



Extension FactSheet

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Noteworthy Broad-Leaved Evergreens for Ohio

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When one thinks of broad-leaved evergreens, rhododendrons and azaleas immediately come to mind. However, there are other broad-leaved evergreens that command as much attention for beauty and usefulness in the landscape. The broad-leaved evergreens discussed in this fact sheet are *Kalmia latifolia*, *Pieris* species, *Leucothoe* species, *Ilex* species, *Buxus* species and *Gaultheria procumbens*. Respectively, these translate into their common names — Mountain laurel, Pieris (sometimes incorrectly called andromeda), drooping Leucothoe, Holly, Boxwood, and Wintergreen. These broad-leaved evergreens have similar cultural requirements with a few exceptions, which will be mentioned in the segments describing the genus. Broad-leaved evergreens provide a wide array of characteristics including some of the showiest blooms as in Mountain laurel and *Pieris*, handsome berries in late fall and winter as in holly and *Gaultheria*, or beautiful foliage as in boxwood and *Leucothoe*.

Site Selection

Most broad-leaved evergreens grow best in a sheltered site. Select a site that is not windswept, and shaded to some degree, but receiving dappled sun during the summer and little or no early morning winter sun. Winter wind and early morning winter sun desiccate foliage, resulting in browning of the leaves. The best sites for these plants are on the north side of a building, the east side, or last, the west side. The south side of a building should be avoided unless it is protected from winter winds and sun. Away from structures, the preferred sites are those with windbreaks such as fences or a row of evergreens. Broad-leaved evergreens should not be planted under eaves where little or no rainfall wets the soil. Assuming that the plant is hardy to USDA Zone 5, which has minimum average temperatures of -10°F to -15°F, success depends on choosing the right plant for the right location.

Soil Preparation

Perhaps the most important requirement for the successful culture of broad-leaved evergreens is soil preparation. The more time and effort spent preparing the soil prior to planting, the less time will be required caring for the plants in the years to come. It is best to prepare beds for broad-leaved evergreens and not plant them in isolated holes with amended soil. Most broad-leaved evergreens require some degree of shade and therefore can be considered “woodland plants” and require woodland-type soil. This type of soil is well-drained, rich in organic matter, constantly moist but never soggy, covered with a layer of mulch, and has a soil pH between 5.5 and 6.5.

The “constantly moist” but “never soggy” soil may best be explained by examining a sponge. A sponge that is full of water is heavy and drips when picked up, but if squeezed, water is released and replaced by air — the sponge feels moist but not soggy. Since we cannot squeeze the soil, we must depend on drainage to rid the soil of excess water and incorporate air.

The heavy clay soils in much of Ohio have none of the qualities of woodland soil and must be amended with organic matter to meet the needs of broad-leaved evergreens. Fifty percent by volume of the planting soil mix should be organic material. Varying combinations of sphagnum peat moss, pine bark mulch, pine needles, compost, and aged, chopped leaves should be worked into the soil to a depth of 12". Pine bark is particularly well suited because it releases turtanical acid, which is thought to inhibit fungi that cause root rot in broad-leaved evergreens. This large addition of amendments will raise the bed considerably, which will allow for good drainage and aeration of the soil. Inorganic materials that may also be incorporated include perlite, vermiculite, and Profile™.

It's a good idea to begin with a soil test to determine the native soil's pH level. Most of the time, agricultural sulfur will need to be incorporated into the bed at the rate of 2 pounds per 100 square feet of surface area to acidify the soil (lower pH). DO NOT use aluminum sulfate to acidify the soil, as the aluminum residue may be harmful to the plants. Note that the change in pH is transitory, and the soil will revert to its native pH level over time. Additional sulfur may need to be added annually. Beds should be prepared in the fall to allow ample time for the soil to settle before spring planting.

