

Bacterial Diseases of Tomato: 2014



Bacterial Diseases of Tomato



- Bacterial speck
- Bacterial spot
- Bacterial canker

Bacterial Diseases of Tomato



- **Bacterial speck- causes lesions on leaves, stems and fruit. Prefers cool (64-75 F), wet weather**
- Bacterial spot
- Bacterial canker

Bacterial speck of tomato



Bacterial speck of tomato

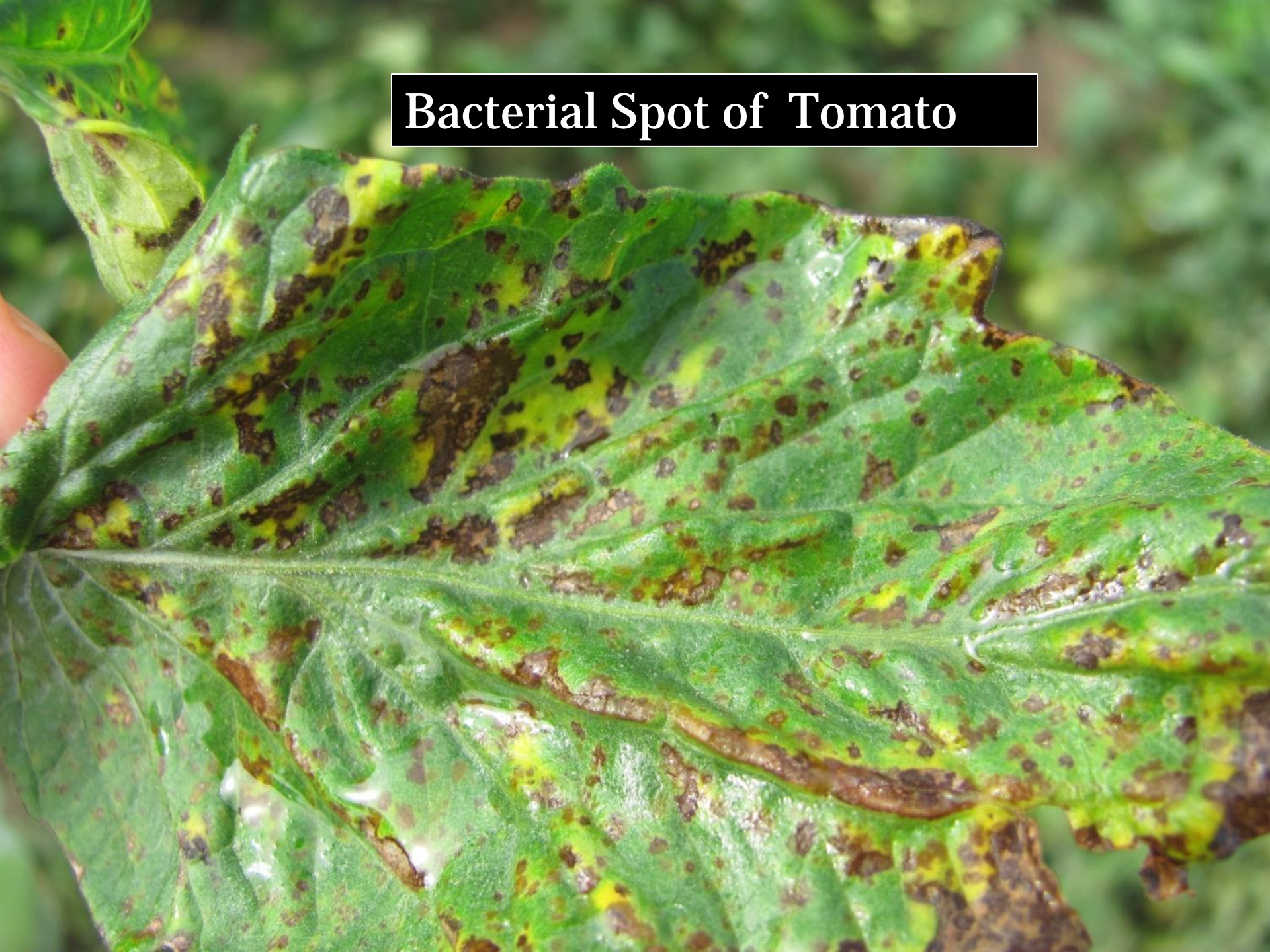


Bacterial Diseases of Tomato



- Bacterial speck
- **Bacterial spot-causes lesions on leaves, stems and fruit. Favored by warm (75-86 F), wet weather.**
- Bacterial canker

