division or cuttings
Landscape Use:	Evergreen groundcover
Other:	Plant 14-16" on center with 4" pots



*Pachysandra terminalis*; Pachysandra or Japanese Spurge





Botanical Name:	<i>Sarcococca humilis hookeriana</i>
Common Name:	Low Sarcococca
Family:	Buxaceae
Location/Source:	Himalayas, China
Type:	Evergreen groundcover
Hardiness	Sunset: 3-9 14-24 USDA: 5-8
Form/Habit:	Low spreading by underground runners with upright stems
Growth Rate:	Slow to moderate
Mature Size:	Height: 1-2' Spread: 4-6'
Landscape Size:	Height: 10-14" Spread: 1-2'
Branching	Opposite
Twigs/Bark:	Glossy medium green twigs and olive green bark
Foliage:	Simple, lanceolate to elliptic leaf; entire margin, leaf 1-2 ½" long and 3/8-1/2" wide; medium green color
Flower:	Blooms late January and early February, small tubular flowers in leaf axils, 5/16" long, white sometimes tinged pink; very fragrant to the point of overpowering
Fruit:	1/8" black berries; not heavy
Cultural Requirements	
Exposure:	Afternoon shade to shade
Soil:	Best in soil high in organic matter
Water:	Regular irrigation
Pruning:	None required
Pests/Diseases:	Watch for scale insects
Propagation:	Cuttings; hard from seed
Landscape Use:	Shade groundcover with winter fragrance
Other:	Slow to establish

*Sarcococca humilis hookeriana*; Low Sarcococca



# **PERENNIALS & GRASSES**



Botanical Name	<i>Festucaovina</i> ‘Glauca’
Common Name	Blue Fescue
Family	Poaceae
Origin	Europe
Type	Clumping perennial grass
Hardiness	Sunset: 1 – 24
	USDA: 3 – 9
Form	Dense clump with very fine blades & short seed heads
Growth Rate	Slow
Mature Size	Height: 10 – 16” Spread: 8 – 10”
Landscape Size	Height: 10 – 16” Spread: 8 – 10”
Branching	--
Bark & branches	--
Foliage	Fine blades (10 – 16” long, 1/16 – 3/16” wide); linear; in-rolled; Color: silver to silver-blue; Somewhat evergreen; dead blades turn tan
Flowers	Loose open panicle—narrow, ovoid Not especially showy—plant usually grown for foliage
Fruit	Open panicle turns tan as seeds ripen; Seed heads persist spring to summer
Exposure	Full sun to light shade
Soil	Well-drained soil
Water	Drought tolerant Tolerates water if soil is very well-drained
Pests	--
Diseases	--
Pruning	Mow anytime to rejuvenate—mow in mid-summer to rejuvenate for fall; must mow in late winter; Burning is best
Propagation	Division—divide every 2 – 3 years to keep plant looking fresh Spreads by tillering—clump will die in the middle Seed—sow in cold frame autumn to spring; straight species only
Use	Will tolerate dry shade, but the blades might flop a bit if shade is too heavy
Other	Short-lived; ‘Elijah Blue’ has wider, very blue blades ‘Siskiyou Blue’ has taller (16 – 18”), bluer blades

*Festuca ovina* 'Glauca', Blue Fescue



Habits



Landscape Scene

Flowers



Fruit

Botanical Name:	<i>Hosta sp.</i>
Common Name:	Hosta or Plantain Lily
Family:	Liliaceae
Location/Source:	Mostly nursery origin
Type:	Clumping perennials
Hardiness	Sunset: 1-10, 14-21
	USDA 4-8
Form/Habit:	Mounded forms from a basal rosette of leaves
Growth Rate:	Moderate
Mature Size:	Height and Spread: depends on cultivar or species 5"-4'
Landscape Size:	Height and Spread 5"-3'
Branching	NA
Twigs/Bark:	NA
Foliage:	Spatulate leaves; 6-20" long, 3-9" wide, heavily veined with entire with entire margins, color from blue green to variegated forms with varying shades of yellow or white
Flower:	Multiple spikes 10-24" tall with 1-2" tubular flowers in shades of purple
Fruit:	NA
Cultural Requirements	
Exposure:	Afternoon to heavy shade
Soil:	Best in well drained soils with high organic matter
Water:	Regular irrigation
Pruning:	Plants die back to crown in winter; remove old leaves
Pests/Disease:	Slugs and snails
Propagation:	Division and tissue culture
Landscape Use:	Specimen perennials for shade and containers
Other:	Dozens of cultivars



