

Special Circular 229



Evergreen Shrubs and Trees for Pennsylvania

PENNSTATE



College of Agricultural Sciences
Cooperative Extension

Arborvitae, American (NLT)	3	Leucothoe, Drooping (BLS)	12
Barberry, Warty (BLS)	3	Mahonia, Leatherleaf (BLS)	12
Barberry, Wintergreen (BLS)	3	Pieris, Japanese (BLS)	12
Boxwood, Common (BLS)	4	Pieris, Mountain (BLS)	13
Boxwood, Littleleaf (BLS)	4	Pine, Austrian (NLT)	13
Cedar, Atlas (NLT)	4	Pine, Eastern White (NLT)	13
Cryptomeria, Japanese (NLT)	5	Pine, Japanese Black (NLT)	14
Douglas Fir (NLT)	5	Pine, Lacebark (NLT)	14
Falsecypress; Hinoki (NLT)	5	Pine, Mugo (NLS)	14
Falsecypress; Japanese (NLT)	6	Pine, Scotch (NLT)	15
Fir, Concolor (NLT)	6	Pine, Table Top (NLT)	15
Fir, Fraser (NLT)	6	Redcedar, Eastern (NLT)	16
Firethorn, Scarlet (BLS)	7	Rhododendron, Carolina (BLS)	16
Hemlock, Canada (NLT)	7	Rhododendron, Catawba (BLS)	17
Hemlock, Carolina (NLT)	7	Spruce, Colorado (NLT)	17
Holly, American (BLS)	8	Spruce, Norway (NLT)	18
Holly, Chinese (BLS)	8	Spruce, Oriental (NLT)	18
Holly, Japanese (BLS)	9	Spruce, Serbian (NLT)	18
Hollygrape, Oregon (BLS)	9	Spruce, White (NLT)	19
Inkberry (BLS)	10	Umbrella Pine (NLT)	19
Juniper, Chinese (NLS)	10	Viburnum, Leatherleaf (BLS)	19
Juniper, Creeping (NLS)	11	Yew, Spreading English (NLS)	20
Laurel, Mountain (BLS)	11	Yew, Anglojap (NLS)	20
Laurel, Sheep (BLS)	11	Yew, Japanese (NLS)	20

Key to plant characteristic:

NLT — narrowleaf tree

BLT — broadleaf tree

NLS — narrowleaf shrub

BLS — broadleaf shrub

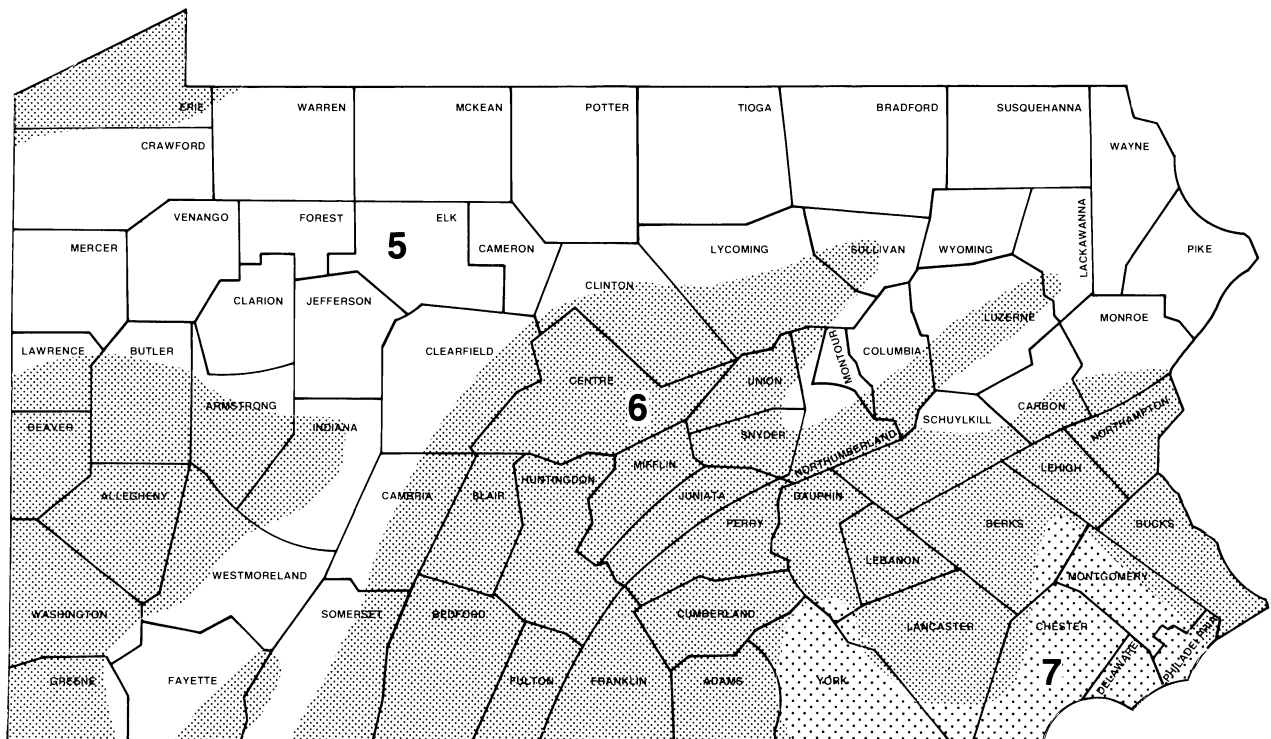
Specimens are illustrated at two-thirds life size.

Hardiness zone map for plants

Zone 5 -20° to -10°F

Zone 6 -10° to 0°F

Zone 7 0° to 10°F



Evergreen Shrubs and Trees for Pennsylvania

Evergreens are plants which retain live foliage from one season to the next. These plants form an important group of landscape plants for the homeowner. They supply color to the landscape when other trees and shrubs are bare in the winter months. Most garden or landscape designs can be improved with careful use of these plants along with a variety of deciduous plants (those which drop their leaves in the fall).

Evergreens can be divided into two main groups — narrowleaf and broadleaf varieties. This classification is usually adequate in determining the major foliage characteristics of a given plant. Most narrowleaf evergreens have foliage that is quite long and needle-like or even scale-like on the stem. On the other hand, broadleaf evergreens develop foliage that has some degree of width to their leaf. The ratio of width to length can vary greatly among the different types of plants.

In addition to the variation in leaf shape, the narrowleaf plants generally do not develop flowers — at least not like an ordinary garden flower. Flowers on these plants are usually quite inconspicuous. The seed is produced in a cone. Some cone-bearing evergreens include pine, fir, spruce, juniper, hemlock, and cypress.

The broadleaf evergreen group is a bit more diverse in its flowering habits. Some of the flowers are quite small. In addition, the seeds of most broadleaf evergreens are produced in an ovary which ripens to form a specifically shaped and often colorful fruit. Among the evergreens in this group are hollies, boxwoods, rhododendrons, pieris, mountain laurel, and mahonia.

Hardiness and Site Requirements

Hardiness refers to a plant's ability to withstand winter cold. Plants native to a particular area can tolerate the cold weather in that locality. Plants introduced from similar climates should be equally hardy. Plantsmen refer to the coldest area in which a plant will survive 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 ones. The hardiness zones within Pennsylvania are shown on the accompanying zone map. Zone numbers in the plant descriptions refer to those shown on this map.

Other weather conditions also influence the hardiness of evergreens. Prolonged drought in the summer, late spring frosts, or early fall frosts may affect a plant's ability to survive. In addition, excessive, as well as insufficient, amounts of water in the soil, shade, or exposure to wind influence hardiness. When considering the hardiness of any one plant in a location, it should be expressed as "a plant's ability to survive and thrive under the existing conditions of the site."

Many evergreens are seriously injured when planted in

excessively windy locations. Since these plants retain a covering of foliage during the winter, they continue to lose moisture even after deciduous plants drop their leaves. It is this moisture loss that causes problems.

Most winter injury occurs when both the plant and soil are frozen. On warm days the leaves thaw and the plant loses moisture. If the site is windy, the moisture loss can be excessive, especially when the supply of moisture in the soil is frozen and cannot move up into the plant. If enough moisture is lost before it can be replaced from the soil, the plant may dry out and die.

The condition of the soil at the site can also affect the plant's ability to survive. Soil conditions are probably more critical with the broadleaf evergreens than for most narrowleaf varieties. In general, most evergreens will require either an acidic soil (pH 5.0-5.5) or slightly acidic (pH 6.0-6.5) for optimum growth and development. Rhododendrons for example will do better in acidic soil, while the Japanese yew, spruce, and firs prefer just slightly acidic soils.

The physical condition of the soil is also important to most evergreens, especially the acid-loving broadleaf types. Evergreens will do best in a soil enriched with decayed organic matter called humus. Organic matter also helps promote good drainage in the soil, which is essential for the optimum development of most evergreens.

Heavy soils (those high in clay) which do not drain well can be improved with the addition of peat moss, sand, well-rotted manure, or aged sawdust, but never add sand alone to a clay soil. The sand-clay mixture will be worse than the original clay soil.

A light, sandy soil may not hold enough water to benefit the plants, in which case organic matter can be used to improve the water-holding capacity of the soil.

The amount of sunlight falling on the plant is also important for evergreens. Most evergreen shrubs will withstand some degree of shade. Narrowleaf evergreen trees, however, will do better if they receive as much sunlight as possible.

There are four types of shade for plants — full shade, open shade, half shade, and light shade.

Full shade is found under low-branching trees with heavy foliage or under the overhang of a building. Evergreens planted in these areas get practically no direct sunlight during the growing season. These plants may suffer from constant competition with other tree roots for available soil moisture. *Open shade* can be found in areas next to the north side of high walls, buildings, or trees. These areas are in full shade but are open to the sky. Direct sunlight is not available to plants. Areas of *half shade* get direct sunlight in the morning or afternoon. This kind of shade is similar to open shade and is caused by a high wall or building facing east or west. In *light shade*, plants get a broken flow of sunlight all year. This is caused by sunlight filtering through the leaves of high-branching trees.

