

Calonectria pseudonaviculata* Can Cause Leaf Spot and Stem Blight of *Pachysandra terminalis* and *Pachysandra procumbens[©]

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Cylindrocladium pseudonaviculatum Crous, J.Z. Groenewald & C.F. Hill (syn= *Calonectria pseudonaviculata* (Crous & al.) L. Lombard & al., *Cylindrocladium buxicola* Henricot) was recently reported infecting boxwood *Buxus* spp. L. in North Carolina and Connecticut. This was the first report of this disease in North America (Ivors et al., 2012). The pathogen caused significant losses in container nurseries and in the landscape in both states and a number of boxwood taxa were shown to be infected. Henricot et al. (2008) reported that all *Buxus* spp. tested and a *Sarcococca* Lindl. (sweet box) sp. tested were all susceptible to this pathogen. Plants in the *Buxaceae* that are either native or grown as ornamentals in North America include *Buxus*, *Sarcococca*, and *Pachysandra* Michx.

Japanese spurge, *Pachysandra terminalis* Siebold & Zucc. is widely grown and Allegheny spurge, *Pachysandra procumbens* Michx., is a native plant that is also grown as an ornamental ground cover in nurseries and landscapes. *Pachysandra procumbens* is primarily reported as a perennial woodland herb or subshrub from the southeastern United States, from Louisiana to Florida and north to Indiana and Pennsylvania. It is relatively rare in nature with locally common populations (Dirr and Alexander III, 1979). It is hardy far north of its natural range and is propagated and sold as an ornamental groundcover in the nursery trade.

We inoculated healthy plants of both *Pachysandra* species in separate experiments to conduct Koch's postulates. Circular lesions (1-4 mm diameter) were evident on leaves within 7 to 10 days after inoculation. Stem lesions were also observed. All inoculated plants developed lesions, and no lesions were observed on non-inoculated plants. Leaves and stems with lesions were surface sterilized in 0.5% NaOCl for 30 s, rinsed twice in sterile distilled water and lesion margins plated onto water agar or ½ PDA (potato dextrose agar). The pathogen was re-isolated from all plants tested.

Stem lesions girdled the plant after 2 weeks and resulted in stem blight and plant death of *P. procumbens*, but not *P. terminalis*. Under humid conditions, heavy sporulation of *C. pseudonaviculatum* was observed on both leaf and stem tissues of *P. procumbens*. Sporulation also occurred to a lesser extent on *P. terminalis*. Microsclerotia were observed in infected leaves and chlamydospores, in infected leaves and stems using both tape lifts and epidermal peels at 400× magnification.

Cylindrocladium pseudonaviculatum has now been shown to cause disease on all common ornamental species in the *Buxaceae* grown in North America. To date, over 20 cases of natural landscape infections in *P. terminalis* have been confirmed in Connecticut (S.M. Douglas, pers. commun.). The discovery of landscape infections of *P. terminalis* resulted in important modification of best management practices for management of this disease in the landscape (Douglas, 2012).

Pachysandra procumbens, while not as common as *P. terminalis*, typically grows in environments conducive for the development of disease and may also serve as a reservoir of inoculum for the boxwood blight pathogen in cultivated landscapes and in nature. In addition, *P. procumbens* is listed by the USDA Natural Resources Conservation Service as endangered in states such as Florida and Indiana (<<http://plants.usda.gov/java/threat?statelist=states&stateSelect=US12>>) and *C. pseudonaviculatum* leaf spot and stem blight may further threaten this species in its native habitat.

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