*Hosta sp.*; Hosta



Botanical Name	<i>Miscanthus sinensis</i> ‘Zebrina’
Common Name	Zebra Maiden Grass
Family	Poaceae
Origin	Nursery
Type	Clumping perennial grass
Hardiness	Sunset: 2 – 24
	USDA: 4 – 8
Form	Clump with straight & tight blades that turn out at the top
Growth Rate	Slow (?)
Mature Size	Height: 4 – 5’ Spread: 6 – 8’
Landscape Size	Height: 3 – 4’ Spread: 2½ - 4’
Branching	--
Bark & branches	--
Foliage	Bottom of the blades is rolled & tan/straw-colored; the top of the blade is flatter (4 – 5’ long, ¼ - 5/8” wide), very pointed, toothed (sharp); Color: dark green with yellow bands across mid-rib; Fall color: yellow-orange; notable
Flowers	Pyramidal panicles (to 16” long) of silky-hairy, copper-colored Flowering stems are 4 – 6’ tall; Blooms in fall (October) Cyclic—every 3 <sup>rd</sup> year is heavy; best after long, hot summers
Fruit	Seed head look fuzzy, brown to copper; Ripen mid to late October
Exposure	Full sun (part shade)
Soil	Prefers moderately fertile, moist but well-drained soil Tolerates any soil
Water	Moderate to regular water
Pests	--
Diseases	--
Pruning	Cut back to base in late winter before new growth starts; Can be cut back again in mid-summer (August) to reduce height & encourage fresh, green growth
Propagation	Division—divide every 3 – 4 years; Spreads by tillering—clumps die in the center
Landscape Use	Specimen in border/bed; source of cut flowers; temporary screen; waterside planting
Other	‘Morning Light’ has white edges that give leaves a silvery look ‘Variegatus’ or ‘Gracillimus’ leaves striped length-wise with white

*Miscanthus sinensis* var.; Maiden Grass





Botanical Name:	<i>Phlox subulata</i>
Common Name:	Moss Pink, Creeping Phlox
Family:	Polemoniaceae
Location/Source:	Eastern US
Type:	Evergreen to semi-evergreen woody perennial
Hardiness	Sunset: 1-17 USDA: 4-6(7)
Form/Habit:	Spreading mat-like groundcover
Growth Rate:	Slow to moderate
Mature Size:	Height: 6-8" Spread: 1-2'
Landscape Size:	Height: 4-6" Spread: 8-12"
Branching	Leaves whorled on upright stems
Twigs/Bark:	Stems grayish to green
Foliage:	Simple, narrow elliptic leaf with entire margin; ¾"-1" long, 1/8" wide
Flower:	Late spring to early summer; single 4 petaled flowers ¾" across; shades of white, pinks and lavender
Fruit:	NA
Cultural Requirements	
Exposure:	Full sun to part shade
Soil:	Best in loamy well drained soils
Water:	Light irrigation
Pruning:	Cut stems back halfway after flowering
Pests/Disease:	Red spider mite
Propagation:	Division and cuttings
Landscape Use:	Spreading groundcover used in rockeries
Other:	Common perennial for color

