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Boxwood in the Landscape

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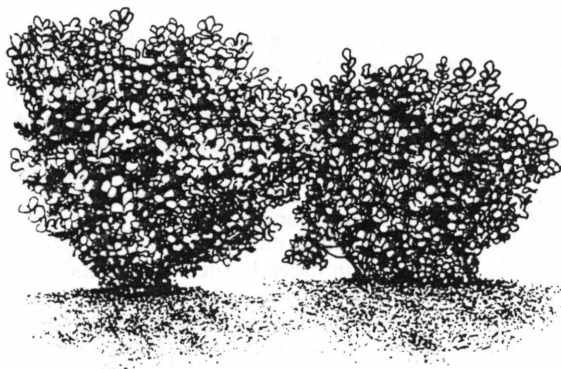
Introduction

Boxwood is used extensively in the landscape development of homes, gardens, and public grounds in Virginia. Since colonial times it has been an integral part of the landscape and many historical gardens in the state are noted for their boxwood. Today many people who have colonial architecture select this plant because they feel it fits this style best, but boxwood is also being used with modern or contemporary homes.

Boxwood owes its popularity not only to tradition, but to its many landscape uses. Some of the ways it can be used are:

- As major plants alone or in combination with other plant material in foundation plantings for homes and public buildings
- To separate, define, enclose, or screen areas
- To provide background for other plantings
- To provide the overall pattern or framework of a formal garden
- For framing vistas
- To outline a terrace, parking area, flower border, or walk
- For planter boxes or large containers
- As topiary pieces, in lieu of sculpture

Boxwood can be used in so many ways because of its many and varied forms such as prostrate, globe, half-erect, weeping, columnar, and pyramidal. In addition, boxwood plants have a wide range in potential size and rate of growth. Low or tall forms and fast or slow growers are available. There are also interesting variations in size of foliage and texture characteristics. The ease with which boxwood can be propagated from cuttings has also contributed to its popularity.



However, boxwood is not popular with everyone. In fact, some violently dislike it and refuse to have it on their premises. Those who do not like it may have had difficulties in growing it and have become disillusioned. Others may develop a prejudice against it because they have seen so many examples of its use in poor designs. In almost any community, one can find round, clipped plants resembling basketballs in rows across a front yard. This unattractive planting often results when the homeowner has not studied landscape design or fails to get a nurseryman or trained landscape architect to help organize the plant material into a pleasing composition. Poor designs may also result from failure to properly maintain healthy, uniform plants.

Boxwood Species and Cultivars

There are about 30 species of boxwood found throughout the world. Primarily, two species, *Buxus sempervirens* and *Buxus microphylla*, and horticultural selections or cultivars of these, are grown as ornamentals. A cultivar is a natural or induced hybrid that varies from the species and can only be reproduced identically by vegetative propagation. Cultivars are usually chosen because they vary from the species in size, form, texture, color, leaf shape, fruiting, flower color, and insect or disease resistance.

Buxus sempervirens - Common or American Boxwood - The American boxwood is a wide-spreading shrub or small tree with very dense, evergreen foliage. Although very old plants may reach 20 feet, it more commonly grows to a height of 5 to 10 feet. Leaves are dark-green above and yellow-green beneath, 1/2 to 1 1/2 inches long, and oblong to oval in shape. It is usually used as a foundation, corner, accent or screening plant. This species and most of its cultivars are tolerant of cold weather.

Buxus sempervirens cultivars

- 'Angustifolia' - largest leaves; often treelike in habit
- 'Argenteo-variegata' - green leaves variegated with white
- 'Aureo-variegata' - green leaves variegated with yellow
- 'Bullata' - low shrub with dark-green, blunt leaves
- 'Handsworthiensis' - wide, strong-growing, upright shrub with dark-green leaves; good hedge plant
- 'Northland' - wide-spreading plant with dark-green foliage all winter; hardy cultivar
- 'Suffruticosa' - very dwarf, slow-growing and compact; leaves up to 3/4 inch long; called "edging" or "English" boxwood; one of the most popular cultivars

Buxus microphylla - Japanese or Littleleaf Boxwood - The Japanese boxwood is a low-growing, compact shrub which rarely gets more than 3 feet tall. Leaves are bright-green, el-

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Spec lptical to lance shaped, and usually $\frac{1}{4}$ to 1 inch long. It is usually used as an edging, low hedge, accent, or rock garden plant. This species and most of its cultivars are heat-tolerant.

