2016 Research Results

growing the best sugarbeets

MICHIGAN SUGARBEET REACh
Research & Education Advisory Council

REACh/SUGARBEET ADVANCEMENT COMMITTEE LIST
2016 Voting Membership

23 Voting Members

Company & Name	Terms	Expire
Michigan Sugar Company		
Jim Ruhlman (5th Member)	Permanent	
David Pratt	Permanent	
Jim Stewart	Permanent	
Brian Groulx	Permanent	
Michigan Sugar Agriculturists (4 Years)		
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Glenn Martus	1	2017
Dexter Auernhamer	2	2018
Michigan Sugar Company District Board Members (1 year)		
Chris Guza (Vice Chair)	1	2017
Mark Sylvester (Treasurer)	1	2017
Rick Leach	1	2017
Michigan Sugar Company At Large Growers (3 years)		
Chris Ziehm	3	2019
Kurt Hrabal	2	2018
Scott Roggenbuck (Chairman)	1	2017
Andy Shaffner (Secretary)	3	2019
Michigan State University,University of Guelph, and USDA (3 years)		
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Janice LeBoeuf	2	2018
Christy Sprague	3	2019
Sugar Beet Seed Company (2 years)		
	1	2017
Agri-Business Retail (2 years)		
Jacob Hecht	1	2017
Agri-Business Manufacturing (2 years)		
David Reif	2	2018
Michigan Sugar Company Board of Directors (1 year)		
Mark Richards	1	2017
Kent Houghtaling	1	2017
SBA Director		
Steve Poindexter	Permanent	

Ex-Officio Members

Company	Name
Chairman of Board of Directors - MSC	Rick Gerstenberger
CEO of Michigan Sugar Company	Mark Flegenheimer

MICHIGAN SUGARBEET REACh
Research Education Advisory Council

MISSION STATEMENT:

The mission of the ***Michigan Sugarbeet Research Education Advisory Council*** is to be the central trusted source of agronomic information for the sugarbeet industry.

The council will provide direction for the Michigan-Ontario sugarbeet researchers and assemble and distribute research/agronomy information.

Cooperative educational efforts will be conducted with the goal of improving productivity and profitability for all stakeholders.

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Evaluate Registered and Experimental Fungicides Applied In-Furrow at Planting and at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot in Sugarbeets

Crumbaugh, Breckenridge, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 19
Harvested: Sept 14
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch

Soil Info: Sandy Loam
%OM: 2.5, pH: 6.6, CEC:8.7
Above Opt: P, K
High: Mn, B
Added N: 100 lbs
Prev Crop: Soybeans

Rhizoc Level: Medium
Cerc Control: Good
Problems: Uneven disease
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches

Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar, 7" Band
Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treatment	Rate/A	Appl	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
18	Quadris Quadris	10 fl oz 14.25 fl oz	IF T-Band 6-8 lf	**$1,370 a**	**7506 a**	**199 a**	**37.7 a**	**13.8 a**	**94.7 ab**
5	Moncut 70 DF	32 oz	IF T-Band	**$1,300 ab**	**7162 ab**	**193 ab**	**37.0 ab**	**13.5 ab**	**94.4 a-d**
7	Proline	5.7 fl oz	IF T-Band	**$1,262 abc**	**6826 abc**	**192 ab**	**35.5 a-d**	**13.3 ab**	**94.9 a**
19	Moncut 70 DF Moncut 70 DF	16 oz 16 oz	IF T-Band 6-8 lf	**$1,235 abc**	**6792 abc**	**189 ab**	**35.9 abc**	**13.2 ab**	**94.5 abc**
3	Quadris	13 fl oz	IF T-Band	**$1,227 abc**	**6636 abc**	**191 ab**	**34.9 a-d**	**13.5 ab**	**93.8 a-f**
12	Xanthion A Xanthion B	1.8 fl oz 9 fl oz	IF T-Band IF T-Band	**$1,225 abc**	**6741 abc**	**189 ab**	**35.6 a-d**	**13.3 ab**	**94.2 a-e**
9	Priaxor	8 fl oz	IF T-Band	**$1,208 abc**	**6541 abc**	**191 ab**	**34.3 a-d**	**13.5 ab**	**94.1 a-f**
20	Quadris Moncut 70 DF	10 fl oz 16 oz	IF T-Band 6-8 lf	**$1,206 abc**	**6639 abc**	**193 ab**	**34.3 a-d**	**13.6 ab**	**94.4 a-d**
21	Moncut 70 DF Quadris	16 oz 14.25 fl oz	IF T-Band 6-8 lf	**$1,204 abc**	**6628 abc**	**189 ab**	**35.1 a-d**	**13.4 ab**	**93.9 a-f**
16	Proline Induce	5.7 fl oz 5 fl oz	6-8 lf 6-8 lf	**$1,200 abc**	**6503 abc**	**193 ab**	**33.8 a-d**	**13.6 ab**	**94.3 a-e**
8	Headline	9.2 fl oz	IF T-Band	**$1,173 a-d**	**6368 a-d**	**190 ab**	**33.6 a-d**	**13.5 ab**	**93.9 a-f**
23	Xanthion A Xanthion B Quadris	1.8 fl oz 9 fl oz 14.25 fl oz	IF T-Band IF T-Band 6-8 lf	**$1,141 a-e**	**6241 a-e**	**187 ab**	**33.2 a-e**	**13.3 ab**	**93.7 a-f**
14	Moncut 70 DF	16 oz	6-8 lf	**$1,135 a-e**	**6155 a-e**	**189 ab**	**32.5 a-f**	**13.4 ab**	**94.0 a-f**
4	Moncut 70 DF	16 oz	IF T-Band	**$1,128 a-e**	**6116 a-e**	180 bc	**33.9 a-d**	**13.0 abc**	93.3 c-f
22	Serenade Soil Quadris	3 qt 14.25 fl oz	IF T-Band 6-8 lf	**$1,128 a-e**	**6221 a-e**	**191 ab**	**32.5 a-f**	**13.4 ab**	**94.2 a-e**
10	Topsin 4.5 FL	20 fl oz	IF T-Band	$1,077 b-e	5820 b-e	**182 abc**	**32.0 a-f**	**13.0 abc**	**93.9 a-f**
2	Quadris	10 fl oz	IF T-Band	$1,067 b-e	5763 cde	176 bc	**32.8 a-f**	12.7 bc	93.3 c-f
1	Quadris	7.125 fl oz	IF T-Band	$1,065 b-e	5723 cde	179 bc	31.9 b-f	12.8 bc	**93.9 a-f**
15	Gem SC	3.6 fl oz	6-8 lf	$1,049 b-e	5701 cde	**188 ab**	30.1 def	**13.5 ab**	93.6 b-f
17	Topsin 4.5 FL	20 fl oz	6-8 lf	$1,046 b-e	5654 cde	175 bc	**32.3 a-f**	12.8 bc	92.8 f
6	Gem SC	3.6 fl oz	IF T-Band	$1,023 cde	5559 cde	**182 abc**	30.4 c-f	**13.0 abc**	**93.7 a-f**
13	Quadris	14.25 fl oz	6-8 lf	$914 def	4994 def	179 bc	27.9 efg	**12.9 abc**	93.3 c-f
11	Serenade Soil	3 qt	IF T-Band	$900 ef	4882 ef	176 bc	27.6 fg	12.8 bc	93.1 def
24	Untreated Check			$778 f	4127 f	166 c	24.8 g	12.1 c	93.0 ef

Average	$1,128	6137	186	32.9	13.2	93.9
LSD 5%	216.8	1150.0	15.0	4.6	0.8	1.1
CV %	13.6	13.3	5.7	10.0	4.3	0.8

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Registered and Experimental Fungicides Applied In-Furrow at Planting and at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot in Sugarbeets

Crumbaugh, Breckenridge, MI - 2016

No.	Treatment	Rate/A	Appl	Net $/A	9-May Stand B/100 ft	21-Jun Stand B/100 ft	14-Jul Dead B/100 ft	1-Sep Dead B/100 ft	1-Jun Vigor* 1-10	23-Aug Vigor* 1-10
18	Quadris Quadris	10 fl oz 14.25 fl oz	IF T-Band 6-8 lf	**$1,370 a**	**192 ab**	**199 a-d**	**7 g**	**10 g**	**8.4 ab**	**7.9 a**
5	Moncut 70 DF	32 oz	IF T-Band	**$1,300 ab**	**201 ab**	**208 a**	**10 fg**	**14 fg**	**8.1 abc**	**7.8 ab**
7	Proline	5.7 fl oz	IF T-Band	**$1,262 abc**	**205 a**	**201 a-d**	**18 efg**	**24 efg**	**8.5 a**	**7.9 a**
19	Moncut 70 DF Moncut 70 DF	16 oz 16 oz	IF T-Band 6-8 lf	**$1,235 abc**	**209 a**	**202 abc**	**14 efg**	**19 efg**	**8.3 abc**	**7.6 abc**
3	Quadris	13 fl oz	IF T-Band	**$1,227 abc**	174 b	**186 a-d**	**10 fg**	**15 fg**	**8.1 abc**	**7.6 abc**
12	Xanthion A Xanthion B	1.8 fl oz 9 fl oz	IF T-Band IF T-Band	**$1,225 abc**	**194 ab**	**180 a-d**	**15 efg**	**19 efg**	**8.1 abc**	**7.5 a-d**
9	Priaxor	8 fl oz	IF T-Band	**$1,208 abc**	172 b	**195 a-d**	**17 efg**	**22 efg**	**8.4 ab**	**7.6 abc**
20	Quadris Moncut 70 DF	10 fl oz 16 oz	IF T-Band 6-8 lf	**$1,206 abc**	**205 a**	**191 a-d**	**21 d-g**	**26 d-g**	8.0 bc	**7.1 a-e**
21	Moncut 70 DF Quadris	16 oz 14.25 fl oz	IF T-Band 6-8 lf	**$1,204 abc**	**193 ab**	**181 a-d**	**17 efg**	**21 efg**	**8.1 abc**	**7.6 abc**
16	Proline Induce	5.7 fl oz 5 fl oz	6-8 lf 6-8 lf	**$1,200 abc**	**212 a**	**208 a**	**16 efg**	**22 efg**	**8.1 abc**	**7.3 a-e**
8	Headline	9.2 fl oz	IF T-Band	**$1,173 a-d**	**196 ab**	**207 a**	22 c-f	30 def	**8.4 ab**	**7.5 a-d**
23	Xanthion A Xanthion B Quadris	1.8 fl oz 9 fl oz 14.25 fl oz	IF T-Band IF T-Band 6-8 lf	**$1,141 a-e**	**197 ab**	**191 a-d**	25 cde	31 def	**8.3 abc**	**7.1 a-e**
14	Moncut 70 DF	16 oz	6-8 lf	**$1,135 a-e**	**197 ab**	**175 a-d**	**18 d-g**	**24 efg**	**8.4 ab**	**7.5 a-d**
4	Moncut 70 DF	16 oz	IF T-Band	**$1,128 a-e**	**204 a**	**204 ab**	**19 d-g**	**26 d-g**	**8.3 abc**	**7.8 ab**
22	Serenade Soil Quadris	3 qt 14.25 fl oz	IF T-Band 6-8 lf	**$1,128 a-e**	**211 a**	**189 a-d**	24 c-f	29 def	**8.3 abc**	**7.1 a-e**
10	Topsin 4.5 FL	20 fl oz	IF T-Band	$1,077 b-e	**208 a**	**195 a-d**	32 bcd	43 bcd	**8.3 abc**	**7.3 a-e**
2	Quadris	10 fl oz	IF T-Band	$1,067 b-e	**183 ab**	167 d	**14 efg**	**18 efg**	7.5 d	**7.4 a-d**
1	Quadris	7.125 fl oz	IF T-Band	$1,065 b-e	**183 ab**	**175 a-d**	**21 d-g**	**26 d-g**	8.0 bc	6.9 cde
15	Gem SC	3.6 fl oz	6-8 lf	$1,049 b-e	**213 a**	**192 a-d**	**19 d-g**	**24 efg**	8.0 bc	6.9 cde
17	Topsin 4.5 FL	20 fl oz	6-8 lf	$1,046 b-e	**213 a**	170 bcd	43 b	58 b	**8.1 abc**	6.8 de
6	Gem SC	3.6 fl oz	IF T-Band	$1,023 cde	**204 a**	**184 a-d**	35 bc	48 bc	8.0 bc	**7.1 a-e**
13	Quadris	14.25 fl oz	6-8 lf	$914 def	**199 ab**	**174 a-d**	**22 d-g**	31 def	**8.1 abc**	**7.1 a-e**
11	Serenade Soil	3 qt	IF T-Band	$900 ef	**200 ab**	167 cd	27 cde	35 cde	8.0 bc	7.0 b-e
24	Untreated Check			$778 f	**213 a**	**203 ab**	56 a	76 a	7.9 cd	6.5 e
Average				$1,128	199.1	189.4	21.8	28.7	8.1	7.3
LSD 5%				216.8	25.2	28.6	11.9	14.6	0.4	0.7
CV %				13.6	9.0	10.7	38.8	36.0	3.5	6.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Vigor: 0 to 10 rating, 10 is best

Comments: The disease level was high but not evenly distributed, which is common for non-inoculated Rhizoctonia trials. In-furrow at planting applications (3.5" band) gave better disease control than foliar treatments applied at the 6-8 leaf stage (7" band). It appeared that the untreated check had higher initial emergence levels than the fungicide treatments, however, most emergence differences were not statistically significant. Quadris applied In-furrow and at the 6-8 leaf stage provided the best Rhizoctonia control and also returned the highest grower payment. Moncut (In-furrow) was nearly as good as Quadris. Several other fungicides including Proline, Xanthion and Priaxor also gave fairly good disease control. The untreated plots had an average of 76 dead beets per 100 ft of row and lost 10 tons per acre and over one point of sugar.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.

Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Quadris Applied In-Furrow and at the 8 Leaf Stage to Tolerant and Moderately Susceptible Varieties for Control of Rhizoctonia in Sugarbeets

Crumbaugh, Breckenridge, MI - 2016

Trial Quality: Good
Variety: B-149N & B-133N
Planted: April 18
Harvested: Sept 13
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Sandy Loam
%OM: 2.5, pH: 6.6, CEC: 8.7
Above Opt: P, K
High: Mn, B
Added N: 100 lbs
Prev Crop: Soybeans
Rhizoc Level: Moderate
Cerc Control: Good
Problems: Uneven disease
Seeding Rate: 4.1 inches
Rainfall: 15.3 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar 7" band
Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treament	Variety	fl oz / Acre	App	Net $/A	RWSA	RWST	T/A	% SUC	11-Aug Dead B/100 ft	19-Jul Vigor 0-10
10	Quadris	B 149N	10.0	In-Fur	**$1,214**	**6825 a**	**188**	**36.3 a**	**13.2**	**3.1 cd**	**8.6 a**
	Quadris		14.3	8 lf							
8	Quadris	B 149N	7.1	In-Fur	**$1,192**	**6627 ab**	**189**	**35.1 ab**	**13.2**	**3.7 cd**	**8.4 ab**
	Quadris		14.3	8 lf							
2	Quadris	B 149N	7.1	In-Fur	**$1,190**	**6469 abc**	**189**	**34.2 ab**	**13.4**	5.9 c	8.3 bcd
6	Quadris	B 149N	14.3	8 lf	**$1,183**	**6503 abc**	**186**	**34.9 ab**	**13.2**	**4.2 cd**	8.3 bcd
1	Quadris	B 133N	7.1	In-Fur	**$1,169**	**6357 a-d**	**188**	**33.8 abc**	**13.4**	**3.2 cd**	**8.3 abc**
5	Quadris	B 133N	14.3	8 lf	**$1,142**	**6281 a-d**	**192**	**32.8 abc**	**13.6**	**3.3 cd**	7.8 fgh
4	Quadris	B 149N	10.0	In-Fur	**$1,134**	**6195 a-d**	**184**	**33.7 abc**	**13.0**	**5.0 cd**	8.2 b-e
7	Quadris	B 133N	7.1	In-Fur	**$1,116**	**6215 a-d**	**186**	**33.4 abc**	**13.3**	**3.6 cd**	8.0 d-g
	Quadris		14.3	8 lf							
3	Quadris	B 133N	10.0	In-Fur	**$1,114**	6084 bcd	**190**	32.1 bc	**13.3**	**2.2 d**	8.1 c-f
9	Quadris	B 133N	10.0	In-Fur	**$1,112**	**6273 a-d**	**190**	**33.0 abc**	**13.5**	**1.9 d**	7.9 e-h
	Quadris		14.3	8 lf							
12	UTC	B 149N			**$1,079**	5795 cd	**181**	32.1 bc	**13.1**	14.3 a	7.8 gh
11	UTC	B 133N			**$1,057**	5681 d	**186**	30.6 c	**13.4**	9.2 b	7.7 h

Average	$1,142	6275	187	33.5	13.3	5.0	8.1
LSD 5%	n.s(117)	627.9	n.s(6.9)	3.0	n.s(0.4)	2.8	0.3
CV %	8.7	8.5	3.1	7.7	2.5	47.5	2.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Quadris Applied In-Furrow and at the 8 Leaf Stage to Tolerant and Moderately Susceptible Varieties for Control of Rhizoctonia in Sugarbeets

Crumbaugh, Breckenridge, MI - 2016

Quadris Effect (Average of both Varieties)

No.	Treatment	fl oz /acre	Appl	Net $/A	RWSA	RWST	T/A	% SUC	% CJP	11-Aug Dead B/100 ft	19-Jul Vigor 1-10
1	Quadris	7.1	In-Fur	**$1,180 a**	**6413 ab**	**188**	**34.0 ab**	**13.4**	**93.9 a**	**4.5 b**	**8.3 a**
5	Quadris	10.0	In-Fur	**$1,163 a**	**6549 a**	**189**	**34.7 a**	**13.3**	**94.2 a**	**2.5 b**	**8.3 a**
	Quadris	14.3	8 lf								
3	Quadris	14.3	8 lf	**$1,163 a**	**6392 ab**	**189**	**33.8 ab**	**13.4**	**94.0 a**	**3.8 b**	**8.0 a**
4	Quadris	7.1	In-Fur	**$1,154 a**	**6421 ab**	**187**	**34.3 ab**	**13.2**	**94.2 a**	**3.6 b**	**8.2 a**
	Quadris	14.3	8 lf								
2	Quadris	10.0	In-Fur	**$1,124 ab**	6139 b	**187**	32.9 b	**13.2**	**94.2 a**	**3.6 b**	**8.1 a**
6	UTC			$1,068 b	5738 c	**183**	31.3 c	**13.2**	93.2 b	11.8 a	7.7 b
Average				$1,142	6275	187	33.5	13.3	93.9	5.0	8.1
LSD 5%				68.1	365.9	n.s(5.9)	1.5	n.s(0.3)	0.6	2.0	0.3
CV %				7.1	6.9	3.8	5.2	2.3	0.8	49.1	3.9

Variety Effect (Average of Quadris Treatments)

No.	Treatment	Net $/A	RWSA	RWST	T/A	% SUC	% CJP	11-Aug Dead B/100 ft	19-Jul Vigor 1-10
2	B 149N	**$1,166**	**6402**	**186**	**34.4 a**	**13.2**	**94.1 a**	**6.0 a**	**8.2 a**
1	B 133N	**$1,118**	**6149**	**188**	32.6 b	**13.4**	93.8 b	3.9 b	8.0 b
Average		$1,142	6275	187	33.5	13.3	93.9	5.0	8.1
LSD 5%		n.s.(47.7)	n.s.(256)	n.s(2.8)	1.2	n.s(0.2)	0.3	1.1	0.1
CV %		8.7	8.5	3.1	7.7	2.5	0.6	47.5	2.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The disease level was moderate, a favorable sugarbeet stand existed in the trial (> 200 beets/100 ft) and there were no significant issues. It appeared that Quadris in-furrow applications delayed emergence slightly (from early stand counts), however, there were no stand differences at full emergence. Quadris in-furrow and foliar treatments provided adequate and equal Rhizoctonia root rot control. There was a variety difference, with B 133N having fewer dead beets compared to B-149N. The untreated plots lost about 2 to 3 tons per acre to uncontrolled root rot.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Compare Quadris to Generic Azoxystrobin Formulations for Control of Rhizoctonia Root Rot
Crumbaugh, Breckenridge, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 18
Harvested: Sept 13
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch
Soil Info: Sandy Loam
%OM: 2.5, pH: 6.6, CEC: 8.7
Above Opt: P, K
High: Mn, B
Added N: 100 lbs
Prev Crop: Soybeans
Rhizoc Level: Moderate
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.3 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar, 7" band
Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treatment*	Applic Timing	Net $/A	Dead Beets /100 ft 22-Aug	Vigor Rating** 0-10 18-Aug	Sugarbeet Stand Beets / 100 ft 9-May	30-Jun	11-Aug
5	Quadris	8 lf	**$1,250 a**	**8.6 b**	**8.0 a**	**220.5**	**229.5**	**206.8 abc**
8	Equation SC	8 lf	**$1,234 a**	**6.0 b**	**8.2 a**	**225.3**	**236.2**	**210.8 abc**
1	Quadris	In-Fur	**$1,195 a**	**5.2 b**	**8.5 a**	**211.6**	**220.1**	200.6 bc
9	Quadris	In-Fur / 8 lf	**$1,174 a**	**6.2 b**	**8.3 a**	**207.6**	**230.4**	**217.5 ab**
11	AzoxyStar	In-Fur / 8 lf	**$1,171 a**	**7.8 b**	**8.0 a**	**217.6**	**229.9**	**218.5 a**
3	AzoxyStar	In-Fur	**$1,166 a**	**8.6 b**	**8.0 a**	**208.1**	**217.8**	200.9 bc
6	Azoxy 2SC	8 lf	**$1,162 a**	**8.4 b**	**8.2 a**	**220.3**	**236.2**	**210.1 abc**
7	AzoxyStar	8 lf	**$1,154 a**	**6.2 b**	**8.4 a**	**220.2**	**235.8**	**208.3 abc**
12	Equation SC	In-Fur / 8 lf	**$1,153 a**	**5.8 b**	**8.3 a**	**209.4**	**225.2**	**213.6 abc**
2	Azoxy 2SC	In-Fur	**$1,125 a**	**9.6 b**	**8.0 a**	**206.1**	**220.5**	**201.7 abc**
10	Azoxy 2SC	In-Fur / 8 lf	**$1,117 a**	**6.8 b**	**8.3 a**	**218.6**	**233.0**	**209.3 abc**
4	Equation SC	In-Fur	**$1,117 a**	**8.0 b**	**8.3 a**	**208.8**	**227.8**	200.4 c
13	Untreated Check		$943 b	27.6 a	5.9 b	**220.7**	**221.0**	181.6 d

Average	$1,151	8.8	8.0	215.0	228.0	206.2
LSD 5%	124.4	4.1	0.7	ns (14.5)	ns (15.9)	14.4
CV %	8.5	36.1	7.0	5.3	5.5	5.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Treatments: In-Fur was applied at 7.125 fl oz/A in a 3.5 inch band, and 8 lf was applied at 14.25 fl oz/A in a 7 inch band

** Vigor: 0 to 10 ratings, 10 is best

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Compare Quadris to Generic Azoxystrobin Formulations for Control of Rhizoctonia Root Rot
Crumbaugh, Breckenridge, MI - 2016

No.	Treatment	Applic	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
5	Quadris	8 lf	**$1,250 a**	**6990 a**	**199 a**	**35.4 a**	**13.7**	**95.2 a**
8	Equation SC	8 lf	**$1,234 a**	**6901 a**	**197 a**	**35.1 a**	**13.7**	**94.9 ab**
1	Quadris	In-Fur	**$1,195 a**	**6632 a**	**193 abc**	**33.6 a**	**13.4**	**95.1 a**
9	Quadris	In-Fur / 8 lf	**$1,174 a**	**6665 a**	**197 a**	**33.7 a**	**13.6**	**95.0 ab**
11	AzoxyStar	In-Fur / 8 lf	**$1,171 a**	**6651 a**	**193 ab**	**35.0 a**	**13.4**	**95.1 a**
3	AzoxyStar	In-Fur	**$1,166 a**	**6475 a**	186 bc	**35.3 a**	**13.1**	94.3 bc
6	Azoxy 2SC	8 lf	**$1,162 a**	**6506 a**	**192 abc**	**35.3 a**	**13.3**	**95.0 ab**
7	AzoxyStar	8 lf	**$1,154 a**	**6464 a**	**192 abc**	**34.2 a**	**13.4**	**94.8 ab**
12	Equation SC	In-Fur / 8 lf	**$1,153 a**	**6550 a**	**193 ab**	**34.1 a**	**13.5**	**94.8 ab**
2	Azoxy 2SC	In-Fur	**$1,125 a**	**6250 a**	**189 abc**	**32.9 a**	**13.2**	**94.8 abc**
4	Equation SC	In-Fur	**$1,117 a**	**6208 a**	186 bc	**33.1 a**	**13.2**	94.1 c
10	Azoxy 2SC	In-Fur / 8 lf	**$1,117 a**	**6356 a**	**190 abc**	**32.9 a**	**13.3**	**94.7 abc**
13	Untreated Check		$943 b	5162 b	183 c	28.6 b	**13.0**	94.1 c

Average	$1,151	6447	192	33.8	13.4	94.8
LSD 5%	124.4	680.5	8.4	2.7	ns (0.45)	0.6
CV %	8.5	8.3	3.4	5.5	2.6	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Quadris FL (azoxystrobin) was compared to the generic azoxystrobin formulations (Equation SC, AzoxyStar and Azoxy 2SC) for control of Rhizoctonia root rot in this trial. The disease level was moderate. All of the azoxystrobin formulations provided adequate control of Rhizoctonia root rot. The only significant differences between the formulations were in purity and final stand. Quadris trended towards the top of the trial but differences were not significant.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Moncut Applied In-Furrow and as a Banded Foliar Spray at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot

Crumbaugh, Breckenridge, MI - 2016

Trial Quality: Good
Variety: Rhizoctonia Susceptible
Planted: April 19
Harvested: Sept 14
Plots: 22 inch
Row Spacing: 6 rows X 38 ft, 6 reps
Soil Info: Sandy Loam
%OM: 2.5, pH: 6.6, CEC: 8.7
Above Opt: P, K
High: Mn, B
Added N: 100 lbs
Prev Crop: Soybeans
Rhizoc Level: See Trts
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar, 7" Band
Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treatment	Rate / Acre	Appl	Net $/A	Dead B /100 ft	Stand Beets / 100 ft		Vigor 0-10 Rating	
					25-Aug	9-May	11-Aug	1-Jun	25-Aug
3	Moncut DF	32 oz	In-Fur	**$1,129 a**	**23.3 c**	**210.7 ab**	**179.3 a**	**8.2**	**7.7 a**
4	Quadris FL	10 fl oz	In-Fur	**$1,119 a**	**25.5 c**	199.5 b	**165.5 a**	**8.4**	**7.5 a**
2	Moncut DF	16 oz	In-Fur	**$1,077 a**	**24.3 c**	**213.0 ab**	**177.9 a**	**8.2**	**7.7 a**
6	Quadris FL	14.3 fl oz	8 lf	**$1,016 a**	39.0 b	**210.9 ab**	**163.3 a**	**8.5**	**7 a**
5	Moncut DF	16 oz	8 lf	**$995 a**	37.2 b	**214.9 ab**	**169.8 a**	**8.5**	**7.1 a**
1	Untreated Check			$792 b	76.8 a	**227.0 a**	136.0 b	**8.6**	5.5 b

Average	$1,021	37.7	212.7	165.3	8.4	7.1
LSD 5%	162.7	9.6	15.7	18.9	ns (0.5)	0.7
CV %	12.1	19.3	5.6	8.7	4.7	7.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Moncut Applied In-Furrow and as a Banded Foliar Spray at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot

Crumbaugh, Breckenridge, MI - 2016

No.	Treatment	Rate / Acre	Appl	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
3	Moncut DF	32 oz	In-Fur	**$1,129 a**	**5953 a**	**190 a**	**31.3 a**	**13.5 ab**	**93.7**
4	Quadris FL	10 fl oz	In-Fur	**$1,119 a**	**5828 a**	**190 a**	**30.6 a**	**13.6 a**	**93.5**
2	Moncut DF	16 fl oz	In-Fur	**$1,077 a**	**5612 a**	**187 ab**	**30.0 a**	**13.5 ab**	**92.9**
6	Quadris FL	14.3 fl oz	8 lf	**$1,016 a**	**5357 a**	178 b	**30.0 a**	13.1 c	**92.6**
5	Moncut DF	16 fl oz	8 lf	**$995 a**	**5247 a**	**182 ab**	**28.9 a**	13.2 bc	**93.0**
1	Untreated Check			$792 b	4072 b	169 c	24.1 b	12.7 d	**91.7**

Average	$1,021	5345	183	29.1	13.3	92.9
LSD 5%	162.7	837.0	8.6	4.1	0.4	n.s(1.6)
CV %	12.1	11.9	3.6	10.6	2.0	1.3

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Moncut fungicide (Nichino Americas) was evaluated for Rhizoctonia root rot in sugarbeets and compared to Quadris. Moncut is an SDHI fungicide and is not chemically related to Quadris. Both fungicides were applied in-furrow at planting in a 3.5 inch band and as a foliar banded spray at the 8 leaf stage. A favorable sugarbeet stand (~ 210 beets/100 ft) existed. Moncut did not affect sugarbeet emergence but it appeared that Quadris slowed emergence slightly. In-furrow applications performed better than foliar 8 leaf applications with Moncut and Quadris. Both fungicides provided relatively good control, and there was not a difference between Moncut and Quadris. The high Moncut rate tended to be slightly better than the other treatments but the differences were not significant. The disease level was very high and the untreated plots lost around 10 tons per acre and nearly a point of sugar due to uncontrolled root rot. The disease infestation was not uniform within the plot which is typical of a non-inoculated Rhizoctonia trial.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Moncut Applied In-Furrow and as a Banded Foliar Spray at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: Rhizoctonia Susceptible
Planted: April 22
Harvested: Oct 3
Plots: 22 inch
Row Spacing: 6 rows X 38 ft, 6 reps
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: See Trts
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar, 7" Band
Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treatment	Rate / Acre	Appl	Net $/A	Dead B/100 ft	Stand Beets / 100 ft		Vigor 0-10 Rating	
					19-Aug	11-May	18-Jul	2-Jun	12-Jul
4	Quadris FL	10 fl oz	In-Fur	**$1,379 a**	**2.8 c**	**166**	**183**	**8.5**	**8.6 a**
3	Moncut DF	32 oz	In-Fur	**$1,331 a**	**2.2 c**	**152**	**181**	**8.4**	**8.5 a**
2	Moncut DF	16 oz	In-Fur	**$1,322 a**	**2.3 c**	**154**	**177**	**8.3**	**8.5 a**
6	Quadris FL	14.3 fl oz	8 lf	**$1,305 a**	**5.3 bc**	**167**	**181**	**8.2**	**8.2 a**
5	Moncut DF	16 oz	8 lf	**$1,259 ab**	**6.8 bc**	**160**	**183**	**8.2**	**8.2 a**
1	Untreated Check			$1,170 b	15.7 a	**161**	**174**	**8.2**	7.3 b

Average	$1,294	5.9	159.9	179.9	8.3	8.2
LSD 5%	121.5	3.1	ns (22.8)	ns (20.1)	ns (0.51)	0.4
CV %	7.9	11.5	11.9	9.4	5.1	4.1

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Moncut Applied In-Furrow and as a Banded Foliar Spray at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot

Laker Agronomy Field, Elkton, MI - 2016

No.	Treatment	Rate / Acre	Appl	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
4	Quadris FL	10 fl oz	In-Fur	**$1,379 a**	**8615 a**	**218**	**39.4 a**	**15.2**	**95.0 a**
3	Moncut DF	32 oz	In-Fur	**$1,331 a**	**8318 a**	**218**	**38.2 ab**	**15.2**	**94.2 a**
2	Moncut DF	16 oz	In-Fur	**$1,322 a**	**8263 a**	**222**	**37.2 ab**	**15.3**	**94.8 a**
6	Quadris FL	14.3 fl oz	8 lf	**$1,305 a**	**8155 a**	**219**	**37.2 ab**	**15.1**	**94.9 a**
5	Moncut DF	16 oz	8 lf	**$1,259 ab**	**7865 ab**	**218**	36.0 bc	**14.9**	**94.8 a**
1	Untreated Check			$1,170 b	7311 b	**216**	33.8 c	**14.9**	94.3 b

Average	$1,294	8088	219	37.0	15.1	94.8
LSD 5%	121.5	759.4	n.s(11.7)	2.3	ns (0.36)	0.4
CV %	7.9	7.9	4.5	5.2	2.0	0.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The disease level was moderate. Moncut fungicide (Nichino Americas) was evaluated for Rhizoctonia root rot control in sugarbeets and compared to Quadris. Moncut is in the SDHI fungicide group and is not chemically related to Quadris. Both fungicides were applied in-furrow at planting in a 3.5 inch band and as a foliar banded spray at the 8 leaf stage. A favorable sugarbeet stand (~ 180 beets/100 ft) existed. Neither fungicide slowed sugarbeet emergence or influenced final stand. Moncut and Quadris provided similar levels of root rot control. The in-furrow treatments were more effective than the foliar treatments. The disease level was moderate and the untreated plots lost 3 plus tons per acre. Sugarbeet quality was only effected to a small extent.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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MICHIGAN SUGAR

Evaluate Moncut Applied In-Furrow and as a Banded Foliar Spray at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot

