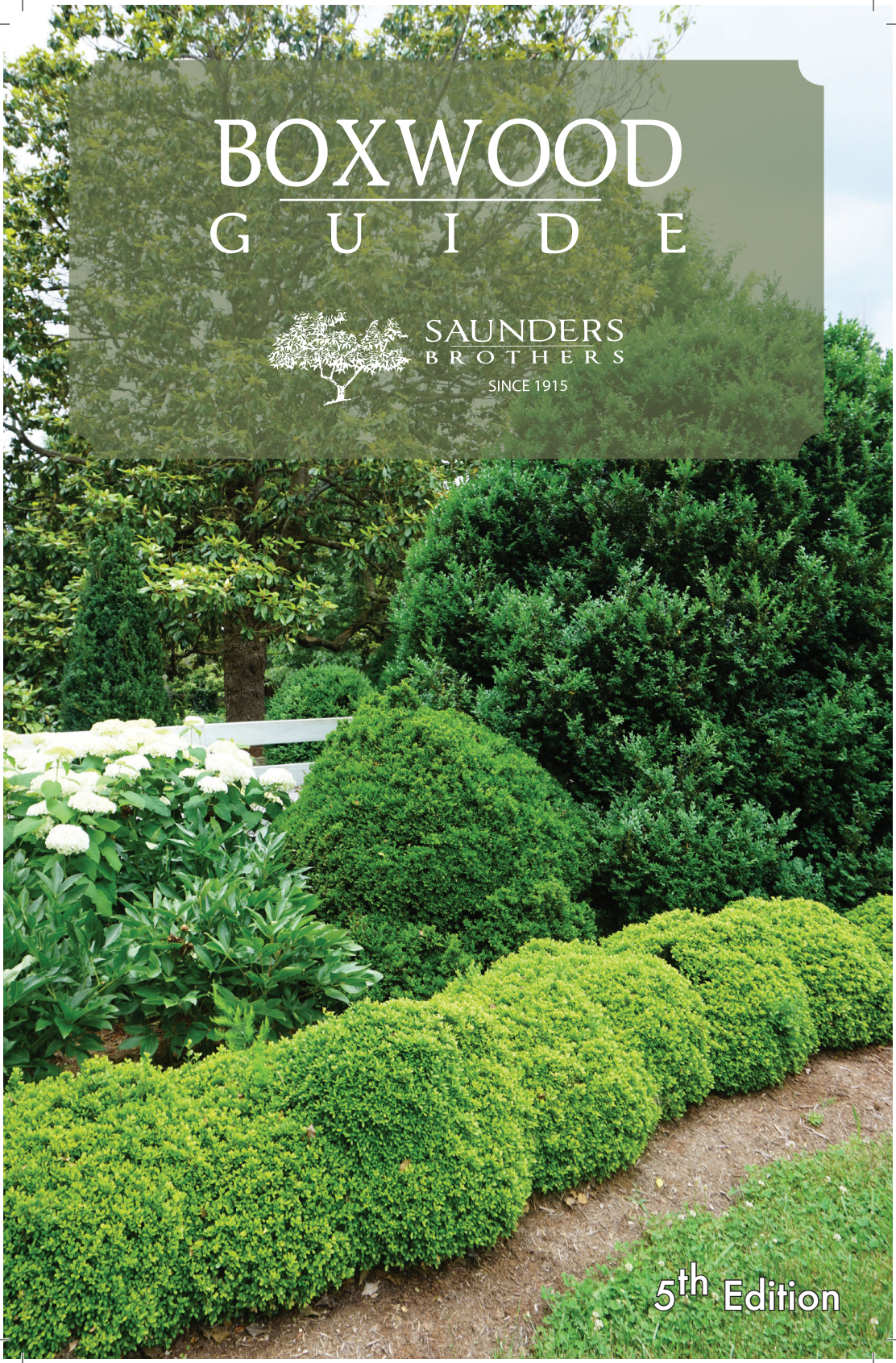
BOXWOOD GUIDE

SAUNDERS BROTHERS
SINCE 1915



5th Edition

Welcome to the 5th Edition of the Boxwood Guide. Since publishing our first guide in the summer of 2005, we have continued to update and add information. This 5th Edition contains more research, descriptions, and details than any of the preceding issues. We have updated nearly all the photos to better show boxwood both in the landscape, as well as, how to better care for them. In addition, we have given you our most up to date information on diseases and pests affecting boxwood.

This book is the result of a journey that began over 70 years ago when our dad, Paul, propagated his first boxwood with the help of our grandmother. Tom, Bennett, Jim, and Robert along with countless other employees want to thank you for taking the time and interest to read and learn more about this fabulous plant that has been part of our family since 1947. We hope the Boxwood Guide helps you better understand and enjoy boxwood as much as we do.

The Saunders Brothers Family

BOXWOOD GUIDE

Table of Contents

BOXWOOD
The Saunders Story

Paul and Tatum Saunders

Paul and the Beginning

Boxwood have been part of the family tradition at Saunders Brothers for nearly 100 years. Paul Saunders' mother, Mildred, had a keen interest in boxwood. Upon moving to what would become the family home in the late 1930's, she began surrounding the home with boxwood. Many of those original plants still stand today. In the late spring of 1947, Paul propagated his first boxwood with the help of his mother and an inspiring science teacher. On a sticky clay bank near the present office and container nursery, 25 of 77 cuttings took root and a nursery was born.

The nursery slowly expanded to the fertile river bottoms. Then, in less than five hours on August 20, 1969, Hurricane Camille dumped 20-25 inches of rain on the mountains of Nelson County, Virginia. The devastation and loss of life in the county were horrendous. The raging Tye River destroyed nearly 10 acres of Saunders plants on the river bottom. Only a few boxwood planted on higher ground survived. With this nucleus, the container nursery was established.

The nursery continued to grow through the 70's and 80's with a wide range of plants being grown in unheated greenhouses. In the late 90's, the demand for more boxwood, both larger and more varieties, led Saunders Brothers to start growing plants in the field again. The container and field operations now grow not only boxwood but over a thousand other varieties of container plants including annuals, flowering shrubs, evergreen and deciduous shrubs, container trees, perennials, and roses. Boxwood, however, remain the signature plant and are grown in both containers and the field.

Today more than ever gardeners are rediscovering boxwood, the backbone of many landscapes and formal gardens for centuries. With increased deer

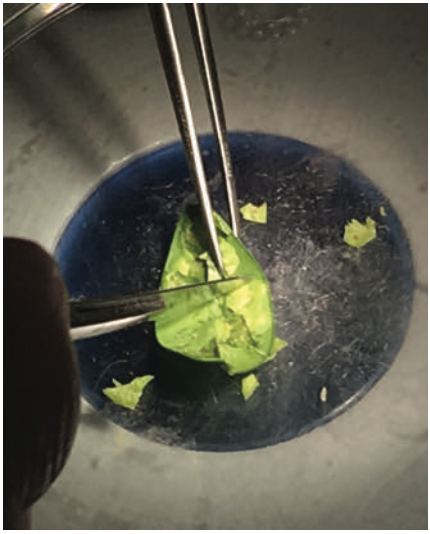
browsing and changing weather patterns, deer resistance and drought tolerance are making boxwood a first choice in many gardens.

Today and Tomorrow

Saunders Brothers began learning about boxwood over 70 years ago and that knowledge base has expanded daily since those first cuttings were stuck. Over time, we have become a leading authority in the United States, as well as abroad, on boxwood production, care, varieties, and research. This knowledge has come from growing boxwood for many years, as well as proprietary research through the National Boxwood Trials, boxwood leafminer and boxwood blight field tests and research, and participation in the American Boxwood Society.

The National Boxwood Trials began in the late 1990's when we realized there was little information available comparing the performance of boxwood in varying climates and geographic locales. Participants were supplied with and asked to evaluate and rate approximately 24 different cultivars in their Trial garden. Data was reported to Saunders Brothers where it was compiled and published. The last Trial data was published in 2011. Since its inception, 20 major botanical gardens, arboreta, and historical sites, 18 universities, colleges, and research stations, as well as 20 individuals and nurseries participated in the project. The test sites are located from Connecticut to Chicago, and then south across the "boxwood belt" to Alabama and Georgia. The Trials also include international contributors from the United Kingdom, Republic of Georgia, and Ukraine. Analysis of this data helps identify the best in boxwood cultivars for specific regions.

Inspecting leaves for leafminer research



Dissecting leaves for leafminer

Studying boxwood blight

Noticing the increased incidence of boxwood leafminer over the past 10 to 15 years, as well as the desire to reduce the use of pesticides, Saunders Brothers began conducting research on varietal resistance to leafminer. Prior to 2008, we began planting a test block solely dedicated to leafminer research. Host boxwood infected with leafminer were planted alongside 100 cultivars of boxwood. Since fall of 2008, we have collected thousands of leaf samples from our test area. Each leaf is dissected and leafminer larvae are counted. This data has helped us differentiate cultivars based on leafminer resistance and susceptibility. Our ultimate goal is to develop or discover boxwood that are naturally resistant to leafminer thus reducing the use of pesticides and increasing the value of boxwood.

Since boxwood blight first appeared in the United States in 2011, Saunders Brothers has dedicated enormous resources to understanding and fighting this disease. We have supplied plants and funded research in multiple states that were conducting both institutional as well as private trials. We have been featured as speakers and panelists throughout the Mid-Atlantic on boxwood topics. We have traveled domestically and internationally to better understand a disease that many once thought would be the end of boxwood. We have met with researchers from state and federal agencies and international groups both public and private. Through a greater understanding of the disease, we believe the battle with boxwood blight will be won with tolerant varieties.

The American Boxwood Society (ABS) was founded in 1961 with the purpose of creating appreciation, scientific understanding, and propagation of boxwood. Saunders Brothers plays an active role in the ABS, both planning and participating in board activities, conferences, seminars, and educational tours.

Through years of our own production, research, and collaboration with individuals, universities, private researchers, arboreta, and the ABS, we have studied and analyzed information that is changing the world of boxwood on a daily basis. Boxwood are now stronger than ever and are standing the test of time.

BOXWOOD
Planting and Site Selection

Boxwood are easy to maintain when properly planted and cared for. We suggest the following recommendations to increase your enjoyment of this timeless plant.

- Check and test the soil. Avoid areas with poor drainage.
- Choose the proper cultivar based on ultimate size and shape, growth rate, maintenance requirements, and sun exposure.
- Prepare the area to be planted and dig the hole.
- Plant the boxwood high, two inches or so of the root ball should be above the soil surface.
- Water thoroughly at time of planting.
- Fall is a great time to plant so roots can take advantage of fall, winter, and spring precipitation before summer droughts.

Proper planting is crucial to the longevity and health of boxwood. Take the steps outlined below to ensure planting success.

Drainage

Consider drainage before selecting a site or planting a boxwood. When choosing a site, avoid areas with standing water, or outlets for gutter or other drains, or areas where soils tend to stay moist or wet year round. Dig a one foot

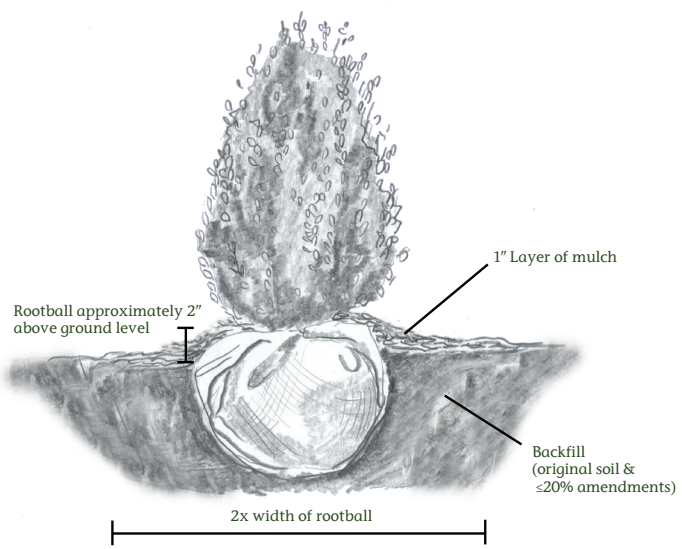
deep hole and examine soil and see how it compares to other areas in the same landscape. Some cultivars are more tolerant of areas with questionable drainage; however, all boxwood will perform better in areas when the plant is elevated and drainage is addressed. Poor drainage is one of the leading causes of problems in boxwood.

Cultivar Selection

Take care to select the proper cultivar of boxwood. Consider the ultimate desired size, shape, and growth rate. Remember to anticipate maintenance requirements, the climate, and the sun exposure of the site. Consider the timing and intensity of sun in the area to be planted. All boxwood will do well in shady areas, while some of those same cultivars will also do well in part-sun or sunny locations. Sunny locations are those areas with bright sun from late morning to late afternoon. Part-sun locations are shaded from late morning to late afternoon but may receive direct sun early or late in the day. Shady locations typically receive little or no direct sun. Generally speaking, all boxwood prefer some afternoon shade. Some cultivars of boxwood will bronze in winter more than others. To lessen winter bronzing, avoid direct afternoon sun. Please refer to each cultivar for recommendations with regard to exposure and winter bronzing due to sun exposure.

Digging the Proper Hole

Dig the hole twice (or more) as wide as the root ball. Dig the hole so that about 2 inches or so of the root ball is above the original soil surface and the base of the rootball is sitting on the undisturbed soil. Planting the boxwood high helps to ensure proper drainage. If the soil is highly compacted, take extra steps to be sure the soil drains properly and water moves easily through the soil. Never plant boxwood level with the soil surface. Take care when the soil has been disturbed below the root ball to ensure that the plant remains elevated and does not settle with time.



Soil Preparation

Proper soil preparation is essential to ensure long term success with any planting. Perform a soil test in advance of any bed preparation. Based on the results of the soil test, modify the soil to achieve a pH in the range of 6.5 to 7.0. Before planting in an existing bed or a new area, we recommend you renovate as much area as possible. This will improve drainage, reduce compaction issues, introduce new soil nutrients and organic matter, and encourage root growth. Renovations of existing areas or new plantings should include removal of unwanted existing plants and debris, the incorporation of soil amendments, and soil mixing. Turn soil to a minimum depth of 10-15 inches and add amendments. Examples of soil amendments can include compost and aged poultry or other manures to increase organic matter and nutrients and limited amounts of peat moss. Mix soil and amendments thoroughly. Newly-incorporated soils should contain no more than 20% amendments. The amended soil should resemble the existing soil in order to encourage root growth beyond renovated areas. If an excess of amendments and new soil are added, the roots of the plant will often not venture beyond the new soil.

sempervirens topiary

Planting

Once you prepare the bed and dig the hole, place the plant in the hole remembering to keep two inches or so of the root ball above the original soil surface. Backfill the hole with the amended soil. Mound the soil up to the edges of the root ball and lightly pack it to avoid leaving any air pockets. Do not place soil on the base or trunk of the plant. Ensure that the plant remains elevated and does not settle with time. Mulch the plant with no more than one inch of aged or decomposing mulch. See page 11 for more information on mulching.

