

# **A Guide for Selecting Shade and Flowering Trees for Pennsylvania Landscapes**

PENNSTATE



College of Agricultural Sciences • Agricultural Research and Cooperative Extension

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Several well-chosen shade and small flowering trees can greatly enhance the appearance of your home and surrounding property. This diverse group of plants can be functional as well as aesthetic in its use. Large trees can supply needed shade to cool and modify the environment, to frame the house or a distant view, or simply to create a pleasing setting for the home. The smaller flowering trees can serve as accent points with seasonal color, as screening for privacy, or as a gradual transition between flowering shrubs and larger shade trees in the landscape.

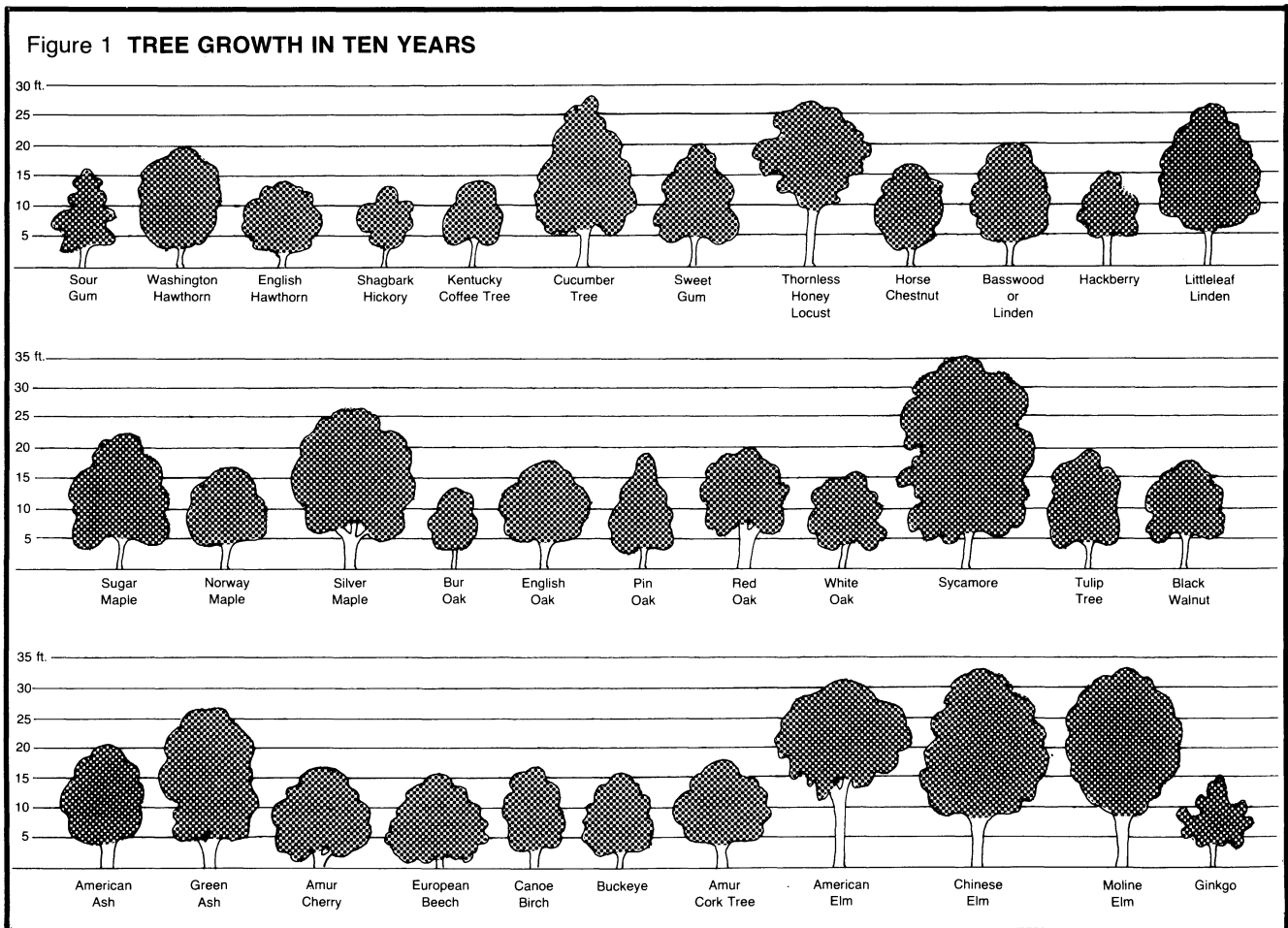
trees will differ in their shape or form at maturity. The overall shape of a tree is directly related to its branching pattern. With some slight variations, most trees conform to one of several possible shapes .