Buxus microphylla cultivars

'Compacta' - also sold as 'Kingsville Dwarf' - very low-growing (about 1 foot tall), wide-spreading plant with dense green foliage

var. japonica - slow-growing evergreen with leaves up to 1 inch long; may attain a height of 3 to 4 feet

var. koreana - loose, open-growing shrub; very hardy but foliage turns brownish in winter

'Wintergreen' - low, slow-growing, winter-hardy shrub; retains good, green color all winter

Plant Culture

Planting Site and Soil Requirements

Boxwoods should only be planted in well-drained soils. They should never be planted near downspouts, under the dripline of a tree, or in any area that stays wet. While boxwoods will live in locations which receive full sun, they grow best in semi-shade. A soil sample should be taken four to six weeks before planting and submitted through the Extension office for analysis. Boxwoods grow in soils ranging from slightly acid to slightly alkaline (pH 5.5 to 7.5). Based upon a soil analysis, the proper amount of lime or sulfur and fertilizer can be added to the area to provide proper nutrition for good plant growth.

Planting

In order for boxwoods to thrive, special attention must be given to planting. The planting hole should be twice as wide but only as deep as the rootball. For filling around the rootball use a good-quality, porous topsoil. This will encourage rapid root growth. Balled-and-burlapped plants should be set in the landscape no deeper than they were growing in the nursery. The soil around plants which were container-grown should come no higher than even with the top of the potting medium. Deep planting will usually cause an initial loss of plant vigor and eventually plant death.

After placing the plant in the hole, gently firm the soil around the roots and water thoroughly. Regular waterings are much more beneficial than frequent light waterings or sprinklings. Thorough watering, which moistens the entire rootball and fill soil, encourages development of a well-branched, healthy root system. Properly watered plants will be more firmly anchored in the soil and less susceptible to drought and nutritional stress. Sprinkling or light watering moistens only the upper surface of the soil. This results in shallow-rooted plants which are poorly anchored in the soil, susceptible to drought stress, and never develop adequate root systems to support good top growth. Additionally, light watering encourages the buildup of soluble salts which can damage the root system and cause plant death.

Mulching

Boxwoods are shallow-rooted and grow poorly in hot, dry soils. To maintain vigorous plants, homeowners should add 2 to 3 inches of organic mulch over the soil surface. Suitable materials for mulching are sawdust, peanut hulls, pine needles, or wood chips. Do not place black plastic under the mulch. The mulch should extend from the plant stem outward to at

least 12 inches beyond the foliage canopy. Plantings should be checked annually, and more organic material added as the depth of mulch decreases due to decomposition. Mulching not only keeps the plant root system cool, but also conserves water by slowing down evaporation of moisture from the soil. Use of clean mulch also reduces weed problems and adds to the aesthetic value of the planting. Excessive mulching is not desirable since the plants' roots will often tend to occupy the upper strata of the soil and will have a tendency to dry out during periods of drought, causing damage to the plant.

Fertilization

Soil tests are necessary to establish a proper fertilization program. In the fall, soil samples should be taken from several places in the area where boxwoods are planted. Soil sample boxes, information sheets, and assistance in taking your samples can be obtained from your local Agricultural Extension Agent. Based upon the soil analysis results, a recommendation will be made as to the amount and analysis of fertilizer that should be used for your boxwood planting.

In the Coastal Plain and lower Piedmont areas, boxwoods should be fertilized twice during the growing season. In the upper Piedmont and Mountain areas, a single annual application of fertilizer prior to new shoot growth is satisfactory for good plant growth. The initial fertilizer application should be made in early spring before plant shoot growth starts. In areas where needed, the second application should be made in late June or early July. Avoid applying any fertilizer to boxwoods in late summer since it can force late tender growth which is extremely susceptible to frost damage.

