



Understand and Manage

Laurel Wilt Disease

Laurel wilt is a deadly vascular wilt disease of red bay (*Persea borbonia*) and other trees in the Lauraceae family, caused by a fungus (*Raffaelea lauricola*). The fungus is carried by a recently-introduced ambrosia beetle (*Xyleborus glabratus*) that is native to Asia (India, Japan, and Taiwan).

The ambrosia beetle was first discovered near Savannah, Georgia in 2002. As the ambrosia beetle bores into the sapwood of stems and branches, the pathogen is transmitted and moves systemically where it plugs up the water conducting cells and causes it to wilt. Laurel wilt has caused widespread mortality of red bay trees in parks, forests, and residential landscapes on the coastal plains of South Carolina, Georgia, and Florida.

Biology

- Redbay ambrosia beetles are believed to initiate attacks on healthy redbays. Adult flight activity is highest in summer or fall, but the beetle may fly at any time of year in Florida.
- Beetles carry spores of the laurel wilt fungus in their mouthparts. Initial attacks are difficult to detect and may not result in successful colonization of the tree by the beetle. However, these initial attacks can inoculate the tree.
- After becoming infected with the laurel wilt fungus, redbays wilt in a matter of weeks to a few months. The dying tree is then colonized by numerous redbay ambrosia beetles (as well as other ambrosia beetle species) that create galleries in the wood, in which they reproduce and cultivate their associated fungi for food. New female redbay ambrosia beetles emerge from infested trees and fly in search of new hosts, whereas males are flightless.



vascular staining under the bark



wilting symptoms in canopy

photos: B. Mayfield - FL Dept. of Ag.

Susceptible Hosts: Redbay (*Persea borbonia*), sassafras (*Sassafras albidum*), pondberry (*Lindera melissifolia*), pondspice (*Litsea aestivalis*), avocado (*Persea americana*), camphor tree (*Cinnamomum camphora*)

Distribution: Coastal plains of South Carolina, Georgia, and Florida.

Pathogen: The laurel wilt fungus, *Raffaelea lauricola*, vectored by the redbay ambrosia beetle, *Xyleborus glabratus*.



redbay ambrosia beetle
photo: USDA - FS

Symptoms

- Drooping, wilted leaves with a reddish to purplish discoloration occur on branches and in redbay progress throughout the entire canopy.
- Leaves eventually turn brown and may stay on the tree for up to a year or more.
- A dark, blackish discoloration can be seen in the sapwood when removing the bark from wilted trees or by cutting cross sections of the stem.
- Wilt symptoms on camphor tree may not progress through the entire crown.

Signs

- The redbay ambrosia beetle is extremely small, spends most of its life cycle inside the host tree, and is rarely seen in the field.
- String-like tubes or piles of fine sawdust may be seen on the bark of trees that have wilted. These are produced by potentially multiple species of ambrosia beetles (including the redbay ambrosia beetle) or other secondary wood borers.

Treatment: Laurel Wilt Disease

Management Strategy Summary

Limited trial data suggests that preventive treatments with Alamo injected by a process called 'macro-infusion' will protect trees for at least 18 months. The residual length of control is unknown, based on current research, re-treatment are recommended every 18-24 months. It is not yet known if treatments on trees that are showing early stages of symptoms will be effective.



Product: Alamo fungicide

Timing: applications can be made throughout the year, it is not known if treatments on trees that are showing early stages of symptoms will be effective

Retreatments: *Preventive Treatments* - Preliminary results show that 8 of 10 trees showed no symptoms of disease 1.5 years after application and artificial inoculation.

Currently we recommend retreatment every 18 to 24 months.

Additional results will provide more optimal retreatment intervals.

Application Method: Macro-infusion



treatment of redbay trees with Alamo via Macro-infusion

photo: T. Prosser, RTSA

Expectations:

Alamo will provide 18 - 24 months of protection from laurel wilt disease. Retreatments are required to maintain protection.

Other Treatment Practices:

- To avoid transporting the beetle and disease to a new area, do not transport firewood, branches, or chips from infested trees outside of known infested areas.



typical ecosystem being affected by laurel wilt

photo: S.W. Fraedrich, USDA-FS