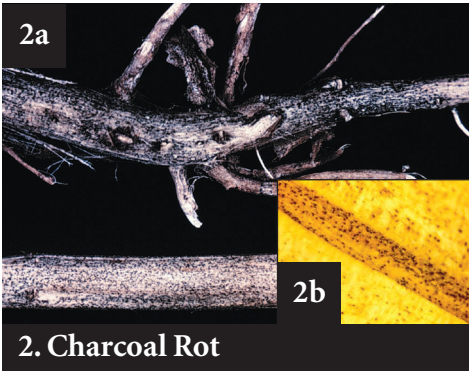


Soybean Disease Profiles II

Stem and Root Rot Diseases

UNL Extension Plant Pathology Team

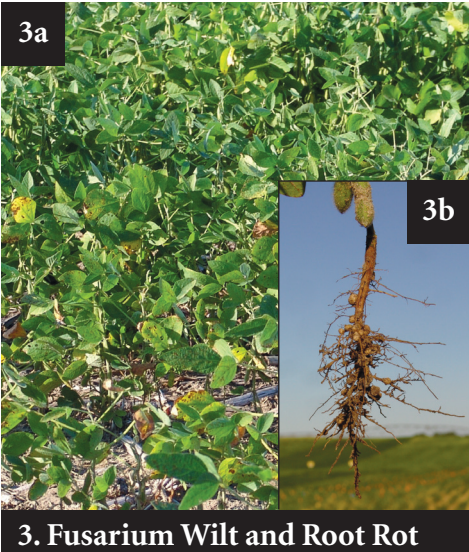
Loren J. Giesler, Robert M. Harveson, Tamra A. Jackson-Ziems, Kevin A. Korus, Bo Liu, and Stephen N. Wegulo



2. Charcoal Rot



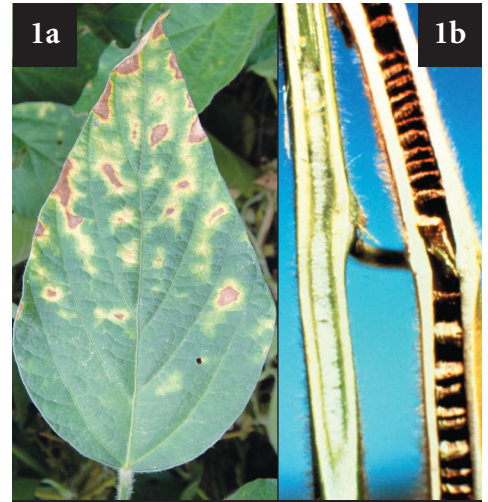
5. Pod and Stem Blight



3. *Fusarium* Wilt and Root Rot



9. Seedling Blight



1. Brown Stem Rot

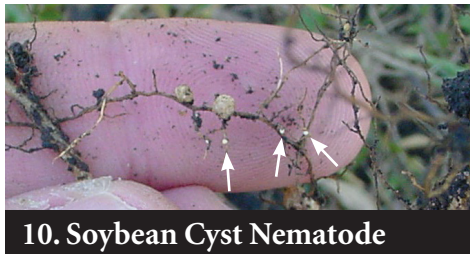


4. *Phytophthora* Root and Stem Rot



7. *Rhizoctonia* Root Rot

8. *Sclerotinia* Stem Rot



10. Soybean Cyst Nematode



11. Stem Canker



12. Sudden Death Syndrome

Disease	Description
1. Brown Stem Rot (BSR) <i>Phialophora gregata</i> *Management: C, N, R	Leaves brown and attached to petiole; interveinal brown to yellow discoloration in leaves; center of stems brown, extending up from roots (<i>Figure 1b</i>).
2. Charcoal Rot <i>Macrophomina phaseolina</i> Management: C, N, R	Leaves of infected plants yellow, wilt, and stay attached; red-brown discoloration of taproot vascular tissue extending up the stem; small black bodies (sclerotia) (<i>Figure 2b</i>) under the stem epidermis give it a gray-black color.
3. Fusarium Wilt and Root Rot <i>Fusarium</i> spp. Management: C, N, R	Leaves of infected plants yellow and wilt under dry conditions; mid to lower canopy leaves yellow and defoliate; brown vascular tissue in roots and stem under epidermal layers; no external stem discoloration or lesions; roots of seedlings will be reddish-brown to dark brown and often the tap root is rotted (<i>Figure 3b</i>).
4. Phytophthora Root and Stem Rot <i>Phytophthora sojae</i> Management: C, F, R	Seed decay and seedling root rots before or after emergence; seedlings wilt and die with discolored stem pith (<i>Figure 4b</i>); plants become yellowed, wilt and show a dark discoloration of the lower stem (<i>Figure 4c</i>); roots of older plants are rotted.
5. Pod and Stem Blight <i>Diaporthe phaseolorum</i> var <i>sojae</i> Management: C, F, R	Symptoms on plants nearing maturity are numerous, small black dots on lower stems, petioles, and pods; speck-sized fruiting structures usually arranged linearly.
6. Phomopsis Seed Decay <i>Phomopsis longicolla</i> Management: C, F, R	Infected seed shriveled, elongated, and cracked; seed appears white and chalky; poor germination if planted.
7. Rhizoctonia Root and Cortical Rot <i>Rhizoctonia solani</i> Management: F, N	Decay of lateral roots and localized brown to red-brown lesions on the hypocotyls and lower stem; discoloration limited to cortical layer.
8. Sclerotinia Stem Rot <i>Sclerotinia sclerotiorum</i> Management: C, F, N, R	During pod development leaves wilt and turn gray-green before turning brown and drying; white fungal growth on stems and pods; diseased stems are bleached; sclerotia on and inside stem and pods (<i>Figure 8b</i>).
9. Seedling Blights can be caused by <i>Pythium</i> spp., <i>Fusarium</i> spp., <i>Rhizoctonia solani</i> , and <i>Phytophthora sojae</i> Management: C, F, N, R	Seed decays before or after emergence; seedlings wilt and die; roots and lower portion of stems rotted; rot confined to outer root surface.
10. Soybean Cyst Nematode (SCN) <i>Heterodera glycines</i> Management: C, R	Heavily colonized plants may be stunted and chlorotic; root system reduced with poor nodulation; yellow to brown cysts visible on roots (pin-head size) (↖).
11. Stem Canker <i>Diaporthe phaseolorum</i> Management: C, F, R	Small, reddish-brown lesions near nodes after flowering; lesions expand longitudinally and develop into a sunken canker that does not encircle the stem (<i>Figure 11b</i>); foliar symptoms may develop similar to SDS and BSR.
12. Sudden Death Syndrome (SDS) <i>Fusarium solani</i> f. sp. <i>glycines</i> Management: C, N, R	Interveinal necrosis; spots coalesce to form brown streaks between the leaf veins with yellow margins (<i>Figure 12b</i>); leaf drop with petiole (leaf stem) remaining; deteriorated taproots and lateral roots; root cortex is light-gray to brown and may extend up the stem.

Photo Credits: Soybean cyst nematode, courtesy of G. Tylka, Iowa State University; all other photos courtesy of faculty in the UNL Institute of Agriculture and Natural Resources.

*Management strategies which can be effective: **C** — cultural practices, such as the use of crop rotation or tillage; **F** — seed treatment or foliar fungicides; **N** — management may not be necessary, practical, or possible; **R** — varieties vary in their resistance/susceptibility and resistance will reduce disease severity.