

PLANT DISEASE CONTROL NOTES

EXTENSION DIVISION • VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

April 1980

THE MAJOR DISEASES OF BOXWOOD

Control Series 170

R. C. Lambe & W. H. Wills*

English boxwood is a popular shrub in traditional gardens. American boxwood is used in both traditional and contemporary plantings. ~~Severe disease had been uncommon until English boxwood decline became epidemic ten years ago.~~ VIRGINIA LIBRARY

General Methods for Prevention of Diseases

BLACKSBURG, VIRGINIA
If cuttings are collected from diseased stock plants or the rooting media used in propagation are infested with plant pathogens, stem and root diseases may develop. Boxwood plantings should never be made in locations from which root rot diseases or decline have been identified. Cuttings should be rooted in pathogen-free rooting media. Treatment of previously used pots, flats, and benches with steam or antiseptic chemicals will eliminate most plant pathogens. Fumigation of fields with broad spectrum fumigants containing methyl bromide before planting will eradicate nematodes and most disease-causing fungi from the soil. However, recolonization of fumigated soil by plant pathogens is possible.

Attention to proper maintenance of plants is basic in disease prevention. Removal of dead branches and dead leaves from the centers of healthy plants is suggested in order to reduce the amount of fungus inoculum. Refer to publications prepared in the Department of Horticulture, VPI&SU, for proper cultural practices.

Phytophthora Root Rot

Both English and American are susceptible to this disease, caused by the fungus Phytophthora parasitica. We have not observed this disease in Virginia in Buxus microphylla. Symptoms of root rot are poor growth and foliage which loses its normal green, ultimately becoming light yellow. Leaves turn upward and lateral leaf margins roll inward, suggesting drought. Leaf symptoms may appear on just a few branches or on the entire plant, depending on the extent of fungus infection of the roots. A chocolate brown discoloration of the wood at the base of the stem occurs for two or three inches above the soil line. Usually, the bark at the base of the infected plant dies and may be easily separated from the wood. When the roots are examined, many are brown in color and they are few in number. The lack of functioning roots is the result of fungus infection and precedes the yellowing and death of the top.

Disease Prevention

Plants growing in soils which have become water-logged following heavy rains in the summer, or which have been over-watered, especially where sub-soil drainage is poor, are predisposed to fungus infection. The abundant moisture allows motile spores of a Phytophthora to move in the soil, infecting new roots on adjacent plants.

New plantings should always be made with healthy appearing plants in well-drained soil. If it is necessary to replant in a site where a boxwood plant has died, remove the dead plant and as much of the diseased root system and soil from the hole as feasible. Boxwood nurseries should be established in well-drained

fields.

There is no chemical control, because all the chemicals that have been tested and are registered have proven to be injurious. Do not replant a susceptible plant in the same location.

English Boxwood Decline

A serious decline of epiphytotic proportions of English boxwood has occurred in recent years in the northern portion of Virginia and the Shenandoah Valley. Each year, additional losses in landscape planting have been reported.

This disease, observed in recent years in Virginia, can best be described as a slow but progressive decline occurring commonly in large plants often 20 years or more in age. Decline symptoms resemble root rot caused by *Phytophthora*. A complex of fungi including *Rhizoctonia*, *Volutella*, *Paecilomyces*, *Fusarium*, and *Pythium* have been associated with root rot, but *Paecilomyces buxi* is believed to be the primary pathogen. Plant parasitic nematodes have also been recovered from the roots of dying plants, but not consistently enough to explain the disease.

External and internal stem discoloration is frequently observed, usually accompanying the root rot phase. Whereas discoloration of the cortex and vascular tissue of plants infected with *Phytophthora* occurs only a few inches above the soil line, plants dying from decline have vascular discoloration well up the main stem. The discoloration may be continuous or discontinuous in the stem.

Disease Prevention

Every effort should be made to maintain the plants in a high state of vigor. All dead branches should be removed by pruning. If the plants have not been regularly cared for, the centers may have an accumulation of dead leaves and stems. Do not replant with English boxwood. Both American boxwood and several cultivars of *Buxus microphylla*, tested under field conditions, have been observed to be resistant to decline. No fungicides are recommended because none have been registered for this disease.

Macrophoma Leaf Spot

Both English and American boxwood are susceptible to the disease called "leaf spot", caused by the fungus *Macrophoma candollei*. On yellow, diseased leaves there are many tiny black raised spots. These spots are the fruiting bodies of the fungus. Usually, the fungus infects plants that have been weakened by root and stem diseases, nematode infection, or improper soil-moisture relations. The disease frequently appears on leaves that have suffered winter injury. Usually, distribution of the disease throughout a boxwood plant indicates low vigor. Considerable defoliation can result, although some spotted leaves will persist on the plant for a long time.

Disease Prevention

Remove all fallen and diseased leaves from the center of the plant and the soil surface and compost or burn to reduce the fungus spore inoculum. All dead branches should be cut off and removed from the vicinity of the plant. Preventing root diseases and nematodes will avoid the disease.

Volutella Stem Blight

For several years, the role of the fungus Volutella buxi in the decline of boxwood has been open to question. This fungus is associated with wilt and canker, but its role as a primary pathogen has not been clearly established. Both English and American boxwood have been found to show symptoms of Volutella stem blight disease.

In the spring, before the new growth appears, the leaves on the tips of twigs turn red, then bronze, and finally yellow. Infected twigs die back for some distance. At various distances below the tip of affected branches, the stem is girdled. A dark brown to black canker is easily discernible by cutting the cortex with a sharp knife.

The Volutella fungus colonizes the diseased leaves and stems and it produces numerous sporodochia or pustules of colorless conidia which appear pink in mass. Winter injury causes foliar symptoms similar to those caused by Volutella buxi.

Disease Prevention

Cuttings collected from diseased plants for propagation carry the fungus and poor success in rooting usually results.

No chemical control measures for this disease are known at present. Diseased stems should be cut out and removed from the vicinity of the plant.

Trade and brand names are used only for the purpose of information and the Virginia Cooperative Extension Service does not guarantee nor warrant the standard of the product, nor does it imply approval of the product to the exclusion of others which may also be suitable.

KEYS TO PROPER USE OF PESTICIDES

1. Read the label on each pesticide container before each use. Follow instructions to the letter; heed all cautions and warnings, and note precautions about residues.
2. Keep pesticides in the containers in which you bought them. Put them where children or animals cannot get to them, preferably under lock and away from food, feed, seed, or other material that may become harmful if contaminated.
3. Dispose of empty containers in the manner specified on the label.

SEE YOUR DOCTOR IF SYMPTOMS OF ILLNESS OCCUR DURING OR AFTER USE OF PESTICIDES

*Extension Specialist, Plant Pathology and Professor, Plant Pathology.
Department of Plant Pathology and Physiology, VPI&SU, Blacksburg, VA 24061

