Southern rust in Corn – Midwest

Southern corn rust, like common corn rust, may appear in the Midwestern region. It is a fungal disease and affects corn after silking. Weather conditions can have a significant impact on the development and spread of the disease. Late infection with southern rust may not impact yield directly but can provide an avenue for stalk rot pathogens to enter the plant. It is important to monitor infected fields for stalk rot issues and decide on a harvest schedule accordingly.

Pathogen Life Cycle
Southern rust is caused by the fungus *Puccinia polysora*. The pathogen does not overwinter in the Midwest (Corn Belt), but does overwinter in the southern United States and Mexico and can be transported each year north to the Corn Belt in early summer. Disease occurrence is dependent upon wind dispersal of the pathogen, thus infection this year does not indicate southern rust will occur next year. You should not discount a corn product if it has been infected by the disease this year, as the disease may not show up again for many years.

Favorable Conditions
Southern corn rust development is favored by high humidity and temperatures between 80° and 90° F. New infections under the favorable conditions have the ability to occur every seven days. Corn products differ in their susceptibility to the disease.

Symptoms
Typically, the disease develops pustules (lesions) on the upper surface of corn leaf, and only sparsely on the lower leaf surface. The pustules are circular to oval in shape and orange to brown in color (see page 2). These pustules are small and in clusters when they erupt, spores will be dispersed by the wind and may cause another cycle of infection.

Lesions may develop also on stalk, husk, and leaf sheath tissues. As the level of infection increases and leaves are covered by the pustules, plants senesce early and look like they should be harvested because the disease has killed the plant tissues.

Arrival Timing Impacts Corn
Southern rust has the potential to cause yield loss, because of its ability to develop rapidly. Impacts of the diseases on corn plant health depend on time of the arrival. Early infected plants that have significantly damaged leaf tissues are also vulnerable to premature stalk lodging and reduction in grain quality. For example, the last significant outbreak of southern rust in Nebraska came via a July storm. This occurrence had a much greater impact on grain fill, test weight, and yield potential than the year the disease arrived early August. Grain was nearly developed and moisture levels were reduced, so late arrival had lesser impact on yield but stalk quality became the main issue.

Harvest Concerns
Because southern rust may lead to stalk rot infections, fields should be scouted for lodging and stalk quality before harvest. Assess the extent of stalk lodging by squeezing or pinching each stalk above a couple of nodes. Another way to check for a potential stalk lodging is to take 10 plants in a row and push each stalk 45 degrees from upright. If more than 10% of the stalks lodge, using either evaluation method, then the field should be slated for early harvest.

Plants damaged by diseases or insects will likely not remain standing until the normal harvest period. Therefore, preparations need to be taken to harvest problem fields early. Although high grain drying costs may be a concern when harvesting wet grain, this expense will likely be a...
Southern Rust in Corn - Midwest

better option compared to the loss of yield due to increased lodging later in the fall.

Management

Resistant varieties are the most cost-effective means to manage the disease in corn field.

Chemical control may be warranted if the weather forecast is for hot, wet, and humid conditions, pustules are present, and black layer is four or more weeks away. However, consider the followings before applying a fungicide:

- Corn that is within two weeks from physical maturity (black layer) may not benefit from a fungicide treatment.
- Fungicide treatment for corn with estimated yield potential of less than 150 bushels per acre may not provide a profitable return.
- Spraying may increase yield if more than 10% of the leaf area is damaged.

Please consult with your local agronomist if you have concerns about southern rust in your fields. Also, consult university recommendations for fungicide application timing.

Sources:

### Differences Between Southern Rust and Common Rust

<table>
<thead>
<tr>
<th></th>
<th>Southern rust</th>
<th>Common rust</th>
</tr>
</thead>
<tbody>
<tr>
<td>Development</td>
<td>Rapid and more destructive</td>
<td>Slow and less destructive</td>
</tr>
<tr>
<td>Location of pustules</td>
<td>Mostly on upper leaf surface</td>
<td>On upper and lower leaf surfaces</td>
</tr>
<tr>
<td>Fungus</td>
<td><em>Puccinia polysora</em></td>
<td><em>Puccinia sorghi</em></td>
</tr>
<tr>
<td>Favorable conditions</td>
<td>80° to 90° F and high humidity</td>
<td>60° to 75° F and RH ≥ 95%</td>
</tr>
</tbody>
</table>

Individual results may vary, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible. ALWAYS READ AND FOLLOW PESTICIDE LABEL DIRECTIONS. Technology Development by Monsanto and Design(SM) is a servicemark of Monsanto Technology LLC. ©2010 Monsanto Company. 06242010SMK