2008 Corn Foliar Fungicides Application Timing Trial

South Central Ag Lab
Clay Center, NE

Tamra Jackson
Extension Plant Pathologist
University of Nebraska-Lincoln
Disease Notes

Gray Leaf Spot

- Gray leaf spot (GLS) was the predominant foliar disease in this trial
- Lesions started on the lowest leaves and progressed up the plant
- Gray leaf spot reached the tassel leaf by harvest in most plots
Disease Notes

Common Rust

• Common rust developed at low severity (<8%) in this trial

• In general, common rust was more severe than normal in Nebraska in 2008, likely due to the ample moisture and cooler than normal temperatures.
Southern Rust

- Southern rust developed in Nebraska in 2008 for the third consecutive year.
- The disease developed at very low incidence and severity (<3%) in this trial and surrounding areas, likely because of the cooler than normal temperatures.
• Late season onset of some foliar diseases of corn during recent years, particularly southern rust during August 2006 and 2007, led to questions regarding the importance of fungicide application timing and the potential benefits of later season applications.

• This trial was initiated in response to these questions to evaluate disease control and yield benefits of foliar fungicides applied after tasseling.
2008 Foliar Fungicide Timing Trial

- Applied with high clearance sprayer
- 20 gallons per acre (gpa)
- Continuous corn
- 2 Planting dates
  - April 30, 2008
  - May 14, 2008
- 2 Hybrids
  - DKC 60-18
    - GLS rating = 7 (fair)
  - DKC 61-69
    - GLS rating = 5 (good)
- 2 Fungicides
  - Headline
  - Stratego
- 6 replicates
- Overhead sprinkler irrigated

South Central Ag Lab, Clay Center, NE
2008 Foliar Fungicide Timing Trial
Data Collection

- Disease severity = % total plot leaf area covered by lesions or rust pustules
- GLS progression recorded as leaf number moving up the plant (1-18)
- Grain was mechanically harvested and adjusted to 15.5% moisture
- Lodged plants per plot (%) estimated at harvest
# 2008 Foliar Fungicide Timing Trial

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2008 Fungicide Timing Trial in NE

Yield (bu/A)

DKC 60-18 (GLS rating = 7/fair)

Planted 4/30/08

Headline

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<thead>
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<th>Application Date</th>
<th>Yield (bu/A)</th>
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<tr>
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Stratego

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<tr>
<td>8/24/08</td>
<td>248</td>
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<td>9/4/08</td>
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</table>

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
Yield (bu/A)
DKC 61-69 (GLS rating = 5/good)
Planted 4/30/08

*No statistical difference were found between treatments according to the Walter-Duncan K-ratio t Test.

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
Yield (bu/A)
DKC 60-18 (GLS rating = 7/fair)
Planted 5/14/08

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE

Yield (bu/A)

DKC 61-69 (GLS rating = 5/good)

Planted 5/14/08

*No statistical difference were found between treatments according to the Walter-Duncan K-ratio t Test.

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE

500 Kernel Weight
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
500 Kernel Weight
DKC 61-69 (GLS rating = 5/good)
Planted 4/30/08

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<tr>
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<td>195</td>
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<tr>
<td>Dough</td>
<td>193</td>
<td>191</td>
</tr>
<tr>
<td>33% Dent</td>
<td>192</td>
<td>195</td>
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<tr>
<td>100% Dent</td>
<td>191</td>
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*No statistical difference were found between treatments.*

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
500 Kernel Weight
DKC 60-18 (GLS rating = 7/fair)
Planted 5/14/08

Headline
Non-treated
Stratego

<table>
<thead>
<tr>
<th>Weight (g)</th>
<th>Tassel 7/24/08</th>
<th>Milk 8/3/08</th>
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<th>33% Dent 8/24/08</th>
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<th>Non-treated</th>
<th>Tassel 7/24/08</th>
<th>Milk 8/3/08</th>
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<td>abcd</td>
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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
500 Kernel Weight
DKC 61-69 (GLS rating = 5/good)
Planted 5/14/08

*No statistical difference were found between treatments.

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Headline in NE
Gray Leaf Spot Disease Severity
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Stratego in NE
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South Central Agricultural Lab near Clay Center, NE
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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Stratego in NE
Gray Leaf Spot Disease Severity
DKC 61-69 (GLS rating = 5/good)
Planted 4/30/08

Application Date

- Silk, 7/24/08
- Milk, 8/3/08
- Dough, 8/18/08
- 33% Dent, 8/24/08
- 100% Dent, 9/4/08
- Non-treated

Severity (% Leaf Area)

South Central Agricultural Lab near Clay Center, NE
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DKC 60-18 (GLS rating = 7/fair)
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South Central Agricultural Lab near Clay Center, NE
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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Stratego in NE
Gray Leaf Spot Disease Severity
DKC 61-69 (GLS rating = 5/good)
Planted 5/14/08

Application Date
- Tassel, 7/24/08
- Milk, 8/3/08
- Dough, 8/18/08
- 25% Dent, 8/24/08
- 100% Dent, 9/4/08

Non-treated

Severities Rated on:
- 7/23 Tassel
- 8/4 Milk
- 8/11 Dough
- 8/26 25% Dent
- 9/16 100% Dent

