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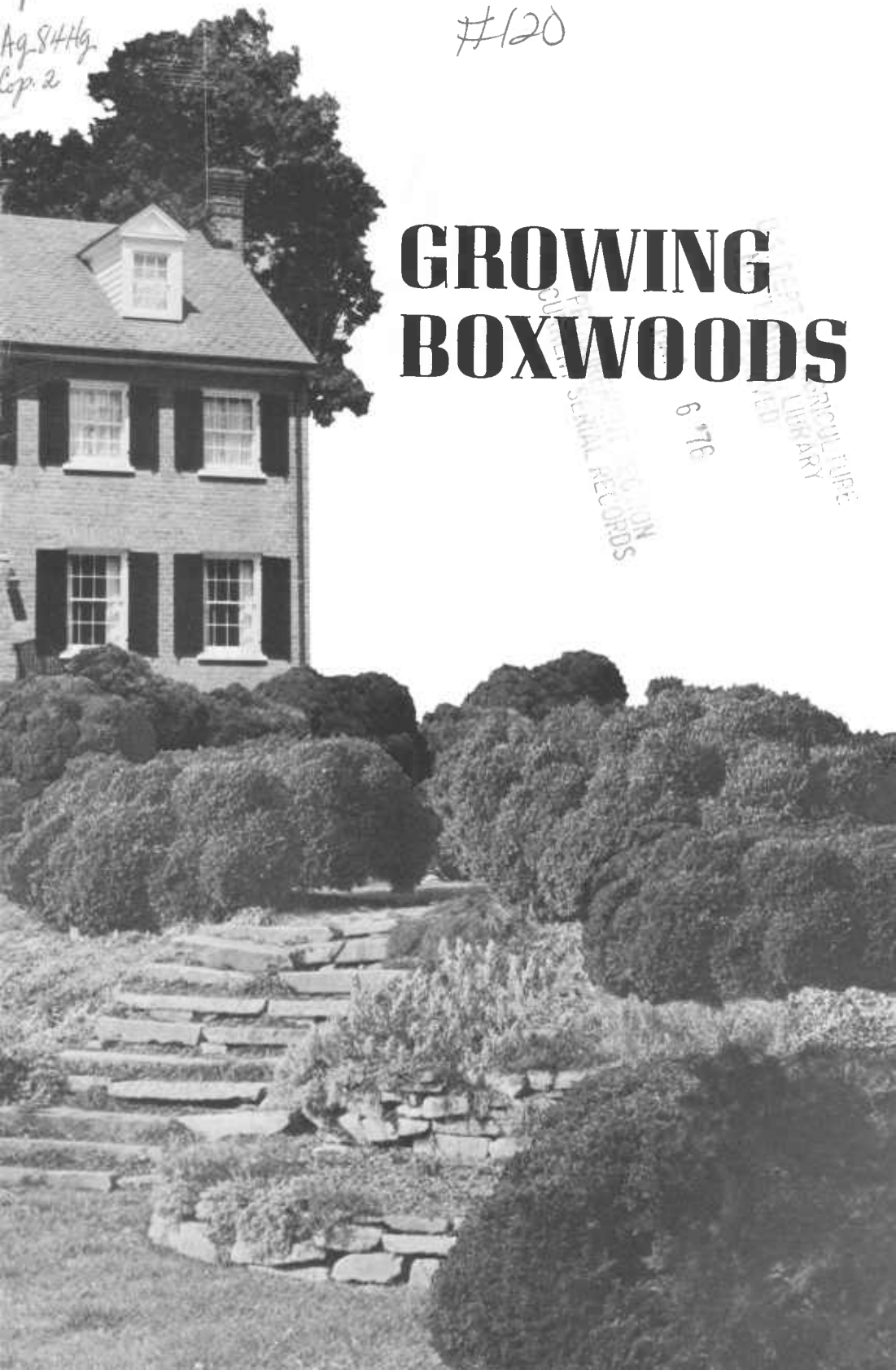
GROWING BOXWOODS



GROWING BOXWOODS

Boxwoods have been cultivated in the Middle Atlantic States from colonial times. The center of climatic adaptation for boxwoods is the Chesapeake Bay region and the foothills of the Blue Ridge in Virginia and North Carolina. Fine specimens are also found in the Piedmont of South Carolina, in Tennessee and Kentucky, in the vicinity of Delaware Bay, on Long Island, N.Y., and on the Pacific coast.

