



Department
for Environment
Food & Rural Affairs

Plant Pest Factsheet

Bacterial spot and canker of *Prunus*

Xanthomonas arboricola pv. *pruni*



Bacterial leaf spot and shot holing symptoms on *Prunus laurocerasus* (cherry laurel) caused by *Xanthomonas arboricola* pv. *pruni* (Fera, Crown Copyright ©)

Background

Bacterial spot and canker is a notifiable disease of *Prunus*. Although potentially damaging on all *Prunus* species, the most severely affected stone fruit hosts are peach, apricot and plum. The Sino-Japanese group of plums (*P. japonica* and *P. salicina*) are generally more susceptible than European plums. Although it is not known to occur on stone fruit cultivars in the UK, it has become locally established in several European countries. It is found in commercial production of ornamental cherry laurel in Europe, and has been found sporadically in the UK at nurseries on this host since 2013. The bacterium causes leaf spots and shot holing of leaves, spotting of fruit and stem cankers. Greatest damage arises from severe defoliation. In the USA, production of Japanese plum trees gradually became uneconomic as leaders died following pathogen invasion and fruits were small and often unmarketable.

Geographical Distribution

It first caused very severe damage in the USA in the early twentieth century and has since been widely reported in both North and South America and many countries in Asia, Australasia and southern Africa. High losses in some years have been reported, especially in peach, apricot and Japanese plum orchards, from USA, Australia (Queensland), New Zealand and South Africa. The pathogen has become locally established in several European countries (Belgium, France, Germany, Hungary, Italy, Moldova, Montenegro, Netherlands, Norway, Romania, Russia, Serbia, Slovenia, Spain, Switzerland and Ukraine). Although low economic damage has generally been reported, in Italy there have been significant outbreaks on Japanese plum and peach.

Host Plants

The known host range of *X. arboricola* pv. *pruni* includes the following *Prunus* species:

- *Prunus armeniaca* (apricot)
- *Prunus avium* (sweet cherry)
- *Prunus cerasus* (sour cherry)
- *Prunus domestica* (plum)
- *Prunus dulcis* (almond)
- *Prunus japonica* (Japanese bush cherry tree)
- *Prunus laurocerasus* (cherry laurel)
- *Prunus mume* (Japanese apricot tree)
- *Prunus persica* (peach)
- *Prunus persica* var. *nucipersica* (nectarine)
- *Prunus salicina* (Japanese plum)

How does it develop and spread?

Infected planting material represents the highest risk of introduction and spread of this bacterium. It is not known to occur in UK stone fruit orchards but widespread findings on cherry laurel (*Prunus laurocerasus*) in the Netherlands and Italy, and several outbreaks detected in the UK since 2013 suggest that this widespread ornamental *Prunus* species is likely to have reduced value due to the symptoms and could be a potential source of infection for fruit crops, where even low levels of damage are of major importance. Surveys for this pathogen, including those carried out prior to 2020 to maintain the UK's Protected Zone status, and Forestry annual surveys of *Prunus avium*, have made no findings of *X. arboricola* pv. *pruni* outside of nurseries to date (Autumn 2022).

Primary infections occur through natural openings (stomata and lenticels) or through wounds. Infection and disease development are favoured by warm, wet and humid conditions. As leaf or fruit spots develop, they exude bacterial ooze (gummosis). Further infections occur as this ooze is dispersed by insects, wind and rain. The bacteria can also be spread on contaminated pruning and harvesting equipment. Canker development differs with host species, and can be an important source of infection the following spring. Leaf scars, that are infected in autumn, can develop into cankers where the bacterium overwinters and in spring multiplies to be spread to opening leaf buds by rain splash. In some hosts, the pathogen can overwinter in shoots infected late in the autumn, or on infected plant debris.

