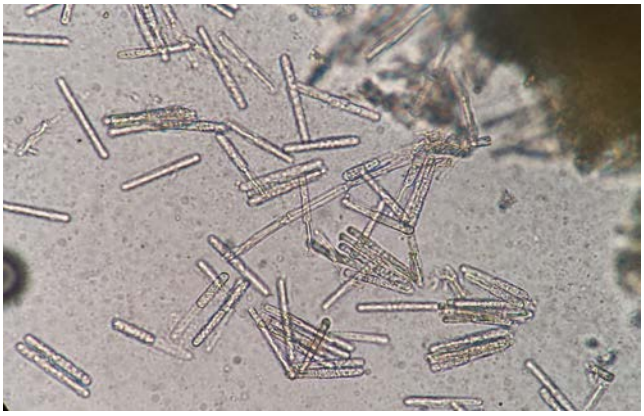
Waypoint ANALYTICAL

BOXWOOD BLIGHT APPEARS IN NORTHERN CALIFORNIA LANDSCAPE: MANAGEMENT CONSIDERATIONS

In December of 2016 our plant disease clinic located in Anaheim, CA received a combination of root tissue and branch clippings of English boxwood (*Buxus sempervirens* 'Suffructicosa') for disease assessment. Information provided by the landscape maintenance firm submitting the material indicates these samples were collected from a mature hedge experiencing symptoms of foliar necrosis, defoliation, and dieback.

Through a combination of microscopy work and culturing of tissues onto agar media it was determined that the decline symptoms were the result of the boxwood blight pathogen *Calonectria pseudonaviculatum*. This information was shared with the diagnostic laboratory at the California Department of Food and Agriculture (CDFA), which independently confirmed this find.

The boxwood blight pathogen is able to survive in temperatures that range between 41^{0}F to 86^{0}F (77^{0}F optimum). In regions of the USA where spring and summer rain is frequent boxwood blight can be very devastating; particularly on boxwoods belonging to *B. sempervirens*. Most cultivars/varieties of *B. microphylla* are not as susceptible and some tolerance to the disease (**not to be confused with resistance or immunity**). *Pachysandra* spp. and *Sarcococca* spp. which are in the family Buxaceae are also susceptible to *C. pseudonaviculatum*.



Conidia (spores) of *Calonectria pseudonaviculatum* from cultured boxwood leaves

Various other species of Cylindrocladium are well-known pathogens of other ornamental crops, and from what we know of these systems, this pathogen can be very challenging to control. One of the main management challenges is the ability of this fungus to produce hardened resting structures known as microsclerotia. These microscopic structures allow the pathogen to survive when conditions are not favorable for its development, and/or in the

absence of a suitable host. All of the defoliated leaves infected by this pathogen contain many microsclerotia and represent a source of inoculum that can re-infect boxwood plants. Even after the leaves have longed decayed, the microsclerotia may remain in the soil for years.

While there is a lack of fungicides with good curative properties for controlling boxwood blight, there are several fungicides that have been identified as providing excellent preventative control. Some of the best products are: Medallion® (fludioxinil) and Daconil Ultrex® (chlorothalonil), as well as some combo products like Palladium® (cyprodinil + fludioxinil), Spectro 90® WGD (chlorothalonil + thiophanate-methyl), Disarm® C (fludioxinil + chlorothalonil), and Affirm® WDG (polyoxin zinc salt). It is always advisable that you consult with your preferred agrochemical provider to set up an appropriate spray program that rotates at least 2 and up to 3 different products with different modes of action in order to avoid resistance.

Cultural control measures include planting boxwood in areas that receive ample sunlight, avoiding constant sheering, providing spacing between plants, and pruning to open the canopy. It is very important that landscape crews practice good sanitation by disinfecting all tools peroxide (ZeroTol®, Oxidate®, etc.), Lysol® disinfectant spray, or 1:10 solution of household.

Ultimately it may be necessary to replace the boxwood with plants that are either tolerant to the disease, or that are not hosts for the pathogen. *Buxus microphylla* 'Green Gem' and *B. sinica* var. *insularis* 'Nana' are good choices as they seem to show a good degree of tolerance to boxwood blight. *Myrtus communis* 'Compacta' and *Ilex crenata* may be good alternatives to boxwood.
Studies conducted at Iowa State University show that nitrogen (N) status of a corn crop can be assessed by measuring the nitrate concentrations in the lower portions of the cornstalks at the end of the growing season.

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