

3-29-2019

# Planting with Seedling Diseases and Low Germination Rates

Daren S. Mueller

*Iowa State University*, [dsmuelle@iastate.edu](mailto:dsmuelle@iastate.edu)

Alison E. Robertson

*Iowa State University*, [alisonr@iastate.edu](mailto:alisonr@iastate.edu)

Ethan Stoetzer

*Iowa State University*, [stoetzer@iastate.edu](mailto:stoetzer@iastate.edu)

Follow this and additional works at: <https://lib.dr.iastate.edu/cropnews>



Part of the [Agricultural Science Commons](#), and the [Agriculture Commons](#)

---

## Recommended Citation

Mueller, Daren S.; Robertson, Alison E.; and Stoetzer, Ethan, "Planting with Seedling Diseases and Low Germination Rates" (2019). *Integrated Crop Management News*. 2548.

<https://lib.dr.iastate.edu/cropnews/2548>

**The Iowa State University Digital Repository provides access to Integrated Crop Management News for historical purposes only. Users are hereby notified that the content may be inaccurate, out of date, incomplete and/or may not meet the needs and requirements of the user. Users should make their own assessment of the information and whether it is suitable for their intended purpose. For current information on integrated crop management from Iowa State University Extension and Outreach, please visit <https://crops.extension.iastate.edu/>.**

---

# Planting with Seedling Diseases and Low Germination Rates

## **Abstract**

You know what they say: March comes in like a lion and out like a lamb.

Well, it certainly feels like this past winter was just one extended lion. While there were signs that maybe Iowa would be seeing greener pastures, that has not been the case, especially for farmers who have experienced flooding this past month. With the recent incidents and resulting disaster proclamations, as well as lost grain storage, the idea of farming greener pastures has a long way until fruition.

## **Disciplines**

Agricultural Science | Agriculture

# IOWA STATE UNIVERSITY

## Extension and Outreach

Integrated Crop Management

# Planting with Seedling Diseases and Low Germination Rates

March 29, 2019

---

You know what they say: March comes in like a lion and out like a lamb.

Well, it certainly feels like this past winter was just one extended lion. While there were signs that maybe Iowa would be seeing greener pastures, that has not been the case, especially for farmers who have experienced flooding this past month. With the recent incidents and resulting disaster proclamations, as well as lost grain storage, the idea of farming greener pastures has a long way until fruition.

According to the U.S. Midwest Climate Hub, Midwestern states have seen precipitation 2-3 times above average. Coupled with already saturated soils, melting snow and flooding from the Missouri River, fields are looking more like swamps than planter ready.

With the saturated conditions, and warmer weather on the horizon, it is especially important that we be fully aware of the risk of crop disease. In light of recent events, here are some important factors to keep in mind when planting.

### **Last fall's saturation**

Last year's late harvest due to consistent downpours that kept combines on the sidelines, affected the quality of corn grain and soybean seeds across the north central region. Consequently, a large amount of soybean seed was exposed to *Diaporthe longicolla* and *Cercospora kikuchii*, causing *Phomopsis* seed decay and purple seed stain, respectively. While some areas harvested high-quality soybean seed, U.S. seed suppliers have reported that soybean seed to be used in 2019 is frequently testing positive for the *Diaporthe* fungus that may lower seed germination rates.



*Diaporthe* can infect seeds, causing deformities in soybean seed and reduced germination.

While there are steps that can be taken to test germination rates and identify if seeds test positive for *Diaporthe*, a huge variable heading into the upcoming growing season will be soil conditions at planting.

While fall 2018 was cool and wet, what followed was a colder and wetter winter (57th coldest and 3rd wettest on Iowa record). According to State Climatologist for Iowa Justin Glisan and Director of the Midwest Climate Hub Dennis Todey, the remainder of March will be cooler than the average temperature. This means that soil moisture for spring planting will likely be very high. As is stands, Iowa is in the 99th percentile for soil moisture and, some areas of the state still snow on the ground. This means farmers need to have a decision made on how to manage low-quality soybean seed to minimize disease and maximize yield in 2019.

