Disease and Insect Management
CERCOSPOR A LEAFSPOT (CLS)
Strategies to Manage Fungicide Resistance
ACSC RED RIVER VALLEY
NUMBER OF SPRAYS PER FIELD

2013  2014  2015  2016  2017

ONE  TWO  THREE  FOUR

0%  10%  20%  30%  40%  50%

YEARLY PERCENTAGE DISTRIBUTION OF SPRAYS IN THE ACSC RED RIVER VALLEY
EAST GRAND FORKS DISTRICT
NUMBER OF SPRAYS PER FIELD

2013 2014 2015 2016 2017
ONE
TWO
THREE
FOUR

0 10% 20% 30% 40% 50% 60%
HILLSBORO DISTRICT
NUMBER OF SPRAYS PER FIELD

2013  2014  2015  2016  2017

0  10  20  30  40  50  60  70  80

% % % % % % %

ONE  TWO  THREE  FOUR
MOORHEAD DISTRICT
NUMBER OF SPRAYS PER FIELD

2013 2014 2015 2016 2017

ONE TWO THREE FOUR
CROOKSTON DISTRICT
NUMBER OF SPRAYS PER FIELD

2013 2014 2015 2016 2017

ONE
TWO
THREE
FOUR
DRAYTON DISTRICT

NUMBER OF SPRAYS PER FIELD

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Future of CLS Management

• No new chemistry in pipeline - None
• Background work on possible additive for improved CLS control, fast-track, yet a few years away
• **Critical** - Timing, coverage, PSI and Tank-mixes
CLS Conditions

• Warm, humid, rainy weather conducive for development of Cercospora Leafspot

• Leaf spots develop 5 to 21 days after infection, depending on: amount of inoculum, temp, & duration of wet period.

• Leaf spots typically occur first on lower, older leaves & progresses to younger leaves
Cercospora Daily Infection Values (DIV)

Found on:
- Crystal Agronomy App
- NDAWN
- Crystalsugar.com

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Variety Cercospora Ratings

- CLS Rating < 4.40 – Best resistance; monitor for disease development
- CLS Rating 4.41 - 4.80 – Moderate resistance; monitor for disease development
- CLS Rating > 4.80 – Low disease resistance, Cercospora likely to show up in these varieties. Monitor closely
## 2018 Official Variety Trials Sort on CLS Ratings

### Performance Data of RR Varieties Approved for 2018 Season - Sorted by Cercospora

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<th>Variety</th>
<th>Yr</th>
<th>Rev/Ton</th>
<th>2 Yr</th>
<th>2 Yr %</th>
<th>Rev/Acre</th>
<th>2 Yr</th>
<th>2 Yr %</th>
<th>Sugar</th>
<th>Yield</th>
<th>Molasses</th>
<th>Emergence</th>
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### Notes
- 2 Yr means 2 years data, 2 Yr % is % of benchmark varieties.
- +2017 Revenue estimate based on a $48.46 best payment (5-yr ave) at 17.5% crop with a 1.5% loss to molasses. 2018 Revenue estimate based on a $52.44 best payment. Revenue does not consider hauling or production costs.
- Borers/Ac are based upon a plan of 40,000.
Factors That Can’t be Ignored

• Use right products
• Apply proper rate
• Application timing critical
• Monitor weather
• Use right nozzle with the right pressure and volume
Products

• Best resistance management is necessary to maintain our limited arsenal of fungicides
• Know the level of resistance in your area – review 2017 tolerance maps
• Be aware when using fungicides where tolerant strains of Cercospora are high or resistance is known in your area
• Know the PHI of the fungicides you use
Rates

• Use only the recommended full rate of the fungicides
• Tank Mixes: Always use full rates of all tank mix partners
• Watch the number of applications for each product
Timing

• Planting date effect
• Spend time in your fields
• Monitor Daily Infection Values (internet & App)
• Know your farm history
• Begin fungicide applications when disease is first identified in your area
• Do not stretch application intervals – Stay on recommended spray schedule
Weather

• DIVs
• Local events
• Dew on canopy
• Fog
• “Air conditioner nights”
Application Method

• Use correct spray volume: 15 – 20 gpa for max coverage
• Use correct pressure: utilize upper level of manufacturers recommended pressure for nozzle
• Use correct nozzles (fungicide specific), boom height & speed for best uniform coverage
• Ground applications of fungicides have been observed to give better control across entire fields
• Aerial applications can be made when a spray is necessary and ground rigs can’t get in a field
Good resistance management starts with rotating different modes of action.

