Fungicide Chemigation Trials
2005-2007

UNL South Central Agricultural Lab
Clay Center, NE

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Introduction

Background

• The increased use of foliar fungicides in corn has led to questions regarding the differences between fungicide applications made via chemigation or by ground.

• This trial was initiated in response to these questions and compared pyraclostrobin (Headline®) efficacy when applied by chemigation or ground.
Disease Notes

Gray Leaf Spot

- 2005 – predominant foliar disease at low/moderate severity
- 2006 – minor compared to southern rust and low/moderate severity
- 2007 – predominant foliar disease at moderate severity
Disease Notes

Common Rust

• 2005 – minor disease at low severity
• 2006 – minor compared to southern rust and at low severity
• 2007 – minor disease at low severity
Disease Notes
Southern Rust

• 2005 – not detected
• 2006 – moderate/severe and predominant disease in this trial this year
• 2007 – minor disease at low severity
2005-2007 Chemigation Trials
Important Dates

• Headline® (pyraclostrobin) used in all trials.

• 2007 - Asgrow RX752 RR2/YGPL
  GLS rating 7 (Fair)
  Planted: May 14, 2007
  Application Date: July 20, 2007
  Harvested: October 30, 2007

• 2006 - NC+ 4947 RB
  Planted: May 5, 2006
  Application Date: July 18, 2006
  Harvested: October 13, 2006

• 2005 - Asgrow RX 752 YG
  Planted: April 27, 2005
  Application Date: ???
  Harvested: October 5, 2005
2005-2007 Chemigation Trials
Treatment List

4 TREATMENTS

1. Non-Treated
2. 6 oz Headline at VT with 0.25” chemigation water
3. 6 oz Headline at VT with 0.50” chemigation water
4. 6oz Headline at VT via ground applicatoin + 0.125 v/v NIS

- 3 Reps, 4 Treatments
- 20 (8 rows b/t plots) x 23’ long
- All treatments applied at Tassel (VT)
- The ground application of Headline (treatment 4) was applied with a CO₂-pressurized sprayer and a 10 ft wide hand-held boom with six Hypro Twincap TJ XR11001 nozzles spaced at 20-in. apart and 12-in. above the canopy.
- Spray volume was 15 gal/A at a pressure of 38 psi.
2005-2007 Fungicide Chemigation Trials

- Linear overhead sprinkler irrigated
- Chemigation treatments were injected at nozzle as illustrated with a venturi-type injector
- Ground applications made by backpack sprayer at 38 psi and 15 gpa
- Middle rows harvested for yield
- Plots = 12 rows x 50’
- 3 reps
2005-2007 Fungicide Chemigation Trials
Data Collection

- Disease severity = % total leaf area covered by disease lesions or rust pustules
- Grain mechanically harvested and adjusted to 15.5% moisture
- Stay green measured as % plants green after beginning senescence
- % moisture measured in combine at harvest
- Lodged plants per plot (%) estimated at harvest
Nozzle and Treatment Diagram

Linear System Span

Drop Tubes

10 ft. 150 ft.

Distribution pattern with 2 treatments across the span (CORN)

20 harvest rows

20 harvest rows
Circles are 40 ft. sprinkler wetted area,
2 treatments wide noted by colors,
one sprinkler plugged between treatments.

Blue lines would be harvest rows
2007 Chemigation Trial in NE
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

- High winds (> 90 mph) impacted this location August 23, 2007 causing various degrees of crop injury, including leaf ripping and low incidence of lodging. The third foliar disease rating was completed just prior to the storm.
2005 Chemigation Trial
Yield
Asgrow RX 752 YG
Planted 4/27/05

- All Applications were of 6 oz Headline at VT (Tasseling)
- Non-treated
- 0.25” Chemigation
- 0.50” Chemigation
- Ground Application + 0.125% NIS

South Central Agricultural Lab near Clay Center, NE
2006 Chemigation Trial
Yield
NC+ 4947 RB
Planted 5/5/06

- All Applications were of 6 oz Headline at VT (Tasseling)
- South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial

Yield
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

- Non-treated
  - Yield: 157.93 bu/A

- 0.25” Chemigation
  - Yield: 189.40 bu/A

- 0.50” Chemigation
  - Yield: 180.03 bu/A

- Ground Application + 0.125 NIS
  - Yield: 195.30 bu/A

All Applications were of 6 oz Headline at VT (Tasseling)
South Central Agricultural Lab near Clay Center, NE
2005 Chemigation Trial
500 Kernel Weight
Asgrow RX 752 YG
Planted 4/27/05

- All Applications were of 6 oz Headline at VT (Tasseling)
- South Central Agricultural Lab near Clay Center, NE
2006 Chemigation Trial
500 Kernel Weight
NC+ 4947 RB
Planted 5/5/06

- Non-treated: 176.91 grams
- 0.25" Chemigation: 183.54 grams
- 0.50" Chemigation: 215.73 grams
- Ground Application + 0.125 NIS: 196.1 grams

All Applications were of 6 oz Headline at VT (Tasseling)
South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial
500 Kernel Weight
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

All Applications were of 6 oz Headline at VT (Tasseling)
South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial
Grey Leaf Spot
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

All Applications were of 6 oz Headline at VT (Tasseling)
South Central Agricultural Lab near Clay Center, NE
2005 Chemigation Trial
Grey Leaf Spot
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 4/27/05

- All Applications were of 6 oz Headline at VT (Tasseling)
- South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial
Common Rust
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

- All Applications were of 6 oz Headline at VT (Tasseling)
- Southern rust occurred at low severity (< 2%)

South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial
Stay Green
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

- All Applications were of 6 oz Headline at VT (Tasseling)
- South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial
Lodging
Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

- All Applications were of 6 oz Headline at VT (Tasseling)
- South Central Agricultural Lab near Clay Center, NE
2007 Chemigation Trial

Moisture Percentage

Asgrow RX752 RR2/YGPL (GLS rating 7/Fair)
Planted 5/14/07

- All Applications were of 6 oz Headline at VT (Tasseling)
  South Central Agricultural Lab near Clay Center, NE
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