NEW Blight Ravages Boxwood (updated March 2013)

A new, aggressive, exotic disease is causing dramatic leaf drop and decline of boxwood on Long Island and in other areas of the US. If you see large areas of bare twigs on any species of boxwood this winter (in a NY nursery, garden center, or landscape), send a sample for testing to the LI Horticultural Research & Extension Center at 3059 Sound Ave, Riverhead, NY 11901 / 631-727-3595. Identification of this pathogen followed by prompt action can help slow the spread of this serious disease. For more information, contact Margery Daughtrey, Plant Pathologist, at mild9@cornell.edu Non-commercial samples should go to the CCE of Suffolk County Diagnostic Lab at 432 Griffing Ave, Riverhead, NY 11901 / 631-727-7850.

There is a new fungal disease affecting boxwood. The problem, called “Box Blight” or “Boxwood Blight,” was reported from both CT and NC in October 2011. Since its initial U.S. detections in CT and NC, the problem has also been identified in MA, MD, NY, OH, OR, PA, RI, and VA as well as three Canadian provinces. The pathogen has apparently been moved by shipping diseased plants; other states where boxwood is grown will very likely be discovering it shortly. Boxwood blight is caused by a fungus that was only recently identified – *Cylindrocladium pseudonaviculatum*, also known as *C. buxicola* and *Calonectria pseudonaviculata*. Prior to its appearance in the United States, it was observed for the very first time in the United Kingdom in 1994.

Initially, symptoms are round, black or dark brown leaf spots and thin, black streak-like shoot cankers, either of which may be easily overlooked. Under warm, humid conditions, the disease quickly progresses to show large areas of browned leaves and conspicuous leaf drop. In a diagnostic lab equipped with microscopes, the leaves and twigs can be examined for the characteristic fruiting of the fungus. It is important to distinguish this new *Cylindrocladium* blight from other common boxwood problems such as *Volutella* blight and *Macrophoma* blight – it is impossible to tell which disease is affecting boxwood by field observations alone.
The boxwood blight pathogen is comfortable in temperature conditions typical in spring and fall in the northeastern U.S., but it does not do well at high summer temperatures. It can grow below 50°F, but growth is halted at 86°F and the fungus mycelium is killed at 95°F (although microsclerotia within killed leaves remain alive). The disease is most favored by warm (18-25°C)(64-77°F), humid conditions. A complete disease cycle (from infection to sporulation) can take as little as 7 days. In 2012 on Long Island, boxwood blight dramatically affected plants in both Nassau and Suffolk county landscapes just after a very humid period in early September.

Host susceptibility within *Buxus* in tests in the UK ranged from the leathery-leaved *B. balearica* as the most resistant, to *B. sempervirens* ‘Suffruticosa’ as the most susceptible. See below for a list of hosts that can be naturally infected. Other *Buxus* species have been found to be susceptible when inoculated by researchers. Although it has not been seen infected in nature, *Sarcococca* (sweet box) was also susceptible when inoculated in the UK. Studies at the CT Agricultural Experiment Station have shown that both *Pachysandra terminalis* and the native *P. procumbens* are hosts: they show small, yellow-haloed, tan leaf spots.

**Some Hosts of Cylindrocladium pseudonaviculatum (natural infection observed)\(^1\)**

**Common (American) boxwood:**
- *B. sempervirens*
- *B. sempervirens* ‘Angustifolia’
- *B. sempervirens* ‘Arctic Emerald’
- *B. sempervirens* ‘Blauer Heinz’
- *B. sempervirens* ‘Compacta’
- *B. sempervirens* ‘Elegantissima’
- *B. sempervirens* ‘Graham Blandy’
- *B. sempervirens* ‘Jade Pillar’
- *B. sempervirens* ‘Latifolia Maculata’
- *B. sempervirens* ‘Memorial’
- *B. sempervirens* ‘Variegata’

**English boxwood:**
- *B. sempervirens* ‘Suffruticosa’
- *B. sempervirens* ‘Suffruticosa variegata’

**Korean boxwood:**
- *B. sinica* var. *insularis* ‘Justin Brouwers’\(^2\)
- *B. sinica* var. *insularis* ‘Winter Gem’
- *B. sinica* var. *insularis* ‘Winter Green’

**Hybrids:**
- *B. sinica* var. *insularis* X *B. sempervirens* hybrid ‘Green Mountain’
- *B. sinica* var. *insularis* X *B. sempervirens* hybrid ‘Green Gem’
- *B. sinica* var. *insularis* X *B. sempervirens* hybrid ‘Green Velvet’
- *B. sinica* var. *insularis* X *B. sempervirens* hybrid ‘Chicagoland’
- *B. sinica* var. *insularis* X *B. sempervirens* hybrid ‘Green Ice’
- *B. sinica* var. *insularis* X *B. sempervirens* hybrid ‘Big Leaf Gordo’

**Littleleaf boxwood:**
- *B. microphylla* ‘Faulkner’
- *B. microphylla* var. *Japonica* ‘Morris Midget’
- *B. microphylla* var. *japonica* ‘National’
- *B. microphylla* var. *japonica* ‘North Star’
- *B. microphylla* var. *japonica* ‘Green Beauty’
- *B. microphylla* var. *japonica* ‘Baby Gem’


\(^2\)This cultivar was recently identified as common boxwood rather than Korean boxwood.
This new species of *Cylindrocladium* attacking *Buxus* will be very difficult to control with fungicides. Masking the problem with fungicides rather than taking more strict eradication actions would be a mistake—the disease will then become extensively distributed as a result. Virginia researchers have observed microsclerotia forming in fallen leaves, and this means that the debris from diseased plants is very dangerous. Sanitation efforts after a disease outbreak must be extremely thorough: infected branches should be pruned out in dry weather, and fallen dead leaves should be collected with a vacuum and bagged. Because the pathogen can last in dead leaves for at least 5 years, composting is not a good option. In the future, nurseries will probably find it desirable to produce the least susceptible cultivars of *Buxus*, and landscapers will be requesting these, or alternative evergreen ornamentals. Valuable historic gardens would be wise to not introduce any *Buxus* plants in the near future, in order to avoid introducing this fungus before effective control measures are developed.

Any horticultural business with boxwood on their property now should search for symptoms, have a representative sample of any boxwood with signs of defoliation checked by a disease diagnostic laboratory, and take aggressive sanitation action immediately if the new disease is found on their premises. All boxwood and boxwood leaf debris remaining in a garden center or landscape this winter should be destroyed if this disease is found, and new boxwood introduced for the next growing season should be placed as far as possible from where boxwood were set in the previous year. It is hard to predict the exact impact of this new boxwood disease, but European experience makes it clear that the nursery and landscape industry needs to take it very seriously in order to prevent it from becoming established everywhere boxwood is grown.

**For More Information:**

American Nursery & Landscape Association (ANLA) Boxwood Blight Knowledge Center at anla.org:
http://www.anla.org/knowledgecenter/premium/index.cfm?view=player&colid=112&cid=324&mfid=5311&StartNum=1

Boxwood Blight Information Page of the Connecticut Agricultural Experiment Station:

Virginia Cooperative Extension Fact Sheet:
http://pubs.ext.vt.edu/PPWS/PPWS-4/PPWS-4.html

North Carolina information on cultivar susceptibility and fungicide trials:
http://go.ncsu.edu/boxwood_blight_links

**Perspective from the UK:**

http://www.rhs.org.uk/Science/Plant-diseases/Publications

*This publication was prepared by Alexis Alvey³ and Margery Daughtrey⁴ in January 2012, updated by Margery Daughtrey in February 2013.*

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