Most broadleaf evergreens will not do well when subjected to the hot winter sun associated with a southern or southwestern exposure. Broadleaf evergreens will do better if they receive either half shade or light shade. Many flowering evergreens also grow best in half shade or light shade.

Landscape Use

The best landscape designs are achieved when evergreens are used in conjunction with other deciduous plants. A landscape developed only with evergreens can be quite dull and boring; it will remain basically the same after the flowering period.

With proper selection and placement of deciduous plants you can have a garden that is continually changing with the seasons. In early spring the foliage will develop on the deciduous plants. This will be followed by flowers on both evergreen and deciduous plants. Then in the summer there can be a contrast of foliage colors and textures. In the fall many of the deciduous plants will lose their green color for additional contrast against the evergreen foliage. Finally, in the winter the evergreens will retain their green colors while the bare stems of the deciduous plants will add interest with their branching patterns and stem colors.

Evergreens can have both an aesthetic and a functional use in the landscape. Aesthetic properties come from their green color, foliage texture, form, and density as well as flowering characteristics. A few of the narrowleaf evergreens, like junipers, change color in the winter months. In addition, many evergreen trees can function as a year-round screen or backdrop for other flowering evergreens or deciduous shrubs. Since they remain basically the same during all seasons, they tend to add a degree of permanence to the garden and landscape.

The broadleaf evergreens that develop conspicuous flowers (pieris, mountain laurel, drooping leucothoe, mahonia, and rhododendron) can be very useful as border and accent plants. After the seasonal flower crop, the foliage on these plants adds contrast to either non-flowering or deciduous shrubs and ground covers. Most of the broadleaf evergreen shrubs tend to develop a rather rounded and spreading shape. This particular quality lends well to the development of a natural or unsculptured landscape design. On the other hand, where there may be a need for a specific plant shape you can select either the Japanese holly or littleleaf boxwood, which can be pruned or sheared to form a low hedge.

Most of the narrowleaf evergreens, with the possible exception of the Japanese yew, function best in the landscape if they are left unpruned. When allowed to grow and take on their natural shape and form, they add considerably to the landscape and are far easier to maintain than plants that have to be continually trimmed to retain a given form. All plants will require some pruning from time to time, but the least amount of pruning is best.

The Japanese yew and most of its varieties will function better in a landscape if they are trimmed each season. The actual amount of pruning needed will depend on how you use them in the design. If they are part of a shrub border with other plants, light shaping will be adequate to keep them in bounds. If they are planted to form a low hedge, a regular shearing and pruning program will be needed to retain the shape and form of the hedge.

Seasonal Leaf Drop. If some of the old leaves or needles on

your evergreens turn yellow or brown, do not become alarmed; this is normal. Evergreens do not lose all their foliage at one time like deciduous plants, and the life of any one leaf can range from one to six years, depending upon the species of plant. New leaves or needles are produced each year, and some of the older inside foliage dies and drops to the ground.

Among evergreens that drop one-year-old foliage are laurel, holly, white pine, and arborvitae. Trees that retain green foliage for three to five years or more are spruce, fir, hemlock, and yew. The pines with two or three needles in a cluster also retain their foliage several years.

Pines and most other needle-bearing evergreens drop old foliage in the fall. Hollies, on the other hand, drop their leaves in the spring or early summer when the new crop of foliage begins to cover the ends of the branches.

Usually this annual drop of foliage goes unnoticed because new leaves and needles conceal the inside foliage that has turned yellow or brown. During periods of adverse weather or poor growing conditions it is not uncommon for a plant to drop more than one season's growth. When this occurs, the process is quite noticeable and draws your attention to the plant. Generally, when conditions improve, the plant will return to its normal cycle of foliage development.

Effects of normal leaf or needle drop may be more striking a year or two after evergreens are transplanted. If there has been root damage in the planting operation, the plant may drop extra foliage to compensate for the imbalance. A lack of water for transplanted evergreens during a dry summer may also result in a leaf drop which is earlier and more severe than normal.

Yellowing and dying of inside foliage seldom indicate real trouble. However, if the growing conditions have been normal and the leaf drop is excessive, check the plants for possible infestations of insects or disease. Your County Extension Office will be able to give you assistance in determining whether these problems exist.

Characteristics of Selected Evergreen Plants

The various aesthetic and physical properties of any given plant will govern how it will best fit into a particular landscape design. The following information on the height, hardiness zone, foliage, flowers and fruit, growth habit, landscape use, culture, and selected cultivars within a given genus and species should help to create a picture of the plant. The list of cultivars is not complete, but only an indication of the possible variations that can be used in the landscape. In addition, there are many cultivars that have not been listed because of limited availability or usefulness.

The descriptions of the plants are intended to supply you with enough information about the plant to determine if it will fit into your landscape design and plan. Specific plant information is also needed to determine if the plant will survive within the limitations of a given site. Lack of information on a plant's growing requirements and physical properties is often the cause of poor landscape development and plant failure in the garden.

Arborvitae, American *Thuja occidentalis*.

As a specimen plant it is good for vertical accents, hedges, or screens. It tends to be too structured for foundation plantings and at maturity may reach a height of 35 to 40 feet (but usually less) and have a spread of 10 to 15 feet. A dense, often broad pyramid-shaped shrub, American arborvitae has short branches that are attached in fan-like planes at right angles to the main trunk. There are no flowers or fruit of ornamental value. This plant requires a deep, well-drained soil and full sunlight. It does not need pruning to retain its shape and will grow in limestone soils. This evergreen has narrowleaf, scale-like, blunt-pointed foliage that is pressed against the branches. The leaves are approximately one-eighth inch long, light green in the summer, and light brown in winter. There is a sweet aroma to the crushed foliage and stems. There are a number of cultivars on the market that vary in shape and foliage color. Yellow is the main color variation. Hardiness zone — 3.

Barberry, Warty *Berberis verruculosa*.

Many gardeners like this broadleaf evergreen for a low border planting. Its dense mound of stems and foliage produce a compact plant. In addition, it can be planted as a low hedge or as a ground cover for large areas. The branches tend to arch to the ground, and the stems produce a three-part spine that may be more than ½ inch long. The foliage is less than 1 inch long and about ½ inch wide. Leaves have a glossy, deep green color on top with a whitish cast underneath. In winter the leaves turn a reddish green. This plant reaches a height of 2½ to 3 feet. It produces a flower that is about ½ inch in diameter and golden yellow. The fruit is round, about ⅜ inch in diameter, and violet black. This plant will tolerate a wide range of soil conditions as long as the site is well drained. It can be planted in full sunlight or light shade, but it may show signs of winter injury when not protected from severe weather. Light pruning will help retain its shape. Hardiness zone — 6.

Barberry, Wintergreen *Berberis julianae*.

This broadleaf evergreen is often used as a tall hedge or border planting with other less structured plants in front of it. An upright plant with rather stiff stems that are armed with three-part spines about an inch long, it usually is a very dense plant. The elliptic foliage is 1½ to 2½ inches long and ½ to ¾ inch wide. Leaves are dark green on top and pale green on the bottom. This evergreen is frequently pruned quite heavily, but it can reach a height of 6 to 10 feet and width of 4 to 5 feet. The flowers and fruit of this variety are similar to those of the warty barberry. The plant will tolerate a wide range of soils but requires a well-drained site. During severe winters it may drop most of its leaves, but it should recover without permanent damage. Hardiness zone — 6.



Boxwood, Common *Buxus sempervirens.*

This is another popular broadleaf evergreen. It looks nice in mass plantings, as a hedge, in topiary designs, and in formal gardens where a structured clipped plant is needed. A dense, multistemmed shrub, this boxwood should be kept trimmed at 4 to 6 feet. It can reach heights of 10 to 12 feet, however, and spread 6 to 8 feet. The plant can be grown in full sunlight or light shade, but it must be planted in a warm, moist, well-drained soil that is slightly acid. It should also be mulched to protect its shallow root system from extreme winds and cold. The foliage is elliptic, about $\frac{1}{2}$ to $\frac{3}{4}$ inch long and $\frac{1}{4}$ inch wide. Although this evergreen does not produce attractive flowers or fruit, its glossy green leaves last all year. Hardiness zone — 6. (It may tolerate colder temperatures when protected from strong winds.)

Boxwood, Littleleaf *Buxus microphylla.*

This plant looks good in formal gardens, in topiary works, as a small hedge, or wherever a well-structured evergreen is needed. More compact than a common boxwood, this plant is only 2½ to 3 feet high. The foliage is $\frac{1}{3}$ inch long and slightly rounded. Leaves are medium green on top and a lighter green underneath; in winter, the foliage turns yellow or brown. The plant can be grown in full sunlight or light shade, but it requires warm, moist, well-drained soil that is slightly acid. One of the more hardy varieties is 'Koreana.' Hardiness zone — 6 (with winter wind protection).

Cedar, Atlas *Cedrus atlantica.*

This narrowleaf evergreen is frequently used as a specimen planting where space permits a 40- to 50-foot tree. Young plants are generally stiff and erect, with a definite central leader and a pyramidal shape. As they mature the plants develop a somewhat flattened top with horizontal branches. In all stages of development this tree is considered quite picturesque. The flowers are inconspicuous but the cones are very prominent; they are approximately 3 inches long and 2 inches in diameter and are produced on the upper side of the stem. For best results, this evergreen should be planted in a slightly acid, moist but well-drained soil where it will receive full sun. No special pruning is required other than removal of a branch that may grow out of form as the tree develops. The needles on this plant are produced in clusters on short spurs along the stem. The length of individual needles is about 1 inch. One reason for the popularity of this tree is the color of the foliage, which can range from a light bluish green to a deep silvery blue. Choose from several cultivars: 'Fastigiata' is a very narrow and upright variety; 'Glauca' is similar to the species but with a deep blue-green color; and 'Glauca Pendula' is a weeping form with deep blue foliage. Hardiness zone — 7 (with winter wind protection).



Cryptomeria, Japanese *Cryptomeria japonica*.

