



Fig. 1. (a) *X. fastidiosa* via TEM;(b) Xylem vessels blocked by the bacterium;(c) Grape leaf showing scorch symptoms;(d) Oranges with fruit size reduction symptoms. Unaffected (centre), Affected (left & right). Photo credits: PaDIL, www.forestryimages.org & the University of California

Disease: Pierce's Disease; Citrus Variegated Chlorosis; Almond Leaf Scold; Plum Leaf Scold; Coffee Leaf Scorch; Phony Peach Disease.

Classification: K: *Eubacteria*, P: *Proteobacteria*, C: *Gammaproteobacteria*, O: *Xanthomonadales*, F: *Xanthomonadaceae*.

Xylella fastidiosa is the causative agent of a number of leaf-scald diseases affecting valuable commercial crops and amenity trees. Its wide host range and ease of transmission make this exotic pathogen a high risk quarantine pest, for which there is no cure.

The Pathogen: *Xylella fastidiosa* is a gram-negative, aerobic, xylem-inhabiting bacterium which is spread via xylem-feeding insects in the Cicadellidae family. The glassy-winged sharpshooter (*Homalodisca vitripennis*) is a key vector overseas and the native common leafhopper (*Orosius argentatus*) is a potential vector within Australia. The bacteria multiply in the xylem vessels causing blockages which result in leaf-scorch symptoms, emerging in the spring and summer. Heavy infections cause the death of susceptible host plants.

X. fastidiosa infections can remain latent in a large number of plants. As *X. fastidiosa* is mobile within the xylem the concentration of the bacterium can vary throughout the plant, making detection of latent infections very difficult. Consequently these latent infections may act as reservoirs of inoculum for nearby susceptible plants.

Distribution: *X. fastidiosa* is distributed throughout Northern, Central and parts of South America. It has recently been detected in Turkey and Taiwan, and intercepted at the borders of Italy and France. It is absent from Australia.

Host Range: *X. fastidiosa* has an extensive host range, with over 56 confirmed host species and many more reported hosts. Significant primary hosts include almond, citrus (exc. mandarins), coffee, grape, peach & plum. Australian natives *Acacia longifolia* and *Eugenia myrtifolia* are hosts, as well as prominent amenity trees: elm, oak & sycamore. Other hosts of economic concern include avocado, cherry, herbs, nuts, pear and rubus.

Impact: In parts of the USA outbreaks of *X. fastidiosa* have devastated local viticulture restricting production to the use of resistant cultivars. Susceptible cultivars of grape die within 5 years of infection. Fruit size is dramatically reduced in citrus and peach. Trees are rendered economically unviable within 5 years.

Control: Quarantine and phytosanitary measures are used to prevent introduction and spread of the disease. Measures include the use of resistant cultivars, certification of planting material and the removal and destruction of infected material. Management of insect vectors and wild host plants in the orchard surrounds is critical. Antibiotics and chemical controls are not effective.

Further Reading: Janse & Obradovic (2010) *XYLELLA FASTIDIOSA: ITS BIOLOGY, DIAGNOSIS, CONTROL AND RISKS*. Journal of Plant Pathology **92**(1, Supplement) S1.35-S1.48

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