

Your Levy At Work



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Improving industry preparedness against *Xylella fastidiosa*

***Xylella fastidiosa* is the number one exotic National Priority Pest for Australia, which could have severe impacts on a broad range of horticultural industries.**

That's according to Dr Fiona Constable, Research Leader – Microbiology, Agriculture Victoria, at the Victorian Department of Energy, Environment and Climate Action.

Dr Constable helped lead the recently completed project *Improving preparedness of the Australian horticultural sector to the threat potentially posed by Xylella fastidiosa (a severe biosecurity risk) (MT17006)*, which looked at improving diagnostic capability to shore up Australia's defenses against a potential *Xylella fastidiosa* incursion.

Xylella fastidiosa (Pierce's disease), a bacterium transmitted by sap-sucking insects, is one of the most harmful plant pathogens worldwide.

HOW DOES XYLELLA SPREAD

Globally, over 650 plant species host *Xylella fastidiosa*.

The bacterium infects the water transport tissues (xylem) of the host plant and can block these tissues, which can lead to plant death.

It is transmitted by xylem sap-feeding insects such as spittlebugs or sharpshooters.

These tiny insects use a proboscis to consume xylem contents from the plant, and once they pick up the bacterium from an infected plant, they can transmit it through the same process to a new plant.

Xylella can also be spread through movement of infected plants and vegetative cuttings.

Though not yet present in Australia and New Zealand, an incursion could cost Australia's horticultural industries over \$1.2 billion annually. *Xylella fastidiosa* poses significant disease risk to several domestic agricultural commodities, including:

- Grapevines
- Almonds
- Citrus
- Stone fruit
- Blueberries
- Cherries
- Dried fruit
- Macadamias
- Lucerne
- Olives
- Numerous ornamental hosts such as oak, elm, maple and oleander.



Severe symptoms of Olive Quick Decline Syndrome caused by Xylella fastidiosa subsp. pauca. (Photo by Dr. Pragy Kant, Agriculture Victoria)

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This project has been funded by Hort Innovation using the nursery research and development levy and funds from the Australian Government. For more information on the fund and strategic levy investment visit horticulture.com.au

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This collaborative project was undertaken by Agriculture Victoria, New South Wales Department of Primary Industries, Western Australian Department of Primary Industries and Regional Development, Queensland Department of Agriculture and Fisheries, and New Zealand Ministry for Primary Industries. The project team broadened previous levy funded project findings on the primary detection, diagnosis, and surveillance of all *Xylella* species, subspecies, and sequence types across a broad range of hosts.

As part of MT17006, the Australian national diagnostic protocol was updated to include new information and state of the art diagnostic assays, ensuring industry has the best and most accurate tools available if an incursion were to occur.

Dr Constable said the project is integral in developing a nationwide approach and a nationally harmonized diagnostic capability to support a biosecurity response if an incursion was to occur.

"*Xylella* has a broad host range and has the potential to significantly impact the productivity and sustainability of many horticultural crops," Dr Constable said.

In Puglia, Southern Italy, in 2013, a subspecies of *Xylella* caused a serious outbreak in olives with some regions losing 100% of their historic olive groves.

After *Xylella* was introduced into the United States, swathes of vineyards died across the country. In 2014, management activities were estimated to cost the Californian grape industry US\$104 million per annum.

"We are trying to prevent these extensive productivity and profitability impacts here if we were to have an outbreak."

Across the course of this three-year project, the team travelled to Europe and North and South America to get first-hand knowledge and experience in *Xylella* diagnosis, and to assess the impact the disease could have on Australia.

"This global sharing of information from our international counterparts influenced the outputs of the project as we incorporated relevant testing procedures, including plant sampling, from overseas," Dr Constable said.

"This has ensured the updated national diagnostic protocol has included best practice around sampling and testing, which is integral to achieve accurate results."

"The project also developed a collection of *Xylella* strains which is held by New Zealand Ministry for Primary Industries. DNA of the strains was shared amongst the project partners to support further research and development into strengthening diagnostic and surveillance capabilities in Australia and New Zealand."

"After genome sequencing different strains of *Xylella* in our labs, we used the data to develop new and improved diagnostic tests for Australia so that in the future, if there was an incursion, we would have the most accurate tests to inform the best course of action," Dr Constable said.

"Determining what strain of *Xylella* you have is critical for management as each strain can have different hosts, which then informs specific outbreak response and pest management procedures."

LOOKING TO THE FUTURE

With the project now completed the team is looking towards the next steps of shoring up Australia's defenses against *Xylella*.

"It's important that this research doesn't stop here. Continually reviewing our national diagnostic protocol as new information becomes available will ensure efficiencies and effectiveness of diagnosis and treatment should we have an incursion," Dr Constable said.

"Further research into local Australian vectors is needed, such as which native insects might be transmitters of the bacterium, alongside identifying the susceptibility of native plant species to different strains of *Xylella*."

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Dr Constable said knowledge sharing across industry and nations is important to keep Australia ahead of the curve in preventing outbreaks of Xylella.

“Have a chat with your local extension officer about Xylella and stay on top of managing diseases that may already be present in your business.”

“We are incredibly lucky to not have a local, known outbreak of Xylella but the risk of introducing the bacterium is high, so we need to start preparing now.”

For detailed information on Xylella in nursery production please find a factsheet and contingency plan here (nurseryproductionfms.com.au/pests-diseases-weeds) and pest identification information here (pestid.com.au)

For more information on Improving preparedness of the Australian horticultural sector to the threat potentially posed by Xylella fastidiosa (a severe biosecurity risk) (MT17006). Read the report here:

<https://www.horticulture.com.au/growers/help-your-business-grow/research-reports-publications-factsheets-and-more/mt17006b/>

To organise a call from a GIA Extension Officer, contact Director RDE and Biosecurity John McDonald on john.mcdonald@greenlifeindustry.com.au or find your local Extension Office at: nurseryproductionfms.com.au/technical-service-providers

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