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial
Gray Leaf Spot Progression
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

- GLS was on tassel leaf of all treatments by 8/26/2008

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial
Gray Leaf Spot Progression
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

Stratego

- GLS was on tassel leaf of all treatments by 8/26/2008
- South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial
Gray Leaf Spot Progression
DKC 61-69 (GLS rating = 5/good)
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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial
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DKC 61-69 (GLS rating = 5/good)
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Stratego

Rated on
- Silk 7/23/08
- Milk 8/4/08
- Dough 8/11/08
- 33% Dent 8/26/08

Application Date
- Silk 7/24/08
- Milk 8/3/08
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- 33% Dent 8/24/08
- 100% Dent 9/4/08
- Non-treated

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South Central Agricultural Lab near Clay Center, NE
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2008 Fungicide Timing Trial
Gray Leaf Spot Disease Progression
DKC 60-18 (GLS rating = 7/fair)
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South Central Agricultural Lab near Clay Center, NE
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Gray Leaf Spot Progression
DKC 61-69 (GLS rating = 5/good)
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*No statistical difference were found between treatments.
South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial
Gray Leaf Spot Progression
DKC 61-69 (GLS rating = 5/good)
Planted 5/14/08

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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Headline in NE
Common Rust Disease Severity
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

Southern rust occurred at low severity (< 4%)
South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Stratego in NE
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DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

Southern rust occurred at low severity (< 4%)
South Central Agricultural Lab near Clay Center, NE
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South Central Agricultural Lab near Clay Center, NE
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DKC 61-69 (GLS rating = 5/good)
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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Headline in NE
Common Rust Disease Severity
DKC 60-18 (GLS rating = 7/fair)
Planted 5/14/08

Southern rust occurred at low severity (< 2%)
South Central Agricultural Lab near Clay Center, NE
Common Rust Disease Severity
DKC 60-18 (GLS rating = 7/fair)
Planted 5/14/08

Southern rust occurred at low severity (< 1%)
South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial-Headline in NE
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South Central Agricultural Lab near Clay Center, NE
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South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
Stay Green % at 100% Dent
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

Headline
Non-treated
Stratego

Green Plant Material (%) vs Application Date

Silk 7/24/08
Milk 8/3/08
Dough 8/18/08
50% Dent 8/24/08
100% Dent 9/4/08

Silk 7/24/08
Milk 8/3/08
Dough 8/18/08
50% Dent 8/24/08
100% Dent 9/4/08

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE

Stay Green % at 100% Dent
DKC 61-69 (GLS rating = 5/good)
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*No statistical difference were found between treatments.

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
Stay Green % at 100% Dent
DKC 60-18 (GLS rating = 7/fair)
Planted 5/14/08

South Central Agricultural Lab near Clay Center, NE
# 2008 Fungicide Timing Trial in NE

**Stay Green % at 100% Dent**

DKC 61-69 (GLS rating = 5/good)

Planted 5/14/08

---

**Application Date**

<table>
<thead>
<tr>
<th></th>
<th>Non-treated</th>
<th>7/24/08</th>
<th>8/3/08</th>
<th>8/18/08</th>
<th>8/24/08</th>
<th>9/4/08</th>
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<tbody>
<tr>
<td><strong>Tassal</strong></td>
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<tr>
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<td></td>
<td></td>
<td></td>
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<tr>
<td><strong>Dough</strong></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>25% Dent</strong></td>
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<td></td>
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<tr>
<td><strong>100% Dent</strong></td>
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*No statistical difference were found between treatments.*

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE
Lodging
DKC 60-18 (GLS rating = 7/fair)
Planted 4/30/08

*No statistical difference were found between treatments.

South Central Agricultural Lab near Clay Center, NE
2008 Fungicide Timing Trial in NE

Lodging
DKC 61-69 (GLS rating = 5/good)
Planted 4/30/08

South Central Agricultural Lab near Clay Center, NE
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Lodging
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South Central Agricultural Lab near Clay Center, NE
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Lodging
DKC 61-69 (GLS rating = 5/good)
Planted 5/14/08

South Central Agricultural Lab near Clay Center, NE
# 2008 Rainfall

Clay Center, NE

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<th>Total Rain (in.)</th>
<th>Avg. High Temp (F)</th>
<th>Avg. Low Temp (F)</th>
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<td>47</td>
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• Does not include irrigation.

*Source used: Nebraska Department of Natural Resources:  [http://dnrdata.dnr.ne.gov/NeRAIN/](http://dnrdata.dnr.ne.gov/NeRAIN/)*
Acknowledgments

• Tamra Jackson, Extension Specialist
• Jae Behn, Research Technologist
• UNL-SCAL Staff and Faculty
  – David Althouse
  – Perry Ridgway
• Mark Hinze
• Julie Breathnach Stevens
• Corn Pathology Lab Staff
2008 Foliar Fungicide Timing Trials

Summary

- Under disease pressure, foliar fungicides applied as late as the dough stage in 2008 were as effective in most treatments at protecting yield as earlier treatments.
- Most treatments receiving fungicides yielded more than the non-treated controls, but not always statistically higher.
- Delaying fungicide applications would likely provide control later in the season, 2-3 weeks beyond tasseling, in case of late season disease onset.