Individually prepared planting holes are not recommended, as they tend to form a "bathtub" effect and accumulate water that does not drain through the surrounding soil. If you insist on planting broad-leaved evergreens in this manner, and if the soil does not drain well, soil may be removed to a depth greater than that required for planting and the lower portion of the hole filled with rocks, sand, gravel, or anything that will drain excess moisture. The width of the hole should be at least three times the diameter of the root ball. Discard half of the native soil and incorporate an equal amount of organic material and a handful of sulfur with the remaining soil.

As an alternative, raised beds built on top of the native soil to a depth of 12"–18" and held in place with timbers or stones are good for broad-leaved evergreen culture. Raised beds require special attention to watering during the summer as they dry out faster than beds prepared at the original grade.

Although not a requirement, it may be beneficial to add a cup of alfalfa meal to the backfill soil at the time of planting. Alfalfa contains a potent growth hormone that stimulates luxuriant growth. Alfalfa meal can be purchased at most feed stores.

Planting

Broad-leaved evergreens available at the nursery will be either in a container or balled-and-burlapped; the majority will be in containers. The first step in planting is to be sure that the root ball is moist. A dry root ball will not absorb water after planting but will shed water to the surrounding soil. Soak the plant's root ball in a tub of water, container and all, until the plant sinks to the bottom and bubbles stop rising to the surface of the water. This will take from five to 15 minutes. After soaking, remove the container by placing your hand over the top of the root ball with the plant stem between your fingers. Invert the entire plant and gently tap the rim of the container against an object. If there is a thick mass of roots present, loosen them with your fingers.

Dig a hole in the prepared bed and place the plant in the hole so that 1" to 1-1/2" of the root ball is above the soil line. This is important since more broad-leaved evergreens are killed by planting too deeply than for any other reason. Add the backfill soil and gently firm it around the roots in the hole. Do not use your foot to tamp the soil. Place a 2" layer of pine bark mini-nuggets or hardwood mulch around the portion of the root ball that is above the soil line, being careful not to pile the mulch around the stem of the plant. Water the plant well.

If the plant is balled-and-burlapped, it may be wise to soak the root ball the day before planting to avoid breaking it when removing the burlap. With broad-leaved evergreens, it is best to remove the burlap after the plant is situated in the hole, since the roots of these plants are fine and delicate and do not grow through the burlap as easily as other types of plants. Carefully undo the burlap and cut it away to its base, being careful not to disturb or break the plant's root ball.

NOTE: Do not use peat moss as mulch for any plant. When it dries, it sheds water like a duck's feathers and is difficult to rehydrate. Also, to avoid compaction of the soil, do not walk in the beds after planting and mulching broad-leaved evergreens.

Watering

Broad-leaved evergreens grow poorly in waterlogged soil; however, they are shallow-rooted plants that dry out faster during the summer than most deep-rooted plants. At least 1" of water per week is needed in the form of rain or irrigation. A rain gauge is necessary to determine the amount of rain that has fallen. More frequent watering will be necessary during drought periods.

The first sign of water deficiency will be a slight curling or twisting of the leaves. It is at this stage that the plants must be watered. The next stage is actual wilting that stresses the plant, making it more susceptible to disease. If in doubt whether to water or not, simply use your finger to feel moisture in the soil. If the top inch of soil feels dry, it is a sure sign that the plant needs water. Drip irrigation systems are ideal for irrigating broad-leaved evergreens.

It is imperative that broad-leaved evergreens have sufficient water before the soil freezes in the winter. Because they are evergreen, during the winter they lose water through the leaves that cannot be replaced when the soil is frozen. If sufficient rain has not fallen in late November, by Thanksgiving, water the plants well.

Fertilizing

Broad-leaved evergreens benefit from annual fertilization. The fertilizer of choice is one that is specifically formulated for acid-loving plants. These fertilizers contain nitrogen in the ammonium or urea form that helps to acidify the soil. Most of these plants do not thrive with fertilizers containing nitrogen in the nitrate form. Apply the fertilizer either in late autumn after a hard freeze has occurred, or in the early spring. Always apply fertilizer according to the label directions.

