

## Cucumber gummy stem blight (201)

### Common Name

Cucumber gummy stem blight, cucurbit gummy stem blight, gummy stem blight of cucurbits. See also Watermelon gummy stem blight (**Fact Sheet no. 07**).

### Scientific Name

*Stagonosporopsis cucurbitacearum*; (previously, *Didymella bryoniae*). Also known by the asexual state, *Phoma cucurbitacearum* or *Ascochyta cucumis*. The latter is commonly found on plants in the field producing minute oval spores in round black structures in the leaf called 'pycnidia' that are just visible to the naked eye.

### Distribution

Asia, Africa, North, South and Central America, the Caribbean, Europe, Oceania. It is recorded from Australia, American Samoa, Cook Islands, Federated States of Micronesia, Fiji, French Polynesia, New Caledonia, New Zealand, Palau, Solomon Islands, and Tonga.

### Hosts

Cucumber and other cucurbits, including melon, gourd, pumpkin, watermelon, as well as species of *Luffa* and *Momordica*.

### Symptoms & Life Cycle

Spots and areas of decay often occur at the tips and other places along the margins of the leaves (Photo 1). The decayed areas are light brown, sometimes with a yellow margin extending back into the leaf (Photo 2). Commonly, there is heavy leaf fall (Photo 3). On the stems, pale brown spots occur at wounds where leaves and fruits have been removed. Tiny black dots that are the spore-producing structures (fruiting bodies or pycnidia) cover these areas. A sticky golden liquid may be present, which is characteristic of the disease, and the reason for its name. If the spots grow around the stem, it dies. Spots on fruit are oval to round; at first, they have a greasy green appearance, later they merge, and develop into a brownish-black rot (hence the common name of black rot). Symptoms on the fruit can continue to develop in storage, when they become more obvious.

Survival is by the dormant cottony growth of the fungus and thick walled resting spores (called 'chlamydospores') inside the undecomposed remains of crops. They can survive for up to 2 years. Spread is by splashing water, wind-driven rain, and on fingers, knives and clothing during cultural operations. Development of the disease depends on how long the leaves, stems and fruits stay wet so that spores can germinate, infect, and for the fungus to continue to grow.

### Impact

This is a common and serious disease of cucumber worldwide. It occurs in the field in the tropics and also in greenhouses in Europe and other temperate regions. The fungus infects all parts of the plant, leaves, stems, flowers and fruits, causing leaf fall, flower drop, fruit rots and wilts. Rots can occur on the fruits in storage or in transit to markets.

### Detection & inspection

Look for infections at the leaf tips and other places along the leaf margin. At the leaf tip, the rots may be V shaped as they advance along the major veins. Look for infections on the stems, especially on the lower part of the vine; they may surround the stem and cause a wilt. Look for flower-end rots on the fruit.



Photo 1. Marginal rot with yellow margin caused by gummy stem blight, *Didymella bryoniae*, on cucumber.



Photo 2. Marginal rot of cucumber leaf caused by gummy stem blight, *Didymella bryoniae*, more advanced than in Photo 2.



Photo 3. Extensive loss of leaves on cucumber plants caused by gummy stem blight, *Didymella bryoniae*.

## Management

### CULTURAL CONTROL

#### Before planting:

- Carefully choose the soil and site for the nursery:
  - Take soil only from areas where cucurbits (e.g., cucumber, melon, watermelon) have not been grown before.
  - Make the nursery far away from any other cucurbits fields.
  - Do not make the nursery downwind from cucurbits fields (otherwise the wind and rain will blow spores onto the nursery).
- In the nursery do the following:
  - Check for leaf spots, at least every 2 days. If spots are present, remove the plants and burn them.
  - If there are many spots, do not use any of the seedlings; throw them away and start again.
  - Sterilise the soil and/or spray the next lot of seedlings with a fungicide.
  - Sterilise the soil by heating it for one hour, either (i) in a half 44-gallon drum over a fire, or (ii) in an earth oven over hot stones, and covered by leaves or damp sacks.
- Do not plant cucumbers next to older cucurbit crops that may already have gummy stem blight.

#### During growth:

- After planting, check the seedling at least twice a week. If spots are seen on the leaves, remove them to delay the spread of the disease. If many leaves, consider using a fungicide (see below).
- Avoid overhead irrigation as water splash spreads this fungus, or if overhead irrigation is used, apply early in the day so that the plants dry quickly.
- Harvest carefully, cutting the fruit from the vine; do not pull them off. Sterilise the knife frequently by wiping it in 1% bleach.
- Remove wilted or dead leaves frequently as they may contain spores of the fungus.
- Remove weeds so air can circulate around the plants to hasten the drying of wet leaves.

#### After harvest:

- Collect and burn, bury or compost the debris as soon as the harvest has finished. The fungus can remain alive in stems on the soil surface for several months and release spores when wetted.
- Do not plant cucumbers in land where cucurbits were grown last crop. Leave a break of 3 years. The fungus can survive in the soil, living on plant remains. Rotate with sweet potato, cassava, taro, but not with other cucurbits.
- Avoid injuring fruit during picking, packing and storage. Preferably store at 10-12°C.

### RESISTANT VARIETIES

No varieties have been bred with resistance, but see watermelon gummy stem blight (**Fact Sheet no. 07**).

### CHEMICAL CONTROL

Use one of the following fungicides: chlorothalonil, mancozeb or copper oxychloride.

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*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.*

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Information from CABi (2019) *Didymella bryoniae* (gummy stem blight of cucurbits). Invasive Species Compendium. (<https://www.cabi.org/isc/datasheet/18900>); and from DAF (2016) Gummy stem blight. Queensland Government. (<https://www.daf.qld.gov.au/business-priorities/agriculture/plants/fruit-vegetable/diseases-disorders/gummy-stem-blight>). Photo 2 Gerald Holmes, California Polytechnic State University at San Luis Obispo, Bugwood.org.

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