

All of the soybean pathogens in Ohio infect different parts of the soybean plant. Environmental conditions that favor disease development vary. Transmission of the pathogens can vary as well as management programs. The Key to Major Soybean Diseases in Ohio (shown here) summarizes

the major symptoms caused by the soybean pathogens found in Ohio that contribute to greatest yield losses. More detailed information can be found on each of these diseases and management practices in this bulletin or in Ohio State University Extension Fact Sheets on plant diseases.

Key to Major Soybean Diseases in Ohio

Disease	Symptoms	Environmental Conditions Favoring Disease	Method of Infection and Transmission	Management
Phytophthora Root Rot	Rapid yellowing, wilting, and collapse of root system on younger plants; older plants show yellowing of lower leaves that moves up the plant followed by wilting with a chocolate-brown stem canker developing from the soil line up the plant.	Poorly drained, high clay content soils are prone to this disease; saturated soils with temperature 60°F and above.	Swimming spores in saturated soil conditions; oospores can move with soil.	Plant varieties with <i>Rps</i> genes plus partial resistance; treat seeds; improve drainage.
Soybean Cyst Nematode	Fields with high numbers of SCN will have circular to oval patches of stunted, yellow plants; at lower populations, plants may appear stunted and produce less than desired yields.	Low fertility; warm soil; lighter soils are prone to higher yield losses; nematode feeding occurs throughout the season.	Nematode feeds on soybean root; eggs are protected by cysts; eggs survive best under moist, cool conditions; cysts are spread on tillage equipment.	Identify fields; prevent introduction; rotate to non-host crops; alternate source of SCN resistance; maintain balanced fertility.
Sclerotinia White Mold	Plants first appear wilted; as they die, leaves and stems turn brown to tan; stems are covered with thick white mold.	Wet, cool conditions prior to and during flowering.	Survive in the soil as sclerotia. Soybean flowers serve as food source for the fungus; sclerotia in harvested seed can contaminate new fields.	Clean seed; plant moderately resistant varieties; rotate crops; use good weed management.

Disease	Symptoms	Environmental Conditions Favoring Disease	Method of Infection and Transmission	Management
Brown Stem Rot	Brown to reddish-brown stem pith; outside base of stem may have greasy appearance; foliage may show wilting, chlorosis, and browning of tissue between veins.	Continuous soybeans; short rotations; reduced or no-till; high yield potential environments.	Survive on surface crop residue.	Rotate crop with corn and wheat; deep plow residues; plant resistant varieties; use shorter maturity cultivars.
Phomopsis Seed Rot	Dead petioles, stems, and pods with small black specks; severely infected seeds are cracked, shriveled, and covered with white mold; seedlings from moldy seed have brown to reddish lesions on cotyledons.	Warm, wet conditions at maturity and delayed harvest; prolonged wet periods after flowering and pod set; lodging and increased feeding by bean leaf beetles may increase seed infection.	Fungi overwinter on soybean straw or may be seed-borne.	Plow down crop residue and/or rotate crop with wheat and corn; treat seed for seed lots with low infections.
Diaporthe Stem Canker	Brown sunken area on stem in 3rd to 5th node of the plant.	High moisture.	Fungus overwinters on soybean straw and seed.	Rotate crop; plow under residue.
Rhizoctonia Damping Off and Stem Rot	Hypocotyl lesions are reddish brown and sunken; canker girdles hypocotyl; older plants are chlorotic with sunken reddish-brown cankers on lower stem near soil surface.	Temperatures 77° to 95°F; soil moisture from 25% to saturated.	Soil-borne fungus survives on weeds and in soil in decaying plant residue as minute sclerotia on soil.	Treat seeds; rotate crop; improve drainage; plow.

Disease	Symptoms	Environmental Conditions Favoring Disease	Method of Infection and Transmission	Management
Septoria Brown Spot	Angular red to brown spots on upper and lower leaves; leaves turn yellow and fall to the ground. Tan lesions becoming dark brown on trifoliolate leaves; infected leaves turn rusty brown and drop; defoliation from bottom to top; irregular brown lesions on pods, stems, and petioles.	High moisture and moderate temperatures, 60° to 85°F.	Fungus overwinters in soybean straw; spores infect seedlings; spores from infected seedlings provide inoculum for later infections of trifoliolate leaves, stems, and pods.	Rotate crop; in heavily infected fields, plow under soybean straw.
Sudden Death Syndrome	Begins as small pale green to yellow circular leaf spots. Brown to tan areas develop between the veins; pith of affected plants is white; root decay and discoloration of roots and crown.	High soil moisture during vegetative growth; cool temperatures prior to or during flowering and pod set; SCN can increase severity of foliar symptoms.	Spores overwinter and survive for years in the soil; spores have been found on the cysts of SCN.	Reduce SCN populations; till to warm soil; plant earlier maturing varieties; use long crop rotations — soybeans only once every three years.
Green Stem/ Soybean Viruses	Severe symptoms include malformed pods, single to no seed; leaves with yellow mottling and puckering between veins; seed may be discolored and stems remain green; fields will also have high levels of bean leaf beetle feeding.	High temperatures <80°F can mask symptoms.	Viruses can be transmitted by either or both seed or insects depending on the virus.	Management recommendations are being evaluated at this time; later planting and control of bean leaf beetle early feeding are the targets.