cropFOCUS
PIONEER agronomy

Fusarium Wilt and Root Rot

Disease Facts

- Fusarium wilt is a disease complex associated with several soil-borne *Fusarium* species.
- Over 10 *Fusarium* species are known to infect soybeans.
- Different species can be favored by different conditions; some prefer warm and dry soils, while others prefer cool and wet soils.
- Host range also differs among species, with some species capable of infecting corn, wheat and other host plants.
- *Fusarium spp.* can infect soybeans as the primary pathogen or alongside other soybean pathogens such as *Pythium, Phytophthora,* and *Rhizoctonia*.
- Infection often occurs during a wet period but becomes noticeable under hot, dry conditions.

Stand loss due to *Fusarium* infection. Note the patchy nature of infection occurring in a specific area of the field.

Symptoms

- Infection causes reddish to brown discoloration of vascular tissue in the roots and stems.
- External light to dark brown lesions may spread over much of the root system but will not extend above the soil line.
- Fusarium-infected roots often have red, orange, or white mycelium visible.
- Infection of the taproot can promote adventitious root growth near the soil surface. Fusarium may also degrade lateral roots, but usually does not cause seed rot.
- Foliar symptoms can appear if root and stem rot is sufficiently severe, including wilting of stem tips, stunting, and chlorosis.
- Upper leaves may appear scorched while leaves in the middle and lower canopy turn chlorotic and wilt, eventually dropping from the plant leaving petioles behind.

Foliar symptoms of fusarium wilt. Photo by Daren Mueller, Iowa State University, Bugwood.org

Disease Cycle

- *Fusarium* spp. survive in the soil as spores or mycelium in plant residue.
- Fungus can infect plants at any stage but especially when plants are weakened by stress.
- After infection, roots are compromised and will show more symptoms during dry conditions.

Dead plants due to Fusarium infection, with healthy plants in the background. Less severe infections may degrade roots without resulting in plant death.

Management

- **Variety Selection** - There are no resistant varieties available.
- **Seed Treatment** - Fungicide seed treatments may protect seedlings.
- **Stress Factors** - Reduce stress factors such as herbicides that cause crop injury, high pH, wet soils, and SCN.
- **Field Drainage and Soil Structure** - Improve field drainage and remediate compaction and hardpan layers if possible.
- **Planting Date** - Problematic fields should be planted when soils are warmer.

Author: Laura Sharpe
Vol. 13 No. 23 August 2021