Cottonseed meal is an organic fertilizer that has an acidic reaction and may be used, as well as soluble fertilizers formulated for acid-loving plants. Regardless of the type of fertilizer used, no fertilizer should be applied after the first week in June. Fertilizer applied after this date may spur late season growth that does not have sufficient time to harden before freezing temperatures occur, and foliage will be burned or killed.

Phosphorus is important for bud formation in broad-leaved

evergreens that are grown for flowers or berries. If a soil test indicates the need for phosphorus, it is best incorporated into the soil at planting time as superphosphate or triple superphosphate. Phosphorus does not easily move through the soil from surface applications.

Summary of Maintenance

If these instructions are followed, maintenance of the bed should be minimal. No cultivation of the soil should be performed around broad-leaved evergreens; rather, weeds should be pulled or cut off at the base. Maintaining a 2" layer of mulch is necessary and should also suppress weeds. Use a mulch material that decays readily, as broad-leaved evergreens will send roots into the decaying mulch, which is rich in humus. Monitor the soil pH level by testing the soil and apply sulfur as needed (usually annually) in the spring to maintain soil acidity below pH 6. Fertilize annually and irrigate, as needed, during the summer.



Kalmia latifolia 'Raspberry Glow'
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Plant Groups

Mountain Laurel — *Kalmia latifolia*

(kal'mi-a lat-i-fo'li-a)

This is a truly beautiful evergreen shrub both in and out of bloom. These are best grown with some shade, but the more sun they are exposed to, the greater the number of flower buds produced, and the plant will be more dense and compact. The downside to more sun is that the flowers will not last as long, and the plants will require considerably more water.

Mountain laurel are often planted with azaleas and rhododendrons since their cultural requirements are identical. The flowers are borne in 4"–6" terminal clusters in late May and early June and range in color from white through pink to almost red. The flowers may also be banded, where the corolla is white with a band of color midway around the flower.



Kalmia latifolia 'Carousel,' a banded variety
©2000 Stephen L. Sohner

Mountain laurel is hardy to about -20°F and actually grows wild in the hills of Lancaster, Ohio. While native plants range from 6'–10' in height and 8' in width, many of the newer cultivars are shorter, and some are dwarf. The leaves are usually lance-shaped, leathery, dark green above and yellowish-green below. The leaves may droop slightly in winter but do not curl as do rhododendrons. The availability of mountain laurel from many nurseries in Ohio is limited, with few if any of the beautiful new cultivars available.

Flower buds for the next year's bloom form in August and September on the current season's growth. Flowers that are left on shoots normally produce seed capsules that reduce new growth. Deadheading, removal of the flower trusses immediately after flowering, usually results in the formation of new shoots on which new flower buds may form. Mountain laurel tends to produce good floral displays every other year, unless the developing seed capsules are removed to enhance annual flowering.

Every plant is subject to injury from insects and diseases. Mountain laurels grown under proper conditions are relatively free from pests, but two problems can cause serious damage. Wilt (root rot) caused by the fungus *Phytophthora cinnamomi* is probably the most important. Planting high (1"–2") and providing adequate drainage, so that plants never "sit" in water, are the keys to avoiding this disease. There is a fungicide registered for control of this fungus, but it is expensive and will not kill the fungus if a plant is already infected.

The second problem that may be encountered is root weevils, especially black vine weevil. Adult weevils are the major insect pests in Ohio. Adult weevils feed at night and cause small, irregular, or semicircular notches on the leaf edges that give the leaf a jagged appearance. The larvae feed on the roots and stems and can cause reduced vigor and/or death. Orthene® is a pesticide registered for weevil control. Read and follow label directions for management of this insect.

There are far too many cultivars to list but a few examples are:
'Nathan Hale' Red-budded, light-pink flowers; heavy,

	dark green, shiny foliage; vigorous; 3' in height; mound.
'Sarah'	Red-budded, very dark-pink flowers (almost red); rich green foliage; 3'-4' mound; prefers more sun than others.
'Silver Dollar'	Pink-budded, huge white flowers (twice the normal size); large leathery leaves; 4'-5' mound.
'Little Linda'	Dwarf; 3 feet; small foliage (1/2 normal size); dark red budded, near white flowers aging rich pink.