SPECIES AND VARIETIES

The two most widely cultivated boxwood varieties are the English box and the common box. Both are members of the botanical species *Buxus sempervirens*. The English box, or *B.s. suffruticosa*, is a dwarf shrub, often less than 3 feet tall at maturity. The common box, or *B.s. arborescens*, is larger, usually attaining the height of a small tree. Both have standard boxwood characteristics: Dense foliage and full, rounded shapes.

Some other forms of the species *B. sempervirens* are—

- Weeping box—a tall boxwood with drooping branches and wispy foliage. Example: *B.s. pendula.*
- Fastigiate box—a narrow, upright type particularly suitable for hedges. Example: *B.s. fastigiata.*
- Variegated box—a shrub that has leaves mottled or bordered with white or light yellow. Example: *B.s. argenteo-variegata.*

Other species of boxwood, in addition to *B. sempervirens,* include *B. balearica, B. harlandii,* and *B. microphylla.* Two hardy plants, the Japanese box and the Korean box, are members of the species *B. microphylla. B. balearica* plants are somewhat scarce, but the other species are available from nurserymen.

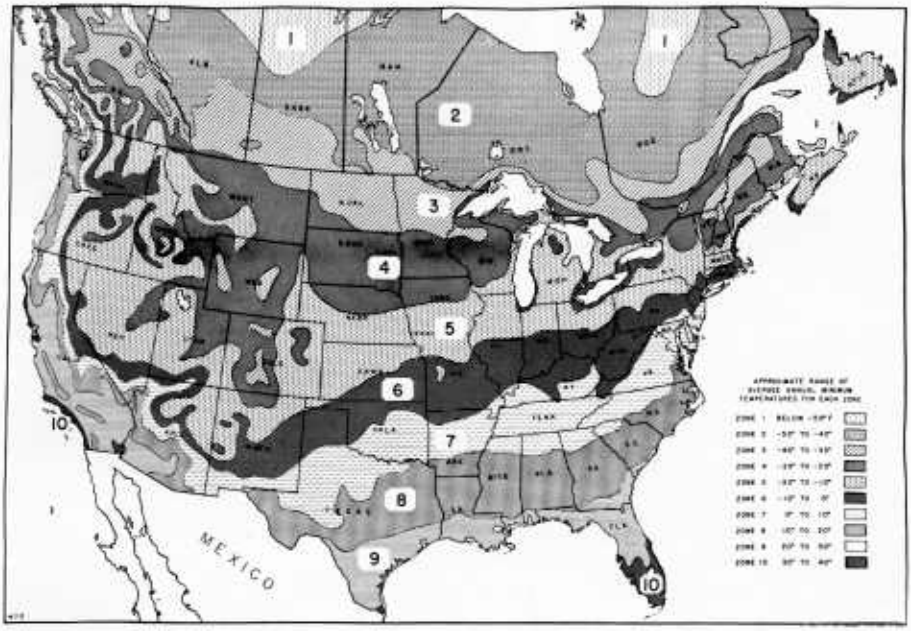
HARDINESS

Boxwood varieties differ in their ability to resist cold weather (see plant hardiness zone map, p. 3). Boxwood culture is almost impossible in areas where temperatures drop to —10° F. or lower. The dry, cold winters of the Midwest are unsuitable for boxwood growth.

SITES AND SOIL

Boxwoods are tolerant of shade and are often planted in heavy shade adjacent to walls or under tall trees. They also do well in full sunlight. An ideal site would provide full sunlight during part of the day and mottled shade at other times.

A wide range of soil types, from sandy loam to heavy clay, are suitable



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The USDA plant hardiness zone map. English box and common box can be grown best in zone 7. Japanese box can be grown in zone 6, and the even hardier Korean box can be grown in the southernmost portions of zone 5. Many varieties can be grown in the warm climates of zones 7, 8, and 9, but zones 4 and lower are too cold for any of the boxwood varieties.

for boxwoods. Soil texture is important only as it influences moisture-holding capacity. Best growth is made in fairly heavy clay that is well supplied with organic matter.

Boxwood soil must be well drained and aerated. If the planting site has no natural drainage, boxwoods can be "planted high"; that is, the hole for the rootball can be made shallower than the depth of the rootball. Earth can then be built up around the protruding rootball to provide a sloping surface. This improves drainage around the base of the plant.

Acid soils and lime-rich soils are both satisfactory for boxwoods; the plants thrive in either.

PREPARATION OF SOIL

If the planting site is suitable for boxwood culture, little preparation of soil is necessary before planting. Make a hole big enough to accommodate the rootball. If the excavated soil is stiff and lumpy, put it aside and use woods soil or topsoil. If good topsoil is not available, mix bonemeal or commercial fertilizer with the excavated soil.

