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Soybean damping-off and replanting

Abstract

In spring 1998, damping-off caused by *Phytophthora* was a production problem in parts of Iowa, especially southern and some central areas. Many disease questions that I received last spring were related to damping-off. Because most areas in Iowa have had plenty of rain so far this spring, damping off may become a problem. In this article I address two important aspects related to damping-off: identification and replanting.

Keywords

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INTEGRATED CROP MANAGEMENT

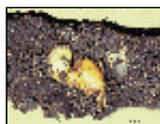
Soybean damping-off and replanting

In spring 1998, damping-off caused by *Phytophthora* was a production problem in parts of Iowa, especially southern and some central areas. Many disease questions that I received last spring were related to damping-off. Because most areas in Iowa have had plenty of rain so far this spring, damping off may become a problem. In this article I address two important aspects related to damping-off: identification and replanting.

Identification

In a wet season, damping-off is more likely to be caused by two fungi, *Pythium* and *Phytophthora*. For early-planted soybeans, the causal agent of damping-off is *Pythium* because this fungus prefers cold soil temperatures. The fungus can cause seed rot, resulting in preemergence damping-off. After emergence, dead seedlings may be visible on the ground with infected plants killed before the first trifoliar stage. The infected plants often have a rotted appearance. Leaves of infected seedlings initially appear gray-green and then turn brown. A few days later, the plants die. Diseased plants are easily pulled from the soil because of rotted roots.

In contrast to *Pythium*, the *Phytophthora* fungus prefers warm soil (about 80°F) and *Phytophthora* damping-off is more likely to occur in soybeans planted in late May and early June. The symptoms of *Phytophthora* damping-off are very similar to those of *Pythium* damping-off. Besides seedling damage, the fungus also causes root rot in advanced growth stages because symptoms continue to develop on the soybean stem, resulting in chocolate-brown discoloration. In the past 2 years, the disease was frequently reported in varieties that did not have resistance genes, especially food beans in southern areas of Iowa.



[1] Seed rot caused by *Phytophthora*.



[2] Soybean damping-off.

One thing to keep in mind in crop scouting is that the stand count from a field visit may not be the final stand count. Seedlings may continue to die after your visit, depending on the weather and the level of resistance of a variety. If a *Phytophthora*-tolerant variety is used, the plants could develop tolerance and further stand reduction would not be a concern. For susceptible varieties, however, the fungus may continue to kill plants when weather

conditions are favorable.

Replanting

A replanting decision is an agronomic one and should be made based on potential yield. If stand reduction is caused by fungal diseases, two plant-pathology-related points should be considered when a replanting decision is made. The first point is to switch to a *Phytophthora*-resistant variety if the option is available. Stand reduction could occur again if a susceptible cultivar is replanted. Last spring, ISU field crop specialist Mark Carlton reported that in a field that was replanted with two different varieties, the half with a 1k-gene resistant variety had a perfect stand, whereas the other half with a nonresistant variety had to be replanted a second time. So choose a variety with the 1k-gene if possible.

The second point to consider is to use seed treatments. If damping-off is caused by *Phytophthora* or *Pythium*, treatments with fungicide having Apron will be effective when a resistant variety is not available, such as most cultivars for tofu soybeans. For effective protection, good coverage of the fungicide on the seed coat is critical. Seed treatment without good coverage may give poor protection, as was observed last year on several farms.

It has been suggested in the past to use tillage before replanting if damping-off in a no-till field is caused by *Phytophthora*. My observations indicate that tillage before replanting may not improve stand establishment, perhaps because the amount of fungus in the soil has built up so high that tillage would not reduce the fungus sufficiently. The most effective measure is to use seed treatment and switch to a resistant variety.

Finally, if you have not planted your soybeans yet and are going to plant them in fields that have had severe damping-off in the past 2 years, using fungicide treatments to treat the seed is a consideration. Information on seed treatment can be found in the [April 12 issue](#) [3] of the ICM newsletter.

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[1] <http://www.ipm.iastate.edu/ipm/icm//iseedrotp.html>

[2] <http://www.ipm.iastate.edu/ipm/icm//idampoff.html>

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