Watering

A thorough soaking at the time of planting is the most important watering a boxwood will ever have. Be sure the entire root zone is thoroughly wetted. Afterwards, periodic waterings on an as-needed basis are best. Allow the root zone to dry before re-watering. It generally takes about 18 months for a boxwood to acclimate to a new site. During this time, monitor the plant for adequate moisture. We recommend approximately one inch of precipitation or irrigation per week for the first 1-2 years, paying close attention during the hot and dry summer months. Do not forget to water your boxwood in the winter. Maintaining proper moisture during winter months lessens root damage in

severe cold and also aids good root growth in times when the ground is not frozen. Boxwood in the Mid-Atlantic region will continue to grow roots through the winter when temperatures are not extremely cold. Never allow the plant to dry to the point of showing stress. When boxwood show stress due to lack of moisture, they seldom recover completely. (See Irrigation on page 11 for more information.)

'Justin Brouwers'

insularis 'Nana'

BOXWOOD Care

Fertilization and Liming

- Use soil tests and maintain a pH of 6.5-7.0.
- Apply in late fall on top of the mulch.
- If fertilizer is needed, use a balanced fertilizer or aged manure.

Boxwood typically do not need a lot of fertilizer. Use soil tests to determine fertilizer needs as well as the pH of your soil. Boxwood thrive when the pH of a soil is between 6.5 and 7.0. A pH below 5.8 can cause problems in boxwood, especially in *Buxus sempervirens* 'Suffruticosa'. The primary time to fertilize is in late fall or early spring. Boxwood roots grow the most in late fall, winter, and early spring, when soil temperatures are more moderate. Late summer and early fall fertilization may cause a plant to initiate fall top growth that may be burned with early frosts and freezes.

Always place the fertilizer near the drip line of the plant and never place it under the mulch. Boxwood typically have feeder roots just under the soil surface, so placing fertilizer directly on those roots can cause damage to the plant. When our field plants are dug, we use a formulation of 12-5-9 to supplement the plant until it's installed. Do not use fertilizers formulated for acid-loving plants like azaleas or rhododendrons as they tend to drive pH down. Based on the results of our soil tests, Saunders Brothers has had good results using aged poultry manure in low rates both at the time of planting and as needed thereafter.

Pruning

- Clean tools properly before and after pruning.
- Prune in late winter to early spring before spring flush and while diseases are less active.
- Use pruning techniques that promote good air flow.
- Pruning techniques are different for each cultivar.

Proper pruning techniques are crucial to long-term success with boxwood. Pruning techniques differ with each cultivar of boxwood. It is important to choose the correct cultivar for the desired use and location to avoid the need for excessive pruning.

Proper sanitation is important when pruning. Any tools should be properly cleaned with alcohol, bleach, Lysol® or some other disinfecting solution before and after working with boxwood to lessen the possibility of spreading disease.

The best time to prune boxwood is in the late winter to early spring, before the plant breaks dormancy. This is typically late February to mid-March in central Virginia. Late winter/early spring pruning minimizes the time between pruning and new growth as well as stimulates a strong spring flush. It also is a good time to prune as diseases like boxwood blight tend to be much less active in cold temperatures. Some gardeners also like to prune in late spring, after the

spring flush, to achieve a more manicured shape in formal gardens. Mid-summer and early fall prunings stimulate late fall growth that may be burned by frost or early winter freezes. Early winter pruning, while not detrimental, leaves pruning scars on the leaves until the spring flush is initiated. Many gardeners choose to thin or pluck 'Suffruticosa' (English boxwood) and *sempervirens* (American boxwood) in late November and December in order to have boxwood greens for holiday decorating. This is a very common practice and one that is helpful to the plant. Once again, take care to clean tools when pruning to avoid spreading diseases.

In general, any pruning that increases the airflow in a boxwood is advantageous. Cultivars that are more dwarf or have very tight habits benefit from annual thinning to increase air flow and sunlight penetration into the interior of the plant. Thinning is typically done by reaching into the plant and breaking or cutting out branches with hand pruners. These branches can be 6-10 inches long on larger cultivars, or only a couple of inches on a dwarf cultivar. This will leave pockets or holes in the plant for air and sunlight penetration. Using hand pruners will result in a cleaner cut and lessens the possibilities of disease introduction. Not all cultivars require annual thinning, however those that benefit the most from thinning are noted in the cultivar section of this Boxwood Guide. Any cultivars that are sheared regularly will benefit from thinning to lessen disease susceptibility.

Larger and more vigorous cultivars are generally tolerant to shearing or more radical pruning techniques. Use loppers or shears to drastically reduce overall plant size on vigorous plants, taking care to leave one-half to two-thirds of the foliage undisturbed. This foliage will produce energy the plant needs to recover. The plant should develop new foliage along the bare stems. Full recovery may take several seasons. Plants that require more drastic pruning may need to be pruned over several years to reduce the overall size in steps and not jeopardize the plant's health. If a *Buxus* 'Suffruticosa' (English) overgrows its intended space, use loppers and ensure clean cuts on larger branches. You should never use shears on *Buxus* 'Suffruticosa' (English Boxwood). Using shears increases the density of the canopy of the plant long-term as well as shatters brittle limbs thus increasing the chance of disease. To minimize radical pruning, do not select large cultivars for applications where small cultivars would be more suitable. See specific notes in the cultivar section of the Boxwood Guide on boxwood pruning and plant size.

'Green Beauty' flushing after late winter pruning

Sport on a boxwood

Boxwood will occasionally send up a branch of foliage that is different from the rest of the plant; this is known as a "sport." This is most obvious in some of the dwarf cultivars including 'Green Pillow', 'Grace H. Phillips', 'Morris Dwarf', and 'Morris Midget'. Remove the sport by cutting into the plant below the point where the sport appeared. Sports on plants do not hurt the plant, but they can be unsightly. Some boxwood enthusiasts will propagate sports in hopes of finding a new desirable cultivar.

Mulching

- Retards weed growth and reduces erosion.
- Retains soil moisture and creates organic matter.
- Moderates soil temperature.
- Lessens diseases including boxwood blight.

Mulching at time of planting and periodically thereafter is beneficial in many ways. Mulch retards weed growth, reduces erosion, helps retain moisture at time of planting and later in dry periods, and decomposes to create additional beneficial organic matter. Also, mulch moderates soil temperature by acting as a layer of insulation between the air and soil in times of extreme heat and cold. Mulch also lessens the incidence of some diseases including boxwood blight by reducing the amount of water splash.

Maintain about one inch of mulch around a plant but never place mulch on the trunk of the boxwood. Re-mulch as needed every two years or so. Be sure mulch is aged or decomposing. Shredded hardwood mulch works well; in addition, composted leaves, pine needles, and pine bark also make good mulches. These types of mulches are beneficial because with time they decompose and create organic matter. Take care not to use 'green' or un-aged mulch like wood chips as it requires extra nitrogen to begin breaking down and plants will often suffer due to the mulch using the available nitrogen thus depriving the plant. Too much mulch can pull nitrogen from the soil particularly if the mulch is not properly aged.

Irrigation

- Boxwood are drought tolerant once established.
- Initial watering at the time of planting is very important.
- Monitor moisture and irrigate plants for first year during droughts and hot summer months.
- Irrigate established boxwood deeply and thoroughly in times of severe drought.
- Drip irrigation is best. Avoid systems that repeatedly wet foliage.
- Overwatering causes problems.

Boxwood are drought tolerant once established. The best irrigation systems are designed to water boxwood only until they are established and then occasionally only in times of severe drought. Once established, boxwood need minimal irrigation. Too much water is often more harmful than not enough water. Avoid watering daily and using methods of irrigation that keep the foliage wet for long periods of time. Daily waterings do not encourage deep and strong root growth that is necessary for long-term survival especially in times of severe drought.

Field production with drip irrigation

Newly planted plants must be watered thoroughly at time of installation. Then, they should receive deep waterings about once a week for the first 3-6 months. Then for the next year or so, new boxwood should receive approximately one inch of precipitation or irrigation per week paying most attention to hot summer months or times of drought. The first year to year-and-a-half after planting are the most critical for irrigation. Typically, boxwood need little supplemental irrigation October through April. Always monitor soil moisture before irrigating. Boxwood will do best when they are watered thoroughly by wetting the root zone to a depth of 12 to 18 inches. The root zone should then be allowed to dry before the next application of water which encourages stronger root systems, as plants are forced to send roots in search of water. Timing of subsequent waterings will be dependent on natural precipitation, weather, and soil conditions. Avoid allowing the plant to dry to the point of showing stress as they may have difficulty recovering. Established plantings over 18 months old require supplemental water only in times of extreme drought.

Simple drip irrigation systems, installed just under the mulch, work well for boxwood. They allow for slow application of water through the root zone area. Lawn irrigation systems should be designed and maintained to avoid daily application of water onto the foliage of boxwood. Continual wet foliage on a boxwood creates a possibility for disease introduction.

In periods of extreme cold, it is especially important to be sure newly planted or transplanted boxwood are thoroughly watered prior to the ground freezing. Filling the air space around the root system with water helps to insulate the plant.

Avoid over-watering boxwood. Some cultivars, especially *Buxus sempervirens* (American), 'Suffruticosa' (English), 'Jensen', 'Elegantissima',

'Vardar Valley', 'Justin Brouwers', and other *sempervirens* cultivars, as well as the *harlandii* cultivars, are especially susceptible to root rot resulting from continuously wet or soggy soil conditions or poorly-drained soils. Remember, roots need air as well as water.

Transplanting

- Fall is the optimal time to transplant.
- Root ball should be dug 2 to 3 times wider than deep.
- Monitor moisture carefully for 12-18 months.

Boxwood can be transplanted from one location to another. Care should be taken when transplanting boxwood. You should consider proper timing and procedures.

The best time to transplant boxwood in central Virginia is early September through mid-November. In your area, choose a time in the fall when summer heat has begun to subside and more frequent rain has begun. However, avoid waiting until severe cold sets in. Some gardeners have success transplanting during mild winters. Proper timing will allow for maximum root growth when moisture is typically more abundant and in turn better prepares the plant for dry seasons, especially summers. The root ball should be dug as wide as the canopy of the plant (at a minimum). The root ball size will vary but a rule of thumb should be for every 2-3 feet in width, the depth should be 1 to 1 ½ feet. Boxwood have shallow roots thus more focus should be on root ball width than depth. Do not leave the boxwood above ground for a long period of time especially in times of extreme heat or cold and do not allow the root ball to dry out. Never move boxwood during the stress of summer heat or severe drought. Many gardeners have greater success when they heavily water the plant they are moving prior to any digging to lessen the stress on the plant. Immediately after transplanting, water thoroughly and continue to monitor moisture for 18 months or so until the plant is re-established (see planting on page 5). Never allow the plant to dry to the point of showing stress. Once drought-stressed, boxwood seldom recover completely.

Tilling and Cultivating Near Boxwood

Avoid repeated cultivating or tilling near the roots of boxwood. Boxwood roots are shallow and widely spread. Cultivating near the drip line of the plant has shown to create problems in boxwood. This is especially evident when boxwood are used as edging in a bed. For example, if one side of the plant is restricted in horizontal root growth by a "hard edge" like a sidewalk or manufactured edging, and the opposite side is tilled 1-2 times a year for planting annuals, severing the roots repeatedly will cause long term problems and potentially kill the plant.

If you need to cultivate where there is a "hard edge" on one side of a boxwood planting, stay about one foot from the drip line of the plant. When the side opposite of cultivation is not restricting horizontal root growth, you may cultivate slightly closer.

Winter and Cold Damage

- Avoid summer and early fall fertilization and pruning.
- Before extreme cold, water newly planted boxwood before soil freezes.
- Full sun exposures increase likelihood of bronzing.
- Snow should be allowed to melt naturally or very carefully removed.
- Spring frosts can occasionally burn new growth, however; in most cases, new buds will quickly develop and cover any damaged foliage.

Boxwood can be damaged by late fall freezes, extreme winter cold or late spring freezes. Damage can range from a few bronzed or desiccated leaves, to broken and dead plants.

There are several ways to lessen late fall freeze damage. Avoid summer and early fall applications of fertilizer that could induce a late fall push of growth that could be burned. Also avoid late summer prunings which can induce fall flushes that are typically tender and easily burned. If a fall frost or freeze damages any foliage, wait until after the first or second hard freeze of winter to prune off unsightly branch tips. Pruning too quickly after the first frost can encourage a new flush of growth if the frost is followed by a warm spell. Otherwise, wait until late winter or early spring to prune. (See Pruning on page 9). Additionally, we have seen bark splitting near the ground level of some boxwood. This typically happens to boxwood that have bare trunks and are exposed to the southwestern sun. Bark splitting is most common in *Buxus* 'Suffruticosa' (English) and young (less than three year old) plants.

Freeze damage

To minimize root damage due to extreme winter cold, newly planted boxwood should be deeply watered before the soil freezes. Filling the air space around the root system with water helps to insulate the plant. Boxwood in containers are especially at risk to winter root damage when they are not well watered.

Foliage bronzing in the winter can be attributed to sun exposure and cultivar selection. Direct sun in the winter (especially from the southwest) will tend to bronze some cultivars more than others. Bronzed leaves typically begin greening up in the spring as temperatures begin to rise and as new foliage covers them. Intense sun on shade-loving cultivars will cause bronzing that does not recover quickly in spring and can cause long-term problems. If you want to minimize bronzing, take care to avoid sunny southwest exposures and consider your varietal selection. Good choices include 'Green Beauty', 'Jim Stauffer', 'Dee Runk', 'Vardar Valley', 'Fastigiata', 'Justin Brouwers', *sempervirens* (American),

and ‘Little Missy’. Cultivars like ‘Wintergreen’ and the “Green Series” (‘Green Velvet’, ‘Green Mountain’, ‘Green Mound’, ‘Green Gem’), as well as some of the dwarf cultivars of boxwood tend to bronze in winter sun. Refer to the cultivar section of the Boxwood Guide for more information.

