

# Ramorum blight *Phytophthora ramorum*

This plant pathogen can be detrimental to oaks and other trees and shrubs. Because this pathogen is federally regulated, detection of infested plants will lead to quarantine and eradication programs. This pathogen potentially threatens Michigan's natural forests, ornamental and urban trees and tree nursery and landscape industries.

[Michigan risk maps for exotic plant pests.](#)

## Other common name

sudden oak death

## Systematic position

Oomycetes > Pythiaceae > *Phytophthora ramorum*  
Werres, De Cock & Man in't Veld

## Global distribution

Many European countries; United States West Coast (California and Oregon).

The geographical origin of *P. ramorum* is unknown. In Europe, the pathogen was first identified in 1993 in Germany and the Netherlands on ornamental plants. By 2007, the pathogen had spread to 16 European countries. In the United States, *P. ramorum* was first detected in 1995 on the central coast of California.

## Quarantine status

This plant pathogen is a federally regulated organism in the United States (NEPDN 2006). In 2004, shipments from *P. ramorum*-infected nurseries in California to other states resulted in confirmation of the pathogen in 22 (non-Midwestern) states. The infected plants were destroyed, and no subsequent infections have been detected. Within the Midwest, the pathogen was detected for the first time in Indiana in 2006 on *Viburnum* shipped from Oregon. The pathogen has not been detected in Michigan as of 2009. Currently, establishment of *P. ramorum* has been confirmed in California and Oregon, mainly in forested areas.

## Plant hosts

More than 110 species of ornamental trees and shrubs have been recognized as hosts. View host plant list at: [http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/pram/downloads/pdf\\_files/usdapriest.pdf](http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/downloads/pdf_files/usdapriest.pdf). Some of the plants important to Michigan's nursery and landscape industries include camellia, Douglas fir, *Rhododendron*, lilac, oaks, *Pieris*, *Vaccinium*, and *Viburnum* and witch-hazel.

## Symptoms

- **On oaks and related trees:** Bark cankers seen as



Bleeding canker on oak tree. (Photo: J. O'Brien, USDA Forest Service, Bugwood.org)



Symptom on oak tree trunk. (Photo: J. O'Brien, USDA Forest Service, Bugwood.org)

bleeding black or reddish sticky fluid on the lower trunk of trees; dieback; death.

- **On shrubs and a few trees of non-oak family:** Ramorum blight seen as gray, brown or purple lesions on leaves, petioles, stems, shoots or needles; lesions usually do not have distinct edges; leaf spots; leaf loss; shoot dieback.

Disease symptoms vary widely from plant to plant. On infected oaks and related trees, the disease is known as sudden oak death, which may kill the hosts. On infected nursery plants, the disease is known as ramorum blight,



Leaf blight on rhododendron. (Photo: J. O'Brien, USDA Forest Service, Bugwood.org)



Leaf blight on California laurel. (Photo: J. O'Brien, USDA Forest Service, Bugwood.org)

which usually does not kill hosts, but may serve as a reservoir for the pathogen. Other plant pathogens (e.g., native *Phytophthora* spp.) and environmental stresses can produce similar symptoms and positive diagnosis is possible only via laboratory testing of suspected plant material.

### Management notes

Survey for *P. ramorum* involves visual inspection of disease symptoms on susceptible hosts at target sites such as nurseries, garden centers, forests and home gardens. Currently, effective control options are limited to quarantine and destruction of infected plants. Regulatory measures may include restricting importation, shipments and sales of potential host plants, and eradicating the pathogen by destroying infected and suspicious nursery plants and disinfecting nursery facilities.

### Economic and environmental significance to Michigan

Introduction of *P. ramorum* to forests has potential to destroy native oaks in Michigan. The pathogen also may pose a serious impact on Michigan's nursery and landscape industries since it can infect a wide range of ornamental woody plants, and it can spread to nurseries, homes, gardens, parks and natural vegetations via movement of infected plant materials.

### Likely pathways of entry in Michigan

Shipments of infected nursery stock, originated from California, Oregon and European sources.

**\*\*\*If you find something suspicious on a susceptible host plant, please contact MSU Diagnostic Services (517-355-4536), your county extension office, or the Michigan Department of Agriculture (1-800-292-3939).\*\*\***

### References

- Anon. *Phytophthora ramorum* Blight (Sudden Oak Death). Purdue Plant & Pest Diagnostic Laboratory. (<http://www.ppd.l.purdue.edu/ppdl/SOD.html>)
- Anon. Ramorum leaf blight, ramorum dieback, and sudden oak death. University of Massachusetts Extension. ([http://www.umassgreeninfo.org/fact\\_sheets/diseases/p\\_ramorum.pdf](http://www.umassgreeninfo.org/fact_sheets/diseases/p_ramorum.pdf))
- Anon. Sampling guidelines for sudden oak death / ramorum blight caused by *Phytophthora ramorum*. University of Maryland Home and Garden Information Center. ([http://www.hgic.umd.edu/\\_media/documents/invasivespeciesalerts/suddenoakdeath/2005SODInfoHGICInstructions.pdf](http://www.hgic.umd.edu/_media/documents/invasivespeciesalerts/suddenoakdeath/2005SODInfoHGICInstructions.pdf))
- Anon. 2007. Ramorum blight and dieback (sudden oak death). British Columbia Ministry of Agriculture and Lands. (<http://www.agf.gov.bc.ca/cropprot/sod.htm>)
- Anon. 2009. *Phytophthora ramorum*. Department of Crop Sciences, University of Illinois at Urbana-Champaign. (<http://pramorom.cropsci.illinois.edu/>)
- COMTF. 2009. California oak mortality task force. (<http://www.cnr.berkeley.edu/comtf/>)
- Illinois CAPS program. 2009 Illinois most "unwanted" invasive pests. Illinois Cooperative Agriculture Survey program. (<http://www.inhs.illinois.edu/research/CAPS/docs/2009%20most%20unwanted%20invasives.pdf>)
- NEPDN. 2006. Northeast Plant Diagnostic Network. (<http://www.nepdn.org/DesktopDefault.aspx?tabindex=3&tabid=28>)
- Parke, J. L. and S. Lucas. 2008. Sudden oak death and ramorum blight. (<http://www.apsnet.org/education/LessonsPlantPath/SuddenOakDeath/default.htm>)
- USDA-APHIS. 2008. APHIS List of Regulated Hosts and Plants Associated with *Phytophthora ramorum*. ([http://www.aphis.usda.gov/plant\\_health/plant\\_pest\\_info/pram/downloads/pdf\\_files/usdaprlist.pdf](http://www.aphis.usda.gov/plant_health/plant_pest_info/pram/downloads/pdf_files/usdaprlist.pdf))

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