

Chestnut blight

Chestnut blight is a serious disease of chestnut trees caused by the fungus *Cryphonectria parasitica*. The fungus does little damage to host trees in its native range in Asia, but has devastated American chestnut since its accidental introduction into the USA more than 100 years ago via infected planting stock. The disease was also introduced into Europe in the 1930s where it affects species such as the European or 'sweet' chestnut. It has since spread to most parts of the continent, causing serious damage in orchards and forests. Chestnut blight was detected for the first time in Britain in 2011 on planted imported trees, but successfully eradicated. However, a new outbreak was detected in Devon on older tree stock at the end of 2016.



Andrej Kunca, National Forest Centre – Slovakia, Bugwood.org

Distribution

Cryphonectria parasitica originates from eastern Asia where it occurs on native trees of the *Castanea* genus. Chestnut blight was first found in North America in the 1930s and it has since spread over the entire native range of the American chestnut (*Castanea dentata*) from Maine in the north to Georgia in the south, and west to Ohio and Tennessee. It has also spread steadily throughout Europe, with the only the Netherlands, Ireland and the UK remaining free of the disease. Infected sweet chestnut trees (*Castanea sativa*) were found at nine orchard sites in England between 2011 and 2012, but all affected trees were destroyed. Since then, annual surveys have been undertaken to detect other outbreaks. The outbreak found in Devon in 2016 is subject to statutory control.

Hosts

American chestnut and European chestnut are very susceptible to infection by *Cryphonectria parasitica* and are usually killed by the disease; Asian chestnut species (e.g. *Castanea crenata*) are less susceptible. Oaks (including *Quercus petraea* and less often *Quercus robur* and *Quercus ilex*) can be infected although the cankers tend to be superficial and rarely cause death of branches or trees. The disease does not affect horse chestnut trees (*Aesculus hippocastanum*).

How the disease spreads

The spread of the *Cryphonectria parasitica* over long distances is primarily via infected saplings. Spread by infected bark, timber, burrs or seeds is also possible. Locally, the spores of the fungus are spread short distances by wind and rain splash. Spores can be produced all year round under suitable conditions.

What to look out for

The fungus attacks the bark, cambium and wood of chestnut trees, entering through bark fissures, wounds and grafts. Rough, sunken cankers are typically formed as the bark dies, followed by stem girdling and bark splitting. There can be multiple cankers on a single tree and epicormic shoots usually develop below the cankers ❶. On young, smooth-barked branches, cankered bark is bright orange/brown ❷. On older stems the infected bark often has a roughened appearance. The bark can be killed rapidly and stems girdled, but with slower disease progress new layers of bark form under affected areas causing swelling and subsequent cracking of the outer bark ❸. Masses of pin-head sized yellow-orange to reddish-brown pustules develop on infected bark ❹ and exude orange-yellow tendrils of spores in humid conditions. Girdling caused by the cankers leads to the rapid wilting and browning of leaves, which remain hanging on the tree ❺.



Daniel Rigling, Eidg. Forschungsanstalt für Wald, Schnee und Landschaft (WSL), Switzerland.



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Action to control the disease

EU regulations control the movement of *Castanea* trees and wood to prevent disease spread. Where chestnut blight is suspected, biosecurity measures are implemented and the infected trees destroyed. Breeding programmes in both the USA and Europe are developing resistant chestnut for fruit and timber production by cross-breeding resistant Asiatic chestnut with native species. In many European countries, infected trees are treated with virally-weakened strains of the fungus as a biocontrol, which can lead to disease remission.

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.

Cryphonectria parasitica is a quarantine organism so there is an obligation to report any suspect trees to the Plant Health

authorities. Further information on the disease and its 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

Some symptoms associated with chestnut blight, such as crown dieback, can also be caused by root-attacking *Phytophthoras*. These pathogens have been known for many decades to cause disease on sweet chestnut. Squirrel damage can also look similar to chestnut blight symptoms.

Reporting the disease

Report suspect trees to the Forestry Commission via the Tree Alert page at: www.forestry.gov.uk/treealert. Please supply photos, full details of the location, contact details and details about the age of the pine 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

For help with pest and disease diagnosis and other tree health issues, contact the Forest Research Tree Health Diagnostic and Advisory Service: www.forestry.gov.uk/fr/ddas

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

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