



AVRDC - The World Vegetable Center

# Fact Sheet

## Tomato Diseases

### Soft Rot

*Erwinia carotovora* subsp. *carotovora*

Found worldwide

#### Symptoms

Soft rot develops in the inner stem, which becomes brown and slimy, then disintegrates and becomes hollow. The damage may extend several centimeters above and below the site of infection. The affected plants wilt and die.



The infected fruit develops a thin outer skin and becomes filled with a slimy mass. The fruit collapses and dries into a shriveled mass when the skin is broken.

The affected stem and fruit have a rotten, foul-smelling odor. All stages of growth are affected, including harvested fruits.

#### How to Identify Soft Rot



*The inner stem becomes brown, slimy and then disintegrates; vines wilt and die. Affected fruit become slimy and collapse (not shown).*

#### Conditions for Disease Development

Soft rot bacteria are inhabitants of field soils. The bacteria will survive in soil longer in cool, wet conditions and will spread to a shorter distance under dry, warm conditions. Survival of the bacteria in soil is linked mainly to soil temperature but also to soil moisture and presence of antagonistic soil-borne micro-organisms. The bacteria also can occur around the roots of many crops and weeds, in surface and underground waters, in rain, snow, aerosols, and on the mouthparts of insects.

The bacteria are often transmitted through wounds created by workers pruning plants or harvesting fruit with contaminated tools or hands. Chewing larvae and insects, such as fruitworms, can also transmit the bacteria. Harvesting during rainy periods or washing contaminated fruits before shipment may disseminate the bacteria.

Transmission of this bacterium may occur from the splashing of infected soil into wounds of neighboring plants. Transmission also occurs when wounds are created using contaminated machinery and implements. Infected cull piles may attract air-borne insect vectors, leading to long-distance transmission.

The development of soft rot is favored by warm air temperatures (20–30 °C) and high relative humidity. Infection of tomato tissue by *Pythium* spp. and *Phytophthora* spp. creates favorable conditions for development of soft rot later.

### **Control**

Avoid injuring plants. Disinfect hands and tools when pruning tomato plants and wash contaminated clothing. Prevent the occurrence of insect wounds by controlling the pests.

Avoid planting tomato crops after crops of potato or cabbage; instead, rotate with crops of bean, maize and soybean. Plant in well-drained soil.

Remove affected plants and destroy them away from the field. Monitor neighboring plants for any symptom development.

Use deep well water if surface water is contaminated. Use chlorinated water to reduce the risk of infection during washing. This will not reduce soft rot development in fruit already infected with the organism.

Harvest during dry weather and minimize fruit injury at harvest.

**For more information on the production of tomato and other vegetables, go to <[www.avrdc.org](http://www.avrdc.org)>.**