Food and Agriculture Organization of the United Nations

International Plant Protection Convention
Protecting the world's plant resources from pests

Facing the threat of *Xylella fastidiosa* together

The bacterium *Xylella fastidiosa* is a serious threat to agriculture, the environment and the economy. Its geographical distribution and its host range have greatly expanded in recent years.

Coordinated efforts should be made globally to avoid further spread.

Figure 1 - Olive quick decline syndrome (Source: Franco Valentini, CIHEAM)

About the pest and associated diseases

Xylella fastidiosa is a vector-borne pest which may lead to the death of the infected plants.

Depending on the host species and on the bacterium subspecies *(fastidiosa, multiplex, pauca)*, *Xylella fastidiosa* can induce a range of diseases, including: Pierce's disease of grapevine, phony peach disease, leaf scald of plum, citrus variegated chlorosis, olive quick decline and leaf scorch in almonds, coffee, oleander and many broad-leaved trees.

About the hosts

Xylella fastidiosa has an extensive natural host range, which includes many herbaceous and woody plants, cultivated crops and weeds. The host range covers over 350 plant species. However, many plant species are asymptomatic hosts or may show symptoms several months after infection, rendering diagnosis and management difficult. The list of host plants is expected to increase whenever the bacterium invades new territories.

About the vectors

Any xylem sap feeding insect is a potential vector of *Xylella fastidiosa*. The sharpshooters *Homalodisca vitripennis* and *Acrogonia terminalis* are primary vectors in California and Brazil, respectively. The meadow spittlebug *Philaenus spumarius* is the only known vector in Italy and is widely distributed in Europe and in the Mediterranean region. However, with ongoing research, new vectors may be identified as the bacterium expands its geographical range.

World distribution

Based on current knowledge, *Xylella fastidiosa* occurs primarily in the Americas. However, recent outbreaks in Southern Italy, Southern France, the Balearic Islands (Spain) and an isolated finding in Germany constitute a significant change to its geographical distribution and to the worldwide list of plant host species. The bacterium has also been reported in Republic of China and Iran.

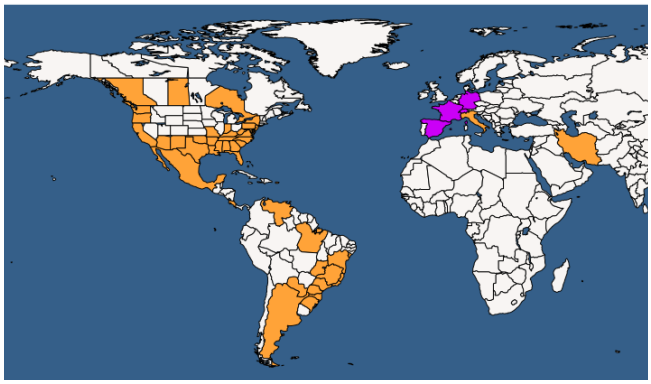

Figure 2 - The European and Mediterranean Plant Protection (EPPO) distribution map of *Xylella fastidiosa* worldwide (March 2017). Countries in orange: bacterium present; countries in purple: bacterium transient. Note that distribution shown on the map is at species level.

CIHEAM

Animal and Plant Quarantine Agency

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Pathways of entry and spread

The most likely pathway for *Xylella fastidiosa* to enter a new area is through the importation of infected plants for planting (other than seeds). *Xylella fastidiosa* likely arrived in Europe from Central American countries. Transmission by xylem sap-feeding insects favours the natural spread of the disease.

Economic impacts

Xylella fastidiosa subsp. *fastidiosa,* the causal agent of Pierce's disease, has been a major constraint for grapevine production in the USA for more than 100 years, causing considerable losses. *Xylella fastidiosa* costs California US$ 104 million per year in terms of losses of vines and measures for disease prevention.

Since 1987, Citrus variegated chlorosis - caused by *Xylella fastidiosa* subsp. *pauca* - has spread rapidly through large areas of southern Brazil. An estimation made in 2007 costed the losses of trees (around 100 million trees were removed) and production in addition to the costs of control measures against the disease at US$ 120 million per year.

The recent spread of the olive quick decline in Italy (Apulia region), caused by the subsp. *pauca* strain CoDiRO, covers approximately 180 000 ha. A significant portion of the olive trees in the infected area are centennial trees. Considering the economic, social, environmental, cultural and historical importance of the olive trees in the outbreak area as well as in the rest of the Mediterranean region, the impact of the pathogen on olive is inestimable.

By contrast, phony peach disease (subsp. *multiplex*) does not kill peach trees or cause dieback, but it does significantly reduce the size and number of fruits. The disease was extremely important in southeastern USA in the 1940s, when 5-year-old orchards were often found to be 50 percent affected and older orchards entirely so.

What can be done: preventive and management measures

Managing the disease in the field is very difficult due to the complexity of hosts and vectors. The most effective actions to be taken against the disease include: prevention and/or containment measures such as the use of 'healthy' propagating materials, early surveillance and detection of the pathogen, the destruction of infected plants and vectors control strategies. Some agronomical practices may be effective in containing the disease, such as the pruning of symptomatic twigs/branches in citrus showing Citrus variegated chlorosis at early stages.

Figure 3 – First one. Pierce's disease of grapevine; Second one. Citrus variegated chlorosis.

Figure 4 – *Xylella fastidiosa* responsible for the olive quick decline syndrome (OQDS) in the province of Lecce, 2015.

CONTACT US

International Plant Protection Convention (IPPC)
Viale delle Terme di Caracalla, 00153 Rome, Italy
Tel: +39 06 5705 4812 | Email: ippc@fao.org

MORE INFORMATION

https://www.ippc.int
http://www.phytosanitary.info