Never use fungicides from the same mode of action back-to-back.

Use multiple modes of action in each spray.

Use full rates of all tank mix partners, all the time.
Tank Mixing Fungicides

• Always start with a tank that is ½ full of water

• Good, aggressive agitation is critical to maintain a good spray solution

• Know your products and add accordingly

• Always empty and clean your tank, lines, and strainers at the end of the day use
Tank Mixing Fungicides

• Do Not tank mix fungicides with Glyphosate or other herbicides

• Fungicide and weed control are to be separate applications and each uses different nozzles, water volume and spray pressure
Mixing Order

A.P.P.L.E.S.

NDSU Weed Science recommendation

1. **Agitate**
2. **Powders Soluble (SG, SP)**
3. **Powders Dry (DF, WDG, WP)**
4. **Liquid flowables and Suspensions (ASC, FME, SC, SE)**
5. **Emulsifiable Concentrates (EC, EW, OD)**
6. **Solutions (S, SL)**

Make sure that each product is uniformly mixed in the tank before adding another product
Summary

• Plant tolerant varieties
• Scout fields diligently
• Monitor the weather – models are not perfect
• Start on time with the right product
• Use correct spray volume & pressure for the most uniform fungicide coverage
Summary

• Full label rate of all products in a tank mix are best for resistance management
• Use correct nozzles, boom height & speed
• Ground versus aerial – both can work well
• Remember: Conditions that favor excellent sugarbeet growth also favor extreme CLS development
• Contact your Agriculturist for further information
Questions?
Fusarium

• Continues to be RRV Production Issue

• Managed best with Fusarium tolerant varieties

• Likes wet, poorly structured soils

• Persistent in soil
2016 Disease Rating
Fusarium

* The disease ratings are general in nature and may not be representative of all fields in a township
Root Aphid

• Field observations:
  – Low incidence in 2016 & 2017
  – Dry soil conditions usually higher presence

• U of Minnesota Root Aphid traps:
  – Very low Root Aphid counts in 2017

• Plant tolerant varieties

• Root aphid presence or Frass is indicator
2016 Disease Rating*
Root Aphid

* The disease ratings are general in nature and may not be representative of all fields in a township.
ACSC Versalime

Made for all districts, Use all or just your district for presentation
Moorhead Factory Versalime ‘17

• Nitrogen
  – 5 Lbs/ton Average
• Phosphorus
  – 12.2 Lbs/ton Average
• Potash
  – 1.8 Lbs/ton Average
• Sulfur
  – 5.4 Lbs/ton Average

• Applying Versalime at a 10 Ton/Acre Rate would provide 50#N, 122#P, 18#K, 54#S
• Benefits include decreased Aphanomyces and improved soil tilth
• Apply 1 year before beets for best results
• Contact Ag Staff for further assistance
Hillsboro Factory Versalime ‘17

- Nitrogen
  - 5.2 Lbs/ton Average
- Phosphorus
  - 14 Lbs/ton Average
- Potassium
  - 1.3 Lbs/ton Average
- Sulfur
  - 7.6 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 52#N, 140#P, 13#K, 76#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance
Crookston Factory Versalime ‘17

- Nitrogen
  - 5.1 Lbs/ton Average
- Phosphorus
  - 11.6 Lbs/ton Average
- Potassium
  - 2.2 Lbs/ton Average
- Sulfur
  - 5.7 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 51#N, 116#P, 22#K, 57#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance
East Grand Forks Factory Versalime ‘17

