



First report of *Phytophthora nicotianae* causing wilting and desiccation on *Buxus sempervirens* in Italy

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Boxwood (*Buxus* spp.) is one of the oldest genus of ornamental garden plants in Europe and is mainly used for hedging and topiary work (Batdorf, 1997). The most commonly planted species is *Buxus sempervirens*. In late September 2012, collar and root rot associated with severe wilting and desiccation of foliage were observed on boxwood potted plants grown in commercial nurseries in central Italy. Of two hundred boxwood plants observed, more than 50% showed these symptoms, and most had the canopy with evident straw colour and diffused desiccation resulting in 20% mortality. Leaves at first appeared light green (Fig. 1), then turned yellow to straw coloured (Fig. 2). Foliar symptoms were initially restricted to a few branches and then extended to most of the canopy. A *Phytophthora* species was consistently recovered by plating small pieces of stem and root tissues cut from the margin of lesions on P5ARPH selective medium (Jeffers & Martin, 1986). A similar species was recovered from soil samples baited with azalea and camellia leaves. Isolates were identified as *P. nicotianae* based on morphological characteristics and DNA analysis. Colonies were arachnoid on potato dextrose agar (PDA), and produced uni- and bi-papillate, prevalently non-caducous, ovoid, pyriform to spherical sporangia (Fig. 3). The average sporangium size was 46 x 40 µm with a length/width ratio of 1.15. Chlamydospores were both terminal and intercalary. All isolates were mating type A2. The identity was confirmed by internal transcribed spacer (ITS) sequence comparison, indicating 100% homology with sequences available in GenBank (e.g. Accession No. JF792541), and 99% homology with cytochrome c oxidase subunit II (*Cox II*) (AY129216; Martin & Tooley, 2003). The sequences of one isolate AB205 were deposited in the European Nucleotide Archive (ENA) with Accession Nos. HG007960 and HG007961 for ITS and *Cox II*, respectively.

Pathogenicity tests were conducted in the greenhouse with the strain AB205 on 10 two-year-old shoots cut from boxwood plants with two inoculation points each. Mycelial plugs (5 mm diameter) cut from the margins of actively growing 15-day-old cultures on PDA were inserted

through the epidermis to the phloem. Controls were treated as described above except for inoculation with sterile PDA plugs. After inoculation, shoots were incubated in test tubes with sterile water for one week in the dark at 22 ± 2°C. Lesions were evident at the inoculation points. *P. nicotianae* was consistently re-isolated from the margin of symptomatic tissues. Controls remained symptomless. Decline and root rot of boxwood plants has been reported to be caused by *P. citricola* in Poland, *P. nicotianae* var. *parasitica* in Virginia, and *P. citrophthora* in North Carolina. To our knowledge this is the first report of *P. nicotianae* on *Buxus sempervirens* in Italy where *P. citrophthora* has been already reported in *Buxus rotundifolia* by Vettrai et al. (2010).

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Figure 1



Figure 2

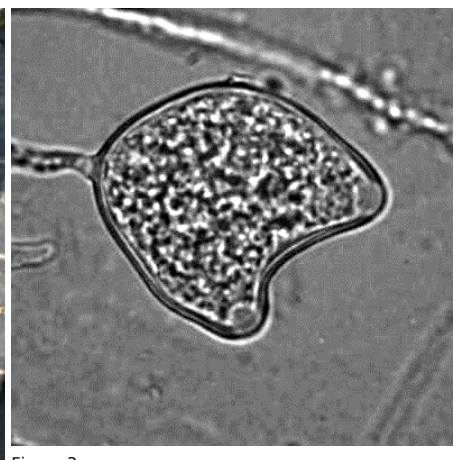


Figure 3

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