Bacterial Canker Disease of Tomato

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With the weather getting warmer in Missouri and garden season approaching, the MU Plant Diagnostic Clinic wants to bring attention to the Bacterial Canker Disease of Tomatoes. This disease can persist in the soil for long periods of time, so prevention is key.

Name: *Clavibacter michiganensis* subspecies *michiganensis* (Cmm)

Figure 1. Tomato leaf necrosis caused by bacterial canker disease Photo: Morgan Goodnight

Figure 2. Tomato stem discoloration caused by bacterial canker disease Photo: Morgan Goodnight

Signs and Symptoms: Symptoms of the disease vary based on the age of the tomato plant, different environmental factors, and the type of infection developed. As a result, a diagnosis of the disease on symptoms alone can be difficult and a sample may need to be sent to a diagnostic clinic to confirm the presence of this disease. Symptoms of seedlings include leaf edge discoloration, necrosis and wilting. The leaves on a mature tomato plant become discolored with interveinal chlorosis and necrosis (Figure 1). The stem develops brown streaks in the vascular tissue and often splits forming brown cankers (Figure 2). The fruit develops small, creamy, white and raised spots with tan or brown centers and white margin.

Life Cycle and Damage: Warm temperatures (75°F to 90°F) and high moisture encourage disease spreading and development. Infected seeds are usually the source of infection, but this pathogen can also stay in weed and decaying plant tissue. It is spread within plantings by splashing water and by human activity. This disease is extremely damaging to tomatoes and difficult to control. Once established, this pathogen can survive on plant residues in the soil for as long as 3 years, and will persist on stakes and equipment for up to 7 months. This is why prevention is the best course of action against the disease.

Disease Management:

1. **Using disease free seeds and seedlings to stop the spread of the disease.** Currently there are no resistant cultivars on the market.
2. **Maintain good sanitation practices.** Since the pathogen can overwinter in plant debris, removal of this debris may help prevent reinfection. Do not use diseased plant debris as compost. Cleaning equipment when transplanting and during pruning and trellising plants can ensure that the pathogen isn't spread between plants.
3. **Crop rotation.** Rotate away from tomatoes and other Solanaceous crops such as potatoes, peppers or eggplants for at least 3 years.
4. **Chemical control.** Applications of fixed copper plus mancozeb may reduce secondary spread of the disease. Actigard is labeled for bacterial leaf spot diseases, but it is not effective for canker. Therefore, prevention is the most effective management strategy.
5. **Keep plants healthy.** This can be done by proper care including watering, fertilizing, providing a well-draining soil medium, and adequate lighting.
6. **Ensure a dry environment.** This pathogen thrives in warm and wet weather conditions, therefore avoid overwater and maintain good air circulation.

References:

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