

Screening Gulf Coast Forest Species for Susceptibility to *Phytophthora ramorum*¹

Jason Preuett,² Daniel Collins,² Douglas Luster,³ and Timothy Widmer³

Abstract

Phytophthora ramorum, the causal agent of sudden oak death in California oak woodlands, poses a threat to woody plants in the rest of the United States, including the Gulf Coast area, which is regarded as a high-risk location. Several plant species native to Gulf Coast forests were tested for susceptibility to *P. ramorum*, including yaupon (*Ilex vomitoria* Aiton), spice bush (*Lindera benzoin* (L.) Blume), southern magnolia (*Magnolia grandiflora* L.), sweetbay magnolia (*Magnolia virginiana* L.), black willow (*Salix nigra* Marsh.), baldcypress (*Taxodium distichum* L.), Virginia creeper (*Parthenocissus quinquefolia* (L.) Planch.) from two sources (Louisiana and Maryland), and eastern baccharis (*Baccharis halmifolia* L.). This study was conducted at the U.S. Department of Agriculture Agricultural Research Station biosafety containment greenhouse facility at Ft. Detrick, Maryland. Foliage of four plants for each species tested was inoculated with a suspension of 50,000 zoospores per ml until run-off. Inoculated plants were placed in a dew chamber at 20 °C for 5 days. After incubation period, leaf lesion areas were assessed for necrosis. Representative samples of necrosis infection areas were plated on *Phytophthora*-selective medium to confirm *P. ramorum* infection. The average percentage of leaf area necrosis was 5.0, 0.2, 8.6, 1.5, 1.1, 0.2, 32.1, 4.9, and 27.9 percent for inoculated baldcypress, black willow, sweetbay magnolia, Virginia creeper (Louisiana and Maryland genotypes), eastern baccharis, southern magnolia, spicebush, and yaupon, respectively; and 4.2, 0.3, 0.3, 3.1, 1.1, 0.4, 0.6, 1.2, and 0.1 percent for non-inoculated control plants, respectively. Comparison of inoculated versus non-inoculated plants showed significant differences ($P \leq 0.05$) for yaupon ($P=0.0008$), southern magnolia ($P=0.001$), and sweetbay magnolia ($P=0.0009$).

An additional study comparing asymptomatic infection of both tested genotypes of Virginia creeper was completed using the same procedure described above. The study was limited due to the available plants after the previous described study. The average percentages of leaflet infection for the two sources were similar for Louisiana (10.0 percent) and Maryland (13.6 percent) genotypes. Further study is needed on Virginia creeper to better understand its potential role in the Gulf Coast region as a potential inoculum source for *P. ramorum*.

¹ A version of the paper was presented at the Sudden Oak Death Fifth Science Symposium, June 19-22, 2012, Petaluma, California.

² Southern University and A&M College, Urban Forestry Program, Baton Rouge, LA 70813.

³ USDA ARS, Foreign Disease-Weed Science Research Unit, 1301 Ditto Ave., Fort Detrick, MD 21702.

Corresponding author: jasonpreuett1@gmail.com.