Bacterial Spot of Tomato



Bacterial Spot of Tomato





Bacterial Spot of Tomato



Bacterial Spot



Bacterial Spot

Bacterial Diseases of Tomato



- Bacterial speck
 - Bacterial spot
 - Bacterial canker
- } Management similar

Bacterial Spot of Tomato



- Strains of the bacterial spot microbe resistance to fixed copper in the Midwest
- Copper resistance in tomato & pepper strains
- Both copper resistant & sensitive strains in any year

Bacterial Spot of Tomato-Host Resistance



- Cultivars differ in susceptibility
- Avoid past problems
- Maynard, Egel and Zandstra Trials
 - <http://docs.lib.purdue.edu/fvtrials/10/>
 - <http://docs.lib.purdue.edu/fvtrials/9/>



Bacterial Spot of Tomato-Greenhouse



- Purchase seed tested for disease
- Good sanitation
- Inspect seedlings
- Apply copper/mancozeb (Dithane only for peppers)
- Apply streptomycin...e.g., Agri-mycin 17

Bacterial Spot of Tomato-Field



- Fall tillage
- Crop rotation
- Avoid leaf wetness
- Fixed copper/mancozeb-5-10 day schedule
- Actigard (0.33 oz/A)...30-50 gal water/A
 - increase water volume with Actigard rate
 - Actigard every other applicationabout 4/year.

Bacterial Spot of Tomato-'New' Products



- Tanos 50DF-may help with bact diseases when applied for fungal diseases.
- Serenade Max-may help with copper resistance
 - Tank mix or alternate
- Agriphage-a disease of bact spot bacterium
 - Need to send in samples early in season
 - Marketed by OmniLytics

