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Will 2008 be the "Perfect Storm" for Soybean Seedling Disease?

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Abstract

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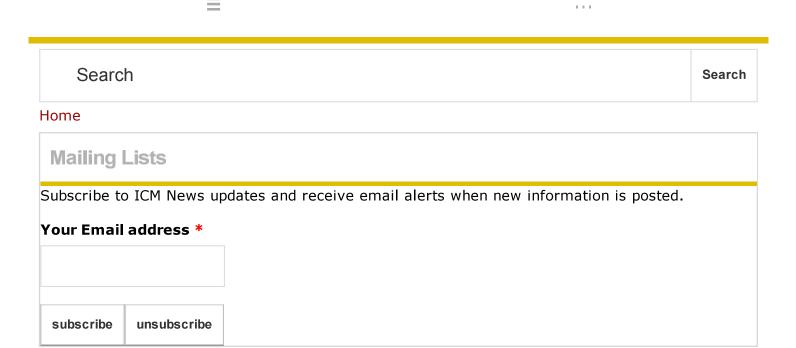
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Will 2008 be the "Perfect Storm" for Soybean Seedling Disease?

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There have been several reports in the press about poor soybean seed quality for this growing season. Seed quality is a problem for many companies this year but all are doing everything they can do to ensure we have the best quality seed possible. In Iowa, however, seed quality issues are minor compared to the south.

Seed quality

Seed companies usually sell high quality seed but this year the standard will be lower for some varieties for a number of reasons;

- demand for soybean seed is high this season due to low supply because seed from some production fields was rejected because of low quality and an increased in soybean acres this year;

- a high prevalence of seedborne fungal infection; and

- lower germination as a result of mechanical damage due to thinner and cracked seed coats.

In Iowa, the lower germination rates have mostly been attributed to mostly to fungal infection. Seedborne fungal infection can result in seedling disease under the right environmental conditions and some seed treatments are effective against these seedborne fungi.

Seedling disease

Several fungi are able to infect germinating seed and cause damping off on soybean. Most of these fungi are soilborne, e.g., *Phytophthora sojae, Pythium, Rhizoctonia* and *Fusarium* spp, however there are seedborne fungi, e.g., *Phomopsis,* which also can affect germination and cause damping off. Each pathogen is favored by slightly different environmental conditions at and soon after planting. Very, wet conditions are required for infection by *Phytophthora* and *Pythium*, where as infections by *Rhizoctonia* and *Fusarium* are favored by drier soil conditions. Soil temperatures also are important: *Pythium* prefers cool soils (<60 degrees F), while *Phytophthora* prefers warmer soils (65 – 75 degrees F) and *Rhizoctonia* prefers even warmer soils (>75 degrees F).

Seedling diseases of corn result in reduced plant stand, poor plant vigor and consequently lower yields. In contrast, however, a reduced stand of soybean does not always result in a lower yield. If the germination is lower than the "typical" 90 percent we will need to be sure to adjust and increase our seeding rate to account for this difference. The problem is however, that even though we adjust the seeding rate to take into account lower germination (as confirmed in a seed testing laboratory), we never really know how the seeds will perform under field conditions.

Fungicide seed treatments

Fungicide seed treatments can be effective in preventing or reducing damage from pathogens that may be carried in/on the seed or pathogens present in the soil that cause seed decay, seedling blights and root rots of soybeans. However, not all seed treatment fungicides are equally effective against all fungal pathogens. Products that contain the active ingredients metalaxyl or mefenoxam, e.g. Allegiance, and Apron XL are effective against *Pythium* and *Phytophthora.* Other active ingredients, e.g., azoxystrobin, captan, carboxin, fludioxonil, PCNB, thiram and thiabendazaole are effective against *Fusarium, Phomopsis* and *Rhizoctonia.* Usually choice of a fungicide seed treatment will depend on knowledge of what disease problems are prevalent in a particular field. Combination seed

treatments are available, and can be used when this information is not available.

With the wet and cool soil conditions that many growers are facing this year the risk is high for seedling blight caused by *Pythium* in addition to damping off caused by seedborne *Phomopsis*. Remember however, fungicide seed treatments will not improve germination of seed that has poor quality and lower germination as a result of mechanical damage because of a thin seed coat, cracked seed coat and other physiological factors.
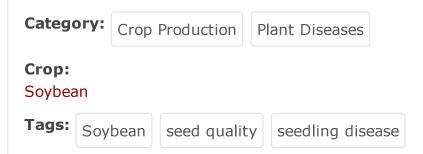
There have been rumors that germination rates are further lowered if low quality seed is treated in advance. Some rumors have even suggested we should not be treating seed because potential mechanical damage from the treating process also may lower germination. We do not know of any independent data to support these claims. If you plan to treat your seed, do it when time allows and handle all seed carefully, particularly if they have thin seed coats and are fragile.

Be patient when it comes to planting

Since the germination levels in some seed lots is below the "normal" 90 percent, it is imperative that we get a good stand the first time around, and avoid replanting since that will lower yield potential due to delayed planting, and also, we may have to replant with seed that may be of even worse quality. The key thing this year is to communicate fully with your seed company and your agronomist and know the condition of your seed. This year, everybody should read the seed tag and know the percent germination of their seed. Since there are large differences among seedlots, each bag or unit should be checked.

Based on the condition of available seed and the cold wet start to the growing season, it appears that we may have the "perfect storm" regarding soybean seedling disease. The bottom line: Be patient. Do not get stressed out with the current weather pattern and soil conditions. Plant only when soil conditions are suitable. A seed treatment will likely be a good investment this year.

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fingicide seed treatments

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