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Scouting seedling diseases and making replanting decisions

Xiao-Bing Yang

Iowa State University, xbyang@iastate.edu

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Scouting seedling diseases and making replanting decisions

Abstract

This year's planting season had an abundance of rainy days and as a result, many Iowa soybean fields are wet with water pools. The season is ideal for soybean seedling damping off, a disease familiar to producers. With this amount of rain, the first two weeks of June should be the time to find seedling diseases if they occur in your soybean fields. In our fungicide treatment experiments, we already have seen great differences in stand counts between treated and untreated control. Producers who did not treat soybean seeds may experience some damping off and may want to begin scouting for soybean seedling disease. Seed treatment may be needed for replanting if damping off is the cause of reduction. Proper identification of seedling disease also is essential in correcting the problems in the future.

Keywords

Plant Pathology

Disciplines

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Scouting seedling diseases and making replanting decisions

by X. B. Yang, Department of Plant Pathology

This year's planting season had an abundance of rainy days and as a result, many Iowa soybean fields are wet with water pools. The season is ideal for soybean seedling damping off, a disease familiar to producers. With this amount of rain, the first two weeks of June should be the time to find seedling diseases if they occur in your soybean fields. In our fungicide treatment experiments, we already have seen great differences in stand counts between treated and untreated control. Producers who did not treat soybean seeds may experience some damping off and may want to begin scouting for soybean seedling disease. Seed treatment may be needed for replanting if damping off is the cause of reduction. Proper identification of seedling disease also is essential in correcting the problems in the future.

There are more soybean producers treating seeds than before. Producers who treated seeds with fungicide before planting or bought treated seeds made the right decision. Producers who planted treated seeds should have fewer stand reduction problems this season. However, it may still be worth your time to scout seedling diseases. Some fungicides may not be effective in stopping certain diseases. Scouting will help determine the effectiveness of the fungicide used. If not effective, the disease in your field may not be on the fungicide list that you selected. Collect the diseased plants and have them identified with the assistance of agronomists, then use the information to select a fungicide for the next soybean crop.

During this season, if found, three fungi should be the major causes of damping off: *Phytophthora*, *Pythium*, and *Rhizoctonia*. Blight seedling by *Rhizoctonia* normally appears as the weather becomes warm and more often is found in soils with high content of sand, such as river bottom fields. Seedling stem discoloration by *Rhizoctonia* is usually limited to the cortical layer of the main root and hypocotyl. Infected stems remain firm and dry. Typical symptoms are localized brown to reddish brown lesions on the hypocotyl and lower stem that do not extend above the soil line. The reddish brown color is a good symptom to aid in diagnosing the disease. *Fusarium* infection also causes reddish stem or root. Seedling disease by *Fusarium* has been a minor problem.

Seedling damping off by *Phytophthora* or *Pythium* can occur either before or after soybean emergence. When seed fails to emerge because of fungal attack, seed rot or preemergence damping off can occur. *Pythium* and *Phytophthora* are two fungi causing

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preemergence damping off in Iowa. When the fungi attack the seed before germination, seed rot occurs. Seed dead before germination will be soft and rotted with soil adhering to it. If infection occurs after germination, seed may fail to emerge and dead plants have a short and discolored root. If plants are killed at the seedling stage (after emergence), the disease is called seedling blight or post-emergence damping off. Diseased plants may stand singly or in small circular groups, particularly in low spots in the field, or they may occur scattered over an entire field.

Symptoms of seedling blight by *Pythium* is very similar to that by *Phytophthora*. One normally cannot separate the two without further laboratory tests. If seed treatments are used, there is no need distinguish them as fungicides effective to one also will be effective to the other. However, soybeans are bred for resistance only to *Phytophthora*, not to *Pythium*. To growers who use resistance as a means to control damping off, identifying *Phytophthora* is critical.

When seedling blight occurs, dead seedlings are visible on the ground. Infected plants dead before true leaf stage will have a rotted appearance. If leaves are present, leaves of infected seedlings first will have a gray-green color before turning brown. A few days later, the plants die and give a rotted appearance. Diseased plants are easily pulled from the soil because of rotted roots. Seedling blight by *Phytophthora* can be differentiated from *Pythium* after V2 growth stage or later. Plants infected by *Phytophthora* have a brown discoloration extending from root up the stem. Soybeans planted in cold, wet soil are most likely to be attacked by *Pythium*. If disease occurs in warm conditions, it is more likely caused by *Phytophthora*. In this planting season, both *Pythium* and *Phytophthora* can be active.

X. B. Yang is a professor of plant pathology with research and extension responsibilities in crop diseases.

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