Winter bronzing

In snowy conditions, it is best to leave the plants alone and let the snow melt on its own. However, in extreme cases when there is chance of breakage, gradually remove the snow by gently brushing the limbs. Remember: if the branches are frozen, beating them or any quick movement of the branch will cause damage to the limb or bark and will encourage the introduction of disease. Some of the *microphylla* cultivars are more rigid and will hold snow with minimal to no damage. In heavy ice storms, leave the ice on the plants to melt naturally. Diseases will often wait until conducive conditions of summer (warm and wet) to invade the damaged plants. The diseases can take six months to a year or more to become evident.

Occasionally in late spring after new growth has begun to emerge, an early morning frost will damage the new growth on a boxwood. Pruning off affected foliage is not necessary as the plant will typically regenerate on its own. In most cases, a secondary flush can be seen in several weeks and will quickly cover any burned foliage.

Most of the boxwood listed within this Boxwood Guide are hardy to zone 5 or 6, however there are some that are listed as zone 7. Refer to the individual cultivars for specific hardiness information.

Boxwood in Containers

Boxwood are an excellent choice for use in a container. Cultivars that are suitable for containers are listed in the cultivar section of the Boxwood Guide under Uses. When planting in a container, take care to select a container that is larger than the root ball of your chosen plant. If you allow space for the roots to grow, the boxwood will have a longer life in the container. Use a potting media to fill around the root ball. Be sure the container has drainage holes in the bottom.

After several years it may be necessary to remove the plant from the pot to re-invigorate it. Cut and loosen the roots, and replace much of the soil in order to stimulate new root growth on the plant before placing it in the same or a larger container. When the root growth is limited, a plant typically will begin to deteriorate. Fertilize lightly annually or biannually with well-balanced fertilizer that does not drive down the soil pH (See Fertilization page 9).

Although boxwood are more drought-tolerant than many plants, be sure to provide adequate water throughout the entire year, including the winter. In winter it is very important that the plant is well watered before extreme cold spells. Filling the air space in the root system with water helps to insulate the plant. In summer, water about once a week. Regularly monitor water and keep roots moist but not wet.

Boxwood Propagation

Boxwood is an easy plant to propagate. Propagation procedures differ with every nursery and gardener. Typical cutting propagation occurs in late June (after the spring flush has had time to harden off) through mid-September. Do not propagate too late into the fall or winter, unless artificial bottom heat is available, as the cuttings need soil temperatures in the low 70's to begin rooting. Make cuttings 4-6 inches long and remove one-third to one-half of the foliage. Apply a rooting hormone to the bottom one-third of the cutting before sticking it in the rooting bed or cell.

Rooting media is typically a combination of sand and peat moss. Cuttings should be shaded from any direct sun until well rooted. Keep the foliage moderately moist until roots develop to increase rooting success. Do not attempt to propagate boxwood from late March through early June as the energy of the plant is being directed into producing new top growth.

Boxwood propagation cuttings

Boxwood propagation at Saunders

Many gardeners use layering to propagate boxwood. The natural weight of limbs or snow can push a branch down until it touches the ground. The portion touching the ground will likely root into the soil. After several months of warm temperatures, the branch can be cut from the parent plant and moved. Other gardeners, typically in the spring, will bend a side branch of a plant down to the soil and lay a brick or rock on top of it. In the fall or the following spring, the plant can be cut from the parent plant and planted elsewhere.

Pets and Boxwood Odor

Dog and cat urine will kill boxwood branches. *Buxus sempervirens* cultivars tend to be the favorite targets of them.

Some boxwood cultivars exhibit a very strong odor in early summer when the sun shines directly on them, especially when the humidity is high. Buxus *sempervirens* 'Suffruticosa' or English Boxwood is the most aromatic. Some people believe this might be what attracts pets. Some gardeners relish the aroma of boxwood and others have likened the smell to that of cat urine. Fortunately for some and unfortunately for others, this is the odor of boxwood and it is more intense with some cultivars than others and cannot be controlled. If the odor or aroma of boxwood is not your favorite, then shy away from *sempervirens* cultivars. *Microphylla* and *insularis* cultivars will be less fragrant.

BOXWOOD Pests

In this section we will discuss the three primary pests of boxwood: leafminer, psyllid, and mites. All are controllable. Below we list information on these pests including cultivar susceptibility as well as control options.

Boxwood Leafminer

- One life cycle per year makes control relatively easy.
- For minor infestations, try pruning off pest-infested foliage in early spring.
- Contact insecticides targeting adult pests can be used during hatch but are seldom effective.
- Systemic insecticides are most effective.
- Select cultivars that are more resistant to leafminer.

The primary boxwood pest is the boxwood leafminer. For many years boxwood leafminer has been primarily concentrated in the Mid-Atlantic, however over the past decade it has become more widespread into the Northeast and Midwest. Over the period of several years, a lightly-infested plant can become discolored, yellowish-brown, and even defoliated. We have seen severe leafminer populations kill boxwood. The good news about boxwood leafminer is that there are effective control options and those options are simplified because there is only one generation of the pest per year.

Late summer boxwood leafminer infestation

Adult leafminer emerge over a two to three week period (depending on temperature) typically in late April to early May. To the naked eye, the adult leafminer appears to be a tan or orange mosquito. The adults who live only a week or two are very weak flyers and generally hover within inches of a boxwood after hatching because any wind will blow them away. The adults mate and

the female lays eggs in the tender new growth of the boxwood. The eggs hatch sometime in early summer, around mid to late June in central Virginia. The larvae begin a 9-10 month cycle during which they feed and live inside the leaf, causing it to blister. The blistering is most evident in winter to early spring of the following year. Depending on the degree of infestation, a leaf can contain as many as 10 or more larvae. In spring, the larvae turn into pupae, and around late April the flying adults emerge and begin a new cycle.

Saunders Brothers has done extensive work trying to determine the best means for control of boxwood leafminer. For minor infestations, some gardeners choose to prune off infected foliage in early spring before the adults emerge. This reduces the population of the pest but offers limited results in heavy infestations as populations can explode from unpruned foliage that is populated with leafminer. Chemical controls seem to be the best protection for boxwood leafminer. We have found it difficult to time a chemical application to kill leafminer adults. As discussed earlier, the life cycle is short, perhaps only a few days in some cases. Since you would have to spray every 2 or 3 days over a two week or more period, we think this control strategy is futile.

The most effective control of leafminer are systemic insecticides applied just after the eggs hatch around mid to late June in central Virginia. Since the larvae are alive, eating, and growing during the summer and fall, we have found systemic insecticides to be effective until temperatures turn cold, which in some years is not until late October or early November. When these chemicals are applied properly and thoroughly to all boxwood in a given area, you can receive control for up to 2-3 years because you eradicate nearly the entire population and it takes several years for a population to rise back up to noticeable levels.

Leafminer larvae and blisters in spring

Saunders Brothers has had very good success controlling leafminer with products that contain the active ingredient imidacloprid, thiomethoxam, or dinotefuran. However, we can relate only our experiences. Saunders Brothers is very aware of a great deal of ongoing discussion regarding these and other chemicals and their possible effect on pollinators. Please note, we are following science and alternative methods to control these pests in order to further eliminate our use of this group of pesticides. We seek to minimize our use of any pesticide by practicing Integrated Pest Management or IPM. Our goal, as well as that of IPM, is that any practice we use will minimize negative impacts on pollinators, the environment, and our employees. We advise any nurseryman, landscaper, or gardener to contact a local full-service garden center or Extension personnel for recommendations. As with any pesticide, read and follow the label.

The best strategy to minimize leafminer populations is to use resistant

varieties. We have researched more than 150 cultivars over the years and have found moderate to good resistance in some cultivars. We continue to research new varieties and attempt to understand why some cultivars are more susceptible than others. Based on tests at Saunders Brothers, relative susceptibilities of cultivars listed in this Boxwood Guide are listed on page 94 as well as on individual cultivar pages.

Astute gardeners should take into account many factors when choosing a boxwood cultivar. The cultivar's susceptibility to leafminer should be considered if the landscape or neighboring landscapes have high populations of leafminer or if they desire to minimize control measures.

Boxwood Psyllid

- Minor damage is aesthetic; heavy infestations can be treated.
- For light infestations, do nothing or prune out damaged tips before adults develop.
- Use insecticidal soaps and horticultural oil in late April and May to control nymphs.
- Consult Extension or your full-service garden center for other chemical controls.

Boxwood psyllid occur wherever boxwood are found. There is only one life cycle per year and the nymph emerges in mid-April or as new growth starts. Leaf damage is mostly superficial and not detrimental to the plant.

Psyllid damage on English boxwood

The nymph lives for about two months chewing on the new foliage, resulting in the upward cupping of the leaves. The cupping of the leaf protects the feeding psyllid. A sticky white deposit is often left on the foliage by the psyllid. Minor damage is mainly aesthetic but heavy infestations can eventually cause some defoliation. Typically in June, the winged adult emerges. It is very small (less than an 1/8 inch) and looks much like a tiny cicada. After mating, the adult female flies over the canopy of the plant and then lays her eggs under the bud scales of the plant. The eggs remain there until the following spring when they hatch as new growth emerges.

Control measures, if desired, vary based on severity of infestation. For minor infestations, do nothing or prune off affected foliage within a month or so of the new growth emerging. This will eliminate the nymphs before they mature into adults and lay new eggs. Another control measure is the use of horticultural oil or insecticidal soap in late April or early May as new growth is emerging. Timing is important. If too early, the scales of the boxwood protect the egg, and if too late the cupped leaves protect the nymph. Insecticides are available for severe infestations and as always, consult your local full-service garden center or Extension personnel for recommendations. Once the psyllid has cupped the

leaf, the pest may be controlled, but damage to the leaf cannot be corrected. In our experience, boxwood leafminer insecticides applied every 2-3 years have the added effect of eliminating psyllid populations.

Mites

- Damage in most cases is only aesthetic and can be overlooked.
- For minor infestations, try washing them off with a fast stream of water.
- For greater infestations, control by applying horticultural oil or other insecticides in summer.

The boxwood mite is actually a spider mite. It is very small and difficult to see with the naked eye or a hand lens. Gently hitting a branch over a piece of white paper will often allow you to see the mites when they fall onto the paper. Mite damaged leaves typically appear to have tiny white spots and marks on them. Damage is often superficial but can become a problem if the mite population becomes too great.

Mite damage

Mites generally begin hatching in late April to May and become most active in hot, dry summers. A typical mite has a life span of 2 to 3 weeks, thus in hot, dry summers there are many generations of this pest.

Control measures include washing off the mites with a fast water stream, natural predators, and the use of horticultural oils and other chemicals. Consult your local full-service garden center or Extension personnel for recommendations. Unfortunately, some of the insecticides used for control of boxwood leafminer seem to cause an increase in mite populations as they presumably kill predators of the mites. There appear to be some cultivars that are more resistant than others to boxwood mites. *Microphylla* cultivars seem to be more resistant, while some *Buxus sempervirens* cultivars seem to be more susceptible.

Wildlife

Boxwood are deer-resistant. Very few cases of deer browsing have ever been reported to Saunders Brothers.

BOXWOOD Diseases

Boxwood tend to be very disease resistant. In most instances, proper planting techniques, site selection, maintenance, and smart gardening will lessen disease occurrence and severity. There are several diseases that may infect boxwood. In the Boxwood Guide we will discuss four of the most common: *Phytophthora* (root rot), *Volutella* (stem blight), boxwood decline, and *Cylindrocladium buxicola* (boxwood blight).

Phytophthora (root rot)

- Purchase healthy plants from reputable suppliers.
- Avoid planting in poorly drained or wet soils.
- Plant properly to ensure good drainage. See page 5.
- If root rot is suspected, correct drainage and elevate or move the plant.

Phytophthora in sempervirens

Phytophthora, a fungus, is commonly called root rot. It is a disease that is found most commonly in heavy, poorly drained soils. It weakens the plant and will eventually kill it. Usually the first indication is that it appears the plant has stopped growing. The foliage turns to light green, then to brown, and finally to a straw color. This progression can take several months to a year or longer. *Phytophthora* will often selectively kill a branch or a section of the plant at a time. When a plant with *Phytophthora* is dug up, the ends of roots will pull off much like pulling the sheath off a knife. Roots will be brown instead of a healthy white or tan color.

Phytophthora is difficult to treat once it is visibly present. The best method of control is to avoid the disease by using good gardening practices. Remember, healthy new plants will stand a better chance of fighting off the disease than older, weaker plants.

When cultivars struggle with drainage and possible early stages of

Phytophthora, their foliage will begin to take on a yellowish or lime-colored tint. If the drainage issues are addressed quickly or the plant is moved or elevated, it can sometimes fight off the disease and return to a healthy green color.

Some cultivars appear to be less sensitive to *Phytophthora* including many of the *microphylla* cultivars. Many of the *sempervirens* cultivars tend to be more susceptible. 'Vardar Valley', 'Jensen', *sempervirens* (American), '*Suffruticosa*' (English), 'Elegantissima', and 'Justin Brouwers' as well as the *harlandii* cultivars are more susceptible when planted in poorly drained soils.

Volutella buxi (stem blight)

- Stress, poor conditions, or injury make boxwood more susceptible.
- Avoid overhead irrigation or watering.
- Prune to promote good air movement throughout the plant.
- If volutella is suspected, remove diseased limbs by pruning them out below infected area.
- Clean pruners regularly.
- Apply fungicides as needed.

Volutella is often a secondary infection after something has weakened or injured a plant. It is most prominent in times of high humidity and poor air movement. *Buxus sempervirens* 'Suffruticosa' (English) is prone to get *Volutella* due to its very dense habit.

Volutella is a fungus characterized by foliage that will turn bronze, then red, then yellow. Damage looks very similar to winter burn but the plant will not recover with spring flush of growth. Cankers will form on the branch, and the bark will typically break and fall or peel off the stem. In wet periods you may even see pink spores along infected areas. *Volutella* normally affects one limb at a time.

Because *Volutella* is most often considered a secondary problem, Saunders Brothers feels the best control is to minimize the primary problems of stress, injury, disease, and other damage. Avoiding conditions that are conducive to *Volutella* is the best means to control it. Boxwood are more susceptible to *Volutella* when they are under stress, in poor environmental conditions, or suffering from winter injury. Avoid overhead irrigation, maintain proper drainage, and thin plants to maximize air movement within the plant. *Volutella* often invades plants that have had winter damage such as heavy snow loads that have injured the bark. Sometimes *Volutella* may take a summer or two to invade a damaged plant as it awaits optimum conditions of warm temperatures, high humidity or moisture, and low air movement. Also, *Volutella* often follows boxwood blight and can mask its symptoms; again, it is typically secondary after blight has damaged the plant.

