Plant Health Care Recommendations for Boxwood

Boxwood (*Buxus sempiverens)* is the aristocrat of formal gardens. Native to Europe, this species has been used extensively in America since colonial times. The dwarf variety, known as English boxwood (Buxus sempirvirens 'suffruiticosa') is widely used as edging, hedges and foundation plants. Many other cultivars of common or American box (B. sempirvirens) have been selected for form and foliage characteristics. Varieties and selection of littleleaf boxwood (Buxus microphylla) are also popular in the landscape especially in colder regions of the US (zones 4 and 5).

All boxwoods grow best in partial shade. Northern or eastern exposures near buildings or in the understory of tall trees are ideally suited for these species. Winter injury, sunscald and desiccation are more prevalent in full sun and in western and southern exposures. Soils must be well drained, organic, slightly acid to neutral pH and fertile. The shallow root system is intolerant of moisture extremes and competition from turf and other ground covers. A light layer of mulch benefits root development. Boxwood roots extend far beyond the edge of the crown. Soil disturbances such as compaction, cultivation and construction must be avoided in the plant's vicinity. Excessive irrigation is one of the most common causes of decline of boxwood.

Boxwood Leafminer

Boxwood is susceptible to many pests, diseases and disorders. Foliage feeding pests include psyllids, spider mites and leafminers. These pests can weaken and disfigure plants. Damage can be prevented by periodically inspecting plants and implementing management strategies before the pests reach damaging levels.

Boxwood is susceptible to several root diseases. *Phytophthora* root rot, a fungus disease, is a leading cause of premature decline and death of boxwood. Root rot develops primarily on wet, poorly drained soils which aids growth and infection by the fungus.

Phytophthora is managed through and integrate approach that includes managing soil moisture, judicious uses of mulches and organic amendments and fungicide drenches to the soil.

Boxwood also is very sensitive to root feeding nematodes. These microscopic worms have stylets which puncture root cells and remove their contents. Nematodes can severely stunt root growth and predispose plants to winter injury. There is no effective control for nematodes in established landscapes. Maintaining plant vigor will help boxwood tolerate the infestation. The use of finely ground pine bark mulches also may help suppress nematode populations.

Volutella canker is frequently cited as cause of twig dieback on boxwood. This disease is common on plants stressed by root disease, nematodes and winter injuries, drought and other environmental stresses. Pruning dead tissue and maintaining healthy plants will prevent injury by Volutella. The fungus *Macrophoma* has also been implicated as the cause of a leafspot or leaf blight. Like Volutella, Macrophoma is a secondary invader of stress and dead tissue.

English Boxwood is susceptible to a decline of unknown cause. Commonly referred to as "boxwood decline" this disease causes progressive decline in plant vitality, branch dieback, which often begins in the center of the plant and ultimately death. Boxwood decline is more prevalent on dry soils and following droughts. The disease is thought by some to be caused by a fungus that attacks the root system but this has not been substantiated. English boxwood should not be replanted on sites affected by boxwood decline. American and littleleaf boxwood appear to be resistant to this disease. A list of boxwoods that can be used as an alternative to English box is included in this report.

Recommended Monitoring for Boxwood

Timing	**Treatment**
Late Winter	Remove leaves from center of plants where they tend to collect. Prune out winter damaged branches. Thin crowns as necessary. Sample for *Phytophthora* root disease and soil nutrient levels and pH if decline symptoms are evident. Apply horticultural oil to suppress psyllids and mites.
Early Spring	Fertilize and amend pH based on soil test reports. Apply fungicide soil drench if *Phytophthora* root rot is present. Monitor for psyllids, mites and leafminers. Treat as needed. Excavate mulch from root collars and add finely ground pine bark mulch to root zone as needed.
Mid Spring	Monitor for psyllids, mites and leafminers. Treat as needed. Monitor irrigation and soil moisture levels to prevent water stress and suppress root disease.
Early Summer	Monitor for spider mites and treat as needed. Monitor irrigation and soil moisture levels to prevent water stress and suppress root disease. Sample for nematodes if this pest is suspected.
Mid Summer	Re-apply fungicide drench if *Phytophthora* root rot is present. Monitor for spider mites and treat as needed. Monitor irrigation and soil moisture levels to prevent water stress and suppress root disease.

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Late Summer	Monitor for spider mites and treat as needed. Monitor irrigation and soil moisture levels to prevent water stress and suppress root disease.
Fall	Apply finely ground pine bark mulch to root system as needed. Fertilize and adjust pH as specified in soil test report. Erect burlap barriers to protect against desiccation on exposed sites. Apply irrigation as necessary to ensure adequate soil moisture before soil freezes in order to minimize winter injury. Apply systemic insecticide if desired to reduce the level of sucking insects and leafminers next year.

Note: Boxwood should be thinned annually by removing small branches in the outer canopy to allow light and air penetration to the center. Boxwoods that have been properly thinned should have growth along their entire stems. Dead branches should be removed when detected.

Timing of root disease treatments can vary throughout the growing season based on plant needs.

Recommended Boxwood Species and Cultivars

The parentage of many boxwoods is very confused especially those of littleleaf boxwood (*Buxus microphylla*). Some taxonomist list up to four varieties of littleleaf boxwood including: *koreana (*Korean box), *japonica* (Japanese box), *sinica* (Chinese box) and *insalaris.* Other taxonomists may not recognize all these varieties, some designate the variety as an actual species and many nurseryman list a selection solely by the cultivar name with no reference to the species or variety. This can cause confusion when selecting plants from nurseries and garden centers. The cultivar name is usually the best representation of the characteristics of the plant. The common boxwood (Buxus sempirvirens} has fewer taxonomic difficulties.

Of the boxwood varieties the English boxwood (Buxus sempirvirens 'Suffruiticosa') also known as"dwarf boxwood and "edging boxwood" is the most difficult to grow. Boxwood "decline" a disease of uncertain cause affects English boxwood wherever it is grown. Once English boxwood is affected by decline, efforts to replant the site with the same cultivar are usually unsuccessful. It is best to replant with another species or cultivar of boxwood.

It is always a good idea to consult with local arboreta for performance of boxwood selections for a specific geographic area.

Dwarf varieties suitable for edging and shearing. These taxa are suitable for zones 6-8 except where indicated.

Buxus microphylla 'Green Pillow'

Buxus microphylla 'Morris Midget'

Buxus microphylla 'Morris Dwarf'

Buxus 'Jansen' a new variety that is similar to English box in form and size. Resistance to boxwood decline has not been thoroughly documented although the plant performs well in Northern Virginia.

Buxus ‘Green Gem’ and ‘Green Mound’. These selections are hybrids between *B. microphylla* var. *koreana* and *B. sempirvirens*. These cultivars reportedly grow well as far north as Chicago.

Larger maturing varieties:

Buxus sempirvirens (American or common box). Many cultivars are available with different form and leaf color. Avoid planting ‘Suffruiticosa’. Generally recommended for zones 6-8.

Buxus microphylla ‘Green Beauty'. Height to 7 feet with 4 foot spread. Hardy in zone 4.

Buxus microphylla ‘Wintergreen’ grows to 4 feet tall with a spread to 6 feet. Hardy in zone 4.

Buxus ‘Glencoe’ (‘Chicagoland Green’). Spreading habit to 4 feet tall with 5 foot spread. Hardy in Zone 4

Buxus ‘Green Mountain’ 5 feet by 3’ tall. Hardy in zone 4.