



AVRDC - The World Vegetable Center

Fact Sheet

Tomato Diseases

Gray Mold

Botrytis cinerea

Found worldwide, especially in greenhouses



Symptoms

“Ghost spots” appear on fruits after periods of prolonged high humidity. These superficial spots have a pale halo with a brown to black pinpoint spot in the center. On unripe fruit, the halo is pale green or silvery, and generally the tissue inside the halo is paler green. On ripe fruit, the halo is pale yellow. If warm and sunny weather occurs, then ghost spot symptoms usually do not develop further, although the marketability of the fruit may be affected. Fruit rot does not develop under these specific conditions.

Botrytis may develop on dying flowers and subsequently infect the fruit calyx. The lesions on fruit appear as light brown to gray spots, up to 3 cm in diameter, and irregular in shape. Later, a dark gray, velvety growth develops on the fruit surface, followed by a watery, soft rot.

Foliar symptoms are more common under humid greenhouse conditions. Affected leaves show light tan or gray spots, and the infected areas become covered by a brown fungal growth. The leaves wither and collapse. The fungus proceeds into the stem producing

How to Identify Gray Mold



Superficial “ghost spots” with pale halos develop on fruit (left photo). A velvety gray mold may appear on the fruit calyx, causing soft rot (top right photo). Under humid greenhouse conditions, *Botrytis* may invade leaves and proceed into stems, where cankers develop (center photo), which cause wilting (right photo).

tan, elliptical cankers with concentric rings. Invasion of lesions by secondary fungi occurs. Stem cankers cause wilting of vines.

Conditions for Disease Development

The fungus has a very wide host range that includes many vegetable crops. *Botrytis* produces overwintering structures called sclerotia in addition to producing various other types of spores. These allow the fungus to survive in soil, dead plant material, or on different host plants. The fungus is easily dispersed large distances by wind. Small pieces of infected plant tissue or fungal spores from infected plant debris are also disseminated shorter distances by splashing and windblown rain.

Gray mold development, particularly fungus sporulation and infection, is favored by cool, wet and humid weather. The fungus requires a water film of several hours for spore germination, and a longer period of surface wetness for symptom development. Optimum relative humidity for spore production is about 90%, and most spores are produced during the night when the temperature is lower and the relative humidity is higher than during the day. Temperatures of 17–23 °C are ideal for disease development. The length of the surface wetness period needs to be longer at the lower temperatures for disease development.

The fungus generally infects plants through wounds; for example, the rough handling of young transplants. Penetration of intact tissue is rare. Fruit can be infected through the stem scar, growth cracks, or other breaks in the skin. Plants approaching maturity are more susceptible. The fungus can also penetrate dead flower tissue or dying foliage.

Excessive application of nitrogen makes plants such as young transplants more susceptible to gray mold. Dense plant canopies will limit air movement within the crop, thus creating conditions for extended surface wetness at night and subsequent increased gray mold severity.

Control

In the field, incorporate *Botrytis*-affected debris into the soil and allow it to decompose before establishing a new tomato crop, or burn diseased plant debris. Plant in fields where good drainage is available and maintain weed control to minimize periods when plants are wet due to reduced air circulation.

In the greenhouse, maintain a relative humidity of less than 80%, especially during the night. Remove all clippings from the plant bed if seedlings are pruned. Do not leave any plant fragments attached to clipped seedlings. Remove decaying plant material from the plant bed.

In all cases, trellising of vines and proper spacing of plants will allow a good flow of air throughout the crop, thus reducing duration of surface wetness.

Resistant varieties are not available. Fungicide sprays help to control the disease. New specific fungicides for *Botrytis* are available but they should be rotated with general multi-site protectant fungicides to prevent the development of resistance in the fungus to the new chemical controls.

For more information on the production of tomato and other vegetables, go to <www.avrdc.org>.