Gilford, Fairgrove, MI - 2016

Trial Quality: Good
Variety: Rhizoctonia Susceptible
Planted: April 20
Harvested: Sept 20
Plots: 22 inch
Row Spacing: 6 rows X
Soil Info: Clay Loam
%OM: 8.8, pH: 8.0, CEC: 31.2
Below Opt: P, Above Opt: K
Medium: Mn, B
Added N: 130 lbs
Prev Crop: Radish
Rhizoc Level: See Trts
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.7 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar, 7" Band
Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treatment	Rate / Acre	Appl	Net $/A	Dead B /100 ft	Stand Beets / 100 ft		Vigor 0-10 Rating	
					25-Aug	6-May	20-Jul	2-Jun	12-Jul
5	Moncut DF	16 oz	8 lf	**$1,347 a**	**0.5 b**	**209 a**	**246**	**9.4**	**8.5**
3	Moncut DF	32 oz	In-Fur	**$1,318 a**	**0.3 b**	179 b	**235**	**8.8**	**8.3**
6	Quadris FL	14.3 fl oz	8 lf	**$1,275 ab**	**0.8 b**	**200 ab**	**230**	**8.8**	**8.0**
4	Quadris FL	10 fl oz	In-Fur	**$1,234 ab**	**0.5 b**	181 b	**219**	**8.3**	**7.9**
2	Moncut DF	16 oz	In-Fur	$1,168 bc	**0.5 b**	184 b	**219**	**8.0**	**7.8**
1	Untreated Check			$1,074 c	4.5 a	175 b	**225**	**9.0**	**7.8**
Average				$1,236	1.2	187.8	229.0	8.7	8.0
LSD 5%				110.4	1.3	22.5	ns (26.1)	ns (1.15)	ns (.62)
CV %				5.93	76.13	7.9	7.9	8.7	8.0

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Moncut Applied In-Furrow and as a Banded Foliar Spray at the 6-8 Leaf Stage for Control of Rhizoctonia Root Rot

Gilford, Fairgrove, MI - 2016

No.	Treatment	Rate / Acre	Appl	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
5	Moncut DF	16 oz	8 lf	**$1,347 a**	**6938 a**	**183 a**	**37.9 a**	**13.4 a**	**92.5**
3	Moncut DF	32 oz	In-Fur	**$1,318 a**	**6743 ab**	**182 ab**	**37.1 ab**	**13.4 a**	**92.3**
6	Quadris FL	14.3 fl oz	8 lf	**$1,275 ab**	**6572 ab**	**178 ab**	**36.9 ab**	**13.2 a**	**91.9**
4	Quadris FL	10 fl oz	In-Fur	**$1,234 ab**	6315 bc	**178 ab**	**35.4 ab**	**13.3 a**	**91.9**
2	Moncut DF	16 oz	In-Fur	$1,168 bc	5983 cd	174 bc	34.4 bc	**12.9 ab**	**92.0**
1	Untreated Check			$1,074 c	5430 d	169 c	32.1 c	12.7 b	**91.6**

Average	$1,236	6330	177	35.6	13.2	92.0
LSD 5%	110.4	558.5	8.2	2.5	0.5	n.s(0.6)
CV %	5.9	5.9	3.1	4.7	2.3	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The disease level was low. Moncut fungicide (Nichino Americas) was evaluated for Rhizoctonia root rot control in sugarbeets and compared to Quadris. Moncut is in the SDHI fungicide group and is not chemically related to Quadris. Both fungicides were applied in-furrow at planting in a 3.5 inch band and as a foliar banded spray at the 8 leaf stage. A favorable sugarbeet stand (~ 220 beets/100 ft) existed. Moncut and Quadris applied at the 8 leaf stage had somewhat better sugarbeet stands. Quadris and Moncut provided similar levels of Rhizoctonia control and there were no differences between in-furrow and foliar treatments.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Rayl Farms Inc., Akron, MI - 2016

Trial Quality: Good
Variety: B-149N, C-059, B-1399
Planted: April 20
Harvested: Sept 20
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch
Soil Info: Sandy Loam
%OM: 2.8, pH: 7.3, CEC: 11.6
Above Opt: P, K
Medium: Mn, B
Added N: 150 lbs
Prev Crop: Wheat
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 16.4 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	BEETcast Timings	Variety	*Application Spray dates	Net $/A		% Leaf Damage					
						Avg of 2		22-Aug		15-Sep	
9	Shorter Intervals 35, 30, 20, 30 dsv	B-149N	A =7/11, B = 7/29, C= 8/11, D = 8/17	**$1,366**	**a**	**4.5**	**e**	**1.2**	**ef**	**7.8**	**f**
7	Shorter Intervals 45, 40, 30, 40 dsv	B-1399	A = 7/18, B = 8/8, C = 8/17, D = 8/30	**$1,237**	**ab**	**3.0**	**e**	**0.8**	**f**	**5.1**	**f**
3	Standard 45, 35, 25, 35 dsv	B-149N	A = 7/18, B = 8/8, C = 8/17, D = 8/30	**$1,224**	**ab**	19.5	c	**1.6**	**def**	37.4	c
1	Standard 55, 45, 35 dsv	B-1399	A = 7/23, B = 8/11, C = 8/26	**$1,211**	**abc**	**6.4**	**e**	**1.0**	**ef**	**11.7**	**ef**
8	Shorter Intervals 40, 35, 25, 35 dsv	C-RR059	A = 7/12, B = 8/2, C = 8/17, D = 8/26	$1,188	bc	**8.2**	**de**	3.6	d	**12.8**	**ef**
6	Longer Intervals 55, 40, 30, 40 dsv	B-149N	A = 7/23, B = 8/11, C = 8/22, D = 8/30	$1,165	bcd	12.8	d	**1.1**	**ef**	24.4	d
4	Longer Intervals 65, 50, 40 dsv	B-1399	A = 7/29, B = 8/17, C = 8/30	$1,137	bcd	**8.4**	**de**	**1.1**	**ef**	**15.7**	**def**
2	Standard 50, 40, 30, 40 dsv	C-RR059	A = 7/22, B = 8/9, C = 8/19, D = 9/9	$1,114	b-e	12.9	d	3.4	de	22.4	de
5	Longer Intervals 60, 45, 35 dsv	C-RR059	A = 7/26, B = 8/17, C = 8/30	$1,051	cde	36.4	b	10.1	c	62.8	b
10	Untreated Check	B-1399		$1,018	de	39.6	b	9.0	c	70.2	b
11	Untreated Check	C-RR059		$967	e	52.4	a	22.2	b	82.6	a
12	Untreated Check	B-149N		$962	e	56.0	a	25.4	a	86.6	a

Average	$1,137	21.7	6.7	36.6
LSD 5%	142.7	4.9	2.2	9.9
CV %	9.8	17.6	25.5	21.0

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Fungicides applied at recommended rates.

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Rayl Farms Inc., Akron, MI - 2016

No.	BEETcast Timings	Variety	Net $/A		RWSA		RWST		T/A		% SUC		% CJP	
9	Shorter Intervals	B-149N	**$1,366**	**a**	**8015**	**a**	**213**	**ab**	**37.6**	**a**	**14.7**	**abc**	**94.7**	**abc**
7	Shorter Intervals	B-1399	**$1,237**	**ab**	**7260**	**ab**	**220**	**a**	33.0	bc	**14.9**	**a**	**95.6**	**a**
3	Standard	B-149N	**$1,224**	**ab**	**7180**	**ab**	204	bc	**35.1**	**ab**	**14.4**	**a-d**	94.0	c
1	Standard	B-1399	**$1,211**	**abc**	**7109**	**abc**	**217**	**a**	32.8	bc	**14.7**	**abc**	**95.6**	**a**
8	Shorter Intervals	C-RR059	$1,188	bc	6974	bc	**217**	**a**	32.2	bc	**14.8**	**ab**	**95.2**	**ab**
6	Longer Intervals	B-149N	$1,165	bcd	6835	bcd	202	bc	**33.8**	**abc**	14.2	cd	94.1	bc
4	Longer Intervals	B-1399	$1,137	bcd	6670	bcd	**210**	**ab**	31.8	bc	14.3	bcd	**95.5**	**a**
2	Standard	C-RR059	$1,114	b-e	6536	b-e	**213**	**ab**	30.7	bc	**14.6**	**a-d**	**95.0**	**abc**
5	Longer Intervals	C-RR059	$1,051	cde	6168	cde	203	bc	30.4	c	14.1	de	**94.8**	**abc**
10	Untreated Check	B-1399	$1,018	de	5977	de	199	cd	30.1	c	13.6	ef	**95.5**	**a**
11	Untreated Check	C-RR059	$967	e	5673	e	190	d	29.9	c	13.3	f	**94.5**	**abc**
12	Untreated Check	B-149N	$962	e	5643	e	176	e	32.0	bc	12.6	g	93.8	c

Average	$1,137	6670	205	32.5	14.2	94.9
LSD 5%	142.7	837.4	9.8	3.9	0.5	1.1
CV %	9.8	9.8	3.7	9.3	2.7	0.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: This trial was located in a Red Zone (high Cercospora risk). The Cercospora leafspot infection came late in the year and became severe in September. Alternaria leafspot was also present. In this trial we evaluated standard BEETcast recommendations compared to shorter and longer interval BEETcast spray recommendations. When averaging 3 varieties, the shorter interval BEETcast recommendation provided significantly better leafspot control (9% leaf damage) than the standard BEETcast recommendation (24% leaf damage). The BEETcast treatment with longer intervals (34% leaf damage) was significantly less effective in controlling leafspot. There was also a significant difference between varieties. B-1399 averaged 26% damage compared to 39% for B-149N and 45% for C-RR059. All treatments should have had a September application. The presence of Alternaria leafspot drove up the leafspot rating for C-RR059. The untreated plots lost 4 tons per acre and 1.7 points of sugar compared to the better treatments. The rank of $/Acre does not necessarily follow the level of leafspot control because of the difference in yield potential of the varieties and the cost of the treatments. None of the treatments caused sugarbeet leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Rayl Farms Inc., Akron, MI - 2016

Spray Treatment Effect (Average of Varieties)

No.	BEETcast Timings	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	22-Aug	15-Sep					
3	Shorter Intervals	**$1,264 a**	**5.2 d**	**1.9 c**	**8.6 d**	**7416 a**	**216 a**	**34.3 a**	**14.8 a**	**95.2 a**
1	Standard	$1,183 b	12.9 c	**2.0 c**	23.9 c	6942 b	211 b	**32.9 ab**	**14.6 a**	**94.8 ab**
2	Longer Intervals	$1,117 c	19.2 b	4.1 b	34.3 b	6558 c	205 c	32.0 bc	14.2 b	**94.8 ab**
4	Untreated Check	$982 d	49.3 a	18.9 a	79.8 a	5764 d	188 d	30.7 c	13.2 c	94.6 b
Average		$1,137	21.7	6.7	36.6	6670	205	32.5	14.2	94.9
LSD 5%		63.9	3.8	2.1	7.6	375.2	4.7	1.7	0.3	0.4
CV %		7.1	22.2	38.9	26.1	7.1	2.9	6.4	2.5	0.5

Variety Effect (Average of Spray Treatments)

No.	BEETcast Timings	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	22-Aug	15-Sep					
3	B-149N	**$1,179 a**	23.2 b	7.3 b	39.0 b	**6918 a**	199 c	**34.6 a**	14.0 b	94.2 c
1	B-1399	**$1,151 ab**	**14.3 c**	**3.0 c**	**25.7 c**	**6754 ab**	**212 a**	31.9 b	**14.4 a**	**95.6 a**
2	C-RR059	$1,080 b	27.5 a	9.8 a	45.2 a	6338 b	206 b	30.8 b	**14.2 ab**	94.9 b
Average		$1,137	21.7	6.7	36.6	6670	205	32.5	14.2	94.9
LSD 5%		71.3	2.4	1.1	4.9	418.7	4.9	1.9	0.2	0.5
CV %		9.7	17.6	25.5	21.0	9.7	3.7	9.3	2.7	0.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Answer Plot, Bach, MI -2016

Trial Quality: Good
Variety: B-1399, C-RR059, B-149N
Planted: April 22
Harvested: Sept 26
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch
Soil Info: Loam
%OM: 2.5, pH: 7.1, CEC: 9.6
Above Opt: P, K
High: Mn, Extremely High: B
Added N: 140 lbs.
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.1 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	BEETcast Timings	Variety	Application Spray Date	Net $/A	% Leaf Damage			
					Avg 3	23-Aug	6-Sep	20-Sep
7	Shorter Intervals 45, 40, 30, 40 dsv	B-1399	A = 7/12, B = 8/1, C = 8/15, D = 8/31	**$1,464 a**	**0.8 g**	**0.0 c**	**0.1 d**	**2.3 f**
9	Shorter Intervals 35, 30, 20, 30 dsv	B-149N	A = 7/7, B = 7/26, C = 8/4, D = 8/22	**$1,443 a**	5.8 e	**0.1 c**	**0.2 d**	17.2 d
1	Standard 55, 45, 35 dsv	B-1399	A = 7/20, B = 8/10, C = 8/26	**$1,427 a**	**1.4 fg**	**0.1 c**	**0.2 d**	**4.1 ef**
2	Standard 50, 40, 30, 40 dsv	C-RR059	A = 7/16, B = 8/4, C = 8/22, D = 9/9	**$1,386 ab**	5.5 e	**0.1 c**	**0.5 d**	15.9 d
8	Shorter Intervals 40, 35, 25, 35 dsv	C-RR059	A = 7/11, B = 7/29, C = 8/15, D = 8/26	**$1,378 ab**	4.5 ef	**0.1 c**	**0.3 d**	13.2 de
3	Standard 45, 35, 25, 35 dsv	B-149N	A = 7/12, B = 8/1, C = 8/15, D = 8/30	**$1,373 ab**	11.0 d	**0.1 c**	**0.5 d**	32.4 c
4	Longer Intervals 65, 50, 40 dsv	B-1399	A = 7/27, B = 8/17, C = 8/31	**$1,365 ab**	**2.2 fg**	**0.1 c**	**0.7 d**	**5.8 ef**
6	Longer Intervals 55, 40, 30, 40 dsv	B-149N	A = 7/20, B = 8/10, C = 8/22, D = 9/9	**$1,333 abc**	14.0 d	**0.2 c**	**1.9 d**	40.0 c
5	Longer Intervals 60, 45, 35 dsv	C-RR059	A = 7/25, B = 8/15, C = 8/30	$1,230 bc	7.8 e	**0.1 c**	**0.7 d**	22.6 d
10	Untreated Check	B-1399		$1,170 cd	27.3 c	**0.4 c**	4.8 c	76.6 b
11	Untreated Check	C-RR059		$1,037 de	34.2 b	1.6 b	10.1 b	91.0 a
12	Untreated Check	B-149N		$1,000 e	42.5 a	4.8 a	24.8 a	98.0 a

Average		$1,300	13.1	0.6	3.7	34.9
LSD 5%		159.7	3.1	0.4	1.7	8.9
CV %		9.5	18.4	54.6	35.7	19.8

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Fungicides applied at recommended rates.

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets Answer Plot, Bach, MI -2016

No.	BEETcast Timings	Variety	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
7	Shorter Intervals	B-1399	**$1,464 a**	**9844 a**	**244 a**	**40.3 ab**	**16.4 a**	**95.8 ab**
9	Shorter Intervals	B-149N	**$1,443 a**	**9837 a**	**231 ab**	**42.6 a**	**15.7 ab**	**95.4 abc**
1	Standard	B-1399	**$1,427 a**	**9545 a**	**240 a**	**39.8 ab**	**16.1 ab**	**95.7 ab**
2	Standard	C-RR059	**$1,386 ab**	**9346 ab**	**235 ab**	**39.8 ab**	**16.0 ab**	95.2 bcd
8	Shorter Intervals	C-RR059	**$1,378 ab**	**9358 ab**	**237 ab**	**39.5 ab**	**16.1 ab**	95.1 bcd
3	Standard	B-149N	**$1,373 ab**	**9328 ab**	**230 ab**	**40.7 ab**	**15.8 ab**	94.7 d
4	Longer Intervals	B-1399	**$1,365 ab**	**9026 ab**	**232 ab**	38.9 bc	**15.6 ab**	**95.9 a**
6	Longer Intervals	B-149N	**$1,333 abc**	**8943 ab**	219 bc	**40.7 ab**	15.2 bc	94.6 d
5	Longer Intervals	C-RR059	$1,230 bc	8227 bc	220 bc	37.4 bcd	15.2 bc	94.6 d
10	Untreated Check	B-1399	$1,170 cd	7463 cd	209 cd	35.7 cde	14.4 cd	95.0 cd
11	Untreated Check	C-RR059	$1,037 de	6613 de	202 d	32.7 e	14.0 d	94.7 d
12	Untreated Check	B-149N	$1,000 e	6378 e	181 e	35.3 de	12.9 e	93.8 e

Average	$1,300	8659	223	38.6	15.3	95.0
LSD 5%	159.7	1018.4	15.8	3.1	0.9	0.6
CV %	9.5	9.1	5.5	6.2	4.6	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: This trial was located in a Red Zone (high Cercospora risk). The Cercospora leafspot infection came late in the year and became severe in September. Alternaria leafspot was also present. In this trial we evaluated standard BEETcast recommendations compared to shorter and longer interval BEETcast spray recommendations. When averaging 3 varieties, the shorter interval BEETcast recommendations provided significantly better leafspot control (11% leaf damage) than the standard BEETcast recommendation (18% leaf damage). The BEETcast treatment with longer intervals (23% leaf damage) was significantly less effective in controlling leafspot. There was also a significant difference between varieties. B-1399 averaged 22% damage compared to 36% for C-RR059 and 47% for B-149N. All treatments should have had at least one more application. The presence of Alternaria leafspot likely drove up the leafspot rating for C-RR059. The untreated plots lost 5 tons per acre and 2 points of sugar compared to the better treatments. The rank of $/Acre does not necessarily follow the level of leafspot control because of the difference in yield potential of the varieties and the cost of the treatments. None of the treatments caused sugarbeet leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets Answer Plot, Bach, MI -2016

Spray Treatment Effect (Average of Varieties)

No.	BEETcast Timings	Net $/A	% Leaf Damage				RWSA	RWST	T/A	% SUC	% CJP
			Avg 3	23-Aug	6-Sep	20-Sep					
3	Shorter Intervals	**$1,428 a**	**3.7 c**	**0.1 b**	**0.2 b**	**10.9 c**	**9679 a**	**237 a**	**40.8 a**	**16.1 a**	**95.4 a**
1	Standard	**$1,395 a**	**6.0 bc**	**0.1 b**	**0.4 b**	**17.5 bc**	**9406 a**	**235 a**	**40.1 a**	**16.0 a**	**95.2 ab**
2	Longer Intervals	$1,309 b	8.0 b	**0.1 b**	**1.1 b**	22.8 b	8732 b	224 b	**39.0 a**	15.3 b	95.0 b
4	Untreated Check	$1,069 c	34.7 a	2.3 a	13.2 a	88.5 a	6818 c	197 c	34.6 b	13.8 c	94.5 c
Average		$1,300	13.1	0.6	3.7	34.9	8659	223	38.6	15.3	95.0
LSD 5%		71.9	2.5	0.5	1.7	7.4	458.5	10.4	2.3	0.6	0.4
CV %		6.9	24.1	94.5	58.1	26.5	6.7	5.9	7.4	5.1	0.5

Variety Effect (Average of Spray Treatments)

No.	BEETcast Timings	Net $/A	% Leaf Damage				RWSA	RWST	T/A	% SUC	% CJP
			Avg 3	23-Aug	6-Sep	20-Sep					
1	B-1399	**$1,357 a**	**7.9 c**	**0.2 c**	**1.4 c**	**22.2 c**	**8969 a**	**231 a**	**38.7 ab**	**15.6 a**	**95.6 a**
3	B-149N	**$1,287 ab**	18.3 a	1.3 a	6.8 a	46.9 a	**8621 ab**	215 b	**39.8 a**	14.9 b	94.6 b
2	C-RR059	$1,258 b	13.0 b	0.5 b	2.9 b	35.7 b	8386 b	**224 a**	37.3 b	**15.3 a**	94.9 b
Average		$1,300	13.1	0.6	3.7	34.9	8659	223	38.6	15.3	95.0
LSD 5%		79.9	1.5	0.2	0.9	4.5	509.2	7.9	1.5	0.5	0.3
CV %		9.5	18.4	54.6	35.7	19.8	9.1	5.5	6.1	4.6	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Grekowicz Farms Inc., Kinde, MI - 2016

Trial Quality: Good
Variety: B-149N, B-1399, C-RR059
Planted: May 5
Harvested: Oct 6
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Loam
%OM: 3.3, pH: 7.6, CEC: 10.9
Above Opt: P, K
High: Mn, Medium: B
Added N: Manure + 60 lbs
Prev Crop: Wheat
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 17.1 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	BEETcast Timings	Variety	Application Spray dates	Net $/A		% Leaf Damage					
						Avg 2		5-Sep		22-Sep	
3	Standard 50, 45, 35, 45 dsv	B-149N	A = 7/16, B = 8/4, C = 8/17, D = 9/9	**$1,755**	**a**	**0.9**	**de**	**0.4**	**d**	**1.5**	**de**
6	Longer Intervals 60, 45, 35 dsv	B-149N	A = 7/26, B = 8/17, C = 8/30	**$1,703**	**ab**	1.5	d	**0.6**	**d**	2.4	d
2	Standard 55, 50, 40 dsv	C-RR059	A = 7/23, B = 8/15, C = 8/26	**$1,647**	**abc**	**0.7**	**de**	**0.2**	**d**	**1.3**	**de**
5	Longer Intervals 65, 50, 40 dsv	C-RR059	A = 7/28, B = 8/18, C = 9/2	**$1,630**	**abc**	**1.2**	**de**	**0.3**	**d**	**2.1**	**de**
4	Longer Intervals 70, 55, 45 dsv	B-1399	A = 7/30, B = 8/22, C = 9/2	$1,582	bc	**0.4**	**de**	**0.2**	**d**	**0.7**	**de**
1	Standard 60, 55, 45 dsv	B-1399	A = 7/26, B = 8/17, C = 8/22	$1,572	bc	**0.3**	**e**	**0.1**	**d**	**0.4**	**e**
7	Untreated Check	B-1399		$1,563	bc	4.1	c	1.7	c	6.5	c
8	Untreated Check	C-RR059		$1,479	cd	6.9	b	2.8	b	11.0	b
9	Untreated Check	B-149N		$1,390	d	9.2	a	3.7	a	14.7	a

Average		$1,591	2.8	1.1	4.5
LSD 5%		157.0	1.0	0.5	1.7
CV %		6.6	23.5	27.7	25.1
Treatment Prob (F)		0.0043	0.0001	0.0001	0.0001

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Fungicides applied at recommended rates.

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Grekowicz Farms Inc., Kinde, MI - 2016

No.	BEETcast Timings	Variety	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
3	Standard	B-149N	**$1,755 a**	**9953 a**	**197 a**	**50.6 a**	**14.2 a**	**92.9 a**
6	Longer Intervals	B-149N	**$1,703 ab**	**9657 ab**	**203 a**	47.7 b	**14.6 a**	**92.8 a**
2	Standard	C-RR059	**$1,647 abc**	**9340 abc**	**204 a**	45.8 bcd	**14.6 a**	**92.9 a**
5	Longer Intervals	C-RR059	**$1,630 abc**	**9244 abc**	**207 a**	44.7 cde	**14.8 a**	**93.2 a**
4	Longer Intervals	B-1399	$1,582 bc	8970 bc	**202 a**	44.3 cde	**14.4 a**	**93.5 a**
1	Standard	B-1399	$1,572 bc	8913 bc	**198 a**	45.1 b-e	**14.2 a**	**93.2 a**
7	Untreated Check	B-1399	$1,563 bc	8860 bc	**205 a**	43.3 de	**14.6 a**	**93.4 a**
8	Untreated Check	C-RR059	$1,479 cd	8386 cd	**197 a**	42.6 e	**14.3 a**	**92.8 a**
9	Untreated Check	B-149N	$1,390 d	7881 d	170 b	46.5 bc	13.1 b	90.6 b

Average	$1,591	9023	198	45.6	14.3	92.8
LSD 5%	157.0	890.2	15.8	2.5	0.9	0.8
CV %	6.6	6.6	5.4	3.7	4.3	0.6
Treatment Prob(F)	0.0043	0.0043	0.0044	0.0001	0.0307	0.0001

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: This trial was located in a Yellow Zone (moderate Cercospora risk). The Cercospora leafspot infection level was low. In this trial we evaluated the standard BEETcast recommendation to a longer interval BEETcast spray recommendation. There wasn't enough leafspot pressure to separate treatment or variety differences. All spray programs controlled Cercospora very well and had less than 2% leaf damage. Economic damage occurs when around 3% of the canopy is damaged. The untreated plots had about 10% leaf damage and lost about 2 tons per acre and one half point of sugar. None of the treatments caused sugarbeet leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot in Sugarbeets
Grekowicz Farms Inc., Kinde, MI - 2016

Spray Treatment Effect (Average of Varieties)

No.	BEETcast Timings	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	5-Sep	22-Sep					
1	Standard	**$1,658 a**	**0.7 b**	**0.2 b**	**1.1 b**	**9402 a**	**199 ab**	**47.2 a**	**14.3 ab**	**93.0 a**
2	Longer Intervals	**$1,639 a**	**1.0 b**	**0.3 b**	**1.7 b**	**9290 a**	**204 a**	45.6 b	**14.6 a**	**93.1 a**
3	Untreated Check	$1,477 b	6.7 a	2.7 a	10.7 a	8376 b	190 b	44.1 c	14.0 b	92.2 b
Average		$1,591	2.8	1.1	4.5	9023	198	45.6	14.3	92.8
LSD 5%		90.3	0.5	0.1	1.1	512.2	9.2	1.3	0.5	0.6
CV %		5.7	18.3	10.9	23.4	5.7	4.6	2.9	3.3	0.6

Variety Effect (Average of Spray Treatments)

No.	BEETcast Timings	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	5-Sep	22-Sep					
3	B-149N	**$1,616**	3.9 a	1.5 a	6.2 a	**9164**	190 b	**48.2 a**	**14.0**	**92.1 a**
2	C-RR059	**$1,586**	2.9 b	1.1 b	4.8 b	**8990**	**202 a**	44.3 b	**14.6**	**93.0 a**
1	B-1399	**$1,572**	**1.6 c**	**0.7 c**	**2.5 c**	**8914**	**202 a**	44.2 b	**14.4**	93.4 b
Average		$1,591	2.8	1.1	4.5	9023	198	45.6	14.3	92.8
LSD 5%		n.s(90.6)	0.6	0.3	1.0	n.s(514)	9.1	1.5	n.s(0.5)	0.5
CV %		6.6	23.5	27.7	25.1	6.6	5.4	3.7	4.2	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Fungicides (with and w/o EBDC Tank Mix) for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 22
Harvested: Sept 29
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Tank Mix**	Net $/A		Improve-ment with Tank Mix	% Leaf Damage							
						Avg 3		Early Rating		Mid Rating		Late Rating	
2	Inspire XT	Yes	**$1,329**	**a**	2.3 X	**2.2**	**i**	**1.0**	**f**	**2.1**	**h**	**3.5**	**g**
10	Minerva	Yes	**$1,318**	**a**	1.9 X	**2.8**	**hi**	**0.9**	**f**	**3.2**	**gh**	**4.4**	**fg**
6	Rhyme	Yes	**$1,313**	**a**	3 X	**2.5**	**i**	**0.6**	**f**	**2.4**	**h**	**4.4**	**fg**
16	Priaxor	Yes	**$1,310**	**ab**	4.9 X	**4.1**	**e-i**	**1.8**	**ef**	4.4	efg	**6.0**	**efg**
12	Proline + Induce	Yes	**$1,285**	**ab**	2.0 X	**2.3**	**i**	**0.6**	**f**	**2.4**	**h**	**4.0**	**fg**
14	Enable + COC	Yes	**$1,282**	**ab**	1.5 X	**2.3**	**i**	**0.6**	**f**	**2.4**	**h**	**4.0**	**fg**
13	Enable + COC	No	**$1,282**	**ab**	NA	**3.4**	**f-i**	**0.9**	**f**	**3.6**	**fgh**	**5.8**	**efg**
4	Topguard	Yes	**$1,278**	**ab**	2.3 X	**2.1**	**i**	**0.8**	**f**	**2.1**	**h**	**3.5**	**g**
9	Minerva	No	**$1,271**	**ab**	NA	5.4	ef	2.4	de	5.4	ef	8.5	def
8	Eminent VP	Yes	**$1,268**	**ab**	1.9 X	**3.1**	**ghi**	**1.0**	**f**	**3.2**	**gh**	**5.1**	**efg**
3	Topguard	No	**$1,261**	**abc**	NA	4.9	efg	**1.4**	**ef**	5.4	ef	**7.8**	**d-g**
1	Inspire XT	No	**$1,261**	**abc**	NA	5.0	efg	**1.9**	**ef**	5.4	ef	**7.8**	**d-g**
11	Proline + Induce	No	**$1,255**	**abc**	NA	4.5	e-h	**1.6**	**ef**	5.4	ef	**6.5**	**efg**
5	Rhyme	No	**$1,249**	**abc**	NA	7.5	d	3.4	d	7.3	d	12.0	d
18	Headline	Yes	**$1,210**	**abc**	5.3 X	5.7	de	**1.4**	**ef**	6.1	de	9.5	de
15	Priaxor	No	$1,184	bcd	NA	20.0	c	6.9	c	21.8	c	31.3	c
7	Eminent VP	No	$1,142	cde	NA	6.0	de	2.4	de	6.1	de	9.5	de
17	Headline	No	$1,081	de	NA	30.1	b	12.0	b	29.5	b	48.8	b
19	Untreated Check		$1,039	e	NA	56.4	a	24.3	a	47.5	a	97.5	a

Average	$1,243		9.0	3.5	8.7	14.7
LSD 5%	106.5		1.8	1.2	1.6	4.2
CV %	5.9		13.8	23.4	13.0	19.8

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Treatment = 4 applications for each treatment (1 and 4 = Main trt, 2 = Manzate, 3 = Cuprofix), Fungicides applied at recommended rates.

** Tank Mix - Yes = Tank Mixed with Manzate

Spray Dates = Initial start was 55 dsv on 7/15, B = 21 days on 8/4, C = 10 days on 8/15, and D = 10 days on 8/26

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.

Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Fungicides (with and w/o EBDC Tank Mix) for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

No.	Treatment	Tank Mix	$/A		RWSA		RWST		T/A		% Suc		% CJP	
2	Inspire XT	Yes	**$1,329**	**a**	**8625**	**a**	**224**	**a**	**38.5**	**a**	**15.3**	**a**	**95.1**	**ab**
10	Minerva	Yes	**$1,318**	**a**	**8589**	**a**	**222**	**a**	**38.6**	**a**	**15.2**	**a**	**95.1**	**abc**
6	Rhyme	Yes	**$1,313**	**a**	**8560**	**a**	**221**	**a**	**38.7**	**a**	**15.1**	**a**	**95.1**	**abc**
16	Priaxor	Yes	**$1,310**	**ab**	**8552**	**a**	**220**	**a**	**37.8**	**a**	**15.1**	**ab**	**95.1**	**ab**
12	Proline + Induce	Yes	**$1,285**	**ab**	**8453**	**a**	**222**	**a**	**38.1**	**a**	**15.2**	**a**	**95.1**	**abc**
14	Enable + COC	Yes	**$1,282**	**ab**	**8332**	**ab**	**222**	**a**	**37.5**	**a**	**15.2**	**a**	**95.2**	**a**
13	Enable + COC	No	**$1,282**	**ab**	**8208**	**ab**	**220**	**a**	**37.3**	**a**	**15.1**	**a**	**95.0**	**abc**
4	Topguard	Yes	**$1,278**	**ab**	**8342**	**ab**	**222**	**a**	**38.4**	**a**	**15.2**	**a**	**95.1**	**ab**
9	Minerva	No	**$1,271**	**ab**	**8176**	**ab**	**220**	**a**	**37.2**	**a**	**15.0**	**abc**	**95.1**	**ab**
8	Eminent VP	Yes	**$1,268**	**ab**	**8285**	**ab**	**222**	**a**	**37.3**	**a**	**15.1**	**a**	**95.2**	**a**
3	Topguard	No	**$1,261**	**abc**	**8114**	**abc**	**217**	**ab**	**37.4**	**a**	**14.9**	**abc**	**94.9**	**abc**
1	Inspire XT	No	**$1,261**	**abc**	**8083**	**abc**	**215**	**ab**	**37.6**	**a**	**14.9**	**abc**	**94.7**	**a-d**
11	Proline + Induce	No	**$1,255**	**abc**	**8145**	**ab**	**219**	**a**	**37.1**	**a**	**15.0**	**abc**	**95.1**	**ab**
5	Rhyme	No	**$1,249**	**abc**	**8043**	**abc**	**216**	**ab**	**37.3**	**a**	**14.9**	**abc**	**94.8**	**a-d**
18	Headline	Yes	**$1,210**	**abc**	**7984**	**abc**	**214**	**ab**	**37.4**	**a**	**14.8**	**abc**	**94.7**	**a-d**
15	Priaxor	No	$1,184	bcd	7657	bcd	**209**	**abc**	**36.7**	**a**	**14.6**	**abc**	94.2	cd
7	Eminent VP	No	$1,142	cde	7383	cd	203	bc	**36.8**	**a**	14.3	bcd	94.0	d
17	Headline	No	$1,081	de	7069	d	204	bc	34.7	b	14.3	cd	94.3	bcd
19	Untreated Check		$1,039	e	6396	d	195	c	32.8	b	13.8	d	94.0	d

Average	$1,243	8052	216	37.2	14.9	94.8
LSD 5%	106.5	655.5	13.2	1.9	0.7	0.7
CV %	5.9	5.6	4.2	3.5	3.1	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Triazole and strobilurin fungicides tank mixed with an EBDC provided significantly better Cercospora leafspot control than the same fungicides applied alone. The strobilurin fungicides (Priaxor and Headline) benefited more from tank mixing than did the triazole fungicides. Leaf injury from Cercospora was reduced from 5.25% (no tank mix) to 2.5% (tank mix) with the triazole fungicides. With strobilurin fungicides, the improvement went from 25% to 5%. This is a much larger improvement due to tank mixing than we have seen in the past. All treatments consisted of a four spray program (ABCD). The A and B timings contained the listed fungicide with or without an EBDC tank mix. The B timing contained an EBDC product alone. The C timing contained a copper product alone. All treatments received the same B and C timing applications.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicides (with and w/o EBDC Tank Mix) for Control of Cercospora Leafspot in Sugarbeets

Laker Agronomy Field, Elkton, MI - 2016

Fungicide Effect (Average of Tank mix and No Tank Mix)

No.	Treatment	$/A	% Leaf Damage				RWSA	RWST	T/A	% Suc	% CJP
			Avg 3	Early	Mid	Late					
1	Inspire (A), Manzate (B), Cuprofix (C), Inspire (D).	**$1,295 a**	**3.6 cde**	**1.4 cd**	**3.7 cd**	**5.6 c**	**8354 a**	**220**	**38.0 a**	**15.1 a**	**94.9**
5	Minerva (A), Manzate (B), Cuprofix (C), Minerva (D).	**$1,294 a**	**4.1 cde**	**1.7 cd**	**4.3 cd**	**6.4 c**	**8382 a**	**221**	**37.9 a**	**15.1 a**	**95.1**
7	Enable+Crop Oil (A), Manzate (B), Cuprofix (C) Enable+Crop Oil (D).	**$1,282 a**	**2.9 e**	**0.8 d**	**3.0 d**	**4.9 c**	**8270 a**	**221**	**37.4 a**	**15.1 a**	**95.1**
3	Rhyme (A), Manzate (B), Cuprofix (C), Rhyme (D).	**$1,281 a**	5.0 c	2.0 c	4.8 c	**8.2 c**	**8302 a**	**218**	**38.0 a**	**15.0 a**	**94.9**
6	Proline+Induce (A) Manzate (B), Cuprofix (C) Proline+Induce (D).	**$1,270 a**	**3.4 de**	**1.1 cd**	**3.9 cd**	**5.3 c**	**8299 a**	**220**	**37.6 a**	**15.1 a**	**95.1**
2	Topguard (A), Manzate (B), Cuprofix (C), Topguard (D),	**$1,269 ab**	**3.5 cde**	**1.1 cd**	**3.7 cd**	**5.6 c**	**8228 ab**	**219**	**37.9 a**	**15.0 a**	**95.0**
8	Priaxor (A), Manzate (B), Cuprofix (C), Priaxor (D).	**$1,247 ab**	12.0 b	4.3 b	13.1 b	18.6 b	**8104 ab**	**214**	**37.2 a**	**14.8 a**	**94.7**
4	Eminent (A), Manzate (B), Cuprofix (C), Eminent (D).	$1,205 bc	4.5 cd	1.7 c	4.7 c	**7.3 c**	7834 bc	**213**	**37.1 ab**	**14.7 a**	**94.6**
9	Headline (A), Manzate (B), Cuprofix (C), Headline (D).	$1,145 c	17.9 a	6.7 a	17.8 a	29.1 a	7527 c	**209**	36.0 b	14.5 b	**94.5**
	Average	$1,254	6.3	2.3	6.5	10.1	8144	217	37.5	14.9	94.9
	LSD 5%	67.7	1.6	0.9	1.3	3.4	416.3	n.s(8.6)	1.1	0.5	n.s(0.6)
	CV %	5.0	24.0	38.7	19.5	32.5	5.0	3.8	2.8	3.0	0.6

Tank Mix Effect (Average of all Fungicide Treatments)

No.	Treatment	$/A	% Leaf Damage				RWSA	RWST	T/A	% Suc	% CJP
			Avg 3	Early	Mid	Late					
2	Tank Mix	**$1,288 a**	**3.0 b**	**1.0 b**	**3.1 b**	**4.9 b**	**8414 a**	**221 a**	**38.0 a**	**15 a**	**95.1 a**
1	No Tank Mix	$1,221 b	9.6 a	4 a	10.0 a	15 a	7875 b	214 b	36.9 b	15 b	94.7 b
	Average	$1,254	6.3	2.3	6.5	10.1	8144	217	37.5	14.9	94.9
	LSD 5%	35.5	0.6	0.4	0.5	1.4	218.5	4.4	0.6	0.2	0.2
	CV %	5.5	19.6	35.0	17.2	28.7	5.5	4.2	3.5	3.1	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Fungicides (with and w/o EBDC tank mix) for Control of Cercospora Leafspot in Sugarbeets

Stoneman Farms Inc., Ithaca, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 25
Harvested: Oct 19
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Loam
%OM: 3.4, pH: 6.7, CEC: 11.3
Above Opt: P, K
High: Mn, Low: B
Added N: 120 lbs
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 22.1 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Tank Mix**	Net $/A		Improvement with Tank Mix	% Leaf Damage					
						Avg 2		15-Sep		12-Oct	
2	Inspire XT	Yes	**$1,826**	**a**	3.5 X	**2.6**	**j**	**2.5**	**h**	**2.8**	**i**
4	Topguard	Yes	**$1,821**	**a**	4.2 X	**2.9**	**j**	**2.8**	**h**	**3.0**	**i**
16	Minerva Duo	Yes	**$1,821**	**a**	1.6 X	**2.4**	**j**	**2.3**	**h**	**2.5**	**i**
12	Proline + Induce	Yes	**$1,787**	**ab**	3.2 X	**3.4**	**j**	**3.0**	**h**	**3.7**	**i**
15	Minerva Duo	No	**$1,782**	**ab**	NA	**3.8**	**j**	**3.4**	**h**	**4.3**	**i**
8	Eminent VP	Yes	**$1,773**	**ab**	4.2 X	**3.5**	**j**	**3.3**	**h**	**3.7**	**i**
6	Rhyme	Yes	**$1,730**	**abc**	4.2 X	**3.7**	**j**	**3.3**	**h**	**4.1**	**i**
14	Enable +COC	Yes	**$1,713**	**abc**	3.5 X	**3.5**	**j**	**3.3**	**h**	**3.7**	**i**
1	Inspire XT	No	$1,698	bc	NA	9.2	gh	7.4	fg	11.0	g
3	Topguard	No	$1,692	bc	NA	12.2	f	9.0	f	15.5	ef
13	Enable + COC	No	$1,692	bc	NA	12.1	f	9.0	f	15.3	f
11	Proline + Induce	No	$1,691	bc	NA	10.7	fg	5.8	g	15.5	ef
10	Minerva	Yes	$1,688	bc	4.1 X	**3.7**	**j**	**3.3**	**h**	**4.1**	**i**
20	Priaxor	Yes	$1,685	bc	4.0 X	8.0	hi	7.5	fg	8.4	gh
18	Super Tin 4L	Yes	$1,671	bcd	1.8 X	**3.9**	**j**	**3.7**	**h**	**4.1**	**i**
5	Rhyme	No	$1,647	cd	NA	15.0	e	11.8	e	18.3	de
17	Super Tin 4L	No	$1,644	cd	NA	6.8	i	6.2	g	7.4	h
22	Headline	Yes	$1,642	cd	3.4 X	17.1	d	14.8	d	19.5	d
7	Eminent VP	No	$1,625	cd	NA	14.5	e	9.0	f	20.0	d
9	Minerva	No	$1,614	cd	NA	14.8	e	8.6	f	21.0	d
19	Priaxor	No	$1,563	d	NA	31.6	c	16.8	c	46.5	c
21	Headline	No	$1,455	e	NA	58.0	b	28.0	b	88.0	b
23	Untreated Check		$1,337		NA	68.0	a	41.0	a	95.0	a

Average	$1,678		13.5	8.9	18.1
LSD 5%	103.6		2.0	1.9	2.8
CV %	4.3		10.3	14.5	10.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Treatment = 4 applications for each treatment (1 and 4 = Main trt, 2 = Manzate, 3 = Cuprofix), Fungicides applied at recommended rates.

**Tank Mix - Yes = Tank Mixed with Manzate

Spray Dates = Initial start was 55 dsv on 7/19, B = 21 days on 8/9, C = 10 days on 8/19, D = 10 days on 8/29

Fungicides applied at recommended rates.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicides (with and w/o EBDC tank mix) for Control of Cercospora Leafspot in Sugarbeets

Stoneman Farms Inc., Ithaca, MI - 2016

No.	Treatment	Tank Mix	Net $/A		RWSA		RWST		T/A		% SUC		% CJP	
2	Inspire XT	Yes	**$1,826**	**a**	**10979**	**a**	**214**	**a**	**51.3**	**ab**	**15.2**	**a**	**93.4**	**ab**
4	Topguard	Yes	**$1,821**	**a**	**10975**	**a**	**214**	**ab**	**51.4**	**a**	**15.1**	**abc**	**93.6**	**a**
16	Minerva Duo	Yes	**$1,821**	**a**	**11029**	**a**	**215**	**a**	**51.3**	**ab**	**15.3**	**a**	**93.4**	**ab**
12	Proline + Induce	Yes	**$1,787**	**ab**	**10800**	**ab**	**213**	**ab**	**50.7**	**abc**	**15.1**	**ab**	**93.4**	**ab**
15	Minerva Duo	No	**$1,782**	**ab**	**10715**	**ab**	**212**	**ab**	**50.4**	**abc**	**15.1**	**ab**	**93.2**	**ab**
8	Eminent VP	Yes	**$1,773**	**ab**	**10698**	**abc**	**212**	**abc**	**50.6**	**abc**	**15.0**	**abc**	**93.4**	**ab**
6	Rhyme	Yes	**$1,730**	**abc**	**10444**	**a-d**	**207**	**a-d**	**50.5**	**abc**	**14.8**	**a-d**	**93.1**	**ab**
14	Enable + COC	Yes	**$1,713**	**abc**	**10376**	**a-e**	**208**	**a-d**	**49.8**	**a-d**	**14.9**	**a-d**	**93.1**	**ab**
1	Inspire XT	No	$1,698	bc	10142	b-e	**204**	**a-e**	**49.8**	**a-d**	**14.7**	**a-e**	**92.8**	**ab**
3	Topguard	No	$1,692	bc	10131	b-e	**203**	**a-e**	**49.9**	**a-d**	**14.6**	**a-e**	**92.8**	**ab**
13	Enable + COC	No	$1,692	bc	10159	b-e	**205**	**a-e**	**49.6**	**a-d**	**14.6**	**a-e**	**93.2**	**ab**
11	Proline + Induce	No	$1,691	bc	10151	b-e	**205**	**a-e**	**49.6**	**a-d**	**14.7**	**a-e**	**93.1**	**ab**
10	Minerva	Yes	$1,688	bc	10202	b-e	**205**	**a-e**	**49.9**	**a-d**	**14.7**	**a-d**	**92.8**	**ab**
20	Priaxor	Yes	$1,685	bc	10189	b-e	**207**	**a-d**	**49.2**	**a-d**	**14.8**	**a-d**	**93.1**	**ab**
18	Super Tin 4L	Yes	$1,671	bcd	10001	c-f	**203**	**a-e**	**49.3**	**a-d**	**14.6**	**a-e**	**92.9**	**ab**
5	Rhyme	No	$1,647	cd	9874	def	200	b-e	**49.3**	**a-d**	14.5	b-e	**92.7**	**abc**
17	Super Tin 4L	No	$1,644	cd	9749	def	197	de	**49.5**	**a-d**	14.3	de	92.6	bcd
22	Headline	Yes	$1,642	cd	9942	def	199	cde	**50.0**	**a-d**	14.4	cde	**92.7**	**abc**
7	Eminent VP	No	$1,625	cd	9744	def	198	de	**49.2**	**a-d**	14.4	cde	92.5	bcd
9	Minerva	No	$1,614	cd	9681	ef	198	de	49.0	bcd	14.3	de	**92.9**	**ab**
19	Priaxor	No	$1,563	d	9391	f	193	ef	48.6	cd	14.0	ef	**92.7**	**abc**
21	Headline	No	$1,455	e	8764	g	183	fg	47.9	d	13.6	fg	91.8	cd
23	Untreated Check		$1,337	f	7755	h	175	fg	44.4	e	13.1	fg	91.7	cd

Average	$1,678	10082	203	49.6	14.6	92.9
LSD 5%	103.6	600.8	11.2	2.0	0.6	0.8
CV %	4.3	4.1	3.8	2.8	2.8	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicides (with and w/o EBDC tank mix) for Control of Cercospora Leafspot in Sugarbeets
Stoneman Farms Inc., Ithaca, MI - 2016

Fungicide Effect (Average of Tank mix and No Tank Mix)

No.	Treatment	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% Suc	% CJP
			Avg 2	15-Sep	12-Oct					
8	Minerva Duo(A), Manzate(B), Cuprofix(C), Minerva Duo(D).	**$1,801 a**	**3.1 f**	**2.8 f**	**3.4 g**	**10872 a**	**214 a**	**50.9**	**15.2 a**	**93.3 a**
1	Inspire(A), Manzate(B), Cuprofix(C), Inspire(D).	**$1,762 ab**	5.9 e	4.9 de	6.9 f	**10561 ab**	**209 ab**	**50.5**	**15.0 ab**	**93.1 a**
2	Topguard(A), Manzate(B), Cuprofix(C), Topguard(D).	**$1,756 abc**	7.6 d	5.9 d	9.3 e	**10553 ab**	**208 ab**	**50.7**	**14.8 abc**	**93.2 a**
6	Proline+Induce(A), Manzate(B), Cuprofix(C), Proline+Induce(D).	**$1,739 abc**	7.0 d	4.4 e	9.6 e	**10475 ab**	**209 ab**	**50.2**	**14.9 ab**	**93.2 a**
7	Enable+Crop Oil(A) Manzate(B), Cuprofix(C), Enable+Crop Oil(D).	$1,702 bcd	7.8 d	6.1 d	9.5 e	10268 bc	206 bc	**49.7**	14.8 bcd	**93.2 a**
4	Eminent(A), Manzate(B), Cuprofix(C), Eminent(D).	$1,699 bcd	9.0 c	6.1 d	11.9 cd	10221 bc	205 bc	**49.9**	14.7 bcd	**93.0 a**
3	Rhyme(A), Manzate(B), Cuprofix(C), Rhyme(D).	$1,689 cde	9.3 c	7.5 c	11.2 d	10159 bcd	204 bc	**49.9**	14.7 bcd	**92.9 a**
9	Super Tin(A), Manzate(B), Cuprofix(C), Super Tin(D).	$1,658 de	5.3 e	4.9 de	5.8 f	9875 cd	200 c	**49.4**	14.5 d	**92.8 ab**
5	Minerva(A), Manzate(B), Cuprofix(C), Minerva(D).	$1,651 de	9.2 c	5.9 d	12.5 c	9942 cd	201 c	**49.4**	14.5 cd	**92.9 a**
10	Priaxor(A), Manzate(B), Cuprofix(C), Priaxor(D).	$1,624 e	19.8 b	12.1 b	27.5 b	9790 d	200 c	**48.9**	14.4 d	**92.9 a**
11	Headline(A), Manzate(B), Cuprofix(C), Headline(D).	$1,549 f	37.6 a	21.4 a	53.8 a	9353 e	191 d	**49.0**	14.0 e	92.2 b
Average		$1,694	11.1	7.5	14.6	10188	204	49.8	14.7	93.0
LSD 5%		72.4	0.9	1.3	1.3	419.7	6.7	n.s(2)	0.4	0.6
CV %		4.2	8.1	16.5	8.6	4.0	3.2	3.3	2.4	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Fungicides (with and w/o EBDC tank mix) for Control of Cercospora Leafspot in Sugarbeets

Stoneman Farms Inc., Ithaca, MI - 2016

Tank Mix Effect (Average of all Fungicide Treatments)

No.	Treatment	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% Suc	% CJP
			Avg 2	15-Sep	12-Oct					
2	Tank Mix	**$1,742 a**	**5.0 b**	**4.5 b**	**5.4 b**	**10512 a**	**209 a**	**50.4 a**	**14.9 a**	**93.2 a**
1	No Tank Mix	$1,646 b	17.1 a	10.4 a	23.9 a	9864 b	200 b	49.3 b	14.4 b	92.8 b
	Average	$1,694	11.1	7.5	14.6	10188	204	49.8	14.7	93.0
	LSD 5%	31.2	0.6	0.6	0.8	175.7	3.4	0.6	0.2	0.3
	CV %	4.3	12.6	17.3	13.1	4.1	3.8	2.8	2.7	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The disease level in this trial was high. All of the triazole fungicides provided fairly good Cercospora control when tank mixed. Minerva Duo, Inspire XT and Topguard were slightly better than the other triazoles. Priaxor was somewhat inferior to the triazoles and Headline completely failed to control leafspot. Tank mixing an EBDC with the fungicides greatly improved performance much more than in previous years. Minerva Duo and Super Tin were not improved as much by tank mixing as were the other fungicides. Low levels of Alternaria and Bacterial leaf spot were present. All treatments consisted of a four spray program (ABCD). The A and D timings contained the listed fungicide with or without an EBDC tank mix. The B timing contained an EBDC product alone. The C timing contained a copper product alone. All treatments received the same B and C timing applications.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Protectant Fungicides for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 22
Harvested: Sept 29
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None
Seeding Rate: 4.1 inches
Beet Stand: 165 B/100 ft
Rainfall: 16 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment**	Rate / Acre	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC
				Avg 2	22-Aug	19-Sep				
3	Koverall (5 Applic) 7/11,7/23,8/4,8/19,8/31	2 lb	**$1,254 a**	**6.2 efg**	**4.1 ef**	**8.3 ef**	**7861 a**	223 bc	**35.2 a**	**15.3 abc**
4	Badge (5 Applic) 7/11,7/23,8/4,8/19,8/31	2 lb	**$1,253 a**	**7.0 efg**	**4.6 ef**	**9.4 ef**	**7850 a**	**225 ab**	**34.9 ab**	**15.4 ab**
5	Cuprofix (5 Applic) 7/11,7/23,8/4,8/19,8/31	2 lb	**$1,249 a**	**5.2 g**	**3.5 f**	**6.9 f**	**7828 a**	**230 a**	**34.1 ab**	**15.5 a**
1	Manzate (5 Applic) 7/11,7/23,8/4,8/19,8/31	1.6 qt	**$1,247 a**	**5.7 fg**	**3.8 ef**	**7.6 ef**	**7815 a**	**226 ab**	**34.6 ab**	**15.4 ab**
9	Kocide (5 Applic) 7/11,7/23,8/4,8/19,8/31	2 lb	**$1,246 a**	**7.4 efg**	**4.9 def**	**9.9 def**	**7810 a**	**227 ab**	**34.4 ab**	**15.5 ab**
2	Dithane (5 Applic) 7/11,7/23,8/4,8/19,8/31	1.6 qt	**$1,234 a**	9.0 e	6.5 de	11.4 de	**7734 a**	219 cd	**35.4 a**	15.0 cd
6	ChampION (5 Applic) 7/11,7/23,8/4,8/19,8/31	2 lb	**$1,224 a**	8.5 ef	**5.5 def**	**8.5 def**	**7672 a**	223 bc	**34.4 ab**	**15.2 abc**
8	*AgriLife (5 Applic) 7/11,7/23,8/4,8/19,8/31	57 fl oz*	**$1,207 a**	11.8 d	7.7 d	15.9 d	**7563 a**	221 bc	**34.1 ab**	15.2 bc
7	AgriLife (5 Applic) 7/11,7/23,8/4,8/19,8/31	38 fl oz	$1,140 b	29.1 c	20.0 c	38.2 c	7143 b	214 de	33.5 b	14.7 de
10	Cueva (5 Applic) 7/11,7/23,8/4,8/19,8/31	2 qt	$1,128 b	42.3 b	29.5 b	55.2 b	7070 b	209 e	**33.8 ab**	14.5 e
11	Untreated Check		$1,021 c	72.3 a	54.2 a	90.3 a	6025 c	196 f	30.8 c	13.9 f
Average			$1,200	18.6	13.1	24.0	7488	219	34.1	15.1
LSD 5%			56.4	2.6	2.6	3.3	353.8	5.5	1.3	0.3
CV %			4.1	12.1	17.3	11.8	4.1	2.2	3.3	1.8

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

***** The 57 fl oz/a rate of AgriLife exceeds the legal single application volume of this product at the time of printing this page.
**Initial spray was 45 dsv then every 12 days after.

Comments: The Cercospora infection was high and a low Alternaria infection was present. The EBDC's and most of the coppers reduced the leafspot level significantly. Six or more fungicide applications would have been needed to provide good Cerospora control. AgriLife at the top labeled reate (38 fl oz/A) and Cueve were less effective. The higher rate of AgriLife (*57 fl oz/A*) was better then the 38 fl oz rate. Yield, quality and grower income followed the same trends. None of the treatments caused leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Triazole + EBDC and Copper Tank Mix Treatments for Control of Cercospora Leafspot in Sugarbeets
Trost Farms Inc., Pigeon, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: May 5
Harvested: Oct 4
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Sandy Clay Loam
%OM: 2.9, pH: 7.1, CEC: 14.7
Above Opt: P, K
High: Mn, Medium: B
Added N: 120 lbs
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.4 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Tank Mix	Rate / Acre	Net $/A	% Leaf Damage		RWSA	RWST	T/A	% SUC
					6-Sep	28-Sep				
8**	Minerva	Echo**	8 fl oz	**$1,236 a**	**0.2 c**	**0.4 c**	**8109 a**	**221 a**	**36.7 a**	**15.3 ab**
6	Minerva	Champ	2 lbs	**$1,206 a**	**0.6 c**	**1.0 c**	**7926 ab**	**219 a**	**36.2 ab**	**15.3 ab**
5	Minerva	Badge	2 pts	**$1,167 ab**	**0.6 c**	**1.3 c**	**7686 abc**	**220 a**	**35.0 abc**	**15.3 ab**
2	Minerva	Manzate	1.6 qts	**$1,161 ab**	**0.5 c**	**1.3 c**	**7648 abc**	**222 a**	34.4 bc	**15.5 a**
4	Minerva	Cuprofix	2 lbs	**$1,161 ab**	**0.3 c**	**0.6 c**	**7647 abc**	**221 a**	34.6 bc	**15.3 ab**
1	Minerva	None		**$1,158 ab**	**0.7 c**	**1.5 c**	7536 bc	**216 ab**	**34.9 abc**	**15.2 ab**
3	Minerva	Dithane	1.6 qts	**$1,158 ab**	**0.6 c**	**1.3 c**	**7628 abc**	**216 ab**	**35.2 abc**	**15.2 ab**
7	Minerva	AgriLife	38 fl oz	$1,086 bc	**1.1 c**	**2.3 c**	7184 cd	**214 ab**	33.6 cd	**15.1 ab**
9	Minerva	Cueva	2 qts	$1,010 cd	17.8 b	27.5 b	6712 d	208 bc	32.3 d	14.8 bc
10	Untreated Check			$998 d	27.3 a	62.8 a	6171 e	202 c	30.5 e	14.5 c

Average	$1,134	5.0	10.0	7425	216	34.3	15.2
LSD 5%	77.9	4.2	4.8	482.0	9.0	1.8	0.5
CV %	4.7	58.2	33.1	4.5	2.9	3.6	2.2

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Each treatment had 4 applications: Minerva (1st = July 14th and 4th = Aug 26th Apps) and EBDC (2nd = Aug 4th and 3rd = Aug 15th Apps). Trt 1 had no tank mix partner, Trt 2 was a tank mix with Minerva + Manzate (1st and 4th Apps), and so on. All fungicides applied at recommended rates.

**Echo (Chlorothalonil) is not currently registered for use on sugarbeets.

* Minerva rate: 13 fl oz/A

Comments: Cercospora leafspot pressure was moderate. Alternaria and Bacterial leafspot were present at lower levels. Minerva tank mixed with Echo** appeared to provide better results (not statistically significant) than the other treatments. ChampION, Badge SC, Manzate Fl, Cuprofix, Dithane Fl and AgriLife provided similar results and kept leafspot damage below economic levels. Cueva was significantly less effective than the other treatments. None of the treatments caused phytotoxicity.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Triazole + EBDC and Copper Tank Mix Treatments for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 22
Harvested: Sept 29
Plots: 6 Rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Tank Mix	Rate / Acre	Net $/A	% Leaf Damage		RWSA	RWST	T/A	% SUC
					1-Sep	26-Sep				
4	Minerva	Cuprofix	2 lbs	**$1,377 a**	**1.2 d**	**9.1 e**	**7618 a**	**201 ab**	**37.9 a**	**14.4 ab**
2	Minerva	Manzate	1.6 qts	**$1,326 ab**	**0.9 d**	**6.8 e**	**7336 ab**	**204 a**	**35.9 abc**	**14.5 a**
3	Minerva	Dithane	1.6 qts	**$1,321 ab**	**1.0 d**	**6.4 e**	**7306 ab**	**204 a**	**35.8 abc**	**14.5 a**
6	Minerva	Champ	2 lbs	**$1,316 ab**	**1.8 d**	**12.7 e**	**7279 ab**	**202 ab**	**36.1 abc**	**14.5 a**
5	Minerva	Badge	2 pts	**$1,312 ab**	**1.7 d**	**12.0 e**	**7256 ab**	196 bc	**37.1 ab**	**14.1 abc**
1	Minerva	None		$1,280 bc	6.6 c	34.0 c	7082 bc	194 bc	**36.4 abc**	14.0 bc
7	Minerva	AgriLife	38 fl oz	$1,216 c	5.3 c	24.5 d	6726 c	195 bc	34.5 c	**14.1 abc**
8	Minerva	Cueva	2 qts	$1,205 c	19.3 b	80.0 b	6665 c	189 c	35.4 bc	13.7 c
9	Untreated Check			$1,089 d	42.0 a	97.2 a	5608 d	173 d	32.4 d	12.8 d

Average	$1,271	8.9	31.4	6986	195	35.7	14.1
LSD 5%	80.0	2.8	5.8	442.3	7.8	2.1	0.4
CV %	5.4	26.8	16.0	5.4	3.4	5.1	2.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Each treatment had 4 applications: Minerva (1st = July 16th and 4th = Aug 25th Apps) and EBDC (2nd = Aug 5th and 3rd = Aug 15th Apps). Trt 1 had no tank mix partner, Trt 2 was a tank mix with Minerva + Manzate (1st and 4th Apps), and so on. All fungicides applied at recommended rates.

*Minerva Rate: 13 fl oz/A

Comments: Cercospora leaf spot pressure was very high. Alternaria leafspot was present at a lower level. Minerva tank mixed with Cuprofix, Manzate Fl, Dithane Fl, ChampION and Badge SC provided similar results, however, leafspot damage was significant. More applications would be needed to provide good leafspot control. Minerva tank mixed with AgriLife gave somewhat less control than the above treatments but provided better leafspot control than the Minerva (no tank mix) treatment. The Minerva + Cueva treatment was significantly less effective than the other treatments. None of the treatments caused leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Minerva and Super Tin with and without MasterLock and N Demand for Control of Cercospora Leafspot in Sugarbeets

Trost Farms Inc., Pigeon, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: May 3
Harvested: Oct 4
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Sandy Clay Loam
%OM: 2.9, pH: 7.1, CEC: 14.7
Above Opt: P, K
High: Mn, Medium: B
Added N: 120 lbs
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.4 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Rate / Acre	Net $/A	% Leaf Damage		RWSA	RWST	T/A	% SUC
				9-Sep	29-Sep				
4	Super Tin 4L MasterLock	8 fl oz 6.4 fl oz	**$1,273 a**	**0.1 b**	**0.2 e**	**8429 a**	**234 a**	**36.0 a**	**15.9 a**
3	Minerva MasterLock	13 fl oz 6.4 fl oz	**$1,200 ab**	**0.8 b**	2.8 cd	**8113 ab**	**227 ab**	**35.7 ab**	**15.6 ab**
8	Super Tin 4L MasterLock N Demand	8 fl oz 6.4 fl oz 1 gal	$1,172 b	**0.2 b**	**0.6 e**	**7961 ab**	**224 abc**	**35.6 abc**	**15.4 ab**
2	Super Tin 4L	8 fl oz	$1,171 b	**0.2 b**	**0.9 de**	7707 bc	**226 abc**	34.1 bc	**15.6 ab**
6	Super Tin 4L N Demand	8 fl oz 1 gal	$1,153 b	**0.3 b**	**1.1 de**	7773 bc	219 bc	**35.5 abc**	15.2 bc
1	Minerva	13 fl oz	$1,148 b	**1.5 b**	4.5 c	7717 bc	**227 abc**	34.1 bc	**15.5 ab**
7	Minerva MasterLock N Demand	13 fl oz 6.4 fl oz 1 gal	$1,139 b	**1.1 b**	3.8 c	**7899 ab**	**228 ab**	**34.7 abc**	**15.6 ab**
5	Minerva Demand	13 fl oz 1 gal	$1,054 c	**2.5 b**	6.9 b	7292 c	215 cd	34.0 c	14.9 bc
9	Untreated Check		$950 d	37.0 a	72.5 a	6081 d	206 d	29.5 d	14.6 c
Average			$1,140	4.8	10.4	7664	223	34.3	15.4
LSD 5%			83.7	4.6	1.9	535.9	10.9	1.5	0.6
CV %			5.0	65.7	12.7	4.8	3.4	3.0	2.7

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Each treatment received 4 applications. Applications 1st = July 14th and 4th = Aug 19th were either Super Tin or Minerva. Applications 2nd = July 29th and 3rd = Aug 8th were EBDC's. MasterLock and N Demand treatments were applied at each application timing.

Comments: Super Tin 4L and Minerva fungicides were applied alone and in combination with MasterLock (sticker / spreader) and/or N Demand (foliar nitrogen). Super Tin provided somewhat better Cercospora leafspot control than did Minerva in this trial. The addition of MasterLock improved the performance of Super Tin and Minerva. Combinations with N Demand did not appear to provide an improvement. None of the treatments caused crop injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Minerva with and without MasterLock and N Demand for Control of Cercospora Leafspot in Sugarbeets

Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 22
Harvested: Sept 29
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Rate / Acre	Net $/A	% Leaf Damage		RWSA	RWST	T/A	% SUC
				26-Aug	22-Sep				
4	Manzate MasterLock	1.6 qt 6.4 fl oz	**$1,482 ab**	**0.1 d**	**4.5 d**	**8990 a**	**213 a**	**42.2 a**	**15.0 a**
3	Minerva MasterLock	13 fl oz 6.4 fl oz	**$1,415 ab**	**0.2 cd**	**7.5 cd**	**8681 ab**	**210 a**	**41.3 ab**	**14.8 a**
8	Manzate MasterLock N Demand	1.6 qt 6.4 fl oz 1 gal	**$1,412 ab**	**0.2 cd**	**8.6 cd**	**8745 ab**	**210 a**	**41.8 ab**	**14.8 a**
2	Manzate	1.6 qt	**$1,394 ab**	0.4 bc	10.7 bc	**8416 abc**	**210 a**	**40.0 abc**	**14.8 a**
6	Manzate N Demand	1.6 qt 1 gal	**$1,393 ab**	**0.2 cd**	**8.6 cd**	**8502 abc**	**204 a**	**41.6 ab**	**14.4 ab**
7	Minerva MasterLock N Demand	13 fl oz 6.4 fl oz 1 gal	$1,354 b	0.2 c	9.9 c	**8486 abc**	**208 a**	**40.8 ab**	**14.7 a**
5	Minerva N Demand	13 fl oz 1 gal	$1,316 b	0.3 bc	10.8 bc	8204 bc	**210 a**	39.1 bc	**14.8 a**
1	Minerva	13 fl oz	$1,305 b	0.6 b	14.9 b	7980 c	**210 a**	37.9 c	**14.8 a**
9	Untreated Check		$1,162 c	11.1 a	73.0 a	6804 d	194 b	35.1 d	13.9 b

Average	$1,359	1.5	16.5	8312	208	40.0	14.7
LSD 5%	98.2	0.9	4.1	575.3	9.4	2.7	0.5
CV %	6.2	53.9	21.3	5.9	3.9	5.7	2.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Each treatment received 4 applications. Applications 1st = July 18th and 4th = Aug 22nd were either Manzate or Minerva. Applications 2nd = July 30th and 3rd = Aug 9th were EBDC's. MasterLock and N Demand treatments were applied at each application timing.

