REPORT TO THE CALIFORNIA OAK MORTALITY TASK FORCE
AUGUST 2002

MONITORING

The flights for the statewide 2002 Sudden Oak Death (SOD) aerial survey have been completed. Over 14,000 miles were flown (nearly 5 times that of last year), covering 20 million acres, in an effort to identify potential SOD sites. Ground survey crews have been trained on SOD detection and have started follow-up ground survey work of identified aerial sites. It is anticipated that ground surveying will take approximately 2 months to complete. (Before groundwork begins, affected Agricultural Commissioners will be informed of the potential SOD sites being surveyed and sampled within their county.) The aerial survey project is a cooperative effort between the USDA-Forest Service, Forest Health Protection's Lisa Levien and Jeff Mai; Cal Polytechnic University-SLO's Wally Mark; and UC-Berkeley's Maggi Kelly and Karin Tuxen. Laboratory confirmations are being done by Cheryl Blomquist, CDFA; the Rizzo lab, UC-Davis; and the Garbelotto lab, UC-Berkeley. Funding was provided by the USDA-FS and CDF. For more information, contact Lisa Levien at Llevien@fs.fed.us.

PRESS COVERAGE

Defenders of Wildlife published the SOD article "Mighty Oaks in Trouble" in the summer edition of their magazine *Defenders*. The article discusses the potential invasive species aspect of SOD, highly impacted areas and the impact SOD has had on the ecology of those areas, and the role of education and regulations in slowing disease spread.

REGULATIONS

The California Board of Forestry and Fire Protection (BOF) amended the Sudden Oak Death "Zone of Infestation" (ZOI) to include Humboldt and Contra Costa Counties at their August meeting. With these additions, there are 12 counties now included in the ZOI.

MANAGEMENT

The BOF approved Monterey County's "Sudden Oak Death Hazard Tree Assessment, Removal, and Restoration Plan" at their August meeting. Through CDF, the State of California is providing up to $1,296,000 of reimbursement funding to the counties known to be infested. To be eligible for reimbursement, each county must receive BOF approval of a hazardous tree assessment, removal, and restoration plan. With a contract in place, counties can act upon their plans and then file necessary documentation with CDF for reimbursement of their costs.

RESEARCH

The deadline for submission of abstracts for the Sudden Oak Death Science Symposium has been extended to August 31, 2002. They should be submitted via e-mail (preferred), or on disk (Mac or Windows compatible) using MS-Word or WordPerfect. Abstracts should be sent to: Joni Rippee, UC Integrated Hardwood Range

Management Program; 145 Mulford Hall, MC #3114; University of California Berkeley, CA 94720-3114; phone: 510-642-0095; email: rippee@nature.bekeley.edu. The Symposium is scheduled in Monterey for December 16 – 18, 2002.

Incidence of *Phytophthora ramorum* inoculum found in soil collected from a hiking trail and hikers' shoes in a California park: Sudden Oak Death is often found in areas of high recreational use. In some of the most heavily diseased areas, recreational hikers frequent the trail systems. It is important to determine if *Phytophthora ramorum* is found in soil along the hiking trails and if inoculum is there, whether or not it could be picked up on shoes of hikers. If it can be picked up, the spread of inoculum by hikers visiting new areas could be a real threat. Sampling for the presence of *Phytophthora ramorum* inoculum in a heavily diseased and popular California State Park on a 1.3 km trail loop occurred following several rainy periods in the spring and one dry period in the summer, 2002. Soil was sampled from five locations along the trail and concurrently soil from hikers' shoes, who had completed hiking the trail, was also sampled. Soil samples were baited with pears, inspected for characteristic *P. ramorum* lesions, and pear tissue from suspicious lesions were transferred to PARP media for pathogen identification. In the spring rainy periods, the incidence of successful pear baiting of the soil for *P. ramorum* varied from a 40 – 60 % success rate for trail soil and a 40 - 95% success rate for soil removed from hiker's shoes. The one dry summer period sampling occurred, baiting from trail soil and shoe soil failed.

This study was conducted by S.A. Tjosvold[1], D.L. Chambers[1], J.M. Davidson[2], and D.M. Rizzo[2] [1]University of California Cooperative Extension, 1432 Freedom Blvd, Watsonville, CA 95076, Email: satjosvold@ucdavis.edu; [2] Department of Plant Pathology, University of California, Davis, CA. 95616.

The final project report for the USDA-FS PSW-Research funded project "Factors related to *Phytophthora* canker (sudden oak death) disease risk and disease progress in coast live oak and tanoak" can be viewed at the Phytosphere Research web site: http://phytosphere.com/publications/Phytophthora_case-control2002.htm.

This report presents data from the second year of observations in a case-control study to examine the role of water stress and various other factors on the development of *Phytophthora* stem canker disease (commonly called sudden oak death) in coast live oak (*Quercus agrifolia*) and tanoak (*Lithocarpus densiflorus*). The study compares subject trees that exhibited symptoms of *Phytophthora* infection (case trees) with symptomless (control) trees. Vegetation-related plot variables that were positively correlated with disease in coast live oak included the count of California bay (*Umbellularia californica*) trees in the plot, the number of plot trees with *Phytophthora* canker symptoms, and the presence of poison oak (*Toxicodendron diversilobum*) in the plot. Tree-related factors that were associated with disease included multiple stems, large stem cross-sectional area, high levels of canopy exposure, and high stem water potential (SWP).

