An Roinn Talmhaíochta, Bia agus Mara
Department of Agriculture, Food and the Marine

Xylella fastidiosa

Introduction

Xylella fastidiosa is a pathogenic bacterium that infects the xylem tissues of a wide range of plants. *X. fastidiosa* has been widespread in the Americas for many years and occurs also in Asia. In 2013 *Xylella fastidiosa* was recorded in Italy, which was the first finding of this pathogen in Europe. Since then it has been found in Corsica, France, Germany, Balearic Islands and Spain. It has a very wide host range and is of great concern for the EU, as so many of the host plants are present here. Our best defence against this pathogen is to prevent its arrival into Ireland.

There are four known sub-species (ssp.) of the bacterium:

1. *Xylella fastidiosa ssp. fastidiosa.* Infects grapevine, citrus and almond plants.
2. *Xylella fastidiosa ssp. multiplex.* This can infect the widest range of host plants, including Ireland's native oak (*Quercus robur*) and wych elm (*Ulmus glabra*). Studies have shown that *multiplex* can survive cold winter temperatures and therefore may pose the greatest risk to Ireland were it to establish.
3. *Xylella fastisiosa ssp. pauca.* Infects coffee, citrus and olive.
4. *Xylella fastidiosa ssp. sandyi.* Infects oleander plants.

The bacterium is associated with several diseases of crops of economic significance, for example, Pierce's Disease of Grapevine, Peach Phony Disease, Oleander Leaf Scorch, Citrus Variegated Chlorosis and Olive Quick Decline Syndrome.

In 2013 *X. fastidiosa* was recorded for the first time in Europe on Olive trees in the province of Lecce, the Puglia region of Italy. In July 2015, the disease was reported in Corsica, France, on the ornamental plant *Polygala myrtifolia.* In June 2016 an isolated finding of the disease was reported in a small nursery in Saxony, Germany, on an Oleander plant. In October 2016 the first outbreak of *X. fastidiosa* was recorded on the Spanish Balearic Island of Majorca on cherry trees, followed by Ibiza and Menorca. In June 2017 the Spanish authorities recorded the first incidence of the disease on the mainland in the Valencia region. This was recorded on almond trees.

What are its hosts?

The outbreaks in Corsica, France, Germany, Italy, Balearic Islands and Spain represent an important change in the bacteria's geographical distribution which has served to expand the range of host plants found to be susceptible. *X. fastidiosa* has a wide range of host plants comprising 359 species in 204 genera and 75 botanical families. Annex I of Commission Implementing Decision (EU) 2015/789, as amended, lists the plants known to be susceptible to the European and non-European isolates of *X. fastidiosa.* This can be viewed at:
http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32015D0789&from=EN

The situation with disease spread is evolving and therefore the numbers listed above may increase.

Hosts of major economic significance are olive (*Olea europea*), grapevine (*Vitis vinifera, V.labrusca, V. riparia),* citrus (*Citrus* spp. *Fortunella)*, almond (*Prunus dulcis),* peach (*Prunus persica)*, coffee (*Coffea* spp.), and oleander (*Nerium oleander*).

Other fruit crops are susceptible to *X. fastidiosa* including blueberry (*Vaccinium corymbosum, V. virgatum*), plum (*Prunus domestica),* and sour cherry *(Prunus cerasifera*).

Among the many amenity trees and plants that have been found to be affected by *X. fastidiosa* are Oak (*Quercus* spp.), American sweet gum (*Liquidambar styraciflua*), American sycamore (*Platanus occidentalis)*, Lavender (*Lavandula*) and Rosemary (*Rosmarinus officinalis*).

How does it spread?

X. fastidiosa is transmitted from plant to plant by xylem sap sucking insects belonging to the order Hemiptera. It is thought that virtually all sucking insects that feed predominately on xylem fluid are potential vectors of the bacterium. The bacterium can persist in symptomless plants, from which insects may acquire the bacterium and pass it to crops. *X. fastidiosa* does not survive in seed.

What are its symptoms?

Tissues in the xylem of plants become congested by bacteria causing blockages and the transport of water and nutrients around the plants is restricted. Symptoms may vary depending on the host plant species and its degree of susceptibility but include leaf scorch (browning), wilting of foliage, dieback from the leaves and death.



Pest Status

X. fastidiosa represents a very serious threat for the EU. The European Commission amended the Commission Implementing Decision (EU) 2015/789 of 18 May 2015 regarding measures to prevent introduction and spread of the disease within the EU on the 14th of December 2017. Decision (EU) 2017/2352 can be viewed on the European Commission website by clicking on the link: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32017D2352&from=EN

Plant Passports

All eurpoean host plants need to be accompanied by a plant passport. The list of host plants can be found on the EU Commissions database, follow the link below:
https://ec.europa.eu/food/sites/food/files/plant/docs/ph_biosec_legis_emergency_db-host-plants_update09.pdf

What can you do

X. fastidiosa is subject to EU emergency measures. The control strategy primarily aims to restrict the movement of potential host plants and insect vectors and to eradicate infected material. This is considered the most effective method of limiting the spread of the disease in the EU. When importing plant material it is advisable to :

1. Use reputable suppliers.
2. Seek guarantees from your supplier in relation to the health status of the plants.

3. Know where the plants originated from.
4. Make sure that the plant material has valid plant passports.

Risk of *X. fastidiosa* establishment in Ireland

Research by the Forest Resources and Climate Unit of the EC Joint Research Centre indicates that, due to current climatic conditions in Europe, there is a low to medium risk of *X. fastidiosa* establishing in Northern European countries such as Ireland. However there is a risk of its being accidently introduced. This may be of particular concern if the sub-species introduced is *multiplex*. Therefore importers of host plant material must be extremely vigilant when importing from Third Countries and infected areas within the EU. It is important to remember that were the disease to establish in a native Irish species it could have social, economic and environmental impacts.

Department of Agriculture, Food and the Marine (DAFM) Actions

In accordance with Decision (EU) 2015/789, as amended, DAFM has carried out national surveys for *X. fastidiosa* since 2015. Inspections of host plants have taken place at nurseries, garden centres, public parks and at border inspection posts. In 2017, over 400 visual inspections were carried out with 94 samples sent for laboratory analysis. To date the disease has not been found in Ireland.

Actions in the event of suspect cases

X. fastidiosa is a quarantine organism therefore any suspected sightings of this disease should be reported to your local plant health inspector or the Division Headquarters at the number below.

Horticulture and Plant Health Division,
Department of Agriculture, Food and the Marine,
Backweston Administration Building,
Backweston Campus,
Celbridge,
Co. Kildare.
Phone: 01-5058885
Fax: 01-6275994
Email: plantandpests@agriculture.gov.ie.

Further information and symptoms of this pest can be viewed on the website of the European Food and Safety Authority (EFSA) by clicking on the links below.

http://www.efsa.europa.eu/sites/default/files/scientific_output/files/main_documents/3989.pdf
http://www.efsa.europa.eu/sites/default/files/scientific_output/files/main_documents/4061.pdf

Images of *X. fastidiosasymptoms* with thanks to Donato Boscia, Istituto di Virologia Vegetale del CNR, UOS, Bari (IT)
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