Comments: Manzate Fl and Minerva fungicides were applied alone and in combination with MasterLock (sticker / spreader) and/or N Demand (foliar nitrogen). Manzate provided somewhat better Cercospora leafspot control than did Minerva in this trial. The addition of MasterLock improved the performance of Manzate and Minerva. Combinations with N Demand appeared to provide minor improvement. None of the treatments caused crop injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Protectant Fungicides with and without MasterLock and Reguard (Sticker / Spreader) for Cercospora Control Blumfield East, Richville, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: May 10
Harvested: Sept 19
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Sandy Clay Loam
%OM: 2.5, pH: 7.9, CEC: 12.6
Above Opt: P, K
High: Mn, Low: B
Added N: 130 lbs
Prev Crop: Radish
Rhizoc Level: Low
Cerc Control: See trts
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 14.7 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Sticker	Net $/A	% Leaf Damage		RWSA	RWST	T/A	% SUC	% CJP
				30-Aug	15-Sep					
1	Manzate - 1.6 qt	MasterLock	**$1,410 a**	**1.2 b**	**2.3 b**	**7918 a**	**189 a**	**41.8 a**	**13.7 a**	**92.9**
6	Super Tin - 8 fl oz	Reguard	**$1,401 a**	**1.2 b**	**2.4 b**	**7791 a**	**188 a**	**41.6 a**	**13.7 a**	**92.5**
9	Super Tin - 8 fl oz	None	**$1,395 a**	**1.3 b**	**2.7 b**	**7673 a**	**190 a**	**40.6 a**	**13.7 a**	**92.9**
3	Super Tin - 8 fl oz	MasterLock	**$1,388 a**	**1 b**	**2.3 b**	**7689 a**	**188 a**	**40.9 a**	**13.7 a**	**92.6**
8	Badge SC - 2 pt	None	**$1,380 a**	**2.5 b**	**4.4 b**	**7711 a**	**190 a**	**40.5 a**	**13.9 a**	**92.3**
4	Manzate - 1.6 qt	Reguard	**$1,369 a**	**2 b**	**3.6 b**	**7746 a**	**195 a**	**39.9 a**	**14.0 a**	**93.1**
7	Manzate - 1.6 qt	None	**$1,362 a**	**2.3 b**	**4.1 b**	**7581 a**	**190 a**	**39.8 a**	**13.9 a**	**92.6**
2	Badge SC - 2 pt	MasterLock	**$1,354 a**	**2.2 b**	**3.8 b**	**7649 a**	**189 a**	**40.6 a**	**13.8 a**	**92.4**
5	Badge SC - 2 pt	Reguard	**$1,321 a**	**2.5 b**	**4.3 b**	**7523 a**	**193 a**	**39.0 a**	**14.0 a**	**92.8**
10	Untreated Check		$1,175 b	27.2 a	58.5 a	6316 b	174 b	36.4 b	13.0 b	**92.0**
Average			$1,355	4.3	8.8	7560	189	40.1	13.7	92.6
LSD 5%			109.2	2.0	3.9	587.7	9.4	2.5	0.5	n.s(0.8)
CV %			7.0	40.6	38.0	6.7	4.3	5.5	3.3	0.7

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Sticker Rates: MasterLock = 6.4 fl oz and Reguard = 12 fl oz

Comments: The Cercospora leafspot infection level was high. Manzate Max, Badge SC (applied 5 times = July 19th, Aug 1st, Aug 15th, Aug 24th, and Sept 2nd) and Super Tin (applied 4 times = July 19th, Aug 1st, Aug 19th and Sept 2nd) were applied with and without a sticker / spreader in this trial. MasterLock (Winfield) and Reguard (Wilber Ellis) were the sticker / spreaders utilized. Around 10 inches of rain fell and 4 inches of irrigation was applied from the beginning of fungicide applications until a week after the last spray application. Super Tin appeared to provide the best leafspot control followed by Manzate and then Badge. The sticker / spreaders improved leafspot control, with Masterlock being better than Reguard. The rank of $/Acre does not necessarily follow the level of control due to the cost of the products. None of the treatments caused leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Protectant Fungicides with and without MasterLock and Reguard (Sticker / Spreader) for Cercospora Control
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 22
Harvested: Sept 29
Plots: 6 Rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Clay Loam
% OM: 3.4, pH: 6.3, CEC: 12.7
Above Opt: P, K
High: Mn, Extremely High: B
Added N: 130 lbs
Prev Crop: Soybeans

Rhizoc Level: Low
Cerc Control: See trts
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches

Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Sticker	Net $/A	% Leaf Damage		RWSA	RWST	T/A	% SUC	% CJP
				30-Aug	27-Sep					
1	Manzate - 1.6 qt	MasterLock	**$1,284 a**	**1.2 b**	**2.3 e**	**7961 a**	**210 a**	**38.0 a**	**14.7 a**	**94.2 a**
2	Badge SC - 2 pt	MasterLock	**$1,274 a**	**2.0 b**	9.3 cd	**7935 a**	**213 a**	**37.3 ab**	**15.0 a**	**93.7 a**
3	Manzate 1.6 qt	Reguard	**$1,234 ab**	**1.3 b**	**3.2 e**	**7717 ab**	**214 a**	**36.1 ab**	**15.0 a**	**94.1 a**
5	Manzate 1.6 qt	None	**$1,233 ab**	**2.0 b**	**6.5 de**	**7571 ab**	**208 a**	**36.4 ab**	**14.7 a**	**93.9 a**
4	Badge SC - 2 pt	Reguard	**$1,210 ab**	**2.2 b**	14.0 bc	**7612 ab**	**211 a**	**36.1 ab**	**14.8 a**	**94.0 a**
6	Badge SC - 2 pt	None	$1,184 b	**2.5 b**	17.7 b	7315 b	**209 a**	34.9 b	**14.7 a**	**93.9 a**
7	Untreated Check		$999 c	23.5 a	61.7 a	5904 c	182 b	32.4 c	13.3 b	92.7 b

Average	$1,203	5.0	16.4	7431	207	35.9	14.6	93.8
LSD 5%	76.2	3.9	4.7	450.3	7.7	2.2	0.4	0.5
CV %	5.4	67.3	24.5	5.1	3.2	5.2	2.4	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Six applications of the fungicides (and stickers) were made for each treatment, starting at 55 DSV's, and reapplied at 12 day intervals.

*Sticker Rates: MasterLock = 6.4 fl oz and Reguard = 12 fl oz

Comments: The Cercospora leafspot infection was high. Manzate Max and Badge SC (applied 6 times = July 15th, July 25th, Aug 4th, Aug 15th, Aug 25th and Sept 6th) were applied with and without a sticker / spreader in this trial. MasterLock (Winfield) and Reguard (Wilber Ellis) were the sticker / spreaders utilized. Around 9 inches of rain fell from the beginning of the fungicide applications until a week after the last spray application. The sticker / spreaders improved leafspot control significantly, with MasterLock being better than Reguard. Manzate tended to provide better leafspot control than Badge. The rank of $/A does not necessarily follow the level of control because of the cost of the products. None of the treatments caused leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Protectant Fungicides with and without MasterLock and Reguard (Sticker / Spreader) for Cercospora Control
Gilford, Fairgrove, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 19
Harvested: Sept 19
Plots: 22 inch
Row Spacing: 6 rows X 38 ft, 6 reps
Soil Info: Clay Loam
%OM: 8.8, pH: 8.0, CEC: 31.2
Below Opt: P, Above Opt: K
Medium: Mn, B
Added N: 130 lbs
Prev Crop: Radish
Rhizoc Level: Low
Cerc Control: See trts
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.7 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Sticker	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
				15-Aug	1-Sep	15-Sep					
3	Super Tin - 8 fl oz	MasterLock	**$1,315 a**	**0.8 c**	**3.1 c**	**4.8 d**	**6831 a**	**182 a**	**37.6 a**	**13.4 a**	**92.4 a**
9	Super Tin - 8 fl oz	None	**$1,287 ab**	**1.2 c**	**4.4 c**	**7.3 cd**	**6640 ab**	**179 ab**	**37.3 a**	**13.2 ab**	**92.1 a**
6	Super Tin - 8 fl oz	Reguard	**$1,283 ab**	**0.8 c**	**3.5 c**	**5.8 cd**	**6701 ab**	**182 a**	**36.9 a**	**13.3 a**	**92.5 a**
7	Manzate - 1.6 qt	None	**$1,255 abc**	**1.8 bc**	**5.0 c**	8.4 c	**6557 ab**	**177 ab**	**37.0 a**	**13.1 ab**	**92.1 a**
1	Manzate 1.6 qt	MasterLock	**$1,249 abc**	**1.1 c**	**4.3 c**	**7.5 cd**	**6606 ab**	**179 ab**	**37.0 a**	**13.2 ab**	**92.1 a**
4	Manzate - 1.6 qt	Reguard	**$1,240 abc**	**1.1 c**	**3.7 c**	**6.2 cd**	**6606 ab**	**178 ab**	**37.0 a**	**13.2 ab**	**92.2 a**
2	Badge SC - 2 pt	MasterLock	$1,203 bc	**1.8 bc**	**4.6 c**	8.8 c	**6403 ab**	**174 ab**	**36.8 a**	**13.0 ab**	**91.9 ab**
8	Badge SC - 2 pt	None	$1,185 c	4.0 b	10.0 b	17.7 b	6240 b	**173 ab**	**36.2 a**	12.8 bc	**92.1 ab**
5	Badge SC - 2 pt	Reguard	$1,174 c	3.8 b	9.3 b	15.8 b	6301 b	174 b	**36.2 a**	**13.0 ab**	**91.8 ab**
10	Untreated Check		$1,005 d	21.5 a	43.0 a	79.2 a	5060 c	165 c	30.8 b	12.5 c	91.3 b
Average			$1,220	3.8	9.1	16.1	6395	176	36.3	13.1	92.0
LSD 5%			83.0	2.0	3.2	3.2	418.0	7.1	1.9	0.4	0.6
CV %			5.9	45.5	30.0	16.9	5.6	3.5	4.4	2.6	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Sticker Rates: MasterLock = 6.4 fl oz and Reguard = 12 fl oz.

Comments: The Cercospora leafspot infection was high. Manzate Max and Badge SC (6 Applications = July 12th, July 23rd, Aug 2nd, Aug 12th, Aug 23rd, and Sept 2nd), and Super Tin (4 applications = July 12th, July 28th, Aug 12th and Aug 29th) were applied with and without a sticker / spreader in this trial. MasterLock (Winfield) and Reguard (Wilber Ellis) were the sticker / spreaders utilized. Over 7 inches of rain fell from the beginning of the fungicide applications until a week after the last spray application. Super Tin provided the best leafspot control followed by Manzate and then Badge. The sticker / spreaders improved leafspot control significantly, with MasterLock being a slightly better than Reguard. The rank of $/Acre does not necessarily follow the level of control because of the cost of the products. None of the treatments caused leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Protectant Fungicides with and without MasterLock and Reguard (Sticker / Spreader) for Cercospora Control

Stoneman Farms Inc., Ithaca, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 25
Harvested: Oct 21
Plots: 22 inch
Row Spacing: 6 rows X 38 ft, 6 reps
Soil Info: Loam
%OM: 3.4, pH: 6.7, CEC: 11.3
Above Opt: P, K
High: Mn, Low: B
Added N: 120 lbs
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 22.1 inches
Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Sticker	Net $/A	% Leaf Damage								
				Cercospora LS			Alternaria LS			Bacterial LS		
				10-Oct		Rank	14-Oct		Rank	14-Oct		Rank
2	Badge SC - 2 pt	MasterLock	**$1,735 a**	**5.5**	**f**	**1**	5.4	cd	5	**5.7**	**f**	**1**
3	Super Tin - 8 fl oz	MasterLock	**$1,725 ab**	12.0	e	3	**4.4**	**de**	**2**	7.9	de	5
6	Super Tin - 8 fl oz	Reguard	**$1,692 ab**	21.8	d	4	4.9	d	3	8.8	d	6
5	Badge SC - 2 pt	Reguard	**$1,688 ab**	**7.9**	**ef**	**2**	5.8	cd	7	7.3	e	3
8	Badge SC - 2 pt	No Sticker	**$1,665 ab**	24.5	d	5	6.7	c	8	7.0	e	2
1	Manzate - 1.6 qt	MasterLock	**$1,657 ab**	24.6	d	6	**3.1**	**e**	**1**	7.3	e	3
9	Super Tin - 8 fl oz	No Sticker	**$1,626 abc**	30.8	c	7	5.4	cd	5	10.7	c	7
4	Manzate - 1.6 qt	Reguard	$1,609 bc	31.7	c	8	5.3	cd	4	10.7	c	7
7	Manzate - 1.6 qt	No Sticker	$1,536 c	43.6	b	9	8.7	b	9	14.0	b	9
10	Untreated Check		$1,365 c	100.0	a	10	23.2	a	10	18.5	a	10

Average	$1,630	30.2	7.3	9.8
LSD 5%	106.0	5.3	1.4	1.1
CV %	5.6	15.0	16.1	9.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Sticker Rates: MasterLock = 6.4 fl oz and Reguard = 12 fl oz

* Super Tin treatments were applied 4 times (S. Tin 1st and 3rd, Manzate 2nd and 4th)
* Manzate and Badge treatments were applied 6 times

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Protectant Fungicides with and without MasterLock and Reguard (Sticker / Spreader) for Cercospora Control

Stoneman Farms Inc., Ithaca, MI - 2016

No.	Treatment	Sticker	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
2	Badge SC - 2 pt	MasterLock	**$1,735 a**	**10665 a**	**217 a**	**49.3 a**	**15.1 a**	**94.4 a**
3	Super Tin - 8 fl oz	MasterLock	**$1,725 ab**	**10445 ab**	**214 a**	**48.9 ab**	**15.0 a**	**93.9 ab**
6	Super Tin - 8 fl oz	Reguard	**$1,692 ab**	**10288 ab**	**212 ab**	**48.6 ab**	**14.8 ab**	**94.1 ab**
5	Badge SC - 2 pt	Reguard	**$1,688 ab**	**10438 ab**	**213 ab**	**49.0 ab**	**14.9 ab**	**94.1 ab**
8	Badge SC - 2 pt	No Sticker	**$1,665 ab**	**10164 ab**	**208 ab**	**48.8 ab**	**14.8 ab**	93.4 bc
1	Manzate - 1.6 qt	MasterLock	**$1,657 ab**	**10168 ab**	**209 ab**	**48.6 ab**	**14.8 ab**	93.7 b
9	Super Tin - 8 fl oz	No Sticker	**$1,626 abc**	9803 bc	**208 ab**	47.1 c	**14.7 ab**	93.6 bc
4	Manzate - 1.6 qt	Reguard	$1,609 bc	9934 bc	**209 ab**	47.6 bc	**14.7 ab**	**93.8 ab**
7	Manzate - 1.6 qt	No Sticker	$1,536 c	9362 c	201 b	46.6 cd	14.3 b	93.5 bc
10	Untreated Check		$1,365 d	8070 d	178 c	45.3 d	12.9 c	93.0 c

Average	$1,620	9934	207	48.0	14.6	93.7
LSD 5%	106.0	626.5	11.0	1.4	0.6	0.6
CV %	5.6	5.4	4.6	2.5	3.5	0.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

*Sticker Rates: MasterLock = 6.4 fl oz and Reguard = 12 fl oz

Comments: The Cercospora leafspot infection level was high and Alternaria and Bacterial leafspot were also problems. Manzate Max and Badge SC (both applied 6 times = July 19th, Aug 1st, Aug 11th, Aug 18th, Aug 29th and Sept 7th) and Super Tin (applied 4 times = July 19th, Aug 3rd, Aug 19th, and Sept 7th) were applied with and without a sticker / spreader in this trial. MasterLock (Winfield) and Reguard (Wilber Ellis) were the sticker / spreaders utilized. Almost 10 inches of rain fell from the beginning of the fungicide applications until a week after the last spray application. Badge was more effective in controlling leafspot than Super Tin and Manzate. MasterLock gave more of an improvement in leafspot control compared to Reguard when tank mixed with the fungicides. Without a sticker / spreader leafspot control was poor. The rank of $/Acre does not necessarily follow the level of control because of the cost of the products. This trial was performed at four different locations and this location was the only trial where Badge had the best leafspot control. This was also the only trial that had a significant level of Bacterial Leafspot. None of the treatments caused leaf leaf injury.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Cercospora Leafspot Control With Different Starting Dates and Fungicide Sequences
Answer Plot, Bach, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 22
Harvested: Sept 26
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Loam
%OM: 2.5, pH: 7.1, CEC: 9.6
Above Opt: P, K
High: Mn, Extremely High: B
Added N: 100 lbs
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See trts
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 15.1 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Rate / Acre	Appl DSV / Days	Appl Date	Net $/A	% Leaf Damage		RWSA	RWST	T/A
						6-Sep	27-Sep			
5	Manzate	1.6 qt	35 dsv	7-Jul	**$1,421 a**	**0.9 b**	**4.5 d**	**9658 a**	**235 a**	**41.1 a**
	Inspire + Manz	7 fl oz + 1.6 qt	50 dsv	16-Jul						
	Manzate	1.6 qt	21 day	4-Aug						
	Super Tin + AgriLife	8 fl oz + 38 fl oz	10 day	16-Aug						
	Topguard + Manz	14 fl oz + 1.6 qt	14 day	31-Aug						
1	Manzate	1.6 qt	50 dsv	16-Jul	**$1,389 a**	**1.0 b**	**5.3 bcd**	**9408 a**	**233 a**	**40.3 a**
	Inspire + Manz	7 fl oz + 1.6 qt	10 day	25-Jul						
	Super Tin + AgriLife	8 fl oz + 38 fl oz	21 day	17-Aug						
	Topguard + Manz	14 fl oz + 1.6 qt	14 day	31-Aug						
4	Manzate	1.6 qt	35 dsv	7-Jul	**$1,378 a**	**2.0 b**	7.3 bc	**9387 a**	**233 a**	**40.3 a**
	Super Tin + AgriLife	8 fl oz + 38 fl oz	50 dsv	16-Jul						
	Manzate	1.6 qt	14 day	29-Jul						
	Inspire + Manz	7 fl oz + 1.6 qt	10 day	8-Aug						
	Super Tin + AgriLife	8 fl oz + 38 fl oz	21 day	29-Aug						
3	Inspire + Manz	7 fl oz + 1.6 qt	50 dsv	16-Jul	**$1,327 a**	**1.0 b**	**4.9 cd**	**9010 a**	221 b	**40.7 a**
	Manzate	1.6 qt	21 day	4-Aug						
	Super Tin + AgriLife	8 fl oz + 38 fl oz	10 day	17-Aug						
	Topguard + Manz	14 fl oz + 1.6 qt	14 day	31-Aug						
2	Super Tin + AgriLife	8 fl oz + 38 fl oz	50 dsv	16-Jul	**$1,321 a**	**1.8 b**	7.6 b	**8974 a**	221 b	**40.6 a**
	Manzate	1.6 qt	14 day	29-Jul						
	Inspire + Manz	7 fl oz + 1.6 qt	10 day	8-Aug						
	Super Tin + AgriLife	8 fl oz + 38 fl oz	21 day	29-Aug						
6	Untreated Check				$1,025 b	55.0 a	97.5 a	6504 b	189 c	34.4 b
Average					$1,310	10.3	21.2	8823	222	39.6
LSD 5%					163.6	3.5	2.5	1037.9	8.8	3.8
CV %					8.3	22.9	7.8	7.8	2.6	6.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The Cercospora infection level was very high and there was a good sugarbeet stand (~ 180 beets/100 ft). It appeared that beginning applications at 35 dsv's with Manzate, then following with a typical sequence of fungicides provided better results than starting at 50 dsv's, however, the differences were not statistically significant. It also appeared that Inspire was the best fungicide to spray first. The untreated plots lost about 6 tons per acre and 35 lbs RWST due to uncontrolled Cercospora leafspot.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide cost subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Cercospora Leafspot Control With Different Starting Dates and Fungicide Sequences
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 22
Harvested: Oct 3
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Clay Loam
%OM: 3.6, pH: 7.4, CEC: 15.2
Above Opt: P, K
High: Mn, Medium: B
Added N: 60 lbs
Prev Crop: Soybeans

Rhizoc Level: Low
Cerc Control: See Trts
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.5 inches

Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Rate / Acre	Appl* DSV / Days	Net $/A	% Leaf Damage 27-Sep	RWSA	RWST	T/A	% SUC
3	Manzate	1.6 qt	35 dsv	**$1,316 a**	**9.9 b**	**7854 a**	**217 a**	**36.2 a**	**15.0 a**
	Inspire + Manz	7 fl oz + 1.6 qt	50 dsv						
	Manzate	1.6 qt	21 day						
	Topguard + Manz	14 fl oz + 1.6 qt	14 day						
	Manzate + AgriLife	1.6 qt + 38 fl oz	21 day						
2	Inspire + Manz	7 fl oz + 1.6 qt	50 dsv	**$1,288 a**	**8.2 b**	**7690 a**	**220 a**	**35.0 a**	**15.2 a**
	Manzate	1.6 qt	21 day						
	Topguard + Manz	14 fl oz + 1.6 qt	10 day						
	Manzate	1.6 qt	21 day						
1	Manzate	1.6 qt	50 dsv	**$1,284 a**	**9.3 b**	**7666 a**	**220 a**	**34.9 a**	**15.2 a**
	Inspire + Manz	7 fl oz + 1.6 qt	10 day						
	Manzate	1.6 qt	21 day						
	Topguard + Manz	14 fl oz + 1.6 qt	10 day						
4	Untreated			$1,077 b	78.3 a	5829 b	191 b	30.6 b	13.6 b
Average				$1,241	26.4	7260	212	34.2	14.8
LSD 5%				80.3	5.1	479.2	11.5	1.4	0.7
CV %				5.3	15.6	5.4	4.4	3.4	3.8

Means followed by same letter are not significantly different.

* The initial 35 dsv application was on July 1st and the 50 dsv application was on July 12th.

Comments: The Cercospora infection was moderate to high. There were no significant differences between treatments (application timings and sequences) with respect to leafspot control, yield or quality. However, all of the treatments provided better leafspot control, yield and quality compared to the untreated check.

Net $/A: Assume a $35 beet payment and a trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Compare Spray Tips (Flat Fan vs. Hollow Cone) for Control of Cercospora Leafspot in Sugarbeets
Crumbaugh, Breckenridge, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 19
Harvested: Sept 14
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch
Soil Info: Sandy Loam
%OM: 2.5, pH: 6.6, CEC: 8.7
Above Opt: P, K
High: Mn, B
Added N: 100 lbs
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None
Seeding: 4.1 inches
Rainfall: 15.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment*	Spray Tip TeeJet	Net $/A		% Leaf Damage					
					Avg 2		25-Aug		Sept 9	
5	Super Tin + Manzate Based Program (4 Applics)	80015XR	**$1,400**	**a**	**3.6**	**e**	**0.9**	**g**	**6.2**	**e**
7	Super Tin Based Program (4 Applics)	80015XR	**$1,367**	**a**	**5.5**	**de**	**1.8**	**fg**	**9.2**	**de**
1	Minerva + Manzate Based Program (4 Applics)	80015XR	**$1,353**	**a**	**7.5**	**de**	**2.2**	**efg**	**12.7**	**de**
6	Super Tin + Manzate Based Program (4 Applics)	TXR80015VK	**$1,318**	**a**	**6.7**	**de**	2.3	ef	**11.1**	**de**
2	Minerva + Manzate Based Program (4 Applics)	TXR80015VK	**$1,304**	**ab**	9.7	d	3.5	e	15.9	d
8	Super Tin Based Program (4 Applics)	TXR80015VK	**$1,302**	**ab**	**7.4**	**de**	2.3	ef	**12.4**	**de**
9	Manzate fb Dithane fb Cuprofix fb Dithane fb (4 Applications)	80015XR	**$1,290**	**ab**	**5.6**	**de**	**1.6**	**fg**	**9.5**	**de**
10	Manzate fb Dithane fb Cuprofix fb Dithane fb (4 Applications)	TXR80015VK	$1,204	b	25.9	b	9.2	b	42.6	b
4	Minerva Based Program (4 Applics)	TXR80015VK	$1,204	b	19.7	c	7.3	c	32.0	c
3	Minerva Based Program (4 Applics)	80015XR	$1,198	b	17.1	c	5.6	d	28.6	c
11	Untreated Check	80015XR	$1,074	c	65.6	a	40.2	a	91.0	a
12	Untreated Check	TXR80015VK	$1,071	c	65.1	a	40.2	a	90.0	a

Average	$1,257	19.9	9.8	30.1
LSD 5%	99.6	4.2	1.2	7.4
CV %	6.1	16.0	9.5	18.8

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* For treatments 1 - 8, there were 4 applications on July 22nd, Aug 12th, Aug 23rd, and Sept 1st. Treatments 9 and 10, had 4 applications, July 22nd, Aug 3rd, Aug 17th and Sept 1st. The main treatment, i.e, Super Tin + Manzate was applied at the 1st and 4th timing. Dithane was the 2nd application timing and Cuprofix was the 3rd timing.

Fungicides applied at recommended rates.

Nozzle Tips: 80015XR = Flat Fan and TXR80015VK = Hollow Cone.

Net $/A: Assume a $35 beet payment and a trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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MICHIGAN SUGAR

Compare Spray Tips (Flat Fan vs. Hollow Cone) for Control of Cercospora Leafspot in Sugarbeets
Crumbaugh, Breckenridge, MI - 2016

No.	Treatment	Spray Tip TeeJet	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
5	Super Tin + Manzate Based Program (4 applics)	80015XR	**$1,400 a**	**7783 a**	**196 ab**	**39.7 a**	**13.9 a**	**93.8 abc**
7	Super Tin Based Program (4 applics)	80015XR	**$1,367 a**	**7518 ab**	**199 a**	**37.8 ab**	**14.0 a**	**94.1 a**
1	Minerva + Manzate Based Program (4 applics)	80015XR	**$1,353 a**	**7660 ab**	**197 ab**	**38.8 ab**	**13.9 a**	**94.0 a**
6	Super Tin + Manzate Based Program (4 applics)	TXR80015VK	**$1,318 a**	**7341 abc**	**194 ab**	**37.9 ab**	**13.7 ab**	**93.8 ab**
2	Minerva + Manzate Based Program (4 applics)	TXR80015VK	**$1,304 ab**	**7397 ab**	191 bc	**38.8 ab**	**13.6 ab**	**93.7 abc**
8	Super Tin Based Program (4 applics)	TXR80015VK	**$1,302 ab**	7168 bcd	**192 abc**	**37.3 ab**	**13.7 ab**	**93.5 abc**
9	Manzate fb Dithane fb Cuprfix fb Dithane fb (4 applics)	80015XR	**$1,290 ab**	**7236 a-d**	**192 abc**	**37.8 ab**	**13.7 ab**	**93.6 abc**
10	Manzate fb Dithane fb Cuprofix fb Dithane fb (4 applics)	TXR80015VK	$1,204 b	6774 cd	183 de	**37.2 ab**	13.1 cd	**93.5 a-d**
4	Minerva Based Program (4 applics)	TXR80015VK	$1,204 b	6770 cd	185 cd	36.6 b	13.4 bc	93.0 cd
3	Minerva Based Program (4 applics)	80015XR	$1,198 b	6738 d	185 cd	36.3 b	13.4 bc	93.1 bcd
11	Untreated Check	80015XR	$1,074 c	5771 e	176 ef	32.7 c	12.8 de	93.1 bcd
12	Untreated Check	TXR80015VK	$1,071 c	5755 e	172 f	33.4 c	12.6 e	92.7 d

Average	$1,257	6993	189	37.0	13.5	93.5
LSD 5%	99.6	535.1	7.3	2.3	0.4	0.7
CV %	6.1	5.9	3.0	4.8	2.1	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The Cercospora infection level was very high and the sugarbeet stand was good (~ 190 beets/100'). Four applications of Super Tin or Minerva based treatments provided fairly good Cercospora control, considering the high Cercospora pressure. The trial was designed to identify treatment differences, not as a recommended spray program. Tank mixing Super Tin and Minerva with Manzate improved leafspot control, especially for Minerva. Utilizing Tee-Jet 80015XR flat fan nozzles with fungicides provided significantly better leafspot control compared to using Tee-Jet TXR80015VK hollow cone nozzles. The untreated check plots lost about 5 tons per acre and 1 point of sugar due to uncontrolled leafspot.

Net $/A: Assume a $35 beet payment and a trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Compare Spray Tips (Flat Fan vs. Hollow Cone) for Control of Cercospora Leafspot in Sugarbeets
Crumbaugh, Breckenridge, MI - 2016

Effect of Fungicide Spray Program (Avg of Nozzle Types)

No.	Treatment	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	25-Aug	9-Sep					
3	Super Tin + Manzate Program (4 Applics)	**$1,359 a**	**5.1 c**	**1.6 b**	**8.7 c**	**7562 a**	**195 a**	**38.8 a**	**13.8 a**	**93.8 a**
4	Super Tin Program (4 Applics)	**$1,334 ab**	**6.4 c**	**2.1 b**	**10.8 c**	**7343 a**	**196 a**	**37.5 ab**	**13.9 a**	**93.8 a**
1	Minerva + Manzate Program (4 Applics)	**$1,329 ab**	**8.6 c**	**2.9 b**	**14.3 c**	**7528 a**	**194 ab**	**38.8 a**	**13.7 ab**	**93.8 a**
5	Manzate fb Dithane fb Cuprofix fb Dithane fb (4 Applics)	$1,247 bc	15.7 b	**5.4 b**	26.1 b	**7005 ab**	187 bc	**37.5 ab**	13.4 b	**93.5 ab**
2	Minerva Program (4 Applics)	$1,201 c	18.4 b	**6.5 b**	30.3 b	6754 b	185 c	36.4 b	13.4 b	93.0 bc
6	Untreated Check	$1,072 d	65.4 a	40.2 a	90.5 a	5763 c	174 d	33.0 c	12.7 c	92.9 c
Average		$1,257	19.9	9.8	30.1	6993	189	37.0	13.5	93.5
LSD 5%		103.8	5.1	5.6	7.5	558.1	7.4	2.2	0.4	0.6
CV %		8.9	27.6	61.8	26.9	8.6	4.2	6.4	3.0	0.7

Effect of Nozzle Type (Avg of Fungicide Treatments)

No.	Treatment	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	25-Aug	9-Sep					
1	TeeJet 80015XR	**$1,280 a**	**17.5 b**	**8.7 b**	**26.2 b**	**7118 a**	**191 a**	**37.2**	**13.6 a**	**93.6**
2	ConeJet TXR80015VK	$1,234 b	22.4 a	10.8 a	34.0 a	6868 b	186 b	**36.8**	13.4 b	**93.4**
Average		$1,257	19.9	9.8	30.1	6993	189	37.0	13.5	93.5
LSD 5%		40.6	1.7	0.5	3.0	218.4	3.0	n.s(1)	0.2	n.s(0.3)
CV %		6.1	16.0	9.5	18.8	5.9	3.0	4.8	2.1	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and a trial average RWST with fungicide costs subtracted off.

Bold: Results are not statistically different from top-ranking treatment in each column.

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Compare Spray Tips (Flat Fan vs. Hollow Cone) for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: B-149N
Planted: April 22
Harvested: Oct 3
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.6, pH: 7.4, CEC: 15.2
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: See trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Spray tip TeeJet	Net $/A	% Leaf Damage		
				Avg 2	22-Aug	19-Sep
1	Minerva + Manzate Based Program (4 Applics)	80015XR	**$1,419 a**	**3.3 f**	**0.5 f**	**6.2 f**
6	Manzate fb Dithane fb Cuprofix fb Dithane fb Manzate (5 Applics)	TXR80015VK	**$1,401 a**	8.3 de	2.3 d	14.3 de
4	Minerva Based Program (4 Applics)	TXR80015VK	**$1,351 a**	17.8 b	4.8 b	30.8 b
5	Manzate fb Dithane fb Cuprofix fb Dithane fb Manzate (5 Applics)	80015XR	**$1,346 a**	**6.1 ef**	**1.2 ef**	**11.1 ef**
3	Minerva Based Program (4 Applics)	80015XR	**$1,337 a**	13.4 c	3.3 c	23.5 c
2	Minerva + Manzate Based Program (4 Applics)	TXR80015VK	**$1,298 a**	9.8 d	2.0 de	17.7 cd
8	Untreated Check	TXR80015VK	$1,123 b	57.0 a	23.5 a	90.5 a
7	Untreated Check	80015XR	$1,108 b	56.4 a	22.7 a	90.2 a

Average	$1,298	21.5	7.5	35.5
LSD 5%	156.5	3.4	0.9	6.0
CV %	9.8	12.8	9.9	13.7

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* For treatments 1 - 4, there were 4 applications on July 18th, Aug 8th, Aug 19th and Aug 29th. Treatments 5 and 6, had 5 applications, July 18th, July 30th, Aug 11th, Aug 23rd and Sept 6th. The main treatment, i.e., Minerva + Manzate was applied at the 1st and 4th timing. Dithane was the 2nd application timing and Cuprofix was the third.

Nozzle Tips: 80015XR = Flat Fan and TXR80015VK = Hollow Cone.

Fungicides applied at recommended rates.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Compare Spray Tips (Flat Fan vs. Hollow Cone) for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

No.	Treatment	Spray tip TeeJet	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
1	Minerva + Manzate Based Program (4 Applics)	80015XR	**$1,419 a**	**8318 a**	**207 a**	**40.2 a**	**14.6 a**	**93.8 a**
6	Manzate fb Dithane fb Cuprofix fb Dithane fb Cuprofix (5 Applics)	TXR80015VK	**$1,401 a**	**7954 a**	**201 a**	**39.6 ab**	**14.3 a**	**93.6 a**
4	Minerva Based Program (4 Applics)	TXR80015VK	**$1,351 a**	**7653 a**	**203 a**	**37.8 ab**	**14.3 a**	**93.8 a**
5	Manzate fb Dithane fb Cuprofix fb Dithane fb Cuprofix (5 Applics)	80015XR	**$1,346 a**	**8030 a**	**204 a**	**39.4 ab**	**14.4 a**	**93.9 a**
3	Minerva Based Program (4 Applics)	80015XR	**$1,337 a**	**7641 a**	**199 a**	**38.4 ab**	**14.2 a**	**93.7 a**
2	Minerva + Manzate Based Program (4 Applics)	TXR80015VK	**$1,298 a**	**7893 a**	**203 a**	**38.9 ab**	**14.4 a**	**93.7 a**
8	Untreated Check	TXR80015VK	$1,123 b	6202 b	171 b	36.4 b	12.5 b	92.8 b
7	Untreated Check	80015XR	$1,108 b	6256 b	177 b	35.4 b	12.9 b	92.7 b

Average	$1,298	7493	196	38.3	14.0	93.5
LSD 5%	156.5	695.8	9.0	2.9	0.6	0.7
CV %	9.8	7.6	3.7	6.1	3.2	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: The disease level was high and the sugarbeet stand was adequate (160 beets/100 ft). This trial was designed to identify treatment differences and not as a recommended spray program for growers. Minerva was applied with and without Manzate as a tank mix. Nozzle types were also compared (flat fan vs hollow cone). Minerva plus Manzate provided relatively good Cercospora control, considering the high disease pressure. Minerva without tank mixing was far inferior to the tank mixed treatment. Applying fungicides with flat fan nozzles gave much better disease control compared to using hollow cone nozzles. Five applications of EBDC's alternated with Cuprofix gave equal control to the Minerva tank mix treatment (4 applics).

