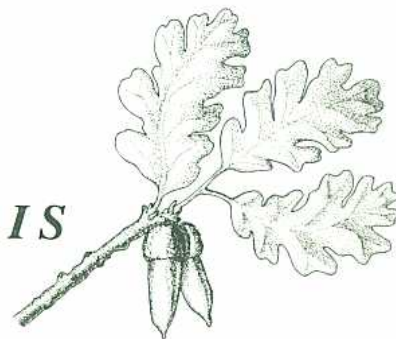


PLANT DISEASE DIAGNOSIS

780 Palmer Road • Walnut Creek, CA 94596

Phone/Fax: (925) 937-3841

**Client:**

Mitch Thomson
City of Oakland, Public Works
7101 Edgewater Dr.
Oakland, CA 94621

Invoice: 4882**Date:** 6/7/2010**Plant:** Canary island Palm at Splashpad park**Disease:** See below**Discussion:**

South tree. *Fusarium oxysporum* (Fusarium wilt) and *Gliocladium* (pink rot) were cultured from the tree.

North tree. *Fusarium oxysporum* (Fusarium wilt) and *Gliocladium* (pink rot) were cultured from the tree.

East tree. *Fusarium oxysporum* (Fusarium wilt) was cultured from the tree.

Fusarium wilt is always fatal to the tree. All three infected trees need to be removed. The fungus is most often spread by infected pruning tools when the fronds are removed. It is not possible to properly sterilize chain saws. A tree may already be infected when it is transplanted. In pruning operations the saw used on that tree may spread the fungus to other palms subsequently pruned.

The disease pink rot was present in two of the palms. This is a fungus that attacks stressed palms. There is no point to treat them since the palms already have a fatal disease.

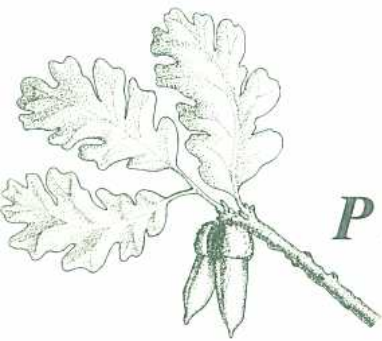
The rest of the palms in the planting do not appear to have Fusarium wilt at this time. To prevent spread of the fungus chain saws must not be used for pruning fronds. Use a hand saw that is sterilized between trees. Clean the debris off the saw and dip it in a 1:1 bleach solution for 5 minutes between trees.

Do not replace the palms with Canary island palm or date palms. The fungus is in the soil and can re-infect. Choose a replacement palm from a genus other than *Phoenix* or *Washingtonia*. Queen palm is not susceptible.

Thank you

Luellen Pierce

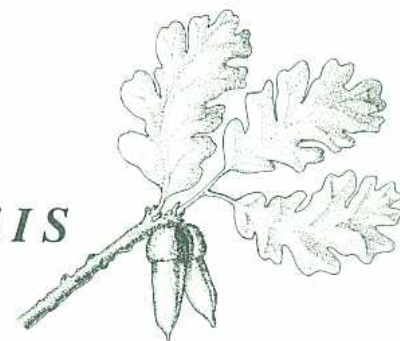
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Fusarium Wilt of Palm



Symptoms

Infected palms first exhibit reduced vigor and decline, with older fronds browning. Fronds die from the oldest to the newest. Often only the leaflets on one side of the frond will die. A prominent brown stripe is visible on the rachis (midrib of the frond) running from the base and extending progressively toward the tip. In longitudinal sections of the rachis, pinkish to brown stripes of discolored vascular tissue are present.

Biology

Fusarium wilt is caused by the 'canariensis' strain of the fungus *Fusarium oxysporum*. The fungus forms spores in

the tissues of an infected palm and in the soil. The fungus causes disease by plugging up the water and nutrient conducting vessels (vascular system) of the tree. The palm dies because it cannot conduct water and nutrients through the plant. Spread of the disease depends upon movement of infected palms or soil. Since palms are commonly transplanted, the infected rootball may infest the soil in the new landscape. The disease can also be spread by pruning tools. If an infected rachis is removed, the fungus survives on the cutting blades. When the fronds from a new tree are subsequently pruned, the new tree will be infected. There is no known airborne spread of the fungus.

Host Range

Fusarium wilt affects *Phoenix canariensis* (Canary island palm), *P. reclinata* (Senegal date palm) and *P. dactylifera* (date palm). There is also some evidence that *Washingtonia filifera* (California fan palm) may be susceptible. It does not infect *Washingtonia robusta* (Mexican Fan palm), or *Archontophoenix cunninghamiana* (King Palm).

Management

The proper management of Fusarium wilt is dependent upon accurate diagnosis. Other rachis blight disease can cause rachis browning. Only laboratory culturing can confirm the diagnosis. Failure to accurately diagnose the disease will result in the spread of the disease, or in the unnecessary destruction of an expensive palm. There is currently no effective treatment and all infected palms eventually die. Disease management thus depends upon prevention of spread. Palms should be inspected for disease symptoms before transplantation. To prevent spread via pruning tools, disinfect tools in a 1/1 dilution of bleach between trees. Only prune off the dead fronds. The fungus is much more active in living fronds. Only prune once a year. Loppers are preferable to chain saws because chain saws are difficult to disinfect. If a palm has died of Fusarium wilt, replant with a resistant species.

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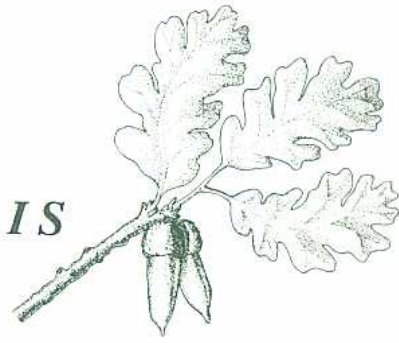
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Pink Rot of Palms



Pink spore mass on rachis

Symptoms

Pink rot may result in a wide array of symptoms. If the bud is killed, no new leaves will appear. A palm only has one bud. If it dies the tree will die as the old leaves fade and no new ones are produced. The rachis (stalk of the leaf) may be infected resulting in the death of a frond. The trunk itself may become rotten. Leaf spots are the least serious symptom. The most diagnostic symptom is masses of pinkish powder (spores) that eventually appear on the dead tissue.

Biology

Pink rot is caused by the fungus *Gliocladium vernoesei*. Older, slower growing trees or stressed trees are most susceptible. The fungus enters through wounds or damaged tissue. Pruning wounds, insect injury, sunburn or freezing all can provide entry for the fungus. Tremendous numbers of pink spores are produced. They are spread by wind and/or rain. Where palms are grown the spores are always present in the environment, so it is important to avoid

stressing or injuring the tree. Many palms infected with the fatal disease Fusarium wilt are also infected with pink rot. It is important to get an accurate diagnosis, since there is no point in treating pink rot on a palm already infected with the fatal Fusarium wilt.



Palm with dead bud. Note flat top

Host Range

This disease has a wide host range. Most palm species are susceptible. Common susceptible landscape palms include canary island palm (*Phoenix canariensis*), Mexican fan palm (*Washingtonia robusta*), California fan palm (*W. filifera*) and Queen palm (*Syagrus romanzoffiana*).

Management

Reduce stress by giving the palms good cultural care. Palms need regular irrigation. Avoid wounds. Wait until the older fronds are dead before pruning them off. Fungicidal treatment with thiophanate-methyl (Cleary's 3336) may be helpful in preventing or treating infections.

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