- Nitrogen  
  - 4.3 Lbs/ton Average
- Phosphorus  
  - 10.7 Lbs/ton Average
- Potassium  
  - 2.0 Lbs/ton Average
- Sulfur  
  - 6.4 Lbs/ton Average

- Applying Versalime at a 10 Ton/Acre Rate would provide 43#N, 107#P, 20#K, 64#S
- Benefits include decreased Aphanomyces and improves soil tilth
- Apply 1 year before beets for best results
- Contact Ag Staff for further Assistance
Drayton Factory Versalime ‘17

• Nitrogen
  – 5.8 Lbs/ton Average
• Phosphorus
  – 16.8 Lbs/ton Average
• Potassium
  – 2.3 Lbs/ton Average
• Sulfur
  – 6.7 Lbs/ton Average

• Applying Versalime at a 10 Ton/Acre Rate would provide 58#N, 168#P, 23#K, 67#S
• Benefits include decreased Aphanomyces and improves soil tilth
• Apply 1 year before beets for best results
• Contact Ag Staff for further Assistance
Springtails

• Tiny wingless primitive animals. (very small, nearly microscopic)
• They are adapted to and reproduce more rapidly in soil moisture levels at or near saturation.
• Although feeding may occur on mature sugarbeet roots, injury is most apparent and harmful in seedlings.
• Above-ground symptoms of springtail injury to sugarbeet seedlings include wilting plants and reduced plant stand.

NDSU extension bulletin March 2001
Springtails

Management

• Not much is known about rotational crop management of springtails to help control in sugarbeet crop year.

• Hard to predict because pressure is variable from year to year and field to field. Fields with fine-textured soils (i.e., clay or silty clay) are more likely to have problems. (NDSU extension bulletin March 2001)

• Best line of defense usually a moderate rate of Counter but not always statistically better than the seed treatments.
Wireworms

- Smooth somewhat hard bodied larvae varying in length from $\frac{1}{2}$ to $1 \frac{1}{2}$ inches. They are most damaging when smaller.
- Color from yellowish-white to copper hues.
- Feed on a wide variety of crops and weeds and are difficult to detect and control.
Wireworms

Management

• They tend to be more prevalent in light textured soils and in fields that were previously a grassy crop, or have not been in crop production for several years, or had several grass weed escapes the previous year.
• There is no economic threshold for wireworms established in sugarbeets.
• A low to moderate rate of Counter 20G (5-6 lb) should do just fine.
• Seed treatments appear to do fine but not a lot of data.
• Insecticide seed treating rotational small grain crops help.
Sugarbeet Root Maggot (SBRM)

- Maggots overwinter as larvae, pupate and emerge in spring as flies in previous years beet fields
- Adult flies are monitored in current year beet fields with sticky stakes
Peak fly activity can occur anytime after 600 DD’s are accumulated, on average, this occurs at 650 DD’s
  – This is monitored at each NDAWN site in the RRV
  – NDSU monitors sticky stakes

It is important to know that warm weather (around 80°F), and calm to low wind conditions are most conducive for fly activity

Flies will remain fairly inactive in cool, rainy, or windy conditions
Root maggot control efforts are working

Flies Per Trap in RRV: 2007 – 2017

Dr Boetel NDSU
2018 Root Maggot Forecast*

High risk:
- Grand Forks/EGF
- Euclid
- Merrifield
- St. Thomas
- Thompson

Moderate risk:
- Argyle
- Auburn
- Ada
- Bathgate
- Buxton
- Climax
- Crookston
- Reynolds

Low

Moderate

High

*Based on fly counts & root maggot feeding injury ratings
## Additive Granular Insecticides for SBRM Control: 2015 – 2017*