This narrowleaf tree may be useful in some garden settings for vertical accent or as a tall screen. Its height of 50 to 60 feet and possible spread of 20 to 25 feet, however, limits its use in some situations. Japanese cryptomeria tends to be a pyramidal or conical tree with a heavy central trunk. The branches are wide-spreading, slightly horizontal, and covered with numerous smaller side branches. Open spaces between the main branches give an irregular pattern to the plant as it matures. The leaves on the stems are very short, about ½ inch or less in length and blunt; they completely cover the younger twigs. Summer foliage is bright green or blue-green. In winter the color changes to a bronze. Both the flowers and fruit are of little ornamental value. Like many evergreens, this plant will grow well in a deep, rich, well-drained soil that is slightly acidic and supplied with moisture all year. Best foliage is obtained in an open, sunny location. Hardiness zone — 5.

Douglas Fir *Pseudotsuga menziesii*.

As a specimen or accent plant a Douglas fir can stand alone or can be mixed into mass plantings with other narrowleaf trees. Its height of 50 to 75 feet and spread of 15 to 25 feet may limit this fir to larger gardens and parks. Where space permits, however, a Douglas fir will develop into a pyramidal form with branches that are rather straight and stiff. As the tree matures, it tends to become more open and graceful in appearance. The flowers are inconspicuous, and the fruit is a cone 3 to 4 inches long and 1½ inches in diameter, with small leafy bracts extending from under the scales. Individual leaves are needle-like, straight, and about 1 to 1½ inches long, arranged along both sides of the stem. Year-round color is a bright, shiny green. For best growth and development, this evergreen should be planted in full sun where the soil is slightly acidic, well drained, and has adequate moisture all year. It does very poorly in dry locations. Hardiness zone — 5 (new growth may be injured by a late spring frost in colder areas).

Falsecypress, Hinoki *Chamaecyparis obtusa*.

This plant was popular in formal gardens many years ago and can still be used where vertical accent is needed. Some of the smaller forms can be used near buildings, where their structural form is not too harsh. Dwarf types can be used in oriental and rock gardens. At maturity the plant may reach 40 to 50 feet high and have a spread of 10 to 15 feet. It grows rather slowly. The shape of the plant is tall and slender, with a definite pyramidal form with small branches extending from the main trunk. The small twigs are covered with narrow leaves that are scale-like, blunt, and less than ¼ inch long. The leaves are tightly arranged along the stem giving it a flat appearance. The foliage color is a shiny green on the upper surface with conspicuous white lines below. This plant and its several forms should not be planted for either flowers or fruit. The type of soil does not have much effect on the plant as long as the soil does not become dry in the summer. Slightly acidic soil is desired. For optimum growth and foliage color, this tree should be planted in full sun. Several cultivars are available: 'Crispii' is similar to the species but with yellow tipped foliage; 'Gracilis' is a compact pyramidal form that reaches a maximum height of 6 feet; and 'Nana' is a very slow growing and compact form. Hardiness zone — 5 (wind protection is needed).



Falsecypress, Japanese *Chamaecyparis pisifera*.

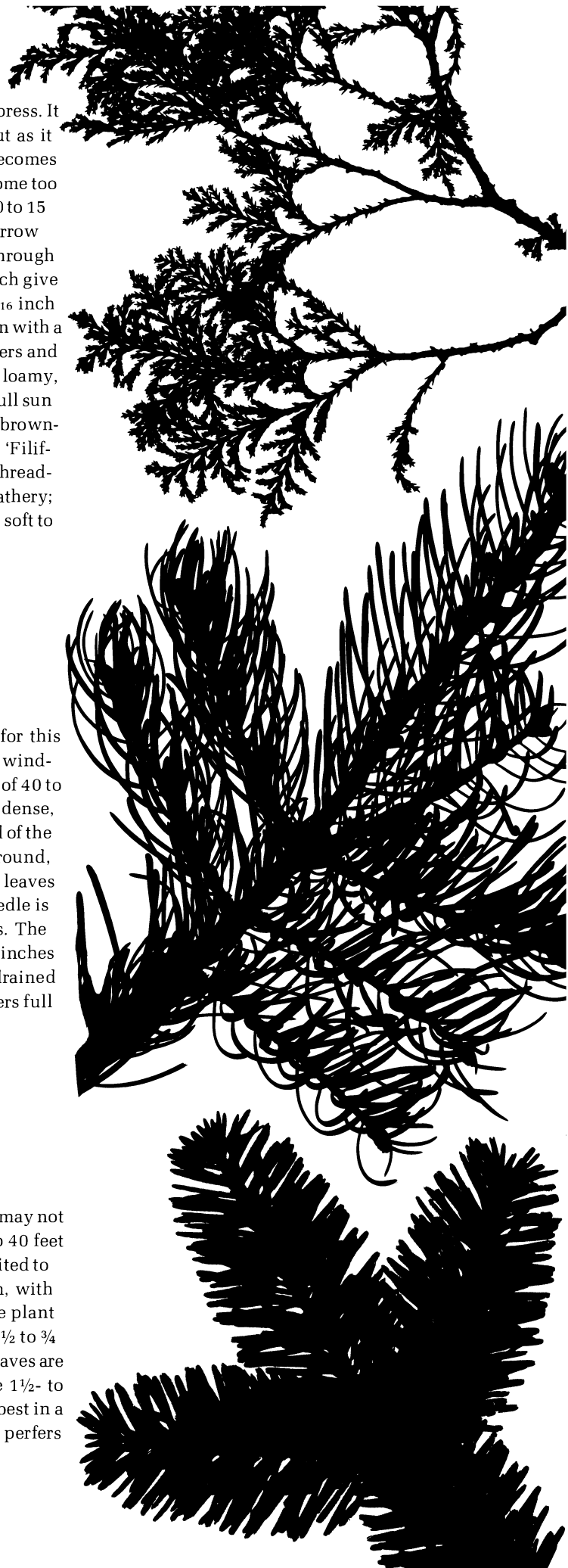
This narrowleaf tree is similar in many ways to the Hinoki falsecypress. It can be used as an accent or specimen plant when it is young, but as it matures the lower branches die and much of the inner foliage becomes brown and remains in the plant several seasons. It also tends to become too large for most home grounds — 40 to 50 feet high with a spread of 10 to 15 feet. Where structured plants are needed, this one develops a narrow pyramidal form while it is young and retains a loose, open texture through maturity. There are numerous small branches along the stems which give the tree a feathery appearance. The leaves are very small, about $\frac{1}{16}$ inch long, needle-like, and pressed against the twig. Foliage is dark green with a conspicuous white line on the lower surface of each leaf. The flowers and fruit are of no ornamental value. The trees will grow best in moist, loamy, well-drained soil that is slightly acidic. Best quality is obtained in full sun and a humid atmosphere. Hot dry weather will result in excessive browning of the inner foliage. Several cultivars of the plant are available: 'Filifera' develops drooping and stringy branches that give the plant a thread-like appearance; 'Plumosa' forms foliage that is soft textured and feathery; and 'Squarrosa' develops needle-like leaves that are gray-green and soft to the touch. Hardiness zone — 4.

Fir, Concolor *Abies concolor*.

Most gardeners will not have adequate space in their landscape for this plant. However, where space permits it can make a very effective wind-break or vertical accent planting. A concolor fir can reach a height of 40 to 50 feet with a spread of 15 to 25 feet. The branching pattern of this dense, conically shaped tree is interesting. The branches in the upper third of the tree tend to point upward, but from the center of the tree to the ground, branches tend to droop toward the ground. The individual narrow leaves are up to 2 inches long and curve upward above the stem. Each needle is blunt and rather flat, with blue or blue-green color on both sides. The flowers are inconspicuous and the fruit is a cylindrical cone 3 to 6 inches long and about 1 inch in diameter. Best growth is obtained in well-drained lighter sandy soils. It will not do well in heavy clay soils, and prefers full sun but tolerates some light shade. Hardiness zone — 5.

Fir, Fraser *Abies fraseri*.

This narrowleaf tree is very similar to the concolor fir except that it may not grow as tall. Under most conditions it will reach a height of 30 to 40 feet and have a spread of 20 to 25 feet, which means that it is not well suited to small properties. Younger plants have a definite pyramidal form, with horizontal branches that give a stiff appearance to the tree. As the plant matures, it becomes more open. The individual leaf is quite short, $\frac{1}{2}$ to $\frac{3}{4}$ inches long, crowded along the stem and pointing forwards. The leaves are blunt and shiny dark green. The flowers are of no value, but the $1\frac{1}{2}$ - to 2-inch-long cylindrical cones can be easily seen. The tree will do best in a moist, well-drained soil, but it tolerates dry conditions. This tree prefers sun or partial shade. Hardiness zone — 5.



Firethorn, Scarlet *Pyracantha coccinea*.

This is a popular and widely planted shrub with semi-evergreen properties. In warmer and protected locations, it will retain foliage from one season to the next. It can be used in the landscape as an informal hedge or screening plant, as a filler plant for inside corners of buildings or fences, or as espaliers on walls or a trellis. Adequate space should be allowed for development since scarlet firethorn often grows from 6 to 15 feet high with an equal spread. It develops a very open and irregular form if left unpruned. The branches grow upright in a spreading pattern and are quite stiff and thorny. Leaves are broad, elliptic, from $\frac{3}{4}$ to $1\frac{1}{2}$ inches long, and dark green in summer. In winter, the foliage turns reddish green. This plant is also valued as a flowering and fruiting shrub. The flowers, which appear in June, are white, about $\frac{1}{4}$ inch in diameter in a cluster of about 3 inches. The fruit persists into the winter and will serve as a food source for some birds. This is one of the few ornamental plants that should be purchased as container-grown plants. If grown in a nursery field, it does not dig well and extensive root damage can occur. There is no root damage with container-grown plants. Scarlet firethorn can be planted in most types of soil and does well if the soil dries out slightly in summer. Full sun will promote better flowering and fruiting, but it does tolerate light shade. Some light pruning will be needed each season to keep the plant within the bounds of the average home garden. Several cultivars are available for different colored fruit. 'Aurea' has yellow fruit; 'Lalandi' is very hardy, with orange-red fruit; and 'Mohave' has bright orange-red fruit that is not eaten by the birds. These shrubs are also susceptible to rabbit damage. Hardiness zone — 6 (may survive in colder areas with winter protection).