FERTILIZING

The boxwood is a heavy-feeding plant and will grow rapidly if liberally fertilized. If its root system is well es-

BN–36266

A full, billowing shape characterizes mature boxwood plantings.

tablished, it will make some growth even if soil is of low fertility.

Do not rely on winter mulches to supply all of the nutrients needed by boxwoods. Some boxwoods—particularly trees and large shrubs—may lack vigor if fed entirely by surface mulch. You can prevent this lack of vigor by sprinkling commercial fertilizer around the base of each plant. Use fertilizer grade 10–6–4. Apply 1 to 2 pounds per 100 square feet of soil surface.

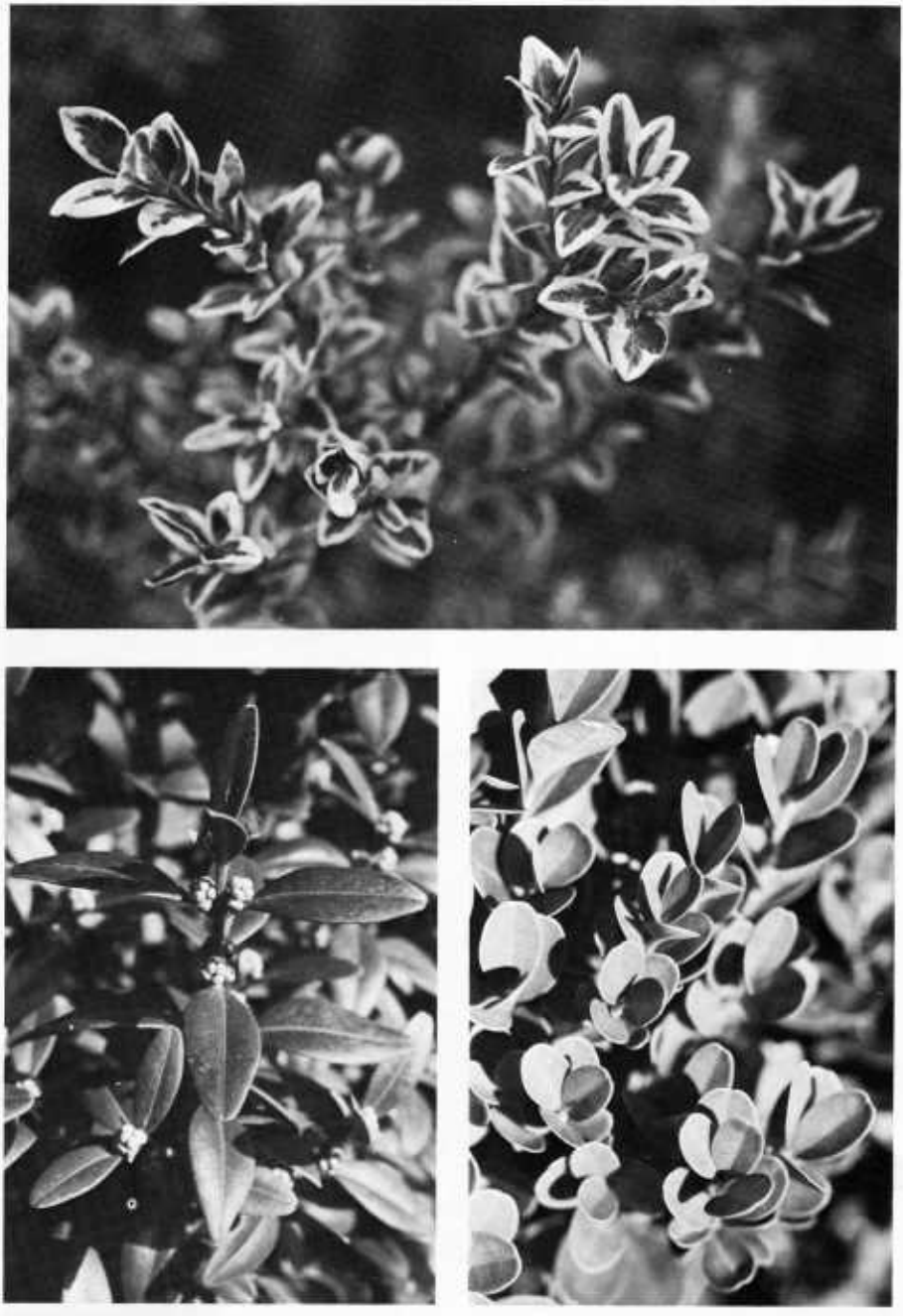
Apply fertilizer in late fall just before the ground freezes, or as soon as the ground thaws in the spring. Fertilizing in early fall may delay the maturing of the shoots and may promote second growth, which will be subject to winterkill.