When *Volutella* is present, prune infected limbs several inches below cankers or broken bark. There are some fungicides available on the market to apply, but as mentioned above, proper care and culture are the best way to avoid the disease.

Boxwood Decline

- Only affects English boxwood ('Suffruticosa').
- Result of stress due to some sort of change in environment or culture.
- Long and slow decline with eventual death or unsightliness.
- Do not replant English or 'Jensen' in places where boxwood decline is suspected.
- Most evident in English in south and west, full sun exposures.

Boxwood decline only affects *Buxus sempervirens* 'Suffruticosa' or English boxwood. Some believe boxwood decline is a single disease, while others believe it is the result of many negative factors that descend on and eventually kill a boxwood. Saunders Brothers believes it is most likely the result of stress(es) that weaken a plant. Then, other diseases and stresses result in a declining boxwood and eventually kill the plant. Some people mistakenly call boxwood decline 'blight', however it should not be confused with *Cylindrocladium buxicola* (boxwood blight) that is discussed below. Boxwood decline is a slow killer while boxwood blight acts very rapidly when conditions are favorable.

Again, boxwood decline is a slow killer of only English boxwood. Over a period of months or a year, the gardener will see a single limb or group of limbs on an English boxwood turn from dark green to a lighter green, then to a light brown and finally the foliage will fall off. The limb can and should be removed. Then likely weeks, months, or even a year later additional sections of the plant will be affected. Over time, sometimes years, of removing multiple sections, the

Boxwood decline in English boxwood

plant will look undesireable and will need to be removed in its entirety. It is very typical to see a row of English boxwood where boxwood decline is affecting random plants, not consecutive ones.

Stresses that can bring on boxwood decline include: losing or removing a large tree that has shaded a plant for many years and suddenly the plant is in full sun, heavy snow that has caused visible and non-visible damage, severe drought, changes in surface or subsurface drainage that create excessive soil moisture, change of soil pH below 6.0, and other factors. In addition, the build up over time of soil nematodes weaken English boxwood. Once the plant is stressed, a multitude of things attack the plant.

There is no cure for boxwood decline. We believe the focus should be on avoiding the disease by reducing the stresses on the plant. To reduce the stresses that lead to boxwood decline, maintain high shade in south and west exposures, maintain mulch around the plant, monitor pH and keep it in the 6.5 to 7.0 range, and supply supplemental water during times of extreme drought. Remember watering should be deep, thorough, periodic, and applied directly to the soil and not to foliage.

When boxwood decline has decimated a plant and you are forced to remove it, do not replace it with another English or 'Jensen' boxwood. We have rarely seen success. However, we have seen very good results when English are replaced with other cultivars like 'Green Beauty', 'Winter Gem', 'Jim Stauffer', and other *microphylla* cultivars. As rule of thumb, we seldom recommend replanting with English boxwood in an garden where English have been in the past, even when they have been removed for reasons outside of boxwood decline. Unfortunately, English boxwood is becoming a plant of the past due to its disease susceptibility.

Cylindrocladium buxicola (boxwood blight)

Understanding Boxwood Blight

- Found in Europe in 1990's. Introduced into U.S. in 2011.
- Only affects plants in the Buxaceae family including *Buxus* (boxwood), *Sarcococca* (sweet box), and *Pachysandra* (spurge).
- Spores are heavy and sticky and are moved on plants or by people, equipment, and splashing water.
- Fungus appears as brown or black spots on foliage with yellow or brown rings.
- After defoliation, infected areas usually have black streaks in the stem.
- Fungus is fast moving in wet and mild temperatures (65-75° F is ideal).
- In prolonged dry, hot, or cold weather, the fungus goes dormant only to reappear in wet, mild temperatures.
- Fungus can survive for years in infected debris either on the plant or in the soil.
- Once in the landscape, the fungus can be surpressed but not eliminated.
- Current chemical options can kill active spores but not the disease.
- The best control measure is to plant tolerant cultivars.

The disease, boxwood blight or box blight, is caused by the fungal pathogen *Cylindrocladium buxicola (*syn. *Calonectria pseudonaviculata)*. This disease only affects plants in the *Buxacea* family which includes *Buxus* (boxwood), *Sarcococca* (sweetbox) and *Pachysandra* (spurge). Boxwood blight was found in Europe in the late 1990's and officially documented in the United States in the fall of 2011. It is unknown how the pathogen was introduced to the US but it was likely on infected plant material.

Boxwood blight lesions on foliage

Defoliation caused by boxwood blight

Understanding boxwood blight is a high priority among research facilities in both Europe and the United States. There is research exploring many facets including tolerant cultivar breeding, chemicals to manage and eliminate the disease, and control and management practices for production as well as in the landscape. Boxwood blight is a fungus that attacks the foliage of boxwood. It first appears as black or dark brown spots on foliage. In a few days, those spots will develop yellow to brown rings around them and cover the leaf. Infected leaves fall off the plant in a matter of a week or so. Stems near infected leaves will develop streaked black stem lesions or cankers.

The boxwood blight spore is heavy and sticky. Unlike most fungi it is not spread by wind with the exception of a driving rain. It is typically introduced to a plant by contact with infected plants and debris, tools and equipment, clothing, animals, water splash, or other means of direct contact.

Optimal Conditions for Boxwood Blight

- Fungus must be present.
- Continual wet foliage from irrigation, rain, or high humidity.
- Temperatures of 60-80° F (Ideal range of 70-75° F).
- Little air movement.

Boxwood blight is most prominent in times when foliage is continually wet from constant irrigation, prolonged rain, or high humidity, and temperature 60° to 80° F. If the fungus is introduced in non-optimal conditions (extreme cold or heat, dry foliage), the disease struggles to become established. However, when optimal conditions exist and the fungus is present, it can and will move quickly if the host plant is susceptible. When conducive conditions subside, the fungus

English boxwood with severe boxwood blight

will go dormant in the form of microsclerotia or black streaks in the limbs of affected plants or debris. They can reside in stems of the plant or in debris in the soil. The fungus can then lie inactive for long periods of time (five years or more) and reappear when conditions become conducive again.

Prevention and Control of Boxwood Blight

- Educate yourself and others who garden.
- Purchase boxwood from educated and prepared suppliers.
- Use landscapers and lawn care companies who are aware of and educated about the disease and use practices to prevent introducing or spreading the disease.
- Clean tools and equipment regularly, and launder clothes daily.
- Lessen or eliminate sharing of tools across other landscapes.
- Prune and plant boxwood to promote good airflow in and around the plant.
- Avoid overhead irrigation. Dry foliage is important.
- Choose cultivars carefully based on desired size and tolerance to boxwood blight.
- Mulch to lessen water splash. See Mulching on page 11.

Like most diseases boxwood are subject to, boxwood blight is best avoided with good cultural and care practices. Educate yourself and other gardeners about the disease and know how to identify it. There is a great deal of information available on the internet and other publications on the disease. Understand how to minimize the disease's movement within the landscape, as it can be present and not yet known. You should purchase healthy plants from reputable suppliers who are aware of the disease and are taking steps to avoid and control the movement of it. Many states now have boxwood blight compliance agreements that nurseries can or must participate in. We recommend that you have discussions with anyone who helps maintain a landscape including those who mow lawns. Are they aware of the disease and are they taking steps to lessen the movement of boxwood blight in the event they are exposed to it? Have they been in multiple other landscapes before coming to your garden?

Anyone working in and around boxwood should wear freshly laundered clothes. Hot water from laundering will kill the spores. Properly clean tools and equipment with disinfecting agents like alcohol, bleach, and other products before and after use in boxwood.

Avoid overhead irrigation when possible, since dry foliage is less likely to become infected if the spores are introduced. In addition, the disease is slower to spread when foliage is kept dry. Plant and prune boxwood to maintain good air flow in and around them. This will allow the boxwood to dry much faster after wet periods thus reducing the infection likelihood. Mulch every two years or so to lessen water splash that can move the disease. Recent research shows the value of properly mulched boxwood in the control and management of box blight.

Properly select cultivars for each application based on ultimate desired size and shape to avoid over-pruning. Many problems, in addition to box blight, can occur if a plant is too big for its specific application in the landscape and it must be pruned heavily to maintain ideal size. If heavy shearing is necessary for the desired application, care should be taken to annually thin the plant to allow air penetration into the plant. In gardens that tend to be wetter with less air movement or where boxwood blight has been found, carefully choose cultivars that are more tolerant of boxwood blight.

Chemical Control of Boxwood Blight

Chemical tests for prevention and control of boxwood blight are ongoing. At the time of publication of the 5th Edition Boxwood Guide, there are multiple fungicides that are considered to be viable options for prevention of boxwood blight, however, there are none that can be considered curative.

Preventative fungicide application

Preventative fungicides are effective at killing spores if they are introduced. These fungicides should be applied on a regular basis during times of potential infection. In central Virginia, the typical infection period begins in early to mid-April and ends in late October. However, it should be noted that fungicide applications must be done in conjunction with other prevention and control measures. If newly purchased boxwood are put in quarantine as a precaution, we do not recommend the use of any fungicides for a minimum of 30 days or more. The waiting period will allow any fungicide that may be present to dissipate and allow the disease, if present, to proliferate if conditions are conducive.

There are no chemicals at this point that are considered options to totally

stop or eliminate the disease once it is present. Once boxwood blight develops microsclerotia or black streaks within the stems or debris, chemicals cannot kill it; they can be used only to lessen sporulation. Saunders Brothers does recommend the use of fungicides by anyone removing boxwood that are infected with boxwood blight. The application of fungicide will kill spores that are present, as well as any new ones that are being produced, thus lessening the likelihood of further infection. For this reason, some gardeners are using fungicides in infected gardens to lessen the spread of the disease if they choose to not remove infected plants. But please remember the fungicide is only killing the spore and not the disease. Consult your local full-service garden center or contact your local Extension office for the latest updates.

Cleanup of Boxwood Blight

If suspected:

- Take samples and limit access to area until results are obtained.

If confirmed:

- Consult your Extension office for recommendations.
- Take great care not to further spread disease.
- Do cleanup on dry, sunny days when foliage is not wet.
- Consider fungicide applications before and during cleanup to lessen sporulation.
- Consider wearing rubber boots and disposable clothing during cleanup to lessen contamination of clothing and shoes.
- Cut and place the infected plants in a plastic bag and take care to catch as much leaf litter as possible.
- After cleaning up leaf debris, remove roots.
- Debris should be burned or taken to landfill with care not to let leaves escape.
- After cleanup, wash skin, launder or dispose of outer clothing, and wash boots.
- Increase airflow in and around remaining plants by thinning and removing lowest limbs.
- All tools and equipment should be thoroughly cleaned when moved between different gardens or areas.
- Be sure to mulch to lessen the splashing of spores.
- Replant boxwood that are tolerant of boxwood blight.
- Monitor boxwood in times of optimal conditions for new infections and flare-ups.

If you suspect the disease in the landscape, you should take great care in collecting samples by double bagging them and taking them to the local Extension office or another testing lab. The area should be roped off or temporarily fenced off until the results are obtained.

If boxwood blight is confirmed, you must be diligent and careful in cleanup. Extreme care should be taken to avoid infecting other plants with debris or plant contact. Contact your local Extension office for the newest cleanup recommendations as they are changing periodically with scientific advancements.

We recommend you choose a time to cleanup when it is sunny and when foliage is dry. Again, the plant is less likely to be sporulating when foliage is dry. Consider applying fungicides to any area where you are working to kill any spores that are present. Your local Extension office can provide fungicide recommendations.

We recommend you wear some sort of disposable suit, like disposable Tyvek® coveralls. Also, wear rubber boots as they can easily be cleaned. If possible put a plastic bag over the infected plant and cut the plant off at the base. Take care to catch as much leaf litter as possible. Then, clean up any leaves that were missed before disturbing the roots as you do not want to incorporate diseased debris into the soil. After all debris is cleaned up, remove the roots. All debris should be bagged or covered to eliminate the possibility of it blowing or falling out. Do not compost the debris. Burning the debris is a good option. Some studies recommend the burying of debris, but you must be careful to bury it a minimum of two feet or more in a place where you do not intend to plant boxwood again. The disease can live for long periods of time in buried debris.

After the cleanup is complete, remove outer clothing and launder or dispose of it. Laundering with detergent and hot water will kill spores. Boots should be thoroughly washed and all tools and equipment should be carefully cleaned as well. We also recommend that you prune any other boxwood in the landscape to increase airflow to maintain dry foliage. Remove any limbs that touch the ground and might get rain splash, and be sure plants are properly mulched. Continue to monitor any boxwood during environmental conditions conducive to infection (warm 60-80° F, wet, and little air movement).

Boxwood blight infected *sempervirens* thriving with good air movement and mulch

Since 2011 when boxwood blight was first discovered in the United States, we have learned a great deal with regard to control and living with the disease. The early assumption was that any landscape that is infected by boxwood blight would need to be totally destroyed. If the landscape is primarily *Buxus* 'Suffruticosa' (English), which is very susceptible to boxwood blight, then we

would likely agree. At a minimum one should remove any plants in the vicinity of the infected plants and closely monitor all other plants. However, we have seen landscapes of *Buxus sempervirens* (American), which are somewhat tolerant to boxwood blight, survive and thrive if certain steps are taken. You should remove the diseased sections, prune to increase air movement within the plant, remove lower limbs, and mulch to lessen splashing of spores from the ground. In addition, the plants should be carefully monitored when infection is likely.

Tolerance to Boxwood Blight

- *Sempervirens* cultivars are typically more susceptible.
- *Microphylla, insularis,* and *harlandii* cultivars and species are typically more tolerant.
- Open and upright plants, including some *sempervirens* tend to be more tolerant.
- Shorter, more compact plants, including some of the *microphylla* tend to be more susceptible.
- See page 94 for a summary sheet or see individual cultivar pages for more information.

Boxwood blight research is producing a large amount of valuable information. When tested in a lab in petri dishes, all boxwood are susceptible to boxwood blight. However, we are finding significant differences when tested in landscape or production scenarios. *Buxus sempervirens* 'Suffruticosa' (English boxwood) is the most susceptible cultivar. We have learned there is boxwood

Boxwood blight susceptibility research. English boxwood (L) and 'Green Beauty' (R).

blight tolerance in boxwood cultivars, particularly the *microphylla, insularis,* and *harlandii* species and cultivars. It is difficult to completely group based on species as we have found exceptions based on plant shape and structure. Open, more upright plants tend to be more tolerant while short, compact cultivars seem

to be more susceptible. A great deal of research is ongoing to discover additional cultivars that will be tolerant to boxwood blight.