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Compare Spray Tips (Flat Fan vs. Hollow Cone) for Control of Cercospora Leafspot in Sugarbeets
Laker Agronomy Field, Elkton, MI - 2016

Effect of Fungicide Spray Program (Avg of Nozzle Types)

No.	Treatment	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	22-Aug	19-Sep					
3	Manzate fb Dithane fb Cuprofix fb Dithane fb Cuprofix (5 Applics)	**$1,374**	**7.2 b**	**1.8 b**	**12.7 b**	**7992**	**203**	**39.5**	**14.3**	**93.7**
1	Minerva + Manzate Program (4 Applics)	**$1,358**	**6.6 b**	**1.3 b**	**11.9 b**	**8105**	**205**	**39.5**	**14.5**	**93.7**
2	Minerva Program (4 Applics)	**$1,344**	15.6 a	4.0 a	27.2 a	**7647**	**201**	**38.1**	**14.3**	**93.7**
Average		$1,359	9.8	2.3	17.3	7915	203	39.0	14.3	93.7
LSD 5%		n.s(94)	3.9	1.0	6.8	n.s(415)	n.s(6.6)	n.s(1.5)	n.s(0.4)	n.s(0.5)
CV %		7.6	43.3	48.9	43.4	5.8	3.6	4.2	3.0	0.6

Effect of Nozzle Type (Avg of Fungicide Treatments)

No.	Treatment	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC	% CJP
			Avg 2	22-Aug	19-Sep					
1	TeeJet 80015XR	**$1,367**	**7.6 b**	**1.7 b**	**13.6 b**	**7996**	**203**	**39.3**	**14.4**	**93.8**
2	ConeJet TXR80015VK	**$1,350**	12.0 a	3.0 a	20.9 a	**7833**	**202**	**38.7**	**14.3**	**93.7**
Average		$1,359	9.8	2.4	17.3	7915	203	39.0	14.4	93.7
LSD 5%		n.s(90.3)	2.0	0.5	3.5	n.s(401)	n.s(5.2)	n.s(1.7)	n.s(0.3)	n.s(0.4)
CV %		9.4	28.2	31.6	28.2	7.1	3.6	6.0	3.1	0.6

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Super Tin + Topsin Tank Mix Applications for Cercospora Leafspot Control
Stoneman, Ithaca, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 25
Harvested: Oct 21
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Loam
%OM: 3.4, pH: 6.7, CEC: 11.3
Above Opt: P, K
High: Mn, Low: B
Added N: 120 lbs
Prev Crop: Corn
Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 22.1 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Rate/A	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC
				Avg 2	15-Sep	14-Oct				
1	Super Tin (A) Manzate (B) Cuprofix (C) Super Tin (D)	8 fl oz 1.6 qt 2 lb 8 fl oz	**$1,925 a**	**1.5 d**	**0.1 c**	**2.8 d**	**12040 a**	**225 a**	**53.5 a**	**15.6 a**
4	Super Tin + Topsin (tank mix) (A) Manzate (B) Cuprofix (C) Super Tin + Topsin (tank mix) (D)	8 fl oz 20 fl oz 1.6 qt 2 lb 8 fl oz 20 fl oz	**$1,860 ab**	**4.0 d**	**1.2 c**	**6.8 d**	**11484 a**	216 b	**53.1 a**	15.1 b
5	Super Tin + Cercobin (tank mix) (A) Manzate (B) Cuprofix (C) Super Tin + Cercobin (tank mix) (D)	8 fl oz 21.8 fl oz 1.6 qt 2 lb 8 fl oz 21.8 fl oz	**$1,835 ab**	**5.3 d**	**1.6 c**	**9.1 d**	**11452 a**	215 b	**53.2 a**	15.1 b
2	Topsin (A) Manzate (B) Cuprofix (C) Topsin (D)	20 fl oz 1.6 qt 2 lb 20 fl oz	**$1,812 ab**	35.5 b	5.2 b	65.8 b	10227 b	205 c	49.9 b	14.5 c
3	Cercobin (A) Manzate (B) Cuprofix (C) Cercobin (D)	21.8 fl oz 1.6 qt 2 lb 21.8 fl oz	$1,743 b	26.5 c	**2.5 bc**	50.5 c	10313 b	208 bc	49.5 b	14.6 c
6	Untreated Check		$1,494 c	57.6 a	15.2 a	100.0 a	8463 c	180 d	47.1 c	13.0 d
	Average		$1,778	21.7	4.3	39.2	10663	208	51.0	14.6
	LSD 5%		135.0	3.8	3.3	6.1	588.1	8.0	1.8	0.4
	CV %		6.4	14.5	63.9	13.1	4.6	3.2	2.9	2.2

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Spray Dates - A = July 18th, B = Aug 1st, C = Aug 11th and D = Aug 23rd.

Comments: The disease level was very high and the sugarbeet stand was adequate (~ 165 beets/100 ft). Topsin and Cercobin (both thiophanate-methyl) were applied in sequence with protectant fungicides and in combination with Super Tin as a tank mix. Super Tin provided significantly better Cercospora leafspot control compared to Topsin and Cercobin.Tank mixing Topsin and Cercobin with Super Tin did not improve the effectiveness of Super Tin.

***Net $/A:** Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.

Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate Super Tin + Topsin Tank Mix Applications for Cercospora Leafspot Control
Auernhamer, Richville, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: May 3
Harvested: Oct 10
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 13.2
Above Opt: P, K
High: Mn, Medium: B
Added N: 100 lbs
Prev Crop: Wheat
Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.5 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

No.	Treatment	Rate/A	Net $/A	% Leaf Damage			RWSA	RWST	T/A	% SUC
				Avg 2	18-Aug	3-Oct				
5	Super Tin +	8 fl oz	**$1,533 a**	**2.7 c**	**0.2 c**	**5.2 c**	**9152 a**	**210 a**	**43.6 a**	**14.93 a**
	Cerobin (tank mix) (A)	21.8 fl oz								
	Manzate (B)	1.6 qt								
	Cuprofix (C)	2 lb								
	Super Tin +	8 fl oz								
	Cerobin (tank mix) (D)	21.8 fl oz								
1	Super Tin (A)	8 fl oz	**$1,525 a**	**3.0 c**	**0.2 c**	**5.8 c**	**8908 ab**	**208 a**	**42.9 a**	**14.87 a**
	Manzate (B)	1.6 qt								
	Cuprofix (C)	2 lb								
	Super Tin (D)	8 fl oz								
4	Super Tin +	8 fl oz	**$1,509 a**	**3.0 c**	**0.3 c**	**5.7 c**	**9013 ab**	**209 a**	**43.1 a**	**15.0 a**
	Topsin (tank mix) (A)	20 fl oz								
	Manzate (B)	1.6 qt								
	Cuprofix (C)	2 lb								
	Super Tin +	8 fl oz								
	Topsin (tank mix) (D)	20 fl oz								
3	Cercobin (A)	21.8 fl oz	**$1,451 ab**	27.5 b	4.5 b	50.5 b	8563 bc	199 b	**43 a**	14.32 b
	Manzate (B)	1.6 qt								
	Cuprofix (C)	2 lb								
	Cercobin (D)	21.8 fl oz								
2	Topsin (A)	20 fl oz	$1,413 b	28.0 b	4.3 b	51.7 b	8344 c	195 b	**42.8 a**	14.12 b
	Manzate (B)	1.6 qt								
	Cuprofix (C)	2 lb								
	Topsin (D)	20 fl oz								
6	Untreated Check		$1,201 c	47.3 a	10.67 a	83.8 a	6871 d	181 c	38.1 b	13.26 c
Average			1438.7	18.6	3.3	33.8	8475.2	200.2	42.3	14.4
LSD 5%			87.3	2.8	1.0	5.1	499.6	7.1	2.1	0.4
CV %			5.1	12.7	25.7	12.8	5.0	3.0	4.1	2.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.
*Spray Dates - A = July 18th, B = Aug 2nd, C = Aug 12th and D = Aug 23rd.

Comments: The disease level was very high and the sugarbeet stand was good (~ 180 beets/100 ft). Topsin tank mixes with Super Tin were evaluated and Topsin was compared to Cercobin (both thiophanate-methyl). Super Tin followed by Manzate, then Cuprofix, then Super Tin again provided fairly good control of Cercospora in the trial. Disease control was not improved by adding either Topsin or Cercobin to Super Tin. Topsin and Cercobin provided equally poor leafspot control when applied without Super Tin.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicides subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Badge SC and Triazole Treatments for Control of Cercospora Leafspot

Avg. of two Locations, Bach and Ithaca - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: Bach - April 22, Ithaca - April 25
Harvested: Bach - Sept 26, Ithaca - Oct 19
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa

Soil Info: Loam
%OM: B=3.1, I=3.3, pH: 6.6
Above Opt: P, K
High: Mn, Med: B=B, Low: B=I
Added N: 100-120 lbs
Prev Crop: Corn

Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None
Seeding Rate: 4.1 inches
Rainfall: Bach - 15.1 inches
Ithaca - 22.1 inches

No.	Treatment	Rate / Acre	Applic*	Net $/A		% Leaf Damage					
						Aug		Sept		Oct	
1	Badge SC	2 pt	A-F	**$1,703**	**a**	**0.6**	**c**	**4.2**	**c**	**15.6**	**d**
3	Inspire XT + Badge SC	7 fl oz + 2 pt	A	$1,653	b	**0.7**	**c**	**6.0**	**c**	20.6	c
	Manzate FL	1.6 qt	C								
	Proline** + Badge SC	5.7 fl oz + 2 pt	D								
	Super Tin 4L	8 fl oz	F								
2	Agri-Life	38 fl oz	A-F	$1,414	c	4.4	b	20.6	b	67.8	b
4	Untreated Check			$1,271	d	8.8	a	47.0	a	96.8	a

Average	$1,510	3.6	19.5	50.2
LSD 5%	48.3	0.7	4.2	4.1
CV %	2.3	13.9	15.6	6.0

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Applic Dates: A: July 19th , B: July 28th , C: Aug 8th , D: Aug 22nd E: Aug 29th F: Sept 8th
** The Proline treatment included Induce at 0.125% v/v

Comments: Badge SC and AgriLife were applied 6 times on a 10 day schedule and compared to a triazole based treatment (4 applic) for controlling Cercospora leafspot. The leafspot level was very high. Alternaria and Bacterial leafspot(s) were also present. The plot area had a favorable stand (~175 beets/100 ft) and diseases other than leafspot were well controlled. AgriLife did not do well in these trials. Badge gave the best control but at least one more application (and shorter intervals) would have been required to keep leafspot below damaging levels. The triazole based treatment should also have had closer spray intervals and another spray application. The untreated plots lost 5.5 Tons/A and about 2 points of sugar due to uncontrolled leafspot.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Badge SC and Triazole Treatments for Control of Cercospora Leafspot

Avg. of two Locations, Bach and Ithaca - 2016

No.	Treatment	Rate / Acre	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
1	Badge SC	2 pt	**$1,703 a**	**9742 a**	**210 a**	**46.4 a**	**14.8 a**	**93.8 a**
3	Inspire XT + Badge	7 fl oz = 2 pt	$1,653 b	**9550 a**	205 b	**46.7 a**	**14.6 a**	93.4 b
	Manzate FL	1.6 qt						
	Proline** + Badge	5.7 fl oz + 2 pt						
	Super Tin 4L	8 fl oz						
2	Agri-Life	38 fl oz	$1,414 c	8114 b	186 c	43.7 b	13.5 b	92.8 c
4	Untreated Check		$1,271 d	7042 c	172 d	40.9 c	12.8 c	92.3 d

Average	$1,510	8612	193	44.4	13.9	93.1
LSD 5%	48.3	267.4	5.3	1.0	0.3	0.3
CV %	2.3	2.3	2.0	1.7	1.6	0.3

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

** The Proline treatment included Induce at 0.125% v/v

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Cercospora Application Timings in Sugarbeets in a Replicated Strip Trial
Schindler, Auburn, MI - 2016

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Sugarbeet Advancement

Trial Quality: Good
Variety: B-149N
Planted: April 20
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 100 psi, 21.63 gpa
Harvested: Nov 11
Plots: 8 rows X 375 ft, 4 reps
Row Spacing: 22 inch
Rhizoc Level: Low
Cerc Control: See Trts.
Problems: None

No.	Treatment	Rate / Acre	Appl Date	Appl DSV	Net $/A	RWSA	RWST	T/A	% Leaf Damage		
									9-Sep	19-Sep	14-Oct
5	Inspire + Manz	7 fl oz + 1.6 qt	15-Jul	45	**$1,292 a**	**8834 a**	**253 a**	**34.9 a**	**3.5 c**	**6.5 d**	**22.0 cd**
	Priaxor + Manz	8 fl oz + 1.6 qt	2-Aug	80							
	Topguard + Manz	14 fl oz + 1.6 qt	18-Aug	115							
	Manzate Max	2 lb	30-Aug	150							
1	Inspire + Manz	7 fl oz + 1.6 qt	15-Jul	45	**$1,246 ab**	**8518 ab**	**251 a**	**33.9 ab**	**3.3 c**	**4.8 d**	**19.5 d**
	Super Tin + Manz	8 fl oz + 1.6 qt	2-Aug	80							
	Topguard + Manz	14 fl oz + 1.6 qt	18-Aug	105							
	Super Tin + Manz	8 fl oz + 1.6 qt	26-Aug	140							
	Cuprofix Ultra 40	2 lb	6-Sept	164							
2	Inspire + Manz	7 fl oz + 1.6 qt	15-Jul	45	$1,197 bc	8188 bc	242 b	**33.9 ab**	**4.5 c**	**9.3 d**	25.6 c
	Priaxor + Manz	8 fl oz + 1.6 qt	2-Aug	80							
	Topguard + Manz	14 fl oz + 1.6 qt	18-Aug	115							
	Super Tin + Manz	8 fl oz + 1.6 qt	30-Aug	150							
	Cuprofix Ultra 40	2 lb	9-Sept	175							
3	Inspire + Manz	7 fl oz + 1.6 qt	15-Jul	45	$1,175 c	8032 c	242 b	33.3 b	**4.1 c**	**6.0 d**	**21.0 d**
	Priaxor + Manz	8 fl oz + 1.6 qt	2-Aug	80							
	Manzate Max	1.6 qt	18-Aug	115							
	Topguard + Manz	14 fl oz + 1.6 qt	23-Aug	130							
	Cuprofix Ultra 40	2 lb	6-Sept	165							
6	Proline* + Manz	5.7 fl oz + 1.6 qt	15-Jul	45	$1,162 c	7944 c	244 b	32.6 bc	11.0 b	21.3 c	42.8 b
	Gem SC + Manz	3.6 fl oz + 1.6 qt	2-Aug	80							
	Inspire + Manz	7 fl oz + 1.6 qt	18-Aug	115							
	Manzate Max	2 lb	30-Aug	150							
4	Manzate Max	1.6 qt	15-Jul	45	$1,039 d	7102 d	226 c	31.4 cd	13.0 b	28.8 b	44.5 b
	Inspire + Manz	7 fl oz + 1.6 qt	25-Jul	60							
	Manzate Max	1.6 qt	9-Aug	95							
	Topguard + Manz	14 fl oz + 1.6 qt	18-Aug	110							
	Manzate Max	2 lb	1-Sept	145							
7	Grower's field (6 Applic)				$997 d	6822 d	218 d	31.3 d	18.8 a	41.0 a	88.8 a
Average					$1,158	7920	239	33.0	8.3	16.8	37.7
LSD 5%					51.3	349.2	7.1	1.2	3.3	4.3	3.9
CV %					3.0	3.0	2.0	2.5	27.1	17.1	6.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Proline had Induce at 0.125%

Comments: MSC and SBA conducted this replicated strip trial comparing several fungicide application programs for controlling Cercospora leafspot. SBA located the plot and harvested the trial while MSC made the fungicide applications. An initial application of Inspire and Manzate gave better control than when Manzate alone was applied. MSC thought the trial would be harvested early and stopped making fungicide applications early in September, however, the trial was harvested late and more fungicide applications should have been made.

Net $/A: Assume a $35 beet payment and trial average RWST with fungicide costs subtracted off.

Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Breckenridge, Richville and Elkton, MI - 2016

Comments: Systiva XS fungicide seed treatment (BASF) was evaluated for control of damping off and late season root rot control in sugarbeets. C-RR059, a variety with fairly good tolerance to Rhizoctonia was utilized (with and without Systiva). The diseases are caused by the pathogen Rhizoctonia solani AG 2-2 IIIB, AG 2-2 IV and AG 4. The active ingredient in Systiva is Xemium, a systemic pyrazole-carboxamide fungicide. Systiva was evaluated as a stand alone treatment and in a systems approach which included Quadris applied in-furrow at planting and as foliar applications. Systiva (without Quadris) provided about a 50% reduction of dead beet counts, improved sugarbeet stand (about 3-4%), increased yields (over 2 tons/acre), increased sugarbeet quality and provided an increase in net grower income of approximately 90 dollars per acre (averaged over the three locations). When Quadris was utilized in addition to the Systiva seed treatment, Rhizoctonia control, yield, quality and net income were significantly improved. Looking at the dead beet counts, it appears that Quadris provided roughly 60% of the disease control compared to around 40% for Systiva. The disease level was moderate to high at the Breckenridge site, moderate at Elkton and low to moderate at Richville. Even though Systiva helps control Rhizoctonia, in areas with a significant Rhizoctonia risk, Systiva should not be utilized as a stand alone treatment for controlling Rhizoctonia.

Systiva Seed Treatment - Brief Summary
Average of 3 Locations in 2016

Seed Treatment	Fungicide	Applic	Dead Beets / 100 ft	Net Income $ /Acre
Systiva	Quadris	In-Fur fb 8 lf	5	$1,297
Systiva	Quadris	8 leaf	6	$1,236
Systiva	Quadris	In-Fur	7	$1,228
None	Quadris	In-Fur fb 8 lf	7	$1,206
Systiva	Quadris	In-Fur fb 12 lf	7	$1,195
Systiva	Quadris	12 leaf	7	$1,163
None	Quadris	In-Fur	10	$1,160
Systiva	None	None	12	$1,154
None	Quadris	In-Fur fb 12 lf	8	$1,142
None	Quadris	8 leaf	11	$1,116
None	Quadris	12 leaf	16	$1,060
None	None	None	24	$959

Treatment	Dead 100 ft	$/A
Systiva fb Quadris*	6	$1,254
Quadris*	9	$1,161
Systiva	12	$1,154
No Systiva No Quadris	24	$959

* Quadris IF fb 8 lf, IF and 8 lf

Quadris applied In-Furrow (10 fl oz/A in a 3.5 inch band)
Quadris applied at the 8 and 12 leaf stage (14.25 fl oz/A in a 7 inch band)

Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Crumbaugh, Breckenridge, MI - 2016

Trial Quality: Good
Variety: C-RR059
Planted: April 19
Harvested: Sept 14
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Sandy Loam
%OM: 2.5, pH: 6.6, CEC: 8.7
Above Opt: P, K
High: Mn, B
Added N: 100 lbs
Prev Crop: Soybeans

Rhizoc Level: Moderate +
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 15.5 inches

Application: Quadris applied In-furrow at planting (3.5" band, 9.5 gpa), and foliar (8 and12 lf) application with tractor mounted compressed air sprayer (7" band, 15 gpa)

No.	Treatment	Systiva	Net $/A	RWSA	RWST	T/A	Late Dead B/100 ft	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
9	Quadris IF, 8 lf	Yes	**$1,316 a**	**7988 a**	**213 a**	**37.6 a**	**8.3 d**	227 b-e	**232 abc**
11	Quadris 8 lf	Yes	**$1,304 a**	**7865 ab**	**215 a**	**36.7 ab**	**8.5 d**	**245 a**	**242 a**
3	Quadris IF, 8 lf	No	**$1,251 ab**	**7425 abc**	**208 a**	**35.6 abc**	**10.7 cd**	209 f	221 bcd
7	Untreated	Yes	**$1,229 abc**	**7314 abc**	**206 a**	**35.4 abc**	16.8 c	**234 abc**	**230 a-d**
12	Quadris 12 lf	Yes	**$1,214 abc**	**7334 abc**	**210 a**	**34.8 abc**	**9.3 d**	**238 ab**	**235 ab**
8	Quadris IF	Yes	**$1,206 abc**	**7232 abc**	**210 a**	**34.4 abc**	**11.5 cd**	224 b-f	227 bcd
2	Quadris IF	No	**$1,186 abc**	7045 bc	**208 a**	33.9 bc	15.8 c	215 def	216 d
10	Quadris IF, 12 lf	Yes	$1,142 bcd	6963 cd	**208 a**	33.5 bc	**10.5 cd**	**231 a-d**	**230 a-d**
4	Quadris IF, 12 lf	No	$1,109 bcd	6694 cd	**204 a**	32.8 cd	**10.8 cd**	212 ef	219 cd
5	Quadris 8 lf	No	$1,100 cd	6591 cd	**202 a**	32.6 cd	16.8 c	227 b-e	220 cd
6	Quadris 12 lf	No	$1,028 d	6163 d	**206 a**	30.0 de	24.0 b	**233 abc**	224 bcd
1	Untreated	No	$851 e	5017 e	185 b	27.0 e	35.7 a	217 c-f	193 e

Average	$1,161	6969	206	33.7	14.9	226	224
LSD 5%	127.2	750.0	10.3	3.0	5.8	14.9	13.4
CV %	9.5	9.3	4.3	7.8	33.3	5.7	5.1

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Systiva Effect (Average of all Quadris Rates)

No.	Treatment	Net $/A	RWSA	RWST	T / A	Dead B / 100 ft Late	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
2	Systiva	**$1,235 a**	**7449 a**	**210 a**	**35.4 a**	**10.8 b**	**233 a**	**233 a**
1	No Systiva	$1,087 b	6489 b	202 b	32.0 b	19.0 a	219 b	215 b
Average		$1,161	6969	206	33.7	14.9	226	224
LSD 5%		62.6	369.2	7.2	0.8	2.2	5.5	4.9
CV %		8.9	8.7	5.7	4.0	23.9	4.0	3.6

Quadris Effect (Average of Systiva and No Systiva Treatments)

No.	Treatment	Net $/A	RWSA	RWST	T / A	Dead B / 100 ft Late	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
3	Quadris In-Fur / 8 lf	**$1,283 a**	**7706 a**	**211 a**	**36.6 a**	**9.5 d**	218 b	**226 ab**
5	Quadris 8 lf	**$1,202 ab**	**7228 ab**	**208 a**	**34.6 ab**	**12.7 bcd**	**236 a**	**231 a**
2	Quadris In-Fur	**$1,196 ab**	7139 b	**209 a**	34.1 bc	13.7 bc	219 b	221 b
4	Quadris In-Fur / 12 lf	$1,125 bc	6828 b	**206 a**	33.1 bcd	**10.7 d**	221 b	**224 ab**
6	Quadris 12 lf	$1,121 bc	6749 b	**208 a**	32.4 cd	16.7 b	**236 a**	**230 ab**
1	Untreated	$1,040 c	6165 c	196 b	31.2 d	26.3 a	**225 ab**	211 c
Average		$1,161	6969	206	33.7	14.9	223	224
LSD 5%		90.0	530.3	7.3	2.1	4.1	10.6	9.4
CV %		9.4	9.3	4.3	7.8	33.3	5.7	5.1

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Blumfield, Richville, MI - 2016

Trial Quality: Good
Variety: C-RR059
Planted: April 20
Harvested: Sept 16
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Sandy Clay Loam
%OM: 2.1, pH: 8.0, CEC: 12.3
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Radish
Rhizoc Level: Low - Moderate
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.0 inches
Application: In-furrow applied at planting (3.5" band, 9.5 gpa), foliar (8 and12 lf) application with tractor mounted compressed air sprayer (7" band, 15 gpa)

No.	Treatment	Systiva	Net $/A	RWSA	RWST	T/A	Late Dead B/100 ft	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
9	Quadris IF, 8 lf	Yes	**$1,275 a**	**7998 a**	**221**	**36.2 a**	**1.2 e**	**206 ab**	**211 a**
8	Quadris IF	Yes	**$1,238 ab**	**7664 ab**	**218**	**35.3 ab**	**2.0 de**	**199 abc**	**204 abc**
10	Quadris IF, 12 lf	Yes	**$1,226 abc**	**7699 ab**	**213**	**36.3 a**	**2.8 de**	**201 ab**	**202 abc**
11	Quadris 8 lf	Yes	$1,170 bcd	7304 bc	**219**	33.5 bcd	**3.2 de**	**205 ab**	**201 abc**
4	Quadris IF, 12 lf	No	$1,146 cde	7136 c	**211**	**33.9 abc**	3.8 d	198 bc	**202 abc**
3	Quadris IF, 8 lf	No	$1,143 cde	7011 cd	**212**	33.2 b-e	4.0 d	**199 abc**	**200 abc**
2	Quadris IF	No	$1,125 def	6904 cde	**211**	32.8 b-f	3.8 d	191 c	199 bc
5	Quadris 8 lf	No	$1,107 d-g	6848 cde	**211**	32.5 c-f	6.8 c	**206 ab**	**210 ab**
12	Quadris 12 lf	Yes	$1,087 d-g	6795 cde	**215**	31.7 c-f	6.3 c	**205 ab**	197 c
7	Untreated	Yes	$1,061 efg	6528 def	**210**	31.1 def	8.3 bc	**208 a**	198 c
6	Quadris 12 lf	No	$1,039 fg	6435 ef	**210**	30.6 ef	10.2 b	**201 ab**	199 bc
1	Untreated	No	$1,023 g	6228 f	**204**	30.5 f	14.0 a	**199 abc**	181 d

Average	$1,137	7045.9	212.9	33.1	5.5	201	200
LSD 5%	82.3	501.1	n.s(12.3)	2.3	2.3	8.4	9.7
CV %	6.3	6.1	5.0	6.1	35.6	3.6	4.2

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Blumfield, Richville, MI - 2016

Systiva Effect (Average of all Quadris Rates)

No.	Treatment	Net $ / Acre	RWSA	RWST	T/A	Dead B / 100 ft Late	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
2	Systiva	**$1,176 a**	**7331 a**	**216 a**	**34.0 a**	**4.0 b**	**204 a**	**202**
1	No Systiva	$1,097 b	6760 b	210 b	32.3 b	7.1 a	199 b	**198**
Average		$1,137	7046	213	33.1	5.6	201	200
LSD 5%		41.3	251.5	5.6	0.7	1.1	3.7	n.s(6.7)
CV %		6.0	5.9	4.3	3.4	33.2	3.0	5.5

Quadris Effect (Average of Systiva and no Systiva Treatments

No.	Treatment	Net $/A	RWSA	RWST	T/A	Dead B / 100 ft Late	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
3	Quadris In-Fur / 8 lf	**$1,209 a**	**7505 a**	**217 a**	**34.7 a**	**2.6 d**	**202 ab**	**206 a**
4	Quadris In-Fur / 12 lf	**$1,186 ab**	**7417 ab**	**212 a**	**35.1 a**	**3.3 d**	199 bc	**202 ab**
2	Quadris In-Fur	**$1,182 ab**	**7284 ab**	**215 a**	**34.1 ab**	**2.9 d**	195 c	**201 ab**
5	Quadris 8 lf	$1,139 b	7076 b	**215 a**	33.0 b	5.0 c	**205 a**	**205 a**
6	Quadris 12 12 lf	$1,063 c	6615 c	**213 a**	31.1 c	8.3 b	**203 ab**	198 b
1	Untreated	$1,042 c	6378 c	207 b	30.8 c	11.2 a	**204 ab**	189 c
Average		$1,137	7046	213	33.1	5.6	201	200
LSD 5%		58.2	354.4	8.7	1.6	1.6	6.0	6.9
CV %		6.2	6.1	5.0	6.1	35.6	3.6	4.2

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: C-RR059
Planted: April 22
Harvested: Oct 3
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans
Rhizoc Level: Moderate
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 16.5 inches
Application: In-furrow applied at planting (3.5" band, 9.5 gpa), foliar (8 and12 lf) application with tractor mounted compressed air sprayer (7" band, 15 gpa)

No.	Treatment	Systiva	Net $/A		RWSA		RWST	T/A		Late Dead B/100 ft		Sugarbeet Stand B / 100 ft Early		Sugarbeet Stand B / 100 ft Late	
9	Quadris IF, 8 lf	Yes	**$1,300**	**a**	**8262**	**a**	**222**	**37.2**	**a**	**4.6**	**f**	**219**	**210**	**a**
8	Quadris IF	Yes	$1,239	b	7782	bc	**220**	35.4	bc	**6.0**	**ef**	**216**	**207**	**ab**
11	Quadris 8 lf	Yes	$1,234	b	7795	b	**221**	35.2	bc	**6.4**	**ef**	**215**	201	bcd
3	Quadris IF, 8 lf	No	$1,225	bc	7621	bcd	**217**	35.1	bc	**6.7**	**def**	**212**	202	bcd
10	Quadris IF, 12 lf	Yes	$1,218	bc	7776	bc	**216**	**35.9**	**ab**	**5.9**	**f**	**215**	**205**	**abc**
12	Quadris 12 lf	Yes	$1,187	bcd	7520	b-e	**218**	34.5	bcd	**7.1**	**def**	**219**	202	bcd
4	Quadris IF, 12 lf	No	$1,172	cde	7418	cde	**215**	34.4	bcd	8.8	cde	**209**	198	cd
7	Untreated	Yes	$1,171	cde	7306	def	**214**	34.0	cd	10.3	c	**218**	201	bcd
2	Quadris IF	No	$1,169	cde	7272	def	**215**	33.9	cd	9.3	cd	**209**	195	d
5	Quadris 8 lf	No	$1,140	de	7160	ef	**214**	33.4	de	10.0	c	**214**	200	bcd
6	Quadris 12 lf	No	$1,112	e	7001	f	**215**	32.4	e	14.4	b	**218**	202	bcd
1	Untreated	No	$1,003	f	6220	g	**203**	30.3	f	21.3	a	**211**	176	e

Average	$1,181	7428	216	34.3	9.2	215	200
LSD 5%	54.7	332.5	n.s(5.2)	1.4	2.6	n.s(8.1)	6.8
CV %	4.0	3.9	2.1	3.4	23.8	3.3	2.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Systiva (Seed Treatment) for Control of Rhizoctonia solani, including Seedling Disease and Root and Crown Rot, in Sugarbeets

Laker Agronomy Field, Elkton, MI - 2016

Systiva Effect (Average of all Quadris Rates)

No.	Treatment	Net $/A	RWSA	RWST	T/A	Dead B / 100 ft Late	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
2	Systiva	**$1,225 a**	**7740 a**	**219**	**35.4 a**	**6.7 b**	**217 a**	**204 a**
1	No Systiva	$1,136 b	7116 b	**213**	33.3 b	11.8 a	212 b	195 b
Average		$1,181	7428	216	34.4	9.3	215	200
LSD 5%		15.4	94.0	n.s(1.9)	0.4	0.9	2.6	3.2
CV %		2.2	2.1	1.4	1.8	16.4	2.0	2.7

Quadris Effect (Average of Systiva and no Systiva Treatments

No.	Treatment	Net $/A	RWSA	RWST	T/A	Dead B / 100 ft Late	Sugarbeet Stand B / 100 ft Early	Sugarbeet Stand B / 100 ft Late
3	Quadris In-Fur / 8 lf	**$1,262 a**	**7941 a**	**220**	**36.1 a**	**5.6 d**	**215**	**206 a**
2	Quadris In-Fur	$1,204 b	7527 b	**217**	34.7 b	7.7 c	**212**	201 b
4	Quadris In-Fur / 12 lf	$1,195 b	7597 b	**216**	35.1 b	7.4 cd	**212**	**201 ab**
5	Quadris 8 lf	$1,187 bc	7478 bc	**218**	34.3 bc	8.2 c	**215**	201 b
6	Quadris 12 lf	$1,149 c	7261 c	**217**	33.4 c	10.8 b	**218**	**202 ab**
1	Untreated	$1,087 d	6763 d	**209**	32.2 d	15.8 a	**215**	189 c
Average		$1,181	7428	216	34.4	9.3	215	200
LSD 5%		38.7	235.1	n.s(3.6)	1.0	1.8	n.s(5.7)	4.8
CV %		4.0	3.9	2.1	3.4	23.8	3.3	2.9

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Systiva® Seed Treatment

Hrabal Farms, Breckenridge - 2016

Trial Quality: Excellent
Variety: C-RR059
Planted: April 23
Harv/Samp: Nov 1 / Oct 18
Plot Size: 4 reps
Row Spacing: 22 inch
Seeding Rate: 56,500

Soil Info: Loam
Fertilizer: 2x2: 275# 13-13-13 + S, 2Mn, 0.5B; PPI: 150# N
Prev Crop: Corn
Weather: Heavier rain during emergence followed by 2 months of drought

Rhiz Control: Heavy Pressure: Quadris In-Furrow (6 oz, 4 inch band)
Cerc Control: Good Control: 1. Inspire + EBDC, 2. Super Tin + EBDC, 3. Eminent + EBDC, 4. Super Tin + EBDC 5. EBDC
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	Populations 100 Ft. of Row		Dead Beets / 1200 Ft. of Row		
						16 Days	31 Days	June 3	June 14	Sept 1
No Systiva In Furrow - Quadris	$1,036	**6878**	**224**	**30.7**	**15.2**	**121**	**232**	**2**	**11**	**74**
Systiva In Furrow - Quadris	$922	6108	**207**	**29.5**	**14.3**	81	**208**	**2**	**9**	**60**
No Systiva No I.F.	$867	5745	**219**	26.3	**15.0**	**147**	**225**	100	180	184
Systiva No I.F.	$856	5675	**214**	26.5	**14.7**	**116**	**215**	41	121	175
Average	$920	6102	216	28.2	14.8	116	220	37	80	123
LSD 5%	—	659	ns (14)	1.8	ns (0.8)	35	ns (23)	25	60	23
CV %	—	7	4	3.9	3.4	19	7	43	47	12

Comments: Systiva is a new systemic Rhizoctonia seed treatment from BASF. Trial was conducted to look at the effect of this seed treatment with and without Azoxystrobin (Quadris) applied in a T-band in-furrow. This trial had heavy Rhizoctonia pressure with significant die off starting just after emergence. It is important to note that significant die off had occurred by 41 days after planting (about 6-8 leaf stage), including in the Systiva Alone treatment. Quadris in furrow almost eliminated this die off. This indicates that there would have been significant die off with Systiva and only foliar Quadris (no in furrow). Systiva was significantly better than check in controlling early season Rhizoctonia. Quadris applied T-band in-furrow was superior to Systiva for both short term and long term control. There appeared to be a small delay in emergence with the Systiva/Quadris combination. Where Quadris was applied in furrow, yields were significantly higher than Systiva alone or No Systiva & No Quadris treatments. Seed treatment is not a replacement for long term Rhizoctonia control that is seen with Quadris in furrow. These treatments did not have Azoxystrobin (Quadris) applied at the 6-8 leaf stage. This is a natural infection non-inoculated trial.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Systiva® Seed Treatment

