Manage soybean diseases with planting

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Manage soybean diseases with planting

Abstract
Unlike the weather in recent years, this spring has been wet so far. There is a lot of moisture in the soil, which affects corn and soybean planting. Soybean diseases are affected by planting dates and planting conditions. Early or delayed planting may increase, reduce, or not affect a soybean disease, depending on when the disease infects soybean and soil conditions after planting. The table below summarizes how planting dates may affect major Iowa soybean diseases. Knowing this information can help you make planting decisions and anticipate what to look for during crop scouting.

Keywords
Plant Pathology

Disciplines
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Manage soybean diseases with planting

by X. B. Yang, Department of Plant Pathology

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The table below summarizes how planting dates may affect major Iowa soybean diseases. Knowing this information can help you make planting decisions and anticipate what to look for during crop scouting.

If you have experienced soybean diseases in your fields in the past, this table may be useful to avoid future disease problems.

Reduced risk by later planting

For diseases in which infection occurs at the seedling stage, planting dates directly affect disease risk. Sudden death syndrome (SDS) caused by *Fusarium solani* and seedling blight caused by *Pythium* require cold soil temperatures when soybeans are in the seedling stage. Therefore, soybeans will have a higher risk of the two diseases if planted early in cool, wet soils. If these diseases were severe in the past, delay planting until the soil warms up to reduce disease risk significantly.

In Iowa, severe SDS is more likely to be found in early-planted soybean fields than in late-planted fields. Be aware that the fungi will not cause much damage if soil moisture is not excessive. When spring conditions are not unusually wet, diseases may not be a concern.

Reduced risk by early planting

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Reduced risk by early planting

Contrary to *Pythium* damping off and SDS, seedling blight by *Rhizoctonia* and *Phytophthora* may be reduced by early planting because optimum conditions for infections by the two fungi are warm soil temperatures. If planted early, soybeans may grow out the susceptible seedling stage and escape damping off.

No effects

Some diseases—bacterial blight, brown spots, and stem canker—are not affected by
planting dates because infections of these disease do not have critical stages.

**Indirect effects**

Planting date also indirectly affects occurrence of white mold, pod and stem blight, and brown stem rot. Infections of the first two diseases do not occur in seedling stages, but there is a certain window of time during which soybeans are susceptible to these pathogens. Soybeans planted at different times in the spring will reach a disease-susceptible stage at different times in the summer--some early, some later. A planting whose window of susceptible stages overlaps with disease-favorable weather conditions will have higher risk of developing disease than a planting whose window misses the disease-favorable weather. For example, in 1996, more white mold was observed in late-planted soybeans because the cool, wet weather came late in the season. Similarly, the susceptible growth stage for pod and stem blight is in the pod-setting stage, and favorable weather during this growth stage affects the level of this disease.

**Seed treatment**

This spring appears not to lead a dry planting season. If weather forecasts favor wet weather, use of seed treatments with fungicides in the grounds that had seedling diseases in the past could be beneficial. If you experienced damping off by *Phytophthora, Pythium*, or *Rhizoctonia* for a particular ground that is to be planted, consider use of treated seeds.

Research has shown that early planting increases the possibility of achieving maximum yield and that the level of success decreases as planting is delayed. Because of narrow planting windows for high yield, especially in northern Iowa, one should not hold back the planting date just for fear of diseases. Knowing your grounds is the key. For instance, if you farm a large acreage and have fields that have disease problems, arranging planting order works in reducing disease risk. For example, if you have six fields and one of them had SDS in the past, you can reduce its risk by designing a planting route with the problematic field planted last and choosing a tolerant variety.

**Effects of planting date on soybean diseases for fields where disease is a concern.**

<table>
<thead>
<tr>
<th>Disease</th>
<th>Conditions for Infection</th>
<th>Growth Stage for Infection</th>
<th>Planting Date Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Damping off by Pythium</td>
<td>Cool and wet soil</td>
<td>Before V2</td>
<td>Later planting reduces risk</td>
</tr>
<tr>
<td>Damping off by Rhizoctonia</td>
<td>Wet and warm soil</td>
<td>Before V2</td>
<td>Early planting may reduce the problem</td>
</tr>
<tr>
<td>Damping off by Phytophthora</td>
<td>Wet soil</td>
<td>Seedling stage</td>
<td>Early planting may reduce the problem</td>
</tr>
<tr>
<td>Sudden death syndrome</td>
<td>Cool and wet soil at planting</td>
<td>Early seedling stage</td>
<td>Later planting reduces risk</td>
</tr>
<tr>
<td>Brown stem rot</td>
<td>Cool and wet weather during the season</td>
<td>All vegetative growth stages</td>
<td>Varies; often more severe in late, mature soybeans</td>
</tr>
<tr>
<td>White mold</td>
<td>Cool and wet at and after flowering</td>
<td>Flowering stage</td>
<td>Varies with weather in flowering stage</td>
</tr>
<tr>
<td>Pod and stem</td>
<td>Cool and wet</td>
<td></td>
<td>Varies with weather during pod</td>
</tr>
<tr>
<td>Disease</td>
<td>Conditions</td>
<td>Stage</td>
<td>Risk Factor</td>
</tr>
<tr>
<td>-------------------------</td>
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<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Foliar diseases</td>
<td>Above normal rains after July</td>
<td>Reproductive stages</td>
<td>Higher risk in later planted and late MG varieties</td>
</tr>
<tr>
<td>Bean pod mottle virus</td>
<td>Warm and dry season</td>
<td>All season</td>
<td>Later planting reduces risk</td>
</tr>
</tbody>
</table>

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