Based on current boxwood blight research, we have listed the relative tolerances of the cultivars listed in the Boxwood Guide. A summary of this information can be found in the back of this book or on individual cultivar pages. We are all learning more about this disease on a daily basis.

Boxwood blight tolerant cultivars in production

Morris Midget

Cultivar: *Buxus microphylla* var. *japonica* 'Morris Midget'

Zone: 6-8

Growth Rate: Very slow, 0.5 to 1 inch per year

Sun Exposure: Part sun or shade

Attributes: 'Morris Midget' is a small dwarf cultivar. It is very compact. In full winter sun, some bronzing will occur but new spring growth will cover the bronzing. The growth rate of this cultivar makes it an appealing plant where space is limited. It responds well to pruning or can be left unpruned. It is slightly smaller than 'Morris Dwarf'. Deer resistant.

Care: 'Morris Midget' requires little to no pruning when used as a specimen. It responds well to shearing when used in edging, parterres, and knot gardens. Thinning is recommended in late winter or early spring which will help reduce chance of disease. Remove any sports with hand pruners by cutting sporting stems back into interior of the plant.

'Morris Midget' is somewhat resistant to boxwood leafminer but very susceptible to boxwood blight. It has few pest or disease issues when planted and cared for properly.

Comments: This is the smallest boxwood we grow. Be patient with it, as it is a very slow grower. We have seen it grown in full sun; however, for best results, plant this boxwood in areas with afternoon shade.

Uses: Small specimen, low hedge, edging, parterre or knot garden

Substitutes: 'Morris Dwarf', 'Grace Hendrick Phillips', 'Green Pillow'

- **Size at 15 years:** 1' Tall x 1' Wide
- **Size at 25 years:** 1.5' Tall x 2' Wide

Morris Dwarf

Cultivar: *Buxus microphylla* var. *japonica* 'Morris Dwarf'

Zone: 6-8

Growth Rate: Very slow, 0.5 to 1 inch per year

Sun Exposure: Part sun or shade

Attributes: 'Morris Dwarf' is an excellent performing cultivar that is very compact. In winter sun, it will bronze; however, in spring new growth will quickly cover the bronzing. It is outstanding for edging formal beds or in parterre gardens and is very low maintenance. It responds well either pruned or left unpruned and is slightly larger than 'Morris Midget'. Deer resistant.

Care: 'Morris Dwarf' requires little to no pruning when used as a specimen. It responds well to shearing when used in edging, parterres, and knot gardens. Thinning is recommended in late winter or early spring which will help reduce chance of disease. Remove undesirable sports with hand pruners by cutting sporting stems back into interior of the plant.

'Morris Dwarf' is very resistant to boxwood leafminer but very susceptible to boxwood blight. It has few pest or disease issues when planted and cared for properly.

Comments: We have seen it in numerous full sun landscapes but, for optimal beauty, plant it so it receives at least afternoon shade. Remember it is a dwarf boxwood and you must be patient with its growth. 'Morris Dwarf' were planted in a stunning knot garden at Mount Vernon, outside of Washington D.C.

Uses: Small specimen, low hedge, edging, parterre or knot garden

Substitutes: 'Morris Midget', 'Grace Hendrick Phillips', 'Green Pillow'

- **Size at 15 years:** 1' Tall x 1.25' Wide
- **Size at 25 years:** 1.5' Tall x 2.25' Wide

Grace Hendrick Phillips

Cultivar: *Buxus microphylla* 'Grace Hendrick Phillips'

Zone: 6-8

Growth Rate: Slow, 0.75 to 1.5 inches per year

Sun Exposure: Part sun or shade

Attributes: 'Grace Hendrick Phillips' mounds and spreads very much like some of the dwarf Japanese hollies. The growth rate is slow enough that it does not outgrow the landscape but fast enough to be used as a primary plant in many landscapes. Be patient in the spring, as new growth appears slightly later than most boxwood. New foliage is light green and matures to a darker green. Deer resistant.

Care: 'Grace H. Phillips' requires little to no pruning, except when used in edging, parterre, or knot gardens. If pruning is necessary, use hand pruners or shears. Occasional sports occur on this plant and they should be removed. Some thinning in late winter or early spring will help reduce disease incidence.

'Grace H. Phillips' is very resistant to boxwood leafminer but somewhat susceptible to boxwood blight. It has few pest or disease issues when planted and cared for properly.

Comments: This boxwood was highly rated in the National Boxwood Trials. Its spreading habit is very appealing. We have even seen mature plants cascading in a rock garden or spreading like a groundcover.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes: 'Morris Dwarf', 'Green Pillow', 'Morris Midget'

- **Size at 15 years:** 1′ Tall x 2′ Wide
- **Size at 25 years:** 1.5′ Tall x 3′ Wide

Green Pillow

Cultivar: *Buxus microphylla* 'Green Pillow'

Zone: 5-8

Growth Rate: Slow, 0.75 to 1 inch per year

Sun Exposure: Part sun or shade

Attributes: 'Green Pillow' is known for its naturally dense, compact, oval habit. Its foliage is lime-green and its shape is larger but very much resembles 'Morris Dwarf' and 'Morris Midget'. In winter sun this cultivar will bronze; however, bronzing or foliage burn will quickly disappear when new growth appears in spring. Deer resistant.

Care: 'Green Pillow' needs very little to no pruning in most applications. It will need pruning if it is used for edging, or a parterre, or a knot garden. Use hand pruners or shears. Remove sports with hand pruners by cutting sporting stems back into interior of the plant. Thinning in late winter or early spring will help reduce possibility of disease.

'Green Pillow' is very resistant to boxwood leafminer but somewhat susceptible to boxwood blight. When properly planted and cared for, this plant has few disease or pest issues.

Comments: Plant this cultivar in shade and watch it thrive. It literally looks like a pincushion. 'Green Pillow' were planted to surround the Jackie Kennedy Rose Garden at the White House in Washington, D.C.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes: 'Morris Dwarf', 'Grace Hendrick Phillips', 'Morris Midget'

- **Size at 15 years:** 1.25′ Tall x 1.5′ Wide
- **Size at 25 years:** 2′ Tall x 3′ Wide

insularis ‘Nana’

Cultivar: *Buxus sinica* var. *insularis* ‘Nana’

Zone: 6-8

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Part sun or shade

Attributes: *Insularis* ‘Nana’ is a low spreading cultivar with lime green new growth in the spring. New growth will slowly fade to a light green. Although considered a smaller cultivar, it is a somewhat fast grower. It is very similar to the cultivars ‘Franklin’s Gem’ and ‘Tide Hill’. Deer resistant.

Care: Prune *insularis* ‘Nana’ lightly in late winter or early spring to make a stronger and denser plant. This cultivar can be pruned with shears or hand pruners. Thinning is not typically necessary but, if this cultivar is sheared heavily, some thinning in late winter to early spring will allow air and sunlight to penetrate the plant.

Insularis ‘Nana’ is very resistant to boxwood leafminer and very tolerant to boxwood blight. It has few pest or disease issues when planted and cared for properly.

Comments: ‘Nana’ is becoming increasingly popular due to its tolerance to boxwood blight and resistance to boxwood leafminer. An annual light pruning will help develop rigidity in this boxwood and lessen the chance of the plant opening up in the center as it matures. Recent genetic testing data indicates ‘Nana’ and ‘Franklin’s Gem’ are basically the same plant.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes: ‘Franklin’s Gem’, ‘Little Missy’, ‘Justin Brouwers’, ‘Vardar Valley’

- **Size at 15 years:** 1.5′ Tall x 3′ Wide
- **Size at 25 years:** 2′ Tall x 4′ Wide

Franklin's Gem

Cultivar: *Buxus microphylla sinica* 'Franklin's Gem'

Zone: 5-8

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Part sun or shade

Attributes: 'Franklin's Gem' is a low spreading cultivar with lime green new growth in the spring. New growth will slowly transition to an olive-green. It is very similar to the cultivars *insularis* 'Nana' and 'Tide Hill'. Deer resistant.

Care: 'Franklin's Gem' should be pruned lightly in late winter to early spring to make a stronger and denser plant. This cultivar can be pruned with shears or hand pruners. Thinning is not typically necessary but, if this cultivar is sheared heavily, some thinning in early spring would be beneficial.

'Franklin's Gem' is very resistant to boxwood leafminer and very tolerant to boxwood blight. It has few pest or disease issues when planted and cared for properly.

Comments: A light annual pruning will lessen the tendency of the plant to open up in the center over time. Demand for 'Franklin's Gem' is greatly increasing as tests show its resistance to leafminer and tolerance to boxwood blight. Recent genetic testing shows it is possibly the same plant as *insularis* 'Nana'.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes: *insularis* 'Nana', 'Little Missy', 'Justin Brouwers', 'Vardar Valley'

- **Size at 15 years:** 1.5′ Tall x 3′ Wide
- **Size at 25 years:** 2′ Tall x 4′ Wide

Little Missy

Cultivar: *Buxus microphylla* 'Little Missy' PP24703

Zone: 5-8

Growth Rate: Slow to medium, 1.5 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Little Missy' is a compact rounded cultivar. It is extremely cold hardy and sun tolerant. It can be used in applications where a smaller sized or sheared plant is desired. It is a great choice for uses where a 2'x2' plant is called for. Foliage is very dark green and comes to a pronounced point at the end of the leaf. Deer resistant.

Care: 'Little Missy' requires little to no pruning, but a light shearing each late winter will increase its compactness. It is considered a Zone 5 boxwood thus it tends to be hardier than some other *microphylla* cultivars.

'Little Missy' is somewhat resistant to boxwood leafminer and very tolerant to boxwood blight. It has very few pest or disease issues when planted and cared for properly.

Comments: 'Little Missy' is a winner. Its shape and size remind us of a half-sized 'Green Velvet'. It is also a great option to use as a substitute for 'Justin Brouwers'. It was found in a production area by West Virginia nurseryman Norman Cole. Norman has had the plant go through -18° F with no damage. Its winter hardiness and durability, disease tolerance, pest resistance, along with its smaller size are all pluses for this plant.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes: 'Justin Brouwers', 'Green Gem', 'Green Velvet', Chicagoland Green™, 'Green Mound'

- **Size at 15 years:** 2' Tall x 2' Wide
- **Size at 25 years:** 3' Tall x 3' Wide

Justin Brouwers

Cultivar: *Buxus sempervirens* 'Justin Brouwers'

Zone: 6-8

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Justin Brouwers' is a compact, mounding to rounded cultivar. It is extremely versatile. It can be used in applications where it is pruned or in gardens with minimal to no pruning. Foliage is a spectacular deep-green color even in winter. It holds its foliage deep into the interior of the plant. Deer resistant.

Care: 'Justin Brouwers', as a juvenile plant and up to about 10-12 inches, has a slightly upright habit. An annual pruning to round the plant should occur in late winter or early spring. Thereafter it can be left basically unpruned and will develop into a plant that is somewhat rounded. An occasional light pruning in late winter or early spring may be preferred. When used as edging, parterre, or knot gardens, pruning and shearing will be necessary. Use hand pruners or shears. Thinning in late winter or early spring is recommended to lessen disease occurrence.

'Justin Brouwers' is very susceptible to boxwood leafminer and very susceptible to boxwood blight. Special care should be taken when planting to ensure the plant is properly elevated and all drainage issues are addressed as it is sensitive to poorly drained soils.

Comments: Recent boxwood DNA tests have shown that 'Justin Brouwers' is a *sempervirens* cultivar and not a *sinica insularis*. 'Justin Brouwers' has been a favorite of ours for many years as a replacement for 'Suffruticosa' (English boxwood). Gardeners should be aware of its boxwood blight susceptibility especially when sheared tightly or in areas of low air movement. If planted correctly this plant is stunning; however, we have seen cases where it is planted in areas of poor drainage and the plant struggles.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes:'Little Missy', 'Green Gem', 'Green Velvet', 'Richard', 'Green Mound'

- **Size at 15 years:** 2′ Tall x 2.25′ Wide
- **Size at 25 years:** 3′ Tall x 3.5′ Wide

Richard

Cultivar: *Buxus harlandii* 'Richard'

Zone: 7-9

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Part sun or shade

Attributes: 'Richard' has unique rounded foliage with an indentation at the tip almost creates a heart shaped leaf. At first glance, it's unusual shaped foliage and glossy texture make 'Richard' easily mistaken as a non-boxwood. The plant's habit is very vase shaped and slightly wider than tall. It is part of the *harlandii* species of boxwood that are thought to have come from southeast Asia or China. Deer resistant.

Care: 'Richard' should be placed in the landscape where it is sheltered from harsh winter winds and extreme cold. It flushes relatively early in spring, thus is more prone to frost damage. In spite of its lack of cold hardiness, it's unique foliage greatly adds to the landscape. 'Richard' requires little to no pruning.

'Richard' is very resistant to boxwood leafminer and very tolerant to boxwood blight. It has very few other disease or pest issues.

Comments: The foliage of 'Richard' is nearly as large as a penny and the heart shape is very unique. We love this plant when it is planted in a protected area. In central Virginia, we have placed it in protected sites on the east or northeast side of the landscape and it has done well, however in the west and southwest locations where it is unprotected, it has suffered winter damage. The *harlandii* group is showing very good tolerance to boxwood blight, thus creating a stir in the boxwood world.

Uses: Small specimen, low hedge, foundation plant

Substitutes: 'Little Missy', *harlandii,* 'Green Gem'

- **Size at 15 years:** 1.75′ Tall x 2′ Wide
- **Size at 25 years:** 2.5′ Tall x 3′ Wide

harlandii

Cultivar: *Buxus harlandii* (Harlandii Boxwood)

Zone: 7-9

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Part sun or shade

Attributes: *Harlandii* is a vase shaped grower with unique foliage that is long and slender. Leaves are approximately 1½" long and $^{3}/_{8}$" wide. With a habit that is slightly taller than wide, *harlandii* will tend to create a nearly drooping habit where foliage goes up and over. Deer resistant.

Care: *Harlandii* should be planted in a protected location in the landscape due to its hardiness of Zone 7. In unprotected areas, it will likely receive winter cold damage. It is one of the first boxwood to flush in spring, thus it is more prone to spring frost damage. *Harlandii* requires little to no pruning.

Harlandii is very resistant to boxwood leafminer and very tolerant to boxwood blight. It has very few other disease or pest issues.

Comments: We chose to grow *harlandii* due to its unique foliage, as well as the demand we have received from customers in warmer regions of the Mid-Atlantic. The *harlandii* species of boxwood is being used in many tests, breeding programs, and experiments due to its excellent tolerance to boxwood blight.