Hemlock, Canada (Pennsylvania State Tree) *Tsuga canadensis*.

This narrowleaf tree is quite versatile in the ways it can be used in the landscape. It can be used as an accent plant or as a backdrop for small flowering trees. With seasonal pruning it can be formed into an effective screen or hedge plant. If allowed to grow into tree form, it will reach heights of 50 to 60 feet with a spread of 25 to 30 feet, so don't plant it too close to your home. It is a pyramidal tree in all stages of development, with soft, graceful, and slightly pendulous branches that produce an open form. The leaves are straight, $\frac{1}{4}$ to $\frac{1}{2}$ inch long, and extend from the sides of the stems. The foliage is dark green above with 2 white lines on the underside. The flowers are hard to see and the cones are small, about 1 inch long. Cones hang below the branches and can be viewed during the winter. This evergreen requires a moist, well-drained, acid soil that does not dry out in summer. It will also survive better in light shade than most other evergreen trees. Do not plant it in heavy clay soils or in windy locations. 'Pendula' is the only cultivar with landscape value. It is a slow growing, weeping hemlock. Hardiness zone — 4.

Hemlock, Carolina *Tsuga caroliniana*.

This narrowleaf tree can be used very much the same as the Canada hemlock. It is slightly smaller in height and spread — 40 to 50 feet high and up to 25 feet wide. If left unpruned it will develop into an open pyramidal tree with slightly pendulous branches. The leaves on the stems are $\frac{1}{2}$ to $\frac{3}{4}$ inch long and radiate all the way around the stem with a dark green upper surface and two white lines on the lower surface. The cones are between $\frac{3}{4}$ and 1 inch in diameter, with loose radiating scales. It will grow under the same conditions as the Canada hemlock. Hardiness zone — 5.



Holly, American *Ilex opaca*.

American holly is a broadleaf evergreen that can be used in the landscape as a small tree or large shrub depending upon the specific design. It can be used with other plants in a border or can be grouped by itself for a display of foliage and fruit (both male and female plants are needed to obtain fruit set on the females). Under landscape conditions, an American holly will grow 15 to 20 feet high and spread from 6 to 10 feet wide, if unpruned. Young plants tend to be pyramidal and dense, with branches to the ground. With age it becomes more open, rather irregular, and high branched. The coarse textured foliage is quite broad and elliptic, about 1 inch wide and 2 to 4 inches long, with scattered spiny teeth along the margin. The leaves are dull green on top with a lighter green below. Both the male and female plants produce a green flower of little ornamental value. Fruit on the females is bright red, spherical, and about ¼ inch in diameter. For best growth, this plant needs deep, moist, well-drained soil that is acidic. Avoid dry locations. Holly will tolerate partial shade or full sun if not exposed to strong winds. If you want a colorful display of fruit, use one male plant for every 3 to 4 female plants to assure adequate pollination. There is one cultivar, 'Xanthocarpa,' that produces yellow fruit. Hardiness zone — 6 (possibly colder zones with adequate winter protection).



Holly, Chinese *Ilex cornuta*.

This plant is quite similar to the American holly except it is hardy only in the warmer areas of the state. It makes a very effective screening and hedge plant when massed together. As a specimen plant it can also be used for its foliage texture and fruit crop. Its natural growth habit is dense, compact, and round, with a maximum height of 8 to 10 feet and a spread of 6 to 8 feet. Generally, little pruning is needed to develop it into an effective screen. The individual leaves are rectangular, 2 to 3½ inches long, with 3 prominent spinelike teeth at the tip and several spines along the margin; the color is deep green. The fruit is similar to that of American holly. This fruit, however, will frequently develop on the plant without pollination of the female flowers. It also requires the same growing conditions as American holly but is very susceptible to wind damage. There is one cultivar, 'Burfordii,' which has dark green foliage and only one terminal spine at the tip of the leaf. Hardiness zone — 7 (may be injured during cold weather).

Holly, Japanese *Ilex crenata*.

Although this plant is not available in most garden centers, there are many cultivars that are. These cultivars differ in form and foliage color, which makes them useful as low hedges, border plantings, or as specimen plants with other informal shapes. The foliage on all cultivars is broadleaf, elliptic or oblong in shape, and range in size from ½ to over 1 inch in length. Leaf color is a dark green above with a lighter green below. The flowers are inconspicuous and the fruit is spherical, ¼ inch in diameter, and black. Only the female plants set fruit. Plants grow best in a light, moist, well-drained soil that is slightly acidic. They can be planted in full sun or light shade. If the shade is too deep, the plants tend to become open and thin. In windy locations, there may be some damage to the foliage during the winter. These plants will tolerate severe pruning to maintain a dense form. Among the cultivars that may fit your particular needs is 'Convexa.' It has very small leaves (less than ½ inch long) and is good for low hedges. This plant grows slowly and is compact, with a maximum height of 2 to 3 feet. 'Green Island' has light green leaves that are flat and up to ¾ inch long. It is a more open and spreading evergreen that will reach a height of 3 to 4 feet. 'Helleri' has small flat leaves about ½ inch long. This plant is a very small compact cultivar approximately 1½ to 2 feet high. 'Hetzii' is similar to 'Convexa' except that the foliage is about twice as large and the plant tends to be more open. 'Rotundifolia' develops glossy, deep green leaves about 1 inch long. This plant is more open and upright than the others and may reach a height of 8 feet or more. Hardiness zone — 6 (5 with wind protection).

Hollygrape, Oregon *Mahonia aquifolium*.

This broadleaf semi-evergreen can be used in border plantings or as an accent plant. It also makes a nice background planting for smaller shrubs. Individual plants can be maintained at heights of 3 to 6 feet with a spread of 3 to 4 feet. The center area of the plant will fill in with periodic pruning of the longer stems. Hollygrape tends to spread by underground stems. The large compound leaves (up to 6 inches long) with 5 to 9 leaflets each are a glossy dark green. These leaves are rather stiff and leathery in appearance. Young leaves have a reddish cast; in the fall they take on purple tones. Bright yellow flower clusters, about 2 inches in diameter, are produced in late April. The fruit is spherical, about ¾ inches in diameter and blue-black. This plant will grow under a variety of conditions but prefers a moist, well-drained, slightly acidic soil for best results. It does quite well in half shade and may die in the winter if located in direct sun. Avoid using it in a windy location. There are two cultivars: 'Atropurpureum' which develops dark reddish-purple leaves in winter and 'Compactum' a hardy dwarf form with dark green foliage. Hardiness zone — 5.



Inkberry *Ilex glabra*.

This is a member of the holly group but does not have the prominent spiny foliage like the American holly. Many gardeners use this shrub for low hedges or in mass plantings as an accent specimen because of its lighter foliage color. It is an upright, freely branching shrub with a rounded, open form that does not get as full and dense as some Japanese hollies. It may reach a height of 4 to 6 feet with an equal spread. The broadleaf foliage is oblong, up to 2 inches long, and ½ inch wide. The leaves are light green and shiny. Both male and female flowers are produced on the same plant, so only one plant is needed to have a crop of fruit. The flowers are inconspicuous, and the small, black fruit (¼ inch in diameter) is produced in the fall. The inkberry, like hollies, does best in moist, acidic soils that are well drained. Avoid planting it in heavy clay because the roots will not develop properly. Periodic heavy pruning will help to restore density to larger, over-grown plants. There is one cultivar, 'Compacta,' that produces a dwarf, tight branching plant. Hardiness zone — 5.



Juniper, Chinese *Juniperus chinensis*.

Chinese juniper is seldom used as a landscape plant because of its size and form. Many of the improved cultivars, however, are better suited to today's home landscapes. Some of these narrowleaf shrubs are being used for vertical accents. The spreading forms can be used as border, screening or hedge plants, while the smaller, low-growing forms can be used as ground covers. Specific height and spread of individual cultivars varies considerably and adequate planting space should be allowed for the particular form that is used. Junipers do not respond well to heavy pruning and shearing, so you should give them plenty of space. The individual leaves are small, blunt, about ¼ inch long and appressed against the stem. On older portions of the plant the leaves become more needle-like. Depending upon the cultivar, leaf color will range from gray-green to blue-green. Flowers and fruit are of little ornamental value. The fruit is about ¼ inch in diameter and blue-green before it ripens; it is quite aromatic when crushed. Junipers will adapt to most soil conditions and tolerate drier conditions than most plants. They will grow best, however, in a moderately moist, acidic or slightly acidic soil, and open, sunny locations. They do not do well in shade but will tolerate wind if it is not too severe. There are many different cultivars of Chinese juniper that can be used in the landscape. If you understand the specific needs of any given cultivar and match it to the space restrictions at the planting site it can be a very effective plant. Among the most popular cultivars of Chinese juniper are: 'Glauca Hetz,' a large, rapid growing, semi-erect and spreading plant with light blue foliage. This plant will reach a height of 10 feet with an equal spread. 'Pfitzeriana' is one of the oldest and most widely planted cultivars. It has green foliage and can grow 15 feet high with a spread of 20 feet. 'Pfitzeriana Compacta' is a smaller form of 'Pfitzeriana.' 'San Jose' is a very dwarf cultivar (10 to 12 inches high) that will spread 5 to 6 feet with irregular branches; its color is a gray-green. The variety 'Sargentii' grows 18 to 24 inches high and may spread as much as 8 to 9 feet with stems having blue-green foliage. Hardiness zone — 5.



Juniper, Creeping *Juniperus horizontalis*.

