

## New Disease Reports

## First record of Erysiphe alphitoides on Wisteria brachybotrys and W. frutescens, and first record of its chasmothecia on Wisteria

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In 2014, pale chlorotic spots with occasional cell necrosis occurred mainly adaxial surfaces of juvenile leaves brachybotrys 'Murasaki-kapitan' and W. frutescens 'Amethyst Falls' (Fig. 1) at Hyde Hall (Essex) and Wisley (Surrey) Royal Horticultural Society Gardens, respectively. Symptoms associated with powdery mildew affected about half the leaves on multiple plants.

On W. frutescens, mycelia were sparse, often lacking conidiophores. Hyphae were branched, septate, 5-6 µm wide and hyaline. Hyphal appressoria were highly lobed, mainly in opposite pairs, 5-9 µm diameter. Conidiophores (n=20), up to 66  $\mu$ m long with foot cells, 13–22  $\times$  4.5–9  $\mu$ m (mean  $17.5 \times 6.5 \mu m$ ), emerging centrally from the side or top of the mother cell and lowest septum not raised above it, with following cells 0-2 (mainly 1 cell),  $6.5-21 \times 6-9 \mu m$  (mean  $12 \times 7 \mu m$ ) (Fig. 2). Conidia (n=80) were formed singly, mainly ellipsoid, some cylindrical or ellipsoidcylindrical,  $18-37 \times 6.5-16 \mu m$  (mean  $26.5 \times 12 \mu m$ ), with a length:width ratio 1.4-3.1 (mean 2.4) (Fig. 3a). On W. brachybotrys, morphology was identical apart from the following small differences: hyphae 4-7 µm wide; hyphal appressoria 5–10  $\mu m$  diameter; conidiophores (n=20), up to 69  $\mu m$ long; foot cells, 14–26  $\mu$ m  $\times$  5–8  $\mu$ m (mean 17  $\times$  7  $\mu$ m); following cells 0–2 (mainly 2 cells) 7.5-21  $\times$  6.5-9.5  $\mu m$  (mean 12  $\times$  8  $\mu m$ ); and conidia (n=80) mainly ellipsoid, some cylindrical, ellipsoid-cylindrical or doliiform,  $19-37 \times 9.5-17 \mu m$  (mean  $25 \times 13 \mu m$ ), with a length: width ratio 1.4-2.9(mean 2.1) (Fig. 3b). The morphology matched the anamorph of Erysiphe alphitoides (Braun & Cook, 2013).

The ITS region was analysed as described by Cunnington et al. (2004) on an isolate from each host using primers PMITS1 and 2. The resulting sequences were deposited in GenBank (W. brachybotrys and W. frutescens, Accession Nos. KP686267 and KP686268, respectively). There was a 100% match between the sequences and with those labelled as E. alphitoides sensu stricto (e.g. AB292700 from Quercus dentata).

Chasmothecia were not present on either W. brachybotrys or W. frutescens but, for the first time in the UK, chasmothecia were found on W. sinensis (Fig. 4) appearing in Surrey during 2006, at the same time as observed on Sorbaria (Denton et al., 2013), thus coinciding with increases in the pathogen's host range. Diameters were 62-69 µm (n=6) on Wisteria,  $108\text{--}116~\mu m$  (n=2) on Sorbaria, compared to 83–95  $\mu m$  (n=4) on Quercus.The smaller size on Wisteria may be due to small sample numbers and immaturity. Neither asci nor dichotomous branching of appendages (Microsphaera type) were observed, but the latter normally only develops after ascospore formation.

To date, powdery mildew has only been recorded on two Wisteria spp., W. floribunda and W. sinensis (Braun & Cook, 2013; Farr & Rossman, 2015). Within the UK, only W. sinensis has a record of powdery mildew and that was identified as E. alphitoides sensu lato (Henricot & Cook, 2008). Erysiphe alphitoides, which infects Quercus spp. worldwide (Farr & Rossman, 2015), has been reported recently on Sorbaria sorbifolia in the UK (Denton et al., 2013). To our knowledge this is the first report of powdery mildew on W. brachybotrys and W. frutescens in the world.

## References

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Figure 1

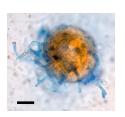


Figure 2



Figure 3



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