SUDDEN OAK DEATH

AND

CARE OF NATIVE OAKS

Introduction

Sudden Oak Death (SOD) is a disease caused by Phytophthora ramorum, a new species of fungus- like organism that has killed large numbers of oaks and tanoaks in some areas of central coastal California. While there have been no oak tree deaths in southern California due to SOD, P. ramorum has now been found infecting camellias at some nurseries in Southern California.

It appears that temperature and humidity are limiting factors for the disease, so the potential of SOD becoming established in coastal areas is greater than inland areas. We are optimistic that our climatic conditions would prevent the disease from becoming established here and do not believe there is an imminent threat to our oaks.

The name Sudden Oak Death is used because of the rapid color change of leaves from green to brown. A tree may be infected with Phytophthora for a year or more before exhibiting this sudden change in foliage. The pathogen that causes SOD also infects, but rarely kills, a number of other woody plant species in California including rhododendron, huckleberry, California bay laurel, madrone and arrowwood. In these species, symptoms include branch tip dieback and spotting on leaves.

History

SOD was first observed in California in1995 killing tanoaks in Mill Valley, Marin County. The disease was also observed in Santa Cruz and Monterey County that year. The cause of SOD was not diagnosed until July of 2000, when researchers reported that a new species of Phytophthora had been isolated from diseased oak trees. This new species of was named Phytophthora ramorum. In January of 2001 the disease was discovered on rhododendron in Santa Cruz County. New hosts were reported throughout 2001 including huckleberry, Shreve oak, madrone, bay laurel, California coffeeberry, toyon, and California honeysuckle. In August of 2001 SOD was discovered on rhododendron in Curry County, Oregon. By April of 2002 there were 15 known host species and 10 counties in California were confirmed as infested with SOD. Also in April of 2002, Poland and England reported P. ramorum on rhododendron and Viburnum respectively. In December of 2002 over 150 nurseries in the UK, France, Belgium, Netherlands, Sweden, Italy, Germany, and other European countries reported infestations of P. ramorum. Phytophthora ramorum was detected on rhododendron at a nursery in King County, Washington and at a nursery in Greater Vancouver, B.C. Currently, there are more than 60 hosts of P. ramorum and 13 counties are infested in California.

How do you recognize Sudden Oak Death?

If any susceptible oak species grows on your property, look for the following symptoms:

1. Bleeding or seeping of a dark viscous substance near the trunk base.

2. Reddish or tan-white fine, beetle boring dust resulting from bark and ambrosia beetles tunneling into the bark and/or wood.

3. Appearance of hard, golf-ball size, dome-shaped fungal fruiting bodies, which are green when new and later turn charcoal black called Hypoxylon.

The beetle boring dust and Hypoxylon fruiting bodies are secondary symptoms that may occur on trees without SOD. Laboratory culturing is the only way to confirm whether a symptomatic oak is infected with the Phytophthora that causes SOD.

Is Sudden Oak Death the only cause of oak mortality?

No. Many other pathogens can also kill oaks. In particular, the Phytophthora root rot fungus (Phytophthora cinnamomi) and oak root fungus (Armillaria mellea) are common in landscape and garden settings. In addition to these and other pests and pathogens, improper cultural practices such as soil compaction, root pruning, over-watering and herbicide use may contribute to the death of oak trees.

Are all oak species susceptible to Sudden Oak Death?

At this time three oak species, California coast live oak (Quercus agrifolia), California black oak (Quercus kelloggii), and Shreve oak (Quercus parvula var. shrevei), and the closely related tanoak (Lithocarpus densiflorus), have been found to be killed by the new Phytophthora species. Other oaks, such as valley oak (Quercus lobata), blue oak (Quercus douglasii) and many introduced ornamental oaks, have not yet tested positive for the new Phytophthora. The blue oak and valley oak are both native to Los Angeles County.

How does Sudden Oak Death spread?

It is not currently known how the Phytophthora pathogen that causes SOD spreads from an infected to a healthy tree. Most species of Phytophthora are spread by soil, water and infected plant material. A few species are also known to be airborne. As with all pathogens, a susceptible host and favorable climatic conditions are necessary for infection to occur. The new Phytophthora species can reproduce rapidly on the leaf surface of hosts such as bay laurel and madrone. These hosts may be important in that they allow for the build-up of Phytophthora spores and therefore serve as a source of infection.

What can you do for oaks that do not have symptoms of Sudden Oak Death?

