

Bean angular leaf spot (216)

Common Name

Angular bean leaf spot

Scientific Name

Pseudocercospora griseola; previously known as *Phaeoisariopsis griseola* and *Isariopsis griseola*. Several strains of the fungus are known.

Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. It is recorded from Australia, Fiji, New Caledonia, New Zealand, Papua New Guinea, Solomon Islands, and Vanuatu.

Hosts

Phaseolus vulgaris (common bean, field bean, French bean, kidney bean, string bean), cowpea, soybean. Other hosts include *Desmodium* species and *Dolichos lablab*.

Symptoms & Life Cycle

Spots are usually seen first at flowering. Two types of symptoms occur depending on the leaf type. On the trifoliolate (3 leaflets) leaves, angular spots up to 3 mm wide, grey and then light brown, sometimes surrounded by a yellow halo, but limited by the veins (Photos 1&2). On the primary (single) leaves, the spots are up to 15 mm diameter and are often with rings, like a target. Fungal mould grows on the undersides of both types of spot, and produces the spores.

On the pods and stems, dark, sunken, oval to circular spots of varying size occur (Photo 2). The spots may join together. Seed becomes infected beneath the spots on the pods. They become discoloured.

Spread is by airborne spores released from the spots on the leaves. Spread over long distances occurs on seed. The fungus is splashed in rain from the infected seed to the leaves.

The fungus survives between plantings in the remains of the crop, on 'volunteer' plants, and on seed, where it can survive for at least 12 months. The disease is favoured by moderate temperatures (16-28°C), rain or high humidity, alternating with dry times. The wet periods allow spore germination, infection and production on the spots; dry periods allow spread of the spores in the wind.

Impact

An important disease in sub-tropical and tropical countries. The spots may be so numerous as to cause premature leaf fall, and the spots on the pods lower quality. It is a particularly important disease in some African countries where legumes are a major source of protein. Losses of 50% of the crop were reported during epidemics in countries of Africa and South America, and occasionally in the USA.

Detection & inspection

Look for the two types of leaf spots, those on the leaves with three leaflets that are angular and limited by the veins, and those that are larger and somewhat circular on the singles leaves. Look for the reddish-brown round spots on the pods with dark borders.



Photo 1. Spots on trifoliolate leaves caused by the angular leaf spot fungus, *Pseudocercospora griseola*.



Photo 2. Angular leaf spot, *Phaeoisariopsis griseola*, on French bean. Some spots joining together, but many limited by the veins.



Photo 3. Large oval to circular spots on pods of bean caused by the fungus, *Pseudocercospora griseola*.

Management

CULTURAL CONTROL

Before planting:

- Make sure that the seed is certified free of the fungus.

After harvest:

- Collect and burn or bury as much of the crop as possible after harvest.
- Do not plant one crop of bean after another in the same land; use a rotation of at least 2-years.

RESISTANT VARIETIES

There are resistant bean and cowpea resistant varieties. However, in some varieties resistance to spots on the leaves and spots on the fruit may differ.

CHEMICAL CONTROL

Treat seed with carbendazim. If fungicides are needed for control of leaf or pod spots, use a copper product or mancozeb.

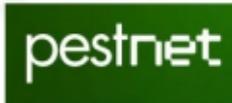
When using a pesticide, always wear protective clothing and follow the instructions on the product label, such as dosage, timing of application, and pre-harvest interval. Recommendations will vary with the crop and system of cultivation. Expert advice on the most appropriate pesticides to use should always be sought from local agricultural authorities.

AUTHOR Grahame Jackson

Information from (including Photo 3) *Diseases of vegetable crops in Australia* (2010). Editors, Denis Persley, et al. CSIRO Publishing; and McKenzie E (2013) *Phaeoisariopsis griseola*: PaDIL - <http://www.padil.gov.au>; and *Phaeoisariopsis griseola* (PHAIGR) (undated) EPO Global Database. (<https://gd.eppo.int/taxon/PHAIGR>); and from CABI (2019) *Crop Protection Compendium*. (<https://www.cabi.org/cpc/datasheet/40010>). Photo 1 Kohler F, et al. (1997) *Diseases of cultivated crops in Pacific Island countries*. South Pacific Commission. Pirie Printers Pty Limited, Canberra, Australia. Photo 2 R. Lafon, INRA, Bordeaux, Bugwood.org.

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