

RESEARCH LABORATORY TECHNICAL REPORT

Laurel Wilt West Coast

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Laurel wilt is a destructive vascular wilt disease affecting members of the Lauraceae family (commonly referred to as “laurels”) such as redbay (*Persea borbonia*), sassafras (*Sassafras albidum*), and the agriculturally important avocado (*Persea americana*). In 2003, laurel wilt was first observed on the coastal plains of South Carolina and Georgia, soon after the redbay ambrosia beetle (RAB) (*Xyleborus glabratus*) was first recorded in the U.S. in 2002 (Figure 1) [1]. The fungus responsible for laurel wilt, *Raffaelea lauricola*, is transmitted by RAB in a symbiotic (mutually beneficial) relationship.

Geographic and Host Range

Laurel wilt has been detected in eleven states in the Southeastern U.S. (Figure 2). The transport of wood infested with RAB has accelerated laurel wilt’s spread.

Fourteen members of the Lauraceae family are susceptible to laurel wilt. While this disease has yet to reach California, the California bay laurel (*Umbellularia californica*) has shown susceptibility in laboratory trials [2]. California bay laurel is found from southwestern Oregon to the southernmost points of California, where it is an ecologically and culturally important component of coastal forests. As the largest U.S. producer of avocado, the introduction of laurel wilt into California could lead to avocado

Figure 2: Geographic distribution of laurel wilt by state. Generated from data by Chip Bates, Georgia Forestry Commission (as of December 2019)

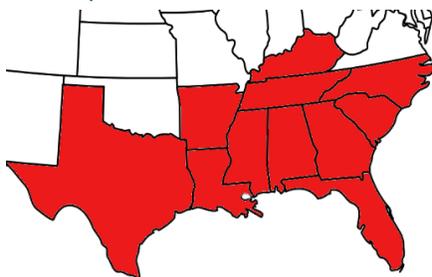


Figure 1: Redbay ambrosia beetle

Photo credit: Lyle Buss, Insect ID Lab Manager University of Florida



mortality in Southern California and serious impacts on the state’s agriculture industry [3].

Disease Cycle

In its introduced range, RAB preferentially targets healthy host species. Although the first attempt by the RAB to bore into the host tree fails, the laurel wilt fungus is still introduced into the xylem tissue (water-conducting sapwood). The tree responds by blocking the xylem cells to prevent the fungus from spreading. This host defense restricts water flow and causes the leaves to wilt. Once weakened, RABs and other ambrosia beetles are attracted to the dying host. RABs bore into the tree and excavate galleries (tunnels) in

the sapwood and lay eggs. Larvae mature in these galleries by feeding on the symbiotic fungal gardens. Later, adult female beetles will disperse to new hosts and continue the cycle. Inoculation by one RAB is sufficient to kill the host [4]. Other species of ambrosia beetle may also be capable of transmitting laurel wilt [5]. In addition, root graft transmission has been identified as a possible method of disease spread in avocado groves and sassafras thickets [6].

Symptoms

Leaves begin to wilt within a few weeks of infection. They may turn brown and droop in localized sections of the crown before spreading to the rest of the canopy. Dead leaves may remain on the tree for up to a year (Figure 3). Removing the bark will reveal sapwood with beetle entrance holes and black and brown vascular streaking (Figure 3). Sawdust tubes containing frass (beetle excrement) may be present along the trunk and at the base of the tree. Disease progression may take a few weeks to a few months depending on environmental conditions.

Figure 3: Attached, dead leaves (left) and sapwood with beetle entrance holes and vascular streaking (right) in laurel wilt-infected redbays

Photo Credit (left): Bud Mayfield, USFS Research Entomologist



Management

There is no cure for trees that have been infected by the laurel wilt fungus. Preventative measures should be taken to keep RAB from spreading to areas with susceptible hosts. Stopping the transport of infected firewood and removing and chipping infected hosts

may reduce the beetle population and likelihood of new attacks. Macro-infusion injections into healthy trees has been shown to prevent fungal infections for two growing seasons before requiring another treatment [2]. Research on using attractants and repellents to protect susceptible hosts is ongoing [7]. Severing root grafts may also be beneficial for hosts with interconnected root systems [6]. Please contact your Bartlett Arborist Representative to learn about management strategies.

Founded in 1926, The Bartlett Tree Research Laboratories is the research wing of Bartlett Tree Experts. Scientists here develop guidelines for all of the Company's services. The Lab also houses a state-of-the-art plant diagnostic clinic and provides vital technical support to Bartlett arborists and field staff for the benefit of our clients.



References

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