Focus on maintaining oak health through proper cultural practices. Avoid disturbance of the root zone, prevent frequent irrigation, and minimize injuries to the trunk and large branches. Prune coast live oak and black oaks during the dry summer months when the beetles and causal pathogen are least active. Limit pruning to dead, dying and structurally unsound branches.

What can you do if trees are infected?

Monitor oaks in urban settings for the bleeding symptom year round. If the bleeding symptom is detected, consult with a certified arborist, pest control advisor or horticulturist to find out whether the cause is the new Phytophthora species. If the new Phytophthora species is confirmed in a tree in an urban setting, application of insecticides and fungicides registered for woody ornamentals may be recommended.

Can the fungus be eradicated from California?

No. Eradication of a pathogen on this scale is biologically and physically impossible.

Where can you get more information?

Information about SOD can be obtained from your local University of California Cooperative Extension or County Agricultural Commissioner's office. Also, see this website:

http://www.suddenoakdeath.org

The information in this brochure on Sudden Oak Death was excerpted and edited from Pest Alert #4a published by the University of California Cooperative Extension in Marin County. Portions of the information on the care of native oaks was excerpted and edited from 'Care of California's Native Oaks" published by the California Oak Foundation.

Care of Native Oaks

Watering Oaks: Native oaks do not normally need to be watered, but if rainfall during the winter and early spring months is below 18 inches, additional deep watering can be applied from March through May. If watering of plants adjacent to the tree is necessary at any time, do not let the water hit the trunk of the tree. Ideally, ferns and other shade plants should not be planted under a native oak as the cultural requirements for the two are totally different.

Root Protection Zone: The root protection zone is 1.5 times larger than the area from the trunk to the drip line. Disturbances in the root protections zone should be minimized. It is best to limit planting and watering in the root protection zone as well.

Planting Near Oaks: Only drought-tolerant plants that require no summer water should be planted around old established oaks, and they should be planted no closer than six feet from the base of the tree. Avoid planting grasses, ivy, azaleas, ferns, rhododendrons or any other vegetation that needs summer watering. Root disease

causing pathogens are often introduced to the root system from nursery grown shrubs such as azaleas or camellias.

Surface Covers and Mulching: In place of plants, other types of ground cover can be used to landscape beneath oaks. Cobbles, gravel, and wood chips are good examples. Allowing the fallen leaves to accumulate under oaks creates a natural mulch layer. A natural mulch layer will slowly provide nutrients as the leaves decompose.

Trenching and Grade Changes: Trenching under oaks for the installation of utilities can lead to rapid decline and death if large roots are cut. If utilities must impinge on the root protection zone, the trench should be dug by hand so that roots larger than two inches can be avoided. Utilities can be bored through the ground at least three feet below the surface to ensure that the roots are not damaged. Changes to the grade with fills or excavation can severely damage the roots.

Pruning: Native oaks should be pruned when they are dormant. Live oaks are dormant in the summer months, July thru October. Deciduous oaks should be pruned during the winter when they have lost their leaves. Always prune to enhance the natural form of the tree. Oaks do not tolerate severe pruning and can be killed if topped or severely pruned. Never prune out more than 15% of the green wood in a single pruning and avoid large wounds. Painting wounds with sealing compounds is not necessary and can slow the wound healing process.

Diseases: The most serious diseases of native oaks are Phytophthora root and crown rot and Armillaria root rot (the oak root rot fungus). Phytophthora and Armillaria are both favored by excessive or summer irrigation. There are no chemical controls for Armillaria root rot. There are two different fungicides that are effective against Phytophthora root rot. These fungicides will not save an oak that is in severe decline due to Phytophthora root rot. Proper cultural care is the most important component to prevent and control root disease in oaks.

Insects: Numerous insects live on oaks but rarely cause significant damage. Small wasps cause galls on leaves and twigs where they lay their eggs but are insignificant and do not harm the tree. Oak moth can defoliate oaks when populations are high and intervention may be required. The oak twig girdler can cause numerous patches of dead leaves but does not adversely affect the trees health. Wood bores are common in the trunks of coast live oaks but they too do not adversely affect the trees health.

Fertilizing: Mature oaks need little or no supplemental fertilization. Light fertilization may be appropriate in landscaped situations to replace nutrients supplied by leaves and other litter that normally accumulates under an oak. Fertilizer should be applied to the entire root protection zone if possible in late winter or early spring.

More information on the care of oaks is available from the California Oak Foundation at:

http://www.californiaoaks.org

GUIDELINES FOR THE CARE OF NATIVE OAKS AND PREVENTION OF SUDDEN OAK DEATH

http://file.lacounty.gov/acwm/cms1_215959.pdf