Bacterial Canker: An Outline

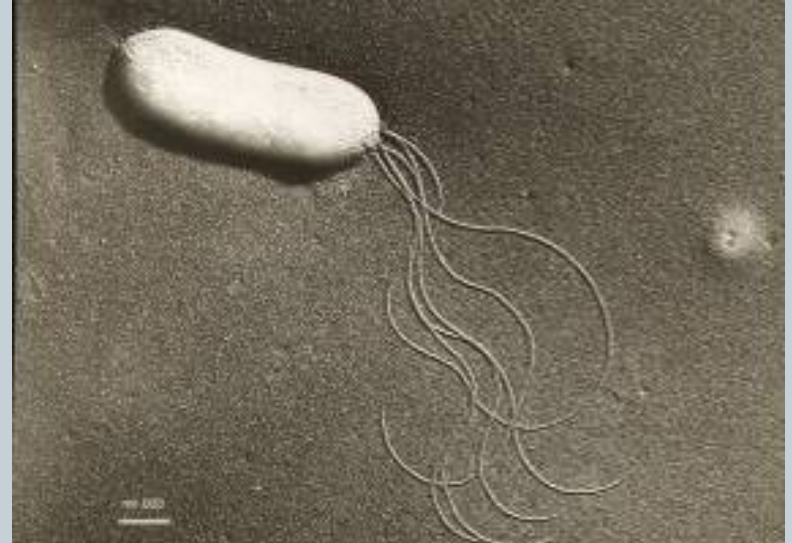


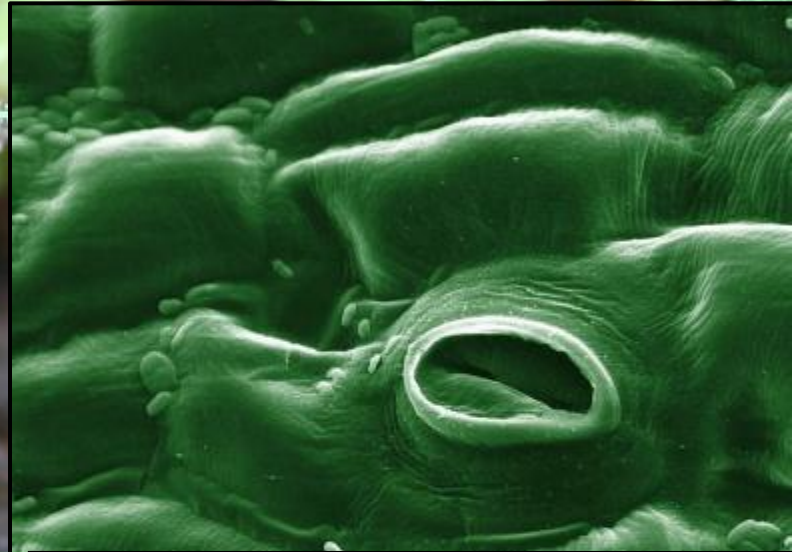
- Background
- Biology
- Symptoms
 - Greenhouse/High tunnel
 - Field
- Diagnosis
- Disease Cycle
- Management
- Questions and Comments

Bacterial Canker: Biology



- Pathogenic bacteria often enter into plants passively.
 - Watersoaking or wounding required.





Stomates on plant leaves
may provide entry to
pathogenic bacteria.



The canker bacterium may become systemic in the tomato plant.



Seeds harvested from a tomato with bacterial canker might transmit the disease to the seedlings.



Tomato crop residue might be a source of bacterial canker especially if left on the soil surface.

Bacterial Canker: Symptoms



- Transplants
- Specialized greenhouse symptoms
- General symptoms
 - Wilt
 - Marginal chlorosis and necrosis of leaves
 - Vascular discoloration
 - Fruit lesions