Uses: Small specimen, low hedge, foundation plant

Substitutes: 'Richard'

- **Size at 15 years:** 2.25' Tall x 2' Wide
- **Size at 25 years:** 3' Tall x 2.75' Wide

Jensen

Cultivar: *Buxus sempervirens* 'Jensen'

Zone: 6-8

Growth Rate: Slow to medium, 1 to 2 inches per year

Sun Exposure: Part sun or shade

Attributes: 'Jensen' is a rounded cultivar that closely resembles *Buxus sempervirens* 'Suffruticosa' (English). It has bluish-green new growth in the spring that turns to a deep green by mid to late summer. Foliage is slightly larger than English. It thrives in dappled shade and soils with good drainage. Deer resistant.

Care: 'Jensen' flourishes when left basically unpruned. It should never be sheared. Shearing will increase canopy density and increase the chance of disease problems. Avoid uses where heavy pruning is necessary. Thinning is recommended either in winter for holiday decorations or in late winter to early spring before new growth appears. This will help sunlight and air to penetrate the canopy of the plant and reduce disease incidence. Use hand pruners.

'Jensen' is somewhat resistant to boxwood leafminer but very susceptible to boxwood blight. To lessen disease issues, it is important that proper planting and pruning techniques are used, as well as, the proper site is chosen. Monitor soil pH and maintain in 6.5-7.0 range.

Comments: We began growing 'Jensen' when we saw its beautiful blue foliage and its potential to be more resistant to some of the diseases affecting English boxwood. It shows most promise if planted on a new site where there has not been diseased English boxwood, there is good drainage, and there is full shade or afternoon shade. However, when planted in full sun, in an area with poor drainage, or as a replacement of diseased English boxwood, it will struggle.

Uses: Medium specimen, low hedge, foundation plant, foliage for holiday decorations

Substitutes: 'Little Missy', 'Justin Brouwers', 'Green Gem', 'Green Velvet', Chicagoland Green™, 'Green Mound'

- **Size at 15 years:** 2.25′ Tall x 2′ Wide
- **Size at 25 years:** 3′ Tall x 3′ Wide

Suffruticosa (English)

Cultivar: *Buxus sempervirens* 'Suffruticosa' (English Boxwood)

Zone: 6-8

Growth Rate: Slow to medium, 1 to 2 inches per year

Sun Exposure: Part sun or shade

Attributes: 'Suffruticosa' (English) is known for its soft, billowy outline and lush foliage. English boxwood is often referred to as "dwarf boxwood" due to its slow growth rate. However, in an ideal environment, the plant will continue to grow for 75 to 150 years and develop into a very large shrub. As a result, take care to avoid using this plant where it will ultimately be too large for the desired use. English boxwood has a distinct odor. Deer resistant.

Care: English boxwood thrives in shade or partial shade and when left unpruned. Never shear as it will increase the foliage density and thus the chance of disease problems. Thinning is recommended in either early winter for holiday decorations or in late winter to early spring. This will help sunlight and air to penetrate the canopy of the plant and reduce disease incidence. Use hand pruners.

English boxwood is very resistant to boxwood leafminer but very susceptible to boxwood blight. Take special attention when planting and caring for English boxwood as it is prone to disease issues. Do not replant it in areas where other English boxwood have died due to disease problems or on sites where English boxwood were previously planted. Avoid areas with poor drainage and areas with direct afternoon sun. Monitor soil pH and maintain in 6.5-7.0 range.

Comments: English boxwood in its optimal environment is untouched in its beauty. It has probably been the most extensively planted boxwood in the United States over the past 100 years. However, many people have planted it on undesirable sites and the plant has not done well. If conditions are questionable, consider a different cultivar. Unfortunately, this may be a plant of the past.

Uses: Medium specimen, foundation plant, foliage for holiday decorations

Substitutes: 'Little Missy', 'Justin Brouwers', 'Green Beauty', 'Green Velvet', 'Green Mound', 'Green Gem'

- **Size at 15 years:** 2.25′ Tall x 2′ Wide
- **Size at 25 years:** 3′ Tall x 3′ Wide

Green Gem

Cultivar: *Buxus* x 'Green Gem'

Zone: 5-8

Growth Rate: Medium, 2 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Green Gem' is a cold-hardy hybrid boxwood with a spherical habit. It is often referred to as being in the "Green Series" of boxwood (see 'Green Velvet' for more information). It is very similar in shape to 'Green Mound' but slightly smaller. To minimize bronzing, avoid planting in areas of direct winter sun. Deer resistant.

Care: 'Green Gem' should be lightly pruned in late winter or early spring to maintain desired shape. Use hand pruners or shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant which reduces the chance of disease.

'Green Gem' is very susceptible to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight.

Comments: It was developed in Canada at Sheridan Nurseries. This boxwood has been planted extensively over the past 20-30 years. Its hardiness and non-domineering size have been popular with many landscapers.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden, containers

Substitutes: 'Little Missy', 'Justin Brouwers', 'Green Velvet', 'Green Mound', Chicagoland Green™

- **Size at 15 years:** 2′ Tall x 2′ Wide
- **Size at 25 years:** 2.75′ Tall x 2.75′ Wide

Elegantissima

Cultivar: *Buxus sempervirens* 'Elegantissima'

Zone: 6-8

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Part sun or shade

Attributes: 'Elegantissima' will add color to the landscape with its green leaves accented with creamy-white edges. Its creamy variegation differs from many of the white margined cultivars. Use the foliage in holiday decorations. Avoid poorly drained soils. Deer resistant.

Care: With minimal to no pruning 'Elegantissima' will develop into a slightly pyramidal plant. If a more rounded shape is desired, prune lightly in late winter or early spring. Thinning is recommended either in winter for holiday decorations or in late winter to early spring before new growth appears. This will help sunlight and air penetrate the canopy of the plant which reduces disease incidence.

'Elegantissima' is somewhat resistant to boxwood leafminer but very susceptible to boxwood blight.

Comments: The color of the foliage on this cultivar makes it a winner. We have seen it planted in full sun but it prefers some shade especially in the afternoon. It can really brighten shaded areas. It is a *sempervirens* cultivar, so at time of planting it is important to properly elevate the plant and address all drainage issues.

Uses: Small specimen, low hedge, foundation plant, foliage for holiday decorations, containers

Substitutes: Golden Dream

- **Size at 15 years:** 2.5′ Tall x 2′ Wide
- **Size at 25 years:** 3.5′ Tall x 3′ Wide

Golden Dream

Cultivar: *Buxus microphylla* Golden Dream ('Peergold') PP16052

Zone: 6-8

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: Golden Dream has a beautiful rounded and compact habit. The foliage is edged with heavy golden variegation. From a distance, the variegation makes the entire plant nearly a lime-green color. Deer resistant.

Care: Golden Dream can be pruned lightly in late winter or early spring to maintain desired habit. Use hand pruners and shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant.

Golden Dream is very resistant to boxwood leafminer and very tolerant to boxwood blight. It has few pest or disease issues when planted and cared for properly.

Comments: This promising boxwood is relatively new to the market. Remember it offers more of a lime coloring than the traditional white or creamy variegation. We like the fact that it is a *microphylla* and believe that it will be more tolerant to sunny locations as well as marginal soil conditions. In late fall and winter, we have seen this cultivar take on a natural orange tint as orange-red spots appear in the variegation. It seems to be a characteristic of the plant, so don't be alarmed as it will quickly disappear in the spring as temperatures rise and new growth emerges.

Uses: Medium specimen, medium hedge, foundation plant, foliage for holiday decorations

Substitutes: 'Elegantissima'

- **Size at 15 years:** 3′ Tall x 3′ Wide
- **Size at 25 years:** 4′ Tall x 4′ Wide

Buddy

Cultivar: *Buxus sempervirens* 'Buddy'

Zone: 6-8

Growth Rate: Medium, 2 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Buddy' has beautiful, dark green, large leaves. Its rounded habit is slightly wider than tall. The habit and overall look of the plant is very similar to 'Green Velvet'. Deer resistant.

Care: 'Buddy' should be lightly pruned with hand pruners or shears in late winter or early spring to maintain desired shape. Thinning is not necessary but as with all boxwood, it will increase airflow and decrease disease incidence.

'Buddy' is very resistant to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight. 'Buddy' has few other pest or disease issues when planted and cared for properly.

Comments: 'Buddy' was added to our boxwood production because of its high resistance to boxwood leafminer while looking nearly identical to 'Green Velvet'.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden

Substitutes: 'Green Velvet', Chicagoland Green™, 'Green Mound', 'Green Gem', 'Little Missy'

- **Size at 15 years:** 2′ Tall x 2.5′ Wide
- **Size at 25 years:** 2.75′ Tall x 3.5′ Wide

Green Velvet

Cultivar: Buxus *x* 'Green Velvet'

Zone: 5-8

Growth Rate: Medium, 2 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Green Velvet' has a somewhat rounded habit that is slightly wider than tall. The foliage on this cultivar is a beautiful medium to light-green in spring and slowly transitions to a dark green. It is a cold-hardy hybrid boxwood that was developed in Canada. It is a selected seedling cross between *Buxus sempervirens* and *Buxus sinica* var. *insularis* and part of the "Green Series" of boxwood which include 'Green Mountain', 'Green Mound', 'Green Gem', and 'Green Velvet'. It is very similar to the cultivar Chicagoland Green™. 'Green Velvet' will bronze slightly in winter especially when exposed to direct sunlight. Typically, in spring, as temperatures rise, bronzed foliage will brighten and new growth will quickly transform the plant to green. Deer resistant.

Care: 'Green Velvet' should be pruned lightly in late winter or early spring to maintain desired habit. It may be sheared into edging and other formal applications. Use hand pruners or shears. Thinning is not necessary but, as with any boxwood, it will help increase airflow and sunlight penetration into the interior of the plant which reduces the chance of disease.

'Green Velvet' is very susceptible to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight.

Comments: 'Green Velvet' has been very popular for the past 20-30 years, however we are seeing better alternatives today. We have seen and heard some reports of root issues possibly related to poor drainage, which may be explained by its *sempervirens* parentage. In many landscapes, it will reach its 15 year size at a moderate speed then very slow growth afterwards.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden, containers

Substitutes: Chicagoland Green™, 'Buddy', 'Green Mound', 'Green Gem', 'Little Missy'

- **Size at 15 years:** 2′ Tall x 2.5′ Wide
- **Size at 25 years:** 2.75′ Tall x 3.5′ Wide

Chicagoland Green™

Cultivar: *Buxus* x Chicagoland Green™ ('Glencoe')

Zone: 5-8

Growth Rate: Medium, 2 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: Chicagoland Green™ will grow slightly wider than tall. It is an excellent cold-hardy cultivar that is extremely uniform in its growth. It is very similar to 'Green Velvet'. Chicagoland Green™ will bronze slightly in winter especially when planted in full sun. Bronzed foliage will typically disappear quickly in spring as temperatures rise. Deer resistant.

Care: Prune Chicagoland Green™ lightly in late winter or early spring to maintain desired habit. It may be sheared into edging and other formal applications. Use hand pruners or shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant which reduces the chance of disease.

Chicagoland Green™ is very susceptible to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight.

Comments: It is a selected hybrid from the Chicago Botanic Garden in Glencoe, Illinois. It is very difficult to distinguish it from 'Green Velvet'. Its hardiness and durability make it a popular plant.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden, containers

Substitutes: 'Green Velvet', 'Buddy', 'Green Mound', 'Green Gem', 'Little Missy'

- **Size at 15 years:** 2′ Tall x 2.5′ Wide
- **Size at 25 years:** 2.75′ Tall x 3.5′ Wide

Green Mound

Cultivar: *Buxus* x 'Green Mound'

Zone: 5-8

Growth Rate: Medium, 2 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Green Mound' is a cold-hardy hybrid boxwood with a spherical habit. It is often referred to as being in the "Green Series" of boxwood (see 'Green Velvet' for more information). It is similar to 'Green Velvet' but more rounded in its natural shape. 'Green Mound' will bronze slightly in winter especially when exposed to direct sunlight. The bronzed leaves will typically brighten as spring temperatures rise and then be covered as new foliage appears. Deer resistant.

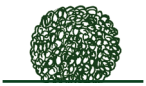
Care: 'Green Mound' should be pruned lightly in late winter or early spring to maintain desired habit. It may be sheared into edging and other formal applications. Use hand pruners or shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant which reduces the chance of disease.

'Green Mound' is somewhat susceptible to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight.

Comments: This is another of the hardy Sheridan Nurseries boxwood from Canada. It is very popular. In many landscapes, it will reach its 15 year size at a moderate speed then very slow growth afterwards.

Uses: Small specimen, low hedge, foundation plant, edging, parterre or knot garden, containers

Substitutes: 'Green Velvet', Chicagoland Green™, 'Little Missy', 'Justin Brouwers'



- **Size at 15 years:** 2.25′ Tall x 2.25′ Wide
- **Size at 25 years:** 3′ Tall x 3′ Wide

Vardar Valley

Cultivar: *Buxus sempervirens* 'Vardar Valley'

Zone: 5-8

Growth Rate: Slow to medium, 1 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Vardar Valley' is very appealing due to its distinctive powdery blue new foliage in the spring combined with excellent winter hardiness. It matures into a broad, mounding plant. Spring blue foliage will fade to a deep green in summer. 'Vardar Valley' holds the deep green color through the winter. Avoid planting in areas where drainage is poor. Deer resistant.

Care: Lightly prune 'Vardar Valley' as needed in late winter or early spring to maintain desired shape and density. Use hand pruners or shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant.

'Vardar Valley' is very resistant to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight. When planted properly in well-drained soils, this plant has few pest and disease problems.

Comments: 'Vardar Valley' has been one of the top plants in the National Boxwood Trials and test gardens. You must be patient with the plant in its juvenile stages (up to about 18" wide) as its habit is open and its branches are prominent. Do not plant in areas where drainage is questionable. 'Vardar Valley' was used in a stunning planting outside The Oval Office of the White House in Washington, DC.