The growth rate of any individual tree is an important consideration. Most shade and small flowering trees are rather fast growing; others are slower growing. In all cases, the actual rate of growth depends on soil quality and fertility, rainfall, and temperature. With optimum site conditions, the tree will establish and thrive best. Young trees will grow more vigorously. As trees mature, they tend to grow more slowly, but proper maintenance practices such as minor pruning, fertilizing, and watering can sustain many older trees for a number of years.

The normal life span of any plant is reflected by its growth rate. In general, the faster-growing trees are shorter lived and begin to decline sooner. The useful life span of most species is often affected by the environment. In densely populated city areas or industrial areas, the useful life span of many trees is much shorter than it is in suburban or rural areas.

**PLANT CHARACTERISTICS**

Growth patterns can vary greatly among different trees at maturity. It is often difficult to predict how a tree will appear after a given time. However, Figure 1 illustrates the relative size and form of some common plants after 10 years of growth. If left to develop naturally without major pruning, most



## WHAT TO CONSIDER WHEN SELECTING TREES

Shade and flowering trees are an enduring feature within your planned landscape, so they should be carefully selected to best meet your specific needs within the limitations of the site and property. Hardiness is a primary consideration in selecting trees. Cold-hardiness is given considerable attention, but total plant-hardiness for the area should not be overlooked. Total hardiness is often defined as a plant's ability to survive and thrive under a given set of conditions. Total hardiness can be affected by temperatures (summer and winter), available moisture, soil types, soil acidity, air pollution, or available light for the plant.

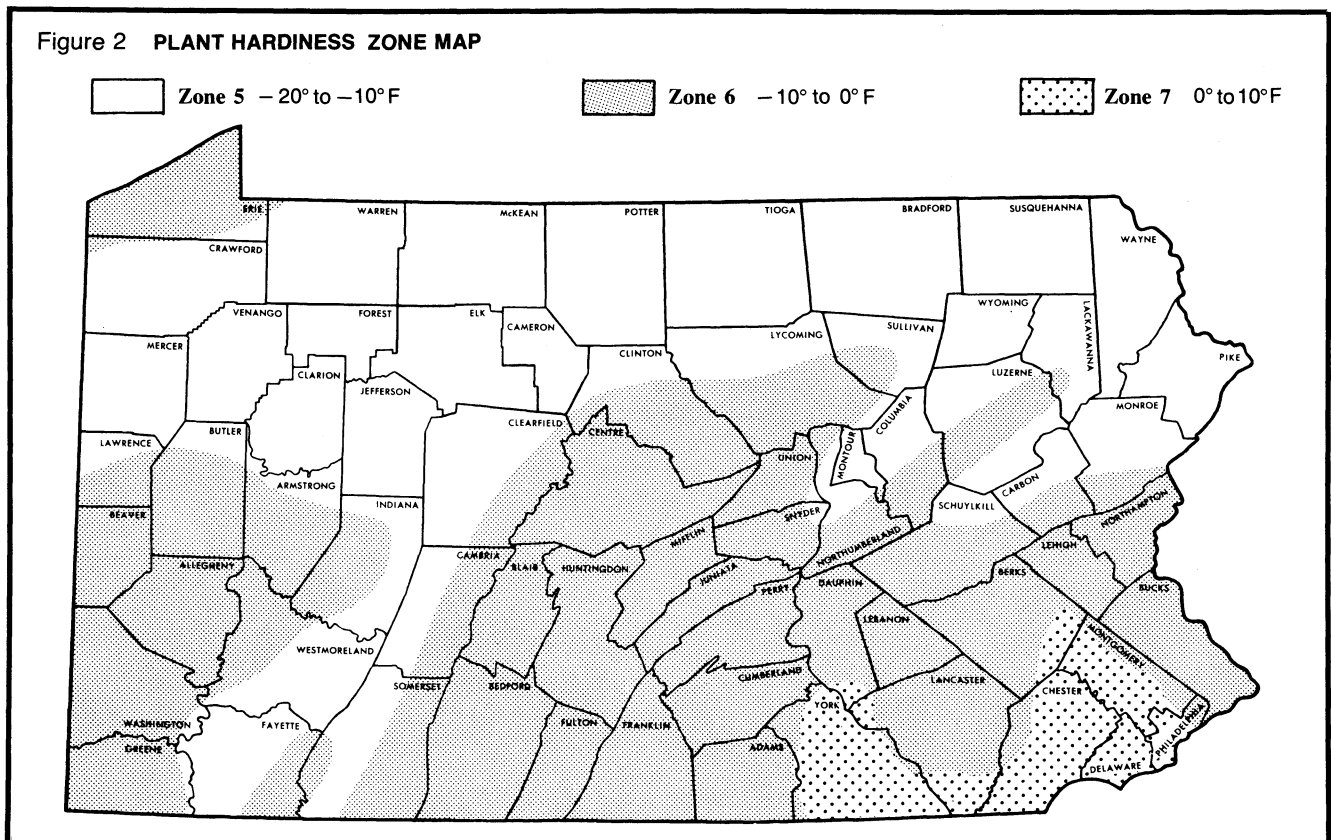
Trees native to a particular locality can be relied on for cold-hardiness in that area. Plants introduced from similar climates should be equally hardy. The coldest area in which a plant will survive is referred to as its hardiness zone. The lower the hardiness-zone number assigned to a plant, the harder the plant. Within limits, hardy plants can be moved into warmer zones, but not colder zones. Figure 2 shows the hardiness zones within Pennsylvania and the numbers of each zone. The zone numbers in plant descriptions refer to those shown in this zone map.

