Pythium spp.

SIGNS & SYMPTOMS:

- On seeds, infected seeds may not germinate and seeds may turn brown and decompose.
- The stems of young seedlings are constricted near the soil line, develop a soft, dark lesion, and frequently topple over.
- On roots, brown discoloration and thinning of roots can be observed. Top lateral root growth may be more prevalent since lower roots are rotted and degraded.
- A less severe root infection of older plants may result in stunted growth only.
- Fruit rot caused by *Pythium* spp. usually starts as a small water-soaked lesion on mature green or ripe fruit in contact with or in proximity to the soil.
- *Pythium myriotylum* has been associated with dark, aerial lesions on tomato stems or leaves.

DISEASE CYCLE & EPIDEMIOLOGY:

- *Pythium* spp. are good soil saprophytes and can grow as vegetative mycelium in the soil indefinitely on various types of organic substrates.
- Tomato fruit growing in very wet soil conditions may be invaded by certain *Pythium* spp. when the fruit touch the soil or soil is splashed onto the fruit surface.
- Sporangia and zoospores are produced when conditions are optimal, particularly in regards to free moisture.

FIELD SIGNATURE:

- White, cottony mycelial growth may be visible on plant parts under humid and moist conditions.
- Some plants will show stunted growth but no other symptoms.
- Infected tissue, particularly roots and stems, is usually dark brown, soft and rotted.

PHOTOS:

Figure 1. Seedling damping off caused by *Pythium* sp. on pepper in a pepper. Photograph by: Shubin Saha.

Figure 2. Root rot and stem rot of infected seedlings. Photograph by: Richard Cullin.

Figure 3. Stem rot of tomato. Photograph by: Pam Roberts.

Prepared by: Drs. Pam Roberts and Ronald French-Monar

DISEASE MANAGEMENT:
Pythium Damping-off, Root Rot and Stem Rot

CULTURAL CONTROLS:

- Use disease-free transplants.
- In transplant production, sterilize soil and production equipment, such as flats and benches.
- Avoid excessive water and maintain good soil drainage.
- Plant when temperatures are favorable for rapid plant growth to avoid plants 'sitting' in the field.
- Use plastic mulch to prevent splashing of soil onto fruit.

Figure 4. Topple from stem rot in tomato. Photograph by: Pamela Roberts.

CHEMICAL CONTROL:

- Use a pre-plant soil fumigant.
- Apply a fungicide drench at transplanting.
- Several fungi and bacteria in addition to *Pythium* spp. cause damping-off symptoms on seeds and seedlings; therefore, proper identification of the causal agent is necessary prior to fungicide selection.
- Fungicides containing mefenoxam, fludioxonil and copper compounds are labeled for this disease. Some of these are labeled for use as a soil drench at time of transplanting.

RESISTANT MANAGEMENT:

- If chemicals used for the management of *Pythium* spp. are known to develop resistance by the pathogen population, these compounds should be rotated with other chemistries.

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