

## Extension Fact Sheet 16: Yam Spots & Dieback



**Common name:** Yam dieback or Lightning disease

**Scientific name:** *Colletotrichum gloeosporioides*

**Hosts:** The fungus exists as many strains, which attack crops and weeds. Some of the strains infect several hosts. Yam (*Dioscorea alata*) is a major host; other yams, for instance, *pana* (*D. esculenta*) and African yam (*D. rotundata-cayanensis*) are not hosts or show only occasional leaf spots.

### Damage

The fungus is damaging during wet weather. Leaf spots occur (photo, left) and these produce masses of spores. On susceptible varieties, leaves quickly turn black (photo, right) during long periods of rain, for instance, during cyclones. Shoots are destroyed and the stems die back. New shoots grow from the planting piece, but these also become black and die back. Plants can be killed without producing tubers or several small tubers are produced by each shoot before it dies.

The blackening is so sudden on some varieties of yam that farmers say the yams have been struck by lightning.

### Biology and Life Cycle

It is not known for certain where the fungus comes from. There are three possibilities:

- It is in the soil;
- It is in the planting material; and
- It comes from other plants, weeds or crop plants.

It is most likely that it comes from other weeds and crops. In the Caribbean, tubers are infected and these are a source of the fungus. Infection of the tubers has not been found in Solomon Islands. Here, the fungus has been found on other crops and weeds.

Symptoms depend on rainfall and the susceptibility of the variety. On young leaves, the spots may enlarge rapidly and sometimes merge. On some varieties, only the young veins are infected; in this case the leaves become cup-shaped as they expand (photo, middle). On older leaves, pinpoint spots develop that do not expand. Usually, the young, infected leaves fall early.

Spores are produced in tiny, dish-like structures in the spots and are splashed by rain onto other leaves and stems. They germinate like a seed, infect and produce more spots and spores. On older leaves, they germinate, but do not infect or only produce pinpoint spots. On some varieties, large numbers of spores on the old leaves cause the leaves to turn black, especially when they are exposed to sunlight.

## **Signs and Symptoms**

Look for brown leaf spots, sometimes with a yellow halo, that are typical of infection. Look for plants where older leaves go black during long periods of rain, and shoots die back. Tuber infection has not been detected in the Pacific, but it is important to inspect planting material very carefully, and only use pieces that are healthy.

## **Management**

### **Cultural control:**

The most important cultural control measure is to plant early, in August and September, so that plants are at the tops of their supporting poles before the storm season. Other measures have been suggested, but their usefulness is in doubt:

- Interplant with maize;
- Do not weed when the plants are wet;
- Crop rotation – i.e., do not plant yams on the same land, one year after another;
- Dig in plant remains after harvest; and
- Avoid damage to the tubers at harvest.

### **Resistant varieties:**

Varieties differ in resistance to the disease; some are resistant at all stages of growth, others only when mature, when they have a full canopy. Farmers should be advised to select those that show resistance. If susceptible varieties are also planted, not only is there a chance that the disease will destroy them, but also they will increase disease pressure on the more resistance types. Variety Kinabeyo from the Philippines is an example of a resistant variety. See Kastom Gaden Association for supplies.

### **Chemical control:**

Although fungicides, for instance, benomyl (no longer manufactured), chlorothalonil, copper, dithiocarbamates (e.g., mancozeb) have been recommended in the Pacific and Caribbean, they can only delay the start of an epidemic. They are not effective during long rainy periods.