WATERING

Boxwoods need the equivalent of about 1 inch of rainfall every 10 days. You can be safe in watering plants thoroughly every 10 days from spring to midsummer. Omit watering for 10 days after heavy or prolonged rains.

From midsummer on, water sparingly—every 2 to 3 weeks. If fall weather is dry, water the plants heavily just before the first freezing weather is expected.

If drought persists into winter,



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Some of the variation in boxwood leaves: Top, variegated box; bottom left, common box; bottom right, English box.

water the plants every 2 to 3 weeks during the winter, whenever the ground is not frozen.

PRUNING

Boxwood foliage is very dense. Outer shoots should be pruned so that inner shoots can get light and air.

Small shoots should be pruned at their juncture with larger branches. If large branches must be removed, standard precautions should be observed: The cut should be close and clean; the bark should be bruised as little as possible; and cut surfaces of a square inch or more should be promptly coated with shellac followed by tree paint.

At least once a year, remove debris (leaves, twigs, etc.) that has accumulated in your boxwoods. Much of it will come out if you shake the bushes vigorously. Pick out the rest. If debris is not removed, it may promote fungus growth.

TRANSPLANTING

Boxwoods can be transplanted at any time except when they are in active growth or when the ground is frozen.

Rootballs should be large and solid. Dwarf boxwoods require a rootball with a diameter at least half the diameter of the top of the plant. Tree boxwoods should have a rootball with a diameter at least one-third the height of the top.

Plants 2 to 3 feet high or broad should be shaded for a year after transplanting. A lattice that cuts off about half the light should be used. Shading is especially important if the plants are moved from a partly shaded to an exposed site. The lattice should clear the foliage by 10 to 18 inches and should protect at least the sunny sides as well as the top of the plant.

ST–852–12

Boxwoods may need winter covers. In mild climates, pine branches placed along the north side of hedges will provide adequate protection.

Newly transplanted boxwoods must be watered thoroughly and regularly. Direct a slow flow of water underneath the crown to the trunk. Continue watering until the rootball is wet

all the way through. Build a low ridge of soil around the rootball to prevent wasting water and to allow thorough wetting.

WINTER PROTECTION

In areas ideally suited for boxwood culture, a mulch of wood chips, leaf mold, or similar material provides adequate protection to boxwood plants during the winter. A mulch protects by preventing rapid temperature change at the soil surface, deep penetration of frost, and excessive loss of surface water.

Additional protection is needed in areas where the winter temperature is likely to be colder than 20° F. In these areas, some covering is necessary for the top of the plant.

The covering can be made of burlap, a section of snow fence, or any other material that will protect the top, yet permit air circulation around the plant. The foliage should not rub against the covering.

Do not put the cover on until the ground surface freezes; take it off as soon as the risk of temperatures colder than 20° F. is past. Mild frosts after removal of covers do little harm.

DISEASES

Diseases of boxwoods can be divided into three classes: Those that attack the leaves, those that attack the stems and branches, and those that attack the roots. All of these diseases are caused by fungi.

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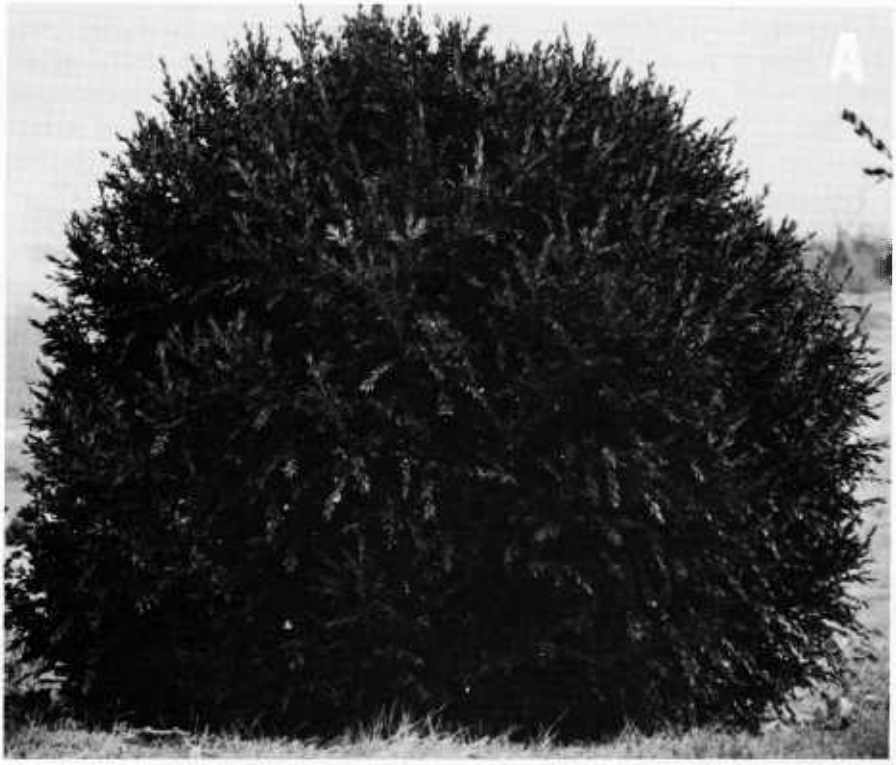
Snow accumulation sometimes breaks down the branches of small boxwood shrubs. This means of support—cords strung along the sides and crisscrossed through the interior of shrubs—helps prevent such damage.



