



Scouting for Soybean Seedling Diseases and Disorders

Stand establishment issues due to seedling injury can be difficult to diagnose in the field, since symptoms can be caused by a variety of factors, particularly when wet weather follows planting. Scouting and proper disease identification is critical in order to initiate appropriate management practices.

Diagnosing seedling diseases and disorders

Seedling diseases and disorders are difficult to correctly diagnose in the field. If you are unsure of why your soybeans do not look healthy, please send a seedling sample to your local diagnostic lab before implementing a disease management program (see tips for collecting samples to the right). Obtaining an accurate diagnosis will allow you to determine the best management strategies for your soybean field.

Tips for collecting samples to submit to a diagnostic laboratory:

1. Collect around 10 plants from several areas showing symptoms in the field.
2. Dig around the seedlings to obtain the full root system and leave a small amount of soil around the seedling.
3. If possible, wrap roots in foil to the soil line and crimp foil to keep soil from moving onto the cotyledons or leaves.
4. Collect samples the day they are shipped. Ship samples overnight, if possible; do not ship samples immediately before the weekend.
5. Do not collect or ship dead plants.
6. Do not wash seedlings prior to submitting.



Soybean seedling diseases and disorders



Fusarium root rot (fungus: *Fusarium* species)

Symptoms include smaller root system with fewer secondary roots, along with light to dark brown lesions on the roots, sometimes extending to the hypocotyl. Infection can occur in a wide range of soil conditions.



Pythium seedling blight (oomycete: *Pythium* species)

Symptoms include rotten, mushy seedlings with poorly developed roots. Water-soaked lesions may be present on the hypocotyl or cotyledons. Infection is favored by wet conditions after planting and is typically a problem in cool soils in north central U.S. and Canada.



Phytophthora root rot (oomycete: *Phytophthora sojae*)

Symptoms include mushy and water-soaked stems and stunted or wilted seedlings. Infection is favored by wet conditions after planting, but is more common in warmer soils than *Pythium* species. *Phytophthora sojae* also can infect soybean at any point in the growing season.

**Rhizoctonia seedling blight (fungus: *Rhizoctonia solani*)**

Common symptoms are red-brown, dry sunken lesions on the seedling hypocotyl. Infection occurs over a wide range of soil conditions and typically does not occur after the seedling stage (V4).

**Pre-emergence herbicides**

Pre-emergence herbicides, especially PPO inhibitors and photosynthetic inhibitors (metribuzin), can injure seedlings, particularly when cool temperatures coincide with rain soon after emergence. Spotty necrosis can occur when rain splashes droplets of residual herbicide from the soil onto emerged seedlings.



Fluopyram fungicide

The fungicide seed treatment fluopyram (ILeVO®; Bayer CropScience) can cause yellow-brown discoloration on cotyledons, but is not common on the trifoliolate leaves. Environmental conditions and genetics may impact severity.



Environmental issues

Frost and/or freeze damage will be evident several days after a frost event and will result in a brown-purple water-soaked appearance on the hypocotyl and cotyledon. Soil crusting may slow or prevent seedling emergence causing the seedling to die before emergence.



Planting issues

Environmental issues can be exacerbated by non-uniform planting depth and/or seed spacing in addition to incomplete closure of the seed furrow. This would result in a gap in a row where seedlings may be absent or only partially emerged.

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