OLEANDER LEAF SCORCH

Integrated Pest Management for Professional Landscapers and Home Gardeners

Oleander leaf scorch is a relatively new disease found mainly in southern California. It is caused by the bacterium *Xylella fastidiosa*, which is the same species (although a different strain) that causes Pierce's disease of grapevines and almond leaf scorch. The strain of *X. fastidiosa* that causes oleander leaf scorch will not cause Pierce's disease, so removing oleanders will not reduce the source of *X. fastidiosa* that can affect grapes. As with other diseases caused by *X. fastidiosa*, the bacterium is vectored by insects, primarily sharpshooters, which feed on the water-conducting tissue (xylem) of the plant.

This disease was first noticed on oleanders in the Palm Springs–Indio area of Riverside County and in Tustin (Orange County) in the early 1990s and has spread to other parts of southern California including Santa Barbara, Ventura, San Diego, San Bernardino, and Los Angeles counties. Evidence to date suggests that the disease resulted from the introduction of a strain of *X. fastidiosa* new to California. The disease has now been reported across the southern United States. While the disease has not yet been recorded north of Santa Barbara County, it is believed that it could spread north through California's Central Valley and along the coast where the glassy-winged sharpshooter is established. Oleanders affected by this disease decline and then die, usually within 3 to 5 years of the first symptoms. There is no known cure.

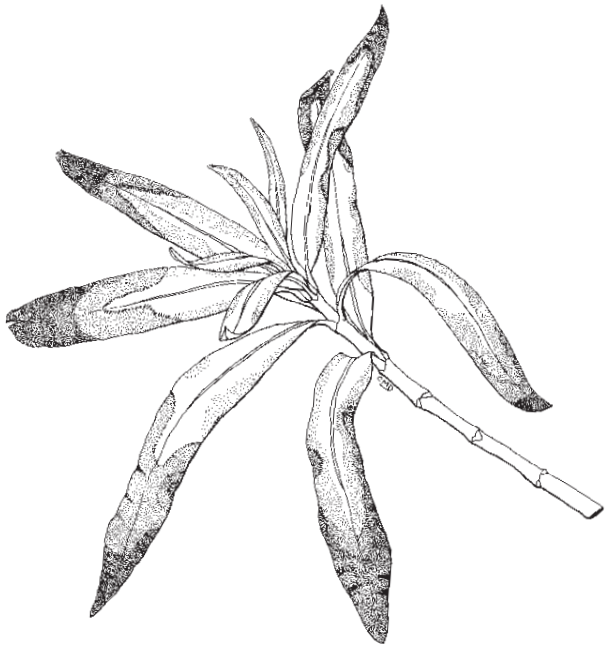

Figure 1. Leaves on one or more branches affected by oleander leaf scorch turn yellow and then brown around the margins.

IDENTIFICATION

Symptoms can be expressed year-round, although they may be more noticeable in late spring and summer; they develop more quickly in warm weather. Leaves on one or more branches may yellow and begin to droop; soon the margins of the leaves turn a deeper yellow or brown, and the leaves eventually die (Fig. 1). As the disease progresses, more branches of the plant are affected and the plant dies. Symptoms are much more severe and develop more rapidly in hot interior valleys than in cooler coastal areas.

Symptoms of this disease are often confused with those caused by drought. However, under limited water conditions leaves on all branches of a healthy plant yellow and droop at the same time. Drought-stressed leaves yellow uniformly or along the central leaf vein, whereas in leaf scorch disease yellowing of leaves progresses from the tip or margins of leaves inward. Also, unless the drought is severe, the plant recovers when watered. An oleander infected with *X. fastidiosa* will not recover when watered because bacteria plug the xylem tubes and limit the flow of water to the affected branches.

Marginal browning of leaves can also be associated with salt or boron toxicity. In these cases leaves usually do not droop, and the symptoms are more noticeable in older leaves.

Plant diagnostic laboratories that test for Pierce's disease in grapevines can also detect *X. fastidiosa* in infected oleander. A soil or tissue test can

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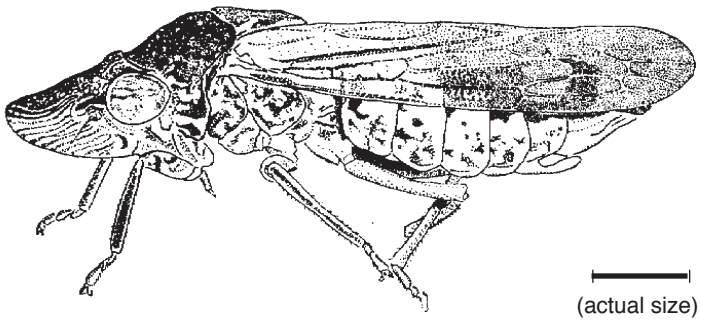

Figure 2. Female glassy-winged sharpshooter.

help determine if the symptoms are caused by an excess of minerals. If salt toxicity is the problem, plants will improve if salts are leached through the soil and below the root zone, whereas no improvement will be seen in plants infected with leaf scorch bacteria.

