

## Crop Knowledge Master



# *Phytophthora colocasiae*

**Taro leaf blight**  
**Taro corm rot**

[Hosts](#)      [Distribution](#) [Symptoms](#)   [Biology](#)      [Epidemiology](#) [Management](#) [Reference](#)

TYPE: Kingdom Chromista

Phylum: Oomycota

DISEASE NAME:

Taro leaf blight

Taro corm rot

HOST

*Phytophthora colocasiae* is known to infect taro (*Colocasia esculenta*), dasheen (*Colocasia esculenta* var. *globulifera*) and some cultivars of ape or tamu (*Alocasia macrorrhiza*). No disease developed when this fungus was sprayed onto *Xanthosoma brasiliense* or other *Xanthosoma* species.

DISTRIBUTION

*Phytophthora colocasiae* has been found in all taro growing areas of Hawaii.

It is also present in Papua New Guinea, Solomon Islands, Philippines, Palau, Guam, the Northern Marianas Islands, Western Samoa, American Samoa, Ponape, Palau, Yap, Truk, India, Taiwan, and Trinidad.

SYMPTOMS

The early stage of leaf blights are characterized by the formation of small, frequently circular brown to olive-green spots. The edge of these spots may be diffuse, wilted, gray, or black to nearly purple. Drops

of a clear, amber liquid can be found on the surface of *Phytophthora* spots. Expansion of leaf spots in moist weather is extremely rapid in susceptible cultivars and large sections of the leaf are rotted in a few days. Large leaf rots or blights, are gray, olive-green to brown (Fig. 1). White, powdery masses of spores are produced on these blights.

When the weather becomes dry, lesions become tan to brown and have a dark brown to black edge. Rate of lesion expansion is greatly reduced and a yellow zone surrounds leaf spots. Exudates on the leaf surface associated with diseased tissue become yellow to brown and forms small crusts. Some lesions are circular and resemble target spots. The zones in the spot represent the growth rate differences of the fungus during warm moist hours and cooler or drier periods. Extensive leaf yellowing and rotting follows expansion of spots (Fig. 2).

In tolerant or resistant cultivars, diseased tissue falls away from spots forming holes in the leaf. This symptom is referred to as shot-holes and also occurs on susceptible cultivars when moist weather is followed by dry conditions (Fig. 3).

When the petiole or leaf stalk becomes infected, rots are usually long, brown, and occur anywhere on the stalk. As the rot expands, the stalk becomes soft, and is unable to support the weight of the leaf and breaks.

Corm rots are common in very susceptible cultivars such as Niue. They are less common on cultivars such as Lehua but appear to occur in higher frequencies following environmental periods highly conducive to disease. Corm rots can begin at any point on the corm. In the early stages, infected tissue is slightly discolored and difficult to recognize. There is a very faint tan color as opposed to the white color of healthy corms. The infected area can also be nearly white but when sliced, infected tissue is rubber-like and not firm. As corm infections progress, the brown discolored area becomes larger and more pronounced. However, the edge of the infected area remains diffuse and has no distinct border with the healthy tissue. In advanced stages, rots are brown to purplish.

## BIOLOGY

*Phytophthora colocasiae* produces microscopic, asexual spores called sporangia. These sporangia are oval, hyaline, semi-papillate (tip of spore is not pointed), deciduous (spores fall from the colony), and have a short stalk or pedicel attached to the base of the spore. These sporangia release swimming spores called zoospores when water or sufficient moisture is present. The sporangia can also germinate directly by producing germ tubes that penetrate the host. Zoospores are able to swim for hours and are attracted to organic matter or host tissue. These spores will stop swimming, encyst (the tails or flagella are lost), and produce a germ tube to penetrate the host.

This pathogen has two mating types, A1 and A2. When grown together in culture dishes, sexual spores called oospores are formed. These oospores are thick walled and may serve as survival structures in the absence of the host. However, oospores have not been found in nature.

This pathogen grows well between 68 to 77 F. Moisture favors the growth, sporulation, dissemination, and infection processes of this pathogen.

## EPIDEMIOLOGY

Sporangia of this pathogen are produced on the surface of infected leaves and petioles (stalks). These spores are readily distributed by splashing water, wind, and rain. On new leaves the fungus rapidly germinates and penetrates the host. Although the taro leaf has a waxy surface, minute amounts of water that accumulate on either surface of the leaf is enough for the fungal spore to germinate and penetrate the host. In paddy culture, water movement carries the pathogen throughout the field and other adjacent paddies.

The fungus is believed to survive in the corm or in soil during dry periods. Movement of the fungus also occurs when infected corms are transported to new locations or fields.

## MANAGEMENT

Extensive removal of diseased leaves from fields with *Phytophthora* epidemics have not reduced infection levels during rainy periods. Chemical controls that are effective in the greenhouse are not allowed for use in paddy culture at this time.

The best option is the propagation and use of resistant cultivars.

## REFERENCES:

1. Farr, D. F., G. F. Bills, G. P. Chamuris, and A. Y. Rossman. 1989. Fungi on Plant and Plant Products in the United States. APS Press. St. Paul, Minnesota. 1252 pp.
2. Ooka, J. J. 1994. Taro Diseases: A guide for field identification. HITARH Res. Ext. Series. No. 148. CTAHR Publication. University of Hawaii. Honolulu, HI.
3. Trujillo, E. E. 1965. The effect of humidity and temperature on Phytophthora blight of taro. *Phytopathology* 55: 183-188.
4. Tilialo, R., Greenough, D., and Trujillo, E. E. 1996. The relationship between balanced nutrition and disease susceptibility in Polynesian taro. *ACIAR Proceedings* 65:105-109.

COPYRIGHT: Janice Y. Uchida and Eduardo E. Trujillo

File: BP-COLO

**Back To:**



[Crop Master Menu](#)



[Knowledge Master Home](#)



[Pest Search](#)