UNIVERSITY OF DELAWARE | Cooperative Extension
COLLEGE OF AGRICULTURE & NATURAL RESOURCES

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Boxwood Blight Caused by the Fungus *Calonectria pseudonaviculata*

The fungus *Calonectria pseudonaviculata* (*Cylindrocladium pseudonaviculatum)* causes severe defoliation and death of container grown boxwoods, and dieback in older plantings. Most boxwood species are susceptible, including American and English boxwood (*Buxus sempervirens*), little leaf boxwood (*B. microphylla*) and hybrids such as *B. sinica*. Pachysandra is a host, and can be a source of spores capable of causing new infections. Sweetbox (*Sarcococca*) has recently been identified as a host. There are a number of other diseases that affect boxwood, and environmental stress plays a role in susceptibility and predisposition to disease. Timely and accurate identification by microscopy is important for management of this aggressive disease.

Boxwood blight was first identified in the United Kingdom in 1994 and then in the U.S. in October of 2011. The disease has been identified in nurseries and landscapes on boxwood and pachysandra. It has been confirmed in NC, CT, VA, RI, MD, MA, OR, NY, PA, OH, DE, & NJ. In June, 2013, boxwood blight was identified in a retail nursery in Delaware, and has been detected subsequently in retail operations, but destroyed.

Boxwood Blight - twigs showing blackened areas and leaf drop; Leaf spots due to boxwood blight

Cylindrocladium is favored by temperatures between 18 and 25 C and by high humidity and rainfall. Early symptoms include brown leaf spots or tip blight, which can be rather inconspicuous. Twigs and stems later develop black streaks and leaves drop. In humid weather conditions or after incubation of samples in a moist chamber, signs of the fungal pathogen may be seen with a hand lens or a microscope. Signs include white clusters of spores of the fungus. It is very important to have this disease accurately identified due to similarity with other diseases, especially Volutella blight, which has been common in Delaware for many years. Volutella blight is most often associated with boxwood plants under environmental stress, whereas *Cylindrocladium* can affect healthy plants.

Spore masses of *Volutella* are pink to orange in color. There is no good control for *Volutella* except to trim out and reduce stress on plants. Boxwood blight, however, can be severe and lead to death of infected plants, and requires control measures.

Management and Control of Boxwood Blight

Control is dependent on rapid and accurate diagnosis. Diseased plants should be removed and destroyed if in a retail or nursery situation. Boxwood within 10 feet of affected plants should also be removed. Make sure to clean up all debris and leaves, as sanitation is very important to remove plant material containing spores. The pathogen can survive for several years in soil and debris, so infected material should not be composted. Following removal of affected material, and trimming and sanitation of remaining area, fungicides can be used to protect new growth and unaffected plants nearby. Pruners and tools should be cleaned with bleach or alcohol. Avoid overhead irrigation. **Do not bring new boxwood into established landscape plantings without inspection.**

Image: N Gregory

Spore masses of *Cylindrocladium* (white) and *Volutella* (orange) 50x magnification

Chemical Control Options

Because it is a new pathogen in the U.S., *Calonectria* may not appear on a fungicide label on existing product. Check with your state Department of Ag or County Agent. Preventive applications are helpful on asymptomatic plants or on plants near confirmed cases. Fungicide spray coverage needs to be very thorough due to the dense canopy of boxwood plants. It is recommended that plants be trimmed first and then sprayed with the high rate of chemical according to label. There are no effective curative treatments. Use of mixtures of multiple active ingredients and rotation of chemistries is important to avoid development of resistance. Some options include:

1. Pageant at 8-12 oz/100gal + chlorothalonil (or mancozeb) (Pageant is boscalid and pyraclostrobin in a combination). Use no more than 2 consecutive sprays
2. Medallion (fludioxonil) 4 oz/100gal + mancozeb (or chlorothalonil)
3. Chlorothalonil 1.375 pints/100gal or mancozeb

Reference to commercial products or trade names does not imply endorsement by University of Delaware Cooperative Extension.

For more information please see the following websites of American Hort (ANLA and OFA) and the Connecticut Agricultural Experiment Station:

www.BoxwoodBlight.org
http://www.ct.gov/caes/cwp/view.asp?a=3756&q=500388

For answers to questions or assistance with diagnosing boxwood blight, please contact:
Delaware Department of Agriculture's Nursery Inspection Unit, Plant Industries
(302)698-4583

Boxwood plant samples with suspect blight symptoms can be submitted to:
University of Delaware Plant Diagnostic Clinic
University of Delaware, Townsend Hall, 531 S. College Ave., Newark, DE 19716
(302)831-1390 http://extension.udel.edu/ag/plant-diseases/ud-plant-diagnostic-clinic/