



CALIFORNIA OAK MORTALITY TASK FORCE REPORT DECEMBER 2004

LEGISLATION

Omnibus appropriations for federal *P. ramorum* funding in 2005 totaled \$9.89 million. The Agricultural Appropriations Bill earmarked \$1.45 million for the Agricultural Research Service; \$94,000 for the Cooperative State Research, Education, and Extension Service; and \$3 million to the Animal and Plant Health Inspection Service. The Interior Appropriations Bill earmarked \$2 million to USDA Forest Service (FS) Cooperative Lands Forest Health Management and \$2.5 million to USDA FS Forest and Range Land Research.

The Omnibus bill also included legislation to recognize the oak tree as America's national tree (Nelson, NE/Goodlatte, VA). Once President Bush signs the Bill, the oak will officially become America's national tree. During a four-month-long open voting process sponsored by the National Arbor Day Foundation in 2001, the oak tree earned the title of America's Chosen National Tree. The oak itself is found in all 50 states and is considered an important part of America's history and culture.

RESEARCH

The recently identified *Phytophthora* taxon C (UK) has been provisionally named *Phytophthora kernovii*, after Cornwall's ancient name, by its discoverers Clive Brasier and colleagues at the UK's Forestry Commission Forest Research Agency. Found causing disease in Cornwall, England in November 2003 on rhododendrons and a nearby beech tree, the pathogen has since been found in Cornwall on 30 beech trees and two English oaks (*Quercus robur*). To date, all finds have been within the *P. ramorum* quarantined area, in woods with a rhododendron-dominant understory. Infected rhododendrons and other plants are being destroyed.

So far, this other new invasive *Phytophthora* seems to be confined to southwest Britain. Initial laboratory tests and observations in the wild indicate that it may be more aggressive or spread faster than *P. ramorum* on rhododendron. Rhododendron, the main host and source of infection, succumbs to disease in just a few weeks rather than months. *Magnolia* and *Liriodendron* have also been affected. This latest discovery raises fears over the pathogen's potential impact on Britain's trees and shrubs, as well as the damage it might cause should it spread to forest ecosystems outside the UK. Among several suggested origins for the new fungus is Yunnan, China, because of the pathogen's apparent association with Magnoliaceae (*Mycological Research* 108: 1108-1110, 2004).

The Department for Environment, Food, and Rural Affairs (DEFRA) Plant Health and Seeds Inspectorate has proposed draft options for containing and eradicating the pathogen within a designated "disease management zone." The objective would be to eradicate over a period of time, and to prevent further spread out of the area. The boundaries of the proposed "disease management zone" have not yet been set. Possible zone containment measures include controls on the movement of susceptible plants and plant parts out of



the zone unless determined to be disease-free; decontamination precautions for high-risk activities such as hedge trimming; access restrictions; and maintenance of a disease-free buffer zone around the edge of the area. Eradication measures would be taken in consultation with landowners and precautionary clearing of all *Rhododendron ponticum* within the zone is under consideration. Grant aid may be available toward the cost of clearing woodland sites; infected trees would only be removed if they became hazardous.

Chemical treatments are being investigated, but no treatments are currently known to be effective at eradicating *Phytophthora kernovii*. Burning plants is preferred over fungicides, which could suppress symptoms without eliminating infection. While infection is not believed to move down into roots, removal of rhododendron roots, rather than just cutting plants off at ground level, is thought to be beneficial because it would prevent re-growth of susceptible plants within the affected area.

Symptoms of the *Phytophthora* species are available on the Forestry Commission website at <http://www.forestry.gov.uk/planthealth>. For more information on the pathogen, visit the [Forestry Commission](#) and [DEFRA](#) websites.

MANAGEMENT

The Oregon Department of Agriculture (ODA) received and approved a revised federal label for the use of Agrichem's Agri-Fos® (11/22/04, EPA Registration #71962-1) on landscape, golf course, nursery, forestry, and park sites for *Phytophthora* and *Pythium* diseases, including Sudden Oak Death. Oregon will allow all uses listed on the approved product label; however, the product label does contain significant restrictions for use in California. The U.S. Environmental Protection Agency (EPA) will work with registrant to clarify the wording of the California use restrictions. For more information, contact Janet Fults, Registrations, Certification/Licensing, Fertilizer Program Manager, ODA Pesticides Division at jfults@oda.state.or.us. Note that California currently has a Special Local Needs registration for Agri-Fos® use on oaks and tanoaks to prevent *P. ramorum*.