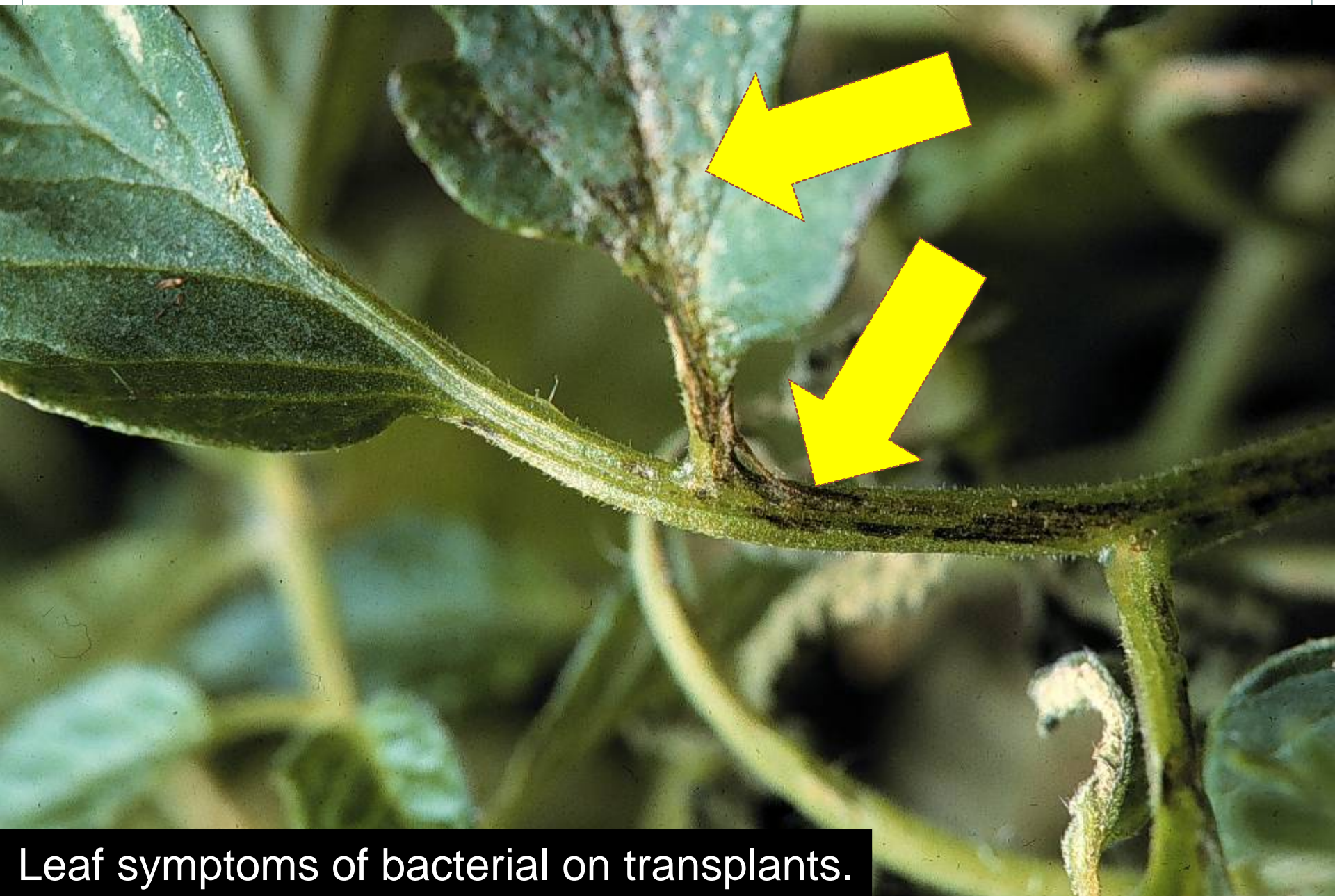
Bacterial Canker: Transplant Symptoms





Leaf symptoms of bacterial canker on transplants.

Photo-Mary Hausbeck



Leaf symptoms of bacterial on transplants.

Photo-Mary Hausbeck

Bacterial Canker: Symptoms



Blisters on GH tomato



Typical early symptom on GH tomatoes



More Advanced Tissue Collapse



Wilting and Leaf Necrosis



Bacterial Canker: General Symptoms from Greenhouse or Field





Wilt caused by bacterial canker.



Marginal chlorosis & necrosis caused by bacterial canker in a high tunnel.



Marginal chlorosis & necrosis caused by bacterial canker in the field.



Vascular discoloration caused by bacterial canker-may occur in HT or field.



Tomato Pith Necrosis



Tomato Pith Necrosis



Symptoms-'birds-eye' fruit lesions caused by bacterial canker –symptoms occurs in HT or field.

Comparison of fruit lesions of bacterial canker, bacterial spot and bacterial speck.



Comparison of leaf lesions of bacterial canker, bacterial spot and bacterial speck.



Bacterial canker



Bacterial spot



Bacterial speck

Bacterial Canker: Disease Cycle

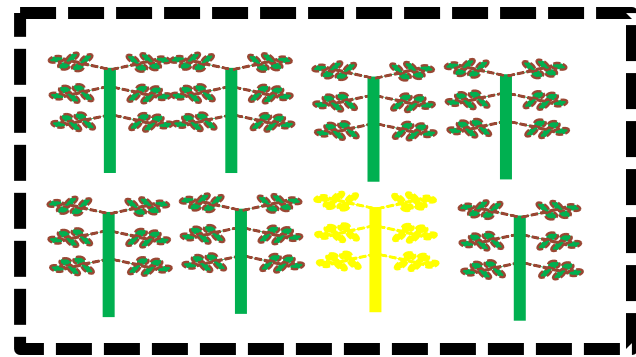


- Primary inoculum-infested crop debris, volunteer plants, infected weeds, tools/stakes, transplants, seeds
- Incidence of seed transmission maybe 1-2%, but may spread to other transplants in greenhouse.
- In the field, disease can be spread by splashing water (rain, irrigation), tools, workers etc.
- Disease development favored by warm temperatures (75-90F)(24-32C)