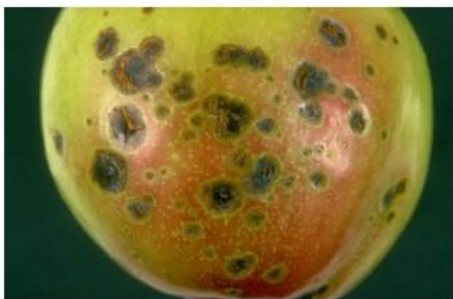
Symptoms



Leaf symptoms of bacterial spot and shot-holing on cherry laurel (Fera, Crown Copyright ©)

All aerial parts of the host plant can be infected. On leaves, the first symptoms are small, water-soaked spots that are more obvious on the lower surface. These develop into brown to black spots, often with a pale green to yellow halo, evident on both leaf surfaces. Bacterial ooze may be associated with the spots. The spots are often more numerous towards the leaf tip because the bacteria accumulate in this region in rain or irrigation droplets, or dew. The diseased areas often drop out, giving a shot-hole appearance to the leaf. Often, a dark ring of diseased tissue is left with the formation of the shot-hole. In some cultivars, the presence of only a few spots can lead to the entire leaf becoming chlorotic and falling prematurely. Even a light infection can cause premature defoliation and greatly reduce fruit yield.

On fruits, symptoms are dark brown to black spots up to 10 mm in diameter. They are usually sunken and cracked and often have a water-soaked margin. Spots may be surrounded by a yellow halo. Large cracked spots can exude ooze laden with bacteria. Early cherry fruit infection results in distorted fruit and bacteria may be found throughout the fruit from the epidermis to the stone.



Leaf spots on plum fruit. Courtesy of U. Mazzucchi – Università degli Studi, Bologna, Italy



leaf spots on cherry fruit. Courtesy of Giorgio M. Balestra Dept. of Plant Protection, University of Tuscia, Via S. Camillo de Lellis, Viterbo, Italy

On stems, cankers can form in spring, usually on the tips of overwintering twigs. These may enlarge, causing dieback. In summer, other cankers may develop as dark water-soaked lesions around infected lenticels. As these cankers increase in size, they may become darker and sunken. Cankers on plum and apricot twigs are perennial and continue developing in 2- to 3-year-old twigs. The infection will penetrate the inner bark, resulting in deep-seated cankers which girdle the stems and cause dieback.



Canker on plum twigs. Courtesy of U. Mazzucchi - Università degli Studi, Bologna (IT)



Peeling back the bark may reveal a red discoloration below these cankers. Courtesy of U. Mazzucchi - Università degli Studi, Bologna (IT)

In addition to *X. arboricola* pv. *pruni*, some other bacteria also cause cankers and leaf spots on *Prunus*, including *Xanthomonas prunicola* and *Pseudomonas* spp., particularly *P. syringae* pv. *morsprunorum*. Fungal organisms, such as *Cercospora* sp., *Blumeriella* sp., *Wilsonomyces carpophilum* (Coryneum blight), and abiotic factors including copper spray and boron toxicity can also cause leaf spotting and shot hole on *Prunus* spp.

Pest Management and Reporting

In the event of an interception at retail or wholesale site or an outbreak at a production nursery, the PHSI will require actions to be taken to minimise the risk of spread.

Good general hygiene measures prevent introduction and spread. These may include cleaning and disinfection of tools, equipment, footwear and growing containers. As spread is facilitated by water splash, a restriction on overhead irrigation is also recommended.

Keep a good look out

Suspected outbreaks of *Xanthomonas arboricola* pv. *pruni* or any other non-native plant pest should be reported to the relevant authority:

For finds at garden centres, plant nurseries or private gardens in England and Wales, contact your local APHA Plant Health and Seeds Inspector, or the PHSI headquarters, in York:

Tel: 0300 1000 313 (please select option 3 when calling)

Email: planthealth.info@apha.gov.uk

For **Scotland**, contact the **Scottish Government's Horticulture and Marketing Unit:**

Email: hort.marketing@gov.scot

For **Northern Ireland**, contact the **DAERA Plant Health Inspection Branch:**

Tel: 0300 200 7847 Email: planthealth@daera-ni.gov.uk

Web: <https://www.daera-ni.gov.uk/topics/plant-and-tree-health>

For finds in the wider environment:

<https://treealert.forestresearch.gov.uk/>

For additional information on UK Plant Health please see:

<https://planthealthportal.defra.gov.uk/pests-and-diseases/uk-plant-health-risk-register/>

<https://planthealthportal.defra.gov.uk/>

<https://www.gov.uk/plant-health-controls>

<http://www.gov.scot/Topics/farmingrural/Agriculture/plant/PlantHealth/PlantDiseases>

<https://www.daera-ni.gov.uk>

Authors

First authored by J. G. Elphinstone and A. Aspin (Fera Science Ltd.) 2016

Revised by A. Aspin (Fera Science Ltd.) and H. Anderson (Defra)

March 2023

© Crown copyright 2023