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Extension FactSheet

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Rhizoctonia Damping-Off and Stem Rot of Soybeans

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Rhizoctonia damping-off and stem rot of soybeans can cause early season stand losses as well as premature yellowing in soybeans. Rhizoctonia is present in all Ohio soils at some level. The stem rot phase can occur at any time during the growing season but generally causes less damage than the damping-off phase.

Symptoms

Rhizoctonia damage may occur at any time during the growing season, but it is more severe on young seedlings. *Rhizoctonia solani* can cause seed rot, root rot, and lesions on hypocotyls. Damping-off occurs when germinating seedlings are infected prior to or just after emergence. On hypocotyls, lesions are reddish-brown and sunken. Diseased seedlings collapse from the firm, dry canker that girdles the hypocotyl. Diseased older plants become chlorotic, resembling plants with nitrogen deficiency. Symptoms on older plants, or on those plants that survive seedling infections, include the characteristic sunken, reddish-brown cankers on the lower stem near the soil surface. Disease losses result from stand reduction in newly planted fields and premature death of diseased plants that produce undersized seed.

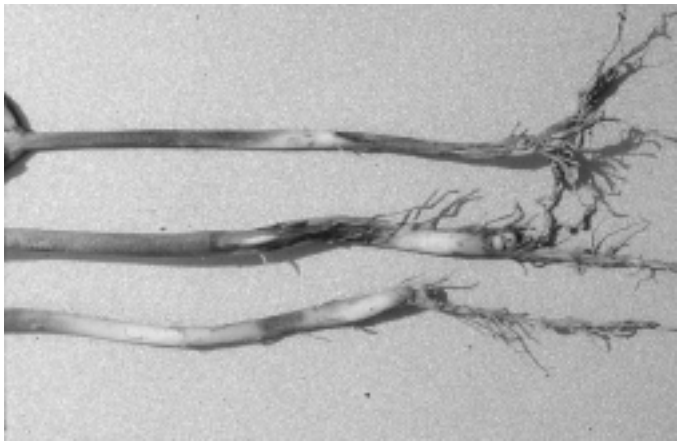
Rhizoctonia stem rot—yellowed, diseased plants in the field.

Damage caused by Rhizoctonia is frequently confused with diseases caused by other seedling pathogens. It is very difficult to identify the pathogen that causes preemergence damping-off. The symptoms are very similar for Pythium, Phytophthora, and Rhizoctonia. Rhizoctonia-infected plants typically have characteristic and distinct reddish-brown, sunken cankers on the lower stem or hypocotyl. Older plants with Phytophthora stem rot have chocolate brown lesions that extend up the stem several nodes on older plants.

Disease Cycle

Rhizoctonia stem rot and damping-off are caused by the soil-borne fungus *Rhizoctonia solani*. This fungus exists as different types that are capable of causing diseases on different plants. The types that affect soybeans can also infect other legume crops, sugar beets, some vegetable crops and weeds. It sur-

Premature yellowing caused by *Rhizoctonia solani,* stem rot.



Characteristic reddish-brown sunken cankers on the hypocotyl caused by *Rhizoctonia solani.*

vives in soil as sclerotia and on decaying plant material as mycelium.

The damping-off and stem rot phases of the disease may occur in both light, well drained and in heavy, poorly drained soils. Soil moisture and temperature have a profound effect on the incidence of the disease. *Rhizoctonia solani* collected in Ohio can infect soybeans across a wide temperature range (60°–95°F) and from low soil moisture (25%) to saturated conditions.

Management

1. Fungicide seed treatment. (Contact your local Extension office for Bulletin 639a-01 Supplement, *Efficacy of Seed Treatment Fungicides for Agronomic Crops in Ohio*) (http://ohioline.ag.ohio-state.edu/b639/b639_17.html)
2. Varietal differences have been noted but routine screening for resistance is available from few sources. The University of Illinois screens entries for their soybean performance trials.
3. Crop rotation with wheat and corn to allow for soybean residues to degrade.
4. Improve soil drainage.
5. Maintain adequate fertilization but not over fertilization.

Additional information is available from your local Extension office or The Ohio State University Plant Pathology website (**www.oardc.ohio-state.edu/ohiofieldcropdisease**).

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