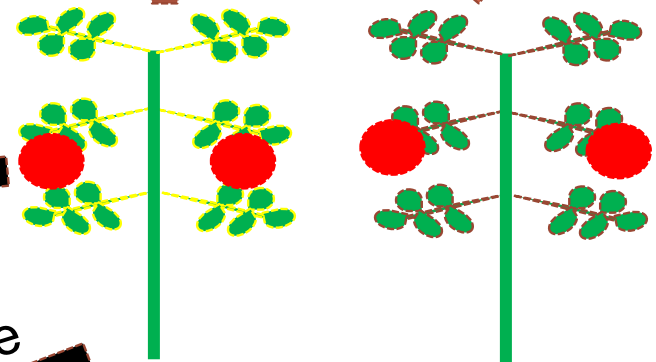
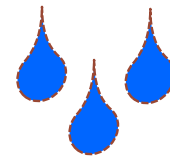
Pathogen survival

- Seed
- Crop residue
- Volunteers
- Weed hosts
- Stakes/tools

Greenhouse



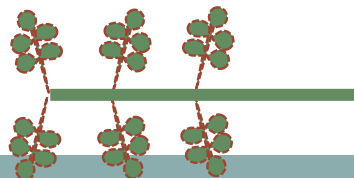
Field



Seed survival



Crop residue



Bacterial canker of tomato



Bacterial diseases of tomato



- Bacterial speck
- Bacterial spot
- **Bacterial canker-causes plant wilt, marginal leaf necrosis and fruit lesions.**



Photo-Mary Hausbeck

A close-up photograph of a plant stem, likely a tomato, showing signs of bacterial canker. The stem is green and hairy, with several dark, sunken, and necrotic lesions visible. A leaf is attached to the stem on the left side. The background is blurred, showing other green foliage.

bacterial canker on transplant

Photo-Mary Hausbeck



bacterial canker



bacterial canker

Symptoms-'birds-eye' fruit lesions caused by bacterial canker in the field.



Comparison of fruit lesions of bacterial canker, bacterial spot and bacterial speck.



Bacterial Canker: Disease Cycle

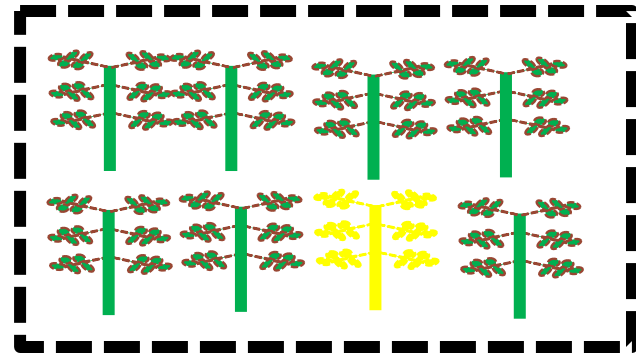


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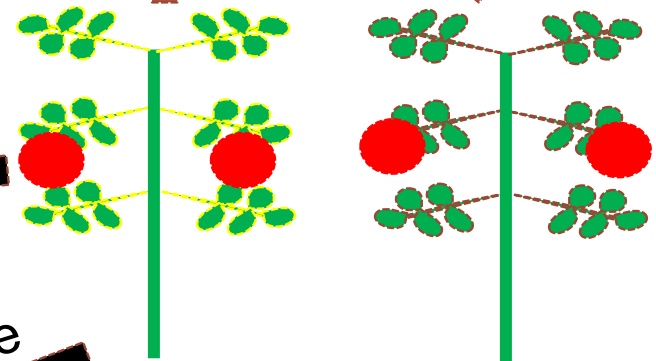
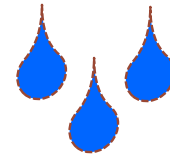
Pathogen survival

- Seed
- Crop residue
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Greenhouse



Field



Seed survival



Crop residue