The recommended amount of fertilizer should always be distributed uniformly over the planting area. Care must be taken to keep fertilizers off the plant leaves; never spread fertilizers closer than 6 inches to the plant stem. After fertilizing, plant foliage should be washed down with water and the soil should be thoroughly irrigated.

Shearing and Pruning

Shearing is the uniform removal of all or part of the latest flush of plant growth. Plants are sheared to increase compactness or to maintain a specified size or shape.

During the first few years after planting, boxwoods should be sheared after each flush of growth to encourage additional branch development. Thereafter, they should only be sheared to maintain a desired shape or form. Do not shear boxwood in late summer since this might force new growth which will not have sufficient time to harden before frost.

Pruning is the removal of selected branches or plant parts. Plants are pruned to remove diseased, injured, dying or dead branches. Unwanted branches are also removed by pruning, especially when plants are being trained to a specific form such as topiary or espalier. Boxwoods are pruned, rather than sheared, to maintain a natural shape and to keep plants at a desired size so that they do not outgrow their landscape value too quickly.

Boxwoods usually require some pruning in spring to remove any branches that have been killed during the winter. Also, as plants get older, some of the older branches may have to be removed so that light can get to the inner shoots. Continuous shading of the inner branches results in foliage drop from those shoots, thereby decreasing plant value and aesthetics.

Watering

Newly planted boxwoods must be watered during the first growing season whenever necessary to keep the soil around the roots from drying out. Frequent and light watering does no good and is often detrimental. Let the hose run slowly so that the water can soak completely into the root zone. Mulching helps conserve soil moisture.

Established boxwoods should be thoroughly watered at intervals during spring and early summer if rainfall is deficient (less than 1 inch per week). Plants that suffer from lack of moisture in spring and summer may produce abundant growth if fall rains are heavy, and their wood may be immature when freezing weather arrives.

If there is a deficiency of fall rain, soak the ground just prior to freezing weather. Broad-leaved plants like boxwood lose water through their leaves during winter. Having an adequate supply may help reduce winter browning of foliage. Water during the winter months if the ground becomes extremely dry.

Cultivation

Avoid digging around boxwoods because their roots are shallow. Plants can be severely weakened or killed by too much cultivation. Use mulch to control weeds and eliminate the need for digging around the bushes. Boxwood used as edging for flower beds is often injured by cultivation of the flower bed area. Sometimes only a portion of the edging will show injury; this can be traced to severed roots.

Boxwood Replacements

Where boxwoods are used extensively, lining a walk or in a formal, patterned garden, it is a good idea to grow a few replacement plants in a section of the vegetable garden or in some isolated portion of the yard. These can be used to replace injured or weak plants. Poor-quality plants can often be rejuvenated by moving them out of a formal garden and placing them in an isolated area or container for a year. After moving, reduce some of the top growth of weak plants, but be sure to prune following the plant's natural form. Fertilize to restore vigor.

Propagation

Boxwood is normally propagated from cuttings although propagation from seed is possible. In fact, garden enthusiasts find that growing boxwood from seed is interesting because the seedlings produced have variations. The form might be upright, weeping, globe, or dwarf, and the texture of the foliage may be fine to coarse. Ability to withstand winter conditions also varies with seedling boxwood.

An easy method of propagation is to place cuttings up to 16 inches long in sand or sandy soil during summer months; keep the area moist (an outdoor mist system would be helpful); protect from direct sunlight and wind. After a good root system develops, transplant to a row in the garden. Partial shade is beneficial until the plant becomes established in the field. This shade could be provided by a section of snow fence.

Propagating in a plastic chamber is also a simple and inexpensive method. For this method use a flat or container, rooting medium, and a plastic cover.