Boxwoods grow in a variety of forms. Pictured on these pages are:

A, a common, or "tree" box. This one is about 5 feet tall; the common box may grow to a height of 30 feet.

BN–36268

B, a weeping box, with drooping branches and wispy foliage.

BN–36257

C, a variegated box the leaves are edged with pale, yellow-green markings.

ST–853–2

D, a boxwood with extreme fastigiate (columnar) characteristics.

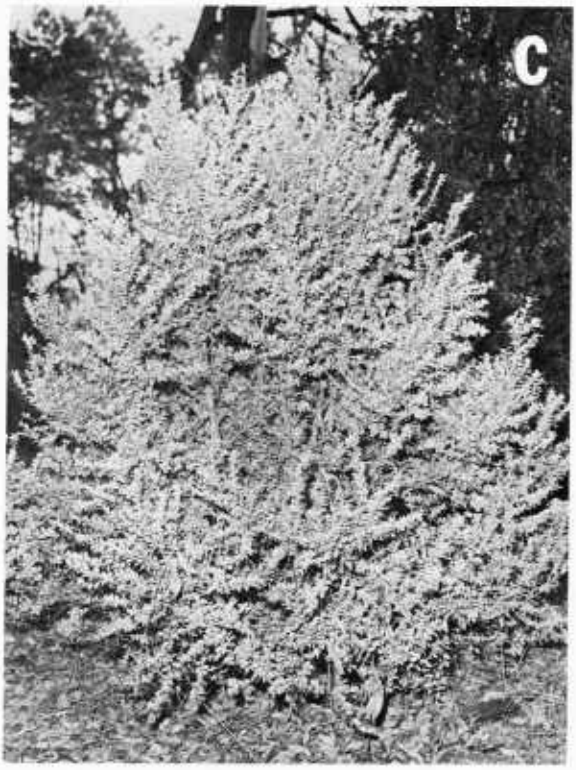
ST–851–9

E, a typical planting of young English box.

BN–26969

The two most widely cultivated boxwood varieties are the common box and the English box. They have been grown in the Middle Atlantic States since colonial times, and their range now extends westward to the Pacific coast (see zone map).

The other boxwoods pictured are a few of the many horticultural varieties that have been named by nurserymen. Formal classification of boxwood is difficult. Consequently, a given variety may have different names in different nurseries.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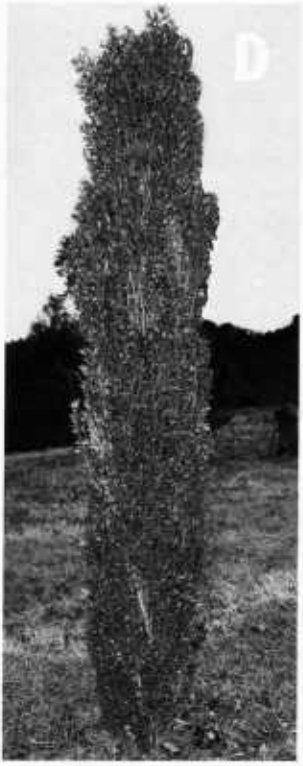
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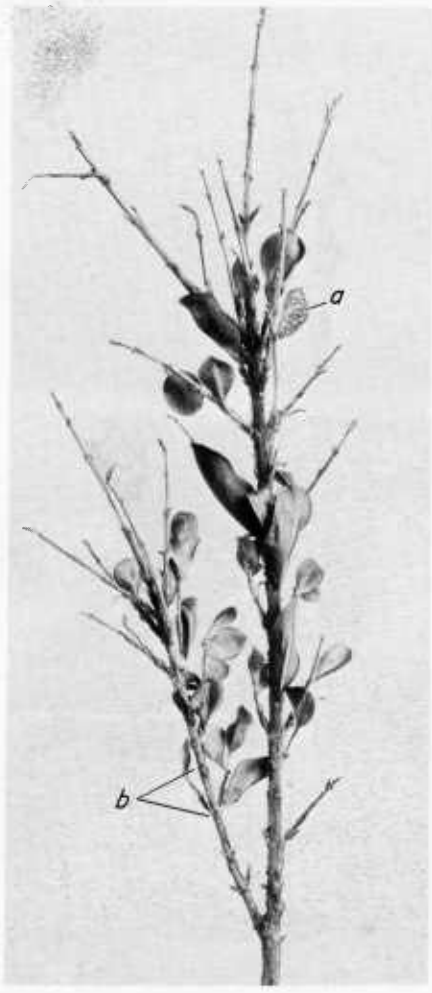
E

