



**FACULTY OF AGRICULTURAL SCIENCES AND ALLIED INDUSTRIES**

**DISEASES OF FIELD&HORTICULTURAL CROPS&  
Management 1 PPA - 312**

## LECTURE 11

### 1. NAME OF DISEASE – PHYTOPHTHORA BLIGHT

**Pathogen**-Phytophthora colocasiae Racib.

#### Preferred Common Name

- taro leaf blight

#### International Common Names

**English:** blight of dasheen; leaf blight of Colocasia spp.; leaf blight of Gabi; Phytophthora leaf blight

#### Symptoms

- Affected leaves initially show small dark spots which enlarge rapidly and turn purplish brown with yellowish margins. The lesions frequently form concentric zones and exude drops of yellowish liquid. Some of the diseased tissues may be covered with a whitish fuzz consisting of sporangia. As the disease progresses, the lesions (mostly along the leaf margin) continue to expand and frequently coalesce. Diseased tissues disintegrate, forming holes of irregular size and shape on the affected leaves. Occasionally the pathogen may cause water-soaked lesion on the petioles. Infected leaves collapse within 20 days of unfurling, compared to 40 days for healthy leaves. The normal 6-7 leaves per plant was reduced to 3-4 leaves per plant by severe disease incidence.

After harvest, grey-brown to dark-blue lesions occur on undamaged corms. These lesions enlarge rapidly and coalesce. The boundary between the healthy and diseased tissues is usually indistinct and soft. Affected corms are almost completely decayed at 8 days after harvest in wet conditions.



### **Life Cycle**

- Hyphae of the fungus generally survive longer in sterilized soil (30 days) than in natural soil (5 days). At  $>20^{\circ}\text{C}$  and  $>55\%$  soil moisture the hyphae disappeared with 5 days of burial in natural soil (Sitansan Pan et al., 1994). Survival of the fungus between crops is less clearly understood. Neither chlamydospores nor oospores have been reported under field conditions although they form readily in agar culture. Thus it is assumed that where the crop is seasonal the fungus survives as mycelium within stored corms used as propagating material for the next season's planting. Oospores may also survive in the corm and leaf tissue left in the field after harvest. In the Philippines sporangia on the leaves were found capable of germination after remaining under field conditions for 3 months ([Gomez, 1925](#)).

Free water is needed for sporangial germination and zoospore mobility. Close to 100% RH is needed for infection to occur. The period of leaf wetness, therefore, has a large effect on infection by *P. colocasiae*. At optimal temperatures of  $24-27^{\circ}\text{C}$ , sporangial germination, release of zoospores and penetration occur after 6-8 hours. The fungus enters the plant through the cuticle and a latent period requires 2-4 days at optimal temperatures of  $27-30^{\circ}\text{C}$ . In wet weather the lesions of infected leaves or petioles may produce many sporangia and zoospores are disseminated by rain splash. Epidemiology

*P. colocasiae* occurs under conditions of high temperature and humidity, in wet areas and densely planted fields. Epidemics occur frequently between July and September in Hainan, China. Primary leaf infection has been observed following tropical storms.

## **Management**

- Hot Water Disinfestations
- Fallows for Disease Suppression.
- Isolate plantings (e.g., three small, separate patches instead of one large patch).
- Prepare the soil well and amend it before planting if calcium, magnesium, or phosphorus are needed.
- Monitor plant calcium levels by leaf analysis, and maintain calcium at recommended concentrations to prevent development of *Pythium* corm rot.
- Add lime material before planting to raise soil pH to 6.0-6.8.
- Rotate taro with other crops.
- Incorporate compost and apply surface mulch.
- Rogue (kill and remove) diseased plants, taking them far from the planting area and destroying them by burying, burning (if allowed), or composting