Hoard Farms, Breckenridge - 2016

Trial Quality: Excellent
Variety: C-RR059
Planted: April 20
Harv/Samp: Oct 31 / Oct 11
Plot Size: 4 reps
Row Spacing: 30 inch
Seeding Rate: 54,000

Soil Info: Loam
Fertilizer: Fall: 2500# of turkey litter; 2x2: 13-13-4-2S + micros; S.D.: 124# N by 28%
Prev Crop: Black Beans
Weather: Heavier rain during emergence followed by 2 months of drought

Rhiz Control: Heavy Pressure: Quadris I.F. (7oz., 4 inch band)
Cerc Control: Good Control: 1. EBDC, 2. Inspire + EBDC, 3. Priaxor + EBDC, 4. Enable + EBDC, 5. Copper
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	Populations 100 Ft. of Row		Dead Beets / 1200 Ft. of Row		
						19 Days	34 Days	June 3	June 14	Sept 16
No Systiva In Furrow - Quadris	$1,332	**8814**	**233**	**37.8**	**15.8**	**274**	**280**	**4**	**7**	**75**
Systiva In Furrow - Quadris	$1,289	**8538**	**232**	**36.8**	**15.8**	250	**273**	**2**	**8**	**63**
Systiva No I.F.	$1,172	**7792**	**229**	**33.9**	**15.5**	260	**277**	24	70	255
No Systiva No I.F.	$1,160	**7710**	**230**	**33.4**	**15.6**	**280**	**274**	74	148	290
Average	$1,238	8213	231	35.5	15.7	266	276	26	58	171
LSD 5%	—	ns(1043)	ns (11)	ns (4.0)	ns (0.6)	11	ns (9)	15	29	62
CV %	—	8	3	7.1	2.3	3	2	37	31	23

Comments: Systiva is a new systemic Rhizoctonia seed treatment from BASF. Trial was conducted to look at the effect of this seed treatment with and without Azoxystrobin (Quadris) applied in a T-band in-furrow. This trial had heavy Rhizoctonia pressure with significant die off starting just after emergence. It is important to note that significant die off had occurred by 43 days after planting (about 6-8 leaf stage), including in the Systiva Alone treatment. Quadris in furrow almost eliminated this die off. This indicates that there would have been significant die off with Systiva and only foliar Quadris (no in furrow). Systiva was significantly better than check in controlling early season Rhizoctonia. Quadris applied T-band in-furrow was superior to Systiva for both short term and long term control. There appeared to be a small delay in emergence with the Systiva treatments. Where Quadris was applied in furrow, yields were significantly higher than Systiva alone or No Systiva & No Quadris treatments at the 90% confidence level. Seed treatment is not a replacement for long term Rhizoctonia control that is seen with Quadris in furrow. These treatments did not have Azoxystrobin (Quadris) applied at the 6-8 leaf stage. This is a natural infection non-inoculated trial.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Clariva™ pn Nematode Seed Treatment

Gene Meylan, Linwood - 2016

Trial Quality: Good
Variety: See Treatments
Planted: April 20
Harv/Samp: Nov 9 / Oct 12
Plot Size: 4 reps
Row Spacing: 30 inch
Seeding Rate: 52,300

Soil Info: Loam
Fertilizer: Pre: 20 gal of 28% + 2 gal of Thiosul; S.D: 50# N by 28%
Prev Crop: Soybeans
Weather: Good

Rhizoc Control: Good control: Quadris I.F. & 6-8 Leaf
Cerc Control: Fair control: 1. Inspire + EBDC, 2. Priaxor + Badge, 3. Minerva, 4. EBDC
Other Pests: Sugarbeet cyst nematode

Treatment	RWSA	RWST	T/A	% Sugar	% CJP	Stand 100 Ft. Day	Nematodes - 100 cc of Soil		
							Cysts	Eggs	Eggs + Juv's
C-G333NT Clariva	**6538**	**205**	**31.8**	**14.1**	**95.3**	**230**	**3**	**170**	**186**
C-G333NT	**6316**	**202**	**31.2**	**13.9**	**95.3**	**229**	**5**	**165**	**215**
LSD 5%	ns (645)	ns (19)	ns (1.2)	ns (1.0)	ns (1.1)	ns (21)	ns (5)	ns (347)	ns (396)
CV %	4	4	1.7	3.1	0.5	4	60	92	88
C-RR059	**5974**	**208**	**28.7**	**14.1**	**96.0**	**237**	**9**	**480**	**535**
C-RR059 Clariva	**5777**	**210**	**27.5**	**14.3**	**95.8**	**224**	**14**	**1070**	**1110**
LSD 5%	ns (811)	ns (14)	ns (2.3)	ns (0.8)	ns (0.7)	ns (14)	ns (7)	ns (1378)	ns (1391)
CV %	6	3	3.6	2.5	0.3	3	27	79	75

Comments: Trial was conducted to evaluate the effect of Clariva pn nematode seed treatment on the population of sugarbeet cyst nematodes (SBCN) and beet yield/quality. This biological product is marketed by Syngenta as a seed treatment that may reduce nematode populations and/or improve yield. It is not recommended as a stand-alone product against SBCN and should be coupled with a tolerant variety. Two sugarbeet varieties were tested: a SBCN tolerant (C-G333NT) and a susceptible (C-RR059). Seed was treated with and without Clariva from the same seed lot. SBCN samples were taken in the fall in 100 foot of row in each of the replications. No visual differences between treatments were noted in summer observations. Clariva did not significantly improve yield or reduce nematode populations in any of the 2015 and 2016 trials (7 trials). However, less nematode reproduction occurs on the tolerant variety than the susceptible variety.

Bold: Results are not statistically different from top ranking treatment in each column.

Clariva™ pn Nematode Seed Treatment

Yoder Farms Inc., Bayport - 2016

Trial Quality: Fair
Variety: See Treatments
Planted: April 22
Harv/Samp: Oct 6 / Oct 3
Plot Size: 4 rep / 3 rep
Row Spacing: 20 inch
Seeding Rate: 60,200

Soil Info: Loam
Fertilizer: 12,000 gal of dairy manure; PPI: 15 gal of 28%, 4.5 gal of Solubor, 1 qt Mn; S.D.: 16 gal 28%
Prev Crop: Wheat / Clover
Weather: Droughty conditions for most of season

Rhizoc Control: Excellent Control: Quadris I.F. & foliar
Cerc Control: Fair Control: 1. Gem + EBDC, 2. Proline, 3. Tin + EBDC, 4. Eminent, 5. Gem, 6. Copper
Other Pests: Sugarbeet cyst nematode

Treatment	RWSA	RWST	T/A	% Sugar	% CJP	Stand 100 Ft. Day	Nematodes - 100 cc of Soil		
							Cysts	Eggs	Eggs + Juv's
C-G333NT Clariva	**6496**	**213**	**30.5**	**14.6**	**95.2**	182	**6**	**218**	**253**
C-G333NT	**6293**	**215**	**29.2**	**14.7**	**95.2**	**200**	**10**	**355**	**450**
LSD 5%	ns (1069)	ns (16)	ns (4.1)	ns (0.8)	ns (0.7)	16	ns (11)	ns (329)	ns (459)
CV %	7	3	6.1	2.5	0.3	4	61	51	58
C-RR059 Clariva	**5282**	**223**	**23.7**	**15.0**	**96.0**	**199**	**15**	**795**	**985**
C-RR059	**4954**	**219**	**22.4**	**14.7**	**96.1**	**199**	**13**	**555**	**705**
LSD 5%	ns (922)	ns (9)	ns (3.0)	ns (0.4)	ns (0.8)	ns (32)	ns (24)	ns (962)	ns (1065)
CV %	5	2	3.7	1.1	0.4	7	78	63	56

Comments: Trial was conducted to evaluate the effect of Clariva pn nematode seed treatment on the population of sugarbeet cyst nematodes (SBCN) and beet yield/quality. This biological product is marketed by Syngenta as a seed treatment that may reduce nematode populations and/or improve yield. It is not recommended as a stand-alone product against SBCN and should be coupled with a tolerant variety. Two sugarbeet varieties were tested: a SBCN tolerant (C-G333NT) and a susceptible (C-RR059). Seed was treated with and without Clariva from the same seed lot. SBCN samples were taken in the fall in 100 foot of row in each of the replications. No visual differences between treatments were noted in summer observations. Clariva did not significantly improve yield or reduce nematode populations in any of the 2015 and 2016 trials (7 trials). However, less nematode reproduction occurs on the tolerant variety than the susceptible variety.

Bold: Results are not statistically different from top ranking treatment in each column.

QuickRoots® Seed Inoculant

Reif Farms, Saginaw - 2016

Trial Quality: Excellent
Variety: B-18RR4N
Planted: April 19
Harv/Samp: Oct 26 / Oct 12
Plot Size: 6 reps
Row Spacing: 22 inch
Seeding Rate: 63,000

Soil Info: Loam
Fertilizer: PPI: 150# N by 28%; 2x2: 36#-0-0 + 1 qt B
Prev Crop: Wheat / Clover
Weather: Good

Rhiz Control: Excellent Control: Quadris I.F. only
Cerc Control: Very Good Control: 1. EBDC, 2. Proline + EBDC, 3. Inspire + Tin, 4. Tin, 5. Topguard + Badge
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. of Row	
							21 Day	42 Day
Quick Roots	$1,400	**9278**	**238**	**39.0**	**16.2**	**95.0**	**179**	**192**
Check	$1,365	**9046**	**236**	**38.3**	**16.1**	**95.0**	**182**	**188**
Average	$1,382	9162	237	38.6	16.2	95.0	181	190
LSD 5%	—	ns (252)	ns (8)	ns (1.1)	ns (0.4)	ns (0.5)	ns (29)	ns (36)
CV %	—	2	3	1.9	2.2	0.4	11	13

Comments: Trial was conducted to evaluate QuickRoots, a Monsanto BioAg product. The product is used as a microbial seed inoculant applied as a planter box treatment. Recommended application rate is 10 grams per 100,000 seed unit. Product claims to increase plant vigor and improve yield. No visual differences were seen between treatments. QuickRoots did show significant improvement in RWSA at the 90% confidence level and tonnage at the 80% confidence level. This is the 3rd year of testing with the majority of the trials either trending or showing significant improvement for QuickRoots. Cost per acre is in the $10 range.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

QuickRoots® Seed Inoculant

Spartan Acres (Knoerr), Saginaw - 2016

Trial Quality: Excellent
Variety: C-G333NT
Planted: April 20
Harv/Samp: Sept 6 / Sept 6
Plot Size: 5 reps
Row Spacing: 20 inch
Seeding Rate: 62,000

Soil Info: Sandy Loam
Fertilizer: PPI: 20 gal. of 28%; 2x2: 45-20-0+Thiosul; S.D.: 20 gal of 28%
Prev Crop: Soybeans
Weather: Droughty conditions through most of season

Rhiz Control: Excellent Control: Quadris I.F. only
Cerc Control: Fair Control: 1. EBDC, 2. Inspire + EBDC, 3. Headline + EBDC, 4. Tin, 5. Proline + EBDC
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. of Row	
							19 Day	41 Day
Quick Roots	$1,207	**4727**	**194**	**24.3**	**13.9**	**93.5**	**148**	**173**
Check	$1,173	**4588**	**194**	**23.7**	**13.8**	**93.7**	**149**	**173**
Average	$1,190	4658	194	24.0	13.8	93.6	149	173
LSD 5%	—	ns (262)	ns (5)	ns (0.7)	ns (0.3)	ns (0.6)	ns (29)	ns (23)
CV %	—	3	2	1.7	1.2	0.4	11	8

Comments: Trial was conducted to evaluate QuickRoots, a Monsanto BioAg product. The product is used as a microbial seed inoculant applied as a planter box treatment. Recommended application rate is 10 grams per 100,000 seed unit. Product claims to increase plant vigor and improve yield. No visual differences were seen between treatments. QuickRoots did show significant improvement in tonnage at the 90% confidence level. This is the 3rd year of testing with the majority of the trials either trending or showing significant improvement for QuickRoots. Cost per acre is in the $10 range.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

QuickRoots® Seed Inoculant

Triple K Farms (Kunick), Saginaw - 2016

Trial Quality:	Fair	**Soil Info:**	Loam	**Rhiz Control:**	Good Control: Quadris I.F. & Foliar
Variety:	C-RR059	**Fertilizer:**	Fall: 175# potash, 153# MAP; 2x2: 20 gal 16-16-0 + 5S; S.D.: 40 gal of 28%	**Cerc Control:**	Fair Control: 1. Inspire, 2. Tin, 3. Inspire, 4. Kocide
Planted:	April 24				
Harv/Samp:	Oct 25 / Oct 14				
Plot Size:	6 reps	**Prev Crop:**	Corn		
Row Spacing:	28 inch	**Weather:**	Dry early with crusting, good through the rest of season		
Seeding Rate:	58,000			**Other Pests:**	None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. of Row	
							16 Day	37 Day
Check	$1,428	**9455**	**279**	**34.0**	**18.4**	**96.1**	**155**	**228**
Quick Roots	$1,389	**9202**	271	**34.0**	18.0	**95.8**	**129**	205
Average	$1,408	9329	275	34.0	18.2	95.9	142	217
LSD 5%	—	ns (434)	7	ns (2.1)	0.3	ns (0.4)	ns (28)	16
CV %	—	3	2	4.1	1.2	0.3	15	6

Comments: Trial was conducted to evaluate Quick Roots, a product that is used as a microbial planter box seed treatment applied at planting time. Recommend application is 10 grams per 100,000 seed unit. Product claims to increase plant vigor and improve yields. No visual differences were seen between treatments. This trial showed significantly lower population with QuickRoots. Previous trials have shown no effect of Quick Roots on emergence. The trial experienced crusting and differences are probably due to emergence difficulties and /or the planter. Higher population of beets in the check strips may have resulted in a slight improvement in beet quality. In this trial tonnage was identical between treatments.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Evaluate Fertilizer Applications (2X2 at Planting and at the 4 Leaf Stage) in Sugarbeets

Helmreich, Bay City, MI - 2016

Trial Quality: Fair
Variety: C-RR059
Planted: April 25
Harvested: Sept 12
Plots: 6 rows X 50 ft, 6 reps
Row Spacing: 22 inch
Soil Info: Sandy Loam
%OM: 3.5, pH: 7.4, CEC: 10.8
Above Opt: P, K
High: Mn, Medium: B
Added N: See Trts
Prev Crop: Soybeans
Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.7 inches
Application: 2 X 2 on planter, 4 lf stage incorporated with fluted coulter (between rows)

No.	Fertilizer rates (lbs ai/A)					Net $/A	RWSA	RWST	T/A	% SUC	% CJP
	Total	2x2 at Planting			4-6 lf						
	N	N	P_2O_5	S	N						
9*	120	36	24	12	84	**$901 a**	**5202 a**	190 bc	**27.3 a**	13.2 bc	94.9 bcd
8	120	36	24	12	84	**$892 a**	**5130 ab**	194 b	**26.3 ab**	**13.6 ab**	94.6 cd
7	120	29	0	12	91	**$889 ab**	**5092 abc**	194 b	**26.3 ab**	**13.5 ab**	94.8 cd
3	120	24	0	0	96	**$872 ab**	**4998 abc**	187 bc	**26.7 ab**	13.1 bc	94.8 cd
6	120	31	24	0	89	**$762 abc**	4400 bcd	191 bc	22.9 c	13.4 b	94.5 d
1	120	0	0	0	120	$745 bc	4310 cd	194 b	22.1 c	**13.4 ab**	**95.1 abc**
4	120	7	24	0	113	$744 bc	4302 cd	182 c	23.6 bc	12.8 c	94.7 cd
2	36	36	0	0	0	$718 c	4165 d	190 bc	21.8 c	13.1 bc	**95.5 a**
5	120	5	0	11	115	$713 c	4138 d	183 c	22.6 c	12.8 c	94.9 bcd
10	0	0	0	0	0	$695 c	3776 d	**203 a**	18.6 d	**13.9 a**	**95.3 ab**

Average	$793	4551	191	23.8	13.3	94.9
LSD 5%	130.9	711.4	8.2	3.1	0.5	0.5
CV %	14.2	13.4	3.7	11.2	3.1	0.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Treatment 9 also had Boron at 0.5 lbs ai/A applied 2 X 2

Net $/A: Assume a $35 beet payment and trial average RWST with fertilizer costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Fertilizer Applications (2X2 at Planting and at the 4 Leaf Stage) in Sugarbeets

Helmreich, Bay City, MI - 2016

No.	Fertilizer rates (lbs ai/A)						Net $/A		Amino		Vigor 0-10				Stand
	Total	2x2 at Planting				4-6 lf									
	N	N	P_2O_5	S	B	N					15-Jun		4-Aug		B/100 ft
9	120	36	24	12	0.5	84	**$901**	**a**	**8.5**	**abc**	**8.4**	**a**	**8.8**	**a**	**205**
8	120	36	24	12	0	84	**$892**	**a**	7.1	bc	**8.0**	**a**	**8.5**	**a**	**204**
7	120	29	0	12	0	91	**$889**	**ab**	**11.3**	**a**	**8.0**	**a**	**8.5**	**a**	**213**
3	120	24	0	0	0	96	**$872**	**ab**	**10.2**	**ab**	**8.2**	**a**	**8.7**	**a**	**204**
6	120	31	24	0	0	89	**$762**	**abc**	6.9	c	**8.1**	**a**	**8.7**	**a**	**213**
1	120	0	0	0	0	120	$745	bc	**8.4**	**abc**	7.3	b	7.8	c	**206**
4	120	7	24	0	0	113	$744	bc	7.5	bc	**8.1**	**a**	8.2	b	**200**
2	36	36	0	0	0	0	$718	c	7.6	bc	**8.1**	**a**	**8.6**	**a**	**212**
5	120	5	0	11	0	115	$713	c	**8.9**	**abc**	**7.9**	**a**	8.2	b	**208**
10	0	0	0	0	0	0	$695	c	5.8	c	7.0	b	5.8	d	**201**

Average	$793	8.2	7.9	8.2	206.3
LSD 5%	130.9	2.8	0.6	0.3	n.s(19.8)
CV %	14.5	29.1	5.8	2.7	8.3

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Nitrogen fertilizer was applied 2 X 2 at planting compared to the 4 lf stage in this small plot replicated trial. Phosphorus, Sulfur and Boron were included in some of the 2 X 2 treatments. The sugarbeet stand was good (about 205 beets / 100 ft) and was similar for all treatments. Sugarbeet yields and quality were improved when a portion of the nitrogen was applied 2 X 2 at planting. Including Phosphorus, Sulfur and Boron in the 2 X 2 treatments tended to increase yields.

Net $/A: Assume a $35 beet payment and trial average RWST with fertilizer costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate the Influence of Various Nitrogen Rates on Grower Income, Yield and Quality when Harvested Early, Mid and Late Season - 2016
Laker Agronomy Field, Elkton, MI

Trial Quality: Good
Variety: C-G351NT
Planted: April 23
Harvested: Sept 1, Oct 1, Nov 1
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Application: 2X2 on planter, 4 lf stage incorporated with fluted coulter (between rows)

Soil Info: Clay Loam
%OM:3.3, pH: 7.6, CEC: 19.4
Above Opt: P, K
High: Mn, Medium: B
Added N: See Treatments
Prev Crop: Soybeans

Rhizoc Level: Good, IF and 8 lf
Cerc Control: Very Good, 6 App beginning at 50 DSV
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 15.5 inches

No.	Nitrogen Rate* Lb ai/Acre			Harvest Date	Net $/A		RWSA		RWST		T/A		% SUC		% CJP	
	Total	2X2	4 lf													
11	120	40	80	1-Oct	**$1,494**	**a**	8479	c	227	fgh	37.4	bc	15.5	de	94.9	ghi
5	40	40	0	1-Oct	**$1,492**	**a**	8156	c	256	de	31.8	e	17.1	c	**96.0**	**abc**
8	80	40	40	1-Oct	**$1,446**	**ab**	8078	c	235	f	34.4	de	16.0	d	95.3	efg
14	160	40	120	1-Oct	**$1,417**	**abc**	8142	c	234	f	34.8	cd	15.9	d	95.1	fgh
17	200	40	160	1-Oct	**$1,413**	**abc**	8240	c	231	fg	35.6	cd	15.7	d	95.1	fgh
20	240	40	200	1-Oct	**$1,407**	**a-d**	8323	c	229	fg	36.3	cd	15.7	de	94.9	ghi
12	120	40	80	1-Nov	$1,333	b-e	**10858**	**a**	269	bc	**40.4**	**a**	18.0	b	95.4	c-g
9	80	40	40	1-Nov	$1,326	b-e	**10519**	**ab**	**289**	**a**	36.4	cd	**19.0**	**a**	**96.3**	**ab**
18	200	40	160	1-Nov	$1,302	c-f	**10896**	**a**	274	b	**39.8**	**ab**	18.2	b	95.8	b-e
15	160	40	120	1-Nov	$1,287	def	**10635**	**ab**	271	bc	**39.2**	**ab**	18.0	b	**95.9**	**a-d**
2	0	0	0	1-Oct	$1,275	ef	6889	d	247	e	27.9	f	16.6	c	95.6	c-f
6	40	40	0	1-Nov	$1,268	ef	9912	b	**289**	**a**	34.2	de	**19.0**	**a**	**96.2**	**ab**
21	240	40	200	1-Nov	$1,251	efg	**10726**	**a**	263	cd	**40.8**	**a**	17.7	b	95.4	d-g
13	160	40	120	1-Sep	$1,188	fgh	4738	e	209	i	22.7	gh	14.5	g	94.5	i
19	240	40	200	1-Sep	$1,140	ghi	4705	e	210	i	22.4	gh	14.6	g	94.6	hi
16	200	40	160	1-Sep	$1,111	hi	4508	e	217	hi	20.8	h	15.0	fg	94.6	hi
7	80	40	40	1-Sep	$1,102	hi	4254	e	210	i	20.2	hi	14.7	fg	94.4	i
10	120	40	80	1-Sep	$1,079	hi	4243	e	209	i	20.3	hi	14.5	g	94.4	i
4	40	40	0	1-Sep	$1,059	i	3994	e	223	gh	17.9	i	15.2	ef	95.3	efg
3	0	0	0	1-Nov	$939	j	7204	d	**295**	**a**	24.4	g	**19.3**	**a**	**96.4**	**a**
1	0	0	0	1-Sep	$608	k	2196	f	212	i	10.3	j	14.6	fg	94.9	ghi

Average	$1,235	7414	243	29.9	16.4	95.3
LSD 5%	111.6	711.1	9.5	2.5	0.5	0.5
CV %	7.1	7.6	3.1	6.6	2.5	0.4

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

* Nitrogen Rate: Nitrogen at planting (2X2) = 8 gal 28% N, 6 gal 10-34-0 and 4 gal ThioSul for a total of 40 lbs ai/A at planting, and at the 4 lf stage 28% N was the source, applied with fluted coulter.

Net $/A: Assume a $35 beet payment and Company average RWST.
Early Delivery Incentive, Freight costs and Fertilizer costs are all incorporated into Net $/A.
Bold: Results are not statistically different from top-ranking treatment in each column.

PIONEER • BIG CHIEF
MICHIGAN SUGAR

Evaluate the Influence of Various Nitrogen Rates on Grower Income, Yield and Quality when Harvested Early, Mid and Late Season - 2016

Laker Agronomy Field, Elkton, MI

Nitrogen Rate Effect (Average of Harvest Dates)

No.	Nitrogen Rate* Lb ai/Acre			Net $/A		RWSA		RWST		T/A		% SUC		% CJP	
	Total	2X2	4 If												
4	120	40	80	**$1,302**	**a**	**7860**	**a**	235	c	**32.7**	**ab**	16.0	d	94.9	d
5	80	40	40	**$1,297**	**a**	**7838**	**a**	238	c	**32.2**	**ab**	16.2	d	95.2	bc
3	160	40	120	**$1,291**	**a**	**7617**	**a**	245	b	30.4	bc	16.5	bc	95.3	b
6	40	40	0	**$1,276**	**a**	**7881**	**a**	240	bc	**32.1**	**ab**	16.3	cd	95.2	bc
2	200	40	160	**$1,273**	**a**	**7354**	**a**	**256**	**a**	28.0	c	**17.1**	**a**	**95.8**	**a**
7	0	0	0	**$1,266**	**a**	**7918**	**a**	234	c	**33.1**	**a**	16.0	d	94.9	cd
1	240	40	200	$941	b	5430	b	**251**	**a**	20.9	d	**16.8**	**ab**	**95.6**	**a**
Average				$1,235		7414		243		29.9		16.4		95.3	
LSD 5%				111.8		644.9		6.4		2.6		0.3		0.3	
CV %				12.0		11.5		3.5		11.6		2.8		0.4	

Harvest Date Effect (Average of Nitrogen Rates)

No.	Harvest Date	Net $/A		RWSA		RWST		T/A		% SUC		% CJP	
2	October 1, 2016	**$1,421**	**a**	8044	b	237	b	34.0	b	16.1	b	95.3	b
3	November 1, 2016	$1,243	b	**10107**	**a**	**278**	**a**	**36.5**	**a**	**18.5**	**a**	**95.9**	**a**
1	September 1, 2016	$1,041	c	4091	c	213	c	19.2	c	14.7	c	94.7	c
Average		$1,235		7414		243		29.9		16.4		95.3	
LSD 5%		42.2		268.8		3.6		0.9		0.2		0.2	
CV %		7.1		7.6		3.1		6.6		2.4		0.4	

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: This trial had an adequate and uniform sugarbeet stand (~ 165 beets/100 ft). Cercospora leafspot and Rhizoctonia root rot were not problems. The only issues were a few low spots and data from those areas were not included in the results. With respect to yield and quality, there were a lot of significant differences between treatments. However, when considering net grower income and utilizing early harvest incentives, the data is harder to interpret. The top 6 (net income) treatments (120 lbs, 40 lbs, 80 lbs, 160 lbs, 200 lbs and 240 lbs) were all harvested on October 1 and there were no significant differences among these treatments. The other October harvest date treatment was the untreated (0 lb N/A) and it ranked about midway down the income column. The November 1 harvest date treatments were clearly superior to the September 1 harvest date treatments. When looking at nitrogen rates averaged over harvest dates, the top 4 nitrogen rates averaged 100 lbs N per acre. This data would suggest that growers would want to stay away from the 0 lb, 200, 240 and possibly the 40 lb N rates and apply between 80 and 120 lbs N per acre. A similar trial conducted last year had the highest income with September harvest dates and a little more nitrogen. More trials would need to be conducted before reliable nitrogen rate recommendations for early harvest could be established.

Net $/A: Assume a $35 beet payment and trial average RWST with fertilizer costs subtracted off.
Early Delivery Incentive, Freight costs and Fertilizer costs are all incorporated into Net $/A.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Factory Lime Applications to Sugarbeets

Crumbaugh, Breckenridge, MI - 2013 and 2016

Trial Quality: Good
Variety: HM-28RR
Planted: May 17
Harvested: Sept 21
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Sandy Clay Loam
%OM: 3.1, Ph: 7.0
Above Opt: P, K
High: Mn, Low B
Prev Crop: Soybeans

Rhizoc Level: Low to Moderate
Cerc Control: Good
Problems: Uneven Emerg
Seeding Rate: 4.1 inches
Rainfall: 12.3 inches

No.	Treatment	Applied	2013					
			Net $/A	RWSA	RWST	T/A	% SUC	% CJP
6	12 Tons/Acre	11/15/2012	**$1,085**	**6120**	**230**	**26.6**	**15.5**	**95.6**
2	2 Tons/Acre	11/15/2012	**$1,064**	**5876**	**228**	**25.8**	**15.6**	**95.1**
5	8 Tons/Acre	11/15/2012	**$1,037**	**5805**	**225**	**25.9**	**15.3**	**95.2**
3	4 Tons/Acre	11/15/2012	**$1,022**	**5671**	**225**	**25.2**	**15.4**	**94.9**
4	6 Tons/Acre	11/15/2012	**$1,004**	**5596**	**230**	24.4	**15.6**	**95.2**
1	0 Tons/Acre	11/15/2012	**$957**	**5265**	**220**	23.9	**15.1**	**94.8**
Average			$1,028	5722	226	25.3	15.4	95.1
LSD 5%			n.s(91.7)	n.s(504.3)	n.s(13.5)	1.8	n.s(.7)	n.s(.5)
CV %			7.5	7.4	5.0	6.1	4.0	0.5

Trial Quality: Good
Variety: SX-1212RR
Planted: April 19
Harvested: Sept 13
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Sandy Clay Loam
%OM: 2.7, pH: 7.4, CEC: 12.3
Above Opt: P, K
High: Mn, Low: B
Prev Crop: Soybeans

Rhizoc Level: Low to Moderate
Cerc Control: Good
Problems: Uneven Emerg
Seeding Rate: 4.1 inches
Rainfall: 15.5 inches

No.	Treatment	Applied	2016					
			Net $/A	RWSA	RWST	T/A	% SUC	% CJP
6	12 Tons/Acre	11/15/2012	**$1,422**	**9534**	**204**	**41.5**	**14.1**	**94.8**
4	6 Tons/Acre	11/15/2012	**$1,342**	**8825**	**206**	**38.4**	**14.2**	**95.1**
5	8 Tons/Acre	11/15/2012	**$1,340**	**8949**	**200**	**39.7**	**14.0**	**94.5**
3	4 Tons/Acre	11/15/2012	**$1,337**	**8376**	**211**	37.2	**14.4**	**95.5**
1	0 Tons/Acre	11/15/2012	**$1,331**	**8513**	**201**	**38.7**	**13.8**	**95.3**
2	2 Tons/Acre	11/15/2012	**$1,298**	**8561**	**203**	37.5	**14.0**	**95.0**
Average			$1,345	8793	204	38.8	14.1	95.0
LSD 5%			n.s(126.6)	n.s(1074)	n.s(12.4)	3.6	n.s(.7)	n.s(.6)
CV %			7.9	10.3	5.1	7.8	4.3	0.6

Comments: Lime was applied and incorporated in the fall of 2012. Sugarbeets were planted in 2013, followed by 2 rotational crops, and planted again in 2016. Lime was not applied again in this trial. In 2013, there was a clear yield response with higher lime rates giving higher yields. There was a trend for quality being higher with lime but the differences were not significant. When sugarbeets were planted in 2016, yields were higher with higher lime rates but the trend was less clear. Quality was not affected by lime in 2016. Sugarbeet emergence was improved with higher lime rates in 2013 but there were no stand differences in 2016. The soil pH in September of 2013 showed the high lime rates increased the pH from 6.3 to 7.8. Soil pH levels in 2016 were: high lime = 7.7 and no lime = 6.7. Manganese levels were not affected by liming at this location. The high lime rates were included to better define the influence of lime on sugarbeet production and are not intended as recommended rates.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Factory Lime Applications to Sugarbeets

Helmreich, Freeland, MI - 2013 and 2016

Trial Quality: Fair
Variety: HM-28RR
Planted: April 18
Harvested: Sept 16
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Sandy Loam
%OM: 2.5, pH: 7.6
Above Opt: P, K
High: Mn, Low: B
Prev Crop: Soybeans

Rhizoc Level: Good
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 10.0 inches

No.	Treatment	Applied	2013					
			$/A	RWSA	RWST	T/A	% SUC	% CJP
2	2 Tons/Acre	11/15/2012	**$882**	**4879**	**250**	**19.5**	**16.9**	**95.2**
3	4 Tons/Acre	11/15/2012	**$870**	**4834**	**249**	**19.4**	**16.9**	**94.9**
6	12 Tons/Acre	11/15/2012	**$868**	**4924**	**249**	**19.8**	**16.9**	**94.9**
4	6 Tons/Acre	11/15/2012	**$840**	**4693**	**247**	**18.9**	**16.8**	**94.9**
5	8 Tons/Acre	11/15/2012	**$836**	**4700**	**250**	**18.8**	**16.9**	**95.3**
1	0 Tons/Acre	11/15/2012	**$833**	**4579**	**244**	**18.7**	**16.6**	**95.1**
Average			$855	4768	248	19.2	16.8	95.1
LSD 5%			n.s(120.6)	n.s(663.3)	n.s(7.8)	n.s(2.2)	n.s(.5)	n.s(.5)
CV %			11.9	11.7	2.7	9.8	2.3	0.5

Trial Quality: Fair
Variety: SX-1212RR
Planted: April 25
Harvested: Sept 12
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Sandy Loam
%OM: 2.9, pH: 7.5, CEC: 9.6
Above Opt: P, K
High: Mn, Medium: B
Prev Crop: Soybeans

Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 16.6 inches

No.	Treatment	Applied	2016					
			$/A	RWSA	RWST	T/A	% SUC	% CJP
1	0 Tons/Acre	11/15/2012	**$1,092**	**6264**	**201**	**31.1**	**14.0**	**94.9**
3	4 Tons/Acre	11/15/2012	**$1,058**	**6118**	**203**	**30.0**	**14.1**	**94.8**
5	8 Tons/Acre	11/15/2012	**$1,026**	**5991**	**200**	**29.8**	**14.0**	**94.5**
6	12 Tons/Acre	11/15/2012	**$1,018**	**5995**	**204**	**29.3**	**14.1**	**94.8**
2	2 Tons/Acre	11/15/2012	**$994**	**5727**	**194**	**29.5**	**13.7**	**94.0**
4	6 Tons/Acre	11/15/2012	**$970**	**5643**	**201**	**28.1**	**13.9**	**94.9**
Average			$1,026	5956	201	29.6	14.0	94.7
LSD 5%			n.s(187.2)	n.s(1073.4)	n.s(8.9)	n.s(4.6)	n.s(.4)	n.s(.7)
CV %			15.3	15.2	3.8	13.2	2.7	0.7

Comments: Lime was applied and incorporated in the fall of 2012. Sugarbeets were planted in 2013 followed by 2 rotational crops and planted again in 2016. Lime was not applied again during the trial period. In 2013, there was a trend towards higher lime rates giving higher yields but differences were not significant. There were no quality or emergence differences in 2013. When sugarbeets were planted in 2016, there were no yield or quality differences. Sugarbeet emergence was improved with higher lime rates in 2013 but there were no stand differences in 2016. The soil pH in September of 2013 showed that high lime rates increased the pH from 7.6 to 7.9. Soil pH levels in 2016 were: no lime = 6.7, high lime: 7.7. Manganese levels in 2013 in untreated plots were 12 ppm (petioles) and around 9 ppm in the limed plots. There were no differences in Manganese levels in 2016. The high lime rates were included to better define the influence of lime on sugarbeet production and are not intended as recommended rates.

