

Boxwood Blight Nomenclature

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Our understanding of boxwood blight has dramatically increased since its discovery in 1994. Along the way there have been several changes to the scientific names of the casual fungi, which may confuse some boxwood aficionados. Yet, these changes tell an exciting story of discovery about a disease that threatens our enduring and beloved boxwood, which has graced our gardens for 6,000 years.

Late in 1994, boxwood blight was first identified by Dr. Béatrice Henricot, Principal Plant Pathologist of the Royal Horticultural Society (RHS) Wisley, England. It was discovered in a nursery in Hampshire, England. Initially, the causal fungus was identified as *Cylindrocladium scoparium*. This common *Cylindrocladium* species is often misidentified due to the similarity of morphological characteristics with other species, e.g. *C. ilicicola*, *C. mexicanum*, *C. pauciramosum*, and *C. spathulatum*.

In 1998, scientists at the RHS examined a diseased boxwood with similar symptoms, and it was apparent that the fungus present was a new species, never described before, as announced by Henricot and others in a 2000 publication. Using traditional cultural techniques and DNA sequencing, the researchers determined that the fungus was indeed a new species and they named it *C. buxicola* in deference to its host. Henricot and Culham submitted a formal description of *C. buxicola* for publication in the journal *Mycologia* in July 2001.

Meanwhile, in New Zealand, where boxwood blight had been seen in 1998, Crous and others identified a new species of *Cylindrocladium* from *Buxus sempervirens* foliage that they published, in 2002, under the name *Cylindrocladium pseudonaviculatum*. Just a few months after this publication, *Mycologia* published Henricot and Culham's paper on *Cylindrocladium buxicola* as the name of the new boxwood pathogen in Europe. Additional tests and communications among the researchers made it clear that *Cylindrocladium buxicola* was synonymous with the new pathogen described from New Zealand. Because of prior publication, the name *Cylindrocladium pseudonaviculatum* thus became the name for this pathogen of boxwood. This was again confirmed by Lombard in 2010.

The sexual morph of this new *Cylindrocladium* was inferred to be *Calonectria pseudonaviculata*, although this stage of the fungus has still not been seen in nature. A new "one fungus-one name" convention, established in 2011, requires fungi to be named according to the name of their sexual stage. For boxwood blight, *Cylindrocladium* is the genus of the imperfect or asexual stage and *Calonectria* is the sexual stage. Therefore, *Calonectria pseudonaviculata* became the name of record for the new boxwood fungus.

In May 2012, the American Boxwood Society hosted an international boxwood blight symposium in Beltsville, Maryland, US. There, scientists proposed two distinct genetic types of the boxwood pathogen in Europe and referred to them as G1 and G2.

In 2016, Gehesquière et al., in a comprehensive study, examined 234 *Calonectria* isolates from diseased *Buxus* from 15 countries on four continents. They distinguished genetic clades G1 and

G2 using multilocus phylogenetic analysis. They named G1 *Calonectria pseudonaviculata*, the species originally described from both the UK and New Zealand. They proposed G2 as a new species, *Calonectria henricotiae*. *C. henricotiae* has been seen to date only in Belgium, the Czech Republic, Germany, the Netherlands, Slovenia, and the UK.

The Center for Agriculture and Biosciences International (CABI) was founded in England in 1910. It is renowned as an international, inter-governmental, not-for-profit organization, providing comprehensive and contemporary scientific information. CABI attributes boxwood blight to *Calonectria pseudonaviculata*, with *Cylindrocladium buxicola* as a synonym.

The Boxwood Blight Insight Group (BBIG) is a four-year research initiative established in September 2020. This international collaborative effort is largely funded by the United States Department of Agriculture, National Institute of Food and Agriculture, Specialty Crop Research Initiative (SCRI). Since its founding, BBIG also identifies boxwood blight as being caused by *Calonectria pseudonaviculata* and *C. henricotiae*.

In December 2021, the Royal Horticultural Society identifies the boxwood blight pathogens as *Calonectria pseudonaviculata* and *C. henricotiae* (syn. *Cylindrocladium buxicola*). Even with this nomenclatural agreement among international groups, the rapid and overlapping discoveries in the foliar pathology of boxwood still result in some potentially confusing name usages even among authorities. Older European and American literature, also, often refers to *Cylindrocladium buxicola*.

As work progresses, our understanding of boxwood blight will continue to improve. The dissemination of authoritative information, with correct nomenclature of both pathogens and hosts, is an important component of this work.

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Submitted: December 2021.