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Selecting Landscape Plants: Shade Trees

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Trees are the basic element for any landscape plan. They set the stage for the entire home grounds design. The type used and their location determine to a great extent what other plantings are appropriate. Providing shade usually requires tall, sturdy, long-living species. Density of foliage, which determines the amount of shading, is important. A tree such as a Norway maple will produce a very dense shade that prevents other plants from growing under it, while a honey locust will produce a light partial shade which is not a hindrance to other plants growing below it. Deciduous trees should be used to shade the south windows of a home in the summer, thus allowing the sun to penetrate in the winter.

Trees are the most permanent plants we grow. Many will live and enhance the landscape for 100 or more years if they are given a chance. Because of the permanency of trees and their importance in the landscape, care must be taken to select the best species for each situation. The wrong tree or one planted in the wrong spot can actually detract from the overall landscape. Five to ten years of precious tree growing time may be lost before the mistake is realized.

How To Choose Trees

No species or variety of tree is sufficiently superior to be called "best" without some qualifications. However, there are many excellent varieties. Choosing a variety with the characteristics that will provide the greatest satisfaction in a given situation requires careful consideration.

Most home owners make the mistake of selecting a particular tree and then trying to fit it into their landscape. A better approach is to decide where a tree is needed and what that tree should do in the landscape. After the desired type of tree has been decided upon and the

selected site's soil and microclimate conditions determined, then it is appropriate to select a species that will grow well in that site and fulfill the determined landscape need.

Avoid trees that are susceptible to storm damage, ones that are hosts to destructive insect and disease pests, and those that produce an over-abundance of objectionable seed or fruit. The choice will generally depend on existing conditions at the planting site. These include room for top and root growth, soil type, subsurface drainage, and the kind of plants you will be able to grow under the tree.

A tree is a long-term investment. Therefore, start with a high quality plant. Trees 5 to 8 feet tall, either balled and burlapped or growing in containers, are usually the best buy. Difficult-to-transplant species may be more easily established if you start with smaller sizes that have been container grown. A reputable dealer will usually help select the tree and will guarantee it to be alive and healthy.

If you don't have a green thumb, your nurseryman will probably plant the tree for a small additional cost. If you decide to plant the tree yourself, you can find information on the correct methods in VCE Publication 430-295, *Guidelines for Planting Landscape Trees*.

Tree species described in the following sections are the ones most commonly available in retail nurseries and garden centers. Some species have been included on the list because they are commonly available, even though they are not recommended for general landscape planting.

Table 1 gives a rating of the relative merits of each species for eight different factors that should be considered when making a selection.

Improved varieties are available for most of the species included in the list. In most cases these varieties need to

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Table 1. Relative Rating for Eight Factors of Selection of Trees

Legend: ++ excellent + good - poor -- very poor

Common Name	Scientific Name	Freedom from Insect Pests	Freedom from Disease Problems	Resistance to Storm Drainage	Will Grow on Poorly Drained Soil	Will Grow in Hot Dry Areas	Easy to Transplant	Withstand City Conditions
Norway maple*	<i>Acer platanoides</i>	+	+	+	-	-	+	+
Red maple	<i>Acer rubrum</i>	+	+	-	++	-	+	-
Sugar maple	<i>Acer saccharum</i>	-	-	+	-	-	+	--
Silver maple	<i>Acer saccharinum</i>	+	+	--	++	-	+	-
Horse chestnut	<i>Aesculus hippocastanum</i>	+	+	-	-	-	-	-
Green ash	<i>Fraxinus pennsylvanica</i>	--	+	+	+	++	+	+
White ash	<i>Fraxinus americana</i>	--	+	+	+	-	+	+
Honey locust	<i>Gleditsia triacanthos</i>	--	+	+	+	++	+	+
Sweet gum	<i>Liquidambar styraciflua</i>	+	-	+	++	-	-	+
Tuliptree	<i>Liriodendron tulipifera</i>	+	+	-	--	--	-	+
Sycamore	<i>Platanus occidentalis</i>	+	--	+	++	+	+	+
White oak	<i>Quescus alba</i>	+	++	++	-	++	--	+
Red oak	<i>Quercus rubra</i>	+	+	++	+	+	-	+
Pin oak	<i>Quercus palustris</i>	+	+	++	+	-	+	+
Chinese pistache	<i>Pistacia chinensis</i>	++	++	+	+	++	++	++
Bald cypress	<i>Taxodium distichum</i>	++	++	+	++	+	--	+
River birch	<i>Betula nigra</i>	+	++	+	++	-	+	+
European white birch	<i>Betula pendula</i>	--	+	+	+	-	+	-
Yellowwood	<i>Cladrastis lutea</i>	++	++	+	-	+	--	+
Ginkgo	<i>Ginkgo biloba</i>	++	++	++	-	+	+	++
Black gum	<i>Nyssa sylvatica</i>	++	++	+	+	-	--	-
Japanese pagodatree	<i>Sophora japonica</i>	++	+	+	-	+	+	++
Linden	<i>Tilia sp.</i>	+	+	+	-	+	+	++
Japanese zelkova	<i>Zelkova serrata</i>	+	+	+	+	+	+	++
Amur maple	<i>Acer ginnala</i>	+	+	+	+	++	++	++
Lacebark elm	<i>Ulmus parvifolia</i>	++	++	++	+	++	++	++
Japanese maple	<i>Acer palmatum</i>	+	+	+	-	--	+	-