Uses: Small specimen, low hedge, foundation plant, foliage for holiday decorations

Substitutes: 'Green Velvet', Chicagoland Green™, *insularis* 'Nana', 'Franklin's Gem'

- **Size at 15 years:** 1.5′ Tall x 3′ Wide
- **Size at 25 years:** 2.5′ Tall x 5′ Wide

Green Beauty

Cultivar: *Buxus microphylla* var. *japonica* 'Green Beauty'

Zone: 6-8

Growth Rate: Medium, 2 to 4 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Green Beauty' is an excellent medium-sized cultivar that has deep green glossy foliage with little winter bronzing. It has a naturally rounded habit that will typically be slightly wider than tall. Its branching structure makes for a very strong plant that can withstand breakage from most moderate to heavy snowfalls. It is very durable and recovers quickly if a limb is broken or if radical pruning is necessary. Deer resistant.

Care: 'Green Beauty' should be pruned lightly in late winter or early spring to maintain a more uniform shape. It will typically start a secondary flush of new growth in the late summer to early fall that may be burned and discolored by fall frost before it hardens off. These branches or "horns" can be pruned off any time after the first hard freeze of the fall, or left on the plant until early spring pruning. If the plant outgrows its desired size, it tolerates radical pruning. Prune with hand pruners or shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant which reduces the chance of disease.

'Green Beauty' is somewhat susceptible to boxwood leafminer but very tolerant to boxwood blight. It has few other pest or disease issues when planted and cared for properly.

Comments: 'Green Beauty' has become very popular due to its high tolerance of boxwood blight. Its durability and disease resistance are very good. We have planted it in locations where diseased English boxwood have died and it is thriving. Pruning as a young plant is a must to develop a good shape. 'Green Beauty' has been planted extensively in the Main Fountain Garden at Longwood Gardens in Kennett Square, Pennsylvania.

Uses: Medium specimen, medium hedge, foundation plant, containers

Substitutes: 'Green Velvet', 'Buddy', 'Green Mound', Chicagoland Green™, 'Jim Stauffer'

- **Size at 15 years:** 3′ Tall x 3′ Wide
- **Size at 25 years:** 4.5′ Tall x 5′ Wide

Wintergreen

Cultivar: *Buxus microphylla* var. *japonica* 'Wintergreen'

Zone: 5-8

Growth Rate: Fast, 4 to 6 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Wintergreen' is a vigorous, winter-hardy cultivar that is ideal when a medium to large foundation plant is desired. It is great for use in medium-sized hedges and is very tolerant of pruning or shearing. It has a tendency to bronze when exposed to direct winter sun but the bronzing will quickly disappear as temperatures rise in spring and as new growth emerges. It is very similar to 'Winter Gem' and 'Faulkner'. Deer resistant.

Care: 'Wintergreen' should be pruned each late winter or early spring to maintain desired shape. Use hand pruners or shears. Additional prunings may be necessary in early to mid-summer, depending on the desired look and vigor of the plant. 'Wintergreen' tolerates more radical pruning if the plant has outgrown its desired size. Thinning is not necessary on this cultivar.

'Wintergreen' is somewhat resistant to boxwood leafminer and very tolerant of boxwood blight. When properly planted and cared for, it has few other disease or pest issues.

Comments: It is a great choice when you want to fill a space quickly. If left unpruned, a vigorous plant can become wiry but the plant will respond very well to hedge shears. There are many cultivars in the nursery industry with the name 'Wintergreen'. Some are very similar to this one and others are very different. When matching plants, be sure to check plant attributes and projected size before purchasing.

Uses: Medium specimen, medium hedge, low hedge, foundation plant

Substitutes: 'Winter Gem', 'Green Beauty', 'Jim Stauffer'

- **Size at 15 years:** 3.5′ Tall x 3.5′ Wide
- **Size at 25 years:** 5′ Tall x 5′ Wide

Winter Gem

Cultivar: *Buxus microphylla* var. *japonica* 'Winter Gem'

Zone: 6-8

Growth Rate: Fast, 4 to 6 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Winter Gem' is a round-shaped cultivar that is relatively vigorous. It tolerates a wide range of sites and uses. New foliage emerges a lime-green color and transitions to a deep, glossy green. It has a tendency to bronze when exposed to direct winter sun but the bronzing will quickly disappear in spring as temperatures rise and as new growth emerges. 'Winter Gem' is very similar to the cultivars 'Wintergreen' or 'Faulkner'. Deer resistant.

Care: 'Winter Gem' should be pruned each year in late winter to early spring to maintain desired shape. Use hand pruners or shears. Additional lighter prunings may be necessary in early to mid-summer, depending on the desired look and vigor of the plant. 'Winter Gem' tolerates more radical pruning if the plant has outgrown its desired size. Thinning is not necessary on this cultivar.

'Winter Gem' is very resistant to boxwood leafminer and very tolerant of boxwood blight. It has few other pest or disease issues when planted and cared for properly.

Comments: Great plant to fill space quickly. It is very similar to 'Wintergreen'. It has very vigorous growth habit that can get rather wiry but it can be controlled with a good pair of hedge shears.

Uses: Medium specimen, medium hedge, low hedge, foundation plant

Substitutes: 'Wintergreen', 'Green Beauty', 'Jim Stauffer'

- **Size at 15 years:** 3.5′ Tall x 3.5′ Wide
- **Size at 25 years:** 5′ Tall x 5′ Wide

Green Mountain

Cultivar: *Buxus* x 'Green Mountain'

Zone: 5-8

Growth Rate: Medium to fast, 2 to 4 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Green Mountain' is a cold-hardy rounded conical shaped hybrid boxwood. It is often referred to as being in the "Green Series" of boxwood (see 'Green Velvet' for more information). 'Green Mountain' will bronze slightly in winter especially when exposed to direct sunlight but bronzing will quickly fade as new spring foliage begins to emerge. Deer resistant.

Care: Prune 'Green Mountain' lightly in late winter or early spring to maintain desired habit. Use hand pruners or shears. 'Green Mountain' is often sheared in a tight pyramid or conical shape to distinguish it from other plants in the "Green Series"; however, when left unpruned, it will develop a more rounded conical habit. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant.

'Green Mountain' is somewhat susceptible to boxwood leafminer and shows variable results in tolerance and susceptibility to boxwood blight.

Comments: This is another of the cold-hardy boxwood from Sheridan Nurseries in Canada. Some gardeners believe annual light prunings are necessary on this cultivar to improve its rigidity as an upright plant or the plant may open up with snow. It grows with relative vigor until it is about 15 years old then slows down.

Uses: Medium specimen, medium hedge, low hedge, foundation plant, containers

Substitutes: 'John Baldwin', 'Dee Runk', 'Fastigiata'

- **Size at 15 years:** 3.5′ Tall x 2.5′ Wide
- **Size at 25 years:** 5′ Tall x 3.5′ Wide

John Baldwin

Cultivar: *Buxus microphylla* 'John Baldwin'

Zone: 6-8

Growth Rate: Medium, 2 to 3 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'John Baldwin' is grown for its true broad, conical habit. Foliage is fine-textured and leaves are relatively small compared to many boxwood. New foliage has a blue tint which will slowly fade to a blue-green. Use this cultivar as an alternative to 'Green Mountain' when a true conical shape with minimal pruning is desired. Also, use it as an excellent substitute for conical Japanese hollies in sun or shade. Deer resistant.

Care: As a juvenile plant that is less than 2 feet or so in height, prune 'John Baldwin' in late winter to early spring to develop a conical habit. Once the plant gets 2-3 feet tall, it requires less pruning, typically having to remove only side shoots or "horns" each late winter or early spring. Use hand pruners or shears although shears are seldom needed as plant matures. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant.

'John Baldwin' is somewhat susceptible to boxwood leafminer but very tolerant of boxwood blight. It has few other pest or disease issues when planted and cared for properly.

Comments: This may be the best pyramidal growing boxwood that we have seen. Being a *microphylla*, it is proving to be more durable with regard to disease and its adaptation to a wider range of soil conditions. We have seen it perform well in marginally wet locations; however, we don't recommend planting any boxwood in areas where drainage is poor.

Uses: Medium specimen, medium hedge, foundation plant, containers

Substitutes: 'Green Mountain', 'Dee Runk', 'Fastigiata'

- **Size at 15 years:** 3.5′ Tall x 2.5′ Wide
- **Size at 25 years:** 6′ Tall x 4′ Wide

Jim Stauffer

Cultivar: *Buxus microphylla* var. *japonica* 'Jim Stauffer'

Zone: 5-8

Growth Rate: Medium to fast, 2.5 to 5 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Jim Stauffer' is an excellent foundation plant that is slightly more vigorous than some cultivars, yet can be maintained in a formal shape. It grows in a comparable height-to-width ratio. It also responds very well to pruning or shearing. It has proven to be more cold-hardy than other *Buxus microphylla*. 'Jim Stauffer' can be used as a great substitute for *Buxus sempervirens* (American) when a plant of similar shape is desired but with smaller ultimate size. Deer resistant.

Care: Lightly pruning 'Jim Stauffer' in late winter or early spring is necessary to maintain a more uniform shape. It will occasionally start a secondary flush of new growth in the late summer to early fall that may freeze before it hardens off. These branches or "horns" can be pruned off after the first hard freeze of the fall or in early spring. 'Jim Stauffer' tolerates more radical pruning if the plant has outgrown its desired size. Prune with hand pruners or shears. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant.

'Jim Stauffer' is somewhat resistant to boxwood leafminer and somewhat tolerant of boxwood blight. It has minimal other disease and pest issues when planted and cared for properly.

Comments: We like this boxwood. It has foliage that is very similar to 'Green Beauty' but its habit is slightly more upright. Its hardiness also makes it the choice of many gardeners in colder climates.

Uses: Medium specimen, medium hedge, foundation plant, containers

Substitutes: *sempervirens* (American), 'Green Beauty', 'Wintergreen', 'Winter Gem'

- **Size at 15 years:** 3.25′ Tall x 3′ Wide
- **Size at 25 years:** 5′ Tall x 5′ Wide

sempervirens (American)

Cultivar: *Buxus sempervirens* (American boxwood)

Zone: 5-8

Growth Rate: Medium to fast, 3 to 5 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: American boxwood is a classic, large-growing, upright to rounded boxwood. In an ideal environment, the plant will continue to grow for 75 to 150 years and develop into a massive shrub (sometimes as large as 15 ft. tall and wide or more). It has excellent dark green winter foliage and cuttings are a favorite for holiday decorations. Be especially careful to plant this cultivar in areas with good drainage. Deer resistant.

Care: Prune American boxwood lightly in late winter or early spring to maintain desired habit. It tolerates more radical pruning if the plant has outgrown its desired size. Use hand pruners, shears, and loppers. Thin in winter for holiday decorations or early spring before new growth appears to increase airflow and light penetration into the interior of the plant thus reducing the incidence of disease.

American boxwood is somewhat resistant to boxwood leafminer and somewhat tolerant to boxwood blight.

Comments: This boxwood has been the backbone of many Colonial American landscapes for many years. Take care to avoid using this plant where it will ultimately be too large for the landscape. Maintain good airflow in and around American boxwood to lessen incidence of boxwood blight. Even when infected with boxwood blight, we have seen this plant continue to thrive when lower limbs were removed to reduce splash up and the plant was thinned to increase airflow.

Uses: Tall specimen, allée, tall hedge, medium hedge, foundation plant, foliage for holiday decorations

Substitutes: 'Jim Stauffer'

- **Size at 15 years:** 4' Tall x 3.5' Wide
- **Size at 25 years:** 6' Tall x 5.5' Wide

Dee Runk

Cultivar: *Buxus sempervirens* 'Dee Runk'

Zone: 6-8

Growth Rate: Fast to medium, 3 to 6 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Dee Runk' is an excellent upright cultivar with a naturally vertical habit. With some pruning, it can be a tight conical shape. It will develop a broader columnar habit with little to no pruning. Use as an excellent choice for narrow hedges or accenting a door or corner. Deer resistant.

Care: 'Dee Runk' responds very well to pruning. Use hand pruners or shears. Lightly prune, as needed, in late winter or early spring to maintain density and desired form. If winter snow or ice has damaged any limbs or pulled them out from the plant, remove them. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant. If a tight conical form is desired, training will be required. Depending on growth and prior maintenance, a light annual pruning followed by a heavier pruning every 3-5 years or so is necessary to maintain its form and minimize splaying due to snow and ice or even heavy wet foliage in spring. Little or no pruning will yield a broader columnar habit. Understand that this habit will allow branches to potentially grow horizontal from the plant especially in frozen winter precipitation or heavy new growth in late spring.

'Dee Runk' is somewhat resistant to boxwood leafminer and somewhat tolerant to boxwood blight. When planted properly, it has few other pest or disease issues.

Comments: 'Dee Runk' is one of the prettiest and most versatile boxwood we grow. We believe this plant is best when pruned into a tight conical form. Its versatility of growing in full sun or full shade make it a great option in many different landscapes. It is very similar to 'Fastigiata'. 'Dee Runk' is Paul Saunders' favorite plant.

Uses: Tall specimen, allée, tall hedge, medium hedge, foundation plant, holiday foliage, containers

Substitutes: 'Fastigiata', 'John Baldwin'

- **Size at 15 years:** 7' Tall x 2.5' Wide
- **Size at 25 years:** 10' Tall x 3' Wide

Fastigiata

Cultivar: *Buxus sempervirens* 'Fastigiata'

Zone: 6-8

Growth Rate: Fast to medium, 3 to 6 inches per year

Sun Exposure: Sun, part sun, or shade

Attributes: 'Fastigiata' is an outstanding upright cultivar. The foliage is rich green with a hint of blue. Its true habit is upright. Depending on the gardener's preferences, this boxwood can either be trained into a narrow column, a conical shape or, with minimal pruning, it can be a broader columnar shape. It is an excellent choice for narrow hedges or accenting a door or corner. Deer resistant.

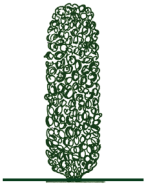
Care: 'Fastigiata' responds well to pruning. Use hand pruners or shears. Lightly prune in late winter or early spring to maintain density and desired form. If winter snow or ice has damaged any limbs or pulled them out from the plant, remove them. Thinning is not necessary but, as with any boxwood, will help increase airflow and sunlight penetration into the interior of the plant. If a narrow columnar or tight conical form is desired, training will be required. Depending on growth and prior maintenance, a light annual pruning followed by a heavier pruning every 3-5 years or so is necessary to maintain form and minimize splaying due to snow and ice or even heavy wet foliage in spring. Little or no pruning will yield a broader columnar habit. Understand that this habit will lend itself to branches splaying out from the plant especially in frozen winter precipitation or heavy new growth in late spring.

'Fastigiata' is somewhat resistant to boxwood leafminer and somewhat tolerant to boxwood blight. It has few other pest or disease issues.