Leaf diseases result in spotted or discolored leaves. Fungus pustules usually appear on the leaves. Leaf diseases can be controlled by spraying from one to four times with Bordeaux mixture. The first spray application should be made in the spring, before plant growth begins; the second, when new growth is about half completed; the third, about 3 weeks after the second; and the fourth, in the fall after growth has ceased.



BN–36264

A, leaf fungus. *B*, twig fungus. Fungi usually develop only on weak or injured plant parts.

Some symptoms of stem disease are loss of color in the leaves, development of spore pustules in the bark, and loosening and peeling of bark. Most stem diseases can be controlled by pruning the diseased parts or gouging out the diseased areas. Pruning should be done before humid summer weather arrives and promotes further growth of fungus spores. As a preventive measure, remove all debris from the interior of the plant. Shake bushes vigorously and go over them with a broom or vacuum cleaner.

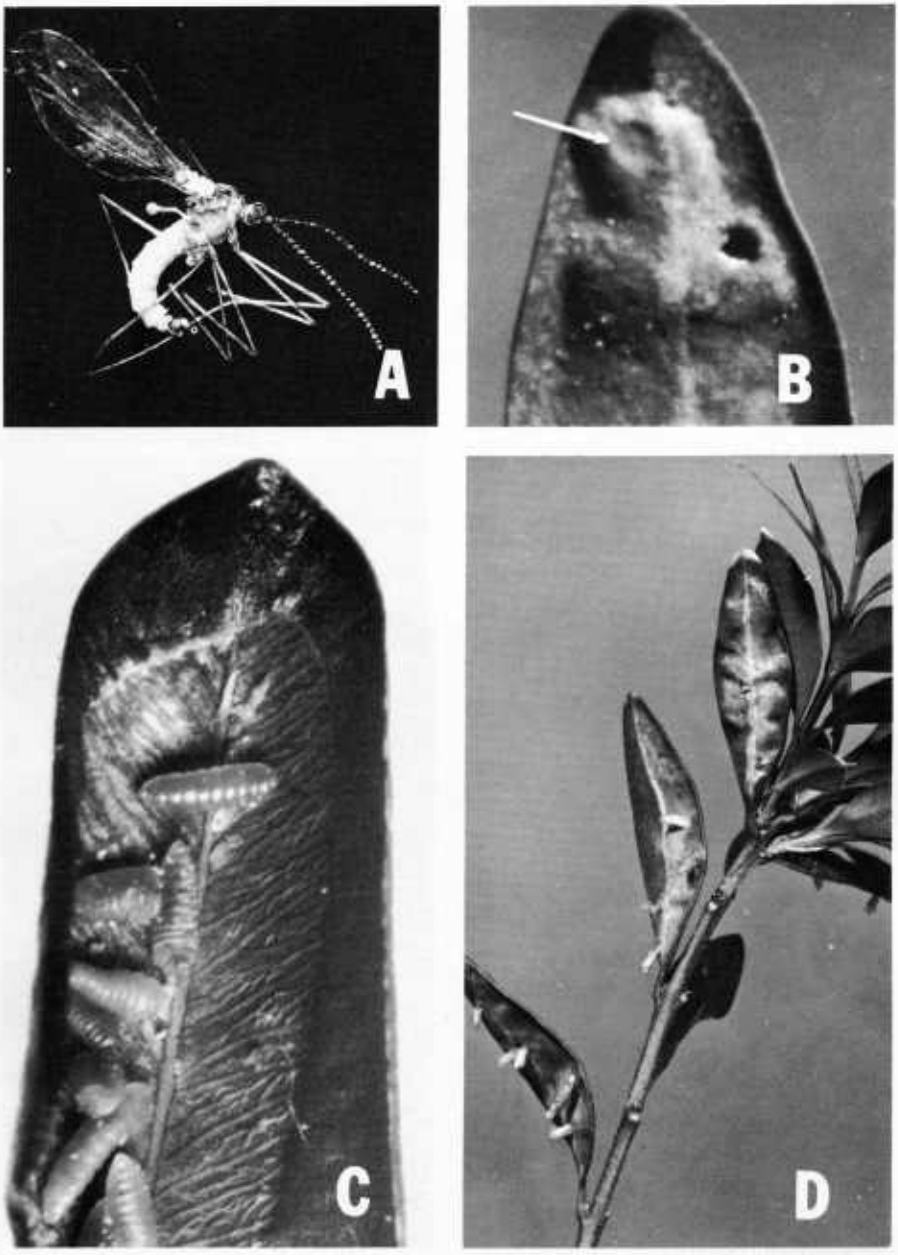
Root rot affects many plants in addition to boxwood, and is very difficult to control once it becomes established. Good cultural practices will help prevent infection. Good drainage around the roots is especially important. If boxwoods die of root rot, the roots should be dug up and the soil sterilized before new trees are planted.