*Phlox subulata*; Moss Pink, Creeping Phlox



Botanical Name:	<i>Senecio cineraria</i>
Common Name:	Dusty Miller
Family:	Asteraceae (Compositae)
Location/Source:	Mediterranean
Type:	Woody semi-evergreen perennial
Hardiness	Sunset: 4-24 H1, H2 USDA: 6-9
Form/Habit:	Mounding from a central rosette
Growth Rate:	Moderate
Mature Size:	Height: 2-3' Spread: 2-3'
Landscape Size:	Height: 1-2' Spread: 2-3'
Branching	Radial from a central rosette
Twigs/Bark:	Pubescent silver gray
Foliage:	Oval leaf with multiple deep, blunt lobes; 2-4" long, 1-1 ½" wide; pubescent silver gray
Flower:	1-3" flat topped corymbs on stems above foliage; small ½" yellow flowers
Fruit:	NA
Cultural Requirements	
Exposure:	Full sun
Soil:	Well drained soils
Water:	Little irrigation
Pruning:	Shear back in winter
Pests/Diseases:	Root rot in heavy wet soils
Propagation:	Cuttings or division
Landscape Use:	Used in perennial plantings for its gray color
Other:	Flowers not very showy



*Senecio cineraria*; Dusty Miller



# TURFGRASS

**NOTE: FOR DEFINITIONS, DIAGRAMS AND FURTHER INFORMATION SEE:  
TURGRASS MANAGEMENT, A.J. TURGEON, PRENTICE HALL, 2002**

Botanical Name:	<i>Agrostis</i>
Common Name:	Bentgrass
Type:	Cool season turfgrass
Description	Five species used in turfgrass; used for intensely cultured areas like golf greens
Botanical Name:	<i>Agrostis capillaries (tenuis)</i>
Common Name:	Colonial Bentgrass
Type:	Cool season turfgrass
Habit:	Fine textured bunch type to weakly creeping (short stolons and rhizomes) grass
Description:	Leaf blade with rolled vernation; membranous, truncate ligule; auricles absent; collar narrow; leaf blade flat 1-3 mm wide, ridged on adaxial surface and smooth on abaxial surface; inflorescence an open panicle and single-floret spikelets
Adaptation and Use:	Well drained slightly sandy acid to slightly acid soils; moderate fertility; poor heat and drought tolerance
Cultural intensity:	Moderate to high
	Mowing height: .3-.8 inches
	Fertilization: 1 to 6 lb. N/1000 square feet per year
	Irrigation frequent especially in drought periods
Seeds:	Seeds: 8,172,000 per pound
	Seeding rate: .5-2.0 pounds/1000 square feet
Characteristics:	Establishment vigor: average
	Leaf texture: medium
	Shoot density: high
	Cold tolerance: medium
	Heat tolerance: medium
	Drought tolerance: medium low
	Shade tolerance: medium high
	Thatching tendency: high
	Wear resistance: low
	Disease potential: medium



Botanical Name:	<i>Cynodon dactylon</i>
Common Name:	Bermuda Grass
Type:	Warm season turfgrass
General Description	Most Bermuda grasses are used in tropical and subtropical climates; newer cultivars can be used in warmer areas of our region
Botanical Name:	<i>Same</i>
Common Name:	Same
Type:	Warm season turfgrass
Habit:	Relatively coarse grass spreading by stolons and rhizomes;
Description:	Vernation is folded; ligule has a fringe of hairs 2-5mm long; auricles are absent; collar is continuous and hairy on margins; leaf blade is flat 1.5-2mm wide and smooth or hairy on both sides; leaf tapers toward tip; inflorescence 4-5 spicate branches
Adaptation and Use:	Will grow in a wide variety of soil conditions, not very cold tolerant; intolerant of shade; used for lawns and sports turf
Cultural intensity:	Moderate Mowing height: ¾-1.5” Fertilization: .5-2 lbs.N/1000 square feet per year Irrigation: regular
Seeds:	Seeds:1,770,600 per pound Seeding rate: 1.0-1.5 lbs. per 1000 square feet
Characteristics:	Establishment vigor: fast Leaf texture: fine Shoot density: high Cold tolerance: medium high with new cultivars Heat tolerance: high Drought tolerance: medium high Shade tolerance: medium low Thatching tendency: high Wear resistance: high Disease potential: medium high

