



## PSEUDOCERCOSPORA LEAF SPOT OF RHAPIS PALM

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### Introduction

The genus *Rhapis* (lady palm) includes nine species of short, bamboolike palms with fibrous sheaths. In the United States, two species, *R. excelsa* and *R. humilis*, have been widely grown for use as potted plants or as landscape components in areas not subject to frost. *Rhapis excelsa* has common names such as bamboo palm, slender lady palm, miniature fan palm, and fern rhapsis.

Rhapis palms have also been popularly used in the Hawaiian landscape. While the taller form of *R. excelsa* has been planted for many decades, dwarf and variegated dwarf cultivars of *R. excelsa* have been introduced recently as potted plants. Dwarf rhapsis has commanded very high prices, particularly on the mainland.

Unfortunately, many commercial growers have been plagued by a moderately severe leaf-spot problem, primarily on dwarf rhapsis. Badly diseased leaves have large numbers of small irregular spots, which give them a mosaic or mottled appearance, leading some growers to speculate that the problem is viral. The disease is widespread, and failure to control it with fungicidal applications reinforced the idea that it was a viral problem. Removal of damaged diseased leaves rendered plants unsalable for many months until new leaves were produced.

### Disease and Symptoms

Leaf spots began as tiny, faintly chlorotic or light green areas, which were somewhat circular and small, less than 1/64" (0.5 mm) in diameter. These enlarged into elliptical or circular spots, more than 1/32" (0.8 mm) long, along parallel veins. Older leaf spots were irregularly circular to elliptical, frequently 1/4" to 1/2" (6 to 12 mm) in diameter. These spots continued to be chlorotic or light green, but a few had dark brown to reddish brown or black flecks. The chlorotic areas gradually turned dark brown to black, indicating that these leaf cells were dead or dying. The tissue was raised very slightly in older spots. Light infections produced small groups of spots, while heavy infections produced leaves with mosaic patterns.

### Cause and Spread

Several fungal species were isolated from diseased leaves, but one, tentatively identified as *Pseudocercospora rhapsicola*, was frequently and consistently recovered. This fungus was experimentally demonstrated to be pathogenic to dwarf rhapsis. Healthy plants were inoculated with spores from a pure culture, and the disease was reproduced (Figs. 1 and 2). Infection occurred only under humid conditions, and disease development was very slow. The first sign of lesion development occurred approximately one month after inoculation, and typical lesions took three months to develop. No disease occurred on inoculated plants when the humidity was low. The slow progression of this disease is in distinct contrast to the rapid necrosis caused by *Phytophthora* species on other palms.

Under natural conditions, older lesions have mature fungal colonies that are producing conidia (asexual or vegetative spores). These spores (Fig. 3) are readily spread to healthy leaves by splashing water. When moisture is available for several hours, the conidia germinate and penetrate the leaf. The fungus parasitizes host cells and eventually causes sufficient damage that leaf spots become visible.

In Japan, a similar leaf spot caused by a fungus called *Cercospora rhapsicola* has been observed on dwarf rhapsis palm. In most morphological and cultural respects, the Hawaii and Japan fungi resemble each other. We believe that both fungi are one fungal species, and that it should be called *Pseudocercospora*. In Hawaii, common rhapsis and other palms have similar leaf spots associated with fungal species resembling *Pseudocercospora*.

### Control

This disease can be controlled by strict sanitation and environmental modifications. Badly diseased dwarf rhapsis plants received from a commercial nursery were cleaned by removing all diseased leaves, leaving only two or three of the youngest leaves. This severe trimming greatly reduced the number of pathogenic fungi on the plant. As young leaves matured, those developing any spots were also

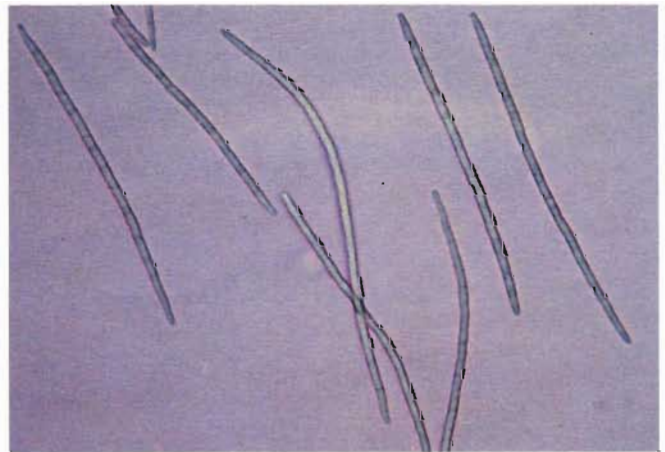


**Figure 1. Reproduction of leaf spots by half-leaf inoculation.**



**Figure 2. Close-up of leaf spots on rhapsis palm with characteristic chlorosis and mosaic leaf patterns.**

removed. After a year in a glass greenhouse these plants had only clean, healthy leaves, indicating that eliminating inoculum sources and reducing free moisture on leaves will disrupt the disease cycle and effectively control the disease. For growers who cannot move plants to protective shelters of glass or solid plastic cover, removing diseased leaves and spraying with mancozeb at 2 lb per 100 gal should be useful in controlling the disease. It should be emphasized that application of mancozeb without sanitation will not be very effective and may be useless.



**Figure 3. Photomicrograph of asexual spores (conidia) of *Pseudocercospora rhapsicola*. Magnification = 420X.**

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