Comments: This is a very good upright boxwood. We have chosen to prune it into a narrow column. Its foliage is slightly bluer than 'Dee Runk'. 'Fastigiata' is thriving in some of our personal gardens as a slender hedge.

Uses: Tall hedge, medium hedge, tall specimen, allée, foundation plant, containers

Substitutes: 'Dee Runk', 'John Baldwin'



- **Size at 15 years:** 6′ Tall x 2′ Wide*
- **Size at 25 years:** 10′ Tall x 2.5′ Wide*

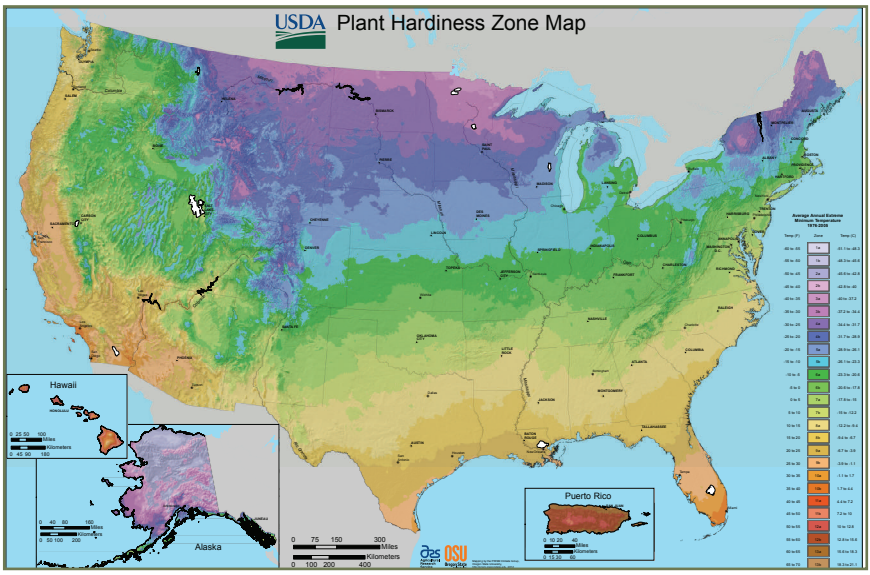
*dependent on habit chosen

BOXWOOD
Glossary of Terms

We have prepared the Boxwood Guide so you can quickly find the most appropriate boxwood for your particular design needs and site conditions. When consulting the Boxwood Guide, please keep in mind the following:

Zone

Included below is the USDA Plant Hardiness Zone Map for the entire United States. This map is also readily available on the Internet or in most horticultural reference books. Please refer to it to be sure you choose the proper plant for your particular zone. Each boxwood cultivar is listed with the zones the plant is known to do well in.



Agricultural Research Service, U.S. Department of Agriculture

- Zone 4 (Average Annual Minimum Temperature -30° to -20°F)
- Zone 5 (Average Annual Minimum Temperature -20° to -10°F)
- Zone 6 (Average Annual Minimum Temperature -10° to 0°F)
- Zone 7 (Average Annual Minimum Temperature 0° to 10°F)
- Zone 8 (Average Annual Minimum Temperature 10° to 20°F)

Growth Rate

This is an average growth rate and could vary depending on the soil, weather, location, and individual gardening practices of your particular site. This is a tool to allow the gardener the ability to compare cultivars on a similar scale.

Sun Exposure

Each cultivar is listed with Saunders Brothers recommendations regarding sun exposure.

- Sun (Location is sunny from late morning to late afternoon)
- Part Sun (Location is shaded primarily from late morning to late afternoon)
- Shade (Location has minimal direct sun)

Attributes

This section describes the cultivars' overall attributes including specific information on foliage, growth, and overall shape.

Care

Here we make recommendations on how to care for each cultivar including pertinent information on pests or diseases. The pruning comments discuss which boxwood can be sheared or thinned and which should not, as well as which cultivars need annual pruning. Remember that care methods continually change with site, weather, and individual gardening practices.

Comments

In the comments section, we supply additional information that we believe is important to better understanding the plant. Also, you will find some personal observations from Saunders Brothers. We feel the comments section is very important to better understanding all we have to share about an individual boxwood.

'Vardar Valley' and 'Elegantissima'

Uses

This section makes suggestions for possible uses of the boxwood cultivar in the landscape. The gardener must consider characteristics before selecting the appropriate boxwood for their needs. Remember, each location and use is unique. Consult other gardeners to see what cultivars are most successful in your area.

Uses listed include:

A **specimen** is a plant grown individually in a lawn or garden for ornamental effect rather than being used as part of a group or mass. Specimens serve as focal points in the landscape. An example of a specimen plant is a flowering tree in a prominent spot on a lawn.

- Tall Specimen (Mature Size of 6′ tall or greater)
- Medium Specimen (Mature size of 3-5′ tall and wide)
- Small Specimen (Mature size of 1-3′ tall and wide)

An **allée** is a tall, straight line of shrubs or trees running along both sides of a walk or road. The plants are typically of the same species or cultivar. An allée (which translates to "avenue") is used to announce the arrival to a garden or other architectural feature.

A **hedge** is a wall of plants. Hedges vary in height depending on the use. They can be planted to provide privacy, be decorative, or delineate a space. Take proper care to choose the correct plant based on the desired look of the hedge. Hedges can range from being tightly clipped to having an unclipped, more natural look. If a highly-manicured look is desired, be sure to select a plant that is responsive to pruning.

- Tall Hedge (Mature size of 8-12′ tall)
- Medium Hedge (Mature size of 4-8′ tall)
- Low Hedge (Mature size of 4′ tall or less)

Foundation plants are typically used around the base of a home. Their functions include: transitioning from lawn to the home, softening hard lines around corners of the home, and beautifying an entrance.

Edging (maximum mature size of 2' high or wide) plants are used to create a low, straight or ribbon-like border along a walkway, lawn, or garden. When creating an edge, take care to select plants with smaller ultimate sizes. Edging is typically clipped very tightly so select a plant that responds well to shearing. When shearing edging, it is often preferred that the plant be shaped slightly broader at the base than at the top to allow light to contact the plant more uniformly. If the gardener prefers a more natural look, plant selection should focus on varieties that have smaller ultimate sizes similar to the desired final size. Note comments on thinning each cultivar.

A **parterre** is a formal garden with tightly clipped edges. Plants are typically laid out in a very symmetrical pattern. The interior of the parterre can be planted with a variety of plants including evergreen shrubs, annuals, herbs, or perennials. A **knot garden** is very similar to a parterre garden but has a distinctly woven pattern. Plant selection in a parterre or knot garden should focus on varieties that have smaller mature sizes as well as plants that respond

well to shearing. Note comments on thinning each cultivar.

Foliage from boxwood is often used as **holiday decorations**. Clippings should be taken in late November or December. Reach into the interior of the plant and cut stems 6-10 inches in length. This thinning process not only produces material for decoration but also allows beneficial air movement and sun penetration into the interior of the plant. Avoid heavy shearing of plants when gathering these clippings. Some cultivars of boxwood produce more attractive decorations due to foliage color and shape.

Boxwood are an excellent choice for use in a **container**. When planting in a container, take care to select a container that is twice as large as the root ball on the desired plant. This will allow several years of enjoyment of the finished product. Be sure the container has drainage holes in the bottom. Although boxwood are more drought-tolerant than many plants, be sure to provide adequate water throughout the entire year including the winter.

Substitutes

This section suggests other possible boxwood to substitute when a certain cultivar is not available or desired. Give consideration to each characteristic of the boxwood before substituting. Remember, each location and use is unique.

Size

In this section the approximate 15 and 25 year old size of the boxwood is listed. Remember, the size of a cultivar is greatly affected by gardening practices, location, weather, and size and age of the plant at time of installation. We also have included a sketch of the relative shape of each cultivar. See page 95 for a relative scaled comparison of each boxwood.

BOXWOOD
Cultivar Summary

Cultivar	Page #	Zone	Exposure	Blight Tolerance	Leafminer Resistance
Buddy	63	6-8	SU, PS, SH	+ -	+ +
Chicagoland Green™	67	5-8	SU, PS, SH	+ -	- -
Dee Runk	87	6-8	SU, PS, SH	+ +	+
Elegantissima	59	6-8	PS, SH	- -	+
Fastigiata	89	6-8	SU, PS, SH	+ +	+
Franklin's Gem	43	5-8	PS, SH	+ +	+ +
Golden Dream	61	6-8	SU, PS, SH	+ +	+ +
Grace Hendrick Phillips	37	6-8	PS, SH	-	+ +
Green Beauty	73	6-8	SU, PS, SH	+ +	-
Green Gem	57	5-8	SU, PS, SH	+ -	- -
Green Mound	69	5-8	SU, PS, SH	+ -	-
Green Mountain	79	5-8	SU, PS, SH	+ -	-
Green Pillow	39	5-8	PS, SH	-	+ +
Green Velvet	65	5-8	SU, PS, SH	+ -	- -
harlandii	51	7-9	PS, SH	+ +	+ +
insularis Nana	41	6-8	PS, SH	+ +	+ +
Jensen	53	6-8	PS, SH	- -	+
Jim Stauffer	83	5-8	SU, PS, SH	+ +	+
John Baldwin	81	6-8	SU, PS, SH	+ +	-
Justin Brouwers	47	6-8	SU, PS, SH	- -	- -
Little Missy	45	5-8	SU, PS, SH	+ +	+
Morris Dwarf	35	6-8	PS, SH	- -	+ +
Morris Midget	33	6-8	PS, SH	- -	+
Richard	49	7-9	PS, SH	+ +	+ +
sempervirens (American)	85	5-8	SU, PS, SH	+	+
Suffruticosa (English)	55	6-8	PS, SH	- -	+ +
Vardar Valley	71	5-8	SU, PS, SH	+ -	+ +
Winter Gem	77	5-8	SU, PS, SH	+ +	+ +
Wintergreen	75	5-8	SU, PS, SH	+ +	+

Boxwood Blight* Tolerance Key

Very Tolerant	+ +
Somewhat Tolerant	+
Variable Tolerance/Susceptibility	+ -
Somewhat Susceptible	-
Very Susceptible	- -

Exposure Key

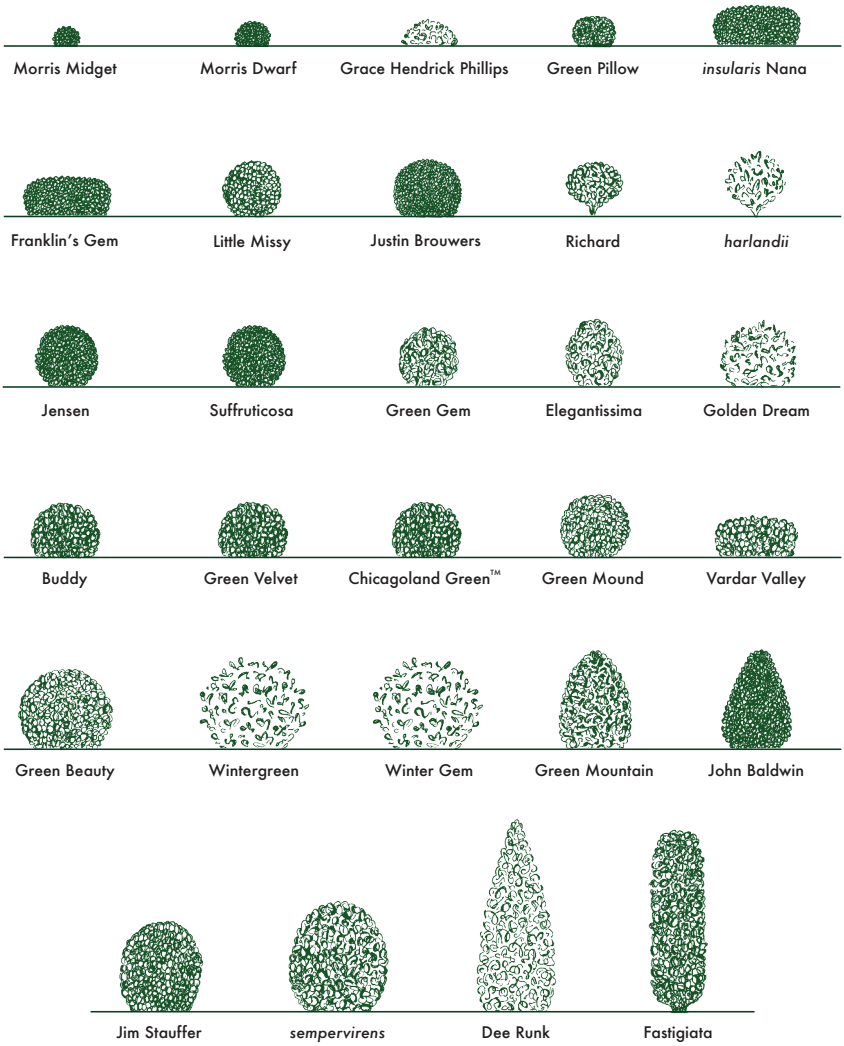
SU- Sun
PS- Part Sun
SH- Shade

Boxwood Leafminer Resistance Key**

Very Resistant	+ +
Somewhat Resistant	+
Neither Resistant nor Susceptible	+ -
Somewhat Susceptible	-
Very Susceptible	- -

*Boxwood blight tolerance data based on multiple tests and observations from Saunders Brothers 2012-2017.
**Boxwood leafminer resistance data based on multiple tests from Saunders Brothers 2008-2016.

BOXWOOD
Cultivar Comparison



Saunders family circa 1906

In 1915, when our grandfather Sam and his brothers, Dick, Doc, Will, and Massie, formed a partnership, family was the center of their business. The brothers stood for integrity, morality, and honesty. Business deals were made with a handshake or by a man's word.

Today, brothers Tom, Bennett, Jim, and Robert, along with their father Paul, continue that tradition. The Saunders family now extends beyond those with the Saunders name. Our greater Saunders Family now includes employees who are mothers and daughters, brothers and sisters, husbands and wives, nephews, and cousins of many other families. We pride ourselves in the longevity and dedication of our employees, many of whom have been a part of the Saunders Family for over 20 years.

The farm now consists of a wholesale nursery, orchard, and farm market. The wholesale nursery operation covers over 100 acres of container production and 150 acres of field (in-ground) production. Our plants are distributed to garden centers, landscapers, and re-wholesalers from the Mid-Atlantic States to New England. Our 180 acres of peach, apple, pear, and nectarine orchards provide fresh fruit for our Farm Market as well as other retail and wholesale markets along the east coast.

Photo courtesy of Lee Luther Jr.

Saunders Brothers circa 2017