Net **$/A:** Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Nitrogen After Manure & Clover

Hrabal Farms, Breckenridge - 2016

Trial Quality:	Excellent	**Soil Info:**	Loam	**Rhizoc Control:**	Excellent Control: Quadris I.F. & 6-8 leaf
Variety:	C-G333NT	**Fertilizer:**	Fall: 16,000 gal of dairy manure; 2x2: 275# of 13-13-13 + S, 2Mn, 0.5B	**Cerc Control:**	Good Control: 1. Inspire + EBDC, 2. Tin + EBDC, 3. Proline + EBDC
Planted:	April 17				
Harv/Samp:	Sept 1 / Sept 1				
Plot Size:	4 reps	**Prev Crop:**	Wheat / Clover		
Row Spacing:	30 inch	**Weather:**	Droughty through mid-season	**Other Pests:**	None
Seeding Rate:	56,500				

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP
No Sidedress	$1,443	**5175**	**207**	**25.0**	**14.2**	**95.2**
Sidedressed 45# N	$1,360	4877	194	**25.2**	13.6	**94.5**
Average	$1,402	5026	200	25.1	13.9	94.8
LSD 5%	—	224	8	ns (2.1)	0.3	ns (0.9)
CV %	—	2	2	3.6	0.9	0.4

Comments: This trial was conducted to evaluate the need for additional nitrogen in sugarbeets after fall applied dairy manure. This field had 16,000 gallons of manure applied in October after wheat harvest in a field that had a clover cover crop which was harvested/removed for feed. Three separate PSNT nitrogen soil test were taken at intervals to determine availability of N from manure. Results from each test resulted in approximately 30# of nitrogen availability (low). This field was dry in May and June when PSNT test were taken. This may have impacted results of the test to show less credit than what would actually be available. Crop was exhibiting good growth and no N deficiencies were seen. A total of 45 additional pounds/acre of nitrogen was side dressed on June 8th in strips for comparison. It continued to be dry through June after sidedressing making it difficult for nitrogen uptake by the plant. No visual growth difference was seen between any treatments. Additional side dress application did not improve yield but did significantly reduce percent sugar and RWST. Dairy manure, clover and starter fertilizer had enough nitrogen for optimum yield.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Ag Zyme®

Meylan Farms Inc., Auburn - 2016

Trial Quality: Excellent
Variety: C-RR059
Planted: April 17
Harv/Samp: Nov 4 / Oct 10
Plot Size: 8 reps
Row Spacing: 22 inch
Seeding Rate: 68,000

Soil Info: Loam
Fertilizer: PPI: 40 gal of 28%; 2x2: 17 gal of 19-17-0 + 1 qt B, 1 qt Mn
Prev Crop: Pickles
Weather: Dry through mid-season

Rhizoc Control: Good Control: Quadris I.F. & 6-8 leaf
Cerc Control: Fair Control: 1. Inspire, 2. Tin, 3. Priaxor + EBDC, 4. Minerva + EBDC, 5. EBDC
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. of Row	
							15 Day	46 Day
Check	$1,163	**7709**	**236**	**32.7**	**15.7**	**96.2**	**116**	**203**
Ag Zyme	$1,137	**7537**	**232**	**32.5**	15.4	**96.3**	**115**	**200**
Average	$1,150	7623	234	32.6	15.6	96.3	116	202
LSD 5%	—	ns (211)	ns (4.4)	ns (0.6)	0.3	ns (0.2)	ns (13)	ns (11)
CV %	—	2	2	1.5	1.6	0.2	10	5

Comments: Trial was conducted to evaluate the impact of Ag Zyme on yield and quality of sugarbeets when it is used in-furrow at planting time. Product claims to "activate microbial potential to help get nutrients in the plant". The product was used at 12.8 oz./acre rate applied in-furrow with Quadris at planting time. Eight replications were harvested for yield and quality. No significant measurable differences in yield occurred between any treatments. No visual difference in growth or vigor was seen between treatments.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Ag Zyme®

Spartan Acres (Knoerr), Saginaw - 2016

Trial Quality: Excellent
Variety: C-G333NT
Planted: April 20
Harv/Samp: Sept 6 / Sept 6
Plot Size: 5 reps
Row Spacing: 20 inch
Seeding Rate: 62,000

Soil Info: Sandy Loam
Fertilizer: PPI: 20 gal. of 28%; 2x2: 45-20-0+Thiosul; S.D.: 20 gal of 28%
Prev Crop: Soybeans
Weather: Droughty conditions through most of season

Rhiz Control: Excellent Control: Quadris I.F. only
Cerc Control: Fair Control: 1. EBDC, 2. Inspire + EBDC, 3. Headline + EBDC, 4. Tin, 5. Proline + EBDC
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. of Row	
							19 Day	41 Day
Check	$1,107	**4332**	**193**	**22.4**	**13.8**	**93.5**	**150**	**168**
Ag Zyme	$1,105	**4324**	**193**	**22.4**	**13.8**	**93.6**	**152**	**173**
Average	$1,106	4328	193	22.4	13.8	93.6	151	171
LSD 5%	—	ns (242)	ns (5)	ns (1.3)	ns (0.3)	ns (0.4)	ns (28)	ns (19)
CV %	—	3	1	3.3	1.1	0.2	11	6

Comments: Trial was conducted to evaluate the impact of yield and quality of sugarbeets when Ag Zyme is used in-furrow at planting time. Product claims to “activate microbial potential to help get nutrients in the plant”. This product was used at 12.8 oz./acre rate applied in a T-band with Quadris at planting time. Five replications were harvested for yield and quality showing no significant differences between treatments. No difference in visual observations were seen between treatments.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Ag Zyme®

Sylvester Farms Inc., Quanicassee - 2016

Trial Quality: Excellent
Variety: B-149N
Planted: April 16
Harv/Samp: Oct 29 / Oct 19
Plot Size: 6 reps
Row Spacing: 24 inch
Seeding Rate: 65,000

Soil Info: Loam
Fertilizer: Fall: Variable K2O; PPI: 55 gal. of 28%, 2x2: 36-28-0-9 + Mn & B
Prev Crop: Corn
Weather: Good

Rhizoc Control: Good Control: In Furrow & 8 leaf foliar, both 10 oz
Cerc Control: Good Control: EBDC with all but #5, 1. Inspire, 2. Tin, 3. Topguard, 4. Tin, 5. Copper, 6. Eminent
Other Pests: Sugarbeet cyst nematode

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. of Row	
							16 Day	45 Day
Ag Zyme	$1,356	**8989**	**259**	**34.7**	**17.4**	**95.4**	**25**	**179**
Check	$1,337	**8861**	**260**	**34.1**	**17.5**	**95.3**	**28**	**173**
Average	$1,347	8925	260	34.4	17.5	95.4	27	176
LSD 5%	—	ns (270)	ns (9.6)	ns (1.0)	ns (0.6)	ns (0.2)	ns (14)	ns (29)
CV %	—	2	3	2.0	2.5	0.2	40	12

Comments: Trial was conducted to evaluate the impact of Ag Zyme on yield and quality of sugarbeets when it is used in-furrow at planting time. Product claims to “activate microbial potential to help get nutrients in the plant”. The product was used at 12.8 oz./acre applied in-furrow with Quadris at planting time. Six replications were harvested for yield and quality. No significant measurable differences in yield or quality occurred between any treatments. No visual difference in growth or vigor was seen between treatments.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Baccarat Biostimulant

Wark Farms, Quanicassee - 2016

Trial Quality: Excellent
Variety: C-G333NT
Planted: April 15
Harv/Samp: Nov 4 / Oct 21
Plot Size: 5 reps
Row Spacing: 22 inch
Seeding Rate: 68,000

Soil Info: Loam
Fertilizer: PPI: 75# N; 2x2: 33 gal of 14-15-0-3S, 2 qt Mn, 1qt B; S.D.: 60# N
Prev Crop: Wheat / Clover
Weather: Good

Rhiz Control: Excellent Control: Quadris I.F. & 6-8 leaf
Cerc Control: Good Control: 1-5 with EBDC 1. Inspire, 2. Tin, 3. Topguard, 4. Tin, 5.Inspire, 6. Copper
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP
Baccarat	$1,452	**9627**	**248**	**38.9**	**16.8**	**95.0**
Check	$1,433	**9499**	**244**	**38.9**	**16.6**	**95.0**
Average	$1,443	9563	246	38.9	16.7	95.0
LSD 5%	—	ns (280)	ns (6)	ns (1.0)	ns (0.5)	ns (0.2)
CV %	—	2	1	1.5	1.5	0.1

Comments: Baccarat Bio Stimulant is promoted as a crop soil booster and plant bio activator. It contains several different acids including: humic, fulvic, ulmic and humine. Claimed benefits are for increased yield, sugar content and more efficient nutrient uptake. Recommendations for sugarbeets is two foliar applications of 28 oz./acre. Product was applied with leaf spot fungicides on the second and third applications. No significant difference in visual growth, yield or quality. This was a high yielding, excellent quality trial.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

Sugar Express® Foliar Fertilizer

Wegener Farms, Auburn - 2016

Trial Quality:	Good	**Soil Info:**	Loam	**Rhizoc Control:**	Excellent Control: Quadris I.F. & 6-8 leaf
Variety:	C-G333NT	**Fertilizer:**	Fall: 120# K; 2x2: 36#-39#-0 +8.7S, 0.3B; S.D.: 120# N	**Cerc Control:**	Fair Control: 1. Inspire + EBDC, 2. Tin + EBDC, 3. Eminent + Copper, 4. EBDC, 5. Copper
Planted:	April 12				
Sampled:	Sept 28 & Oct 24				
Plot Size:	7 Reps	**Prev Crop:**	Oats		
Row Spacing:	30 inch	**Weather:**	Good	**Other Pests:**	None
Seeding Rate:	55,000				

First Sample - Sept. 28 - 10 Days After Application

Treatment	RWST	% Sugar	% CJP
Sugar Express	**235.0**	**15.7**	**96.0**
Check	**233.9**	**15.7**	**95.8**
Average	234.5	15.7	95.9
LSD 5%	ns (15.3)	ns (0.9)	ns (0.4)
CV %	5.0	4.4	0.4

Second Sample - Oct. 24 - 36 Days After Application

Treatment	RWST	% Sugar	% CJP
Sugar Express	**241.2**	**16.1**	**96.0**
Check	**240.8**	**16.1**	**96.0**
Average	241.0	16.1	96.0
LSD 5%	ns (10.5)	ns (0.6)	ns (0.2)
CV %	3.3	3	0.2

Comments: This trial was conducted to see if a foliar application of Sugar Express, from Miller Chemical, applied late in the season would improve sugar quality in sugarbeets. Sugar Express is a 4-10-40 highly crystalline fertilizer with the appropriate ratio of phosphorous and potassium designed to be used close to harvest. Product was applied at 10 pounds per acre 10 days before the first sugar sampling. Samples were taken again at 36 days after application. Quality analysis had 7 replications for each treatment. No significant difference was seen in RWST, sugar content (%) or Clear Juice Purity (CJP). Field did have significant late season Cercospora leafspot.

Bold: Results are not statistically different from top ranking treatment in each column.

Response of 8 Varieties to Nitrogen Fertilizer

Couture Flatland Farms, Ontario 2016
Dr. Laura L. Van Eerd and Mike Zink
University of Guelph, Ridgetown Campus

Trial Quality: Excellent
Variety: 8 Varieties
Planted: April 15
Harvested: Sept 20, Oct 24
Row Spacing: 30 inch

Soil Info: Loam
%OM: 3.3, Ph: 7.8
CEC 21.5, P 28ppm, K 152 ppm
Weather: Dry, Irrigated 3X
Prev Crop: Grain Corn

Cerc Control: 5-6 Fungicide Applications
Planter Fert.: 11lb. N/ac (11-52-0)

Table 1: Impact of N fertilizer on sugarbeet production (average of 8 varieties, 2 harvest dates, 3 reps).

N Applied	RWSA		Tons/Acre	RWST		% Sugar		Payment $/a	
0 lb/ac	**12720**	**a**	**55.5**	**230**	**a**	**15.6**	**a**	**2342**	**a**
40	**12456**	**ab**	**57.2**	218	b	15.0	b	**2283**	**ab**
80	12152	b	**57.3**	211	c	14.7	b	2223	b
140	11399	c	**57.0**	200	d	14.1	c	2095	c
200	11025	c	**58.7**	188	e	13.5	d	2032	c

* For each column, average with different letters indicates a statistical difference.
Payment $: $35 USD company average RWST = 230 + early payment
Results: N Fertilizer (Table 1)
-Fertilizer N rate did not impact sugarbeet yield.
-Beets did not display N deficiency symptoms.
-Soil mineralization provided crop needs.
-Highest payment, RWSA, RWST and % sugar were with no N fertilizer applied.

Table 2: Fertilizer N rate correlations with sugarbeet payment, yield, RWST, and RWSA at early (E) and late (L) harvest showing correlations of these factors with SPAD meter and Greenseeker readings taken in June. Correlations indicated with *p=0.05, **p=0.01, ***p=0.001, or not significant '-'.

N Rate			Payment ($/ac)						RWSA (lb/ac)						Yield (ton/ac)						RWST (lb/ton)						Variety
			N rate		SPAD		GS		N rate		SPAD		GS		N rate		SPAD		GS		N rate		SPAD		GS		
Variety	SPAD	GS	E	L	E	L	E	L	E	L	E	L	E	L	E	L	E	L	E	L	E	L	E	L	E	L	
B122N	*	*	-	*	-	-	-	-	-	*	-	-	-	-	*	-	-	*	-	-	-	***	-	*	-	**	B122N
B133N	**	-	**	*	-	-	-	-	**	*	-	-	-	-	-	-	**	-	-	-	***	***	*	-	-	-	B133N
B1399	**	*	**	-	-	*	-	-	**	-	-	*	-	-	-	-	-	-	-	-	***	**	**	**	*	*	B1399
C059	-	-	-	-	*	-	*	-	-	-	*	-	*	-	-	*	-	-	-	-	**	***	-	-	-	-	C059
C333NT	*	-	*	***	-	-	-	-	*	***	-	-	-	-	-	-	-	-	-	-	**	*	-	-	*	-	C333NT
C351NT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	*	-	-	-	***	***	-	-	*	*	C351NT
H9616	-	-	**	*	-	-	-	-	**	*	-	-	-	-	-	-	-	-	-	-	***	**	*	-	-	-	H9616
SX1235N	**	-	-	*	-	-	-	-	-	**	-	-	-	-	-	-	-	-	*	*	***	***	**	*	-	-	SX1235N
All	***	**	***	***	-	-	-	-	***	***	*	-	-	*	-	-	-	*	**	-	***	***	**	-	**	**	All

Comments: The higher the rate of N fertilizer applied the lower the payment %sugar, RWST and RWSA. At Early harvest, half of the varieties showed a negative response between N rate and payment, while at late harvest, 5 to 8 varieties showed the same response. The SPAD meter and Greenseeker measures leaf and canopy greenness. SPAD readings taken in June had a significant positive linear relationship with N applied for 5 to 8 varieties. Greenseeker readings showed the same relationship for only 2 to 8 varieties. Both the SPAD and Greenseeker show some promise but ideally readings should only pick up a significant response when the crop responded to N applied. Similar results were observed in 2015.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Early-Harvest Sugarbeet Nitrogen Response

Kurt Steinke and Andrew Chomas, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage**: Conv., 30-in. row
Planting Date: April 19, 2016 **(Harvest 8/29/16)**	**N Rates**: See below
Soil Type: Clay loam; 3.0 OM; 7.1 pH; 48 ppm P; 182 ppm K	**Population**: 4 ¼ in. spacing
Variety: Crystal RR059 **Prev. Crop**: Non-interseeded winter wheat	**Replicated**: 4 replications

N Trt. (Total lb. N/A)	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
0 – Check	4333	216	20	14.6	96.0	74	5.3
40	6537	225	29	15.2	95.8	86	6.2
80	6223	215	29	14.5	95.9	94	6.9
120	5586	207	27	14.1	95.6	107	8.0
160	6351	199	32	13.6	95.5	133	10.3
$LSD_{(0.10)}$[a]	**694**	**7.5**	**3.2**	**0.4**	**NS**	**11**	**1.0**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

N Trt. (Total lb. N/A)	Gross Grower Payment ($/A)	Net Economic Return Minus N Costs ($/A)[a]	Net Economic Return Minus N Costs and Trucking ($/A)[b]
0 – Check	1309	1309	1234
40	1977	1963	1854
80	1889	1861	1752
120	1693	1651	1550
160	1929	1873	1753

[a, b] Gross grower payment and net economic returns based upon a $35/ton base payment with early delivery, volume, and quality incentives; N price of $0.35/lb.; trucking costs of $3.75/T.

Summary: Trial quality was good to excellent. All treatments received 40 lbs. N/A as 28%, 20 lbs. P_2O_5/A, 50 lbs. K_2O/A. and 2 lbs. Mn/A as starter placed 2x2 on April 19 (check plots did not receive any N). The 40 lb. N/A treatment received no supplemental N beyond the starter application. Sidedress N applications were completed at the 2-4 leaf stage on May 24. In the current study, nitrogen treatments receiving 40 lb. total N (40 N as 2x2) resulted in the best combination of tonnage and sugar quality for this early harvest date.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Beet Lime, Ag Lime, and Plant Tuff Silicon Fertilizer on Sugarbeet

Kurt Steinke and Andrew Chomas, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage**: Conv., 30-in. row
Planting Date: April 19, 2016 (Harvest 10/6/16)	**Trt's:** See below
Soil Type: Clay loam; 3.0 OM; 7.1 pH; 48 ppm P; 182 ppm K	**Population**: 4 ¼ in. spacing
Variety: Crystal RR059 **Prev. Crop**: Non-interseeded winter wheat	**Replicated**: 4 replications

Trt. (Tons/A)	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
Check	7200	218	33	15.3	93.9	218	16.3
Plant Tuff (0.5)	8678	234	37	16.1	94.7	185	13.0
Plant Tuff (1.0)	9302	232	40	16.1	94.3	255	17.7
Ag Lime (0.5)	8954	235	38	16.2	94.6	262	17.7
Ag Lime (1.0)	9197	230	40	15.9	94.4	182	13.2
Beet Lime (0.5)	9306	227	41	15.9	93.8	224	15.8
Beet Lime (1.0)	10070	240	42	16.4	94.8	180	12.0
$LSD_{(0.10)}$[a]	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

Summary: Trial quality was fair to good. All treatments received 40 lbs. N/A as 28%, 20 lbs. P_2O_5/A, 50 lbs. K_2O/A. and 2 lbs. Mn/A as starter placed 2x2 on April 19. Sidedress N applications (120 lb. N/A) were completed at the 2-4 leaf stage on May 24 for a total N application of 160 lb./A. Amendments were applied pre-plant incorporated the day of planting. Check plots received starter fertilizer and sidedress N but no additional amendments. No differences in plant tissue nutrient contents were observed across any treatments as compared to the untreated check. Results were not statistically different across treatments.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Sugarbeet Nitrogen Response Following Wheat

Kurt Steinke and Andrew Chomas, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage**: Conv., 30-in. row
Planting Date: April 19, 2016 (Harvest 10/6/16)	**N Rates**: See below
Soil Type: Clay loam; 3.0 OM; 7.1 pH; 48 ppm P; 182 ppm K	**Population**: 4 ¼ in. spacing
Variety: Crystal RR059	**Replicated**: 4 replications

N Trt. (Total lb. N/A)	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
0 – Check	8363	261	32	17.3	96.2	96	6.2
40	9394	255	37	17.0	95.7	136	9.1
80	10670	266	40	17.8	95.7	131	8.6
120	9839	252	39	16.9	95.7	175	11.6
160	10335	247	42	16.8	94.8	177	11.7
200	9067	232	39	16.0	94.6	232	16.4
240	10347	231	45	15.9	94.4	280	19.2
160N Total 1T/A chicken manure with 66N SD	10581	246	43	16.8	94.8	205	13.4
160N Total 2T/A chicken manure with 13N SD	9556	245	39	16.7	94.9	159	10.5
$LSD_{(0.10)}$[a]	**NS**	**12.6**	**5.7**	**0.7**	**0.6**	**71**	**4.7**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

N Trt. (Total lb. N/A)	Gross Grower Payment ($/A)	Net Economic Return Minus N Costs ($/A)[a]	Net Economic Return Minus N Costs and Trucking ($/A)[b]
0 – Check	1258	1258	1138
40	1421	1407	1268
80	1602	1574	1424
120	1480	1438	1292
160	1562	1506	1348
200	1363	1293	1147
240	1565	1481	1312
1 T/A + 66N	1593	1426	1265
2 T/A +13N	1439	1146	1000

[a, b] Gross grower payment and net economic returns based upon a $35/ton base payment with volume and quality incentives, an N price of $0.35/lb., chicken manure bulk price of $144/T, and trucking costs of $3.75/T.

Summary: Trial quality was good to excellent. Previous wheat crop was not interseeded with a leguminous cover crop. All treatments received 40 lbs. N/A as 28%, 20 lbs. P_2O_5/A, 50 lbs. K_2O/A. and 2 lbs. Mn/A as starter placed 2x2 on April 19 (check plots did not receive any N). The 40 lb. N/A treatment received no supplemental N beyond the starter application. Sidedress N applications were completed at the 2-4 leaf stage on May 24.

The 2016 growing season was a tale of two seasons. Dry spring conditions facilitated timely planting but April precipitation was > 60% below the 30-year average and both May and June precipitation totals were > 50% below the 30-year average. Dry soil conditions likely limited N losses early but some timely rain events on June 5 and June 16 had beet stands and canopies looking good. July and August rainfall totals were above 30-year averages with 3.5 and 5.2 inches, respectively. While the autumn season was below average from a precipitation standpoint, many soils never dried out from the late summer rains and beets had ample moisture throughout this time period. The increased beet tonnage typically observed with above-recommended N rate applications occurs after Sept 1. Moist autumn soil conditions and warm air and soil temperatures may have limited some root bulking and sugar storage. Autumn growth conditions may not have been adequate to sufficiently dilute beet N concentrations thus further contributing to the lower sugar contents reported across the region. Moist autumn conditions, increased reports of leafspot, warmer fall temperatures lessening sugar storage, and in some cases dry spring conditions impacting stand emergence may have all impacted the 2016 sugarbeet season. In this particular study, nitrogen treatments receiving around 80 lb. total N (40 N as 2x2 and 40 N sidedress) resulted in the best combination of tonnage and sugar quality. Rates greater than 80 lb. total N did not significantly increase yield, decreased RWSA, and increased amino-N concentrations. No significant differences in residual soil N after harvest were present among the 0-240 N rates in this study.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Sugarbeet Response to Phosphorus Fertilizer

Kurt Steinke and Andrew Chomas, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage**: Conv., 30-in. row
Planting Date: April 19, 2016 (Harvest 10/6/16)	**Trt's**: See below
Soil Type: Clay loam; 3.0 OM; 7.1 pH; 48 ppm P; 182 ppm K	**Population**: 4 ¼ in. spacing
Variety: Crystal RR059 **Prev. Crop**: Non-interseeded winter wheat	**Replicated**: 4 replications

P Trt. (Total lb. P_2O_5/A)	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
0 – Check	8773	238	37	16.2	94.9	205	14.3
25	9775	244	40	16.5	95.4	189	12.8
50	9568	239	40	16.3	95.0	205	13.7
100	10046	239	42	16.3	95.0	137	9.5
$LSD_{(0.10)}$[a]	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

P Trt. (Total lb. P_2O_5/A)	Gross Grower Payment ($/A)	Net Economic Return Minus Trucking ($/A)[a]
0 – Check	1326	1187
25	1470	1320
50	1440	1290
100	1512	1354

[a] Gross grower payment and net economic returns based upon a $35/ton base payment with volume and quality incentives and trucking costs of $3.75/T.

Summary: Trial quality was good to excellent. All treatments received 40 lbs. N/A as 28% placed 2x2 on April 19. Phosphorus applications consisted of triple superphosphate applied as a 2x2 at-planting. Sidedress N applications (120 lb. N/A) were completed at the 2-4 leaf stage on May 24 for a total N application of 160 lb./A. In the current study, phosphorus application did not influence tonnage or quality. Producers will want to monitor residual soil P levels to determine whether or not a P application is warranted.

MICHIGAN STATE UNIVERSITY EXTENSION

Michigan State University AgBioResearch

Sugarbeet Response to Sulfur Application

Kurt Steinke and Andrew Chomas, Michigan State University

Location: Saginaw Valley Research and Extension Center	**Tillage**: Conv., 30-in. row
Planting Date: April 19, 2016 (Harvest 10/6/16)	**Trt's**: See below
Soil Type: Clay loam; 3.0 OM; 7.1 pH; 48 ppm P; 182 ppm K	**Population**: 4 ¼ in. spacing
Variety: Crystal RR059 **Prev. Crop**: Non-interseeded winter wheat	**Replicated**: 4 replications

S Trt. (Total lb. S/A)	RWSA	RWST	Tons/A	% Sugar	% CJP	NH2	Amino-N
0 – Check	8877	247	36	16.8	94.9	186	12.3
25	9122	247	37	16.7	95.2	181	11.7
50	9251	244	38	16.6	94.9	192	13.0
100	9597	246	39	16.8	94.8	224	14.9
$LSD_{(0.10)}$[a]	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**	**NS**

[a] LSD, least significant difference between means within a column at ($\alpha = 0.10$).

S Trt. (Total lb. S/A)	Gross Grower Payment ($/A)	Net Economic Return Minus Trucking ($/A)[a]
0 – Check	1339	1204
25	1376	1237
50	1396	1253
100	1445	1299

[a] Gross grower payment and net economic returns based upon a $35/ton base payment with volume and quality incentives and trucking costs of $3.75/T.

Summary: Trial quality was good to excellent. All treatments received 40 lbs. N/A as 28%, 20 lbs. P_2O_5/A, 50 lbs. K_2O/A. and 2 lbs. Mn/A as starter placed 2x2 on April 19. Sulfur applications consisted of gypsum (calcium sulfate) applied pre-plant incorporated. Sidedress N applications were completed at the 2-4 leaf stage on May 24 for a total N application rate of 160 lbs/A across all treatments. In the current study, S applications did not significantly affect sugar tonnage or quality.

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MICHIGAN SUGAR

Evaluate Low Rates of Dual, Outlook and Warrant Applied Early Post Emergence to Sugarbeets

Gilford, Fairgrove, MI - 2016

Trial Quality: Good
Variety: HM-9617RR
Planted: April 19
Harvested: Sept 19
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 8.8, pH: 8.0, CEC: 31.2
Below Opt: P, Above Opt: K
Medium: Mn, B
Added N: 130 lbs
Prev Crop: Radish
Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.7 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa

No.	Treatment	Rate/A	Applied	Net $/A	% Weed Control		Vigor* 0-10 Rating		Early Stand	Full Stand
					22-Jun	11-Jul	2-Jun	11-Jul	5-May	2-Jul
13	Warrant Roundup PM	3 pt 32 fl oz	4 lf Cot-2, 4, 12 lf	**$1,324 a**	**95 a**	**99 a**	7.3 bc	**9.1 ab**	121 e	**188**
10	Nortron Roundup PM	3 pt 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,295 a**	**93 a**	**100 a**	7.3 bc	**8.6 a-d**	132 b-e	**183**
7	Warrant Roundup PM	1 pt 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,294 a**	**93 a**	**100 a**	7.3 bc	8.3 bcd	129 cde	**186**
9	Warrant Roundup PM	3 pt 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,289 a**	**90 a**	**99 a**	7.3 bc	8.0 d	127 cde	**185**
14	Roundup PM	32 fl oz	Cot-2, 4, 12 lf	**$1,281 ab**	**91 a**	**98 a**	**8.0 a**	**9.3 a**	**145 a**	**185**
12	Outlook Roundup PM	1 pt 32 fl oz	4 lf Cot-2, 4, 12 lf	**$1,277 ab**	**94 a**	**100 a**	**7.5 ab**	**9.1 ab**	**134 a-d**	**184**
4	Outlook Roundup PM	9 fl oz 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,277 ab**	**91 a**	**99 a**	6.8 bc	8.3 bcd	**136 abc**	**179**
2	Dual Magnum Roundup PM	1 pt 32 fl oz	2 lf Cot-2, 8, 12 lf	**$1,270 ab**	**94 a**	**99 a**	6.9 bc	8.3 bcd	129 cde	**181**
6	Outlook Roundup PM	1 pt 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,260 ab**	**93 a**	**99 a**	6.5 c	8.1 cd	132 b-e	**184**
5	Outlook Roundup PM	12 fl oz 32 fl oz	2 lf Cot-2, 8, 12 lf	**$1,258 ab**	**95 a**	**98 a**	7.0 bc	8.3 bcd	131 b-e	**181**
8	Warrant Roundup PM	24 fl oz 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,255 ab**	**94 a**	**99 a**	7.0 bc	**8.4 a-d**	123 de	**181**
11	Dual Magnum Roundup PM	1.33 pt 32 fl oz	4 lf Cot-2, 4, 12 lf	**$1,246 abc**	**94 a**	**100 a**	7.3 bc	**9.0 abc**	**135 a-d**	**187**
3	Dual Magnum Roundup PM	1.33 pt 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	**$1,244 abc**	**93 a**	**98 a**	6.9 bc	8.1 cd	132 b-e	**189**
1	Dual Magnum Roundup PM	12 fl oz 32 fl oz	Cot - 2 lf Cot-2, 8, 12 lf	$1,204 bc	**94 a**	**97 a**	6.8 bc	8.3 bcd	**133 a-d**	**181**
15	Untreated Check			$1,172 c	0 b	0 b	7 bc	7.9 d	**142 ab**	**184**
	Average			$1,263	86.7	92.1	7.10	8.46	132.0	183.8
	LSD 5%			70.9	4.2	2.9	0.7	0.8	10.4	n.s(18)
	CV %			3.9	3.4	2.2	6.4	6.5	5.5	6.7

Means followed by the same letter are not significantly different. Duncans New MRT 5%.
***Vigor**: 0 to 10 ratings, 10 is the best.
AMS added to Roundup Power Max at 17 lbs/100 gal.
Net $/A: Assume a $35 beet payment and trial average RWST with herbicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

Evaluate Low Rates of Dual, Outlook and Warrant Applied Early Post Emergence to Sugarbeets

Gilford, Fairgrove, MI - 2016

No.	Treatment	Rate /A	Applied	Net $/A		RWSA		RWST		T/A		% SUC	
13	Warrant Roundup PM	3 pt 32 fl oz	4 lf 2, 4, 12 lf	**$1,324**	**a**	**7031**	**a**	**186**	**abc**	**37.8**	**a**	**14.0**	**ab**
10	Nortron Roundup PM	3 pt 32 fl oz	2 lf 2, 8, 12 lf	**$1,295**	**a**	**7002**	**a**	**190**	**a**	**36.9**	**a**	**14.2**	**a**
7	Warrant Roundup PM	1 pt 32 fl oz	2 lf 2, 8, 12 lf	**$1,294**	**a**	**6834**	**a**	**186**	**ab**	**36.7**	**a**	**13.9**	**abc**
9	Warrant Roundup PM	3 pt 32 fl oz	2 lf 2, 8, 12 lf	**$1,289**	**a**	**6852**	**a**	182	bcd	**37.6**	**a**	13.8	bcd
14	Roundup PM	32 fl oz	2, 4, 12 lf	**$1,281**	**ab**	**6746**	**ab**	178	d	**37.9**	**a**	13.6	d
12	Outlook Roundup PM	1 pt 32 fl oz	4 lf 2, 4, 12 lf	**$1,277**	**ab**	**6800**	**ab**	182	bcd	**37.4**	**a**	13.7	bcd
4	Outlook Roundup PM	9 fl oz 32 fl oz	2 lf 2, 8, 12 lf	**$1,277**	**ab**	**6767**	**ab**	**183**	**a-d**	**36.9**	**a**	13.8	bcd
2	Dual Magnum Roundup PM	1 pt 32 fl oz	2 lf 2, 8, 12 lf	**$1,270**	**ab**	**6745**	**ab**	182	bcd	**37.1**	**a**	13.7	bcd
6	Outlook Roundup PM	1 pt 32 fl oz	2 lf 2, 8, 12 lf	**$1,260**	**ab**	**6711**	**ab**	**184**	**a-d**	**36.6**	**a**	**13.9**	**abc**
5	Outlook Roundup PM	12 fl oz 32 fl oz	2 lf 2, 8, 12 lf	**$1,258**	**ab**	**6682**	**ab**	182	bcd	**36.6**	**a**	13.8	bcd
8	Warrant Roundup PM	24 fl oz 32 fl oz	2 lf 2, 8, 12 lf	**$1,255**	**ab**	**6640**	**ab**	181	bcd	**36.7**	**a**	13.7	bcd
11	Dual Magnum Roundup PM	1.33 pt 32 fl oz	4 lf 2, 4, 12 lf	**$1,246**	**abc**	**6641**	**ab**	**183**	**a-d**	**36.2**	**a**	13.8	bcd
3	Dual Magnum Roundup PM	1.33 pt 32 fl oz	2 lf 2, 8, 12 lf	**$1,244**	**abc**	**6630**	**ab**	178	d	**37.3**	**a**	13.5	d
1	Dual Magnum Roundup PM	12 fl oz 32 fl oz	2 lf 2, 8, 12 lf	$1,204	bc	6387	bc	177	d	**36.1**	**a**	13.5	d
15	Untreated Check			$1,172	c	6100	c	179	cd	34.1	b	13.6	cd

Average	$1,263	6705	182	36.8	13.8
LSD 5%	70.9	369.0	6.3	1.8	0.3
CV %	3.9	3.9	2.4	3.5	1.5

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Chloroacetamide herbicides (Dual Magnum, Outlook and Warrant) were applied early post-emergence (cotyledon to 2 leaf stage) and at the 4 leaf stage. All of the treatments were tank mixed with Roundup. The high rates applied early caused a delay in emergence, however, the final stands were not impacted. Warrant tended to cause slightly more early stand reduction than Dual or Outlook. Roundup alone and the untreated check had the highest early and final stand counts. With respect to weed control, all of the treatments were as good or better than Roundup applied alone. The weed population, wild mustard and common lambsquarter, was moderate and the untreated plots lost around 3 tons per acre due to weed competition.

