

# National Pest Alert



## Boxwood dieback *Colletotrichum theobromicola* Delacr.

Boxwood (*Buxus* sp.) is an important perennial landscape shrub in the United States. It is considered a top ornamental choice for new housing and other commercial development because of its vibrant green color and herbaceous evergreen growth. According to the 2014 USDA National Agricultural Statistics Service, the wholesale market value of boxwoods was estimated at \$118 million annually in the United States.

Boxwoods are known to be infected by a number of plant diseases that include boxwood blight, macrophoma blight, phytophthora root rot and volutella blight. In 2015, a new disease of boxwood called boxwood dieback was identified in Louisiana and is the first known report in the United States (Singh et al. 2015). Boxwood dieback is a foliar disease caused by a fungal pathogen, *Colletotrichum theobromicola*. Research suggests that an association probably exists between *Colletotrichum* spp. and boxwood (Crouch 2012; Farr et. al 2016; Holcomb 1967).

### Symptoms

Boxwood dieback symptoms include random dieback of twigs with light tan colored foliage (Figure 1). Affected leaves do not defoliate and tend to stay attached to the branches. Root and crowns of affected plants look normal (Figure 2). These symptoms on boxwoods have been long observed in landscape plantings, but were always attributed to phytophthora root rot or volutella blight. The infection also causes bright black discoloration of stem immediately under bark (Figure 3). This bright black discoloration extends all along the infected twigs and differs from discoloration of the crown region caused by phytophthora root rot.



FIGURE 1. Random dieback of twigs with light tan colored foliage caused by boxwood dieback.



FIGURE 2. Root and crowns of boxwood infected by *Colletotrichum theobromicola* look normal.

Other biotic and abiotic agents that may cause similar symptoms to boxwood dieback include boxwood blight, macrophoma blight, cold injury, and herbicide injury.

### Geographic distribution and host range

In the United States, boxwood dieback has been detected and identified in a number of states in the south and south eastern U.S. Complete information on the susceptibility of boxwood cultivars to *C. theobromicola* is not available. However, English, Japanese and Korean cultivars of boxwood have been found to be very susceptible.



FIGURE 3. Bright-black discoloration of stem immediately under bark caused by *Colletotrichum theobromicola*.

Photos this page: Raj Singh, LSU AgCenter

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FIGURE 4. Boxwood liners infected with *Colletotrichum theobromicola*

## Disease epidemiology

Boxwood dieback is a foliar disease that has been detected from boxwood liners (Figure 4). The disease is thought to be introduced to new locations via infected liners. The pathogen is known to produce spores on young infected twigs in the landscape (Figures 5 and 6). Disease spread from plant to plant is accomplished by poor pruning practices, and by the dispersal of conidia via rain or irrigation water.

Although environmental conditions affecting disease development are not currently known, artificial inoculation of boxwood plants maintained in a greenhouse at  $28 \pm 2^\circ\text{C}$  and 85% relative humidity has demonstrated that symptom development will occur after three months of incubation.

## Disease management

Since boxwood dieback is a recently discovered disease, effective diagnostic tools and control measures such as fungicides are currently limited. So landscapers, nurserymen and homeowners should follow good cultural practices and create an environment that will hopefully decrease the spread and development of boxwood dieback.

Since removing dead and dying twigs from plants infected by the pathogen is not known to control this disease, all symptomatic plants in the landscape should be removed and destroyed. Surface disinfection of pruning and cutting tools is important to reduce its spread. Avoiding unnecessary plant injury may also help avoid any potential infection by the pathogen.

Nursery owners should closely monitor liners and potted boxwoods for symptoms of boxwood dieback. Suspected plants must be immediately isolated from healthy plants.

Disease management strategies practiced for managing phytophthora root rot will not provide management of boxwood dieback. Laboratory testing is required to confirm boxwood dieback because it can easily be misdiagnosed as phytophthora root rot.

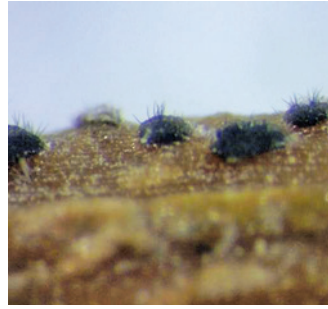


FIGURE 5. Acervuli of *Colletotrichum theobromicola* with black setae produced on infected boxwood twigs in a moist chamber.

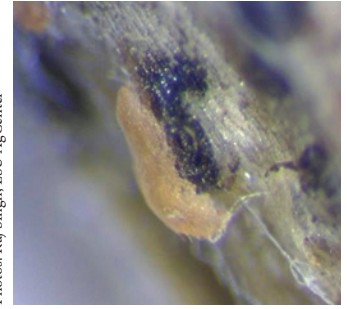


FIGURE 6. Salmon colored sticky conidia produced on infected boxwood twigs in a moist chamber.

## Sample collection and submission

To determine if plants have boxwood dieback, individuals should send plants showing early stages of disease development to a diagnostic clinic. If practical, send whole plant including roots. Branches and twigs that have been dead for several months do not generate accurate diagnosis. Collect three to four 1-foot long symptomatic twigs with both healthy and diseased tissue from recently infected areas. Wrap twigs individually in dry paper towels and then pack them in plastic ziplock bags. Include a completed sample submission with the sample and send it your state plant diagnostic laboratory. Consult your state plant diagnostic lab before collecting and shipping samples (<https://www.npdn.org/home>).

## Literature cited

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