### **Soybean seedling diseases**

Wet and possibly compacted soils from fall and early season planting, may expose soybean seed to seedling disease, such as *Phytophthora* root and stem rot, and *Pythium* seedling

blight and root rot. With moist soils, even high quality seed is at risk for infection by these pathogens.



*Phytophthora* in soybean affecting the early growth stages. *Craig Grau*

*Phytophthora* can infect soybeans at any growth stage. Root rot is more severe in no-till fields, poorly drained soils or low areas prone to flooding. The pathogen is an oomycete (water mold), which means it can move through and survive in water. When soil temperatures reach approximately 60 degrees Fahrenheit and are saturated, oospores of the pathogen germinate, and infection of plants occurs. Warm, saturated soils, especially right after planting, are conducive to disease. Seed treatments that include metalaxyl, mefenoxam or ethaboxam target oomycetes and can provide some protection.

*Pythium*, which is also an oomycete pathogen, can cause both seed and root rotting. The pathogen is prevalent in the northern U.S. and is capable of infecting plants at lower temperatures, between 50-60 degrees Fahrenheit. Planting in cold, wet soils should be avoided to reduce infection. Seed treatments targeting oomycetes can be effective.

Reduced sensitivity to metalaxyl, mefenoxam and ethaboxam has been documented in some species of *Pythium*.



*Pythium* in soybean seedlings

## Corn seedling diseases

Higher-quality corn seed is also not immune to seedling diseases in moist, cooler soils. Root rots in corn are very common and can be caused by several pathogens (*Pythium*, *Fusarium* and *Rhizoctonia*). Root rot susceptibility can be reduced by standard seed fungicide treatments. Susceptibility can also be reduced if soil is 50 degrees Fahrenheit or warmer, and is drier.



An example of what *Pythium* looks like in corn seedlings. *Craig Grau*

Similarly, seed decay and seedling blight may also be caused by the same pathogens and can also be the culprit. Fungicidal seed treatments can protect corn seedlings against these pathogens; planting into warmer, drier soils also helps.

## Final thoughts

According to Iowa State research, the best time to plant corn to ensure optimal yields varies by region within the state but ranges from April 12 through May 9. For soybeans, this time can vary from April 25 to May 1.

Climate reports indicate that the latter half of March is drier than normal across Iowa, boding well for snow melting and evaporation. It's important to know the quality of both your corn and soybean seed, as well as a general moisture rate of the soils you'll be planting them in, to make informed decisions about future disease management.

The Crop Protection Network is always a great resource for disease identification manuals and articles on evaluating soybean seed quality.

Be sure to visit the ISU Extension store to get copies of our scouting manuals and disease guides that go into more detailed instructions on how to manage the aforementioned diseases, and more.

**Category:** Plant Diseases

*Links to this article are strongly encouraged, and this article may be republished without further permission if published as written and if credit is given to the author, Integrated Crop Management News, and Iowa State University Extension and Outreach. If this article is to be used in any other manner, permission from the author is required. This article was originally published on March 29, 2019. The information contained within may not be the most current and accurate depending on when it is accessed.*

**Crops:**

Corn Soybean

**Tags:** soybean seedling disease corn seedling disease Corn Soybean seed treatments moist soils disease

**Authors:**

Daren Mueller Associate Professor



Dr. Daren Mueller is an associate professor and extension plant pathologist at Iowa State University. He is also the coordinator of the Iowa State University

Integrated Pest Management (IPM) program. Dr. Mueller earned his

bachelor's degree from the Univ...

Alison Robertson Professor of Plant Pathology and Microbiology



Dr. Alison Robertson is an associate professor of plant pathology and microbiology. She provides extension education on the diagnosis and management of corn and soybean diseases. Her research interests include Pythium seedling disease of corn and soybean and Goss's wilt. Dr. Robertson receiv...

Ethan Stoetzer Communications Specialist II

