



# Scouting for Common Soybean Seed Diseases

Soybean diseases affect seed quality that results in economic losses. Food grade or specialty soybeans require blemish-free seed coats and are at the highest risk of economic losses due to seed diseases. This scouting card describes signs and symptoms of soybean seed diseases that are observed in the late reproductive stages of soybean through harvest.

## Seed Disease Management Strategies

1. Plant pathogen-free seed of resistant varieties in areas with a history of the disease.
2. Fungicide seed treatments may reduce seed to seedling transmission of fungal diseases; foliar fungicides may reduce seed infection by some fungi.
3. Tillage and crop rotation can reduce the amount of residue-born disease inoculum available to infect soybean.
4. Controlling bean leaf beetle, aphids, and other insect vectors will reduce virus infection and can reduce pod injury that could result in fungal infection.



## Diseases



### **Phomopsis seed decay (fungus: *Phomopsis* spp.)**

Phomopsis seed decay is characterized by cracked, shriveled seed with chalky mold present on the seed surface. Black fungal specks (pycnidia) may also be present on seed. Phomopsis seed decay can affect yield, grade, food quality, viability, and vigor of infected seed.



### **Sclerotinia stem rot (white mold; fungus: *Sclerotinia sclerotiorum*)**

Infected stems and pods are discolored and white, cottony mold and black fungal bodies (sclerotia) are present. Infected pods can result in seed infection, and sclerotia can contaminate seed lots.





**Soybean virus (bean pod mottle [left] and soybean mosaic [right])**

Infected seeds have brown to black streaks extending from the hilum. Virus symptoms on leaves are often confused with growth-regulator herbicide injury. Virus infected plants are scattered in the field or may be found along the edge where insect vectors enter the field. One way viruses survive from season to season is in infected seed. The viruses are transmitted from plant to plant by insects such as bean leaf beetle and aphids.



**Cercospora purple seed stain (fungus: *Cercospora kikuchii*)**

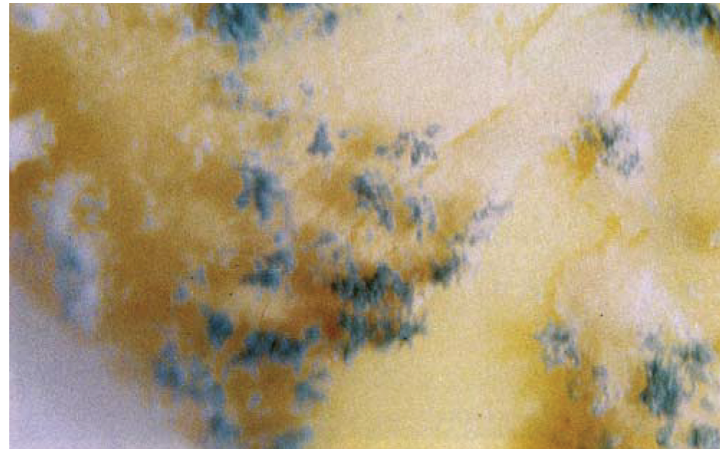
The pathogen that causes purple seed stain also causes Cercospora leaf blight of soybean. Infected seed varies from pale to dark purple discoloration of the seed coat. In most cases, the seed embryo is not affected, but germination of infected seed may be reduced.





### Downy mildew (oomycete: *Peronospora manshurica*)

The foliar phase of downy mildew results in pale yellow-green lesions on leaves in the upper canopy. Infected pods may not show symptoms, but the seed and inner pod will have a white crust that is made up of a mass of spores. Infected seed can be cracked and small and have reduced quality.



### Other

Seed can be affected by several other fungi such as *Alternaria*, *Macrophomina* (charcoal rot), *Penicillium* (right image), *Fusarium* (left image), *Colletotrichum* (Anthracnose), and bacteria such as *Pseudomonas* (bacterial blight). These issues are often more problematic on previously damaged seed.

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### Photographs

All photos were provided by and are the property of the authors except bean pod mottle and petri dishes with diseased seeds by Craig Grau, University of Wisconsin; downy mildew diseased seeds by X.B. Yang, Iowa State University; downy mildew leaf symptoms by Alison Robertson, Iowa State University; *Penicillium* and *Fusarium* diseased seedlings from Dennis McGee and Robert Nyvall, Iowa State University

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