Heat- and drought-resistance are usually linked. In areas of

low rainfall or where soil moisture will be limited, drought-resistant species should be planted. However, if trees are watered regularly, some species might be grown in hot, dry locations where they would not otherwise survive.

Some species are better suited to specific soil conditions. Plants tend to grow poorly or even die if the soil in which they are planted is not at the proper pH. Some plants thrive in acid soils and others grow well in alkaline soils. The available soil moisture can also affect the survival of many trees. If there is excess water in the soil throughout the year or if the soil drains slowly after a heavy rain, a plant's growth could be affected. Some plants are better able than others to withstand excess soil water. Once the site conditions are known, along with the soil needs of a given species, you will be able to select trees suited to the area.

The growth rate of different kinds of trees is another factor to consider before making a final selection. In general, trees growing rapidly have weak wood that is more susceptible to storm damage. Slower-growing trees, as a rule, have somewhat stronger wood. However, if shade is needed soon in an area, you may want to plant a fast-growing tree. If you plant such a tree, you may wish to consider planting a slower-growing species nearby to provide shade in later years when the fast-growing species is no longer needed and could be removed.



The size and shape of the tree at its maturity should be given close consideration. The size of the mature plants in proportion to the surrounding structures and landscape design is an important factor that should not be overlooked. A medium-sized tree that is 30 to 35 feet tall at maturity is suited to the average lot with a one-story house. However, under the same conditions a tree 50 to 100 feet tall would be too high and out of proportion. Larger trees would be suitable for larger properties. The use of too many small flowering trees in a very large area may also seem ill proportioned.

The form of the young plant will have a direct bearing on how well it fits in the landscape. Trees planted for shade should have straight trunks whose lowest branch is 6 to 7 feet above the ground. The straight trunk will allow the tree to develop a symmetrical head well above the ground. It is unwise to select a young tree with a divided lower trunk because this is a weak spot. Trees with a double trunk (Fig 3) may split in half in a strong wind or ice storm, thus ruining them for further landscape use.

### POTENTIAL PROBLEMS WITH SOME TREES

Certain problems can arise from the improper selection or placement of some plant species. In addition, some locations will cause problems no matter which plant is used there. Hopefully, the following suggestions and guidelines will help overcome such problems on your property.

A number of plant-related problems can be traced to the root system. Roots of trees such as Elm, Willow, Poplar, and Maple can clog sewer lines. The problem is more common where a break in the line allows water to escape into the surrounding soil. These roots will not, contrary to popular belief, seek out the water, but more-rapid root development will occur where there is such available water in the soil. If the sewer and drain lines are intact and functioning properly, there will be no trouble with tree roots.

On the other hand, the shallow roots of some plants can cause a different problem. If these trees are planted too near sidewalks, the developing root systems can break the pavement. When these trees are in open lawn areas, their root systems can rob the turf and surrounding woody shrubs of needed water. Also, the surface roots make mowing very difficult.

The above-ground portion of the plant should be considered if there are overhead utility lines. Select plants with a suitable size and branching pattern that will not interfere with the lines. A tree that tends to tower over the house, providing useful shade in the hot summer, may, however, fill the rain gutters with leaves each fall.

