

Petiole (Rachis) Blight of Palm¹

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Summary

- Petiole (rachis) blight is caused by numerous fungal pathogens, but the symptoms these pathogens cause are similar for all of them.
- Palm host range is unknown for this disease.
- The disease often results in discolored (usually brown or reddish-brown) elongated lesions or streaks along the petiole of the oldest (lowest) leaves.
- The pathogens infect *only* the petiole, not the leaf tissue. However, destruction of vascular tissue (xylem and phloem) deep into the petiole results in a one-sided or uneven death in the leaf blade.
- Fungal structures can sometimes be observed on the infected petiole surface.
- Since very little is known about this disease, only general disease management strategies regarding sanitation, water management, and fungicide use can be provided.

Introduction

To discuss petiole (rachis) blight, a brief introduction to palm leaf anatomy is required. There are three types of palm leaves. All possess a base (leaf sheath), a petiole and a blade. The leaf base is the portion that attaches to the stem (trunk). The leaf petiole is the stalk or stem of the leaf connecting the leaf base with the leaf blade.

The leaf blade is either: 1) fan-like (palmate) with individual leaflets (segments) merged together and the petiole terminated where the blade begins; 2) an elongated version of fan-like (costapalmate) with individual leaflets (segments) merged together but with the petiole extending into the leaf blade; or 3) feather-like (pinnate) with individual leaflets clearly delineated and attached to the petiole, with the petiole extending the entire length of the leaf blade. The extension of the petiole into the leaf blade is called the “costa” on a costapalmate palm, and the “rachis” on a pinnate palm.

Unfortunately, the term petiole and rachis are often used interchangeably. Since diseases of the petiole were first observed on *Phoenix* palms, pinnate-leaf palms that have a rachis, the common

1. This document is Fact Sheet PP-221, one of a series of the Plant Pathology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date January 2006. Visit the EDIS Web Site at <http://edis.ifas.ufl.edu>.

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name of these diseases became “rachis blight.”

However, as we now know, palms that do not have a rachis also are susceptible to petiole diseases. In this fact sheet the disease will be referred to as “petiole blight.”

In general, the “typical” or “classic” petiole blight is a disease in which the pathogen only infects the petiole. The disease symptoms may look like the pathogen has also infected the leaf blade, but this is a secondary affect from petiole infection. An exception to the “typical” petiole blight is a disease caused by *Pestalotiopsis*. This pathogen causes both a leaf spot and blight as well as a petiole or rachis blight, usually at the same time. It is discussed in a separate fact sheet at <http://edis.ifas.ufl.edu/pp141>.

Pathogens and Hosts

There are a number of different pathogens associated with petiole blight. These include *Cocoicola* and *Serenomyces*, which are only found in association with palms. *Macrophoma*, *Phoma*, *Phomopsis*, *Diplodia*, and *Pestalotiopsis* may also cause this disease, but these fungi also cause diseases of numerous other plant hosts. The host range of all of these fungi within the palm family is unknown.

Symptoms

Mature palms (palms with trunks) are more likely to be affected by petiole blight than juvenile palms. On mature palms, the oldest (lowest) living leaves will be affected first. The disease will move up through the canopy to younger leaves. The disease may severely debilitate the palm, but the disease seldom kills the palm (Figure 1).

No matter which pathogen is causing the disease, the symptoms of petiole blight are essentially the same. Discolored (usually brown or reddish-brown) elongated lesions or streaks often occur along the petiole and rachis (Figures 2 and 3). The fungus invades deep into the petiole and is destroying all tissue, including the vascular tissue (xylem and phloem). This vascular tissue moves water and carbohydrates between the leaf and the stem (trunk). Vascular tissue destroyed in the petiole or rachis results in *localized* death in the leaf blade because only the leaf segments or leaflets connected to the



Figure 1. Overview of *Washingtonia robusta* group: The center palm is severely affected by Petiole Blight caused by *Cocoicola*. Credits: A. Wilson

destroyed vascular tissue are killed (Figure 4). This results in a one-sided or uneven death of the leaf blade, the symptom most often observed first. For *Phoenix canariensis* (Canary Island date palm), these symptoms are quite similar to those caused by *Fusarium* wilt. See the fact sheet on this disease at <http://edis.ifas.ufl.edu/pp139>.



