

plant disease

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Disease Notes

First Occurrence of Laurel Wilt Disease Caused by *Raffaelea lauricola* on Redbay Trees in Mississippi

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Laurel wilt is a lethal, nonnative vascular wilt disease of redbay (*Persea borbonia*), sassafras (*Sassafras albidum*), and other trees in the Lauraceae (1,4). It is caused by a fungus (*Raffaelea lauricola*) and transmitted by the redbay ambrosia beetle (*Xyleborus glabratus*), a nonnative insect first detected in Georgia in 2002 (1,2). Since introduction of the pathogen and vector (presumably from Asia), laurel wilt has caused extensive mortality to redbays in Georgia, Florida, and South Carolina (1). In June 2009, a landowner in Gautier, MS reported dead redbay trees. Signs and symptoms were identical to those reported for laurel wilt along the Atlantic Coast (wilted, bronze red foliage, and dark gray-to-black vascular discoloration) (1). Infected trees have subsequently been confirmed in and near the Pascagoula River Basin. Size of infected redbays ranged from 5 to 20 cm (diameter at breast height). No heavily decomposed or fallen redbays were noted. Many individual specimens exhibited extensive drying of stem wood and dry, wilted, light brown foliage. This indicates that introduction to the area may have occurred within the last 3 years. *X. glabratus* adults were collected (30°26'44.45"N, 88°39'41.83"W) in a Lindgren funnel trap baited with phoebe and manuka oil lures. Beetle identification was confirmed by USDA-APHIS, and voucher specimens were submitted to the Smithsonian National Museum of Natural History and the Mississippi Entomological Museum. Symptomatic redbay wood chips from the same location were surface sterilized and plated on cycloheximide-streptomycin malt agar and *R. lauricola* was isolated. A 1,026-bp portion of 18S rDNA (GenBank No. GQ996063) was amplified by PCR and sequenced using primers NS1 and NS4. BLASTn searches revealed perfect homology to *R. lauricola* isolate PL 697 (GQ329704). Two isolates of *R. lauricola* were recovered and prepared into separate spore suspensions (1×10^8 CFU/ml). Each isolate was inoculated into two healthy redbays. The inoculated redbays were placed in a growth chamber with two water-only controls. All

inoculated plants, and none of the controls, exhibited wilt symptoms and died within 20 days. *R. lauricola* was recovered from the discolored sapwood of the inoculated plants, completing Koch's postulates. A model prediction for the natural dispersion of *X. glabratus* and *R. lauricola* estimated that these organisms may not reach Mississippi for 10 to 15 years (3). The current detection of laurel wilt in Mississippi is substantially ahead of this estimate. Currently, no records of laurel wilt have been reported from western Georgia, all of Alabama, or the panhandle of Florida. Confirmed locations in Mississippi are in Jackson County, along the Interstate 10 corridor and the Pascagoula River drainage. Due to the relatively large extent of the infestation (~64 km², including hundreds of infected trees) eradication is not being attempted. Surveys, remote sensing, and phylogeographic analysis are underway to delineate the extent of infestation and discover the mode of introduction. The current outbreak of laurel wilt in Mississippi is likely the result of human transport of infested wood, either from Asia as a separate, new introduction or from previously infested areas in the southeastern United States.

References: (1) S. W Fraedrich et al. *Plant Dis.* 92:215, 2008. (2) T. C. Harrington et al. *Mycotaxon* 104:399, 2008. (3) F. Koch and W. Smith. *Environ. Entomol.* 37:442, 2008. (4) J. A. Smith et al. *Plant Dis.* 93:198, 2009.