Two mail order sources for *Kalmia* are Roslyn Nursery at www.roslynnursery.com and Greer Gardens at www.greergardens.com.



'Pieris x Brouwers Beauty'
©2000 Stephen L. Sohner

Pieris — *Pieris japonica* and related species

(peer'-is)

Pieris is an excellent broad-leaved evergreen for a woodland setting. It can be used in mass, as a foundation planting, in the shrub border, or mixed with other broad-leaved evergreens. Most are hardy to USDA Zone 5, but in severe winters, leaf burn and bud kill can be expected. *Pieris* as well as *Kalmia* are deer-resistant and only eaten as a last resort. The plants are upright, dense evergreens with varying new foliage color depending on the cultivar.

The flowers are bell-shaped and produced on 3"–6" pendulous panicles in April and may last for up to six weeks. Most of the cultivars produce white flowers, but newer cultivars produce flowers with red buds that open to varying shades of pink. The new foliage color of some cultivars may be the most spectacular aspect of the plant. Local nurseries offer several cultivars but, as with Mountain laurel, the newer and more spectacular plants are

only available by mail order. The same sources listed under *Kalmia* also offer a wide selection of *Pieris*.

The flower buds form in the summer prior to the year of flowering and are very decorative throughout the winter months. These plants do not have to be deadheaded to produce good yearly bloom.

There are a couple of pest problems. Root rot caused by *Phytophthora cinnamomi* can be a problem with members of the genus *Pieris*.

Lace bugs that suck sap from the leaves and cause the leaves to turn yellow or brown can be a problem with *Pieris*. Orthene® and Sevin®, as well as a few other insecticides, are registered for *Pieris* lace bug and should be applied in mid- to late May if evidence of the insect is present.

Again, there are far too many species and cultivars to list but a few examples are:

Pieris x 'Brouwers Beauty'

A cross between Japanese and Mountain *Pieris*; white flowers; more cold hardy than *Pieris japonica*; dark green shiny leaves; new foliage light yellow-green; flower buds purplish red.

Pieris floribunda — Mountain *Pieris*

Very hardy; not affected by lace bug; white flowers borne on upright panicles.

'Cavatine'

Reported to be very hardy; white flowers.

'Flamingo'

Deep rose-red non-fading flowers; bronze red new growth; vigorous.

Drooping Leucothoe — *Leucothoe fontanesiana*, and Coast Leucothoe — *Leucothoe axillaris*

(Lew-koth'o-ee fon-ta-knee-z-a'na and ak-sil-lay'ris)

Both of these species of *Leucothoe* are similar and will be treated as one. Drooping leucothoe is a very beautiful, graceful evergreen with long, arching branches and thick leaves that turn red or bronze in the winter. The flowers are white, borne on 2"–3" long racemes that originate from the leaf axils in May. The flowers are not very showy and are sometimes hidden by the leaves. However, new leaf growth is a striking attribute and can be bright green, bronze, purple, red, or combinations of white, pink, and bronze. The plants are useful with other evergreens, in foundation plantings and in borders. They are good undergrowth plants that can hide "leggy" plants behind them.

These plants grow best in partial to full shade and can be grown in dense shade, but may become thin. Particular attention to culture and water are necessary as any stress to these plants will render them susceptible to leaf-spotting fungi that may cover the entire leaf and eventually defoliate the entire plant. *Leucothoe fontanesiana* is available from many nurseries in Ohio.

Root rot caused by *Phytophthora cinnamomi* can also be a problem with members of the genus *Leucothoe*.

Cultivars to consider include:

‘Girard’s Rainbow’ (*L. fontanesiana*)

Beautiful new growth emerges variegated white, pink, cream, and copper.

‘Sarah’s Choice’ (*L. axillaris*)

Clean foliage with no spotting; heat tolerant; new growth emerges red; burgundy fall color.