RESEARCH

Recently Published *P. ramorum* Paper - Histological studies of *Phytophthora ramorum* in *Rhododendron* twigs. Pogoda, F. and Werres, S. (2004). *Canadian Journal of Botany* 82: 1481-1489.

Abstract: Freshly cut *Rhododendron* twigs were inoculated with *Phytophthora ramorum* S. Werres, A.W.A.W. de Cock and W.A. Man in't Veld. Disease development (discoloration of the twigs) was observed. Tissue samples were taken for re-isolation and for histological studies from four different zones of the inoculated twigs. Thin sections were stained with toluidine blue O. Re-isolation of the pathogen was successful from all samples. The histological studies showed that *P. ramorum* was not only present in the brown zones of the *Rhododendron* twigs, but also in the healthy-looking green zones. Hyphae were found in different twig zones and in different tissues, but chlamydospores occurred only in brown twig zones where they developed mainly in the cortical



parenchyma. Results from the histological studies provide a basis for how *P. ramorum* colonizes host tissue in Rhododendron twigs.

Soon to be published *P. ramorum* paper - First Report of Foliar Infection of *Maianthemum racemosum* by *Phytophthora ramorum*. D. Hüberli, K. L. Ivors, A. Smith, J. G. Tse, and M. Garbelotto. Department of ESPM-ES, 151 Hilgard Hall, University of California, Berkeley, CA 94720. Plant Disease. In press.

In May 2003, *Phytophthora ramorum* S. Werres & A.W.A.M. de Cock was isolated from the leaf tips of a single plant of false Solomon's seal (*Maianthemum racemosum* (L.) Link formerly known as *Smilacina racemosa* (L.) Desf.), a native, herbaceous perennial of the *Liliaceae* family, at Jack London State Park in Sonoma County, California. Affected leaves had cream to brown colored lesions on the tips which were delimited by a yellow chlorotic zone. Lesions on stems were not observed. The isolate (American Type Culture Collection, Manassas, VA, ATCC MYA-3280; Centraal Bureau voor Schimmelcultures, Baarn, the Netherlands, CBS 114391) was typical of *P. ramorum*, with large chlamydospores and caducous semi-papillate sporangia, and the sequence (GenBank Accession No. AY526570) of the internal transcribed spacer (ITS) region of the rDNA matched those published previously (4). The site, from which wood rose (*Rosa gymnocarpa*) was recently identified as a host, is a mixed forest containing confirmed *P. ramorum* infected coast redwood (*Sequoia sempervirens*), California bay laurel (*Umbellularia californica*), and tanoak (*Lithocarpus densiflora*) trees (2,3). Two leaves per asymptomatic, pesticide-free, potted-plant of false Solomon's seal were inoculated with zoospores of the *P. ramorum* isolate obtained from infected false Solomon's seal (1). Five plants were inoculated in trial 1 and the following day, 3 plants were inoculated in trial 2. A control leaf of each plant was dipped in sterile deionized water. Plants were enclosed in plastic bags, misted regularly with sterile distilled water, and maintained at 16 to 21°C in the greenhouse. In both trials, plants did not have lesions on the leaves after 16 days and were reinoculated on separate days for each trial with higher concentrations of zoospores (1×10^5 (trial 1) and 2×10^5 (trial 2) zoospores/ml). Cream-colored lesions similar to those observed in the field were evident one week after the second inoculation and had stopped progressing in both trials by 17 days. Lesions starting from the leaf tips averaged in length 13 mm (range 8 to 24 mm), and *P. ramorum* was reisolated on *Phytophthora*-selective agar medium modified with 25 mg PCNB from 44% (trial 1) and 83% (trial 2) of all lesions (4). Control leaves had no lesions, and *P. ramorum* was not reisolated. Sporangia were not observed on any leaves when examined under the dissecting microscope. Because lesions developed only after a second inoculation with higher concentrations of zoospores and these lesions stopped progressing after 17 days suggests that false Solomon's seal is much less susceptible than other hosts, such as western starflower (*Trientalis latifolia*) (1) and wood rose (2). This is the first report of a plant from the *Liliaceae* as a natural host for *P. ramorum*, although *Smilax aspersa* was identified as being susceptible in artificial inoculations of detached leaves (E. Moralejo & L. Hernández, personal communication). False Solomon's seal is popular in the horticultural industry.



References: (1) D. Hüberli et al. *Plant Dis.* 87:599, 2003. (2) D. Hüberli et al. *Plant Dis.* 88:430, 2004. (3) P.E. Maloney et al. *Plant Dis.* 86:1274, 2002. (4) D.M. Rizzo et al. *Plant Dis.* 86:205, 2002.