Steps:

1. Select a flat or plastic pot.
2. Be sure the container has drainage holes.
3. Fill container with sharp sand, vermiculite, or a 50% mixture of sand and peat moss; moisten well.
4. Collect cuttings 6 to 12 inches long and protect them from drying out. Remove leaves from lower 2 inches of cutting.
5. Dip cuttings in a rooting hormone.
6. Insert cuttings 1 to 1½ inches into medium.
7. Soak with water.
8. Cover the cuttings with plastic. Use a wire coat hanger or wooden arch to support the cover. Bamboo stakes are excellent support if pots are used. Make sure the plastic is fastened to the container snugly.
9. Place in an area away from direct sunlight.
10. As roots develop, gradually remove the plastic to harden off the plant.

It may not be necessary to water the medium for several weeks. Water when there is no condensation of moisture on the plastic. When cuttings are well-rooted, transfer to pots or a planting bed area. Some shade is needed until the plants become adjusted.

Winter Damage or Injury

Boxwoods are susceptible to winter damage and may show the following symptoms:

1. The foliage is reddish-brown, yellowish, grayish-green, or completely loses color.
2. Death of entire branches especially in the middle and apical parts of the crown.
3. The occurrence of sunken areas in the bark of the trunk just above the ground line or in the crotches, and along the sides of main branches. Examination of the sunken bark may show that it is brown throughout or contains brown streaks and that in many places it has separated from the wood so that patches of considerable size can be stripped off. Cracks may develop in the stem.

Boxwoods that are low in vitality are more susceptible to winter damage. Plants that experience a growth check during the summer and are stimulated into untimely growth by rainy periods in the fall do not harden off their growth before freezing weather, and are susceptible to winter damage. In mild winters, plants that were dormant in the fall may be coaxed into cambial activity on warm days, especially if they are exposed to direct sunlight. The recurrence of freezing weather injures or kills the new tissue, and sometimes causes the bark to freeze and separate from the wood.

Water loss may cause severe damage to boxwood. This loss occurs in winter when high winds or temporary warm weather causes a plant to give off an unusually high amount of moisture. This, coupled with frozen ground which prevents roots from taking up moisture, causes browning or burning of the foliage.

Spraying boxwood plants that have a tendency to winter burn with an anti-desiccant spray in late November may help to

lessen winter burn or browning. A second application in late January is often recommended.

Various management practices may help to prevent damage:

1. Make sure the plants enter the dormant season in a healthy and vigorous condition with adequate soil moisture. If needed, apply fertilizer before July and do corrective thinning during the spring. Check to see that the center of the plant is free of dead leaves and other debris.
2. Water during dry periods throughout the year.
3. Provide wind protection for plants in exposed situations by using snow fences or lattice frames covered with burlap or pine boughs stuck in the ground.
4. Provide newly planted boxwood with a temporary burlap screen or snow fence for shade and wind protection. Do not let the burlap touch the foliage.
5. Provide a mulch of wood chips, leaf mold, or similar materials. A mulch protects by preventing rapid temperature change at the soil surface, deep penetration of frost, and excessive loss of surface water.
6. Remove snow from boxwood during or after a snow storm or as soon as practical by brushing the plant with a broom or stick. The weight of heavy snow may cause the stems to break, especially if they are weak. However, do not attempt to remove snow if branches are frozen as breakage will occur. Aid development of strong stems through proper thinning.
7. Large American boxwood may be protected against snow damage by wrapping the outer branches with strong nylon cord. Tie the cord securely to a low branch, pressing the boughs upwards and inward; wrap cord in an upward spiral around the bush, having cords 8 to 10 inches apart. Have cord tight enough to prevent breakage from excess weight of snow or ice but not enough to exclude air circulation around the plant.

Boxwood Insect and Mite Pests

There are only three major pests which are common on boxwood: the boxwood leaf miner, the boxwood psyllid, and the boxwood mite. Several minor pests, including the boxwood webworm, wax scale, oystershell scale and an eriophyid mite, have been reported on boxwood in Virginia and occasionally may be serious in local situations.

Boxwood plants are frequently infested with two or more pests at the same time. Certain boxwood species and varieties may be more or less susceptible to the pests than others.