Holly — *Ilex species*

(eye'lecks)

There are many species of evergreen hollies, but only a few are hardy for culture in Ohio. Some of the evergreen hollies can attain tree-like proportions, but most naturally form compact shrubs. The shrub types of holly are excellent for hedging, specimen use, or in foundation plantings. The very glossy, dark green leaves are particularly beautiful in the winter months. As a bonus, many cultivars produce colorful berries that are very pleasing to the eye especially when little other color is present in the landscape.

It is important to note that most hollies are dioecious, that is, having male and female flowers occurring on separate plants. Only the female plants will produce berries, provided that a male is planted nearby for pollination. A common complaint about holly plants is that they never produce berries; the cause is often that a male pollinating plant is not located nearby, or that all the plants are male and are incapable of producing berries.

Japanese Holly — *Ilex crenata*

A handsome evergreen shrub 5'–10' high. Leaves are oblong, dark green, finely toothed, and of coarse texture. Black berries are rather inconspicuous since they are borne under the foliage. Cultivars to consider:

‘Black Beauty’ Selected in Ohio for extreme hardiness; lustrous dark green foliage; compact habit; male.

‘Glory’ Small compact globe form; male; extremely hardy.

‘Schworbel’s

Upright

Pyramidal form; female; extremely hardy.

Inkberry — *Ilex glabra*

Excellent evergreen for foundations, hedges, in masses, and as accent plants. The leaves are oblong with a few teeth near the

apex (tip). Berries are black and often hidden by the leaves, but are showier than those of *I. crenata*. The plants are hardier than *I. crenata* but the leaves may burn or discolor in severe winters.

Cultivars to consider:

‘Compacta’ A dwarf female that grows from 4'–6' high; very hardy with fruit that is jet black and persists through the winter.

‘Nordic’ Developed in Ohio for extreme hardiness; probably a male, as no berries have been observed on this plant; touted by the introducer as carefree, very low maintenance, superior foliage, form, texture, and windburn-resistant.



Meserve Holly
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Meserve Hybrid Hollies, Blue Holly and China Holly series — *Ilex x meserveae*

The blue series of holly is the result of a cross made between the Prostrate Holly and English Holly by Mrs. F. L. Meserve. Meserve hollies are probably the best evergreen hollies for northern areas, including Ohio. The blue group has leathery, spiny, lustrous, dark green foliage on stems that are deep purple. The fruit of the female is large and dark red. The plants grow 8'–10' high, are pyramidal or shrubby in form, but can be pruned to any shape. All of the Meserve hollies grow best in a northern exposure that is tempered from extreme temperature fluctuations. The Meserve hollies are readily available at most nurseries and garden centers in Ohio.

Cultivars to consider:

‘Blue Prince’ One of the hardiest of the blue hollies; male.

‘Blue Princess’ Abundant dark red fruit; female; lustrous, bluish-green foliage.



'China Boy' and 'China Girl'
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'China Boy'	Compact mounded form; male pollinator for 'China Girl;' reported to be hardier than the blue series.
'China Girl'	Abundant large red berries; probably the best fruit producer of all hollies; female; lustrous, green foliage.
'Golden Girl'	Abundant clusters of rich, yellow berries in early fall; female; satiny blue-green foliage.
'Dragon Lady'	Meserve holly that is sold in Ohio and should probably be avoided. It is not as hardy as other blue hollies and will defoliate or be killed to the ground in severe winters.

American Holly — *Ilex opaca*

A pyramidal tree usually 15'–30' in height. Leaves are spiny, elliptic, long, dull green above with a yellowish-green underside. The fruit is pea-sized, red, and persists into winter. American Holly is very particular to soil conditions and must be grown in acid, well-drained soil. The trees are hardy but not wind-tolerant, and will burn in severe winters unless planted in a protected location. They are extremely slow growing and are usually not available in large sizes at the nursery. There are more than 1,000 named cultivars. With so many cultivars available it will be difficult to find one specific cultivar at any nursery.

Cultivars to consider:

'Farage'	Large dark green leaves and deep red, long-lasting berries.
'Canary'	Large growing tree with light green leaves and canary yellow berries.

'Jersey Knight' Male plant with excellent dark green foliage.

