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Boxwood Blight, A newly emerging disease

“Boxwood blight,” also called “Box Blight”, is a new, aggressive, and exotic disease of boxwoods that may initially show few or no symptoms in the nursery. However, it can cause severe blight and decline when such infected plants are planted. The disease is caused by a fungus called *Cylindrocladium pseudonaviculatum*, also known as *C. buxicola* and *Calonectria pseudonaviculata*. The disease has been reported from several eastern states, including the Mid-Atlantic, as well as three Canadian provinces. The disease incidence, first observed in 2013, has been increasing each year in Maryland. When detected in Maryland nurseries, all diseased plants are destroyed and sites are cleaned to avoid further spread of the disease. Boxwood blight may be present, but undetected, in other states where boxwood is grown. The pathogen has apparently been spread from originally infected nurseries through long-distance shipping of infected plant material. So far, in Maryland, the disease is reported only from limited locations. Maryland Department of Agriculture (MDA) inspectors regularly monitor nurseries, and if boxwoods are found positive for this disease, all infected plants found are destroyed to avoid further spread of the disease.

If you observe a plant with suspicious symptoms, please contact MDA so that we can confirm the cause and minimize further spread of the disease. It is important to realize that infected plants may not exhibit symptoms until fungicide spray programs that are commonly used are halted. Once spraying is stopped, infected asymptomatic plants may begin exhibiting symptoms. Because of this, it is very important to separate newly received boxwood shipments, and to observe them prior to commingling the plants with other boxwood stock, or distributing plants further. MDA is committed to minimizing the spread of this disease from production nurseries, where it can be more easily confined in the infection site.

The optimum temperature range for the boxwood blight pathogen to grow is normally 64° to 77° F, which is typical during spring and fall in the northeastern U.S. The disease does not thrive below 50° F in winter or above 86° F in summer. In adverse conditions when the fungus mycelium is killed, resting structures (microsclerotia and/or chlamydospores) are produced which can survive for up to several years in the environment and in the soil. In favorable conditions, the pathogen might complete its life cycle in 7 days. The pathogen spreads by wind-driven rain or splashing water over short distances and is most infective in conditions of high humidity. Wind-borne spore dispersal is not known but is likely limited to shorter distances. Infection can also be spread by infected plant refuse, contaminated equipment and clothing, and by household pets and other animals.



Fig 1. Blighted plants-with twig blight (left), dark brown lesions on the leaves and stem followed by excessive defoliation, accumulating fallen leaves on the ground (right) indicate an infection by *Cylindrocladium pseudonaviculatum*.

No boxwood variety is reported to be immune to this disease; however, some varieties are more susceptible than others. *Buxus sempervirens* 'Suffruticosa', the classic boxwood that is commonly seen in very old landscapes, is perhaps the most susceptible variety. Symptoms may vary with the boxwood species or cultivar, and with environmental conditions. Boxwoods with mixed infections of *Cylindrocladium pseudonaviculatum* and *Volutella buxi* were commonly observed in field conditions. Symptoms produced by these pathogens can be confusing. *Volutella* is most commonly observed in the field as well as in the lab as it grows much faster than *Cylindrocladium*. Quite often, field symptoms are not enough to distinguish between these two pathogens. Generally, *Cylindrocladium* causes excessive defoliation and produces dark brown lesions on leaves (Fig. 1 and 2A) and stems (Fig. 2B). In the laboratory, white fungal colonies with box-shaped spores confirm the presence of *Cylindrocladium pseudonaviculatum*, whereas pink colonies (Fig 2C), commonly seen in the field and the laboratory under conditions of high humidity and temperature, confirm the presence of *Volutella*. Our goal is to detect *Cylindrocladium* in the nursery and destroy the fungal infection at the source.



Fig. 2. Close-up of dark brown lesions with light brown center on leaf (A) and dark brown lesion on stem (B) of boxwood with blight infection by *Cylindrocladium pseudonaviculatum*,

Important tips to minimize the disease

- Always obtain planting materials from boxwood blight free nurseries.
- Always segregate boxwood stock by supplier and observe for symptoms of boxwood blight before commingling with other boxwoods.
- Do not bring dead or dying boxwoods back to your nursery or holding yard.
- If possible, avoid overhead sprinkler irrigation which creates high humidity and favorable conditions for many diseases including boxwood blight.
- Dense foliage and crowded plants create favorable conditions for the disease. Space your plants.
- Spraying the same chemical type more than twice in a season creates the possibility of developing resistant pathogen populations. Rotate classes of fungicides used.

Look for the symptoms as described above and if you observe possible signs, call MDA, Plant Protection and Weed Management Section at 410-841-5920.

Prepared and revised by Dr. Ramesh R. Pokharel, MDA, PPWM, 2018.