The amount of shade that a tree provides to the surrounding area should also be considered. Norway Maple, for example,



gives a very dense shade that limits the light available for plant growth underneath. Honey Locust produces a light, filtered shade that allows grass to grow right to the trunk. The intensity of the shade from a given plant will govern the type and degree of land-use under its canopy.

The fruit crop on some plants may be a potential problem. The fruit of the Horse Chestnut is toxic if eaten in any quantity. It is also rather hard and could cause injury or damage if thrown from a rotary mower. Some fruit have disagreeable odors as they decompose — the Ginkgo for example. Even the volume of fruit may be a nuisance as with some of the Crab Apple varieties.

Tree flowers are not above suspicion as potential problems. The male flowers on the Tree of Heaven have a strong, unpleasant odor. The pollen from several other species irritates many people. Petal-drop from flowers on some smaller trees can make walkways dangerously slick.

It is difficult to find a plant species that is faultless. The drawbacks, however, must be balanced against the assets when selecting plants to suit specific landscape needs.

## SHADE AND FLOWERING TREES FOR SPECIFIC SITE CONDITIONS

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### Tree Hardiness

With the exceptions noted below, all trees mentioned in this publication have hardiness numbers of 5 or lower, which means they should grow well throughout the Commonwealth. The Canoe Birch (*Betula papyrifera*), however, does best in the northern counties only. Certain trees with hardiness numbers of 6 cannot be expected to do well in the colder areas of Pennsylvania. These include:

Franklinia (*Franklinia alatamaha*)  
Goldenrain Tree (*Koelreuteria paniculata*)  
Oak, Willow (*Quercus phellos*)  
Pear, Bradford (*Pyrus calleryana* "Bradford")  
Plane Tree, Oriental (*Platanus orientalis*)

Only one variety of tree grown in Pennsylvania should be restricted to zone 7 for best results — the Silk Tree (*Albizia julibrissin*).

### Growing Sites

No two growing sites are exactly the same. The more difficult the growing conditions or the more specific the requirements for a tree in a given situation, the more difficult it becomes to make the proper selection. There are extremely severe conditions under which it may be nearly impossible to grow any tree. In such cases, it is far easier to try correcting the site conditions first than to choose a tree correct for the site. Keep in mind that *all* plants will benefit from optimum growing conditions. In the following list, growing conditions indicated must not be interpreted as requirements for plant survival; rather, the conditions are those which the particular variety will tolerate. Where only the genus of a tree is indicated, it can be assumed that most of the species and/or varieties of that genus would function equally well under the conditions listed.

### Trees Tolerant of Shade

Few trees require shade to thrive; however, some will adapt to these conditions rather well. The deeper the shade the more difficult it will be for any tree to develop properly. In deep shade, many of the flowering trees will not set flowers or fruit as will similar plants given more sunlight. Besides the degree of shade, the source is also an important factor to consider. For example, open shade on the north side of a building is better than shade from a dense canopy of trees. The following plants will tolerate some overhead shade:

Eastern Redbud (*Cercis canadensis*)  
Flowering Dogwood (*Cornus florida*)  
Juneberry (Serviceberry) (*Amelanchier* species)  
Sourwood (*Oxydendrum arboreum*)  
Striped Maple (*Acer pennsylvanicum*)  
White Fringe Tree (*Chionanthus virginicus*)

### Trees Tolerant of Moist or Wet Soils

The amount of moisture available to a plant in a given site can range from free water standing on the soil surface for an extended time to seasonal accumulations of water after heavy rains. The total available water at the site will often determine just which plants will adapt to or tolerate the site. Very few plants will survive if they stand in water for any length of time.

The physical quality of the soil at the site and the speed with which excess water drains off will have a direct bearing on plant survival. Even if there is no free water standing on the soil surface, there may be problems in establishing trees. The length of time which surface water remains on the site is a good indication of the internal drainage of the soil. The longer the soil is wet, the poorer the drainage.

If the soil drainage is slow to poor, thus interfering with soil aeration, root problems may result. In addition to water and nutrients, a plant's root system needs air to function properly. Excess water in the soil reduces the total amount of air, and root injury may occur. The following plants will tolerate moist to wet, but not saturated soil conditions.

