

Fireblight

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Identification, Biology & Management

Fireblight is a destructive bacterial disease, mainly of tree and shrubs in the rose family e.g. apples, crab apples, pears, quinces, medlars, hawthorns, roses, *Photinia*, *Amelanchier*, *Pyracantha*, *Sorbus*, *Rubus*, and *Cotoneaster*. Typically, it causes shoot dieback and blossom death, but its cankers can kill larger sections of canopy. The disease is most severe during warm, moist springs and on poorly drained sites. Blossom, young leaves and shoots are more susceptible, so younger, vigorous plants, or those heavily fertilised with nitrogen, are at greater risk. Similar symptoms on *Prunus* species are usually due to blossom wilt or bacterial canker instead.

Symptoms

Infection becomes evident from late spring to autumn. The most characteristic and easily observed symptoms are wilting and blackening or browning of the blossoms and leaves on the terminal shoots (Figure 1), appearing as if they have been scorched by fire and often forming a “shepherd’s crook” shape. Characteristically, the dead leaves remain firmly attached to the shoot. Infected tissue may produce a pale bacterial ooze, especially during wet and warm spring weather.

Sunken cankers (Figure 2) form at the unions of infected twigs and larger branches, which may weep pale to brown ooze. The cambial region of infected shoots and branches initially appears water-soaked and reddish to reddish-brown in colour, especially when the spread is most active. Infection in the graft union region is also recorded.

Host species should be taken into consideration. Similar symptoms on *Prunus* species (e.g. cherry, plum) are much more likely to be caused by blossom wilt and bleeding canker (*Pseudomonas spp.*) instead. Microscopic examination can be used to check for the characteristic sporulation of blossom wilt.

Figure 1: Fireblight infection of leaves and flowers



Causal Agent & Biology

Fireblight is caused by the bacterium *Erwinia amylovora*. The organism over winters in bark cankers at the margins of living and dead tissue. Wind, rain-splash and insects are responsible for the transport of the bacteria. Blossoms are the typical site of infection, but young leaves and shoots are also susceptible. Sucking insects, e.g. leafhoppers or aphids, or unsanitized pruning tools may introduce the bacteria directly into plants. Optimal temperatures are 20-25°C, while temperatures above 35°C may reduce infection.

Figure 2: Canker on infected branch



Control

Resistant varieties of some host species are available and should be planted where possible. Lists of resistant varieties are accessible in arboricultural literature online and in books.

Control of fireblight can be difficult and require a comprehensive program of sanitation, cultural practices and plant protection products to ensure satisfactory results.

Figure 3: Fireblight damage on a pear



Remove infected branches from the tree. Terminal infections are best pruned out when first noticed. Make cuts in the healthy wood well below the last observable symptom (approximately 25-35 cm) and disinfect pruning tools often in alcohol or a 1% bleach solution. Branch infections should be removed during dry weather in late summer or in the dormant season. Sanitation is critical in eliminating overwintering inoculum that contributes to blossom infections and eliminating the source of canker blight infections.

Susceptible species should be planted on well-drained soil and the pH maintained at the recommended level for the species in question (neutral to slightly acidic for most members of the Rosaceae). Fertilisation, when necessary, is applied in late autumn or early spring. Nitrogen should only be applied using slow-release formulations. Prune lightly and often to avoid stimulating rapidly growing sprouts that are highly sensitive to disease.

Dormant season sprays, during November through to February, are an effective treatment to reduce infection during the following year. Preventative plant protection products, including biological controls, can be applied as a foliar spray during April, May and June. Approved products have limited curative activity once the disease is established making well timed dormant and preventative applications key. Growth regulators are available for some hosts and can reduce susceptible young growth. Late-stage infections should be managed with a view to improve plant condition in the next growing season.



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