Creeping juniper is a useful landscape plant because of its low and spreading form. Many of the low-growing cultivars are suited to the needs of the home landscape and other plantings where a shrub-like ground cover is needed. Specific height and spread on most cultivars is variable and nearly all are less than 2 feet high. The specific foliage characteristics of this juniper would be the same as described for the Chinese juniper. The flowers, fruit, and cultural requirements are also the same. There is, however, a slight variation in the foliage color of the creeping juniper. During the summer months the foliage is deep blue-green or steel-blue and in the winter it turns purple on most cultivars. Some useful cultivars of creeping juniper are: 'Bar Harbor,' a low growing, spreading form, 1 foot high with a 6 to 8 foot spread, and a purple color in winter. 'Blue Rug' is a dense, slow growing, prostrate plant with blue-green foliage. 'Emerson' is low and slow growing, 1 foot high and spreading 9 to 15 feet, with blue foliage during the winter. 'Plumosa' is an older cultivar that is wide, dense, and compact, with a purple tint in winter. 'Procumbens' reaches a height of 6 inches but spreads to 12 or 15 feet and features blue-green foliage. 'Wiltoni' is a very flat form with trailing branches. This cultivar only reaches a height of 4 to 6 inches and spreads 6 to 8 feet; summer color is a silver-blue with a light purple tint in the winter. Hardiness zone — 5.

Laurel, Mountain (Pennsylvania State Flower) *Kalmia latifolia*.

This very attractive spring flowering shrub is frequently used as a specimen or border plant along with other evergreens. Depending upon site conditions, it can reach a height of 10 feet with an equal spread. Under ideal conditions it develops into a large irregular spreading plant that becomes open and loose with age. The central stems on the plant are quite erect. The broadleaf foliage is elliptic and elongated, 2 to 4 inches long, and about 1 inch wide. The leaves are smooth and shiny dark green above and light green below. In addition to the foliage, attractive flowers cover the plant in June. These flowers vary from white to deep pink and are ½ to 1 inch in diameter in clusters 4 to 6 inches across at the end of the stems. The fruit is a brown capsule which should be removed as soon as the flower fades. Mountain laurel requires certain conditions to grow properly, and it is often difficult to obtain good quality plants in a landscape setting. For optimum growth they require the following: a cool, moist, well-drained soil that is acid; mulch over the root system to reduce moisture loss and stabilize soil temperatures; light shade or open shade; and wind protection. There are two cultivars with different colored flowers. 'Alba' has pure white flowers and 'Rubra' has deep pink flowers. Hardiness zone — 5.

Laurel, Sheep *Kalmia angustifolia*.

This small plant with its broadleaf foliage makes an ideal low border planting. It is used mainly for its flowers and foliage. Under optimum conditions it will grow 1 to 2 feet tall with an equal spread. This evergreen often becomes a rounded and spreading plant composed of upright stems. Open plants can be improved with light pruning. Leaves on this plant are elliptic and elongated, 1 to 2 inches long and about ½ inch wide, medium green above and light green below. Small clusters of purple or crimson flowers develop in mid-June or early July. Each flower is ¼ to ½ inch in diameter. Cultural requirements are the same as with mountain laurel. Hardiness zone — 5.



Leucothoe, Drooping *Leucothoe fontanesiana (catesbaei)*.

This broadleaf evergreen has a graceful, spreading, and arching form with branches that extend to the ground. Such a shrub is useful in border plantings or as a fill-in plant under the branches of other plants. Its colorful foliage and flowers are other pluses. This shrub can grow to 3 or 4 feet with an equal spread, but it is generally maintained as a smaller plant. The ovate and elongated foliage, 2 to 5 inches long and about 1 inch wide, adds to the density of the plant. New leaves in the spring are bronze which turns to a deep green in summer, followed by a purple cast in the fall. White urn-shaped flowers are produced in the spring. These are about ¼ inch long and are found in 2- to 3-inch long clusters along the stem. For best results, drooping leucothoe should be planted in moist, but well-drained organic soil that is acidic. Avoid dry and windy planting sites. It does very well in light shade or half shade, but will tolerate full sun if supplied with adequate moisture all year. If the plant gets too tall or leggy, it should be pruned back severely. 'Nana,' a dwarf form, is the only cultivar available. Hardiness zone — 5 (with some winter protection against sun and wind).

Mahonia, Leatherleaf *Mahonia bealei*.

This is a rather coarse textured plant that will have limited use in the average home landscape. In larger areas it can be used as a hedge or border planting. Leatherleaf mahonia can reach a height of 8 to 10 feet and have a spread of 4 to 6 feet, but it is usually maintained as a smaller plant. This evergreen is composed of upright, stiff branches that produce an open form. The leaves are semi-evergreen, compound with 5 to 9 leaflets (up to 2½ inches long) with a spiny edge. Each leaf can be up to 6 inches long and is quite thick with a leathery texture. The flowers and fruit on this plant are very similar to that on Oregon hollygrape except that the flower cluster is larger on this plant. Cultural requirements are the same as for hollygrape. Hardiness zone — 6 (with wind protection).

Pieris, Japanese *Pieris japonica*.

Many gardeners use this broadleaf shrub as a specimen or border plant because of its attractive flowers and seasonal color changes. It can be maintained within the bounds of the average landscape planting, but it may grow as tall as 6 to 8 feet with a spread of 4 to 6 feet. Upright and spreading branches produce a slightly stiff but dense form resulting in an informal shape that blends well with other plants. Interest comes from the foliage, which is oblong, 1¼ to 2½ inches long, and glossy. As new foliage develops, it is a rich bronze which turns dark green as the leaves mature. In winter the foliage remains green or takes on a slightly purple tint. In mid-March white, urn-shaped flowers about ¼ inch long appear in 3- to 5-inch-long pendulous clusters. This plant seems to do well under a range of conditions but will do better if grown in a moist, well-drained organic soil that is acidic. The planting site can have partial shade or full sun but it should provide some wind protection. As soon as the flowers begin to fade, remove the seed heads to improve flower development for the following season. The cultivar 'Compacta' is a very compact plant with smaller leaves; 'Pink Bud' has pink buds and flowers; and 'Variegata' has leaves with white margins. Hardiness zone — 5 (with adequate winter protection).



Pieris, Mountain *Pieris floribunda*.

As a low-growing specimen and border plant, this species is admired for both its flowers and foliage. Its small size (2 to 3 feet high with equal spread) makes it ideal for a small planting where other larger broadleaf plants might not be appropriate. It has a rounded and slightly dense form with rather stiff and upright branches. The leaves are 1½ to 2 inches long and ½ to ¾ inch wide, dark green in color with a rather dull surface. The flowers are similar to those of the Japanese pieris except that mountain pieris produces flowers in an upright cluster at the end of the stem in mid-April. Cultural requirements are the same as those for the Japanese pieris. Mountain pieris, however, will tolerate soils that are only slightly acid. Hardiness zone — 5.

Pine, Austrian *Pinus nigra*.

This large narrowleaf tree can be used as an accent planting, or as a screen or windbreak in large landscapes. It can also serve as a backdrop for other shrubs or small flowering trees where there is a need for contrasting foliage. The 45- to 50-foot height and 25- to 35-foot spread limits its usefulness around structures. Young Austrian pines have a dense pyramidal form, but as they mature they become broad, slightly flat-topped trees. The branches are rather heavy and coarse, but they spread from the central trunk to form a layered appearance. The dense foliage consists of clusters of 2 needles each. The needles are 4 to 6 inches long, quite stiff, and dark green all year. The fruit is a 2- to 3-inch-long cone with heavy scales. This cone opens to about 2 inches in diameter when ripe. Austrian pines adapt to site conditions better than most of the pines. Best growth and development can be expected in a deep, moist, and well-drained soil. It will tolerate dry soils and fairly strong winds. This pine also can be planted in heavy clay soils and full sun. Hardiness zone — 5.

Pine, Eastern White *Pinus strobus*.

This valuable forest and timber tree has some value as an ornamental, but like other large narrowleaf trees it requires considerable space for proper growth and development. Under cultivated conditions it can often reach a height of 50 to 60 feet with a spread of 20 to 35 feet. As a specimen or background plant it adds a soft green color and fine texture to the landscape. Young trees have a pyramidal form and an open texture. As the trees mature, the branching structure becomes quite prominent, with heavy horizontal limbs. The smaller side branches give it a plume-like appearance. The foliage consists of 5 needles in each cluster. These needles are 3 to 5 inches long and very flexible. The thinner stems move easily in a gentle breeze producing an airy appearance. Needles retain their deep green color all year. The flowers are not easily seen, but the cones are narrow, cylindrical, and up to 6 inches long and about 1½ inches in diameter. The scales of the cones are generally covered with resin which turns white. The tree does not do well in exposed locations or areas exposed to high levels of air pollution. It will tolerate full sun or partial shade. Best planting sites are those with moist, well-drained, fertile soil. The area should not be subject to seasonal dry weather in either summer or winter. Over the years several cultivars have been developed. They have the same properties and limitations as the species, except for size and texture. 'Compacta' is a slow growing plant with a dense, rounded form. 'Contorta' is an open and highly irregular, pyramidal form with twisted stems; it is slow growing. 'Minima' is a dense, low spreading plant that is wider than high. 'Prostrata' is a rounded, dwarf form. Hardiness zone — 4.



Pine, Japanese Black *Pinus thunbergi*.

The irregular growth habit and form of this narrowleaf tree makes it an ideal accent or specimen plant for small gardens. In a mass planting it can serve as a backdrop for other shrubs and small trees. It does not get as large as other pines since it has a maximum height of 20 to 60 feet depending upon the plant and growing conditions. This tree frequently develops a broad pyramidal shape with irregular branches that often become pendulous with age. Two needles are produced per cluster. Each needle is 4 to 6 inches long, rather stiff, and very sharp. The stiffness of the foliage gives the tree a coarse appearance. Leaf color is a dark green all year. The fruit is an ovoid cone 1½ to 2 inches long and about 1½ inches in diameter. In contrast to some other pines this one will adapt well to light sandy soils, full sun, and tolerates salt spray. Adequate soil moisture and a well-drained planting site will help maintain growth. Hardiness zone — 6.

Pine, Lacebark *Pinus bungeana*.

Where there is enough space this is a very attractive specimen plant. The bark on the plant is unique in that, as it matures, older sections drop off to expose irregular patches of lighter colored inner bark. The shape of this plant tends to be rounded or slightly pyramidal. It often develops multiple trunks which make the plant look like a shrub. Depending upon the number of trunks, it may grow from 30 to 50 feet high and have a spread of 20 to 30 feet. Multiple-stem plants tend to be somewhat shorter than the single-stem specimens. As the plant matures it forms a flat-topped, open, and wide-spreading tree. The 3-needle clusters are 2 to 4 inches long, rather stiff, and sharp which adds to the texture of the plant. Leaf color is a brighter green than most other evergreens. The fruit is a cone 2 to 3 inches long and about 2 inches in diameter produced in groups of 2 and 3 per stem. This plant prefers well-drained soil and sunny locations. It will also tolerate limestone or slightly acid soils better than most pines. Hardiness zone — 5.