Bald Cypress (*Taxodium distichum*)  
Black Gum (*Nyssa sylvatica*)  
Pin Oak (*Quercus palustris*)  
Red Maple (*Acer rubrum*)  
Silver Maple (*A. saccharinum*)  
Sweet Bay Magnolia (*Magnolia virginiana*)  
Sweet Gum (*Liquidambar styraciflua*)  
Sycamore (*Platanus occidentalis*)  
Willow (*Salix* species)

### Trees Tolerant of Dry Soils

Dry growing conditions can vary widely from one location to another. This category may include a light sandy soil that dries quickly after a rain, or it may apply to a specific site where there is limited water due to any number of factors. A wide building overhang or large areas of pavement can limit the total amount of water available to the plant in that site. Heavy clay soil also makes a site unfavorable to most plant growth. Site conditions directly affect the quality of plants produced.

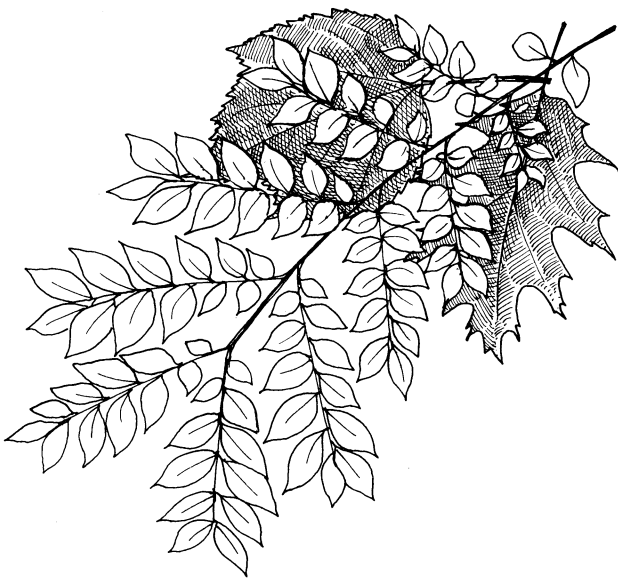
Amur Maple (*Acer ginnala*)  
Box Elder (*Acer negundo*)  
Common Hackberry (*Celtis occidentalis*)

Goldenrain Tree (*Koelreuteria paniculata*)  
 Honey Locust (*Gleditsia* species)  
 Japanese Pagoda Tree (*Sophora japonica*)  
 Red Ash (*Fraxinus pennsylvanica* & varieties)  
 Russian Olive (*Elaeagnus angustifolia*)  
 Scarlet Oak (*Quercus coccinea*)  
 Silk Tree (*Albizzia julibrissin*)

### Trees Suitable for Temporary Use

The retention of otherwise undesirable, nonpermanent trees — such as softwood varieties easily damaged by ice or wind storms — may be justified, especially if they are the only trees on the property and their removal would constitute a significant alteration. They may also be suitable as temporary shade trees while more permanent trees are being established. As the better trees take over, the temporary trees should be removed. Several temporary trees are:

Black Cherry (*Prunus serotina*)  
 Box Elder (*Acer negundo*)  
 Elm (*Ulmus* species)  
 Lombardy Poplar (*Populus nigra italica*)  
 Quaking Aspen (*Populus tremuloides*)  
 Silver Maple (*Acer saccharinum*)  
 Tree of Heaven (*Ailanthus altissima*)



## AESTHETIC QUALITIES OF SHADE AND FLOWERING TREES

In addition to selecting various plants on the basis of their suitability to your particular site, you may wish to consider other qualities of plants. Many have interesting flowers, fruit that adds seasonal color, bark of various colors and/or textures, as well as specific growth characteristics that add to their value in the landscape. By considering and selecting plants with a variety of qualities, you will be able to create an interesting planting around your home and property. Do not, however, select too many different plants which do not blend well; too much variety in the garden generally leads to confusion rather than harmony of the planting. Plants with outstanding specific qualities can function very well as specimens in the garden, but try not to establish too many specimen plants.

### Trees with Fragrant Flowers

Flower fragrance in the garden is welcome in any season. A number of large shade and small flowering trees produce fragrant flowers during the year. By selecting several plants with overlapping bloom periods, you can add this extra touch to your landscape. Most flowering plants produce pleasant-smelling flowers.

