



Trees for Landscape Containers and Planters

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Planting trees in aboveground containers and planters is becoming a common practice on sites that are not suited for inground planting. Containers differ from raised planters in that they are usually smaller in volume and moveable, whereas planters are generally larger, and often built as part of the permanent hardscape (paving, etc.). The greatest challenge in selecting trees for containers and planters is in choosing trees that can survive temperature extremes, and that can establish roots in a limited volume of substrate (potting soil). Consider several factors when selecting containers and trees including environmental influences, container and planter design, substrate type, and tree characteristics.



Trees can be planted in both moveable containers (left – dwarf Alberta spruce) and in permanent planters (right – river birch).

Environmental influences

Hardiness is the ability of a tree to survive in a particular geographic area, with temperature being the major determining factor. Trees in Virginia are subjected to winter air temperatures ranging from average minimal sub-zero lows in USDA Hardiness Zone 5b (-10°F to -15°F – parts of Bland, Giles and Tazewell counties) to

the relatively mild average minimal annual lows of Zone 8a (15°F to 10°F – Chesapeake and Virginia Beach). All areas of the state may experience summer air temperatures up to 105°F or more, with the Richmond area generally being the hottest.

In the landscape, soil buffers temperatures at the cold extreme, with soil temperatures below a frozen crust seldom dropping below 20°F to 30°F. Tree roots are generally several degrees less cold hardy than tree stems. This means that roots of trees in containers and planters, whose stems might ordinarily be hardy to sub-zero temperatures, may die when substrate temperatures drop below freezing. If the substrate freezes, wind may cause leaves on evergreen trees to dry out because roots are unable to absorb water from the frozen root ball. Wind can also speed container substrate temperature decreases.



Container used in a sheltered location to protect the tree from temperature extremes and wind (topiary juniper).

Tree roots in containers and planters may die during the summer when substrate temperatures frequently exceed air temperatures, often going above 120°F. Wind, as well as heat from pavement, can increase water evaporation from containers, leading to dried out leaves.

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Container and planter design and size

Containers and planters for landscape trees can be constructed of a variety of materials in many different shapes and configurations. Coordinate the appearance of containers and planters with the landscape site. Also, determine how much time and money is available for container and planter maintenance and select accordingly.

Planter built of material to coordinate with the background wall.



With regard to container or planter size, a confined tree root system ideally should have two cubic feet of substrate for every square foot of tree canopy. Consider the mature size of the desired tree and design or select containers or planters with adequate root volume. Remember that the greater the substrate volume in the container or planter, the greater the temperature buffering, and the reserve of water and nutrients. In exposed and windy areas it may be desirable to line containers and planters with supplemental insulation.

Drainage is very important when designing or selecting containers and planters. For containers, and planters with constructed bottoms, be sure that channels exist to drain away excess water. Planters that are open to the ground should be built atop soil through which water readily drains.

If containers must be used to permit seasonal relocation to more temperate conditions during winter months, select small containers and trees. To avoid container damage or structural collapse if containers are used on above ground patios, rooftops, etc., keep the total weight of the container, substrate, trees and water in mind.

Even with careful container and tree selection, trees may outgrow the volume of their containers. Periodic tree removal for root pruning and



Small trees (topiaried junipers) and containers were used in this exposed area to permit easy relocation to a more protected area during the winter.

substrate replacement is one method of controlling size (a technique used in bonsai). Removal and root pruning can be labor intensive, however, especially with large trees. Rather than root pruning, consider transplanting trees into larger containers or planters, or into the landscape, if they grow too large.

Substrate type

One advantage of growing trees in containers and planters is the opportunity to blend a substrate that may be better than the existing site soil. Substrates for containers and planters should resist changes in volume and compaction due to rain and irrigation. The substrate should have good aeration and drainage while retaining adequate water. Field soil is a poor container substrate because gravity cannot pull excess water out of the container, leaving field soil too wet for container use. In addition, field soil can be contaminated with weed seeds, insects and diseases.

A variety of organic and inorganic components can be used to blend a substrate including pine bark, compost, sand and expanded clay products. Avoid using peat moss that is difficult to rewet if it dries out, and perlite and vermiculite that are light and may float. All soilless substrates need to be supplemented at least yearly with a complete slow release fertilizer with micronutrients.

Substrate composition should be tied to irrigation method. If the only available water will be rain, use a substrate with smaller pore spaces to retain more water. To increase the water-holding capacity of a substrate, add sand to create smaller pore spaces in which water will be held. If regular watering or irrigation will be available, a lighter substrate may be adequate.