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<td>Poncho Beta + Counter 8.9# <strong>At-plant Band</strong></td>
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<td>32.3 a</td>
<td>$359</td>
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<td>9242 a</td>
<td>31.8 ab</td>
<td>$377</td>
</tr>
<tr>
<td>Poncho Beta + Counter 8.9# <strong>Post Band</strong></td>
<td>8814 ab</td>
<td>30.6 a-d</td>
<td>$310</td>
</tr>
<tr>
<td>Poncho Beta + Counter 5.25# <strong>At-plant Band</strong></td>
<td>8745 ab</td>
<td>31.2 ab</td>
<td>$259</td>
</tr>
<tr>
<td>Counter 7.5# Band + Thimet 7# Post Band</td>
<td>8719 ab</td>
<td>31.0 abc</td>
<td>$263</td>
</tr>
<tr>
<td>Counter 8.9# Band</td>
<td>8405 bc</td>
<td>30.1 bcd</td>
<td>$211</td>
</tr>
<tr>
<td>Poncho Beta + Thimet 7# Post Band</td>
<td>8397 bc</td>
<td>30.1 bcd</td>
<td>$210</td>
</tr>
<tr>
<td>Counter 7.5# Band</td>
<td>8225 bcd</td>
<td>29.0 de</td>
<td>$215</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>8058 cd</td>
<td>28.9 de</td>
<td>$167</td>
</tr>
<tr>
<td>Poncho Beta + Counter 5.25# <strong>Post Band</strong></td>
<td>7958 cd</td>
<td>29.2 cde</td>
<td>$124</td>
</tr>
<tr>
<td>Counter 5.25# Band</td>
<td>7715 d</td>
<td>27.9 e</td>
<td>$119</td>
</tr>
<tr>
<td>CHECK</td>
<td>6700 e</td>
<td>24.2 f</td>
<td></td>
</tr>
</tbody>
</table>

**LSD 0.05**: 619.2 1.97

*Dr Boetel NDSU*
Thimet 20G Timing & Rate Impacts on Root Maggot Control: Recoverable Sucrose (11-year combined analysis)

9-17d Pre-peak

0-8d Pre-peak

LSD test, $P = 0.05$
## Impact of Single Post Sprays on SBRM Control

**St. Thomas, ND, 2015 – 2017**

<table>
<thead>
<tr>
<th>Treatment</th>
<th>RSA (lb/ac)</th>
<th>Tons/ac</th>
<th>Gross Rev. / ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Counter 8.9# B + Lorsban Adv. 2 pts</td>
<td>8,707 a</td>
<td>29.9 a</td>
<td>$955</td>
</tr>
<tr>
<td>Counter 8.9# B + Lorsban Adv. 1 pt</td>
<td>8,664 a</td>
<td>29.8 a</td>
<td>$946</td>
</tr>
<tr>
<td>Counter 7.5# B + Lorsban Adv. 2 pts</td>
<td>8,211 ab</td>
<td>29.1 ab</td>
<td>$855</td>
</tr>
<tr>
<td>Poncho Beta + Lorsban Adv. 2 pts</td>
<td>8,187 ab</td>
<td>28.8 abc</td>
<td>$862</td>
</tr>
<tr>
<td>Poncho Beta + Lorsban Adv. 1 pt</td>
<td>8,011 ab</td>
<td>27.5 abc</td>
<td>$880</td>
</tr>
<tr>
<td>Counter 7.5# B + Lorsban Adv. 1 pt</td>
<td>7,911 ab</td>
<td>26.9 bc</td>
<td>$881</td>
</tr>
<tr>
<td>Counter 8.9# B</td>
<td>7,711 b</td>
<td>26.8 bc</td>
<td>$829</td>
</tr>
<tr>
<td>Counter 7.5# B</td>
<td>7,628 b</td>
<td>26.6 bc</td>
<td>$817</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>7,522 b</td>
<td>26.4 c</td>
<td>$798</td>
</tr>
<tr>
<td>Check</td>
<td>5,780 c</td>
<td>21.0 d</td>
<td>$578</td>
</tr>
</tbody>
</table>

