

## HAWAII COOPERATIVE EXTENSION SERVICE

Hawaii Institute of Tropical Agriculture and Human Resources

University of Hawaii at Manoa

COMMODITY FACT SHEET HIB-4 (A)

FLOWER



### HIBISCUS BLIGHT CAUSED BY *ATHELIA*

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#### Introduction

Hibiscus plants, bearing lush green foliage and available in a multitude of floral colors, have long been popular in Hawaii as hedge plants and for use as blooming ornamental landscape plants. Their flowers are also used as garnish and as decorations at festive events. In recent years, blooming hibiscus plants have been promoted as potted ornamentals for sale on the Mainland, greatly increasing the demand for them.

Various cultivars are commercially propagated by cuttings and rooted using intermittent mist. These cuttings are 3 in. to 5 in. (7.6–12.7 cm) long and have five to seven leaves per cutting, with the larger leaves cut in half. In general, this was a problem-free propagation process until late 1986, when a leaf blight and soft stem rot of cuttings were observed at a nursery on Oahu.

#### Description

The disease was characterized by extensive and prominent development of white fungal



Figure 2. Stem rot with wilting leaves.



Figure 1. Hibiscus blight on cuttings.

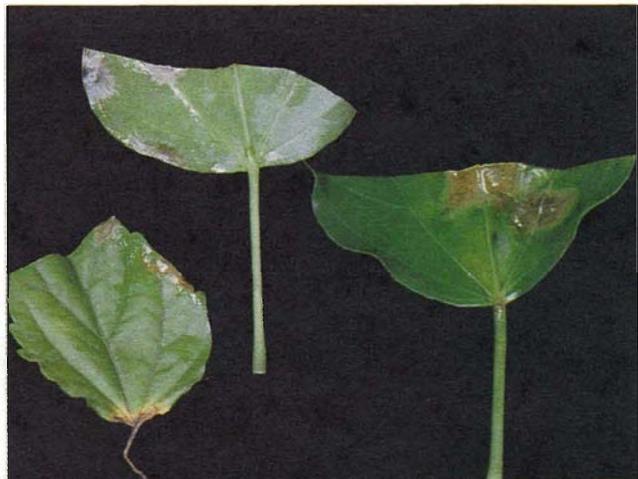


Figure 3. Fungal penetration of cut hibiscus leaves, and subsequent rot.

growth over the surface of infected leaves and stems (Figure 1). Leaf blights were tan to brown, commonly with an irregular, bright yellow border. As the disease progressed, green leaves wilted and severe defoliation, stem rot, and eventual loss of cuttings occurred (Figure 2). The fungus frequently entered cut leaf blades (Figure 3), and penetrated unwounded stems through the nodes of infected leaves or, commonly, at sites where infected host tissue covered with mycelial growth touched the stem. Stem rots were very soft and tan to brown.

The white, radiating fungal strands were distinctive, resembling mycelial growth of *Sclerotium rolfsii*, another fungus. A few, tan to brown, ellipsoidal to irregularly spherical (3 x 4 x 6 mm), hardened bodies called sclerotia were formed by the fungal strands. Microscopic basidia, spore-bearing structures of this fungus, were also present on field-collected diseased specimens. When these basidia were maintained at approximately 24°C (75°F) overnight, fungal spores, called basidiospores, were produced. These spores aid in the dissemination of the fungus and eventual disease spread. In field specimens, fungal growth that appears fluffy or puffy may contain basidia.

The suspect fungus was isolated in pure culture by placing infected pieces of hibiscus on agar and was tentatively identified as an *Athelia* species. The pathogenicity of the *Athelia* culture was confirmed on a common red hibiscus cultivar and the hibiscus variety 'Peach'. Wounding was not necessary for infection.

Pathogenicity trials were conducted on cuttings maintained on a mist bench receiving five seconds of mist every two minutes. A small (7-mm diameter) section of *Athelia* culture was

placed on the lower leaves of the cuttings. Within a week the fungus had penetrated the leaves and formed yellow leaf spots with brown centers. Defoliation quickly followed. The fungus spread to healthy leaves, and within a month all of the cuttings in each pot were defoliated. In addition, about 50 percent of the cuttings developed stem rot and eventually died.

This disease, characterized by the vigorous, white, fungal growth over host tissue, has close similarities to southern blight caused by *Athelia rolfsii* (commonly known as *Sclerotium rolfsii*). These two fungi are closely related, but *S. rolfsii* is readily recognized by its production of numerous small, spherical, smooth, brown sclerotia resembling mustard seed, whereas the hibiscus *Athelia* produces a few large, irregularly ellipsoid, brown sclerotia.

### Control

At present, control measures need to be based on general plant pathological principles and information developed for other diseases, with sanitation as the primary concern. In general, it is preferable to discard all infested flats. For rare cultivars, if only a few cuttings are infected, the flat can be salvaged by removing all diseased and suspect cuttings. After removal of all diseased material, supplemental treatments of benomyl (Tersan 1991 or Benlate) can be made to restrict further disease spread. All contaminated flats, pots, etc., should be washed well and dipped in a 10 percent solution of common household bleach or other surface disinfectant.

This is the first record of an *Athelia* species in Hawaii other than *A. rolfsii* and the first observation and demonstration that *Athelia* is a pathogen of hibiscus.

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