Crab Apple (*Malus* species) — May  
 Flowering Cherry, some varieties (*Prunus* species)  
 — Late April  
 Japanese Pagoda Tree (*Sophora japonica*) — August  
 Linden (*Tilia* species) — Early July  
 Mountain Ash (*Sorbus aucuparia*) — Late May  
 Russian Olive (*Elaeagnus angustifolia*) — Early June  
 Silk Tree (*Albizzia julibrissin*) — July  
 Sourwood (*Oxydendrum arboreum*) — Mid-July  
 Sweet Bay Magnolia (*Magnolia virginiana*) — Late May  
 Star Magnolia (*Magnolia stellata*) — Mid-April  
 White Fringe Tree (*Chionanthus virginicus*) — Early June

### Trees with Colored Bark

The bark on many trees can add interest to the garden, especially in winter. Some bark characteristics are more prominent on mature trees. Any of the trees with interesting bark should be planted in a conspicuous location when possible. The following trees are a few that have interesting bark colors:

**Gray**  
 American Yellowwood (*Cladrastis lutea*)  
 Beech (*Fagus* species)  
 Elm (*Ulmus carpinifolia*)  
 Hackberry (*Celtis* species)

Hornbeam (*Carpinus* species)  
Juneberry (*Amelanchier* species)  
Mountain Ash (*Sorbus* species)  
Red Maple (*Acer rubrum*)  
Saucer Magnolia (*Magnolia soulangeana*)

#### White

European Birch (*Betula pendula*)  
Paper or Canoe Birch (*Betula papyrifera*)

#### Red to Brown (Cherrylike)

Flowering Cherry, most (*Prunus* species)  
Japanese Tree Lilac (*Syringa amurensis japonica*)  
Sargent Cherry (*Prunus sargentii*)

#### Colored Twigs

Flowering Dogwood (*Cornus florida*) — greenish red  
Golden Chaintree (*Laburnum vossii*) — silvery-green  
Japanese Pagoda Tree (*Sophora japonica*) — bright green  
Japanese Maple (*Acer palmatum*) — red  
Sourwood (*Oxydendrum arboreum*) — red  
Striped Maple (*Acer pennsylvanicum*) — green with white stripes

#### Trees with Varied Bark Textures

The variety of textures that many barks have can be used to offset a landscape planting. Several trees shed bark (exfoliate), creating an interesting pattern on the trunk. Often, the exposed inner surface of the trunk is a contrasting lighter color. Smooth-barked trees, although perhaps not as dramatic as exfoliating trees, do stand out well among a group of plants with rougher-textured barks. Smooth barks are usually gray or greenish gray. Some trees, when mature, develop unusual bark textures, such as corky bark.

#### Exfoliating Bark

Birch (*Betula* species) — white, yellow, or reddish; peels laterally  
Eastern Redbud (*Cercis canadensis*) — small plates, orangish beneath  
Hawthorn (some species of *Crataegus*) — small, irregular plates, lighter beneath  
Japanese Zelkova (*Zelkova serrata*) — irregular patches, orangish beneath  
Kousa Dogwood (*Cornus kousa*) — irregular plates, yellowish beneath  
Russian Olive (*Elaeagnus angustifolia*) — shreds off vertically  
Sycamore (*Platanus* species) — large irregular patches, cream colored beneath

#### Smooth Bark

American Yellowwood (*Cladrastis lutea*)

Beech (*Fagus* species)  
Golden Chaintree (*Laburnum* species)  
Hornbeam (*Carpinus* species)  
Juneberry (*Amelanchier* species)  
Magnolia (*Magnolia* species)  
Mountain Ash (*Sorbus* species)

#### Corky Bark

Amur Corktree (*Phellodendron amurense*) — gray  
Common Hackberry (*Celtis occidentalis*) — gray

#### Trees with Attractive Flowers

Flower quality on a plant is probably given as much consideration as any other property when plants are selected for the landscape. The flowers on most of the small trees are highly valued. However, many of the large shade trees frequently have an attractive flower crop at some time during the year. On the larger trees, the individual flowers are usually small in proportion to the tree. Since the flowers are quite a distance from the viewer, they generally go unnoticed.

