Soybean Cyst Nematode in Wisconsin

- Distribution
- Thresholds for Planting a Resistant Variety
- Impact of host resistance on SCN

SCN in Wisconsin
Approximately 20% of the soybean acreage in Wisconsin is infested with Soybean Cyst Nematode (SCN). The SCN has been detected from 26 counties to date.

Counties infested:
- Adams
- Buffalo
- Chippewa
- Columbia
- Crawford
- Dane
- Dodge
- Dunn
- Eau Claire
- Grant
- Jefferson
- Juneau
- Kenosha
- La Crosse
- Marquette
- Milwaukee
- Outagamie
- Pepin
- Racine
- Rock
- Sauk
- Sheboygan
- Trempealeau
- Walworth
- Washington
- Waushara
Only a soil test will reveal the SCN-disease potential of a site.
Manage SCN using

**Rotation**

SCN does not infect all plants. Without a host to feed on, the nematode population will decline.

**Resistant Varieties**

Nematodes infect resistant varieties but relatively few nematodes mature and reproduce.
Racine Field No. 2 – 2000

Pi = 905

Average yield gain of resistant variety = 25 bu/A $\ (P = 0.01)$

![Graph showing the relationship between SCN Pi and yield for SCN-resistant and SCN-susceptible varieties. The graph includes a legend indicating that open triangles represent SCN-resistant (white) and solid squares represent SCN-susceptible (black) varieties. The x-axis represents Pi (eggs/100 cm$^3$ soil) ranging from 0 to 3000, and the y-axis represents yield (bu/a) ranging from 0 to 90.]
Racine No. 3 - 2001

Pi = 1179

Average yield gain of resistant variety
= 24 bu/A (P = 0.10)
Marquette West - 2001
SCN-susceptible variety planted
Average yield difference between infested versus “noninfested” areas = 7 bu/A (P = 0.10)
Racine No 2 - 2000

SCN eggs
Per 100 cm³ soil
Green = $1 - 1000$
Red = $> 1000$

Spring
At-Plant

Fall
After Harvest
Res./Sus.
The response of SCN populations to management varies among fields

Fate of SCN population during the soybean year (based on 22 data sets from 1999-2000)

**Susceptible variety** (n=10)  **Resistant variety** (n=12)
2 fields remained same 7 fields decreased
8 fields increased 2 fields remained same

3 fields increased
Rotating with a nonhost crop helps lower SCN population densities (change from May 1999 to May 2001 including one year of a nonhost crop)
Nematode populations change in response to resistant varieties…….

Data from a 5-year experiment at the Hancock Research Station

<table>
<thead>
<tr>
<th>Rotation</th>
<th>Pi (eggs/100 cm³ soil)</th>
<th>Yield (bu/A)</th>
</tr>
</thead>
<tbody>
<tr>
<td>PI 88788</td>
<td>1231</td>
<td>31.8</td>
</tr>
<tr>
<td>PI 88788 / susceptible</td>
<td>6930</td>
<td>31.2</td>
</tr>
<tr>
<td>PI 88788 / PI 209.332</td>
<td>1813</td>
<td>36.1</td>
</tr>
</tbody>
</table>
Rotating sources of SCN resistance and including a susceptible variety when population densities fall below 500 eggs per 100 cm$^3$ soil will help prolong the lifespan of resistant varieties.

BUT don’t forget about other diseases.....
Summary

• SCN-infested acreage increasing in WI
• Soil testing identifies disease potential
• Substantial (> 20 bu/A) yield advantage in planting an SCN-resistant variety when Pi > 1000
• Some yield advantage when Pi > 500
Summary

• SCN populations usually decline when a resistant variety is planted, but
• SCN does infect resistant varieties and some live to reproduce and to pass this ability on to their offspring
• Choose varieties and rotations appropriate to the disease potential of each field
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