BACTERIAL TRANSMISSION

Xylella fastidiosa growth in plants is limited to the xylem and is spread from plant to plant by xylem-feeding insect vectors. The dominant vector in southern coastal California is the glassy-winged sharpshooter *(Homalodisca vitripennis [*formerly *Homalodisca coagulata])* (Fig. 2), which was first identified in California in 1990. This insect acquires the bacteria from infected plants while feeding on the xylem sap. The bacteria replicate in the sharpshooter's mouth, so that once a sharpshooter adult acquires the bacteria, it is infectious for life. Nymphs lose the bacteria when they molt. When the sharpshooter moves to another plant to feed, it takes bacteria with it in its mouthparts and deposits them into the next host plant. When the bacteria enter the xylem, they can then multiply and spread throughout the plant to such an extent that they greatly reduce the movement of water within the plant.

In the Coachella Valley, the smoke-tree sharpshooter *(Homalodisca liturata)* is more abundant than the glassy-winged sharpshooter and is the most likely vector of oleander leaf scorch bacterium. Other sharpshooters such as the blue-green sharpshooter *(Graphocephala atropunctata)* may also spread the bacteria from plant to plant. The blue-green sharpshooter is often common in irrigated ornamental landscapes in coastal California.

VECTOR IDENTIFICATION AND BIOLOGY

The glassy-winged sharpshooter is nearly ½ inch long with transparent wings; it is larger than most other sharpshooters found in California. The insect is dark brown on top and has a slightly lighter underside. The top of the arrowhead-shaped head is stippled with ivory or yellow dots. A large white spot is frequently present on each forewing of reproductively mature females, although the insect may rub these spots off when it lays eggs. The glassy-winged sharpshooter excretes large amounts of liquid when feeding, and on heavily infested plants, excrement gives the leaves or fruit a whitewashed appearance. The smoke-tree sharpshooter is similar in appearance to the glassy-winged sharpshooter, but its head has distinct yellow wavy lines instead of dots (Fig. 3).

There are two generations per year of glassy-winged sharpshooter in California. Glassy-winged sharpshooters overwinter as adults and lay eggs in spring. The first generation develops from late spring to early summer, with egg-laying beginning in midsummer. The second generation matures into the overwin-

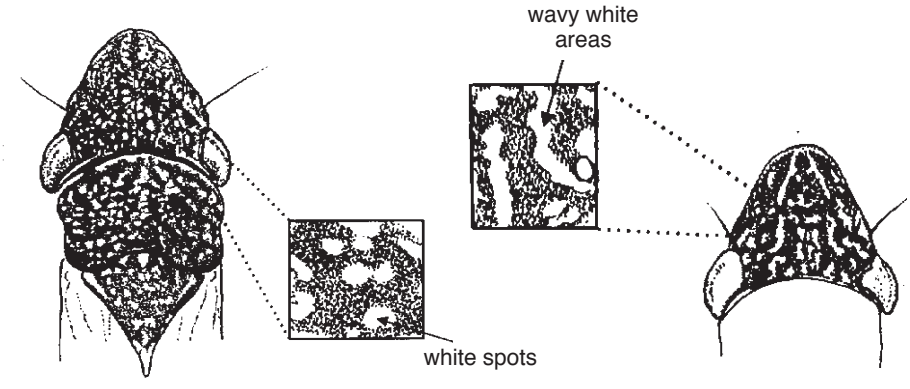

Figure 3. Detail of head of glassy-winged sharpshooter (*left*) and smoke-tree sharpshooter (*right*).

tering adults starting in late summer.

MANAGEMENT

There is no known cure for oleander leaf scorch. Pruning out the part of the plant showing symptoms may help the appearance of the oleander tree or shrub but will not save the plant. The bacteria by then have already moved throughout the plant via the xylem, and limbs that show symptoms are only the first to become affected. Research indicates that some cultivars of oleander may express symptoms to lesser degrees than others and may live longer than other varieties when infected.

Because of the year-round abundance of the glassy-winged sharpshooter, currently available insecticides are not effective in stopping the spread of the disease. The best management may be early removal of plants infected with the oleander leaf scorch bacteria to reduce the source of inoculum, but there are no experimental data to validate this method. Although only a few plant species have been tested as hosts of the oleander leaf scorch strain of *X. fastidiosa*, it is possible that other plant species may harbor the bacteria without showing disease symptoms.

REFERENCES

Blua, M. J., P. Phillips, and R. A. Redak. 1999. A new sharpshooter threatens both crops and ornamentals. *Calif. Agric.* 53(2):22–25. Available online for a fee, http://californiaagriculture.ucop.edu/index1999.html.

Purcell, A. H. Xylella fastidiosa Web site, Univ. Calif. Berkeley. Available online, http://www.cnr.berkeley.edu/xylella/index.html. Accessed April 2006.

Phillips, P. A., C. A. Wilen, and L. G. Varela. In press 2006. *Pest Note: Glassy-winged Sharpshooter* UC ANR Publication 7492. ❖

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