**LSD (0.05)** 661 2.65
## Postemergence Spray Timing for SBRM Control
St. Thomas, ND: Combined Analysis *(2015-2017)*

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Timing (from peak fly)</th>
<th>RSA (lb/ac)</th>
<th>$$ above Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ctr. 7.5 lb + Lors. Adv. 2 pts <strong>2X</strong></td>
<td>7 d pre / 4 d post</td>
<td>9249 a</td>
<td>$482</td>
</tr>
<tr>
<td>Ctr. 7.5 lb + Lors. Adv. 1 pt + Mustang 4 oz</td>
<td>2 d pre / 4 d post</td>
<td>8882 ab</td>
<td>$357</td>
</tr>
<tr>
<td>Ctr. 7.5 lb + Lors. Adv. 1 pt <strong>2X</strong></td>
<td>7 d pre / 4 d post</td>
<td>8735 ab</td>
<td>$413</td>
</tr>
<tr>
<td>Ctr. 8.9 lb + Lors. Adv. 2 pts</td>
<td>2d pre</td>
<td>8724 ab</td>
<td>$352</td>
</tr>
<tr>
<td>Ctr. 7.5 lb + Lors. Adv. 2 pts</td>
<td>2d pre</td>
<td>8405 bc</td>
<td>$321</td>
</tr>
<tr>
<td>Ctr. 7.5 lb + Mustang Maxx 4 fl oz</td>
<td>2d pre</td>
<td>8367 bc</td>
<td>$372</td>
</tr>
<tr>
<td>Ctr. 7.5 lb + Lorsban Advanced 1 pt</td>
<td>2d pre</td>
<td>8302 bc</td>
<td>$337</td>
</tr>
<tr>
<td>Counter 20G 8.9 lb</td>
<td></td>
<td>7806 cd</td>
<td>$246</td>
</tr>
<tr>
<td>Counter 20G 7.5 lb</td>
<td></td>
<td>7443 d</td>
<td>$193</td>
</tr>
<tr>
<td>Check</td>
<td></td>
<td>5882 e</td>
<td>---</td>
</tr>
<tr>
<td><strong>LSD (0.05)</strong></td>
<td></td>
<td><strong>822.0</strong></td>
<td></td>
</tr>
</tbody>
</table>

Dr Boetel NDSU
<table>
<thead>
<tr>
<th>Seed Trt.</th>
<th>At-plant</th>
<th>Post</th>
<th>RSA (lb/ac)</th>
<th>Rev./ac</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poncho Beta</td>
<td>Counter 8.9#</td>
<td>Lorsban Advanced 1 pt</td>
<td>10061 a</td>
<td>$1295</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 8.9#</td>
<td>Thimet 7#</td>
<td>9934 ab</td>
<td>$1288</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 8.9#</td>
<td>Thimet 7# + Lors. Adv 1 pt</td>
<td>9554 abc</td>
<td>$1221</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 8.9#</td>
<td>Counter 8.9#</td>
<td>9413 abc</td>
<td>$1229</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 5.25#</td>
<td>Counter 5.25#</td>
<td>9409 abc</td>
<td>$1167</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 7.5#</td>
<td>Thimet 7#</td>
<td>9122 bcd</td>
<td>$1151</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 8.9#</td>
<td>Counter 8.9#</td>
<td>8940 cde</td>
<td>$1100</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Thimet 7#</td>
<td>Counter 5.25#</td>
<td>8856 cde</td>
<td>$1134</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Thimet 7#</td>
<td>Counter 5.25#</td>
<td>8833 cde</td>
<td>$1059</td>
</tr>
<tr>
<td>Poncho Beta</td>
<td>Counter 5.25#</td>
<td>Counter 5.25#</td>
<td>8266 ef</td>
<td>$1002</td>
</tr>
<tr>
<td>Check</td>
<td></td>
<td></td>
<td>7713 f</td>
<td>$965</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td><strong>LSD (0.05)</strong></td>
<td>855.5</td>
</tr>
</tbody>
</table>
Root Maggot Control Recommendations 2018

• **Lorsban 4E (Chlorpyrifos)** — Minimum of 10 days between application if used 2 times

• **Mustang Maxx or Asana XL** - can be used as 2\(^{nd}\) or 3\(^{rd}\) applications if flies resurge before 10 day Minimum is met for Lorsban (Chlorpyrifos)