Boxwood Leafminer. Most varieties of *Buxus sempervirens* are highly susceptible, as well as *B. microphylla* var. *Japonica*. English boxwood, *B. suffruticosa*, is less frequently infested. Damage is caused by larvae feeding on the tissue between the outer surfaces of the leaf, leaving a visible trail or tunnel, thus the term "leaf miner." Infested leaves appear blistered from late summer through the following spring. New leaves do not show signs of mining until late summer when larvae are larger. A dozen or more larvae may occur in a single leaf. By fall, or in early spring, premature leaf-drop may result from severe infestation.



Larvae first occur in the leaves in early June. They hatch during late April and early May from eggs laid by adults 3 to 4 weeks earlier. The only evidence of infestation are egg-laying punctures on the undersides of the leaves which appear as tiny blister spots. There is one generation in a single season. Adults are active before and after the first of May. Eggs are present from then until early June. Larvae feed in the leaves from June until fall and spend the winter in the leaves. They pupate in April.

Control measures should be applied when larvae have just hatched and before damage occurs. Systemic insecticides will kill larvae if applied as late as mid-August, but feeding damage will have occurred. Spraying once in mid-June with a systemic insecticide gives excellent control. A contact spray is also effective when adult miners are present.

Boxwood Psyllid. Psyllids are green, sucking insects which as adults look like miniature cicadas or large leafhoppers. They are also called jumping plant lice since their specialized hind legs enable them to spring into the air to take flight. Plants injured by boxwood psyllids show conspicuous cupping of the foliage. The damage does not seriously impair the health of the plant unless severe infestations persist over a period of years.



The boxwood psyllid overwinters as a nymph within the egg shell. Eggs are inserted between the bud scales by adults during July and early August. Embryonic development takes place between then and fall. The nymphs emerge in mid-to-late April as soon as the buds begin to open. They feed on the new tender growth causing shoots and leaves to become deformed. Nymphs are green and produce white, waxy secretions. They remain clustered within cupped leaves until early June when adults first mature. One generation occurs each year.

American boxwood is the prime host. Severe infestation over a period of years causes serious damage. Occasionally English boxwood plants exhibit cupped foliage of a psyllid infestation but damage is rarely severe.

Effective control of psyllids can be achieved but some cupping of foliage will occur since nymphs begin feeding on new growth immediately after emergence. Control measures should be applied as soon as new growth appears. Sprays later will kill the insects, but with little or no reduction in leaf cupping. A wetting agent or a spreader-sticker must be added to achieve good control.

Boxwood Mite. Several species of mites are known to feed on boxwood but the most injurious and common is the boxwood mite. The foliage becomes stippled with pinpoint-sized flecks. In severe cases all of the foliage may appear gray, bronzed, or chlorotic.

Mites overwinter as round, greenish, flat-topped eggs on the undersides of the leaves. They hatch in May and complete a generation in 2 to 3 weeks. Several generations occur each year, accounting for rapid build-up of populations and extensive damage. It is important to apply control measures early in the season, preferably in early-to-mid-May. However, miticides are effective if sprayed whenever the mites are found.

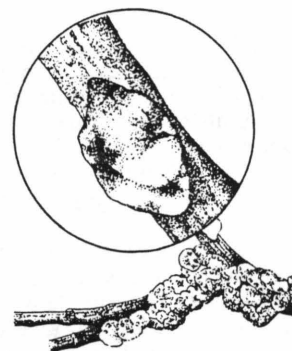
Boxwood Webworm. An inconspicuous insect, the boxwood webworm is confined to the inner parts of very dense plants. It occurs chiefly on English boxwood. The larvae spin loose webs along the stems and twigs, feeding on the innermost leaves. They have never been observed feeding on external foliage. Since many spiders inhabit the interior portions of boxwoods, the presence of webbing may be confusing. Webworms can be distinguished from spiders since fecal pellets or droppings along with partially chewed, brown leaves are scattered throughout the webbing of the insect. The grayish larvae are up to ½ inch long by late spring and provide positive diagnosis of boxwood webworm.

Overwintering larvae pupate and become adults during May and June when egg-laying occurs. Small larvae or caterpillars are present during July and August, and the larvae overwinter on the plants. There is one generation each year.