Your local nursery will probably not stock all of the species included in this list. However, they will generally be able to obtain a specimen for you if given enough time.

*Though commonly available, this plant is considered to be an invasive alien species.

be asexually propagated from the original selected parent. Most of the selected varieties are superior to the standard varieties grown from seed and well worth the added cost needed to produce and purchase them.

The trees listed in the following section have been divided into three groups according to their size. The large trees are ones that reach a mature height of greater than 60 feet. Trees with a mature height between 30 and 60 feet make up the medium-sized group. There are relatively few shade trees in the group of small trees which is made up of trees less than 30 feet tall. The need for small trees may often be satisfied by flowering trees. For more information on flowering trees, see VCE Publication 426-611, *Selecting Landscape Plants- Flowering Trees*.

Large Trees

AMERICAN SYCAMORE

Platanus occidentalis

The most striking feature of the sycamore is the flaking bark that peels off to reveal a lighter-colored bark underneath. Sycamore is considered a dirty tree; it is continuously dropping bark that needs to be picked up. A twig blight that temporarily disfigures the foliage attacks sycamore almost every spring. It will seldom kill the tree, but it certainly reduces its value as an ornamental. Sycamore is a fast-growing tree that will reach an immense size. It is too large for the average home grounds and should not be used as a street tree due to roots that heave sidewalks and a tall crown that interferes with overhead power lines. It needs a deep, rich soil to develop properly. (75 to 100 ft. height; spread may exceed height).

If a sycamore-type tree is desired, London planetree (*P. x acerifolia*) is a better choice than the native American species. It is resistant to the twig blight and does not reach as large a size.

BALD CYPRESS *Taxodium distichum*

This fast-growing, pyramidal tree becomes rounded with age. The light-green, fern-like leaves turn a rust color before they are shed in the fall. This tree has relatively few insect or disease problems and will grow on a wide variety of soil types and moisture conditions. It is especially suited to wet or swampy conditions (50 to 70 ft. height; 20 to 30 ft. spread).

GINKGO *Ginkgo biloba*

Geological evidence indicates that the ginkgo has been growing on the earth for 150 million years. Although it is one of the most primitive trees known, it is also one of the best adapted to city conditions. The ginkgo has no

known insect or disease pests and hence never needs spraying. The interesting fan-shaped leaves of the ginkgo turn a clear yellow in fall. Only grafted nonfruiting varieties or known males should be planted; the round, plum-like fruits of the female trees have an obnoxious odor. Ginkgo will eventually become a large tree, but it is slow-growing and will take at least 50 years to develop. An upright cultivar for street planting is 'Fastigiata' (50 to 80 ft. height; 30 to 40 ft. spread).

GREEN ASH *Fraxinus pennsylvanica*

Green ash is a vigorous tree while young. It develops a broad crown at maturity. The leaves turn a bright-yellow in fall but do not remain on the tree long enough to be effective. It is drought-resistant and will grow on a wide variety of soil types. A borer insect can be a serious pest of green ash while it is becoming established. Seedlings of green ash can be a problem in flower beds and untended areas; it is advisable to plant the new seedless varieties such as 'Marshall's Seedless' instead of the standard ones (50 to 60 ft. height; spread may be 1/2 of height).