INSECTS AND RELATED PESTS

The principal pests of boxwoods are the boxwood leaf miner, the boxwood psyllid, the boxwood mite, and oystershell scale. Pesticides named in this section kill pests present in old foliage and protect new foliage from infestation. Local conditions may influence spraying requirements; if you want advice about spraying, get in touch with your county agricultural agent.

Boxwood Leaf Miner

The boxwood leaf miner is the larva of a small gnatlike fly. In spring, the



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A, the orange-colored adult, or fly, of the boxwood leaf miner. *B,* a miner-infested leaf; the arrow points to the thin spot through which the adult fly will emerge. *C,* leaf miner maggots, exposed by removing the surface membrane of the leaf. *D,* pupal skin hanging from the undersurface of the leaf. The adult fly has emerged from the skin.

flies inject their eggs into the young boxwood leaves. Larvae from the eggs develop slowly during the summer, hollowing out areas inside the leaves as they feed. They winter inside the leaves.

The larval, or feeding, stage of the life cycle is completed late in April or early in May. The pupal stage follows; it lasts about 10 days. During this stage, the larvae turn to pupae. The pupae break through the surfaces of the leaves and work themselves partway out. The adult flies then emerge from the pupae.

Adults of this insect are easily controlled with properly-timed applications of carbaryl. To determine the right time to apply carbaryl, watch the development of the pupae. Every 2 or 3 days during the pupal period, break open a leaf and examine the pupae. A pupa's head and wing pads turn dark brown near the end of the pupal period—just before the adult fly emerges from the leaf. This is the time to apply carbaryl.

To control the leaf miner when in the young larvae stage, spray with carbaryl about June 15 just after they hatch. Spraying later in the summer or autumn also controls the larvae, but their mines will remain as yellow spots in the leaves.

Dimethoate sprays will control mature larvae if applied in early spring as plants resume growth.

Boxwood Psyllid

The adult boxwood psyllid is a grayish-green sucking insect about one-eighth inch long. In its preadult (nymph) stage, the psyllid feeds on leaves and causes the characteristic leaf-cupping deformity on young

FI–17408

Boxwood foliage infested with psyllids. Note the excreted white material and the cupping of leaves.

spring growth. The nymph also excretes a white waxy substance. In late May and early June the nymphs become adults. The adults feed 6 to 7 weeks, then deposit their eggs at the base of overwintering buds. The eggs hatch between August and October.

The newly hatched nymphs are oval, legless, and scalelike in appearance. They feed by inserting their thin, hair-like mouth parts into the live tissues of the plant and hibernate in this stage under the bud cover. In spring, usually about mid-April, they molt, grow legs, and crawl to new leaves to feed. To control nymphs, spray with malathion in early spring when new plant growth starts and again about May 15. Spray again about June 15 to control adults.

Boxwood Mite

The boxwood mite is found in most boxwood plantings. The adults are yellowish green to reddish brown and about one-sixty fourth inch long. Eight or more generations may be hatched during the spring, summer, and fall. The last generation to mature in the fall lays eggs that remain dormant during the winter and hatch in mid-April.

