Epidemiology, Economic Damages and Risk of Bacterial Wilt and Bacterial Canker Diseases of Tomato

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Domateste Bakteriyel Kanser ve Solgunluk Hastalığı Riski, Epidemiyolojisi ve Ekonomik Zararı

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The Pathogen

Common Name	-Bacterial wilt of tomatoes -Southern bacterial wilt of tomatoes
Scientific Name	*Ralstonia solonacearum* ***(Formerly Pseudomonas solonacearum)***

Bacterial Wilt of Tomatoes

Disease Symptoms

The Pathogen

- Soil-borne
- Has several races and strains
- Enters through microscopic wounds (*often injured by insects, cultivation, or transplanting*)

Environment

- high temperatures (29-32 C) and wet soil.
- The pathogen prefers acidic soils (soil pH < 7.0)
- The disease can occur on all types of soil
- Moves via contaminated water, contaminated seedlings, workers or machinery
- The presence of root-knot nematode accelerates disease development

Distribution

Worldwide: → In tropics and sub-tropics. Asia, Africa, North, South and Central America, the Caribbean, Europe

Endemic in Tropics such as CERRADO of Brazil

HOST Plants

More than 200 hosts in more than 30 plant families

Race 1 affects many members of the family Solanaceae - eggplant, capsicum, chilli, potato, tomato and tobacco, and other families

Beans, Rye, Cabbage, Corn,

IMPACT/Potential Risk

Taiwan: Incidence ranges from 15 to 55% during the summer season

In India: 10 to 100% incidence of BW during the summer

Thailand: 5-25%
Vietnam: 5-96%

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Confirmation

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Bacterial Canker of Tomatoes

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The Pathogen

Scientific Name	*Clavibacter michiganensis subsp. michiganensis* (Cmm)

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Environment

— Warm temperatures (23 to 32°C)
— High moisture or high relative humidity

— optimum pH for growth of this bacterium is between 7 and 8

— Survives on infected plant debris, weed hosts, volunteer plants, contaminated stakes

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Source

- Can survive in the absence of a tomato crop in soil up to 2 years.
- It can over winter in plant debris for 3 years and on wooden stakes for up to 10 months.
- Can survive in seeds for at least 5 years and still cause infection.
- Persist on Solanaceous weed hosts such as nightshade
- Can be found in Re-circulated water system such as flow irrigation

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Spread and Infectionwind, rain, runnin

- Localized spread can occur by water, insects, and equipment used during transplanting, cultivation, staking, pruning, pollinating, and spraying.
- The organism can be spread by handling transplants and established plants. It spreads on the hands of workers and on pruning knives.
- Infection can take place through natural plant openings, but is more likely through wounded areas.
- Free moisture is critical for the bacterium to successfully invade the host tissue. Generally, disease spread occurs when the weather is wet and warm.

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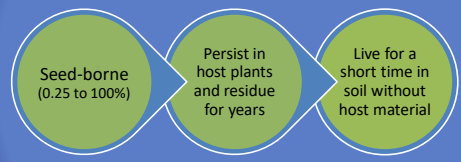
The Pathogen



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Distribution

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Distribution

Worldwide: → not frequently been seen

- Distribution in greenhouse/field is through workers' hands, equipment, and pruning and clipping of transplants
- introduced to new areas through infected seed or transplants.

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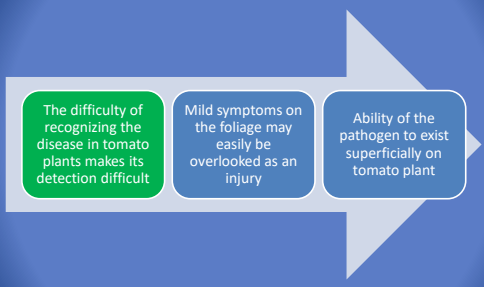

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Delay in detection results in extensive and rapid spread of the disease..

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IMPACT/Potential Risk

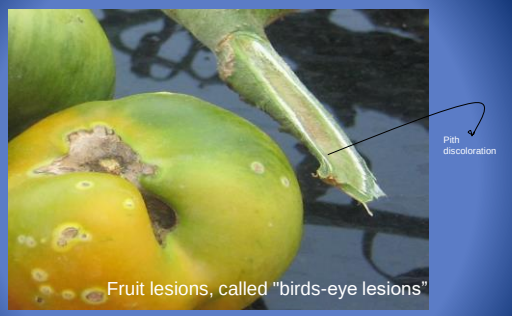
The losses may vary from a few diseased plants to a total loss of production depending on environmental conditions and the agricultural practices used by growers.

IMPACT/Potential Risk

Is severe on tomatoes that have been clipped or pruned

in Ontario, Canada, yield losses of up to 84% in commercial fields

artificially inoculated crops, yield losses varied from 46 to 93%



Fruit lesions, called "birds-eye lesions"

TEŞEKKÜRLER