New Disease Reports

First report of *Phytophthora lateralis* on *Chamaecyparis pisifera*

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In June 2011, Scottish Government Plant Biosecurity Inspectors submitted some branches from a Sawara cypress (*Chamaecyparis pisifera*) to SASA to test for the presence of regulated *Phytophthora* spp. The tree was about 100 years old and growing in a castle garden in the west of Scotland. It was exhibiting symptoms of dieback on individual branches within the crown (Figs. 1, 2). No cankers were observed on the trunk or root collar, indicating an aerial infection as observed by Robin *et al.* (2011) and Green *et al*. (2012).

The sample was divided for molecular testing and for isolation. For the molecular testing, symptomatic parts of the sample were ground in liquid nitrogen and DNA was extracted using the Nucleo Spin Plant DNA extraction kit (Macherey and Nagel, Düren, Germany). The DNA was tested in a nested PCR for *P. lateralis* (Schena *et al*., 2008) targeting the Ras-related protein gene *Ypt1* using general *Phytophthora* primers YPh 1F/2R in the first round and specific *P. lateralis* primers Ylat3F/2R in the second round. A resulting 133 bp band matched the positive control extracted from a pure culture of *P. lateralis*.

For isolation, pieces of foliage were excised from the area bordering the dieback symptoms and placed onto V8 agar containing antibiotics selective for *Phytophthora* spp. (PARPNH; Jung *et al.,* 1996). The agar plates were incubated at 18°C in the dark and after five days a *Phytophthora* sp. was observed. The culture showed characteristic features of *P. lateralis* such as sparse aerial mycelium, non-caducous and non-papillate sporangia, and the laterally formed chlamydospores typical of the species (Hall, 1991). The isolated pathogen was re-inoculated onto detached leaflets of *C. pisifera* cvs. 'Filifera Nana' and 'Nana Aurea Variegata'. Ten leaflets (7-10 mm) per host were floated in a petri dish containing approximately 3,500 sporangia/ml. The petri dishes were kept in a growth room at 20°C with 12 hours light. After seven days, the leaflets of both tested cultivars were showing discolouration or necrosis from which the pathogen was re-isolated fulfilling Koch's postulates.

Currently, there are two genetically and morphologically distinct lineages of *P. lateralis* known to occur in Scotland; the "Pacific Northwest lineage" has been found in several locations in the UK, and the "UK lineage", so far only been found in two places in Central Scotland (Brasier *et al*., 2012; Green *et al*., 2013). Sequencing of the ITS region of the ribosomal RNA (GenBank Accession No. KJ158420) revealed that the new isolate was identical to the UK lineage of the pathogen. Subsequently, a further infected Sawara cypress and a *C. lawsoniana* were identified close-by in the same garden as the original infected specimen. While *P. lateralis* has been found frequently on *C. lawsoniana* in several countries (Brasier *et al.,* 2012), this is to our knowledge the first report worldwide of *P. lateralis* infecting *C. pisifera*.

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Figure 1

Figure 2

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