

Almond

Almond Leaf Scorch

Pathogen: *Xylella fastidiosa*

(Reviewed 3/09, updated 3/09)



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SYMPTOMS

Almond leaf scorch appears as a [marginal scorching](#) of leaves that begins as early as June and continues to develop during summer. A [golden yellow band](#) develops between the brown necrotic edge and the inner green tissues of the leaf. Disease symptoms may appear first on one branch or a portion of one scaffold. As years go by, more and more of the tree is affected until the whole canopy is involved. Another name for this disease, [golden death](#), describes the golden yellow color of the canopy of a severely infected tree. Infected trees bloom and leaf out later than healthy trees, are stunted, less productive, and have reduced terminal growth. Trees with almond leaf scorch usually survive for many years.

COMMENTS ON THE DISEASE

Almond leaf scorch symptoms somewhat resemble those of salt burn, but salt burn usually (but not always) has an abrupt margin between the necrotic and healthy tissue with little or no intermediate yellowing. Almond leaf scorch necrosis usually progresses from the leaf tip and margins back to the base of the leaf and is *not* uniform along the leaf margins whereas salt burn is more evenly distributed along the margins as well as the tip. Also, the pattern of symptom development over the years and distribution within the tree and within the orchard, along with leaf nutrient analysis should help distinguish the two.

The bacterium (*Xylella fastidiosa*) that causes almond leaf scorch also causes Pierce's disease of grapevines and alfalfa dwarf disease. Many common weeds and riparian plant species including bermudagrass, rye, fescue grasses, watergrass, blackberry, elderberry, cocklebur, and nettle are hosts and serve as reservoirs of inoculum. Common annual orchard weeds such as annual bluegrass, burclover, cheeseweed, chickweed, filaree, London rocket, and shepherd's purse have also been found to be infected. Weed-to-tree or tree-to-weed spread is also a possibility. The bacteria are vectored by xylem-feeding insects such as leafhoppers and spittlebugs. The most probable vectors for almond are the redheaded and [green sharpshooters](#). However, it is not believed that currently identified vectors can spread the disease from an infected tree to a healthy one. The disease may become more important if the [glassy-winged sharpshooter](#) (*Homalodisca vitripennis* [= *H. coagulata*]), which can spread the disease, becomes established in almond-growing areas.

MANAGEMENT

First-year symptoms may be confined to a few inches from the infection site and not be noticed for 2 or 3 years. Movement within a tree may be slow and require several years to infect the entire tree. In other cases, spread throughout the tree appears to have occurred within a year. If discovered early and only in one branch, the infection may be removed by pruning off a primary scaffold 5 to 10 feet below visible

symptoms. If this is attempted, flag the pruned tree and observe it in subsequent years for indication of the disease.

If the orchard is young (5 to 10 years old), the best course of action may be to remove infected trees. In older orchards, (16 to 20 years old), it may be more cost effective to keep infected trees because the entire orchard is normally removed between 22 and 25 years of age and infections will probably not significantly impact yields before then. The most difficult decision is what to do when infected trees are found in orchards 11 to 15 years old. The answer may depend on whether there are other young orchards nearby, how long the orchard is expected to last before it is likely to be removed, and once mapped, whether the number of infected trees increases rapidly.

Sharpshooter populations increase slowly and the insects disperse slowly. Grass-feeding sharpshooters require year-round access to plants on which they can feed and reproduce. Clean cultivation of almond orchards for a 6-week period at any time of the year (like during harvest) should prevent the establishment of in-orchard vector populations. Thus, cover crops in almond orchards should not pose a threat. The most common habitats for sharpshooters in the Central Valley are irrigated pastures, alfalfa fields with grass weeds, and permanent cover crops.

PUBLICATION



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Diseases

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