HONEY LOCUST *Gleditsia triacanthos* var. *ine rmis*

Native honey locust trees are best known for their long, stiff, branched thorns that are a constant hazard. They also produce long, flat seed pods that may be a nuisance. The improved thornless, podless varieties of honey locust, such as 'Sunburst,' 'Shademaster,' 'Skyline,' and 'Majestic,' are the only ones that should be considered for planting. Their lacy foliage gives a loose, open shade that is ideal for patios and shade-loving plants. In the fall, the small leaflets filter into the grass as they fall and require little raking. Unfortunately, honey locust is subject to attacks by mimosa webworms, and unless the insect is controlled it will nearly defoliate the tree by midsummer each year. If the gardener is not prepared to spray the tree at least twice a year to control this insect, something else should be planted (30 to 70 ft. height; spread may equal height).

HORSE CHESTNUT *Aesculus hippocastanum*

The horse chestnut is a magnificent tree in the spring when its foot-long panicles of showy flowers cover the tree, resembling candles on a Christmas tree. It is definitely not a tree for the small yard. Its coarse texture and large size make it look out of place except in a very large area. The horse chestnut has earned a bad reputation in many areas. It is susceptible to leaf scorch in dry weather and is not appropriate for southeast Virginia. Leaf blotch and powdery mildew are frequently present. Its

branches are relatively weak and subject to storm damage. The large nuts are produced profusely. They have no economic or ornamental value and are a nuisance wherever they fall, in addition to being poisonous.

The 'Baumannii' horse chestnut, a double-flowering variety, should be planted in preference to the standard varieties because it does not produce seed. There is also a red-flowered form available that is more showy than the standard types (50 to 75 ft. height; 40 to 70 ft. spread).

NORWAY MAPLE *Acer platanoides*

Note: the Virginia Native Plant Society has identified Norway Maple as an invader of natural areas throughout Virginia. As its name implies, the Norway maple is a native of Europe but has been widely planted over the eastern United States. Most of the varieties of maple with unusual shape or foliage color have been derived from this species.

The dense shade and shallow root system make it almost impossible to grow anything under a Norway maple. Its yellow flowers in early spring are interesting but not especially ornamental. It certainly has merit for planting in areas where you don't care whether or not you can grow anything in its shade. Leaf scorch can occur in hot, dry summers. Norway maple is also susceptible to problems with girdling roots. Seeds sprout readily and can be weedy in some areas (40 to 50 ft. height; spread may equal height).

PIN OAK *Quercus palustris*

Pin oak is one of the fastest growing oaks. The branching habit of the native pin oak is truly unique. The upper branches are ascending, the middle ones horizontal, and the lower ones drooping. This makes the pin oak a poor choice as a street tree with the exception of the 'Sovereign' cultivar; its lower branches do not droop. As the drooping lower branches are removed to allow for traffic beneath the tree, the horizontal branches begin to droop; some branches always seem to be interfering with traffic. Pin oak should be planted where it has room to assume its natural shape. It will grow poorly in soil with a high pH -the leaves will turn yellow due in part to iron chlorosis, and extensive soil treatment will be necessary to return the tree to a healthy condition (60 to 70 ft. height; 25 to 40 ft. spread).

RED MAPLE *Acer rubrum*

One of the first signs of spring is the flowers of the red maple. The profusion of tiny, red flowers with the background of smooth, gray bark is a beautiful sight. Red

maple is also one of the first trees to change color in the fall. Some trees develop a red fall color, but many of them do not. Several improved varieties of red maple have been developed that produce outstanding fall color such as 'Red Sunset,' 'October Glory,' and 'Autumn Flame.' There are also varieties available with a narrow crown. Red maple is easy to transplant and grows rapidly. However, it is relatively weak wooded and subject to storm damage (40 to 60 ft. height; spread may equal height).

RED OAK *Quercus rubra* or *Q. borealis*

Red oak is a fast growing oak. It develops into a large, broad, round-topped tree with a deep-red fall color. It withstands city conditions, has a clean habit of growth, and makes one of the best street and shade trees. Unfortunately, it is not appropriate for southeast Virginia (65 to 75 ft. height; 40 to 50 ft. spread).

SILVER MAPLE *Acer saccharinum*

Silver maple is a fast-growing but relatively short-lived tree. Its brittle wood is too subject to storm damage for it to be recommended for general landscape use. The tree is also notorious for plugging sewer lines and lifting sidewalks. It should only be used in large open areas or parks where falling branches will not be a hazard and roots cannot interfere with sewers or sidewalks. The silvery undersides of the leaves are exposed when the wind blows, which does give it some ornamental value (50 to 70 ft. height; spread may be 2/3 of height).

