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College of Agricultural, Consumer and Environmental Sciences

report on
PLANT DISEASE

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DEPARTMENT OF CROP SCIENCES
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BEET PHYTOPHTHORA ROOT ROT

Phytophthora root rot, caused by the oomycete *Phytophthora drechsleri*, is a soil-borne diseas of beets, especially sugar beets. The disease is more severe where fields are wet for long time.

Symptoms

Foliage of affected plants wilt and become yellow. Necrotic spots appear on the tap root, more towards bases of the roots. Adventitious lateral roots often appear above infected points. Rotted issue turns brown with a distinguishing blackish margin adjacent to healthy tissue (Figure 1). Ultimately, entire affected root may become rotted and die.

Figure 1. Phytophthora root rot of sugar beet (APS, Courtesy E. G. Ruppel).

Disease Cycle

Phytophthora drechsleri survives as thick-walled spores (oospores) in the soil. Oospores can survive in the soil for several years. The spore germinate and produce reproductive bodies called sporangia. In wet conditions, sporangia produce motile spores (zoospores) that infect roots. Then, new sporangia and zoospores are produced at the infected spots. This pathogen also produce another thick-waaled bodies, called chlamydospores. Chlamydospores also suvivive in the soil and produce sporangia and zoospore.

Disease Management

- Losses to Phytophthora root rot can be prevented/minimized through practices that prevent prolonged exposure of the crop to high levels of soil moisture. So, preventing waterlogging and improving field drainage are recommended for managing this root rot.
- Plant resistant cultivars, if available.
- Avoid using infested water with the pathogen.
- Clean equipment after using in the field.

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- Crop rotation with nonhost plants for at least three years should be considered.
- Seed treatment with mefenoxam can be considered for preventing early infection of plants.
- Using phosphorous acid products can delay/reduce root infection. There are new fungicides effective against *Phytophthora* species. Recommendation of fungicide applications should be based on the local research. Also, fungicides with different FRAC group numbers should be considered to manage resistance development of the pathogen to fungicides.