Cabbage leaf spot (133)

Photo 1. Roughly circular leaf spots, with concentric rings, mostly between the veins on cabbage caused by *Alternaria brassicicola*.

Photo 2. Cabbage leaf spot, *Alternaria brassicicola*, showing dark brown areas where spores are forming, and a large spot (lower left) with a crack in the centre; later, the crack will widen and the centre of the spot will fall out similar to that shown in Photo 3.

Photo 3. Single leaf spot on a cabbage leaf caused by *Alternaria brassicicola*, showing the "shot-hole" effect: the centre of the spot rots and falls out. A yellow margin or halo is also seen.

**Common Name**

Cabbage leaf spot

**Scientific Name**

*Alternaria brassicicola*

**Distribution**

Worldwide, temperate as well as tropical countries. The disease has been recorded in Samoa and Tonga.

**Hosts**

Members of the brassica family, e.g., broccoli, cabbage, cauliflower, mustard, oilseed rape, and cruciferous weeds.

**Symptoms & Life Cycle**

Brown or black leaf spots, circular or irregular, and mostly between the veins, occur on the leaves (Photo 1). The spots, up to 25 mm diameter, show concentric rings, giving a target-like appearance (Photo 1). The spots usually have a well-defined margin surrounded by a halo. Black spore masses form on the lower leaf surfaces (Photo 2). As spots age, they become papery, and the centres fall out giving a "shot-hole" appearance (Photos 2&3). Under favourable conditions (wet and warm, 20-30°C), the spots merge, causing the leaf to dry out and look scorched. Spots also develop on stems, leaf and flower stalks, and on seed heads. Dark, sunken rots occur on the heads of broccoli and cauliflower.

Spread of the fungus over short distances occurs in water droplets splashed from infected plants to those nearby; further spread occurs in wind-driven rain, and in wind alone when the crop is harvested. Spread over long distances occurs on seed.

**Impact**

A fungus is the cause of the leaf spot. It is an important disease, causing economic loss in several different ways. Its effect on seed is twofold: (i) seed infection causes both pre- and post-emergence damping-off (see Fact Sheet no. 47) leading to stem cankers of the survivors; and (ii) seed infection also affects the amount of seed harvested and its quality. On mature plants, the spots on the head and/or outer leaves are unsightly and reduce market price, as well as the time that cabbages and related crops can be stored.
In Samoa, the disease is said to be more common in cooler highland areas on over-mature cabbage heads.

**Detection & Inspection**

Look for the brown or black leaf spots with concentric black rings - the target spot appearance is characteristic of this disease. Look with a x10 lens to see the velvety appearance of the spots on the lower surface of the leaf where the spores form. Look to see the "shot-holes" as the centres of the spots dry and fall away.

**Management**

**CULTURAL CONTROL**

Before planting:

- Treat seeds with hot water at 50°C for 25-30 minutes, and then dry them.
- Grow seedlings in soilless or pasteurized media in clean trays. Check regularly for signs of disease, and discard any plants with symptoms.

During growth:

- Remove weeds from in and around the plots of cabbages (and related crops).

After harvest:

- Remove the remains of the crop after harvest, and destroy. Note, infections on the leaves produce spores until the leaves are completely decomposed. Alternatively, plough in the remains as deeply as possible.
- Rotate crops, leaving a 1-2-year interval between crops of cabbages (and related crops) planted on the same land.

**CHEMICAL CONTROL**

- **Seed treatment:** Iprodione has been used as a seed treatment. Captan, or thiram can be used as alternatives.
- **In the field:** Fungicides used against Alternaria leaf spot include chlorothalonil, copper formulations, mancozeb, iprodione and members of the strobilurin group.

**AUTHOR** Grahame Jackson


Produced with support from the Australian Centre for International Agricultural Research under project PC/2010/090: Strengthening integrated crop management research in the Pacific Islands in support of sustainable intensification of high-value crop production, implemented by the University of Queensland and the Secretariat of the Pacific Community.

This fact sheet is a part of the app *Pacific Pests and Pathogens*

The mobile application is available from the Google Play Store and Apple iTunes.

**Copyright © 2016. All rights reserved.**