

# Bacterial Canker of Garden Tomatoes

## A New Disease in Minnesota Vegetable Gardens

Bacterial canker is a plant disease that results in leaf discoloration, wilt, fruit spots, stem cracking and discoloration on tomato and pepper plants.

This disease is caused by the bacteria *Clavibacter michiganensis* subspecies *michiganensis*.

The bacteria can infect tomato, pepper, eastern black night shade and cut leaf nightshade.

### How to Recognize Symptoms of Bacterial Canker

This disease can be difficult to diagnose. If you suspect your tomato or pepper has bacterial canker, send a plant sample to the UMN Plant Disease Clinic (<http://pdc.umn.edu>) for a diagnosis.



A. Stoddard, MDA

#### Seedlings

- Small, white, raised spots may form on leaves
- The seedling wilts. Leaves on one side wilt first. The whole plant may wilt and die

#### Leaves

- Edges of leaf turn brown, with a yellow border
- Dark, sunken veins on leaves and petioles
- Wilt on lower leaves, often on one side only
- Entire plant may collapse and die

#### Fruit

- Small (1/4 inch), creamy, white spots with tan or brown centers on fruit (bird's eye spot)



Heinz USA, Bugwood.org



Heinz USA, Bugwood.org

#### Stem

- Brown streaks can be seen in the vascular system when the stem is cut open
- Stem splits forming long, brown cankers
- Yellow sticky fluid may emerge from cut stem when squeezed

## Movement and Survival

- The bacteria that cause bacterial canker can be brought into the garden on infected seed or transplants. These may not show symptoms of disease.
- It spreads on splashing water from rain or irrigation, or on hands and tools of workers.
- It survives up to three years on plant debris and for several months on stakes and equipment.
- The bacteria infect and survive on nightshades, weeds that are closely related to tomato, and tomato plants that grow from the previous season's fallen fruit.

## Prevention and Management

The best way to prevent bacterial canker is to use clean tomato seed and transplants.

- Purchase seeds from a reputable supplier.
- Seed suspected of contamination can be treated with bleach or hot water. Hot water will kill bacteria on the surface and inside of the seed. Bleach only cleans the outer surface of the seed.

### Hot Water Treatment

Soak seed in 100 °F water for 10 minutes, then 122 °F water for 25 minutes. Rinse in cool water for 5 minutes.

### Bleach Treatment

Soak seeds in a solution of 1 part germicidal bleach to 4 parts water for 1 minute. Rinse in water for 5 minutes.

- Purchase healthy transplants from a reputable grower. Avoid transplants that have been pruned or cut back as this procedure easily spreads the bacteria.
- Avoid working in the garden when the leaves are wet.
- Use a 1:9 solution of bleach to water, to regularly clean pruning tools.
- Manage weeds in the vegetable garden.

*Eastern black nightshade and cut leaf nightshade can both become infected by bacterial canker and allow the bacteria to persist in the garden.*



Strand Herbarium



Copyright © 2007 The Regents of the University of California. All rights reserved.  
J.M. DiTomaso, UC Davis

## If Bacterial Canker is Found in the Garden

- Any infected plants should be buried at the site or composted on site.
- Throw away wooden stakes, twine, bamboo or other structures made of natural material used in the garden. These are difficult to clean because they have many pores for the bacteria to hide in.
- Tools, metal tomato cages or other equipment made out of metal or smooth material can be cleaned with a 1 to 9 solution of bleach and water.
  - ◆ Remove all soil and plant debris from tools and trellises.
  - ◆ Mix 1 cup bleach with 9 cups water.
  - ◆ Wearing water proof gloves wash all tools and equipment with the bleach solution.
  - ◆ Rinse with clean water and dry before storing.
- Do not save seed from infected plants.
- Avoid planting tomatoes or peppers at that spot for 3 years.