

Fusarium Wilt of Palms

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Date palm wilt, caused by the fungus *Fusarium oxysporum* f. sp. *canariensis*, is the most serious and lethal disease of Canary Island date palm (*Phoenix canariensis*). This disease leads to dieback of individual fronds, usually beginning in the lower canopy, and eventually results in plant mortality. There is no chemical treatment that has proven effective against this disease. It is important to remember in all phases of plant care that this is a highly infectious and lethal disease and care must be taken to prevent spread.

Diagnosis

Confirmation of this disease must come from a laboratory culture of the fungus; however, certain symptoms in the field can be helpful in identifying infected trees. The most unique symptom of this

disease is the **one-sided death** of pinnae (leaflets) along the frond, with dark coloration of the rachis (petiole) on the side with necrotic pinnae (Figure 1).

Figure 2: Internal rachis tissue displaying pink discoloration caused by *Fusarium*

Figure 1: One-sided death of pinnae and dark coloration of the rachis (see subset photo)



This one-sided dieback will eventually progress to total frond death. Frond death usually begins in the lower portion of the crown and moves upwards.

Internal discoloration of the dead and dying fronds is another key diagnostic symptom of *Fusarium* wilt. Internal tissue of the rachis is normally white or cream in color, but infected tissue will be brown or pink internally (Figure 2).

The discoloration will be associated with the dead half of the rachis at that stage of frond death. A pink coloration on the surface of the rachis may be due to a different disease called Pink Rot, however internal pink streaking in the vascular tissue is almost 100% diagnostic for *Fusarium* wilt.

Date palms may be infected with *Fusarium* for months or years prior to symptoms being displayed. These asymptomatic diseased trees can be potential sources of new infections. **The fungus is readily spread from diseased to healthy palms on pruning tools.** This is the number one vector for the spread of this disease. The fungus also can reside in soil for long periods of time and can be transferred to landscape sites when transplanting nursery stock. Once *Fusarium* is introduced into the tree by pruning tools or root infections, it spreads through the vascular (water conducting) system causing wilting and death of the plant.

Sampling

In order to confirm *Fusarium* in a sample, the fungus must be cultured from the infected tissue. The ideal sample contains rachis tissue with visible pink or brown discoloration. Removal of the leaflets will help in packaging the sample for shipping and they are not necessary for diagnosis. When collecting samples from more than one tree, cutting tools must be sterilized between trees. Sterilization of tools can be achieved by soaking the blade in bleach for 10 minutes. For this reason, **it is recommended that more than one handsaw be used if multiple samples are to be taken.**

Pruning

Pruning of infected palms is not recommended (see section on removal). Due to the possibility of non-symptomatic infection, steps should be taken to prevent spread anytime Canary Island date palms are pruned. Whenever possible, this species should be pruned with handsaws rather than chainsaws due to the difficulty in sterilizing chainsaws. Multiple

handsaws should be used if multiple trees are to be pruned. **Saws must be sterilized between each tree** by soaking the blade in bleach for 10 minutes. Pruning should occur when wind is absent or minimal as sawdust is considered a source of inoculum for spread of this disease.

Removal

Once *Fusarium* wilt is confirmed in a tree, removal is always the primary recommendation. This disease is lethal in nearly 100% of infected trees, and there is no chemical treatment to prevent or eradicate this pathogen. Infected trees left in the landscape will serve as a source of infection for other date palms, and may be more susceptible to other fungal problems, potentially leading to crown or stem failure.

If other Canary Island date palms are present on site, removal should be accomplished with as few cuts as possible. Ideally, trees will be removed by crane after digging the root ball; however this is not always possible. Sawdust and all wood waste must be removed from the site to reduce potential spread. Removed trees should be disposed of in the landfill and not in any manner that recycles wood waste because the tissue remains infective for long periods.

Replacement

If a Canary Island date palm is removed due to disease, it **should not** be replaced with the same species. The fungus can remain active in the soil for at least 25 years. Many other genera of palm species are available, and no other genus has proven susceptible to this strain of *Fusarium*. Other species in the genus *Phoenix* may show some degree of resistance, but use of a different genus is recommended. While no palm will replace the grand aesthetics of the Canary Island Date palm, species such as *Syagrus romanzoffiana* (Queen palm) or *Washingtonia* spp. (Fan palms) are resistant to this disease and may be suitable replacements with somewhat comparable form and function.

