



California Olive Trees Dying from Exotic Pest Infestation

Posted on April 10, 2020 by [landscapeexpert](#)

With so many trees dying in natural and landscape settings, I've observed a disturbing trend throughout San Diego, and I assume most of the state. Property owners allowing dead and declining trees, palms and shrubs to remain in place. The problem with this practice, aside from aesthetics, is the dead plant may serve as a vector, whereby flying insects such as beetles, leaf hoppers, spittle bugs etc. may spread the disease to other uninfected trees.

Over the past decade, drought and climate change has taken a toll on millions of trees throughout California. Drought weakened trees succumb to secondary invaders such as wood boring bark beetles. There appears to be a continuous proliferation of new exotic pests resulting in diseases that are killing millions of trees in nature and within our urban forests and residential landscape settings.



— Olive tree displaying decline symptoms



— Gold spotted oak borer

First collected and identified in 2004 was the [gold spotted oak borer, \(GSOB\)](#). This flathead borer is responsible for killing over 100,000 live and black oaks in San Diego County alone. There is no effective prevention or cure.

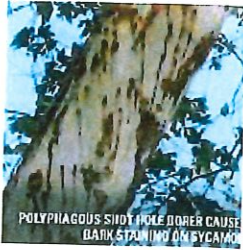
Reports of the disease known as citrus greening, previously confined to China, appeared in Florida, threatening the entire U.S. industry. The disease is a vector-transmitted pathogen by the

[Asian citrus psyllid](#). This disease ravaged Florida citrus growers. Once infected, there is no cure.

Another exotic pest first detected in Southern California in 2003 has been infesting hundreds of different species and is now established throughout the southland.

The [Polyphagous shot hole borer](#) is a small ambrosia beetle responsible for transmitting Fusarium disease to many tree species including avocado,





- Sycamore bleeding from shot hole borer

box elder, coast live oak, maple, liquidambar, coral, sycamore and many other species. Fusarium is a vascular clogging disease for which there is no cure.

- Citrus damaged by Asian citrus psyllid

The list goes on and on. Climate change and an ever more connected world will continue the trend toward future invasive exotic pests.

In early 2000, olive trees, (*Olea europaea*) became very popular as a landscape tree, heavily planted throughout southland landscapes. For the past decade, olive trees have been declining from a number of diseases. Two of the diseases are fatal, both display similar symptoms, making diagnosis difficult.



- Foliage display tip and marginal burn symptoms

Symptoms appear as leaf marginal burning, tip dieback, leaf scorch, and loss of foliage color. Defoliation proceeds from the top down and outside in toward the trunk. Small twigs die back, eventually larger branches and entire limbs die. Depending on location and season, the decline may be rapid or slowly over the years.

Disease Infection

Diseases known as quick decline, leaf scorch, or variegated chlorosis are caused by *Xylella fastidiosa*, the bacteria best known for causing Pierce's disease on grapes, but also attacks citrus, peach, almonds, oleander, olives and many other species.

Verticillium wilt affects olive trees in commercial and landscape plantings and many other species. The disease is caused by soil-borne fungi, *Verticillium albo-atrum* and *dahliae*.



- Xylella or Verticillium?

Both are vascular clogging diseases, where the fungus or bacteria spreads throughout the vascular system, restricting water movement within the xylem tissue. However, they have separate means of transmission. Unfortunately, neither disease has a cure, infected trees and shrubs decline over time, usually resulting in death.

Description and Spread

Xylella is transmitted by the glassy-winged sharpshooter, (*Homalodisca vitripennis*), leaf hoppers and spittle bugs. These vectors are xylem feeding insects.

The pathogen multiplies and spreads throughout the host tissue, restricting water movement through the xylem tissue.

Insect vectors feeding on infected trees (such as olive and oleander) may acquire the bacterium and carry it to new hosts.

Verticillium is a soil-borne fungus, it invades the root system of olives when the soil temperature is cool.

After penetrating through roots, the fungus multiplies within the xylem tissue, interrupting and reducing water movement from the roots to the leaves.

Each disease clogs the vascular system, interrupting water movement from the roots to the leaves.

Both diseases have similar symptoms making identification difficult.

Common Symptoms: (not all symptoms may be present)

Xylella:

Leaf scorch beginning at the tip toward the stem (petiole).

Marginal browning, scorch and yellowing.

Twigs and branches dieback beginning in the upper crown.

Desiccated leaf and fruit drop.

Production of suckers.



— Crown dieback



— Tip burn



Verticillium:

Symptoms appear in spring.

Newer leaves curl inward.

Dead fruit clusters remain attached.

Loss of leaf color and luster.

Leaf and fruit drop follow.

— Oleander infected
with *Xylella*





— Progressive decline

Individual branches and or large portions of the tree may die within one season. The tree may not die, growth may develop on unaffected portions of the tree and suckering from

the crown.

The new growth continues until re-infected; the cycle repeats the following year.

Vascular staining may be present.



— Dead fruit retained

— Inward leaf curl

Control

There is no cure for *Xylella* or *Verticillium*. Recommendations for both diseases include:

Remove suspected plants immediately to prevent vectoring disease to other susceptible host plants, i.e.: olive, oleander, sweetgum, grapes, etc.

Integrated pest management to control insect vectors may help slow disease spread but spraying to control leafhoppers is expensive and futile.

Control of nearby weeds and grasses to help limit insect vectors.

Pruning out infected limbs may improve the appearance, but it is impossible to prune "below" the infected wood, so pruning does not get rid of the disease.

Fungicide applications are not effective.

Remove declining and dead trees immediately.

Replant with disease resistant species.



— Vascular staining

Avoiding the disease is most effective but not always possible. Soils are easily contaminated with *Verticillium* from former planting and the pathogen may survive in the soil for several years, ready to infect newly planted susceptible species.

While greenhouse soils may be heat pasteurized to kill the fungus, that is impossible in the landscape. Solarizing landscape soils has some effect at reducing verticillium infected soils. Prior to planting, rototill and irrigate the soil as deeply as possible. Cover the area with six mil plastic, seal the edges with soils to secure for six to eight weeks.

Effective cultural practices such as fertilizer application, irrigation management, weed and insect control may assist in preventing infection and possibly reduce the effects of the disease. Most of these practices focus on improving plant vigor that help mask the disease, however these treatments are not curative.

It is important to note, many of the foliar symptoms described above may also be due to drought or poor irrigation practices. There are also foliar diseases that may produce similar symptoms but are only minor and may not pose a serious threat.

Diagnostic laboratory testing is the definitive method for a positive identification of the disease.

The important take away is this: Don't ignore decline symptoms in olive and other susceptible species, as the plant may be infected with a fatal vascular disease. Declining and dead trees left in place may serve as a source for the disease to be vectored by beetles, sharpshooters and other pests to healthy nearby trees. Remove dead or dying trees to prevent disease spread.

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