Oleander Leaf Scorch:
The Scourge of Phoenix Xeriscapes

Prized for their evergreen foliage and showy tropical blooms, oleanders (*Nerium oleander*) found a home in Phoenix landscapes during the home-building boom of the 1940s and 1950s. Today, many of those very old and established oleanders—particularly in north central Phoenix—suffer from a deadly disease known as Oleander Leaf Scorch. And it's spreading.

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The Bacterial Cause of Oleander Leaf Scorch

First, a little bit about plant biology. Like humans, plants need food and water to sustain life. Within plants, photosynthesis creates food at the leaves and stems and is conducted downward via plant tissue called *phloem*.

Water, on the other hand, is absorbed from the roots up via plant tissue called *xylem*. It is within these water-conducting tissues that the *Xylella fastidiosa* bacterium responsible for Oleander Leaf Scorch live.

Bacteria from infected plants colonize in the xylem and quickly spread, blocking critical water supplies to the plant. Water-starved and stressed, oleanders start manifesting symptoms of Oleander Leaf Scorch.

It's important to note that there are many strains of *X. fastidiosa*, and each strain affects different plants differently.

The "*X*" Vector

We now know that *Xylella fastidiosa* bacteria spread throughout oleander plants via xylem to infect the plant with Oleander Leaf Scorch. But how does it get into the plant in the first place?

Easy. Leafhoppers.

The leafhoppers most responsible for decimating the oleander population in California are the glassy-winged sharpshooter and the blue-green sharpshooter. In the Phoenix area, smoke-tree sharpshooters are the primary vectors.

These ¼" long insects feed on an infected plant's xylem, then deposit the *X. fastidiosa* bacteria—which multiply in their mouths—to other oleanders. Once *X. fastidiosa* enters the xylem, it quickly replicates and essentially starves the plant of life-sustaining water.

These fast-moving sharpshooters are easy to see, but hard to catch. And once adults are infected with the *X. fastidiosa* bacteria, they're infected for life. These two factors make it very difficult to eradicate and control sharpshooters which, in turn, make it nearly impossible to control Oleander Leaf Scorch.

> ***A little note about pruning tools:*** *While there's no evidence that* X. fastidiosa *can be transmitted by pruning tools, it's still a good idea to clean them after each use—and especially after using them on oleanders.*

Distribution of Oleander Leaf Scorch

First spotted in the early 1990s in the Coachella valley and around Tustin, Oleander Leaf Scorch—evidently from a strain of *Xylella fastidiosa* new to California—quickly spread across the Southwest, decimating oleanders in its path. Today, it's been reported all across the southern United States.

In Phoenix, Oleander Leaf Scorch has fixated on an area bounded by 15th Avenue to 16th Street and Camelback to Greenway. These very old and established oleanders reside with turfgrass on large, flood irrigated lots—which may be a viable breeding ground for insects carrying *X. fastidiosa*.

Oleander Leaf Scorch has also been spotted outside this area, and may be slowly spreading to other less dense oleander populations.

Oleander Leaf Scorch Symptoms

Oleander Leaf Scorch symptoms often mimic those of water-stressed plants. Leaves initially turn yellow and droop, followed by browning and eventual leaf drop. But there are some distinct differences. Oleander Leaf Scorch symptoms and disease progression include:

- Yellowing, drooping leaves on one or more branches
- Leaf tips and margins turn a darker yellow to brown and move inward
- Leaves eventually drop
- More branches are affected as the disease progresses
- Warmer weather brings on more noticeable (and sometimes more severe) symptoms

Some of these symptoms may also indicate salt damage or a nutrient deficiency, although those issues are less common. But if the oleander still looks as if it's dying after giving it water, leaching the salt out of the soil, and applying the right nutrients, then it's probably Oleander Leaf Scorch.

Diagnosing Oleander Leaf Scorch

Unfortunately, the only way to accurately diagnose Oleander Leaf Scorch is to perform serological or molecular assays in a laboratory environment—similar to the kinds of tests done to diagnose bacterial infections in humans. But using these tests on plants is often impractical.

Fortunately, there are some practical ways to distinguish between Oleander Leaf Scorch and a thirsty or salt-toxic plant. Use this quick 5-point diagnostic tool to help you understand the difference:

1. ***Does your oleander have yellowing or browning leaves on a couple of branches…or throughout the plant?*** The *X. fastidiosa* bacteria gradually spread throughout the plant, while lack of water affects the whole plant at the same time. So a few sad and yellowing branches suggest symptoms associated with Oleander Leaf Scorch. An entire yellowing plant suggests that it's time to water.

2. ***Does the yellowing and browning occur at the tips and margins of oleander leaves…or around the central leaf vein?*** If it occurs around the central vein and works its way outward, your oleander probably needs water. Yellowing and browning that starts on the leaf tips and margins and works its way inward likely means Oleander Leaf Scorch.

