

Strawberry diseases

Gray mold

Pathogen: *Botrytis cinerea*



Is one of the most **important fruit rot diseases** affecting strawberries.

Symptoms

- Symptoms of Gray mold are the diagnostic grey, fuzzy growth that will cover entire fruit.
- *Botrytis* infection spread brown rot and fuzzy gray mold on ripening berries
- The fungus can also develop at low temperature (even at 0°C), with the consequent shortening of the period of storage and marketing.



Environmental conditions

Frequent rains, high relative humidity, and moderate temperatures are conducive to development of this disease.

Infection

The spores are airborne and are usually abundant in strawberry fields. As gray mold develops on infected berries, these become sources of inoculum secondary infections of adjacent berries.

Overwinter

The gray mold fungus overwinters on old leaves and plant debris and can sporulate freely on dead and decaying plant material.

Control

- A range of effective fungicides are available to help manage the disease.
- Alternate fungicide classes to avoid development of fungicide resistance.
- Where possible, remove sporulating berries from the field and destroy them to limit inoculum availability.

Soft rot, Black rot or Leak

Pathogens:

Rhizopus stolonifer



Mucor spp.



Symptom

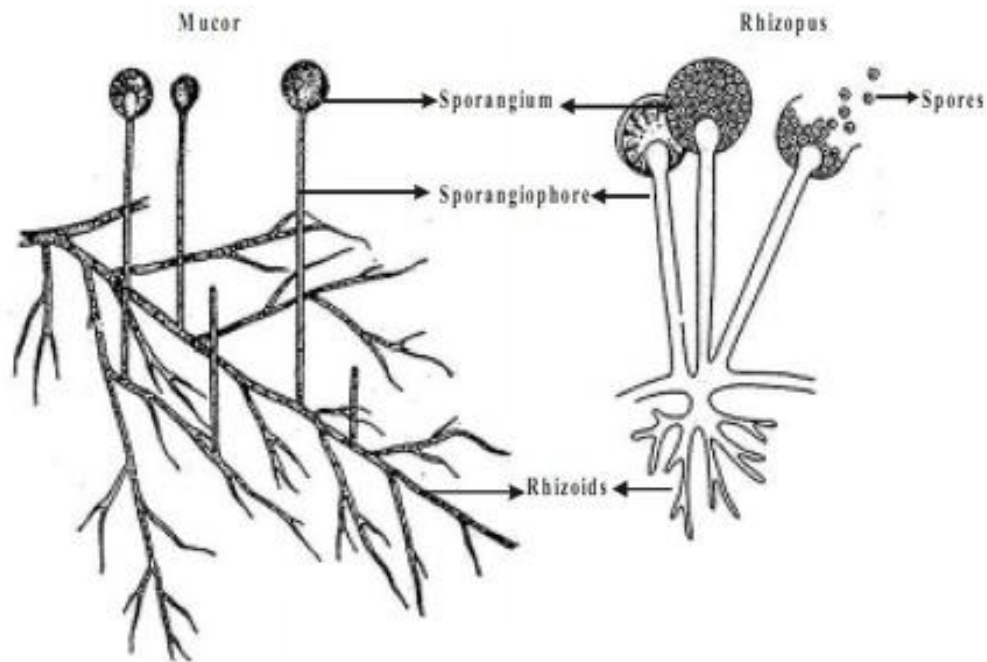
- The fruit rot symptoms for both pathogens are very similar.
- Fruit infected with either of these pathogens become very soft and start to leak sticky red juices from the fruit tissues.
- In later stages of infection fruit softens to the point that it is no longer solid and cannot be picked up without falling apart.
- Affected fruit are usually covered with the wispy, fuzzy black and white growth of the pathogen.



[Rhizopus and Mucor fruit rots in strawberry](#)



[Rhizopus Fruit Rot](#)



Control

- Fruit rots in strawberry can cause significant losses if not recognized early and controlled.
- The use of good cultural practices such as:
 - Keeping fields weed-free
 - Promoting good drainage
 - Long crop rotations
 - Preventative fungicide applications are critical.

Penicillium fruit rot

Pathogen: *Penicillium spp.*

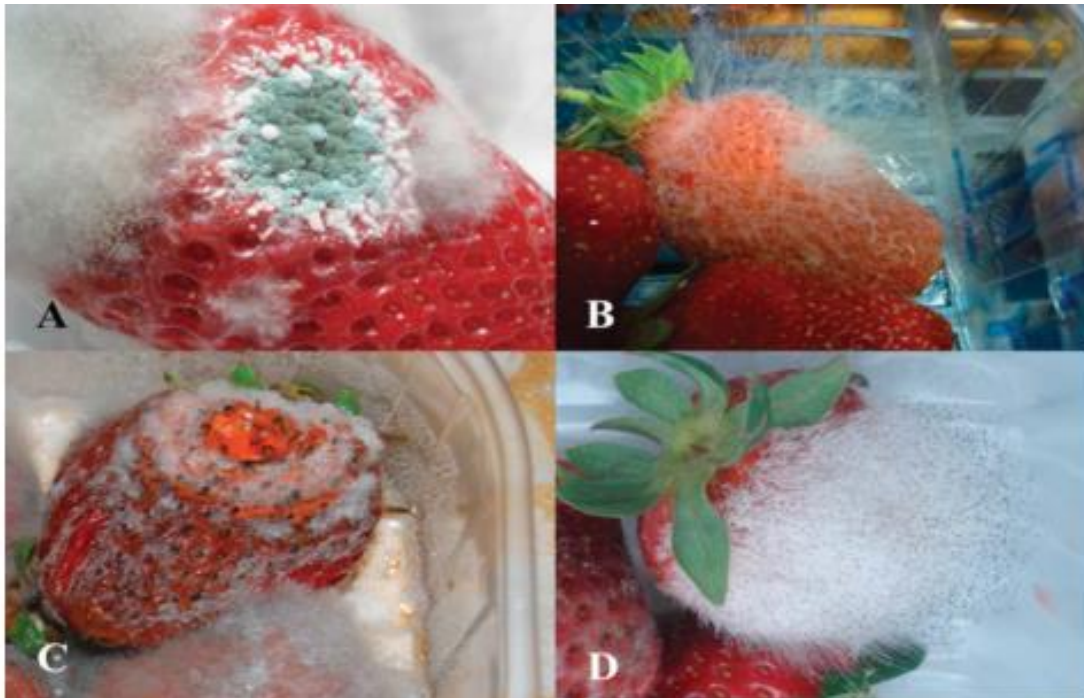
Is mainly caused by *Penicillium expansum*, along with some other species of the genus *Penicillium*, which can cause large postharvest losses in strawberry fruit.