Pine, Mugo *Pinus mugo mughus*.

This narrowleaf shrub can be adapted to a variety of landscape settings. The dwarf forms are probably better for most plantings since they do not get as large as the standard types. They can be used as an accent planting or for low borders in front of other plants. Some plants are 8 feet tall with an equal spread; however, most mugo pines are much smaller. Plants that have been propagated asexually from small or low-growing specimens will retain the characteristics of that parent. There are 2 needles per cluster, and each needle is 2 to 3 inches long. The dark green needles are rather stiff and pointed. Overall texture of the plant is medium to coarse. The flowers are inconspicuous but the cones are about 1½ inches long and ¾ to 1 inch in diameter. Each scale of the cone is tipped with a small spine. This shrub will do well under most growing conditions. It prefers a deep, moist, and well-drained soil in either full sun or partial shade. Yearly pruning will help to maintain a more dense and compact shrub. There are a number of cultivars on the market. If possible, select a cultivar that is known to be dwarf or compact, since it will retain this size longer. Hardiness zone — 4.



Pine, Scotch *Pinus sylvestris*.

In recent years this narrowleaf tree has become one of the most popular Christmas trees. Its large size at maturity, however, limits its usefulness in the average landscape. Where space does permit, it can be used as a specimen or accent plant. The unique orange color of the upper trunk also provides a color accent. Under most conditions Scotch pine will reach a height of 30 to 50 feet and have a spread of 30 to 35 feet. Young plants retain an irregular pyramidal form for many years. As the plant matures, the lower branches die and the remaining branches become horizontal. The mature tree is quite open and picturesque, with a flat top and irregular shape. There are 2 needles per cluster and individual needles can be up to 4 inches long on some plants. These needles are rather stiff, slightly twisted, and have a blue-green color most of the season. Cones are often produced in groups of 2 or 3 along the stem. They are elongated, up to 3 inches in length, and about 1½ inches in diameter. Scotch pine will grow under a wide range of soil conditions and will tolerate dry soils. However, better growth will be obtained in good, well-drained soil that is slightly acidic. The plants also prefer full sunlight. Two cultivars are available. 'Argentea' has foliage with a definite silver cast, and 'Fastigiata' is a columnar, narrow form. Hardiness zone — 3.

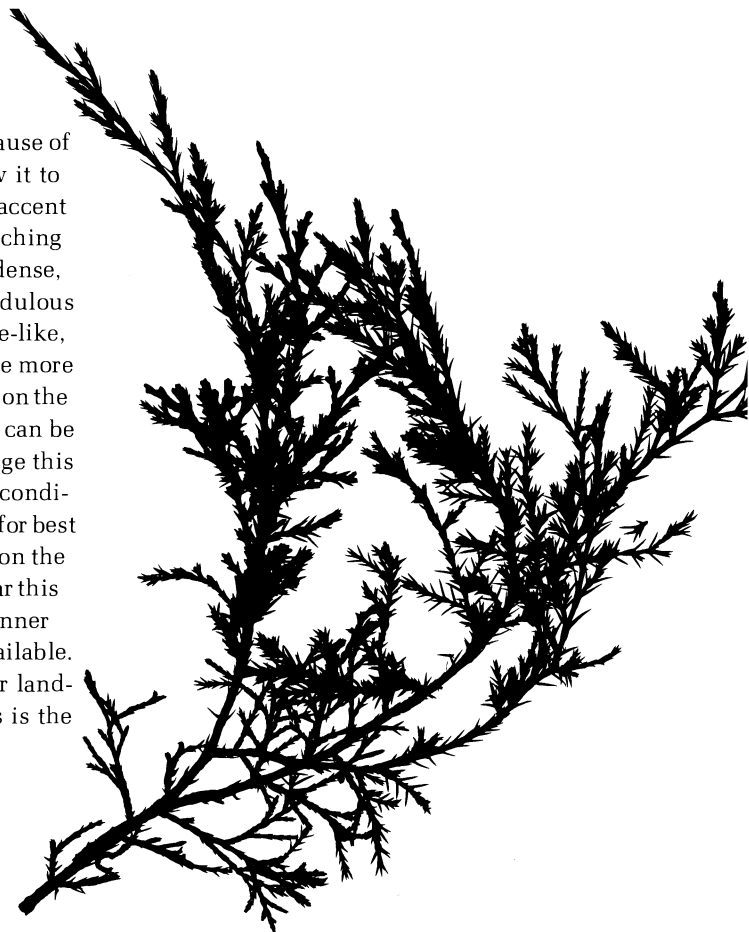
Pine, Table Top *Pinus densiflora umbraculifera*.

This narrowleaf, shrub-like tree can be used in different landscape settings. It will usually reach a height of 9 feet with a slight spread to the branches making it an ideal outdoor bonsai or dwarf specimen plant. This pine also develops into a small umbrella-like plant with very dense branches in the crown. The branch pattern is upright and spreading with the ends of the branches forming the umbrella-like pattern. As the plant matures the bark turns orange or orange-red as it peels off in thin scales. Two needles are produced per cluster. Each needle is 3 to 4 inches long, slightly twisted, and soft textured. The needles are arranged in an upright fashion along the stem and are bright blue-green in summer and a lighter green in winter. The fruit is a cone about 2 inches in length and 1 inch in diameter. For best growth, plant this pine in a moist, well-drained soil that is slightly acidic and in full sun. Hardiness zone — 5.



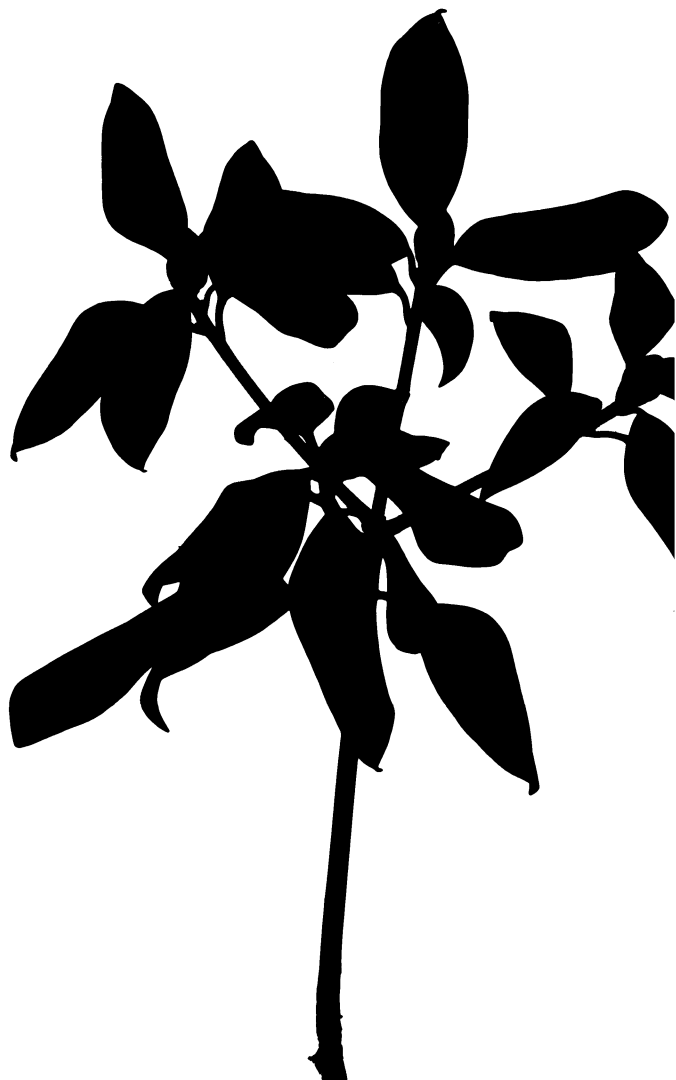
Red Cedar, Eastern *Juniperus virginiana*.

The true red cedar is probably not a very good landscape plant because of its harsh vertical form. The definite upright shape does not allow it to blend in well with other spreading plants. However, where vertical accent is desired, this is one plant to consider. It can grow rather tall, reaching heights of 35 to 40 feet and a spread of 8 to 20 feet. Young plants are dense, pyramidal, and columnar. Older plants tend to have slightly pendulous growth at the tips of the branches. The leaves are narrow and scale-like, blunt, and appressed against the stem. On older stems the leaves are more needle-like and pointed. As the older foliage dies, it tends to remain on the plant several seasons, which results in a brown inner portion that can be unsightly. It is not planted for either flowers or fruit. One advantage this plant has over others is that it is very tolerant of adverse growing conditions. It will grow in poor soil with a high pH but must have full sun for best results. Light pruning each season will help stimulate new foliage on the outer portion of the plant to cover the dead inner foliage. Do not shear this plant or the outer layer will become too dense and increase the inner browning process. There are many forms and types of red cedar available. The one you might select will depend upon requirements of your landscape setting. The major difference between most of the cultivars is the density and color of the foliage. Hardiness zone — 3.



Rhododendron, Carolina *Rhododendron carolinianum*.

This can be a very effective plant where you need broadleaf foliage and a low-growing form. It can be used for a low border shrub or for massing where its display of spring flowers will add interest. In addition, it can be used as a fill-in planting in front of other larger broadleaf shrubs. Periodic pruning will keep the plant 3 to 5 feet tall and equally wide. It tends to be round and open, with upright spreading branches. The foliage is not too dense, 2 to 3 inches long, and about 1 inch wide. Summer color is dark green and winter color varies from green to purple-green. The flowers are one of this plant's main features. They are produced in clusters up to 3 inches across starting in mid-May. Flowers are pure white, pale pink, or rose depending upon the variety. Remove the flower clusters as soon as they fade. This will prevent seed development and increase the number of flower buds set for the following season. The cultural needs of rhododendrons are quite specific: moist, well-drained acidic soil; light shade in the winter; protection from drying winds all year; periodic applications of soluble iron fertilizer; and plenty of water in the fall before the soil freezes. There are two varieties available: 'Album' (white flowers) and 'Lutem' (yellow flowers). Hardiness zone — 6 (zone 5 with winter protection).



