



# 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.



## Acknowledgments

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Loren Giesler, University of Nebraska; Carl Bradley, University of Kentucky; Marty Chilvers, Michigan State University; Anna Freije, Purdue University; Bill Johnson, Purdue University; Travis Legleiter, Purdue University; Mark Licht, Iowa State University; Daren Mueller, Iowa State University; Adam Sisson, Iowa State University; Damon Smith, University of Wisconsin; Albert Tenuta, Ontario Ministry of Agriculture, Food and Rural Affairs; Kiersten Wise, Purdue University; Heather Young-Kelly, University of Tennessee

### Reviewers

Jason Bond, Southern Illinois University; Ahmad Fakhoury, Southern Illinois University; Chris Little, Kansas State University; Dean Malvick, University of Minnesota; Berlin Nelson, North Dakota State University; Alison Robertson, Iowa State University; John Rupe, University of Arkansas

### Photographs

All photos were provided by and are the property of the authors except Phytophthora left and right and Rhizoctonia right by Craig Grau, University of Wisconsin-Madison; Environmental issues right by Tristan Mueller, Iowa Soybean Association; Cover; Pythium seedling blight right, pre-emergence herbicides right, and fluopyram fungicide right by Brandon Kleinke, Pythium seedling blight left by Gary Munkvold and Environmental issues left by Alison Robertson, Iowa State University; Rhizoctonia left by Jim Stack, Kansas State University

### Sponsors

The Soybean Disease Management series is a multi-state collaboration sponsored by the North Central Soybean Research Program (NCSRP). This project was funded in part through the United Soybean Board and *Growing Forward 2 (GF2)*, a federal-provincial territorial initiative. The Agricultural Adaption Council assists in the delivery of GF2 in Ontario. Contributors to this series come from land-grant universities in the North Central states and Canada.

NCSRP NORTH CENTRAL SOYBEAN  
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National Institute of Food and Agriculture



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