SUGAR MAPLE *Acer saccharum*

The fire-red to yellow fall color of the sugar maple is one of the most beautiful sights in Virginia. The sap of this tree can be boiled down to produce maple syrup and sugar. Mature sugar maples show a wide variation in form but tend to have a broad, rounded head. At least one disease and two insects attack sugar maple; this limits its usefulness in areas of the state where these pests are a problem. Susceptibility to gas and smoke damage makes sugar maple less suitable for city conditions than Norway and red maples.

Improved varieties of sugar maple include a dwarf, globe-shaped form; a very narrow, columnar form; and a cut-leaved form. This plant is not appropriate for southeast Virginia (60 to 75 ft. height; spread may be 2/3 of height).

SWEET GUM *Liquidambar styraciflua*

The glossy, green, star-shaped leaves of the sweet gum are one of its most ornamental features, especially when they take on fall colors of yellow, orange, red, and purple.

Where it is given room to develop, few trees will approach it in symmetrical beauty. The interesting ball-shaped fruit hangs on the tree long after the leaves have fallen; they are a nuisance in the lawn when they finally fall. An additional ornamental feature is the winged or corky bark projections that develop along the branches. A fruitless cultivar is 'Rotundiloba' (30 to 50 ft. height; 20 to 30 ft. spread).

TULIPTREE *Liriodendron tulipifera*

The native tuliptree needs a deep, fertile, moist soil to develop properly. It is often difficult to transplant, but once established it will grow rapidly and develop into a large tree. It is too large for the average-sized yard and should be planted only where it has ample growing space.

Pale-yellow, tulip-shaped flowers are produced in May. After the fruit breaks open in the fall to release its seed, a tulip-shaped portion of the fruit remains on the tree to add interest during the winter. The tuliptree has few serious insect or disease problems. However, the leaves may turn yellow and drop during hot, dry periods of midsummer, especially in the Tidewater area (70 to 90 ft. height; 35 to 50 ft. spread).

WHITE ASH *Fraxinus americana*

White ash does not grow as fast as green ash, but it will eventually become a larger tree. It develops a yellow and purple fall color that is rather unique. White ash has the same borer problems as green ash. The new seedless varieties of white ash such as 'Rose Hill' or 'Autumn Purple' should be planted in preference to the standard varieties (50 to 80 ft. height; spread may equal height).

WHITE OAK *Quercus alba*

A mature white oak is one of the most majestic trees. They are rounded in outline with thick, sturdy, horizontal branches. The native white oak is slower-growing and more difficult to transplant than most other oaks. However, it is not as susceptible to insects and diseases, and it grows on a wider range of soil types. It is a difficult species to transplant and is best moved only in the spring (100 ft. height; 50 to 80 ft. spread).

Medium-Sized Trees

AMERICAN YELLOWWOOD *Cladrastis kentukea (lutea)*

The most distinctive feature of the yellowwood is its pendulous clusters of white, fragrant, wisteria-like flowers. The tree may not bloom every year, but the clean foliage and rounded form of this tree would make it

worthwhile to plant even if it never blooms. Its thin, gray bark is similar to beech. The yellowwood has no serious disease or insect problems. An excellent, golden-yellow fall color may develop some years. This tree is tolerant of high pH soil (35 to 50 ft. height; 40 to 55 ft. spread).

BLACK GUM *Nyssa sylvatica*

The scarlet to orange fall color of the native black gum is one of the most brilliant of any tree species. It is a dense, pyramidal tree with lustrous, dark-green, leathery leaves. It is a difficult tree to transplant and like most hard-to-transplant trees, the smaller sizes have a better chance of surviving after they are moved. At the present time, black gum is difficult to find in many nurseries, but is becoming more commonly available as more people get to know its merits. It is a fairly fast-growing, pest-free tree excellent for wet areas (30 to 50 ft. height; 20 to 35 ft. spread).

CHINESE PISTACHE *Pistacia chinensis*

This is an adaptable tree that can be useful as a street tree. It has no major pest problems, is tolerant of drought, and is very tolerant of urban conditions. In the fall, leaves turn bright orange and scarlet, although color varies among trees. This tree has an attractive rounded habit (35 to 45 ft. height; 25 to 30 ft. spread).

