NEW DISEASE REPORT

First report of ramorum bleeding canker on Quercus falcata, caused by Phytophthora ramorum

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Phytophthora ramorum (Werres et al., 2001) is the cause of a bleeding canker of native American oaks in California and southern Oregon, USA, known as sudden oak death (Rizzo et al., 2002). In Europe, P. ramorum has caused dieback and leaf blight of various shrubs, especially Rhododendron (e.g. Lane et al., 2003). Many European trees are potentially susceptible to P. ramorum (Brasier et al., 2002). Trees at woodland and garden sites in the UK with infected rhododendrons are therefore being monitored.

In October 2003, a mature 60-cm-diameter American southern red oak, Quercus falcata, was found in southeast England with ‘bleeding’ in the lower 1 m of the trunk. Samples taken at ~2 m above ground level revealed fresh lesion edges in the inner bark, consistent with a phytophthora bark necrosis, girdling the entire circumference of the tree. The lesion edges were mottled (i.e. with islands of necrotic and healthy tissue) and pale orange-brown to red-brown. Staining extended ~3 mm into the outer wood vessels. Older lesion areas extended down to the root flares and were a darker red-brown. Extensive frass, indicating bark beetle colonization of the stressed tree, was present to 1 m and fresh frass was present sporadically to ~2 m.

When samples of inner bark from lesion edges were plated onto a selective medium, a Phytophthora sp. was consistently isolated. On carrot agar, isolates exhibited the combination of temperature-growth relationships, sporangia, chlamydospores and denticulate hyphae unique to P. ramorum (Werres et al., 2001). Its ITS sequence (AY616757) was identical to that of other P. ramorum isolates. Physiological and genetic analyses showed the isolates were of A1 sexual compatibility type and conformed to the European population of P. ramorum. When wound-inoculated (Brasier et al., 2002) into bark of 100-cm-diameter Q. falcata branch material, the pathogen caused long lesions (~70 mm) in 5 weeks and was successfully reisolated. Control agar plugs only caused a few mm of bark discoloration.

This is the first report of ramorum bleeding canker in the UK. Quercus falcata is a close relative of American northern red oak, Q. rubra, a common plantation or ornamental tree in the UK and Europe. Bark of mature Q. rubra is susceptible to P. ramorum on inoculation (Brasier et al., 2002) and two trees have been found naturally infected in the Netherlands (P. D. de Gruyter, Wageningen, personal communication). Both Q. falcata and Q. rubra are therefore at risk from P. ramorum.

References


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Accepted 12 May 2004 at www.bspp.org.uk/ndr where figures relating to this paper can be viewed