Newly hatched mites feed first on adjacent leaf tissue, then move from leaf to leaf. The adult mites feed mostly on tender shoots and on the upper surfaces of leaves. Leaves at first show tiny scratchlike markings; later they become bronzed and withered, and sometimes drop to the ground. Dicofol and dimethoate, applied about May 15 and again June 15, will control most mite infestations. If infestations are extremely heavy, spray once every 2 weeks.

Oystershell Scale

Oystershell scale attacks many kinds of plants. This scale has a covering shaped like an oyster. The covering is brownish gray, one-eighth inch long, and one-sixteenth inch wide. The scale itself is yellow and soft bodied.

ST–854–11

Healthy boxwoods have dense, lush foliage. Above, one of the specimens of common box at Blandy Experimental Farm, Boyce, Va.

Scale eggs pass the winter under the coverings of female scales. The eggs hatch in May or June, and the nymphs become adult scales by mid-July.

If large numbers of scales build up, severe stunting or death of infested branches may result. Prune heavily encrusted branches before spraying. Apply dimethoate about June 15 to control young scales. In addition, apply a summer oil emulsion before plant growth begins in the spring. Follow the directions on the container label.

NEMATODES AFFECTING BOXWOODS

Boxwoods are attacked by several species of plant-parasitic nematodes, the most common of which are root-knot nematodes, root-lesion nematodes, and spiral nematodes.

Damage

Root-knot nematodes enter the roots and cause the root swellings, or galls, that are usually called root-knot. When infections are severe, plants become stunted, foliage turns yellow, and leaves fall. The plants may eventually die.

Root-lesion nematodes enter the root cortex and kill the cells on which they feed. The damaged tissue is invaded by bacteria and fungi, and the roots rot. This stimulates formation of new lateral rootlets above the dead area, which in turn are invaded by the nematodes. The result is an excessively branched root system with the individual roots rotted or partly rotted.

Spiral nematodes feed with their heads imbedded in the root tissue. Cells of the root cortex are killed and adjacent cells are affected by a substance secreted by the nematodes. The result is an open wound that may be invaded by bacteria and fungi.

If the roots are seriously damaged by nematodes the plant will be unable to get food and water, and will appear sickly even when heavily watered and fertilized.

Because nematodes are too small to be seen without magnification, and because a number of other ailments cause similar symptoms, nematode infestation is difficult to determine.

Treating Infested Plants

The chemical 1,2-dibromo-3-chloropropane (DBCP) has been used with some success.

CAUTION: This chemical may kill boxwoods if too much is applied. Follow the manufacturer's directions carefully.

Emulsifiable formulations of DBCP are the most convenient. Bank up the earth to form a basin around the plant, then pour the chemical, mixed with water, into the basin. Use enough water to distribute the chemical evenly

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Trade names are used in this publication solely for the purpose of providing specific information. Mention of a trade name does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture or an endorsement by the Department over other products not mentioned.

CONTROL

The pesticides mentioned in this publication are available in several different formulations that contain varying amounts of the active ingredient. Because of differences in active ingredient, dosage rates are not indicated in this publication. The user is cautioned to read and follow all directions and precautions given on the label of the pesticide formulation that will be used.

over the area of the basin. Add enough water to fill the basin to a depth of at least 3 inches. The chemical is effective only if enough water is used. The water carries the chemical down around the roots.

Do not apply DBCP when plants are in active growth. The best time of year for application is spring or early fall. Soil temperature at a depth of 6 inches should be between 40° and 80° F. during application.,

One treatment does not kill all nematodes. Repeat the treatment as nematode populations rebuild, but do not repeat it more frequently than once a year.

Before replacing a nematode-damaged plant, treat the soil with DBCP or some other nematode killer. Examine the roots of the replacement plant for nematode damage. Do not buy nematode-infested plants. Such plants seldom thrive, even in fumigated soil.

PRECAUTION

Federal and State regulations require registration numbers on all pesticide containers. Use only pesticides that carry this designation. Read and follow all directions on the label.

USDA publications that contain suggestions for the use of pesticides are normally revised at 2 year intervals. If your copy is more than 2 years old, contact your Cooperative State Extension Service to determine the latest pesticide recommendations.

The pesticides mentioned in this publication were Federally registered for the use indicated as of the issue date of this publication. Because the registration of a pesticide that you have had in your possession for some time can be changed, you may wish to check with your local agricultural authorities to determine the registration status of the pesticide.

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This edition replaces all previous editions of this publication. Because of changed insecticide recommendations, earlier copies should be destroyed.

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