



**Fig. 1.** a) *Stagonosporopsis cucurbitacearum* on ¼ strength PDA agar; b) Close up of melanized pycnidium with protruding pycnidiospores; c) Colourless pycnidium; d) Infected butternut squash fruit showing the irregular circular spots; e) Gummy stem blight on cucumber stem showing pycnidia (white arrow).

**Common Name:** Gummy stem blight; black rot (squash)

**Disease: Classification:** K: Fungi P: Ascomycota C: Dothideomycetes O: Pleosporales F: Didymellaceae

*Stagonosporopsis cucurbitacearum* is the primary causal agent of gummy stem blight disease and affects cucurbitaceous vegetable crops all around the world. Two other species, *Stagonosporopsis caricae* and *Stagonosporopsis citrulli* have also been reported as causing the same disease in cucurbits. *S. caricae* also causes leaf spot and stem and fruit rot in papaya (*Carica papaya*). All 3 species were once known as *Didymella bryoniae*.

### Biological and Ecology:

The pathogen can produce two types of spores: a) sexually via the formation of perithecia and b) asexually via pycnidia. *S. cucurbitacearum* is seedborne, airborne (wind and water splash) and soilborne. All above ground parts of the plant can become infected and symptomatic. Lesions on the stem and fruit may begin as water-soaked areas and then develop into dry lesions, which crack and release a characteristic reddish-brown gummy coloured ooze. Symptoms can vary between crops, with watermelon developing a distinct greenish tan to black spot while in butternut squash a superficial, tan to white petrified area can develop in clear concentric rings. Pycnidia are also commonly found within the lesion. Infected fruit may also eventually develop a soft black rot.

### Impact:

Gummy stem blight can cause serious economic losses to in watermelon, rockmelon, honeydew, squash, pumpkin and cucumber crops. The Australian Melon Industry consists of approximately 250 growers producing some 217,000 tonnes of melons annually across an area of around 8,500 hectares.<sup>1</sup> In 2017–18, melon production was valued at \$147 million (LVP), with exports valued at \$31.6 million.<sup>2</sup> GSB is more common on greenhouse crops in NSW during the cooler months.

**Distribution:** It is found mainly in tropical and subtropical areas, but with exceptions, e.g. some temperate areas where cucurbits are grown - New York, Michigan, Netherlands, Sweden etc, as per Stewart et al in the reference list.

**Host Range:** It infects cucurbits.

### Management options:

The pathogen can be seed-borne so using treated seed should be standard practice.

Any residual plant matter from previous cucurbit crops could act as a source of inoculum and should be managed. Don't move soil from infested to uninfested blocks, disinfest machinery.

A minimum of 2 to 3 year rotation with non-cucurbit crops is essential following an infected crop.

The disease is favoured by moist conditions and fungicides registered for gummy stem blight control in cucurbits could help with control, particularly in wet conditions.

**Further Reading:** Aveskamp et al (2010) *Stud Mycol* 65:1–60; Dept of Agriculture and Fisheries <https://www.daf.qld.gov.au/business-priorities/agriculture/plants/fruit-vegetable/diseases-disorders/gummy-stem-blight>; Gusmini et al (2017) *Hortscience* 52:1477–1482; Liu et al (2017) *Plant Dis* 101: 838-839; Mahapatra, et al. (2020) *Australasian Plant Dis. Notes* 15: 7. <https://doi.org/10.1007/s13314-020-0376-z>; Moumni et al (2019) *Phytopathol Mediterr* 58:379–383; Newberry E [https://wiki.bugwood.org/Didymella\\_bryoniae](https://wiki.bugwood.org/Didymella_bryoniae); Nuangmek et al. (2018) *Can J Plant Pathol* 40: 306-311; Stewart et al (2015) *Fungal Biol.* 119:370-382; Zhao et al. (2019) *J Phytopathol* 167:41–55.

<sup>1</sup> <https://www.melonsaustralia.org.au/> <sup>2</sup> <https://www.planthealthaustralia.com.au/industries/melons/>

**Key Contacts:** Dr Natalie Elias; Dr Francine Perrine-Walker