All plants will, at one time or another, set flowers. The visibility of the flowers to the viewer has a direct bearing on the desirability of the plant. Below are listed some of the shade and flowering trees having attractive flowers:

#### Small (up to 35 feet)

Crab Apple (*Malus* species) — white, pink, deep-red varieties  
Dogwood (*Cornus* species) — white with bracts  
Eastern Redbud (*Cercis canadensis*) — deep pink  
Flowering Cherry (*Prunus* species) — pinkish  
Hawthorn (*Crataegus* species) — white  
Juneberry (*Amelanchier* species) — white  
Laburnum (*Laburnum* species) — golden yellow  
Mountain Ash (*Sorbus* species) — white  
Silk Tree (*Albizia julibrissin*) — pink to red varieties  
Silver Bell (*Halesia* species) — white  
Snowbell (*Styrax japonica*) — white  
White Fringe Tree (*Chionanthus virginicus*) — white

#### Medium (35 to 75 feet)

American Yellowwood (*Cladrastis lutea*) — creamy white  
Goldenrain Tree (*Koelreuteria paniculata*) — deep yellow  
Japanese Pagoda Tree (*Sophora japonica*) — creamy white  
Magnolia (*Magnolia* species) — white to pink varieties  
Pear (*Pyrus* species) — white  
Sourwood (*Oxydendrum arboreum*) — white

#### Large shade trees (75 feet or more)

Norway Maple (*Acer platanoides*) — yellowish green  
Red Maple (*Acer rubrum*) — red  
Tulip Tree (*Liriodendron tulipifera*) — orangish yellow



## Tree Fruit Descriptions

If their flowers have been pollinated and the weather has not been too severe, some plants will bear very attractive, colorful fruit. However, there are several factors to consider about a fruit crop. Any plant's fruit could cause a problem at some time, depending on where the plant is situated. For example, hard or firm spherical fruit on a walkway might be a hazard to pedestrians; in a turf area such fruit could become dangerous when thrown from a rotary mower; yet the same fruit in a shrub border might pose no problem at all. Fruit that is dry and/or winged at maturity might create a litter problem in areas where it is not wanted. If blown into shrub beds, the seeds might germinate and become a weed problem. Plants with relatively large fleshy fruit are best set away from walkways where there is less chance of tracking the fruit into the house.

The following comments concerning fruit of various plants may assist the homeowner in deciding where to make plantings on his property. Trees with especially attractive or notable fruit are indicated. Keep in mind that many of the fruit-related problems are short-lived, considering a plant's long-term benefits. General fruit descriptions are given, as well as problems, where any exist, that might be associated with a particular fruit crop.

**Black Gum** — Fruit is small ( $\frac{3}{8}$  to  $\frac{1}{2}$  inch long), fleshy.

**\*Carolina Silver Bell** — Elongated, dry tan pods, 1 to  $1\frac{1}{2}$  inches long, that remain in the tree; not produced in great quantities.

**\*Cherry** — Round fleshy fruit on varieties that bear; ornamental cherry does not set fruit.

**\*Corktree** — Blue-black, fleshy, berrylike fruit about  $\frac{1}{2}$  inch in diameter; borne in clusters. The fruit remains on the tree well and does not drop in large quantities until dried up.

**\*Crab Apple** — Small, fleshy, red to yellow apple,  $\frac{1}{2}$  to  $1\frac{1}{2}$  inches in diameter, depending on variety. Some forms retain fruit well and cause no problems, while most do drop fruit after it ripens in fall. In these cases, restriction on planting location may be needed.

**\*Dogwood** — Fruit fleshy, red, berrylike; birds attracted to fruit help reduce quantities.

**Elm** — Dry, winged fruit,  $\frac{1}{2}$  inch in diameter. Some species bear and shed fruit in the spring, while others bear in the fall.

**Fringe Tree** — Round, fleshy, about  $\frac{3}{8}$  inch in diameter; holds well in tree.

**Ginkgo** — Fruit is round, fleshy, about 1 inch in diameter. It drops after several fall frosts and can be rather messy. When crushed, it has a strong, unpleasant odor. Plant limitations should be considered for fruit-bearing trees.

**Golden Chaintree** — Elongated cluster of small dry pods; remains well in tree.

**\*Goldenrain Tree** — Greenish-yellow, dry, inflated pod containing several seeds. Pods remain in the tree over the winter.

**Hackberry** — Round, fleshy fruit, about  $\frac{1}{4}$  inch in diameter.

**\*Hawthorn** — Red to orange, applelike fruit,  $\frac{1}{4}$  to  $\frac{5}{8}$  inches in diameter, depending on species. Birds feeding on the fruit tend to drop fragments.

**Honey Locust** — In the true species, the fruit is an elongated pod 12 to 15 inches long and about 1 inch wide. There are named varieties which do not set fruit. When fruit is borne, it is a litter problem on walks and lawns.

**Hornbeam** — Small, winged nutlet that remains in tree.

**Horse Chestnut** — Fruit is rounded, fleshy pod  $1\frac{1}{2}$  to 2 inches in diameter, with hard inner seed about  $1\frac{1}{2}$  inches in diameter. The inner seed and pods can litter walks and lawns.

