

Soybean seed treatments: Questions that emerge when plants don't



Poor soybean stand establishment is frustrating, especially considering all the time and money spent on seed, planting, and maintaining fields. This is particularly true when farmers have also invested in seed treatments designed to prevent crop loss due to seedling diseases. However, every product has limitations and may not always work the way it is intended. Conversely, a user may expect a product to work in a way in which it was not intended. In this publication, we are answering some common questions that emerge when soybean plants don't.

Is disease actually causing poor stand establishment?

Stand establishment issues can be caused by many factors besides seedling diseases, including soil conditions (compaction, residue level), environmental issues (flooding, cold stress, drought), planting issues (planting depth, planter error), insect injury, or poor seed quality. Seedling diseases are only one of many potential factors. Making a good diagnosis is the first step toward determining if seedling blight is to blame for poor stand establishment. If seedling disease is the major cause of a problem, it is important to determine the causal pathogen and disease. Different seed treatments and management practices are recommended for different diseases as noted below. See *Resources* at the end of this document for information on seedling disease identification.

If a disease, is the issue the choice of seed treatment?

Choosing the right seed treatment is important since certain fungicide active ingredients work against specific pathogens. For instance, metalaxyl and mefenoxam have activity against seedling blights caused by the *Pythium* and *Phytophthora* pathogens, but do not have efficacy against *Fusarium* and *Rhizoctonia* pathogens. Additionally, fungicide efficacy can vary for specific species within a pathogen group. See *Resources* at the end of this document for information on fungicide efficacy.

If the fungicide has activity against the causal pathogen, could the fungicide rate be incorrect?

Possibly. In certain fields with a history of soybean seedling blights such as *Phytophthora* root rot, higher rates of metalaxyl or mefenoxam may be required.

If a disease, is fungicide resistance the issue?

Fungicide resistance is one of the first things that may come to mind when a fungicide fails to manage disease. Resistance development is complex and is influenced by fungicide mode of action, pathogen biology, and other factors. The only way to be certain fungicide resistance is the cause is to have pathogens isolated and examined in a lab. Although there are examples of pathogen resistance to fungicides used in seed treatments, fortunately these occurrences are still rare and localized. Therefore, do not immediately assume that the cause of any fungicide failure is due to fungicide resistance. Incorrect application of the seed treatment, a low or reduced rate of the treatment, lack of combining other management strategies with the seed treatment, and cultivar susceptibility all play a role in the success of using seed treatments to manage seedling blights and improve stand establishment.

Can environment compound disease issues?

Environment, variety genetics, and agricultural practices can have a significant impact on fungicide seed treatment efficacy. If the targeted planting date is early or conditions are very cool and wet, seed treatments may not be enough to protect against certain pathogens. Additionally, seed treatments only protect seeds and seedlings for approximately 3 weeks after planting, depending on product and disease. If environmental conditions conducive to disease do not occur until after that time and on a susceptible variety, a farmer may see disease and think the seed treatment is to blame, despite the fact that seed treatments have a limited window of activity.

What else can be done in combination with seed treatments to manage seedling diseases?

Fields with a severe history of seedling blight may need extra management tactics, which should include planting resistant cultivars, improving drainage, reducing compaction, and avoid planting before heavy rains. No one strategy will completely manage a particular seedling blight. Therefore, farmers are encouraged to incorporate an integrated approach to managing seedling blights. For example, by combining tile drainage, genetic resistance, **AND** seed treatments, a farmer may observe better seedling blight management and improved stand establishment compared to using seed treatments alone.

Resources

Information on identification of seedling blights, sampling for seedling diseases, and soybean fungicide efficacy can be found through the Crop Protection Network (www.cropprotectionnetwork.org), the Soybean Research and Information Initiative (<http://soybeanresearchinfo.com/resourcelibrary.html>), and the Grain Farmers of Ontario (www.gfo.ca).



Authors

By Kiersten Wise, Purdue University; Daren Mueller, Iowa State University; Carl Bradley, University of Kentucky; Martin Chilvers, Michigan State University; Anna Freije, Purdue University; Loren Giesler, University of Nebraska-Lincoln; Adam Sisson, Iowa State University; Damon Smith, University of Wisconsin-Madison; and Albert Tenuta, Ontario Ministry of Agriculture, Food and Rural Affairs. All photos were provided by and are the property of the authors.

Reviewers: Emmanuel Byamukama, South Dakota State University; Anne Dorrance, The Ohio State University; Doug Jardine, Kansas State University; Dean Malvick, University of Minnesota; and Sam Markell, North Dakota State University.

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