

Xylella fastidiosa

Xylella fastidiosa is a disease causing bacterium that affects a wide range of important woody plants and broadleaved trees. It invades the xylem vessels that transport water throughout plants and causes symptoms that range from leaf scorch to tree dieback and death. In the natural environment it is transmitted by xylem-fluid feeding insects such as leafhoppers. Until recently the bacterium was only known in the Americas and Taiwan, but an outbreak on olive trees in southern Italy was confirmed in 2013. Affected shrubs were also found in France in 2015. In Italy, the bacterium is apparently causing the rapid decline of olive trees over a large area and is under emergency measures. It has not yet been found in the UK and measures are in place to protect our trees.



T.D. Leininger, USDA Forest Service, Bugwood.org

Distribution

There are at least four subspecies of the bacterium *Xylella fastidiosa*: 'fastidiosa', 'sandyi', 'pauca' and 'multiplex'. Subspecies *fastidiosa* is found in Central America, North America and Taiwan, and hosts include citrus, almond and coffee plants and grapevines. *Sandyi* affects oleander in the USA. *Pauca* is found in Argentina, Brazil, Costa Rica and Paraguay, and hosts include citrus and coffee. *Multiplex* is mainly found in the USA and probably has the widest host range, affecting trees including oak, elm and plane. The Italian outbreak on olive is associated with subspecies *pauca*, which has also been intercepted on ornamental coffee plants imported into France, Germany, Holland and Italy. The most recent outbreaks in France (Corsica) have affected Spanish broom and milkwort and were diagnosed as subspecies *multiplex*.

How the disease spreads

In the natural environment, *Xylella fastidiosa* is mainly spread by insects that feed on xylem fluid. There are various insect species in Britain that could take on this role if the bacterium was introduced into the UK, for example the common froghopper (meadow spittlebug). Such insects generally only fly short distances but they can be moved over much longer

distances by the wind. As the insects feed, they pick up the bacterium from infected planting stock and pass it on to healthy plants. Transfer between neighbouring plants is also possible via root grafts.

Symptoms to look out for

Most disease symptoms result from the blockage of the xylem vessels within the plant or tree, which restricts the movement of water. Symptoms vary, depending on host species and susceptibility, but include marginal leaf browning known as leaf scorch, foliage wilting and withering of branches. With severe infections in some of the most damaging host/subspecies combinations, dieback, stunting and eventual plant death can occur, for example in olive trees or grapevines.

However, on plane (above), maple ❶, oak ❷ and elm ❸ trees, visible symptoms consist of leaf scorch, sometimes with dieback of twigs and branches. The characteristic leaf symptoms, which are visible in summer, include browning at the leaf margins (not along the main veins), and there is often a yellow edge to the browned areas ❷❸.



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Action to control the disease

Measures to exclude this pathogen from the UK are the best control option. However, if the disease was to establish, controls might include the removal of host trees and habitat management of the insects that could spread the bacterium.

How you can help

You can help us protect the health of our trees, woodlands and forests by reporting signs of tree pests and diseases. *Xylella fastidiosa* is a quarantine organism so there is an obligation to report any suspect trees to the Plant Health authorities.

You can also find and follow the general advice on sensible biosecurity measures from: www.forestry.gov.uk/biosecurity.

Further information on the disease and identifying disease symptoms is available from the websites and contacts listed in the box below. Note that, in Britain, there are several other common tree disorders that can cause similar symptoms.

Disorders with similar symptoms

There are a number of other disorders that can produce symptoms similar to those caused by *Xylella fastidiosa*:

- Horse chestnut trees commonly suffer from a fungal disease, which causes a brown leaf blotch with a yellow halo. The same tree species can also be affected by horse chestnut leaf miner but this causes inter-veinal browning of leaves rather than marginal browning of leaves.
- Elms suffer from Dutch elm disease which also causes wilting and browning of foliage.
- Plane trees suffer from a fungal disease called anthracnose, which causes twig death and leaf blight. Powdery mildew can also cause yellowing and distortion of young leaves.

Reporting the disease

Report suspect trees to the Forestry Commission via the Tree Alert page at: www.forestry.gov.uk/treealert
Please supply photos of symptoms, details of the affected tree(s) location, contact details and, if possible information about the age of the tree (e.g. mature or recent planting).

For more information

To find out more about tree pests and diseases in the UK:
www.forestry.gov.uk/pestsanddiseases

Forest Research provides diagnosis and advice on tree disorders:
www.forestry.gov.uk/fr/ddas

For information and the latest research on *Xylella fastidiosa*:
<http://nature.berkeley.edu/xylella>

Contacts and plant health authorities

- Forestry Commission (Plant Health)
www.forestry.gov.uk/planthealth
- APHA (Animal and Plant Health Agency)
www.gov.uk/government/organisations/animal-and-plant-health-agency
- Scottish Government (Plant Health)
www.scotland.gov.uk/planthealth