Botanical Name:	<i>Festuca</i>
Common Name:	Fescue
Type:	Cool season turfgrass
General Description	Six species commonly used as turfgrass with the fine fescues used most
Botanical Name:	<b><i>Festuca rubra</i></b>
Common Name:	Red Fescue
Type:	Cool season turfgrass
Habit:	Creeping type grasses spreading by rhizomes
Description:	Vernation is folded; ligule membranous .5mm long and truncate; auricles are absent; collar is narrow without hairs; leaf blade 1.5-3mm wide; deeply ridged on adaxial surface; inflorescence a contracted panicle; cultivars used to increase drought tolerance and disease resistance
Botanical Name:	<b><i>Festuca rubra commutata</i></b>
Adaptation and Use:	Chewings Fescue
Type:	Cool season turfgrass
Habit:	Non-creeping bunch type turfgrass
Cultural intensity:	Moderate: Forms a denser turf than red fescue
	Mowing height: 1.5-2"
	Fertilization: 2 lbs. N/1000 square feet or less per year
	Irrigation: Low; drought tolerant
Seeds:	Seeds 544,800 per pound
	Seeding rate: 3.0-5.0 lbs./1000 square feet
Characteristics:	Establishment vigor: medium fast
	Leaf texture: fine
	Shoot density: medium
	Cold tolerance: medium
	Heat tolerance: medium
	Drought tolerance: high
	Shade tolerance: high
	Thatching tendency: medium low
	Wear resistance: medium
	Disease potential: medium

Botanical Name:	<i>Lolium</i>
Common Name:	Ryegrass
Type:	Cool season turfgrass
General Description	10 species from temperate regions with 2 used as turfgrass
Botanical Name:	<i>Lolium perenne</i>
Common Name:	Perennial Ryegrass
Type:	Cool season turfgrass
Habit:	Perennial bunch type grass
Description:	Vernation a folded ligule, membranous 0.5-2mm long, truncate to rounded; auricles small soft and claw like; collar broad and divided; leaf blade flat 2-5mm wide, ridged on adaxial surface, glossy and keeled on abaxial surface; inflorescence a flat spike with awnless spikelets.
Adaptation and Use:	Moist cool environments without severe winter or summer temperatures. Best in neutral to slightly acid soils with moderate to high fertility. Often used as a nursegrass with other types
Cultural intensity:	Moderate  Mowing height: 0.5-2" Mowing quality sometimes poor because of tough vascular bundles  Irrigation: necessary in drought periods  Fertilization: 2-6lbs. N/1000 square feet per year
Seeds:	Seeds: 227,000 per pound  Seeding rate: 4.0-8.0 lbs./1000 square feet
Characteristics:	Establishment vigor: fast  Leaf texture: coarse  Shoot density: low  Cold tolerance: low  Heat tolerance: low  Drought tolerance: medium  Shade tolerance: low  Thatching tendency: medium low  Wear resistance: medium high  Disease potential: medium low
Cultivars:	<b>‘Derby’ &amp; ‘Manhattan’</b> ; finer textured, denser, more persistent and better mowing quality



Botanical Name:	<i>Poa pratensis</i>
Common Name:	Kentucky Blue Grass
Type:	Cool season turfgrass
General Description	Most commonly used temperate turfgrass
Habit:	Rhizomatous spreading turfgrass
Description:	Vernation is folded; ligule is membranous very short .0.2-0.6mm long, truncate; auricles absent; collar broad and divided; leaf blade V shaped or flat, parallel sided, smooth on both sides with a boat shaped tip; inflorescence open pyramidal panicle
Adaptation and Use:	Sunny or slightly shaded sites with well drained moist neutral to slightly acid soil. Widely used for lawns and sports turf.
Cultural intensity:	Low to high depending on cultivar Mowing height: .75-2.5” Irrigation: as needed to prevent wilt and sustain density Fertilization: 2-6lbs.N/1000 square feet per year
Seeds:	Seeds: 2,179,200 per pound Seeding rate: 1.0-2.0 lbs./1000 square feet
Characteristics:	Establishment vigor: medium low Leaf texture: medium Shoot density: medium Cold tolerance: medium to medium high Heat tolerance: medium Drought tolerance: medium Shade tolerance: medium low Thatching tendency: medium Wear resistance: medium to medium high Disease potential: medium