Sprays should thoroughly drench the interior parts of the plants.

Eriophyid Mite. In recent years a very tiny mite in the family Eriophidae has been causing distortion, twisting, and reduction of new growth on infested plants. It may be more severe in greenhouse and lathhouse propagation. The mites are so small they are difficult to see even with a magnifier. They are cream-colored, carrot- or worm-shaped with two pairs of legs, and a proboscis protecting a pair of stylets that pierce the surface of the foliage. Damage is most evident and severe in late spring when new growth is most rapid. The mites feed on the lower and upper surfaces of newly developing leaves, but do not cause stippling as does the boxwood mite. Little is known of its biology and seasonal development.

Scale Insects. A number of different scale insects attack boxwood. They are not as common or widespread as other boxwood pests, but locally can build up to cause severe damage. In Virginia these scales have been found on boxwood: Japanese wax scale, oystershell scale, peony scale, euonymus scale, cottony maple scale, cottony cushion scale, and the bifasciulate scale. Two other insects to watch for are the grape mealybug and the Comstock mealybug.



The wax scale attacks nearly 100 kinds of plants. It is about 1/3 inch in diameter when mature, including the very thick, bright-white, waxy covering. Eggs are laid beginning in April and hatch between June 3 and June 21, depending on geographic location. Young scales develop to mature females by fall. There is one generation each year. The scale can be controlled effectively by spraying infested plants in early June when eggs begin to hatch.

The other species of scale insects are occasional pests and generally as a group not destructive. Control is achieved by applying a drenching spray of insecticide at the time when crawlers are active: oystershell scale, about the first of June; peony scale, about the fifth of June; and euonymus scale, about May 10 to 15. Horticultural oil sprays are also effective.

Insect Control. For recommendations on the use of insecticides, see VPI & SU Publication 456-004, *Pest Management Guide for Home Ornamental Plants*.

Diseases of Boxwood

Diseases of boxwood are few in number and are grouped into foliage/twig blights and root diseases. Those in the latter group are far more serious than those in the former, which rarely cause death or major disfigurement of boxwood plants. Prevention of disease should be the primary aim of nurserymen and homeowners alike, and the first step in prevention is to start with healthy plants or cuttings for propagation. Thereafter, the chances for maintaining disease-free plants will be enhanced by proper care in watering, fertilization, mulching, pruning and thinning, winter protection and avoidance of practices which stress the plants and make them more susceptible to diseases. Stress is almost always a factor in disease development and expression.

Foliage and Twig Blights

There are two clearly identifiable diseases and several minor, not clearly identifiable foliage conditions under this heading.

Volutella twig blight - This is an easily diagnosed disease caused by the fungus *Volutella buxi*. Twig blight can be found at any time of the year on both English and American box as well as on *B. microphylla*. The twig tissue turns dark-brown to black for a few inches from the terminal and the leaves in the affected area become progressively discolored from bronze to yellow and die. Both stem and leaf tissue usually exhibit masses of salmon-pink spores in cushion-like pads, although the spore masses may not be visibly present until the tissue is put in a humid atmosphere naturally or in a moist chamber. Twigs damaged by winter injury may develop *Volutella* cankers. On occasion, cankers may continue to develop caus-

ing the death of large stems, even to the ground level, if not pruned out. Although its role as a primary pathogen has not been unequivocally established, *V. buxi* can be controlled simply by pruning out diseased tissue well below the visibly discolored zone. No chemical control measures are recommended.

Macrophoma leaf spot - The causal agent of this condition is a fungus which produces very small, raised, black fruiting bodies on senescent leaves. The fruiting bodies are rarely seen on leaves of healthy coloration. It is clearly a secondary colonizer of boxwood leaves and thus a questionable pathogen at best. The leaves will ultimately fall but can be removed for cosmetic purposes.

Other leaf disorders - Other leaf disorders to which no pathogenic agent can be causally related include a marginal chlorosis in which the leaf border is bright yellow around a normal green lamina, and a condition in which the leaf is irregularly spotted with slightly sunken lesions of light brown to purplish color. Neither seem to be of much importance and occur sporadically.