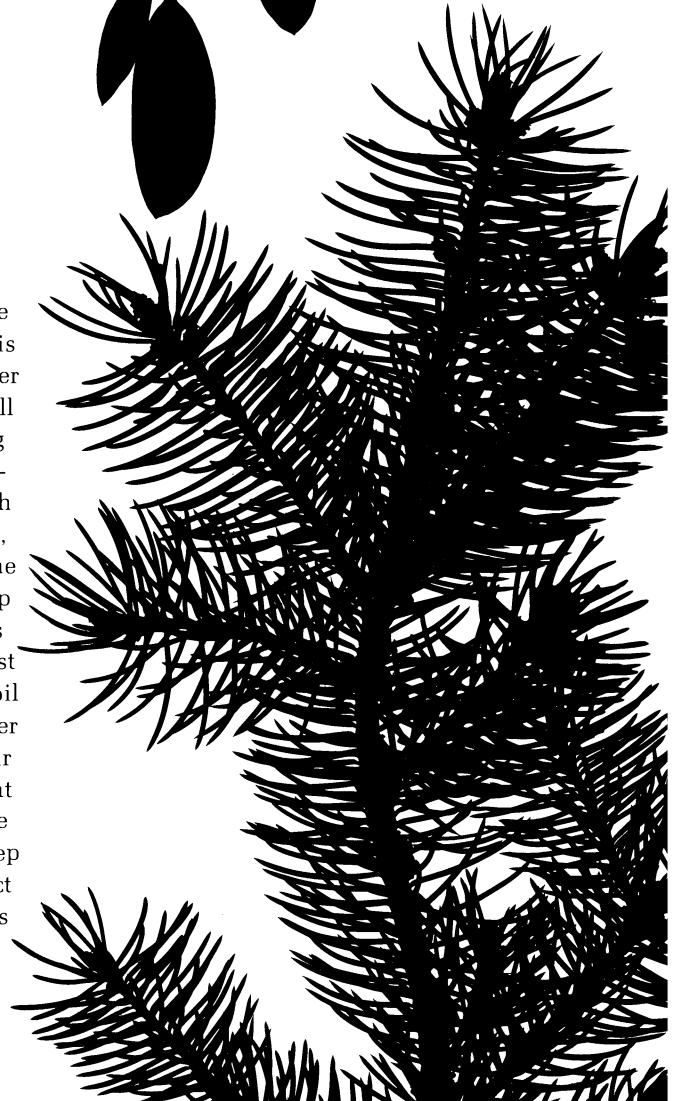
Rhododendron, Catawba *Rhododendron catawbiense*.

The improvement of this plant and its many cultivars over the years has resulted in some very useful landscape plants. Foliage and flowers make this plant ideal for shrub borders or as accent specimens. A proper blend of compatible flower colors can create a very impressive landscape design. The plants tend to grow larger than most gardeners expect, but they can be maintained at heights of 6 to 8 feet and spreads of 5 to 8 feet. They are dense, upright, and spreading plants with thick layers of foliage covering the branches. The branches often extend to the ground to produce a rounded form. Individual leaves are broad and elliptic, 2 to 4 inches long and about 1½ inches wide. Leaves are rather coarse and leathery with dark green upper surfaces and lighter coloring below. Individual flowers range from 2 to 2½ inches across and are produced in clusters up to 6 inches in diameter by late May. Flower color on the species is lilac-purple; however, a variety of colors are available in the many cultivars. Cultural requirements are the same as described for Carolina rhododendron. Here are a few cultivars with different flower colors: 'America' has a broad form with clear red flowers; 'Cunningham' is a rather low growing form with white flowers; 'English Roseum' is more upright and vigorous with light rose colored flowers; 'Lee's Dark Purple' is compact with dark purple flower buds that open into a medium purple flower; and 'Mrs. C. S. Sargent' develops a carmen rose flower that is spotted with yellow. Two older cultivars are 'Nova Zembla' with red flowers and 'Roseum Elegans' with lavender-pink flowers. Hardiness zone — 5.



Spruce, Colorado *Picea pungens*.

This plant should never be used near houses and other buildings where they will interfere with the branching pattern of the tree. Where space is available, it is an attractive specimen, accent, or background plant for other flowering or fruiting shrubs or trees. Under landscaping conditions, it will grow 90 to 100 feet with a branch spread of 20 to 30 feet at the base. During all stages of development it has a broad pyramidal form with stiff horizontal branches. As it matures, the crown tends to become more open. Each needle is produced individually on the stem and is about ¾ to 1 inch long, very stiff, and sharply pointed. Most of the needles are arranged on the upper portion of the stem. Leaf color varies and can range from a deep green to a blue- or silvery-white. The fruit is a cylindrical cone that is tapered at each end, 2 to 4 inches long, and about 1 inch in diameter. Best growth and development occurs in deep, rich, moist, and well-drained soil where the plant gets full sunlight. It will tolerate more drought than other spruces. Most cultivars of Colorado spruce have been selected for their intense blue or silvery-blue color of foliage. There is no special treatment or fertilizer that can modify or change its color from green to that of the special forms. 'Argenta' has a silvery-white foliage 'Hoopsii' has a deep blue color and dense pyramidal form; 'Moerheimii' is a dense compact plant with a somewhat irregular shape and deep blue color. Hardiness zone — 3.



Spruce, Norway *Picea abies.*

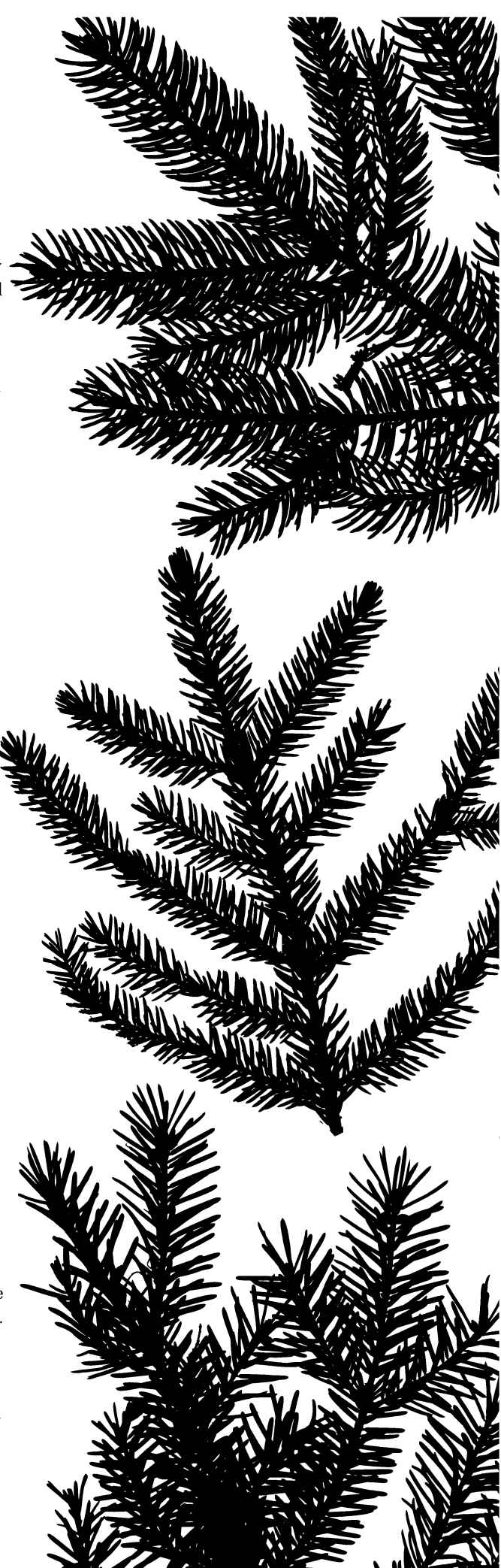
This is another large narrowleaf tree best suited to larger properties and open spaces. Where its size is no problem, you can plant it as a specimen, background plant, or as a windbreak. It should not be planted near a house; this tree can grow 40 to 60 feet high and spread 25 to 30 feet. Its form is pyramidal at all ages. Young trees tend to be rather stiff, but as they mature the small side branches become pendulous producing a weeping effect. Needles are ½ to 1 inch long, produced individually along the stem. They are very stiff, pointed, and dark green all year. The fruit is a cylindrical cone 4 to 6 inches long and about 1½ inches in diameter. When the cones ripen, they hang below the branch. Norway spruce grow best in moist, well-drained soil and in full sunlight. It does not tolerate excessive drought in either summer or winter. The foliage is often injured by salt spray along roadways. Cultivars of Norway spruce are: 'Nidiformis' a shrub-like, dwarf, dense, and broad plant; 'Pendula' with its main branches and stems weeping; and 'Procumbens' a dwarf, broad shrub up to 4 feet high. Hardiness zone — 3.

Spruce, Oriental *Picea orientalis.*

This spruce is not planted too extensively, but where space permits it can add interest and color to the landscape. When used as a specimen or background plant it gives a more graceful appearance than either the Colorado or Norway spruce. It frequently reaches heights of 40 to 50 feet with a spread of 25 to 30 feet. The plant is dense and pyramidal with somewhat horizontal branches coming from the main trunk. Smaller side branches are slightly pendulous. Single needles are found along the stem. They are quite short, ¼ to ½ inch long, blunt, and pressed against the twig. Year-round color is a deep green. For such a large tree, the fruit tends to be rather small. The cone is tapered at both ends and is 2 to 4 inches long and 1 inch in diameter. Oriental spruce will tolerate poor soil but will respond to good growing conditions. It will not do well when exposed to dry winter conditions. Hardiness zone — 5.

