

Fireblight

What is it?

Fireblight is a serious disease of Apples, Pears and related trees and shrubs in the family Rosaceae, sub-family Maloideae (Pome fruits). It is caused by the bacterium *Erwinia amylovora*. Its hosts include *Amelanchier* (June Berry), *Chaenomeles* (Flowering Quince), *Cotoneaster* (Cotoneaster), *Crataegus* (Hawthorn), *Cydonia* (Quince), *Eriobotrya* (Loquat), *Malus* (Apple), *Mespilus* (Medlar), *Photinia*, *Pyracantha* (Firethorn), *Pyrus* (Pear) and *Sorbus* (Mountain Ash). All species in the sub-family maloideae are believed to be hosts but *Sorbus intermedia* (Swedish Whitebeam) does not show symptoms. The disease is native to North America, and was introduced to Europe in the 1950s. Fireblight is present in a large part of the UK, but it is listed as a quarantine disease in the EC Plant Health Directive and the Plant Health (Great Britain) Order 1993 (as amended) in order to prevent the disease moving, particularly into designated zones.



Early shoot infection on Apple showing bacterial ooze, 'crooking' and leaf necrosis.

Where is it found?

The first UK finding was in a Pear orchard in Kent in 1957. It is now widespread in Wales, south and central England, with scattered findings in locations in some northern counties. It is also found in Scotland and is established in Central Scotland and the Tayside area. It was recently found as far north as Banff in Morayshire. It is not found in Northern Ireland, the Isle of Man, or the Channel Islands.

A major feature of its spread in England has been the movement of the disease along Hawthorn (*Crataegus* species) hedges planted alongside railways, motorways and main roads. In Europe it is believed that there were further separate introductions during the 1960s



into the Netherlands, Denmark and Poland, and as at April 2005, it has been reported in most of the 25 EU Member States, including Cyprus to the south, Sweden to the north and Greece and Poland to the east. Beyond the EU, its spread includes Armenia, Egypt, Israel, Jordan, Lebanon, Norway, Romania, parts of Switzerland, Turkey, and Ukraine. Some areas of the EU known not to be infected have been given Protected Zone status. These include parts of Austria, Estonia, Finland, France (Corsica), Ireland, parts of Italy, Latvia, Lithuania, Portugal, Slovakia, Slovenia, Spain, UK (Northern Ireland, Isle of Man, Channel Islands). Host plants moved into these areas must be accompanied by a plant passport, and must be produced in Registered Premises for which a Buffer Zone has been established and which have met various official freedom, inspection or testing conditions. Buffer Zones must cover an area of at least 50km², with a boundary of at least 1km away from the nursery. The whole area of the Buffer Zone is subject to official inspection. There is also regulation of movement of beehives to and within protected zones. These recently reviewed measures are described in the amendments to the Plant Health Directive 2000/29/EC made by Directive 2003/116/EC.



Infected Hawthorn stem with bacterial ooze.



Shoot infection on Pear, dead leaves still attached.

What are its symptoms?

Fireblight can affect all aerial parts of the host. Symptoms include:

- Wilting and death of flower clusters following blossom infection.
- Withering and death of young shoots: in some cases the tip of the shoot bends to form a characteristic “shepherd’s crook”.
- Leaves showing necrotic patches, which spread from the leaf margin or the petiole and midrib, depending on the initial site of infection; these generally remain attached to the plant.
- Infected fruit turning brown or black; these become shrivelled, but remain attached to the plant.
- Cankering which may spread into the main stem and kill the plant by girdling. Externally, the cankers are usually sunken in appearance and surrounded by irregular cracks in the bark. When the bark is removed, a reddish-brown discolouration of the underlying tissues may be revealed, often with a well-defined leading edge to the stained area.

Many cultivars of Apple and Pear, particularly Cider Apples and Perry Pears, are highly susceptible because they flower late, when relatively large numbers of bacteria are present. Early-flowering cultivars, that show little or no secondary blossom, may escape infection in most years. Symptoms

vary according to the host. On Pear, the first symptoms are likely to be seen from July onwards, although they can appear in May or June if spring blossom is infected. Symptoms on apple are generally similar, but the disease spreads more slowly along the branches. Hawthorn shows similar symptoms to Pear, but the degree of internal discoloration can vary according to cultivar.



Shoot and blossom infection in Pear, showing typical fireblight strikes.



Blossom infection in Cotoneaster, leading to systemic invasion resulting in stem necrosis.



Large overwintering canker on Pear



Removal of bark from canker reveals characteristic foxy red discoloration of woody tissues.

How does it develop and spread?

The most likely means of introduction is on infected planting material, which may or may not show symptoms. Primary infection usually occurs in spring through lenticels or wounds in young shoots, or through blossom. On some hosts, the disease then spreads down the shoot to the main stem, eventually killing the plant. Infected tissues may exude white bacterial ooze in warm, humid conditions; this can spread infection to other plants when carried by insects, birds, wind and rain. Cankers become dormant in autumn and these provide a source of infection in the following spring. Bees and other pollen or nectar gathering insects are the primary vector of the disease, hence the restrictions on movement of beehives to and within Protected Zones.

What can be done?

There are no effective chemical measures available in the UK to control Fireblight. All nurseries selling host plants must be registered and approved for issuing plant passports for the host plants traded. If infection is found in the nursery or immediate vicinity any infected plants must be rogued. In addition, premises registered for issuing plant passports for plants moving into Protected Zones must meet additional requirements including buffer zone freedom. If infection is confirmed on or near registered premises, the PHSI has statutory powers to prevent its spread by removal of the affected plants.

Keep a good look out

If you suspect the presence of this disease, you should immediately inform your local Defra Plant Health and Seeds Inspector or:

PHSI HQ, York

Tel: 01904 455174

Fax: 01904 455197

Email: planthealth.info@defra.gsi.gov.uk

web: www.defra.gov.uk/planth/ph.htm