Symptom

- Have a blue appearance on the fruit.
- This disease is occasionally appears and usually only important locally.

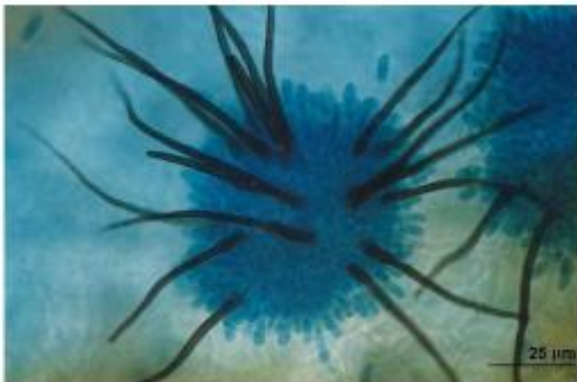




Postharvest strawberry fruit decay caused by the fungi
 Penicillium spp. (blue and white) and Botrytis cinerea (gray) (A),
 Rhizopus stolonifer (B), Colletotrichum spp. (C), and Mucor spp. (D).

Anthracnose

Pathogen: *Colletotrichum fragariae*
C. acutatum



Symptoms

- Circular black and sunken spots appear at the beginning on infect fruit.
- watersoaked lesions enlarging rapidly within 2-3 days to include most of the fruit
- Mould growth may appear on the edges on the lesion, while at the centre there is copious production of spores
- after a period of hot weather, turn dark brown to almost black.
- Infected fruits may dry up completely



Importance

It is a serious disease wherever the fruit is grown and consumed

Survival

the pathogen survives in infected transplants or debris

Dispersal

Spores (conidia) may be dispersed in the field by wind-driven rain, splashing water, insects, movement of workers, equipment or animals

Environment condition

Spore production, germination and fruit infection are favoured by warm, humid weather.

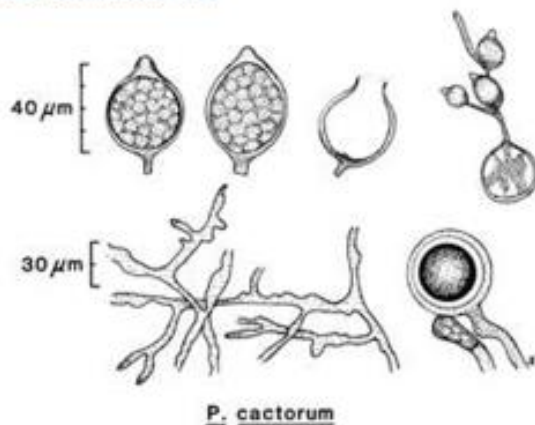
Control

- Maintain anthracnose-free plants
- Use of drip irrigation
- Remove early infected fruits away from the fields
- Use of protective fungicide to partly control from flower bud emergence to harvest

Leather or crown rot

Pathogen: *Phytophthora cactorum*

The fungus attacks berries in the field at all stages of growth. has a wide host range and can infect at least 154 genera of vascular plants in 54 families. causes damping-off



Morphology of *Phytophthora cactorum*.

Upper row, Papillate sporangia, empty sporangium, and germinated oospore producing sporangia.

Lower row, Gnarled mycelium and an oospore in an oogonium with a paragynous antheridium.

Symptoms

- Symptoms are different depending on the fruit stage.
- On immature, green fruit, the infected areas appear dark brown or normal green with a brown edge.
- On ripe, mature fruit, they ripe fruit develops a purplish colour and foul odour and taste.
- White mould may grow from the diseased fruit.
- The pathogen may also cause a serious crown rot, which can develop along with the fruit rot.



Fruit rot occurs when berries come in contact with the soil.

Dispersal

When weather conditions are warm and rainfall is abundant, the pathogen releases its spores into the soil. These infested soil particles are dispersed onto the fruits by splashing rain or wind.

Environmental conditions

infection is favored by warm, wet weather and poorly drained soil.



Culture of *Phytophthora cactorum* grown on V-8 juice agar.

Management

Practices, such as

- mulching, that keep the fruit off the ground
- aid in minimizing rain splash will help control leather rot.
- Growers also should plant resistant varieties
- provide good soil drainage
- and avoid planting in low spots.

T.A.