**Juneberry** — Fruit is round, fleshy, about  $\frac{1}{2}$  inch in diameter. When it is produced, birds generally remove it from tree before it drops.

**Katsura Tree** — Small (about  $\frac{3}{4}$  inch long) fruit, remaining in tree over winter.

**Lilac (Japanese Tree)** — Fruit is dry pod,  $\frac{1}{2}$  inch long; borne in clusters that remain in tree.

**Linden** — Fruit is rounded, dry and about  $\frac{1}{4}$  inch in diameter; borne in small cluster.

**\*Magnolia** — Pinkish-green, elongated, twisted pod about 5 inches long and  $1\frac{1}{2}$  inches in diameter. It remains in the tree.

**\*Maple** — Winged (attractive red on Amur and Red maple), and can vary from  $\frac{5}{8}$  to 2 inches long, depending on species. It can create a temporary litter problem on walks, but is rather easily cleaned up.

**\*Mountain Ash (European)** — Orangish-red fruit, fleshy, about  $\frac{3}{8}$  to  $\frac{1}{2}$  inch in diameter. It is borne in clusters and hangs well in the fall. Birds feeding on the fruit may drop fragments.

**Oak** — Acorns,  $\frac{1}{2}$  to  $\frac{3}{4}$  inch in diameter, either rounded or elongated and dry. Rather hard and may pose problems for pedestrians on walkways.

**Pagoda Tree** — Elongated pod, 6 to 8 inches long, with seeds. Fleshy pods become slippery when they lie on the ground.

**Pear (Bradford)** — Mature fruit is very small (about  $\frac{1}{4}$  inch in diameter).

**Plum** — Fruit about  $\frac{5}{8}$  inch or more in diameter, rounded, fleshy.

Plane Tree — Firm fruit about 1½ inches in diameter, borne in clusters of two or three.

Redbud — Dry, elongated pod, 2½ to 3 inches long; remains in tree well into the winter.

Russian Olive — Fruit is about ½ inch in diameter and elongated. It is fleshy and is not produced in large quantities.

Silk Tree — Fruit is flat pod, 4 to 6 inches long. The plant flowers over an extended period so the fruit develops gradually.

Snowbell (Japanese) — Fruit is about ½ inch in diameter, round and dry. It remains in the tree over the winter months.

\*Sourwood — Fruit is small (about ⅛ inch long), tan capsule, borne in clusters several inches long that remain in the tree over winter.

\*Sweet Gum — Fruit is greenish, spiny and round (about 1 to 1½ inches in diameter). It is rather firm when it ripens and drops.

\*Tree of Heaven — Fruit is winged and about 1½ inches long, borne in large, attractive tan clusters that are 8 to 10 inches in diameter. Clusters and seeds may drop in the fall.

Tulip Tree — Fruit is conelike cluster of elongated seeds. The cluster is about 2 inches long and holds together in early fall. During late fall and winter the individual winged seeds are shed.

Walnut (Black) — Fruit is hard, round, and about 2 inches in diameter. It drops as it ripens in the fall.

Willow — Fruit is a small cluster of seeds in a pod.

Yellowwood — Fruit is a flat pod about 1½ inches long, borne in an elongated cluster. The fruit remains in the tree for an extended period of time.

Zelkova — Fruit less than ¼ inch in diameter and dry.

\*Fruit of attractive shape, texture or color for ornamental purposes.

The following are some trees with the sexes on separate plants:

Ash (*Fraxinus*), some species

Corktree (*Phellodendron*)

Ginkgo (*Ginkgo*)

Honey Locust (*Gleditsia*)

Katsura Tree (*Cercidiphyllum*)

Maple (*Acer*), many species

Poplar (*Populus*)

Tree of Heaven (*Ailanthus*)

White Fringe Tree (*Chionanthus*)

Willow (*Salix*)

### **Trees with Separate Sexes**

There may be times when a specific tree is the ideal plant except for its problem fruit. Sometimes the fruit problem can be overcome if the plant in question is dioecious (developing male and female flowers on separate plants). Only those plants with the female flowers are able to bear fruit, and only when there is a supply of pollen from a nearby male plant. Fruit problems can be prevented by planting only the male forms. If male and female plants are far enough apart, there may not be enough pollen getting to the female to produce any fruit. However, plant separation to prevent fruit development is not as reliable as planting only the male trees.