The experiment was conducted by T.J. Swiecki and E.A. Bernhardt; Phytosphere Research, Vacaville, CA

EDUCATION

On September 12, 2002, the Task Force and CDFA will be holding a training session in Marin County on recognition, sampling, and diagnosis of *Phytophthora ramorum* (Sudden Oak Death). There will be a lecture session in the morning at the Marin Center followed by a field trip in the afternoon to Miwok Meadows, China Camp State Park for hands-on field session. Registration materials and more information can be found on the California Oak Mortality Task Force web site at http://www.suddenoakdeath.org or contact Bettie Trotter at bettie.trotter@fire.ca.gov.

DATES TO REMEMBER

9/12/02 – COMTF SOD Training in Marin; contact Bettie Trotter at bettie.trotter@fire.ca.gov

9/21 – 22/02 – Marin Releaf acorn harvesting of Coast Live Oak trees in China Camp State Park for planting in December; contact Sandra Sellinger at (415) 721-4374

9/27/02 – "Space for Trees" SOD/Pitch Canker fundraising golf tournament at Del Monte Golf Course in Monterey; contact Rick Hawley at rick@greenspacecambria.org

10/26 - 11/18/02 – "The Art of Saving Oaks" art auction and exhibit in Bay Model, Sausalito; contact Carol Haggerty at chaggert@pacbell.net

12/16–18/02 - COMTF meeting and SOD Research Symposium in Monterey; contact Pat Shea at pjshea@davis.com

THE LEARNING CURVE, QUESTIONS AND ANSWERS

An interview with Cheryl Blomquist, Diagnostician, California Department of Food and Agriculture, Sudden Oak Death/*Phytophthora ramorum* Laboratory, Sacramento

Cheryl Blomquist and her assistant Terra Irving have processed over 1,300 samples for *Phytophthora ramorum*. After looking at so many leaves and petri dishes, they have a few pointers to offer on sampling for *P. ramorum*.

What is the best material to culture *Phytophthora ramorum* from?

The best host material to analyze using DNA techniques or to culture from is either rhododendron or bay leaf lesions. Small slivers of canker margins from bleeding oaks collected onto the selective media (PARP) onsite also culture very well if a sample is taken from an active part of the canker. Whole bay and rhododendron leaves can be collected and shipped in plastic bags with a slightly damp paper towel. All samples must be kept cool until they are shipped. They should be shipped using an overnight service, especially in warm months. Samples can be stored in a refrigerator if you are collecting on a Friday. After collecting samples in the field, seal the plate and put them directly into a cooler with cold packs. Put leaf samples into a cooler after collection as well. Do not leave samples in a hot car.

Yellow bay leaves with leaf tip necrosis and angular leaf spots are fine to sample, although green leaves are preferable. If you cannot find symptomatic bay leaves on the tree, you can recover them from the ground if they are still bright yellow with black leaf tip necrosis and spots. Send at least 5 leaves with symptoms. Do not send dead brown leaves of any species.

What is the best way to sample tanoak?
Please do not send tanoak leaves with leaf spots for diagnostic purposes. *P. ramorum* is rarely detected on tanoak leaves with leaf spots, even using the most sensitive DNA analysis techniques. I recommend taking the California Oak Mortality Task Force (COMTF) training session for samplers (The next training is 9/12.) so you can collect canker samples and put them directly into PARP. Collect from active cankers on more than one tree in the area if possible. It is common to get only 2 positives out of 5 cankered trees sampled.

What are the best kinds of samples to provide of toyon, manzanita, vaccinium, big leaf maple, and buckeye?
Please do not send toyon leaves with leaf spots unless there is oak disease and bay symptoms (if bay is present) in the area. Of course, this does not apply to county employees doing nursery surveys. They are required to comply with the federal quarantine regulations, which include collecting from every possible symptomatic host. My experience with maple and buckeye samples is still minimal, so I don't have a solid opinion yet on the best method for sampling these plants. When sending manzanita or vaccinium samples, please send dieback symptoms. Take a large sample, including the dead/live junction for more than one branch. I have never detected *P. ramorum* on leaf spots of manzanita.

Does there appear to be a better time of year to sample?
I do get positives from oaks on culture plates and from bay using both PCR and culturing techniques in mid-July. Those who sample frequently have told me that they believe fewer cultures of *P. ramorum* grow from oaks sampled in summer. Sampling in coastal California from December through April (depending on rainfall—the more the better) is probably optimal.

Why does it seem to take so long to get back lab results?
For nursery surveys and hosts that generally cannot be cultured, we try to complete PCR and report the results within 2 weeks. Oak, bay, and rhododendron culture plates are held for about three weeks. Realistically though, it takes about a month to receive cultured results. If your sample follows a new county nursery survey or we are out of town, it can take longer.

Can I put all samples from one site on a single Pest Detection Report (PDR)?
It is okay, but not preferable, to put multiple samples of the same species from the same site on one PDR. But, you will need extra pages, which can be sent to you from the lab. If you want to put multiple samples on the same slip, you do delay receiving notification

of a positive result because it will take 3 weeks to get a clear result out of negatives that are usually on the same slip.

How do I get PARP plates?
You need to have gone through the COMTF sampler SOD training to get PARP plates. (The next training is 9/12.) Following training, you can call me and request the number of plates you need. Please only request what you will use in the following 6 weeks, as the plates don't keep for longer than this. Throw away old plates because they rapidly overgrow with mold, which can inhibit the growth of *P. ramorum*. Plates are usually sent out the day after they are requested unless new PARP needs to be made, in which case they usually go out two days after the request is made. They need to be stored in the dark and refrigerated until used.

Cheryl Blomquist can be reached at cblomquist@cdfa.ca.gov or (916) 262-1870. The lab mailing address for shipping samples is CDFA; Pest Diagnostics Branch; 3294 Meadowview Road; Sacramento, CA 95832-1448.