EUROPEAN WHITE BIRCH *Betula pendula*

The European white birch is a very graceful, relatively short-lived tree grown for its striking white bark. The tree is extremely susceptible to the bronze birch borer, an insect that can destroy a large specimen tree in a single season. The white birch should not be planted unless the owner is aware of the quick destruction that can result from this pest if proper control is not taken. It is not appropriate for southeast Virginia (40 to 50 ft. height; spread may be 2/3 of height).

JAPANESE PAGODATREE *Sophora japonica*

This tree gets its common name from the fact that it was planted around Buddhist temples in the Orient. It is also known as the scholar tree or simply as Sophora. Its large clusters of white pea-like flowers are showy and interesting because they appear in late summer after other trees have already flowered. The yellow seed pods usually hang on the tree until after it has lost its leaves in the fall. Good cultivars include 'Regent' (fast growing with dark, glossy foliage) and 'Princeton Upright' (upright branching habit) (50 to 75 ft. height; spread may equal height).

JAPANESE ZELKOVA *Zelkova serrata*

Zelkova is a fast-growing, vase-shaped to spreading tree. Its leaves resemble those of the elm; it is a close relative, but unlike the elms, it has smooth, gray bark and develops a good red to purple fall color. Young zelkova trees are often crooked and need corrective pruning to develop into a desirable tree. Zelkova is susceptible to several pests that attack elm trees, but it is relatively resistant to Dutch elm disease (50 to 80 ft. height; equal spread).

LACEBARK ELM *Ulmus parvifolia*

An excellent, durable landscape tree with attractive exfoliating bark. The excellent, exfoliating bark varies in color, but is usually gray, green, and brown with orange underneath. It is resistant to Dutch elm disease and the elm leaf beetle. While it is sometimes called Chinese elm, do not confuse it with the undesirable *U. pumila*, which nurseries will often refer to as Chinese Elm as well (50 ft. height; similar spread).

LINDEN *Tilia spp.*

The lindens are some of the best shade trees. Their small flowers, produced in early summer, are somewhat ornamental and highly fragrant. The small, round seed is born on an interesting leafy bract that hangs on the tree well into the winter. Of the seven species of linden grown in this country, the littleleaf linden (*Tilia cordata*) is the most commonly available and best-suited for home situations. The leaves remain green on the tree long after other trees have shed. Lindens have few insect or disease pests.

Two improved cultivars of littleleaf linden are 'Greenspire,' a straight-trunked tree that rapidly grows into a narrow, oval form; and 'Chancellor,' with a narrow, compact, upright form (60 to 70 ft. height; spread may be 1/2 to 2/3 of height).

RIVER BIRCH *Betula nigra*

The most interesting characteristic of the native river birch is its salmon-colored bark that peels off in paper-thin layers. Unfortunately, bark characteristics vary greatly from tree to tree. As the tree ages, bark becomes brown to dark gray and scaly on older limbs. The tree is noted for its ability to grow in wet soils, but it will grow in drier situations as well. The river birch has been greatly ignored in favor of the showier white birches, but it is a fine ornamental and should be planted more. It is far more resistant to insects than the white birches. The cultivar 'Heritage' has more ornamental bark and foliage (40 to 70 ft. height; 40 to 60 ft. spread).

Small Trees

AMUR MAPLE *Acer ginnala*

The Amur maple is a small, round-headed, extremely hardy tree. Its red fall color is as brilliant as any of the maples. The winged seeds (often bright red in summer) hang on the tree after the leaves have fallen, adding interest to the tree in winter. It is one of the best of the small trees, requiring practically no attention and able to grow in a wide range of soil types (15 to 18 ft. height; spread may equal height).

JAPANESE MAPLE *Acer palmatum*

This large shrub or small tree is planted for its interesting foliage. There are many varieties available, but the ones with red or finely cut foliage are the most popular. Japanese maple can be grown over most of Virginia, but even the hardiest varieties need some protection in the northern half of the state, and those used in Tidewater must be kept well watered and mulched during the summer to avoid marginal leaf scorch. A rich, well-drained soil high in organic matter is needed for best growth. Japanese maple will not grow on poorly drained or dry soils. Although some varieties grow 25 feet tall, most of the varieties commonly grown as ornamentals will not get over 10 feet tall. Most of the varieties are very slow growing (6 to 25 ft. height; equal spread).