

# Exotic Pest Alert: Pierce's disease in grapevines

Plant Biosecurity Orange

*Xylella fastidiosa* is an exotic plant pest causing Pierce's disease in grapevines

Pierce's disease is a serious threat to Australia's grape industries

If symptoms are seen it must be reported promptly to the Exotic Plant Pest Hotline **1800 084 881**

## Introduction

Pierce's disease is a bacterial disease caused by *Xylella fastidiosa*. This bacterium lives in the water-conducting system (xylem) of the grapevine and is spread from plant to plant by sap-feeding insects. Glassy-winged sharpshooter, an exotic plant pest is a key vector (Primefact 1192).

*Xylella fastidiosa* affects a wide range of plants. Symptoms are called Pierce's disease in grapevines, leaf scorch in almonds and oleander, phony peach disease in peach, leaf scald in plum and variegated chlorosis in citrus.

## Symptoms

The characteristic symptom of Pierce's disease in grapevines is leaf scorch (Figure 1). Leaves become yellow around the leaf margins or between the veins. The outer leaf area may dry suddenly while the rest of the leaf remains green. Affected leaves are less vigorous and smaller than healthy leaves (Figure 2).

Leaves dry progressively over a period of days to weeks. Concentric zones of discoloured and dead tissue are seen. The whole leaf may shrivel and drop leaving only the leaf stalk attached.

Diseased stems often mature irregularly, with patches of brown and green tissue. These are known as 'green islands' (Figure 3).

Flower clusters on infected vines may set berries but these usually dry up before reaching maturity.



Figure 1 Scorched leaves on infected grapevine



Figure 2 Healthy grape leaf (left) infected leaves (right)



Figure 3 Green islands on infected grapevine canes

## Infection and severity

Leaf symptoms vary with the grapevine species and cultivar.

Grape varieties such as Pinot Noir and Cabernet Sauvignon show regular zones of progressive leaf margin discolouration and drying. Discolouration and scorching in the variety Thompson Seedless occurs in sectors of the leaf rather than as rings around the margins.

Symptoms are usually more obvious in grapevines that are stressed by high temperatures or drought conditions. Climatic differences between regions can affect the timing and severity of the symptoms but not the type of symptoms.

## Stages of infection

Pierce's disease can kill grapevines by blocking the plant's water conducting system. Susceptible grapevines cultivars can die within one to two years of the initial infection.

In the first growing season after being infected only one or two canes may show symptoms. Symptoms gradually spread along the cane from the point of infection to the tip and more slowly towards the base of the cane. Some or all of the fruit clusters on the infected cane may wilt and dry out. Tips of canes may die back and roots also may die back.

In the following year some canes may fail to bud out. New leaves are yellow and older leaves appear scorched. Infected vines may grow at a normal rate but the quantity of new growth is less than that of healthy vines. In late summer leaf scorching symptoms reappear.

In later years infected grapevines develop late and produce stunted yellow shoots.

## Hosts

The bacterium *Xylella fastidiosa* affects a wide host range of agricultural and ornamental plants.

Some hosts are symptomless.

## Insect vectors

All sucking insects that feed on xylem sap are potential vectors of *Xylella fastidiosa*.

An insect vector of major concern is the glassy-winged sharpshooter (*Homalodisca vitripennis*) (Primefact 1192).

Glassy-winged sharpshooter is an exotic plant pest.

## Spread

Pierce's disease is transmitted by grafting infected propagation material onto healthy rootstocks and by sap-sucking insect vectors.

Pierce's disease is not transmitted through contaminated pruning equipment or by seed transmission.

## World distribution

Pierce's disease in grapevines occurs in North America, Central America and some parts of north-western South America.

## Control

There is no cure for Pierce's disease.

Prevention is the best option for the management of Pierce's disease.

Removal of infected vines and vector control are used in California to reduce disease spread.

## Actions to minimise risks

Your vineyard management should include:

- sourcing propagation material of a known high health status from reliable suppliers
- regularly monitoring for glassy-winged sharpshooter
- investigating sick vines
- practicing on-farm biosecurity to prevent entry, establishment and spread of pests and diseases
- ensuring all staff and visitors are instructed in and adhere to your on-farm hygiene practices
- keeping records

## Reporting

If you suspect symptoms of Pierce's disease:

Call the Exotic Plant Pest Hotline on

**1800 084 881**

Take photos not samples to minimise the risks of spreading the disease

Contact your local district horticulturalist

Visit the Plant Biosecurity website

[www.dpi.nsw.gov.au/biosecurity/plant](http://www.dpi.nsw.gov.au/biosecurity/plant)

An **exotic plant pest** is a disease causing organism or an invertebrate not present in Australia and which threatens agricultural production, forestry or native and amenity plants.

## Resources

Department of Agriculture, Fisheries and Forestry (2010)  
'National Diagnostic Protocol for Pierce's Disease.  
*Xylella fastidiosa*'

Plant Health Australia (May 2004) Pest Risk Review –  
Pierce's disease

Figures 1 and 2 courtesy of Alex H. Purcell, University of  
California - Berkeley, Bugwood.org

Figure 3 courtesy of John Hartman, University of  
Kentucky, Bugwood.org

---

© State of New South Wales through the Department of Trade  
and Investment, Regional Infrastructure and Services (NSW  
Trade & Investment) 2012. You may copy, distribute and  
otherwise freely deal with this publication for any purpose,  
provided that you attribute the Department of Trade and  
Investment, Regional Infrastructure and Services as the owner.

ISSN 1832-6668

Disclaimer: The information contained in this publication is  
based on knowledge and understanding at the time of writing  
(April 2012). However, because of advances in knowledge,  
users are reminded of the need to ensure that information upon  
which they rely is up to date and to check currency of the  
information with the appropriate officer of the Department of  
Primary Industries or the user's independent adviser.

Published by the Department of Primary Industries, a part of the  
Department of Trade and Investment, Regional Infrastructure  
and Services.

PUB12/57