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Extension FactSheet

Plant Pathology, 2021 Coffey Road, Columbus, OH 43210-1087

Charcoal Rot of Soybeans

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Charcoal rot of soybeans has been occasionally diagnosed in Ohio. It is more prevalent in the southern and western United States than in the north central region, and on early maturity to midmaturity group soybeans. Although hot, dry weather is generally unfavorable for development of diseases, charcoal rot is a major exception.

Symptoms

Irregular areas of wilting or premature death of plants suffering from drought stress are indications of charcoal rot. Early season diagnosis is very difficult, but during the later stages of plant development very small black structures (microsclerotia) become evident as a grayish-black discoloration in the root and lower stem tissues. Cutting the lower stem will expose the discolored tissues in comparison to normally white tissues of healthy plants.

Causal Fungus

Charcoal rot is caused by the fungus, *Macrophomina phaseolina*. The fungus can survive in dry soil as microsclerotia for 2 years or longer. Microsclerotia cannot survive more than 7 to 8 weeks in wet soils. Infection occurs early in the season on seedlings and the fungus grows slowly in the plant until hot dry weather occurs after flowering. Soil populations increase when soybeans are grown continuously, allowing the disease to become more severe in successive soybean crops.

Management

Cultural methods must be used to minimize charcoal rot damage. There are no fungicides available for effective disease control and genetic resistance is generally not available in cultivars.

1. Crop rotation to prevent build-up of inoculum (microsclerotia) in the soil.
2. Plant at recommended plant populations. Very high plant populations are prone to drought stress which favors disease development.
3. Maintain adequate soil fertility levels to reduce nutrient stress and encourage vigorous growth.

Charcoal root rot—note gray discoloration of root tissues.

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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