Tree selection

Selection of a suitable tree depends upon location (environmental and size), container or planter size, and desired tree form or type. Trees that will remain in place should be selected for their year-round appearance, maintenance requirements, and size. They should be aesthetically compatible with their container/planter and surroundings. Trees classified as dwarf, semi-dwarf, and small are the most appropriate size selections.

Evergreen hollies form a nice year-round background for annual flowers used in containers well proportioned for the trees.



Trees recommended for containers and planters

Common Name	Latin Name	Cultivars and Comments
Trident maple	<i>Acer buergeranum</i>	—
Hedge maple	<i>Acer campestre</i>	—
Amur maple	<i>Acer ginnala</i>	‘Flame’
Paperbark maple	<i>Acer griseum</i>	—
Fullmoon maple	<i>Acer japonicum</i>	—
Japanese maple	<i>Acer palmatum</i>	Dwarf cultivars
Serviceberry	<i>Amelanchier</i> spp.	Numerous cultivars
River birch	<i>Betula nigra</i>	Large planters only
Eastern redbud	<i>Cercis canadensis</i>	‘Forest Pansy’, ‘Silver Cloud’, ‘Texas White’
American hornbeam	<i>Carpinus caroliniana</i>	Large planters only
Falsecypress	<i>Chamaecyparis</i> spp.	Dwarf cultivars; evergreen
Chinese fringetree	<i>Chioanthus retusus</i>	—
Fringetree	<i>Chioanthus virginicus</i>	—
Kousa dogwood	<i>Cornus kousa</i>	—
Corneliancherry dogwood	<i>Cornus mas</i>	—
Smoketree	<i>Cotinus coggygia</i>	—
Cockspur hawthorn	<i>Crataegus crusgalli</i>	var. <i>inermis</i> is thornless
Downy hawthorn	<i>Crataegus mollis</i>	—
Honeylocust	<i>Gleditsia triacanthos</i>	‘Sunburst’; large planters only
Common witchhazel	<i>Hamamelis virginiana</i>	—
Possumhaw, deciduous holly	<i>Ilex decidua</i>	‘Council Fire’
Winterberry	<i>Ilex verticillata</i>	—
Nellie R. Stevens holly	<i>Ilex</i> x ‘Nellie R. Stevens’	Evergreen
Foster’s Hybrid holly	<i>Ilex</i> x <i>attenuata</i>	‘Foster’s’; large planters only; evergreen
Juniper	<i>Juniperus</i> spp.	Tree-form cultivars; evergreen
Goldenraintree	<i>Koelreuteria paniculata</i>	Medium to large planters
Crape myrtle	<i>Lagerstroemia indica</i>	Smaller cultivars; provide winter protection above Zone 7b
Southern magnolia	<i>Magnolia grandiflora</i>	‘Little Gem’; evergreen
Ann magnolia	<i>Magnolia</i> x ‘Ann’	
Galaxy magnolia	<i>Magnolia</i> x ‘Galaxy’	Large planters only
Saucer magnolia	<i>Magnolia</i> x <i>soulangiana</i>	Large planters only
Star magnolia	<i>Magnolia</i> x <i>stellata</i>	
Centurion crabapple	<i>Malus</i> x ‘Centurion’	Large planters only
Japanese crabapple	<i>Malus floribunda</i>	Large planters only
Indian Magic crabapple	<i>Malus</i> x ‘Indian Magic’	Large planters only
Sargent crabapple	<i>Malus sargentii</i>	—
Sourwood	<i>Oxydendrum arboreum</i>	Medium or large planters
Lacebark pine	<i>Pinus bungeana</i>	Evergreen
Swiss stone pine	<i>Pinus cembra</i>	Evergreen
Japanese red pine	<i>Pinus densiflora</i>	Large planters only; evergreen
Mugo pine	<i>Pinus mugo</i>	Evergreen
Japanese black pine	<i>Pinus thunbergiana</i>	Large planters only; evergreen
Purpleleaf plum	<i>Prunus cerasifera</i>	Numerous cultivars
Kwanzan cherry	<i>Prunus serrulata</i>	‘Kwanzan’; large planters only
Yoshino cherry	<i>Prunus</i> x <i>yedoensis</i>	Large planters only
Callery pear	<i>Pyrus calleryana</i>	Large planters only; avoid ‘Bradford’