• **Lorsban 4E (Chlorpyrifos)** — can be mixed with Glyphosate

• Do **NOT** mix *Lorsban Advanced* with Glyphosate
Root Maggot- Summary

• Average population has declined since 2016, but there is an increase in number of areas affected
  – Proper management control measures are working!
• Aggressive control is a must in areas of high risk and rising populations
• POST: Seed treatments or low rates of at-plant granules are not sufficient w/out a post insecticide
• POST: control tools are the key to success
ROOT MAGGOT

QUESTIONS?
# 2018 ACSC RHIZOCTONIA MANAGEMENT OPTIONS

<table>
<thead>
<tr>
<th>Method</th>
<th>AT-PLANT</th>
<th>POST</th>
<th>POST</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Method</strong></td>
<td>IN-FURROW/BAND (3-7”)</td>
<td>BAND/BROCAST</td>
<td>BAND (7-11”)</td>
<td>BROADCAST</td>
</tr>
<tr>
<td><strong>Timing</strong></td>
<td>AT-PLANT</td>
<td>4 to 5 weeks after planting</td>
<td>4 to 5 weeks after planting</td>
<td>4 to 5 weeks after planting</td>
</tr>
<tr>
<td><strong>Rate</strong></td>
<td>12 oz/Acre (1.65 lbs Ai/Gal)</td>
<td>6.7oz/Acre (2.08 lbs Ai/Gal)</td>
<td>10 oz/Acre (2.08 lbs Ai/Gal)</td>
<td>15 oz/Acre (2.08 lbs Ai/Gal)</td>
</tr>
<tr>
<td><strong>Tank-Mixes</strong></td>
<td>w/starter fertilizer</td>
<td>Glyphosate w/ surfactant</td>
<td>Glyphosate w/ surfactant</td>
<td>Glyphosate w/ surfactant</td>
</tr>
<tr>
<td><strong>Water Volume</strong></td>
<td>5-10 gal/acre</td>
<td>10-15 gal/acre</td>
<td>10-20 gal/acre</td>
<td>10-20 gal/acre</td>
</tr>
</tbody>
</table>

**Notes**
- Mixes with liquid fertilizers with no crystallization or clogging
- Do not apply in-furrow if cool weather follows planting
- Do not include COC or MSO in tank mix
- Applying w/starter in-furrow may increase risk of phytotoxicity
- Do not mix with conventional herbicides/insecticides
- Time application 3 days before or 3 days after conventional herbicide or insecticide application
- Narrower bands are most effective, do not reduce rate
- Additional surfactant along w/ glyphosate will not increase risk of injury
- Do not add deposition aids or any oil based additive when mixing with glyphosate
- Always add Priaxor 1st to spray tank

(see reverse side)
## RHIZOCTONIA MANAGEMENT OPTIONS

<table>
<thead>
<tr>
<th>DISEASE SEVERITY</th>
<th>RECOMMENDATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Slight</td>
<td>Seed treatment with Post Quadris/Priaxor</td>
</tr>
<tr>
<td>Moderate</td>
<td>Increase Crop Rotation Length, Tolerant Variety, Seed treatment, Post Quadris/Priaxor 1x</td>
</tr>
<tr>
<td>Severe</td>
<td>Increase Crop Rotation Length, Tolerant Variety, Seed treatment, AZteroid At-Plant, Post Quadris/Priaxor 1x or 2x</td>
</tr>
</tbody>
</table>

## ADDITIONAL NOTES:

- Quadris and Priaxor are both SC formulations, always add them 1st to spray tank, use good agitation and apply the mixture promptly
- Quadris/Priaxor should never be tank-mixed with any oil-based additives or EC formulations of herbicides/insecticides due to increased risk of injury
- Seed treatments for the control of Rhizoctonia do not provide season long control and should be coupled with post Quadris/Priaxor
- 2018 Rhizoctonia fungicide standard seed treatments by company:
  - Betaseed = Systiva
  - Crystal = Kabina
  - Hilleshog & Maribo = Vibrance
  - Seedex = Tri-Pak (Metlock + Rizolex + Kabina)
  - Ses Vanderhave = Fungicide Pack (Metlock + Rizolex + Vibrance)
Questions?