New Disease Reports

First report of *Phytophthora tentaculata* affecting *Santolina* in the UK

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Santolina chamaecyparissus, also known as cotton lavender, is a dwarf Mediterranean shrub often grown for its aromatic foliage and as a dwarf hedging plant. In 2013, *S. chamaecyparissus* plants were sent to the Royal Horticultural Society from a garden in Derbyshire with decayed roots and lesions at the base of the stems. To isolate the pathogen, 1-2 mm pieces of necrotic tissue from the lesion leading edge were placed on *Phytophthora* selective media (SMA; amended as per Brasier *et al*., 2005) and incubated at 20°C for three days. In addition, pieces of necrotic stem tissue were placed into apple (cv. Granny Smith) baits and incubated in the dark at 20°C for up to one week. As soon as lesions formed on the apples the lesions were placed onto SMA plates for isolation. Hyphal tips were transferred onto carrot agar (CA) in order to obtain pure cultures.

Sporangia formed readily when CA plugs of an actively growing culture were floated in filtered pond water. The sporangia (Fig. 1) were ovoid to obpyriform in shape, ranging between 22-79 (55.6) x 15-49 (37.2) µm in size (average l/b ratio 1.50; n = 46), papillate and primarily non-caducous, but occasionally caducous with a short pedicel (4-7 µm). Oogonia were readily produced on CA, globose and measured between 24-39 (32.8) µm (n = 70). The paragynous (occasionally amphigynous) antheridia were spherical or club-shaped and measured 10-16 (12.9) x 12-23 (15.6) µm (n = 33). Oospores were aplerotic and had a diameter of 21-35 (28.3) µm (n = 64). Chlamydospores were observed on CA after at least two weeks growth. They were intercalary or terminal and had a diameter of between 25- 42 (33.6) µm (n = 56). Based upon morphological characteristics, which agreed with the original description by Kröber & Marwtiz (1993), the pathogen was identified as *Phytophthora tentaculata.*

The molecular identification of an isolate (RHS252983) as *P. tentaculata* was confirmed by sequencing the ITS region using a semi-nested PCR reaction as described by Henricot & Waghorn (2014). The ITS of the RHS252983 isolate (GenBank Assession No. MG761692) was identical to other *P. tentaculata* isolates (KF501392, KF667505, AF266775 and FJ802009).

Six plants of *S. chamaecyparissus* cv. Pretty Carol were inoculated at the stem base with 3 mm plugs from a seven-day-old *P. tentaculata* culture (RHS252983) grown on CA as described by Henricot & Waghorn (2014). The plants were kept in a grow dome at ambient room temperature and natural light conditions. After 21 days, the plants showed signs of wilting and decline when compared to control plants inoculated with plugs of CA only (Fig. 2). Necrotic lesions extended up and down the stems with lengths of 50-190 (114) mm. In comparison, agar controls yielded lesions of 15-30 (20) mm. *Phytophthora tentaculata* was successfully re-isolated from the lesion margins of the inoculated plants and confirmed by DNA sequencing.

Phytophthora tentaculata has been recorded in North America (Rooney-Latham & Blomquist 2014), Asia (China, Japan) and several European countries (Italy, Germany, Spain and The Netherlands) (Farr & Rossman, 2018). In California, it has been found in restoration nurseries providing planting stock for forest and other environmental settings with the potential to cause lasting environmental damage (Rooney-Latham *et al*., 2015). To our knowledge, this is the first report of *P. tentaculata* in the UK.

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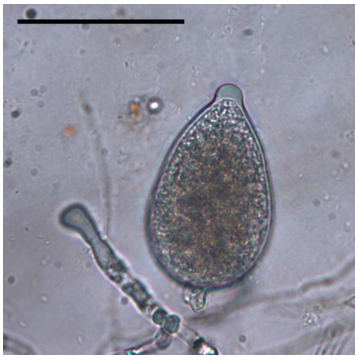

Figure 1

Figure 2

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