Root and Stem Diseases

There are three recognized diseases in this category which cause decline and/or death of boxwood plants. These are Phytophthora root rot, English boxwood decline and nematode-induced injury.

Phytophthora root rot - The soil-borne fungus *Phytophthora parasitica* (*P. nicotianae* var. *parasitica*) causes a rot of the root system typical of root rots caused by this and related species on many woody and herbaceous plants. The form found on boxwood is distinct in its host relations and does not appear to offer a threat to other plants. Roots of infected plants are brown and water-soaked in appearance and all but the woody tissue is degraded. The stem is darkly discolored for a few inches above the soil line, from which the bark may be sloughed. Following root degradation the foliage takes on an aspect typical of wilt in woody plants: the leaf margins roll upward, the leaf gloss gives way to dullness, and the leaves dry out and turn brown. The entire plant or large sections of it show these foliage symptoms at the same time in contrast to the pattern seen with English boxwood decline to be described below.

The pathogen prefers warm weather and the disease is more common in the warmer regions of Virginia and more southern states than in the cooler areas of Virginia, although it may occur all up and down the east coast. The disease also tends to occur in heavier-textured soils or wherever there may be conditions of excessive moisture in the root environment. Since the pathogen produces motile spores which swim in water films in the soil, conditions conducive to disease also favor spread of the fungus. Growing plants in well-drained soil or potting media will go a long way towards prevention of this disease. All forms of *Buxus* are susceptible; therefore, boxwood should not be replanted where plants have died of this disease unless the soil is removed or somehow decontaminated.

English boxwood decline - This disease can be described best as a slow but progressive decline occurring in plants of all ages. It is limited to the form of *B. sempervirens* commonly called English boxwood and is associated with a complex of fungi the most consistent and prominent of which is *Paecilomyces buxi*. *P. buxi* is never found in a pathological relationship with any other form of boxwood. Although some plant parasitic nematodes have been found in association with declining plants, they have not been found as part of this complex in numbers suggesting a primary cause. Although decline is thought to be stress-related, research efforts have not resulted in the identification of any particular stress factor which might trigger the colonization of roots by *P. buxi* and thus be called a major predisposing factor.

English boxwood decline has been observed in several mid-Atlantic states but the center of an epidemic which occurred in the early seventies was northern Virginia and the northern Shenandoah Valley. There, numerous large plantings and some entire small nurseries were destroyed. Specimens of this disease are received in the Virginia Tech Plant Disease Clinic every year.

Foliage symptoms develop over a period of one to several years, commonly about two years. The earliest symptoms are slight off-color areas in the plant. Leaves of affected stems turn progressively bronze, orange, dull-yellow and straw-yellow, finally turning brown with defoliation leaving a gray skeleton of twigs. The decline of each affected branch progresses independently resulting in a plant with a patchwork of multicolored sections. At this point in the development of the disease, the root system is almost entirely destroyed by rot. A spectacular aspect of the symptomatology is the high percentage of root destruction before any foliage symptoms are seen, making early diagnosis very difficult. There is some browning of the stem beginning below ground, which may extend some distance above ground, frequently in a discontinuous pattern as it progresses up the stem. The fungus can usually be isolated from these lesions.

Proper care of plantings of English boxwood is the best insurance against loss to this disease for growers in geographic areas where the disease is found. Proper care includes prevention of moisture stress, removal of dead plant debris, and protection from winter injury. It is advisable not to replant with English boxwood where losses have occurred. This has been observed to meet with failure in both home plantings and under experimental nursery conditions, even when chemical sanitation of the soil was practiced.

Nematodes on boxwood - Certain species of nematodes do, under certain conditions, feed on boxwood roots, resulting in decline symptoms in some boxwood plantings. Nematode damage should be considered when decline of boxwood plants can not be attributed to other agents. Assistance of a local Extension agent should be sought in collecting and transmitting samples for a nematode assay.

Insect drawings by Kathy Born

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