NURSERIES, CHRISTMAS TREES, AND GREENARY

On 10/27/04, UK Minister for Plant Health and Forestry Ben Bradshaw announced [industry assistance](#) for those suffering hardships related to actions taken to protect the wider UK environment from *P. ramorum*. Conditions of this one-time payment of \$200,000 include the industry's willingness to provide matching funds, State Aids' approval from the European Commission, and the industry putting forward realistic proposals for developing long-term risk sharing arrangements in relation to quarantine plant diseases.

***P. ramorum* was detected in November at six additional Oregon nurseries while** conducting compliance agreement surveys. The USDA's Confirmed Nursery Protocol has been initiated at each of the nurseries. So far this year, the Oregon Department of Agriculture has completed compliance agreement surveys at 772 nurseries and 665 Christmas tree plantations. The total number of nurseries where *P. ramorum* was found as a result of the survey now stands at 13. No infected plants were found at Christmas tree plantations. Additionally, trace-forward investigations from the Forest Grove, OR nursery finds resulted in pathogen identifications in three Connecticut nurseries. For more information, contact Gary McAninch at gmcainc@oda.state.or.us.

The Washington State Department of Agriculture (WSDA) recently inspected more than 100 Christmas tree plantations for *P. ramorum* on a fee-for-service basis. Similarly, in time for the 2004 holiday greens shipping season, the WSDA and the Department of Natural Resources (DNR) completed surveys on 98 Noble fir (*Abies procera*) sites to comply with anticipated requirements of customers and to preserve market access. As part of the *P. ramorum* National Wildland Survey, 93 nursery perimeters and 26 wildland sites were surveyed by WSDA and DNR. *P. ramorum* was not found. To date, no conifers in Washington have been found to harbor the pathogen. For more information, contact dan.omdal@wadnr.gov.

Currently there are 173 USDA APHIS confirmed positive *P. ramorum* sites in 22 states from trace-forward, national, and other surveys. The breakdown per state is: AL(3), AR(1), AZ(1), CA(53), CO(1), CT(3), FL(6), GA(16), LA(5), MD(2), NC(9), NJ(1), NM(1), NY(1), OK(1), OR(24), PA(1), SC(4), TN(2), TX(11), VA(2), and WA(25).

The Oregon Department of Agriculture (ODA) held a public hearing on 11/19 to discuss a proposed regulation designed to extend Oregon's *P. ramorum* certification program for the next three years. The Oregon Association of Nurseries testified at the hearing, supporting the continuation of the certification program as long as the proposed ODA regulation mirrored provisions found in the proposed federal USDA-APHIS Emergency Order. Oregon officials intend to harmonize Oregon's regulation with the



federal Emergency Order. The comment period for Oregon's proposed regulation ends Friday, 12/3. For more information, contact Gary McAninch at gmcainc@oda.state.or.us.

REGULATIONS

The federal “Confirmed Residential Protocol for *Phytophthora ramorum* Detections in Landscaped Residential or Commercial Settings” has been posted to the [USDA Animal and Plant Health and Inspection Service \(APHIS\) Plant Protection and Quarantine \(PPQ\) website](#). The protocol describes actions to be taken by regulatory officials when *P. ramorum*-positive plants are found in home gardens and other landscaped areas. Items addressed include consumer notification, determining where the plants were purchased, and record keeping; surveying and inspecting other hosts and associated hosts; plant removal and elimination as well as debris disposal; soil and water sampling in addition to soil treatment; quarantine measures; replanting; and follow-up monitoring. For more information, contact James Writer, USDA APHIS, at James.V.Writer@aphis.usda.gov.

CALENDAR OF EVENTS

12/9 – 10/04 – Oregon State Board of Agriculture Meeting; The meeting begins at 8:30 a.m. in the Education Center, The Oregon Garden; 879 W. Main; Silverton, Oregon. The meeting resumes 12/10 at 8:30 a.m. The meeting is open to the public. Many items will be addressed, including Sudden Oak Death, the status of Oregon's Christmas tree industry, and Ballot Measure 37. For more information, contact Bruce Pokarney at (503) 986-4559.

1/18 – 21/05 - Second Sudden Oak Death Science Symposium, Marriott Hotel, Monterey, CA. For Symposium program content, contact Rick Standiford, UC Berkeley Center for Forestry, at standifo@nature.berkeley.edu or Pat Shea, USDA Forest Service Pacific Southwest Research Station, at pjshea@davis.com. Updates on the meeting will be posted at <http://nature.berkeley.edu/forestry/sodsymposium>.