

## Southern Rust of Corn

- Southern corn rust is a fungal disease that generally affects corn after silking.
- Weather conditions can have a significant affect on when southern rust develops and how far and quickly the disease spreads.
- Yield loss can be severe, especially in late-planted corn.

### Life Cycle

Southern rust is caused by the fungus *Puccinia polysora* and generally occurs in tropical to sub-tropical areas. Under favorable conditions, the disease can thrive in temperate regions. The pathogen overwinters in southern Florida, the Caribbean, and Mexico and is transported north each year by winds and storms. Like common rust, southern rust requires a live host to survive. Disease occurrence is dependent upon wind dispersal of the pathogen, thus infection one year does not indicate that southern rust will occur the following year.

### Favorable Conditions

Disease development is favored by high humidity and temperatures between 80° and 90° F. Under favorable conditions, new infections are visible in about 10 to 14 days.<sup>1</sup> Epidemics may occur when unusual weather patterns lead to mass air movements from the tropics, where southern rust is endemic.

### Symptoms

Pustules develop primarily on the upper surface of leaves and only sparsely on the lower leaf surface (Figure 1). Pustules are circular to oval in shape and light orange in color. These pustules erupt and expose small, dust-like, golden colored spores, which are dispersed by wind. Unlike common rust, pustules may also develop on stalk, husk, and leaf sheath tissues.

### Effect on Yield Potential

Southern rust has the potential to cause yield loss due to its ability to develop and spread rapidly. The effect of the disease on corn plant health and yield depends on time of infection. Plants infected early in the season may develop significantly damaged leaf tissue. Heavy infections of



Figure 1. Southern rust pustules covering leaves.

southern rust can lead to early senescence and can limit the ability of the plant to produce carbohydrates for grain fill. This leads to stalk cannibalization and may predispose the plant to stalk lodging, stalk rots, and reduced grain quality.

If southern rust is identified, growers in the region should first focus their scouting efforts on irrigated, late-planted fields or low-lying fields, such as river bottoms, that are prone to moist conditions. Irrigated or river bottom fields are more likely to have the high humidity required by southern rust to infect corn. Late-planted fields are at risk for developing more severe infections of southern rust because young leaves are more susceptible than older leaves. When scouting for southern rust, determine the growth stage and yield potential to help evaluate whether or not fungicide applications are an economically feasible option.

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## Management Options

**Resistant varieties** are the most cost-effective means to manage southern rust in field corn.

**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 following before applying a fungicide<sup>2</sup>:

- 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.

- Fungicide control is preventative rather than curative.

Fungicides can not restore the health of infected leaf tissues, but they can prevent new tissues from becoming infected. Thus, applications must be made before southern rust develops to severe levels.

Headline AMP<sup>®</sup> fungicide, is effective at helping to prevent the spread of southern rust in corn and providing residual protection from other major foliar diseases.

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

### Sources:

<sup>1</sup>Robertson, A. 2007. Outbreak of southern rust on corn. Integrated Crop Management. IC-498(23). Iowa State University. <http://www.ipm.iastate.edu> (Verified 6/23/14).  
<sup>2</sup>Koenning, S. 2005. Southern rust for corn. Corn Disease Information Note 2. North Carolina State University. <http://www.ces.ncsu.edu> (Verified 6/23/14).  
Additional sources: Jackson, T. 2007. Rust diseases of corn in Nebraska. NebGuide G1680. University of Nebraska. <http://www.ianpubs.unl.edu> (Verified 6/23/14).  
Lipps, P. et al. Common corn rust. Fact Sheet AC-0031-01. The Ohio State University. <http://ohioline.osu.edu> (Verified 6/23/14).  
Pataky, S. Differentiating common rust and southern rust. Plant Management Network.

**Table 1. Differences between southern rust and common rust.**

	Southern Rust	Common Rust
<b>Development</b>	Rapid and more destructive	Slow and less destructive
<b>Location of pustules</b>	Mostly on upper leaf surface	On upper and lower leaf surfaces
<b>Fungus</b>	<i>Puccinia polysora</i>	<i>Puccinia sorghi</i>
<b>Favorable conditions</b>	80° to 90° F and high humidity	60° to 77° F and RH ≥ 95%
<b>Pustules (lesions)</b>	Small Densely clustered Circular to oval shape Light orange in color	Large Sparsely scattered Elongated shape Brick red in color
		

For additional agronomic information, please contact your local seed representative.

**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.** Leaf Design<sup>®</sup> is a registered trademark of Monsanto Company. Headline AMP<sup>®</sup> is a registered trademark of BASF Corporation. All other trademarks are the property of their respective owners.  
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