



First report of *Verticillium dahliae* causing wilt in *Impatiens* New Guinea Group hybrids

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In September 2014, wilting plants were observed in a trial of *Impatiens hawkeri* New Guinea Group hybrids at RHS Garden Wisley. The stems of affected plants were defoliated (Fig. 1) and black staining was noted in the vascular tissues when cut stems were examined in cross section. Stems with staining were incubated in a humid chamber and after three days abundant verticils and conidia of a *Verticillium* species were produced, corresponding to the dark, stained areas of the stems (Fig. 2). The fungus usually went on to produce microsclerotia suggestive of *Verticillium dahliae* when the specimens had been incubated for seven days. Natural infection was thus confirmed on 26 cultivars and pure cultures of *V. dahliae* from *Impatiens* SunPatiens Vigorous Magenta 'Misato Fg3' and *Impatiens* 'Impacwhi' were isolated onto potato dextrose agar and used for infection assays and molecular analysis. The ITS region was sequenced with ITS1F (Gardes & Bruns, 1993) and ITS4 (White *et al.*, 1990). The sequences (GenBank Accession Nos. KT970068-KT970070) were identical to *V. dahliae* isolates from, for example, tomato (FJ900167, GU461607 and GU461610), cotton (GU461609) and grapevine (FJ475122). Three isolates were deposited into the RHS Plant Pathology culture collection (Accession Nos. M10A6, M10D5 and M10E5).

Plug plants of *Impatiens* cvs. SunPatiens Blush Pink 'Sakimp013' and SunPatiens Vigorous Magenta were potted into 9 cm pots in a 3:1 (v/v) mix of John Innes No. 2 potting mix:vermiculite. After four weeks' growth, the roots were washed and placed for 30 minutes in conidial suspensions (c. 10^7 conidia/ml) of *V. dahliae* (M10E5) in sterile distilled water, or water alone, before transferring into fresh potting mix as above. Two plants per treatment were placed in a growth room maintained at a temperature of 20°C day/16°C night and a humidity of 55%. Plants showed signs of wilting, defoliation and vascular tissue staining four weeks post inoculation (Fig. 3). Uninoculated plants showed no symptoms of wilt. *Verticillium*

dahliae was recovered from the vascular tissue in stained stems of inoculated plants.

This is the first record of *Verticillium* wilt on *Impatiens* New Guinea Group hybrids. The disease has been recorded on other species of *Impatiens* such as *I. balsamina* (French, 1989) and *I. walleriana* (Taylor, 1993). However, this report is of particular interest as New Guinea Group hybrids have been grown as a substitute for *I. walleriana* (busy Lizzie), which is very susceptible to the downy mildew pathogen *Plasmopara obducens* (Jennings, 2014). New Guinea Group hybrids are not thought to be susceptible to *P. obducens*.

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Figure 1

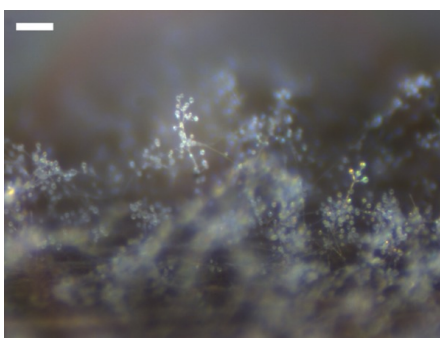


Figure 2



Figure 3

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