



## Future Threat: *Xylella fastidiosa*

A new disease known as bacterial leaf scorch but also as olive quick decline syndrome and Pierce's disease (*Xylella fastidiosa*) has been discovered spreading through southern Italy, causing major damage to olive production. While olive production is obviously not a significant concern in the UK, this bacterial disease can infect a very wide host range. It is known to be a serious problem on trees common in the UK such as *Acer*, *Platanus*, *Prunus*, *Quercus*, and *Ulmus* (maples, planes, cherries, oaks and elms respectively) as well as many others. On these trees symptoms include peripheral burn of foliage and rapid crown dieback. This can appear very similar to drought, salt, herbicide, root, or canker damage. Currently only laboratory based diagnostic techniques are able to identify, for sure, if the symptoms of *Xylella* are actually caused by the bacteria. The reason for this is that the bacteria reproduce within the xylem and physically block it, which disrupts water transport, causing the symptoms of drought in the foliage.

**Summary:** *Xylella fastidiosa* is a xylem restricted bacterium transmitted by xylem-sap-feeding insects (specifically Hemiptera), however the actual vectors are not currently known within the UK. Aphids and leaf hoppers are known to partially feed on xylem sap and as such these are likely to be able to transmit the *Xylella* bacterium.

**Common Names:** Bacterial Leaf Scorch (BLS), Pierce's disease of grapevines, oleander leaf scorch, citrus variegated chlorosis disease (CVC), Olive Quick Decline Syndrome

**Host:** Very wide host range, most notably *Acer rubrum*, *Catharanthus roseus*, *Citrus sinensis*, *Coffea*, *Morus rubra*, *Myrtus communis*, *Nerium oleander*, *Olea europaea ssp. europaea*, *Platanus occidentalis*, *Polygala myrtifolia*, *Prunus spp.*, *Quercus rubra*, *Ulmus americana*, *Vaccinium*, *Vinca minor*, *Vitis*, *Westringia rosmariniformis*.

Because this pathogen is not currently in the UK, it is unknown how it will spread here, if it eventually does. To understand this better we need to get to grips with some basic principles of pathogen dynamics.

A number of potential hosts exist within the UK. *Xylella* can tolerate temperatures from 12-17 and above 34 degrees celsius (Feil and Purcell 2001), but temperature extremes are likely to be limited within the plant where the disease will develop increasing the likelihood of survival within the xylem.

We therefore have a suitable hosts, a suitable climate and time will tell if the bacteria is present at high enough populations within our shores. However the transmission of the bacteria and its ease of spread haven't yet been discussed. *Xylella* is transmitted through xylem feeding insects such as leafhoppers. Common froghoppers (meadow spittlebug) have been suggested as appropriate vectors; however, these rarely feed on trees. Aphids are sap sucking insects that are commonly found feeding on a wide range of tree species. Although aphids are classically thought to feed only on phloem sap and thus not likely to transmit *Xylella*, research (Pompon, et al. 2010) has actually suggested that aphids do occasionally feed on xylem sap.

Control can currently not be achieved; however, management by reducing the vectors of the disease is possible, rapid removal of infected trees is also highly beneficial as this reduces the chances of further spread.

