PEST ALERT!

Be on the lookout for

Sudden Oak Death

KILLING TREES!

Fig. 1. Bleeding cankers on a coastal live oak.

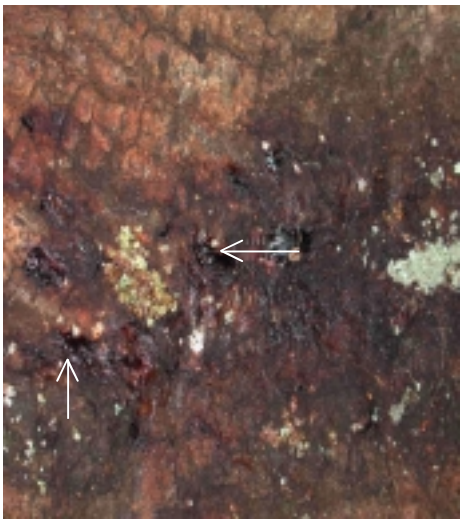

Fig. 2. Fresh bleeding from a young canker.

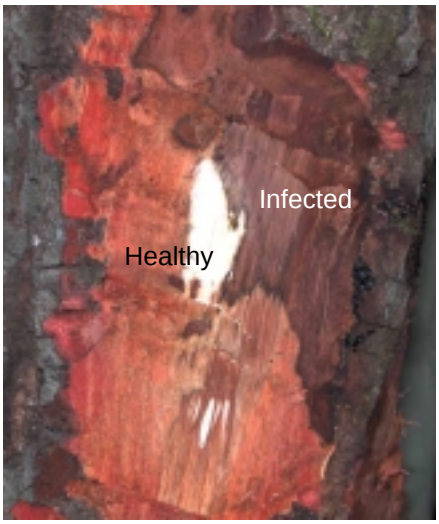

Fig. 3. Canker margin in the bark and wood.

Sudden oak death, caused by a new *Phytophthora* fungus, is killing tanoaks, black oaks, and coastal live oaks in California's San Francisco Bay Area. The disease is most severe in Marin, Monterey, Napa, Santa Cruz, and Sonoma counties.

Symptoms of sudden oak death on diseased trees include:

- **burgundy-red to black sap bleeding onto the bark surface (Figs. 1, 2),**
- **sunken or flattened cankers beneath the bleeding (Fig. 1),**
- **distinctive dark red canker margin in the bark and wood (Fig. 3),**
- **cankers and bleeding occur above ground, usually within 3 to 15 ft of the soil line.**

On young tanoaks, the first symptom seen may be wilting and drooping of all of the new growth.

Help keep this disease out of Oregon!

If you see oaks or tanoaks that may have this disease, please notify:

Oregon Dept. of Agriculture
635 Capitol St. NE
Salem, OR 97301-2532
503-986-4636 or 1-866-INVADER
TTY:503-986-4762
www.oda.state.or.us

Oregon Department of Agriculture

Additional Information About Sudden Oak Death (SOD)

SOD, a new disease of tanoaks, black oaks, and coastal live oaks, was first detected near Mill Valley, CA, in 1995. Since that time, SOD has spread throughout Marin, Monterey, Napa, Sonoma, and Santa Cruz counties. Trees with SOD-like symptoms have also been found in Humboldt, Mendocino, San Mateo, and Santa Clara counties.

SOD is believed to be caused by a new *Phytophthora* sp. The fungus invades susceptible trees through the bark, killing portions of the tree. This creates an ideal environment for insects and other fungi to invade. The origin of this new *Phytophthora* sp. is presently unknown.

Hosts

So far, three tree species are known to be susceptible to SOD; tanoaks (*Lithocarpus densiflorus*), coastal live oaks (*Quercus agrifolia*), and black oaks (*Q. kelloggii*). Tanoaks are the most susceptible, with young trees dying within 3 weeks of infection. In general, coastal live oaks and black oaks survive longer. However, once infected, trees do not recover. Researchers are checking other tree and shrub species for susceptibility to this disease.

Symptoms

The symptoms of SOD on the three host species are very similar (Fig. 1, 2, and 3). Young infected tanoaks have an additional symptom; all of the new growth may droop and/or wilt before any cankers or bleeding appear. The sunken or flattened cankers appear below the bleeding (Fig. 1, 2). During the dry summer months, the bleeding may look like a wet spot on the trunk. The distinct droplets of sap oozing from the bark are more obvious during the wetter fall, winter, and spring months.

Cankers and bleeding occur above ground, usually within 3-15 ft of the soil line.

The symptom considered most diagnostic for SOD is the distinct dark red canker margin (Fig. 3). This symptom is most readily apparent in the bark and cambium. However, the canker margin will extend a very short distance into the wood (< 0.5”).

Disease Movement

Researchers are currently trying to determine how SOD spreads. Other *Phytophthora* species can spread through infected plant material (e.g. firewood), soil or mud, and water. It is highly likely SOD can be spread the same way. Insects are also being examined as possible vectors for this disease.

Spore Viability & Establishment

The new *Phytophthora* sp. that causes SOD produces two types of spores: zoospores and chlamydospores. Zoospores are produced asexually in sporangia. The spores are short-lived and motile. Zoospores can swim several feet through water or water films to infect a susceptible host. A single spore can start an infection (*i.e.* canker). Sporangia may also germinate and infect susceptible hosts without producing zoospores. Chlamydospores are specialized spores that allow the fungus to survive environmental extremes (*e.g.* drought). Chlamydospores of other *Phytophthora* species have been known to survive for 2-6 years in infected plant debris or soil.

The SOD fungus prefers cool, wet conditions. It is favored by temperatures between 50 and 65 degrees Fahrenheit. Temperatures above 90 degrees Fahrenheit inhibit fungal growth.

Exclusion & Control Strategies

At present, SOD does not occur in Oregon. It is only found in and around California's San Francisco Bay Area. Therefore, Oregon's oaks and tanoaks can be best-protected by preventing the introduction of the disease to Oregon.

- Do not transport oak firewood or other potentially infected plant materials from diseased areas in California to Oregon.
- If you visit diseased areas in California, wash your vehicle and shoes before traveling to disease-free areas. This includes mountain bikes ridden in areas with the disease.
- If you see an oak or tanoak tree with symptoms like SOD, report it to the Oregon Department of Agriculture or the Oregon Dept. of Forestry immediately.

For more information, please contact:

Dr. Nancy Osterbauer, Plant Division, Oregon Dept. of Agriculture, 503-986-4666
Dr. Alan Kanaskie, Oregon Dept. of Forestry, 503-945-7397

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