Influence of Variety Tolerance, Application Timing and Fungicide Efficacy on Control of Cercospora Leafspot in Michigan

ASSBT – 2011

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Introduction

- Cercospora Leafspot caused by the fungus *Cercospora beticola*
- Most damaging foliar disease for Michigan sugarbeet growers
- Causes significant losses in sugarbeet yield and quality
## Expected Yield and Quality Losses From Cercospora Infestations

<table>
<thead>
<tr>
<th>Cerc Rating 0-9</th>
<th>Expected Loss Tons/A</th>
<th>Expected Loss % Suc</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.5 or less</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3</td>
<td>1.0</td>
<td>0.25</td>
</tr>
<tr>
<td>4</td>
<td>1.5</td>
<td>0.5</td>
</tr>
<tr>
<td>5 - 6</td>
<td>2.0</td>
<td>0.75</td>
</tr>
<tr>
<td>7 - 8</td>
<td>3.5</td>
<td>1.5</td>
</tr>
<tr>
<td>9</td>
<td>5.0</td>
<td>2.5</td>
</tr>
</tbody>
</table>
### Cercospora 0-9 Rating Scale

<table>
<thead>
<tr>
<th>Rating</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>No Yield or Quality Loss</td>
</tr>
<tr>
<td>2.5</td>
<td>Can’t measure Yield/Quality Losses</td>
</tr>
<tr>
<td>3</td>
<td>Lose 1 Ton/A and 0.25% Suc</td>
</tr>
<tr>
<td>Rating</td>
<td>Description</td>
</tr>
<tr>
<td>--------</td>
<td>-------------------------------</td>
</tr>
<tr>
<td>5</td>
<td>Lose 2 Tons/A and 0.75 pt Suc</td>
</tr>
<tr>
<td>7</td>
<td>Lose 3 Tons/A and 1.5 pts Suc</td>
</tr>
<tr>
<td>9</td>
<td>Lose 5 Tons/A and 2.5 pts Suc</td>
</tr>
</tbody>
</table>
Control With Fungicides

Triazoles (Good Control)

- Inspire
- Eminent
- Proline + NIS
Control With Fungicides

Strobilurins (Good Control)

- Headline
- Gem
Control With Fungicides

Super Tin

- Fair-Good Control

EBDC’s

- Fair Control

Short residual or tank mix
Control With Fungicides

Topsin M

- Widespread resistance
Rotate Fungicide Classes

Strobilurins

- Resistance potential very high

Triazoles

- Resistance potential high
Apply Fungicides Early

Triazoles and Strobilurins

- Good at preventing spore germination
- Good at preventing spores from penetrating leaf
Apply Fungicides Early

Triazoles and Strobilurins

✧ Not good at curing an existing infection

✧ Not good at preventing sporulation
Control of Cercospora With Fungicides - 2010

- LSD: 0.3

Chart showing the control of Cercospora with different fungicides compared to an untreated control, with CLS values ranging from 0 to 9.
Cercospora Control With Fungicides
Timing of Spray Applications

- Based on BEETcast Prediction Model
- In conjunction with scouting
BEETcast Prediction Model
Implemented in 2004

- Measures leaf wetness and air temperature
- Disease severity values (DSV’s) reported daily and accumulated
BEETcast Prediction Model

Spray triggers based on

- DSV Level
- Risk Management Zone
- Variety tolerance
BEETcast Prediction Model
5 Year Summary
Cercospora Ratings

0-9
Rating

LSD: 0.8

55/55 2.5 Applic
Scout/Label 2.7 Applic
70/55 2.1 Applic
Scout/Late Label 1.8 Applic
Untreated
Application Timings
Based on Growing Region

- Very high risk (Red Zone)
- High risk (Red-Orange Zone)
- Moderate risk (Yellow Zone)
- Lower risk (Green Zone)
BeetCast Risk Management Zones
Application Timings Based on Variety Tolerance

Tolerant Variety

Moderately Susceptible

Highly Susceptible
Effect of Variety Tolerance on Application Timings - 2006

- Moderately Susceptible Variety
- Tolerant Variety

Cerc 0-9

LSD: 0.24
DSV Levels From 2004 to 2010 (Sep 10\textsuperscript{th} of Each Year)
Cercospora Infection Levels in Research Trials (Red Zones)
Highly Susceptible Varieties

Red Zones

- 45/45/45 DSV’s

- If late tighten up next spray
Moderately Susceptible Varieties

Red Zones

♦ 55/55 DSV’s

♦ If late tighten up next spray
Tolerant Varieties

Red Zones

- 60/55 DSV’s
- If late tighten up next spray
Highly Susceptible Varieties

Green Zones

- 65 DSV’s or First Spot
- Follow with 55 DSV’s
Moderately Susceptible Varieties

Green Zones

- 75 DSV’s or First Spot
- Follow with 55 DSV’s
Tolerant Varieties

Green Zones

- 80 DSV’s or First Spot
- Follow with 55 DSV’s
Progression of Cercospora in September and October

Without a Late Application

CLS Rate 0-9

Late August

Late September

Late October
Cercospora Summary

- Upward Cercospora trend in Michigan
- Potential for yield and quality loss is high
Cercospora Summary

- Triazoles and Strobilurins very effective
- Resistance management is important
Cercospora Summary

Application timings based on

- DSV Levels and/or scouting
- Risk in Growing region (Red – Green)
- Variety tolerance
Cercospora Summary

- Must spray early
- Late season fungicide applications pay off
Questions