New Disease Reports

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

G.J. Denton [1], J.O. Denton [1]* and R.T.A. Cook [2]

[1] *Plant Pathology, Royal Horticultural Society, Wisley, Woking, Surrey GU23 6QB, UK*; [2] *30 Galtres Avenue, York YO31 1JT, UK*

*E-mail: jennydenton@rhs.org.uk

Received: *20 Nov 2015.* ***Published:*** *27 Jan 2016.* ***Keywords:*** *powdery mildew*

In 2014, pale chlorotic spots with occasional cell necrosis occurred mainly on adaxial surfaces of juvenile leaves of *Wisteria 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 µm long with foot cells, 13–22 × 4.5–9 µm (mean 17.5 × 6.5 µm), 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 × 6–9 µm (mean 12 × 7 µm) (Fig. 2). Conidia (n=80) were formed singly, mainly ellipsoid, some cylindrical or ellipsoid-cylindrical, 18–37 × 6.5–16 µm (mean 26.5 × 12 µm), 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 µm diameter; conidiophores (n=20), up to 69 µm long; foot cells, 14–26 µm × 5–8 µm (mean 17 × 7 µm); following cells 0–2 (mainly 2 cells) 7.5–21 × 6.5–9.5 µm (mean 12 × 8 µm); and conidia (n=80) mainly ellipsoid, some cylindrical, ellipsoid-cylindrical or doliiform, 19–37 × 9.5–17 µm (mean 25 × 13 µm), 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*, 108–116 µm (n=2) on *Sorbaria*, compared to 83–95 µm (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

Braun U, Cook RTA, 2012. Taxonomic manual of the *Erysiphales* (powdery mildews). CBS Biodiversity Series **11**, 1-707.

Cunnington JH, Lawrie AC, Pascoe IG, 2004. Unexpected ribosomal DNA internal transcribed spacer sequence variation within *Erysiphe aquilegiae sensu lato*. *Fungal Diversity* **16**, 1-10.

Denton GJ, Denton JO, Cook RTA, 2013. First report of powdery mildew on *Sorbaria*. *New Disease Reports* **28**, 15. http://dx.doi.org/10.5197/j.2044-0588.2013.028.015

Farr DF, Rossman AY, 2015. Fungal Databases, Systematic Mycology and Microbiology Laboratory, ARS, USDA. Retrieved 1 April 2015 from http://nt.ars-grin.gov/fungaldatabases/.

Henricot B, Cook RTA, 2008. New report of a powdery mildew on *Wisteria* in the UK. *Plant Pathology* **57**, 374. http://dx.doi.org/10.1111/j.1365-3059.2007.01671.x

Figure 1

Figure 2

Figure 3

Figure 4

To cite this report: Denton GJ, Denton JO, Cook RTA, 2016. First record of *Erysiphe alphitoides* on *Wisteria brachybotrys* and *W. frutescens*, and first record of its chasmothecia on *Wisteria*. *New Disease Reports* **33**, 5. http://dx.doi.org/10.5197/j.2044-0588.2016.033.005

This report was published on-line at www.ndrs.org.uk where high quality versions of the figures can be found.