Long-Stalked Holly — *Ilex pedunculosa*

This species is named for its bright red berries that hang down on thin stalks. This holly is an evergreen shrub or small tree growing to 20' in height. The leaves are elliptic, long, lustrous, dark green and without spines. In the winter, the foliage displays a yellow-green cast. The berries are pea-sized and persist through late fall and are relished by birds. This may be one of the hardiest of the red-fruited hollies. There are few named cultivars, and it may not be readily available at local nurseries. This plant is usually sold as "pedunculosa male" and "pedunculosa female" since both are required for berry production.

Of the species listed, *Ilex glabra* and *Ilex pedunculosa* are the most disease-free, while *Ilex opaca* is the most disease-prone. Root rot caused by *Phytophthora cinnamomi* can be a problem with members of the genus *Ilex*.

There are two common insect and mite pests. Spider mites can cause yellowish stippling of the leaves, and there may be webbing on their under surfaces. Holly leafminer causes yellowish or brown winding trails or blotches on the leaves, particularly on American holly.

Boxwood — *Buxus*

(bucks'us)

Boxwoods are perhaps best known for hedges and topiaries but can be used for any landscape purpose. They are an excellent choice for edging beds or paths and can be grown in sun or moderately deep shade. Boxwoods do not require an acid soil to thrive as do the other broad-leaved evergreens mentioned here; however, they are shallow-rooted and require the same light,



'Green Velvet' Boxwood
©2000 Stephen L. Sohner

well-drained, woodland soil. They will grow in a pH range of 5.0 to 7.5, which allows them to be grown with the acid-loving plants or in soil prepared without the addition of sulfur.

Only two of the 30 known species of boxwood are commonly grown — *Buxus microphylla*, Littleleaf Boxwood, and *Buxus sempervirens*, Common Boxwood. The differences between the two species are in leaf size and color. *B. microphylla* has small, medium green leaves, which often turn a yellowish-green in the winter. *B. sempervirens* has larger, lustrous, dark green leaves that remain dark green in the winter. Most of the cultivars within these two species are hardy only in southern Ohio. However, *B. microphylla* var. *koreana* is extremely hardy in Ohio and can survive winters with temperatures as low as -20°F to -25°F. There are now crosses of *B. microphylla* var. *koreana* and *B. sempervirens* with the hardiness and compactness of *B. m.* var. *koreana* and the good leaf color of *B. sempervirens*. Cultivars from this cross include ‘Green Gem,’ ‘Green Ice,’ ‘Green Mountain,’ ‘Green Mound,’ and ‘Green Velvet.’ All of these are considered hardy for Ohio.

Other varieties and cultivars to consider:

Buxus microphylla var. *koreana* and several of the named forms ‘Tall Boy,’ ‘Winter Beauty,’ ‘Winter Gem,’ and ‘Wintergreen.’

Buxus sempervirens cultivars that are reportedly hardy in Ohio include ‘Northern Beauty,’ ‘Northern Find,’ ‘Northland,’ ‘Pullman,’ and ‘Welleri.’

Problems on boxwood include root rot caused by *Phytophthora cinnamomi* and insects that can disfigure the foliage. They include boxwood leafminer and boxwood psyllid.

Creeping Wintergreen, Checkerberry, or Teaberry — *Gaultheria procumbens*

(gawl-ther'i-a pro-kum'benz)

Wintergreen is a hardy, prostrate, woody, groundcover that grows to 6" in height and spreads to 3' by underground stems. It is exceptional when planted under large rhododendrons or as a groundcover in woodland gardens. The leaves are oval, toothed, shiny, and dark green. With the advent of cold weather, the leaves turn a beautiful red. Small white or pink flowers appear in late spring followed by bright red round berries that last through the winter. The leaves emit a strong odor of wintergreen when bruised.

Wintergreen is subject to root rot caused by the fungus *Phytophthora cinnamomi* if planted in clay soil with poor drainage.

Visit Ohio State University Extension's WWW site "Ohioline"
at:
<http://ohioline.ag.ohio-state.edu>