Figure 2. Reddish-brown streak along petiole of *Washingtonia robusta* due to Petiole Blight. Credits: A. Wilson

Again, while it appears the fungus is also infecting the leaf blade, it does not. The leaf blade symptoms are a result of the fungal damage in the



Figure 3. Close-up of discolored petiole streak shown in Figure 2. Credits: M.L. Elliott



Figure 4. Reddish-brown lesion on petiole disrupts vascular tissue which kills leaflets within the leaf blade. Credits: M.L. Elliott

petiole and rachis. Thus, for diagnostic purposes, the petiole or rachis is the tissue that must be examined and sampled, and not the leaf blade. A cross-section through the petiole or rachis lesion or streak will reveal the discolored internal tissue resulting from the fungal invasion. It is critical to use a saw to cut through the petiole or rachis. A tool such as a pruning shear may bruise internal, healthy plant tissue in the cutting process. This bruise can then be mistaken for fungal damage.

Sometimes, the surface of the diseased petiole or rachis will have erupted with fungal structures while the leaf is still attached to the palm trunk (Figure 5). These structures either are or can be induced to produce spores used to identify the pathogen.



Figure 5. Sporulating structures of *Coccoicola* on a *Washingtonia robusta* petiole. Credits: M.L. Elliott

Diagnosis

As stated above, fungal structures may be present on the petiole or rachis at the time the symptoms are observed. These structures may also be sporulating while the leaf is still attached to the trunk, which makes pathogen identification relatively simple. If not producing spores, it is usually possible to induce spore production. If these structures are not immediately evident, placement of the diseased petiole segment into a moist chamber (e.g., sealed plastic container with wet paper toweling) will often induce their development (Figure 6).



Figure 6. Sporulating structures of fungus causing Petiole/Rachis Blight on *Latania*. This piece was incubated for two weeks before the structures appeared. Credits: M.L. Elliott

While some of the pathogens that cause petiole blight can be cultured on artificial media, many cannot. The Florida Extension Plant Disease Clinic (FEPDC) network is available for pathogen identification. Contact your local county Extension

office or FEPDC for information on sample submission and cost of laboratory diagnosis. In general, the entire leaf should be placed in a cardboard box or tube and padded with dry paper. The leaf can be cut into pieces with a handsaw for easier packaging. Do not place the pieces in a plastic bag.

Disease Management

Very little is known about petiole blight, including the specific environmental conditions that encourage disease development. It is presumed that high humidity is required for fungal infection and disease development, as that is a requirement for many plant diseases that affect above-ground tissue. It is also presumed that spores are the primary means of fungal movement from palm to palm. Based on these assumptions, sanitation and water management are the basis for petiole blight management.

Removal and destruction of severely infected leaf fronds would be suggested as a means of reducing inoculum (available spores to infect other leaves and palms). This would be especially critical in a nursery situation where palms are planted closer together and are more numerous. However, if the palms are in the landscape and under nutrient stress, pruning should be minimal as removal of too many leaves may be detrimental to the palm rather than beneficial.

In a nursery, increasing distance between plants, increasing air movement, and irrigating in the early morning hours to reduce leaf wetness at night are critical water management components. When possible, overhead irrigation should be eliminated.

Since no fungicides have been evaluated for efficacy in managing petiole blight, fungicide recommendations are educated guesses at best. Fungicides would only be recommended in those situations where a palm is being seriously affected, or the potential for an epidemic is high, such as in a nursery. Never initiate a fungicide program without first initiating a cultural control program as described above.

For palms where the canopy is still accessible for spraying, broad-spectrum contact or systemic foliar

fungicide sprays to protect the petiole and rachis may be useful. For palms where the canopy is no longer accessible, broad-spectrum systemic fungicide soil drenches may be useful, although information as to movement of systemic fungicides in palms is extremely limited.

It is critical to understand that fungicides do not cure the damage already present on the palm. Plant tissue does not “heal” itself. Once the damage occurs, it will remain for the duration of the life of that particular leaf. Fungicides are used to prevent further spread of the disease by protecting a leaf petiole and rachis that has not yet been infected by the fungal pathogen.

Selected References

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