3. ***Does the yellowing and browning seem to accelerate in late spring and through the summer?*** While Oleander Leaf Scorch symptoms can be seen year-round, they are more pronounced as the weather warms. And in the hot, dry Phoenix desert, symptoms will develop much more quickly and appear much more severe than along the California coast.

4. ***Are the oleander leaves drooping?*** Drooping leaves suggest that you might be dealing with Oleander Leaf Scorch. If the leaves are yellowing but not drooping, then it may be salt toxicity.

5. ***Does your oleander respond to watering?*** Unless your plant is severely water-stressed, it will quickly respond to watering by turning a healthy green. If, after a few days, your oleander is still yellow, it's probably Oleander Leaf Scorch.

Controlling Oleander Leaf Scorch

Unfortunately, the prognosis for oleanders with Oleander Leaf Scorch is dismal.

There are no registered pesticides or practical controls for diseases caused by *Xyllella fastidiosa*. Antibiotics may have some very short-term benefits at controlling the insects on a large scale, but are next to impossible in residential settings because of the year-round abundance of the sharpshooters.

Pruning out the part of the plant showing symptoms or cutting the oleander to the ground may elicit healthy new growth and improve the oleander's appearance. But it will not save the plant. By the time you see symptoms of Oleander Leaf Scorch, the infection has already spread throughout the plant via the xylem.

Even removing infected plants may be ineffective at controlling the spread of the disease. But it is also the best way to manage the spread of the disease today.

While some cultivars do express less serious symptoms and may, ultimately, live longer, oleanders with Oleander Leaf Scorch usually die within three to five years—or sooner.

Other Hosts for *Xylella fastidiosa*

The *X. fastidiosa* strain responsible for Oleander Leaf Scorch in oleanders may also infect other plants in the Apocynaceae family, including periwinkle (*Vinca* species). But this strain of *X. fastidiosa* is just one of many.

Other *X. fastidiosa* strains have caused similar leaf scorch and dieback symptoms in:

- Elm, ash, oak, maple, and mulberry trees on the East Coast.
- Ornamental plum, olive, and liquidambar trees in southern California.
- Crops such as grapes, almonds, and others (ie, Pierce's disease).

And *X. fastidiosa* strains can occur in some species without showing symptoms of disease.

Clearly, the relationship between *X. fastidiosa*, leafhopper vectors, and plant hosts are not very well understood, making it difficult to control or treat the resulting diseases.

Alternatives to Oleander in Phoenix Xeriscapes

The good news? There are alternatives.

Perhaps the best alternative to non-native plants are native plants. Native plants have long survived the harsh conditions of the Phoenix desert and are less susceptible to diseases. They have naturally healthy immune systems!

Native plants also require less water and less maintenance. Unless you require a formal look, prune just once a year—or not at all for a more natural look. And put the cost savings to a better use.

Plus, oleanders are toxic. But most of us do not know just how toxic they can be. Ingesting just one leaf can be fatal to a child or pet. Burning oleander branches or using them for food preparation can make an adult extremely ill. And handling oleanders can irritate the skin or cause an allergic reaction.

Here are some excellent low-water, low-maintenance native alternatives for Phoenix xeriscapes:

- **Hop Bush (*Dodonaea viscosa*)** – Grows to 8-10' tall and wide and acts as a privacy or sun screen. While its blooms are not nearly as showy, low-water Hop Bush offers dense, vibrant evergreen foliage with small blooms in the spring. Even better? *Dodonaea viscosa* requires little to no pruning and throws very little litter.
- *Tecoma stans* – These low-water xeriscape favorites offer dense evergreen foliage with blooms nearly all year. Depending on the variety, *T. stans* can grow to 6-10' tall and 4-8' wide and will work very well as a border or screen in a sunny location. Look for **Yellow Bells**, **Orange Jubilee**, or the dramatic Sunset varieties.
- **Arizona Rosewood *(Vauquelinia californica)*** – A Sonoran Desert native, Arizona Rosewood works well in sun or part sun and low water, and slowly grows to 10' tall by 8' wide. Its dark evergreen foliage contrasts well with clusters of white blooms in early summer.

The loss of established oleanders to Oleander Leaf Scorch can be traumatic. But it's also an excellent opportunity to welcome non-poisonous, low-water, and no-maintenance natives to your Greater Phoenix xeriscape.

Sources:

- *Diseases of oleander (*Nerium oleander*) in Arizona: Oleander leaf scorch (OLS).* Extension Plant Pathology, University of Arizona, December 18, 2008.
- *Landscape Disease Bulletin: Pierce's Disease of Grape and Oleander Leaf Scorch.* Agricultural Commissioner, Weights and Measures Program, County of Los Angeles.
- *Oleander Leaf Scorch.* Pest Notes, Statewide Integrated Pest Management Program, University of California Division of Agriculture and Natural Resources, Publication 7480, April 2008.
- *Pests of Landscape Shrubs and Trees: An Integrated Pest Management Guide.* Statewide Integrated Pest Management Program, University of California Division of Agriculture and Natural Resources, Publication 3359, 2nd ed., 2004.