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Corn seedling diseases causing problems

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Abstract
As producers squeezed in their corn planting between storms this spring, corn seeds experienced very wet conditions in many cases, and emergence problems are being reported widely by extension field specialists and seed company agronomists. The Plant Disease Clinic also has received several samples of corn seedlings with disease problems. The stand problems are generally worse in the southern part of the state, except in local areas where heavy rain washed out fields or caused flooding. Iowa Agricultural Statistics reported on June 1 that 6 percent of the corn acreage will be replanted due to disease, flooding, or crusting and I expect this number will ultimately be even higher.

Keywords
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As producers squeezed in their corn planting between storms this spring, corn seeds experienced very wet conditions in many cases, and emergence problems are being reported widely by extension field specialists and seed company agronomists. The Plant Disease Clinic [1] also has received several samples of corn seedlings with disease problems. The stand problems are generally worse in the southern part of the state, except in local areas where heavy rain washed out fields or caused flooding. Iowa Agricultural Statistics reported on June 1 that 6 percent of the corn acreage will be replanted due to disease, flooding, or crusting and I expect this number will ultimately be even higher. Six percent does not sound like a big number but it is well above average. And many poor stands with seedling disease will be kept because of the late date.

Anthracnose leaf blight on corn.

[2]

Darkened roots and lesion on mesocotyl due to fungal infection.

[3]

Poor seedling health due to fungal infection of roots; healthy seedling on the left.

[4]

Pythium and Fusarium are the most common fungi associated with seed rot and seedling blight of corn. The wet soils have been particularly favorable for Pythium this spring. Several species of Pythium can rot the seed prior to germination or attack the young seedling before or after emergence. When these seedlings are examined, dark, slimy lesions can be found on the roots or mesocotyl. Fusarium symptoms tend to be tan-to-reddish brown lesions that cause the root or mesocotyl to shrivel. Rhizoctonia can cause distinct sunken, reddish brown lesions. Other fungi such as Penicillium, Colletotrichum, and Diplodia also are common seedling pathogens. Any of these fungi can cause a general darkening and reduction in size of the young root system. It is very difficult or impossible to identify these different fungi in the field because their symptoms are very similar and more than one can be found on the same plant. Anthracnose leaf blight (Colletotrichum graminicola) frequently accompanies other seedling diseases and contributes to the death of a plant by killing off what little leaf tissue that it has left. This fungus causes brown or tan oval leaf lesions with a dark brown border.
Laboratory identification is needed to pin down the specific fungi involved, but the management practices differ very little among fungi.

The important thing is to determine whether the problem is related to a disease or some other cause. Above ground, the symptoms of seedling diseases are a failure to emerge or emergence of plants with poor color, slow growth, and wilting and withering of the leaves, followed by collapse of the plant. The symptoms will be worse in areas that are wet, compacted, or have heavier soil. Symptoms may be on scattered plants or in small-to-large patches. Of course, other pests and problems may mimic these symptoms, so it is important to dig up seedlings and examine them for the symptoms described above or for symptoms of herbicide injury or insect feeding.

At this point, management of affected fields is mainly a decision whether to replant or not. At this late date, replanted corn will yield less than two-thirds of an equivalent stand planted before May 10. The decision depends on how bad the remaining stand is and whether replanting with soybeans is an alternative. Seedling diseases can have lingering effects because height of infected but surviving plants is uneven, resulting in reduced yields. Unfortunately, this effect is difficult to quantify for the replant decision. It is essentially too late to worry about corn seedling disease management practices, described in the March 22 ICM newsletter [5]. One practice that can help at this stage is careful cultivation to promote nodal root development and to dry the surface soil.

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