

WATERMARK DISEASE OF WILLOW



Diseased cricket-bat willow trees - Christian Malford, Wiltshire, England.

©Crown copyright. Forest Research



Watermark disease of cricket-bat willow, viewed as cross section to show internal symptoms - Duxford, Cambridge, England.

©Crown copyright. Forest Research

Status: Non-quarantine

Causal organism: *Brenneria salicis*

Host species

Many *Salix* spp. are affected, but the pathogen can also reside in non-symptomatic poplar and alder.

Distribution

The disease is widespread in the Netherlands and is also found in Belgium, Italy, Hungary (frequently on *Salix alba* in Europe) and Japan (from *Salix bakko*, *Salix sachalinensis*, and *Salix kinuyanagi*) (EPPO, 2020).

Occurrence in the UK

B. salicis is found mostly in East Anglia, but there have been isolated outbreaks in Leistershire and Wiltshire.

Symptoms of the disease

Leaves on some branches suddenly wilt and turn reddish-brown during spring and summer months. These branches die and become leafless. Sapwood of affected branches and trunks show water-soaked brown lesions or a red-brown stain. Staining is usually restricted to the outermost annual rings, but sometimes covers the entire transverse section of branch/trunk. After cutting, bacteria can ooze (and spread) from watermark-stained lesions. Seriously diseased trees often die. Although shoots may recover and grow leaves, these are often re-infected with the pathogen and subsequently die.

Control measures

Preventative: In the UK, growers should be made aware of the disease and associated risks. As the bacteria can be present in young trees that do not exhibit symptoms of the disease, nursery stock should be screened for the presence of *B. salicis* prior to planting out. Control of soil nitrogen levels due to excess fertilisation may also help reduce disease incidence.

Curative: In ornamental plantings in the Netherlands, highly susceptible clones have been replaced with more resistant cricket-bat willow trees.

