

MANAGING LOWER GERMINATION SOYBEAN SEED

Soybean seed fields experienced the same production challenges in 2018 as commercial for-market soybean fields. Wet weather delayed harvest, subjecting seed to prolonged periods of a favorable environment for diseases that can affect the appearance and germination of soybean seed.

Because of these diseases, soybean seed offered for planting in 2019 may have germination percentages lower than usual.



Figure 1. Diaporthe-infected seed



Figure 2. Purple seed stain-infected seed

Diaporthe longicolla and pod and stem blight (D. Sojae) are two fungal diseases within the Diaporthe-Phomopsis disease complex that can infect soybean seed (Figure 1). Seeds infected with these diseases can be shriveled, cracked, and may have a whitish mold growth. However, pod and stem blight-infected seed can also appear healthy. Another disease that was prominent in 2018 was purple seed stain or Cercospora blight which caused seeds to have varying amounts of purpling (Figure 2).

Because of these diseases, soybean seed offered for planting in 2019 may have germination percentages lower than usual. Fungicide seed treatments should be considered on lower germination seed to help

maintain or increase germination potential. A fungicide treatment can help to protect the seed and young seedlings from many seed- and soil-borne pathogens. Seeds that are infected with fungi or planted where emergence delays are likely can benefit the most from a fungicide seed treatment. Several fungicides and fungicide combinations are registered for use on soybeans. State university recommendations are a good resource for local recommendations. Regardless of germination percentages, soybean seed should always be handled carefully and as minimally as possible. Additionally, seed should be kept in a cool, dry location.

Seed treatments can be wettable powders, flowables, dusts, or liquids.

Depending on the format, these products may be custom applied in slurry, ready-mix, or mist-type treaters, or mixed directly as a dust in the planter or drill box. It is very important to use proper personal protective equipment as set forth on the product label when treating seed or handling treated seed. Many people are sensitive to certain seed-treatment chemicals and should not handle them. Treated seed should be stored safely and should never be used in food, feed, or oil purposes.

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General guidelines for handling low germination and sensitive soybean seed include:

- Limit handling. Throwing or dropping seed bags can reduce germination by as much as 10%.
- If already treated, refrain from applying additional treatments because of the additional handling required.
- Operate augers slow and full when handling bulk seed. Conveyors or brush augers are preferred over steel.

Suggested guidelines for customers:

- Consider installing a soft surface for seed to land on in tenders, drills, and other equipment.
- Plant higher germination seed first to help avoid potential early-season stresses.

- Plant seed when environmental and soil conditions are favorable for optimum emergence and stand potential. Replant seed may be limited.

Seeding rates may need to be increased for germinations lower than the normal 90%. Seed tags should be checked to determine germination percentage and seed size. A general formula to determine seeding rate is below.

Percent live seed emergence is an arbitrary number determined prior to planting and is based on the variables mentioned above such as seed quality, seeding rate, seedbed condition, soil type, individual seed product, and planting date. Typically, 90% is a rule of thumb; however, it should not be used in all situations. For example, if planting conditions are favorable, a higher percentage may be used.

Sources

¹Robinson, A.P. and Conley, S.P. 2007. Plant populations and seeding rates for soybeans. AY-217-W. Purdue University.
Kleczewski, N. 2019. Seed quality issues a concern in 2019 soybeans. Illinois Field Crop Disease Blog. University of Illinois. <http://cropdisease.cropsciences.illinois.edu>.
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Web sources verified 2/12/19. 2003_S1

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$$\text{Seeding Rate} = \frac{\text{Desired Plant Population}}{\% \text{ Germination } X \% \text{ Pure Seed } X \% \text{ Live Seed Emergence}}$$