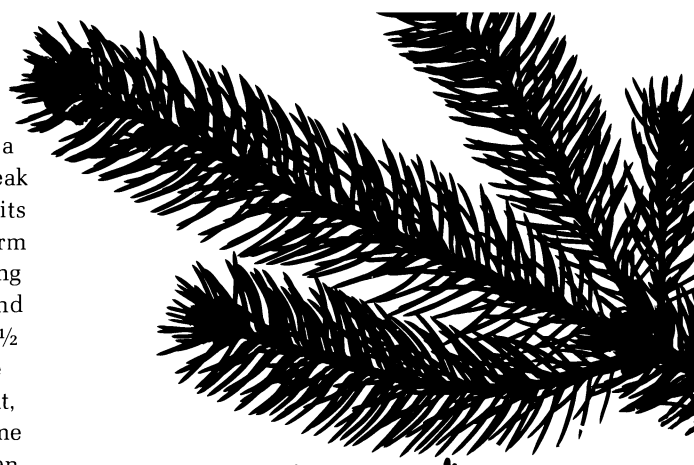
Spruce, Serbian *Picea omorika.*

This narrowleaf evergreen is well suited to the home landscape because of its rather narrow shape. It generally reaches a height of 40 to 50 feet with a spread of up to 20 feet. A Serbian spruce is a very narrow pyramidal tree with short ascending branches near the top and drooping lower branches. Individual needles along the stem are ½ to ¾ inch long, stiff, and blunt. The upper surface of the needle is dark green; the lower surface is a silvery white. The tree will tolerate both limestone and slightly acid soils, light shade, and city conditions. It does need adequate moisture all year and good drainage. Hardiness zone — 5 (with some protection from winter wind).



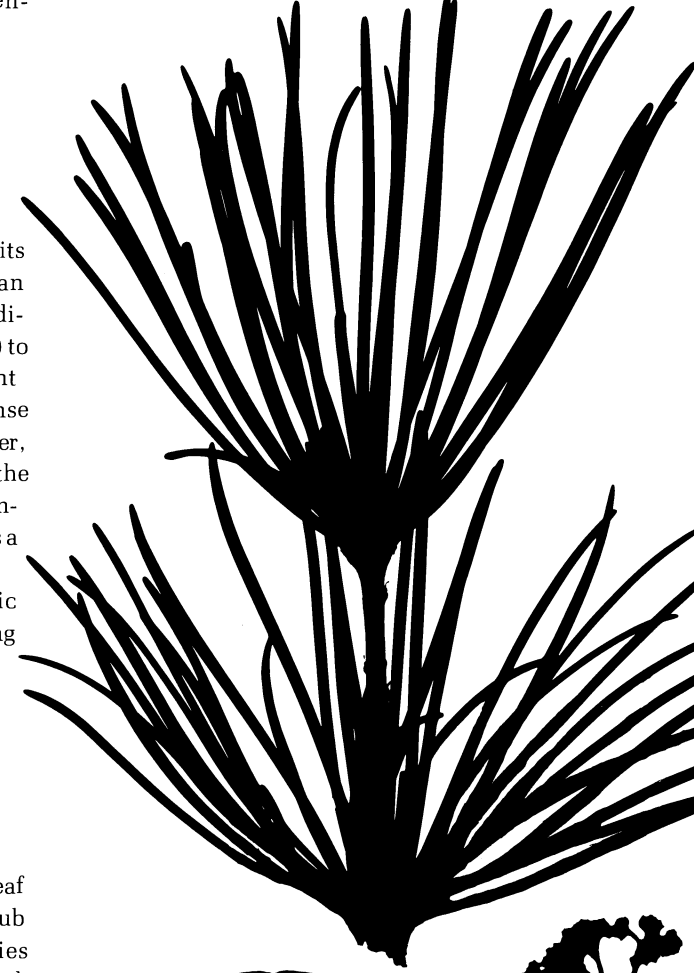
Spruce, White *Picea glauca*.

Where a lighter shade of green is called for, this narrowleaf tree may be a good choice. It is frequently used as a specimen, background, or windbreak tree. Its height of 40 to 60 feet and spread of 20 to 25 feet, however, limits its usefulness around the home. A white spruce is a dense pyramidal form with compact ascending branches. The single needles grow mostly along the upper side of the stem. Each needle is about ½ inch long, stiff, and pointed, with a pale green color all year. The cones are cylindrical, 2 to 2½ inches long, and about 1 inch in diameter. Where they will fit, white spruce seem to tolerate a wide range of conditions such as wind, heat, drought, and crowding. They do best in full sunlight but tolerate some light shade. Cultivars include 'Conica,' a dwarf conical form, and 'Densata,' a slow-growing conical form. Hardiness zone — 3.



Umbrella Pine *Sciadopitys verticillata*.

This unusual looking species is often selected as an accent plant for its unique foliage and form. It grows very slowly and can function well in an oriental setting or collection of dwarf plants. Under most landscape conditions it will reach a maximum height of 20 to 30 feet with a spread of 10 to 15 feet. Young plants are broad, compact, and pyramidal. As the plant matures it becomes more spreading and oval shaped. It is not a very dense plant. The narrow leaves on the tree are leathery, about ⅛ inch in diameter, and up to 4 inches long. These needles come in clusters at the tips of the smaller twigs and radiate outward, similar to the framework of an umbrella. The upper surface of the leaf is dark green and the lower surface is a lighter green. The fruit is a woody cone with very heavy scales. Best growth is obtained in a rich, moist, well-drained soil that is slightly acidic and where the plant gets full sun. It will need some protection from strong winds and hot afternoon sun in the winter. Hardiness zone — 6.



Viburnum, Leatherleaf *Viburnum rhytidophyllum*.

For those gardeners who need a large, upright broadleaf shrub leatherleaf viburnum may be the answer. It generally grows as a multiple-stem shrub in border plantings, but it can be used as a single plant with smaller species around the base. Leatherleaf viburnum is a large plant, 10 to 15 feet high with an equal spread. With some pruning each season, however, you can maintain a somewhat smaller plant. Its form is upright and spreading with a dense cover of foliage. Individual leaves are oblong and blunt at each end, up to 6 inches long, and about 2 inches wide at the middle. The upper surface is a deep green color and wrinkled in appearance. The lower leaf surface is covered with a yellow pubescence which creates a two-toned effect as the leaf moves in a breeze. In addition to the foliage properties of the plant, the flowers and fruit have ornamental value. The flowers are yellow-white that appear in mid-May in clusters 4 to 6 inches across. The fruit is ovoid, about ⅓ inch long. As the fruit ripens in late summer it changes color from red to black before it drops to the ground. This plant is quite tolerant of most soil conditions. Good growing conditions will improve its ability to withstand hard winters. The cultivar 'Allegheny' has improved flower and fruit production. Hardiness zone — 6 (will need some winter wind protection for best results and quality foliage).



Yew, Spreading English *Taxus baccata repandens.*

This low-growing narrowleaf shrub can be used in a variety of landscape settings. It can be used for seasonal color, massing, or as a deep ground cover in larger areas. This yew grows 2 to 3 feet high and has a spread of 3 to 4 feet. It develops into a rather informal plant with branches that arch back to the ground. Individual leaves, produced along each side of the stem, are $\frac{3}{4}$ to $1\frac{1}{2}$ inches long and slightly curved. The upper leaf surface is dark green, the lower surface light green. Female plants develop bright red, fleshy fruit about $\frac{1}{4}$ inch in diameter. This fruit contains hard inner seeds which are very toxic. A moist, well-drained, slightly acid soil is essential for good growth and development. Yews will not tolerate heavy, wet, clay soil. Light pruning and thinning of the older wood will help to retain good foliage and plant quality. Hardiness zone — 6 (possible zone 5 with winter wind and sun protection).

Yew, Anglojap *Taxus media.*

This plant and all of its cultivars are the result of a cross between *Taxus cuspidata* (Japanese yew) and *Taxus baccata* (English yew). It is a valuable landscape plant but has the same limitations and uses as the Japanese yew. The specific growth habit will depend upon the cultivar being used; the true species is generally not available as a landscape plant. The foliage on most of the plants is about $\frac{1}{8}$ -inch wide and up to 1-inch long, blunt, and arranged around the stem to give a rather dense cover of foliage. The fruit and flowers, as well as the cultural requirements, are the same as for the English yew. Among the many cultivars are: ‘Brownii,’ a male type with a dense, rounded form that grows 6 to 8 feet high with an equal spread; ‘Densiformis,’ a dense, shrub-like plant that is twice as wide as it is high; and ‘Everlow,’ a dense, low-growing spreading cultivar up to 2 feet high with deep green foliage. ‘Hatfieldii’ is an older cultivar with a dense, broad pyramidal shape up to 12 feet high. ‘Hicksii’ is also an older selection that forms a broad columnar and wide-spreading plant that may reach a height of 8 to 10 feet. ‘Wardii’ is a very dense, slow-growing and widespreading form that may reach a height of 6 feet. Hardiness zone — 5 (for most of the cultivars).

Yew, Japanese *Taxus cuspidata.*

Japanese yew and many of its cultivars are wide spreading, dense, with upright growing branches. The actual size will vary with the specific cultivar. Leaves are narrow and arranged along the sides of the stems. Each leaf is about $\frac{1}{8}$ inch wide and up to 1 inch long and blunt. The upper surface of the leaf is a deep green and the lower surface a lighter green. Flowers and fruit are the same as found on the English yew. For best results, yews should be planted into a moist, well-drained, slightly acid soil. Heavy, wet soils will cause the plant to decline and eventually die. Japanese yew will tolerate full sun but may require some wind protection. This plant will withstand heavy pruning, or periodic shearing. Pruning to keep the center of the plant open will result in a better plant since more light will reach the inner foliage and stems. As with other yews, there have been many cultivars selected over the years; only a few are listed here. ‘Capitata’ is a densely pyramidal form that may grow as high as 40 feet with a spread of up to 15 feet. ‘Densa’ is a very dwarf, low, and compact shrub with dark green foliage. ‘Nana’ is a slow-growing and compact plant that can be maintained at a height of 3 to 4 feet. ‘Thayerii’ is a slow-growing older selection with wide, spreading branches that extend to the ground. Hardiness zone — 5.



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