Net $/A: Assume a $35 beet payment and trial average RWST with herbicide costs subtracted off.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Nortron Pre Followed by Post Applications of Roundup plus Dual Magnum, Outlook and Warrant

Gilford, Fairgrove, MI - 2016

Trial Quality: Good
Variety: HM-9617RR
Planted: April 19
Harvested: Sept 19
Plots: 6 rows X 38 ft, 4 reps
Row Spacing: 22 inch
Soil Info: Clay Loam
%OM: 8.8, pH: 8.0, CEC: 31.2
Below Opt: P, Above Opt: K
Medium: Mn, B
Added N: 130 lbs
Prev Crop: Radish
Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches
Rainfall: 15.7 inches
Application: JD 3520 Tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa

No.	Treatment	Rate / A	Applied	Net $/A	% Weed Control		0-10 Vigor**		Stand-B/100 ft	
					43 day 2-Jun	82 day 11-Jul	23 day 13-May	82 day 11-Jul	15 day 5-May	54 day 13-Jun
5	Roundup PM Warrant	32 fl oz 3 pt	Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,252 a**	**93 a**	**98 a**	7.1 cde	**8.5 a**	**148**	**232**
1	Roundup PM	32 fl oz	Cot-2 lf, 4 lf, 12 lf	**$1,240 ab**	**90 a**	**98 a**	**7.8 a**	**8.9 a**	**140**	**241**
7	Nortron Roundup PM Outlook	3 pt 32 fl oz 1 pt	Pre Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,228 ab**	**95 a**	**100 a**	7.4 bc	**8.8 a**	**149**	**229**
10	Nortron Roundup PM Outlook Outlook	3 pt 32 fl oz 9 fl oz 1 pt	Pre Cot-2 lf, 4 lf, 12 lf Cot-2 lf 4 lf	**$1,224 ab**	**95 a**	**100 a**	7.0 de	**8.9 a**	**144**	**235**
8	Nortron Roundup PM Warrant	3 pt 32 fl oz 3 pt	Pre Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,221 ab**	**94 a**	**100 a**	7.1 cde	**8.8 a**	**141**	**241**
3	Roundup PM Dual Magnum	32 fl oz 1.33 pt	Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,209 ab**	**91 a**	**98 a**	7.0 de	**8.6 a**	**142**	**240**
2	Nortron Roundup PM	3 pt 32 fl oz	Pre Cot-2 lf, 4 lf, 12 lf	**$1,194 ab**	**95 a**	**99 a**	**7.6 ab**	**8.9 a**	**143**	**234**
6	Nortron Roundup PM Dual Magnum	3 pt 32 fl oz 1.33 pt	Pre Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,192 ab**	**94 a**	**100 a**	7.3 cd	**8.6 a**	**143**	**243**
4	Roundup PM Outlook	32 fl oz 1 pt	Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,182 ab**	**93 a**	**98 a**	7.3 cd	**8.5 a**	**145**	**228**
11	Nortron Roundup PM Warrant Warrant	3 pt 32 fl oz 24 fl oz 3 pt	Pre Cot-2 lf, 4 lf, 12 lf Cot-2 lf 4 lf	**$1,177 ab**	**95 a**	**100 a**	6.9 e	**8.8 a**	**148**	**238**
9	Nortron Roundup PM Dual Magnum Dual Magnum	3 pt 32 fl oz 12 fl oz 1.33 pt	Pre Cot-2 lf, 4 lf, 12 lf Cot-2 lf 4 lf	$1,156 b	**95 a**	**100 a**	7.0 de	**8.9 a**	**140**	**238**
12	Untreated Check			$1,073 c	0 b	0 b	7.4 bc	7.3 b	**142**	**233**
Average				$1,196	85.7	90.8	7.23	8.60	143.9	236.1
LSD 5%				80.1	5.0	2.1	0.24	0.49	n.s(23)	n.s(27)
CV %				4.7	4.0	1.6	2.3	3.9	11.2	7.8

Means followed by the same letter are not significantly different. Duncans New MRT 5%.
Net $/A: Assume a $35 beet payment and trial average RWST with herbicide costs subtracted off.
** **Vigor:** 0-10 visual rating with 10 being best
AMS added to Roundup Power Max at 17 lbs/100 gal.
Moderate infestation of common lambsquarter and wild mustard.
Bold: Results are not statistically different from top-ranking treatment in each column.

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Evaluate Nortron Pre Followed by Early Post Applications of Roundup plus Dual Magnum, Outlook and Warrant
Gilford, Fairgrove, MI - 2016

No.	Treatment	Rate / A	Applied	Net $/A	RWSA	RWST	T/A	% SUC	% CJP
5	Roundup PM Warrant	32 fl oz 3 pt	Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,252 a**	**6915 a**	**188**	**36.8 a**	**14.1**	**91.4**
1	Roundup PM	32 fl oz	Cot-2 lf, 4 lf, 12 lf	**$1,240 ab**	**6771 a**	**192**	**35.4 a**	**14.1**	**91.9**
7	Nortron Roundup PM Outlook	3 pt 32 fl oz 1 pt	Pre Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,228 ab**	**6925 a**	**192**	**36.0 a**	**14.3**	**91.6**
10	Nortron Roundup PM Outlook Outlook	3 pt 32 fl oz 9 fl oz 1 pt	Pre Cot-2 lf, 4 lf, 12 lf Cot-2 lf 4 lf	**$1,224 ab**	**6925 a**	**189**	**36.6 a**	**14.1**	**91.4**
8	Nortron Roundup PM Warrant	3 pt 32 fl oz 3 pt	Pre Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,221 ab**	**6886 a**	**190**	**36.3 a**	**14.2**	**91.6**
3	Roundup PM Dual Magnum	32 fl oz 1.33 pt	Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,209 ab**	**6685 a**	**188**	**35.6 a**	**14.2**	**91.1**
2	Nortron Roundup PM	3 pt 32 fl oz	Pre Cot-2 lf, 4 lf, 12 lf	**$1,194 ab**	**6660 a**	**187**	**35.5 a**	**14.1**	**91.2**
6	Nortron Roundup PM Dual Magnum	3 pt 32 fl oz 1.33 pt	Pre Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,192 ab**	**6731 a**	**188**	**35.9 a**	**14.0**	**91.5**
4	Roundup PM Outlook	32 fl oz 1 pt	Cot-2 lf, 4 lf, 12 lf 4 lf	**$1,182 ab**	**6540 a**	**186**	**35.2 a**	**14.0**	**91.0**
11	Nortron Roundup PM Warrant Warrant	3 pt 32 fl oz 24 fl oz 3 pt	Pre Cot-2 lf, 4 lf, 12 lf Cot-2 lf 4 lf	**$1,177 ab**	**6676 a**	**186**	**36.1 a**	**14.0**	**91.0**
9	Nortron Roundup PM Dual Magnum Dual Magnum	3 pt 32 fl oz 12 fl oz 1.33 pt	Pre Cot-2 lf, 4 lf, 12 lf Cot-2 lf 4 lf	$1,156 b	**6560 a**	**187**	**35.2 a**	**14.0**	**91.3**
12	Untreated Check			$1,073 c	5788 b	**182**	31.8 b	**13.8**	**91.1**

Average	$1,196	6671.8	187.8	35.53	14.08	91.33
LSD 5%	80.1	432.2	n.s(8.2)	1.91	n.s(.4)	n.s(.9)
CV %	4.7	4.5	3.0	3.7	1.9	0.7

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Nortron applied pre at 3 pts/A, and low rates of Dual (12 fl oz), Outlook (9 fl oz) and Warrant (24 fl oz) applied early post appeared to provide a slight improvement in weed control and a slight decrease in sugarbeet vigor (early season ratings), however, differences were not significant for the most part. At mid season, there were no differences in weed control, vigor or stand between herbicide treatments. All treatments were significantly improved over the untreated check. A moderate weed infestation (lambsquarter and wild mustard) was present and untreated plots lost about 4 tons per acre to weed competition.

Bold: Results are not statistically different from top-ranking treatment in each column.

Net $/A: Assume a $35 beet payment and trial average RWST with herbicide costs subtracted off.

Ethotron tank-mixtures with Stinger in sugarbeet

Christy Sprague, Gary Powell and Brian Stiles, Michigan State University

Locations: Richville (SVREC)	**Application timings**: 6-leaf beets
Planting Dates: April 16, 2016	**Herbicides:** see treatments
Soil Type: Sandy clay loam	**O.M.:** 2.5 **pH:** 7.8
Replicated: 4 times	**Variety:** Hilleshog 9616 RR

Table 1. Sugarbeet injury, weed control, yield, and recoverable white sugar per acre (RWSA) for Ethotron POST combinations.

Herbicide treatments[a]	Injury (14 DAT)	C. lambsquarters (53 DAT)	C. ragweed (53 DAT)	Yield	RWSA
	— % —	— % —	— % —	— ton/A —	— lb/A —
Roundup (22 oz)	0	90	82	27.2	6700
Stinger (0.5 pt)	5	18	87	8.7	2262
Stinger (0.5 pt) + Roundup (22 oz)	20	96	90	27.9	6502
Ethotron (0.75 pt)	0	50	47	12.7	3144
Ethotron (0.75 pt) + Roundup (22 oz)	0	99	82	28.0	6793
Ethotron (0.75 pt) + Stinger (0.5 pt) + Roundup (22 oz)	25	99	90	22.3	5276
Ethotron (0.75 pt) + Stinger (0.5 pt) + Dual Magnum (1.33 pt) + Roundup (22 oz)	22	100	90	29.5	6950
Untreated	0	0	0	2.0	527
$LSD_{0.05}$[b]	7	5.4	6.7	4.57	920

[a] All treatments with Roundup PowerMax included ammonium sulfate at 17 lb/100 gal. See recommendations in the MSU Weed Control Guide for Field Crops.

[b] Means within a column greater than least significant difference (LSD) value are different from each other.

Summary: A field trial was conducted to evaluate the effects of postemergence (POST) Ethotron (ethofumesate) tank-mixtures on sugarbeet injury, weed control, and yield. Herbicide treatments were made when sugarbeet was at the 6-leaf stage and common lambsquarters and common ragweed averaged 2-inches tall. All treatments that contained 0.5 pt of Stinger caused significant sugarbeet injury, 7 and 14 DAT. However, by 28 DAT sugarbeet injury was not apparent with any of the treatments. Applications of Stinger and Ethotron alone did not adequately control common lambsquarters 18 and 50%, respectively. The addition of Roundup to these herbicides improved control and these combinations provided greater common lambsquarters control than Roundup alone, 53 DAT. Ethotron alone did not provide adequate common ragweed control (47%). However, the addition of Stinger to Roundup or Roundup + Ethotron improved common ragweed control compared with Roundup applied alone. When weeds were not controlled sugarbeet yield was reduced 93%. The greatest impact on yield was due to poor common lambsquarters control, Stinger or Ethotron applied alone. It did not appear that early-season injury from Stinger impacted sugarbeet yield or recoverable white sugar at the end of the season.

Effect of simulated tank-contamination with dicamba on sugarbeet - SVREC

Michael Probst and Christy Sprague, Michigan State University

Locations: Richville (SVREC)	**Application timings**: 2-, 6-, and 14-leaf beets
Planting Dates: April 16, 2016	**Herbicides:** see treatments
Soil Type: Clay loam	**O.M.:** 3.0 **pH:** 7.8
Replicated: 4 times	**Variety:** Hilleshog 9616

Table 1. Sugarbeet injury and yield resulting from sub-lethal rates of dicamba applied at three different growth stages.

		Herbicide Injury (14 DAT)			Yield		
Herbicide treatments[a,b]	**Clarity rate**	**2-leaf**	**6-leaf**	**14-leaf**	**2-leaf**	**6-leaf**	**14-leaf**
	fl oz/A	— % —	— % —	— % —	- ton/A -	- ton/A -	- ton/A -
Non-treated control	0	0 a	0 a	0 a	30.8 a	29.8 a	30.6 a
Dicamba - 0.0625%	0.02	3 ab	--	--	29.2 a	--	--
Dicamba - 0.125%	0.04	5 bc	1 a	3 ab	30.1 a	30.6 a	27.4 ab
Dicamba - 0.25%	0.08	7 c	7 b	5 bc	29.1 a	30.3 a	29.0 a
Dicamba - 0.5%	0.16	14 c	7 b	9 c	28.1 a	31.0 a	27.7 ab
Dicamba - 1%	0.32	16 c	19 c	15 d	32.0 a	28.3 a	24.3 b
Dicamba - 2%	0.64	--	32 d	34 e	--	22.7 b	25.1 b

Means followed by the same letter in the same column are not significantly different at $\alpha \leq 0.05$.

[a] All treatments included 22 fl oz/A of Roundup PowerMax and 17 lb/100 gal of ammonium sulfate to simulate tank-contamination.

[b] Rate percentages are based off of a field use rate for Clarity of 32 fl oz/A.

Summary: Field studies were conducted to determine the effects of sub-lethal doses of dicamba on sugarbeet. The release of Roundup Ready 2 Xtend (dicamba resistant) soybean will increase the risk for potential exposure of sugarbeet to dicamba through several different means, including spray tank-contamination. Several sub-lethal rates of dicamba (0.0625 – 2% the field use rate) were applied when sugarbeet were at the 2-, 6-, and 14-leaf (pre-canopy closure) stages. All treatments included a full rate of 22 fl oz/A of Roundup PowerMax + ammonium sulfate to simulate spray tank-contamination. Herbicide injury was evaluated throughout the season, with maximum injury generally occurring 14 days after application. Significant sugarbeet injury was observed when 0.125%, 0.25%, and 0.25% of the field use rate of dicamba was applied to 2-, 6-, and 14- leaf sugarbeet, respectively. At 2% the field use rate of dicamba sugarbeet injury was 32 and 34% for the 6- and 14-leaf timings, respectively. At harvest, very little sugarbeet injury was detected when dicamba was applied to 2- and 6-leaf sugarbeet. However, there was a significant reduction in yield at the 2% rate of dicamba applied to 6-leaf sugarbeet. This rate also caused an 18% reduction in yield when applied to sugarbeet with 14-leaves. Yield was also reduced when 1% the field use rate was applied at the last timing. Recoverable white sugar per acre results were similar to yield and dicamba had little effect on the percent sugar. The greater time to recover or possibly the lower amount of leaf area at the earlier application timings may help explain why the applications made to 2-leaf sugarbeet did not impact yield. Based on these results, it appears that if the amount of dicamba equivalent to 1% the field use rate is left in or not cleaned out of the spray tank there could be an impact on yield especially if sugarbeet are larger than the 6-leaf stage. We are currently examining what, if any dicamba residues can be found in the sugarbeet 14 days after treatment and at harvest.

Effect of simulated tank-contamination with 2,4-D on sugarbeet - SVREC

Michael Probst and Christy Sprague, Michigan State University

Locations: Richville (SVREC)	**Application timings**: 2-, 6-, and 14-leaf
Planting Dates: April 16, 2016	**Herbicides:** see treatments
Soil Type: Clay loam	**O.M.:** 3.0 **pH:** 7.8
Replicated: 4 times	**Variety:** Hilleshog 9616

*Table 1.*Sugarbeet injury and yield resulting from sub-lethal rates of 2,4-D at three different growth stages.

		Herbicide Injury (14 DAT)			Yield		
Herbicide treatments[a,b]	**Enlist Duo Rate**	**2-leaf**	**6-leaf**	**14-leaf**	**2-leaf**	**6-leaf**	**14-leaf**
	fl oz/A	—%—	—%—	—%—	– ton/A –	– ton/A –	– ton/A –
Non-treated control	0	0 a	0 a	0 a	25.1 a	24.8 ab	21.5 a
2,4-D - 0.0625%	0.05	2 ab	--	--	25.6 a	--	--
2,4-D - 0.125%	0.10	1 abc	3 ab	3 ab	26.7 a	27.0 a	20.7 a
2,4-D - 0.25%	0.20	4 bcd	7 b	6 b	28.1 a	26.3 ab	21.9 a
2,4-D - 0.5%	0.40	5 cd	16 c	24 c	23.3 a	22.3 b	21.2 a
2,4-D - 1%	0.80	7 d	23 d	27 c	26.5 a	22.2 b	17.9 b
2,4-D - 2%	1.60	--	34 e	37 d	--	10.8 c	11.5 c

Means followed by the same letter in the same column are not significantly different at $\alpha \leq 0.05$.

[a] All treatments included 22 fl oz/A of Roundup PowerMax and 17 lb/100 gal of ammonium sulfate to simulate tank-contamination.

[b] Rate percentages are based off of a field use rate for Enlist Duo of 4.75 pt/A.

Summary: Field studies were conducted to determine the effects of sub-lethal doses of 2,4-D on sugarbeet. The release of Enlist (2,4-D resistant) soybean will increase the risk for potential exposure of sugarbeet to 2,4-D through several different means, including spray tank-contamination. Several sub-lethal rates of 2,4-D (0.0625 – 2% the field use rate) were applied when sugarbeet were at the 2-, 6-, and 14-leaf (pre-canopy closure) stages. All treatments included a full rate of 22 fl oz/A of Roundup PowerMax + ammonium sulfate to simulate spray tank-contamination. Herbicide injury was evaluated throughout the season, with maximum injury generally occurring 14 days after application. Significant sugarbeet injury was observed when 0.5% of the field use rate of 2,4-D was applied to 2-, 6-, and 14-leaf sugarbeet. At 2% the field use rate of 2,4-D sugarbeet injury was greater than 30% for the 6- and 14-leaf timings. At harvest, very little sugarbeet injury was detected. However, sugarbeet yield was reduced 56% and 47% when 2% the field use rate of 2,4-D was applied to 6- and 14-leaf sugarbeet. Recoverable white sugar per acre results were similar to yield and tank-contamination of 2,4-D had little effect on the percent sugar. The greater time to recover or possibly the lower amount of leaf area at the earlier application timings may help explain why the applications made to 2-leaf sugarbeet did not impact yield. Based on these results, it appears that if the amount of 2,4-D equivalent to 1% the field use rate is left in or not cleaned out of the spray tank there could be an impact on yield especially if sugarbeet are larger than the 6-leaf stage. We are currently examining what, if any 2,4-D residues can be found in the sugarbeet 14 days after treatment and at harvest.

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Effect of Harvest Date on Sugarbeet Yield, Quality and Grower Income

Average of 7 years, 17 Locations

Harvest: 6 Dates, Aug 15 to Nov 1
Plot Size: 6 rows X 38 ft, various reps
Seeding Rate: 4.1 inches
Beet Population: About 190 B/100'

No.	Harvest Date	Net $/A	$/Ton	RWSA	RWST	T/A	% SUC	% CJP	Beets/ 100'
2	September 1	**$2,010**	$71 b	6395 e	219 e	29.1 c	15.2 cd	94.3 c	**190.8**
3	September 15	**$1,971**	$63 c	7595 d	234 d	32.8 b	15.9 c	95.1 b	183.7
4	October 1	**$1,910**	$58 d	8706 c	256 c	34.5 b	17.3 b	95.0 b	184.3
1	August 15	**$1,869**	**$83 a**	4822 f	211 e	22.9 d	14.8 d	93.9 d	**188.0**
5	October 15	$1,851	$52 e	10083 b	270 b	**37.9 a**	18.1 b	95.4 b	**191.2**
6	November 1	$1,838	$51 e	**11028 a**	**285 a**	**39.0 a**	**18.9 a**	**95.8 a**	**185.2**
Average		1908.2	62.9	8105.1	245.9	32.7	16.7	94.9	187.2
LSD 5%		145.5	3.8	467.8	12.9	2.0	0.8	0.4	6.5
CV %		11.2	8.9	8.5	7.7	8.9	6.8	0.6	5.1

Means followed by the same letter are not significantly different. Duncans New MRT 5%.

Comments: Harvest date trials continued again in 2016. In the average of 7 years of trials, yield tends to increase by approximately 1.6 tons per week, and RWST increases by approximately 8.3 lbs. per week. The Early Delivery Incentive Program adjusts grower payment to account for this. Disease levels in 2015 and lower sugar content in 2016 have favored harvest dates in September. Yield and sugar content continue to increase through the end of harvest, but not at the rates seen in previous years testing.

Bold: Results are not statistically different from top-ranking treatment in each column.

Effect of Havest Date on Sugarbeet Yield, Quality and Grower Income

Average of 3 Locations - 2016

Trial Quality: Good
Variety: B-18RR4N & C-G333NT
Planted: Auernhamer - May 3, Laker - April 22, Shaffner - April 18
Harvested: See Trts
Plots: 6 rows X 38 ft

Rhizoc Level: Low
Cerc Control: Good
Seeding Rate: 4.1 inches
Row Spacing: 22 inch

No.	Harvest Date	Net $/A	$/Ton	RWSA	RWST	T/A	% SUC	% CJP	Beets /100ft
1	August 15	**$1,578**	**$77**	4732	**227**	21.3	**15.9**	93.6	**182.0**
3	September 15	**$1,561**	$45	7208	195	36.3	13.7	94.1	**179.4**
5	October 15	**$1,557**	$39	10216	**229**	**44.5**	**15.7**	94.7	**181.1**
4	October 1	**$1,494**	$43	8201	214	38.4	14.9	94.1	**174.0**
6	November 1	**$1,456**	$39	**11448**	**258**	**44.7**	**17.3**	**95.6**	**178.3**
2	September 1	**$1,429**	$49	5427	176	30.5	12.7	93.2	**186.5**
Average		$1,513	$49	7872.0	216.2	36.0	15.0	94.2	180.2
LSD 5%		n.s(251)	10.2	824.9	34.1	3.0	2.0	0.8	n.s(19)
CV %		9.1	11.5	5.8	8.7	4.6	7.2	0.5	5.8

Comments: Yields increased between each of the harvest dates. Although disease control was good, late season conditions were not conducive to an increase in sugar content. Rainfall prior to the harvest dates seemed to directly affect sugar content. With early delivery incentive factored in, there was no statistical significance in payment between any of the harvest dates.

Auernhamer Farms, Richville, MI - 2016

Trial Quality: Good
Variety: B-18RR4N
Planted: May 3
Harvested: See trts
Plots: 6 rows X 38 ft, 5 reps
Row Spacing: 22 inch

Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 13.2
Above Opt: P, K
High: Mn, Medium: B
Added N: 100 lbs
Prev Crop: Wheat

Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches

No.	Harvest Date	Net $/A	$/T	RWSA	RWST	T/A	% SUC	% CJP	Beets /100ft	GDD*	Rain Inch*
5	October 15	**$1,408**	$39	9238	229	**40.3**	15.9	94.3	177.0	19.2	0.95
6	November 1	**$1,327**	$41	**10340**	**269**	**38.4**	**18.0**	**95.7**	179.8	11.1	1.11
4	October 1	**$1,293**	$41	7105	208	34.2	14.7	93.6	176.9	24.1	1.09
3	September 15	**$1,238**	$45	5715	191	29.9	13.6	93.7	172.3	29.7	1.29
1	August 15	**$1,220**	**$67**	3650	195	18.7	14.2	92.7	**190.0**	36.3	1.87
2	September 1	$1,181	$46	4496	164	27.4	12.1	92.6	**202.1**	34.2	1.04
Average		$1,278	$46	6757.2	209.4	31.5	14.7	93.7	183.0	25.8	1.2
LSD 5%		195.0	2.7	1022.2	11.0	4.1	0.6	0.6	21.0		
CV %		11.6	4.5	11.5	4.0	9.9	3.2	0.5	8.9		

***GDD** (Growing Degree Days): an average daily amount for the 2 weeks prior to that harvest date.
***Rain Inch:** actual rainfall amount 2 weeks prior to that harvest date.
Comments: At this location, the highest payment was on October 15th. Yield increased through this harvest date, but then leveled off. Sugar content continued to increase through the last harvest date of November 1st.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Effect of Harvest Date on Sugarbeet Yield, Quality and Grower Income

Laker Agronomy Field, Elkton, MI - 2016

Trial Quality: Good
Variety: C-G333NT
Planted: April 22
Harvested: See trts
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Clay Loam
%OM: 3.3, pH: 7.6, CEC: 19.4
Above Opt: p, K
High: Mn, Medium: B
Added N: 130 lbs
Prev Crop: Soybeans

Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches

No.	Harvest Date	Net $/A	$/Ton	RWSA	RWST	T/A	% SUC	% CJP	Beets/ 100ft	GDD*	Rain Inch*
4	October 1	**$1,302**	$43	7119	218	32.6	15.2	94.2	**186.4**	23.7	1.0
6	November 1	**$1,247**	$39	**9791**	**259**	**37.9**	17.3	**95.6**	**184.7**	10.0	0.6
5	October 15	**$1,245**	$38	8199	222	**36.9**	15.4	94.4	**198.7**	18.1	1.4
1	August 15	**$1,232**	**$90**	3629	**265**	13.8	**18.2**	94.2	**177.6**	34.3	0.8
3	September 15	**$1,185**	$42	5497	179	30.6	12.8	93.6	**187.2**	27.2	1.2
2	September 1	$1,117	$48	4223	172	24.5	12.5	93.0	**175.4**	29.0	2.2
Average		$1,221	$50	6410	219	29.4	15.2	94.2	185.0	23.7	1.2
LSD 5%		145.0	2.3	710.1	9.8	2.9	0.5	0.5	n.s(17.4)		
CV %		10.0	3.8	9.3	3.8	8.2	3.0	0.4	7.9		

Comments: Extremely dry weather at this location resulted in very low yield, but high sugar content on the August 15th harvest date. Consistent rains thereafter increased yield quickly. The highest payment was on October 1st and highest yield was on November 1st.

Shaffner Brothers LLC., Freeland, MI - 2016

Trial Quality: Good
Variety: B-18RR4N
Planted: April 18
Harvested: See trts
Plots: 6 rows X 38 ft, 6 reps
Row Spacing: 22 inch

Soil Info: Silt Loam
%OM: 3.2, pH: 7.3, CEC: 18.4
Above Opt: P, K
Medium: Mn, Medium: B
Added N: 150 lbs
Prev Crop: Navy Beans

Rhizoc Level: Low
Cerc Control: Good
Problems: None
Seeding Rate: 4.1 inches

No.	Harvest Date	Net $/A	$/Ton	RWSA	RWST	T/A	% SUC	% CJP	Beets/ 100ft	GDD*	Rain Inch*
1	August 15	**$2,282**	**$75**	6917	219	31.4	15.3	94.0	**178.2**	35.8	1.5
3	September 15	**$2,260**	$50	10413	215	48.5	14.8	**95.0**	**178.8**	28.9	1.9
5	October 15	**$2,018**	$40	**13209**	**234**	**56.4**	**15.9**	**95.4**	**167.5**	19.2	1.4
2	September 1	$1,988	$53	7564	191	39.6	13.5	94.1	**182.2**	31.1	2.3
4	October 1	$1,889	$43	10378	216	48.5	14.9	**94.6**	158.5	23.7	1.4
6	November 1	$1,794	$37	**14213**	**246**	**57.7**	**16.6**	**95.5**	**170.5**	9.9	0.9
Average		$2,039	$50	10449	220	47.0	15.2	94.8	172.6	24.8	1.6
LSD 5%		276.7	3.8	1477.3	16.4	5.4	0.8	0.9	18.7		
CV %		11.4	6.5	11.9	6.3	9.7	4.6	0.8	9.1		

***GDD** (Growing Degree Days): an average daily amount for the 2 weeks prior to that harvest date.

***Rain Inch:** Actual rainfall amount 2 weeks prior to that harvest date.

Comments: The highest payment at this location was on August 15th. Yields increased dramatically from the first to last harvest date. The level of sugar content was directly affected by the amount of rain preceding each of the harvest dates.

Net $/A: Gross payment unless noted as net. Calculated assuming a $35 payment and a trial average RWST.
Bold: Results are not statistically different from top-ranking treatment in each column.

Narrow Row Population Trial

CARTOMMA Farms, Wallaceburg Ontario - 2016

Trial Quality: Good
Variety: C-RR059
Planted: April 23
Harv/Samp: Nov 14 / Nov 14
Plot Size: 4 reps
Row Spacing: 20 inch
Seeding Rate: See treatments

Soil Info: Loam
Fertilizer: PPI: 700# of 20-16-19-2.4S
Prev Crop: Corn
Weather: Good

Rhizoc Control: None
Cerc Control: Fair Control: 1. Proline + EBDC, 2. EBDC, 3. Proline + EBDC
Other Pests: None

Planted Population	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Emerged Pop.	
							100 Ft. of Row	Per Acre
64,000	$1,778	**11773**	**271**	**43.5**	**18.1**	**95.8**	**197**	51,455
71,000	$1,775	**11758**	**270**	**43.5**	**18.0**	**95.8**	**212**	55,408
57,000	$1,720	**11403**	**271**	**42.1**	**18.1**	**95.6**	179	46,685
Average	$1,758	11645	271	43.0	18.1	95.7	196	—
LSD 5%	—	ns (713)	ns (12)	ns (2.6)	ns (0.7)	ns (0.4)	18.5	—
CV %	—	4	3	3.5	2.1	0.3	5.4	—

Comments: This trial was conducted to look at the effect on yield and quality of different planting populations in 20 inch rows. Planted populations should take into account stated germination percent, soil conditions and growers ability to establish consistent stands. In this trial, emergence averaged between 78-82%, which is excellent for sugarbeets. Sugarbeets have the ability to produce excellent yields in a relatively wide range of populations. In this trial, yields were not significantly different from the highest population to the lowest. However there is a trend for less yield with the lowest population. Previous research would indicate that the sweet spot for emerged stands is 175-225 beets in 100 foot of row, regardless of row width. All of these planting rates fell in that range.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

John Deere High Speed Planter

Pike Farms, Akron - 2016

Trial Quality: Excellent
Variety: C-RR059, Size ELS
Planted: April 19, 2016
Plot Size: 6 reps
Row Spacing: 22 inch
Seeding Rate: 64,500

Soil Info: Loam
Fertilizer: No 2x2 or in furrow pop-up.
In Furrow: No in furrow Quadris fungicide
Prev Crop: Wheat followed by clover
Weather: Near perfect for emergence

Treatment	Emergence (100 Ft)		Plant Spacing (In.)		Monitor Readings	
	Final 44 Days	Early 16 Days	Average Spacing	Standard Deviation	Ride Quality (%)	Singulation (%)
6 MPH	**236**	**131**	**4.42**	**0.56**	88.5	**99.8**
4 MPH	**234**	**129**	**4.42**	**0.61**	**94.7**	**99.7**
8 MPH	**228**	**125**	**4.42**	**0.61**	77.4	99.3
Average	232	128	4.42	0.59	86.9	99.6
LSD 5%	ns (11)	ns (20)	ns (0.04)	ns (0.07)	2.9	0.1
CV %	4	12	0.73	9.27	2.6	0.1

Comments: This trial was done to evaluate sugarbeet emergence and spacing at different speeds using a planter equipped with **John Deere ExactEmerge™** row units. This technology uses a **brush belt** to deliver the seed to the bottom of the trench at a rearward trajectory that matches the ground speed of the planter. This trial used a 24 row DB44 planter that was equipped with air bag down force. In this trial the field was worked twice prior to planting and had a level surface. The seed that was used was **ELS** (Extra Large Seed) with a diameter size of 11.5-13.5/64". Emergence conditions were excellent and emergence averaged between 84-87% which is very high for sugarbeets. Emergence counts are an indicator of the ability of the row unit to hold consistent depth. The emergence counts were taken from 4 rows of the planter and replicated 6 times in the field. There was no significant or visual difference found with emergence counts for the different speeds, but 6 mph trended to be highest for both early and final emergence. Plant spacing was determined by measuring the space between plants in 10 feet across 4 rows for each replication. This data represents the spacing measurements of nearly 2000 plants. All planting speeds provided the same average spacing of 4.42". The standard deviation is a measure of the variation of the plant spacing compared to the mean spacing. A lower standard deviation would indicate a more uniform spacing. The difference in standard deviation between the different speeds was not significant. The row unit ride quality and % singulation were estimates taken from observing the monitor. The ride quality did decrease as the planter speed increased, but in this trial it did not have much effect on either emergence or spacing. This maybe due to excellent overall emergence and a fairly smooth field. Overall, this planter provided excellent stands and spacing even at 8 mph, but this trial was planted with ELS seed. Results with the smaller seed sizes are unknown, but issues with monitor sensors on the smaller seed sizes have been reported. The effects are also unknown of planting into a rougher seed bed or when crusting/emergence problems exist since uniform seed depth will be much more critical in these conditions.

Bold: Results are not statistically different from top ranking treatment in each column.

TrackTill® Planter Attachment - Trial #1

D & B Karg Farms, Rapson - 2016

Trial Quality: Excellent
Variety: B-149N
Planted: April 19
Harv/Samp: Oct 3 / Sept 29
Plot Size: 4 reps
Row Spacing: 22 inch
Seeding Rate: 61,000

Soil Info: Sandy Loam
Fertilizer: Fall: VRT Potash; 2x2: 50#-60#-25# + Micros; S.D.: 110# of N by AA
Prev Crop: Wheat / Radish
Weather: Good season

Rhiz Control: Excellent Control: Quadris I.F. (7 oz) & 10 leaf (14 oz)
Cerc Control: Good Control: 1. EBDC, 2. Inspire + EBDC, 3. EBDC, 4. Inspire + EBDC, 5. EBDC + Copper
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. 45 Day
TrackTill	$2,219	**11356**	**272**	**41.8**	**17.7**	**96.9**	**226**
Check	$2,134	10929	265	**41.3**	17.3	**96.9**	**228**
Average	2176	11143	268	41.5	17.5	96.9	227
LSD 5%	—	270	3	ns (1.4)	0.3	ns (0.2)	ns (12)
CV %	—	1	1	1.5	0.7	0.1	2

Comments: TrackTill is a planter attachment manufactured by Yetter that provides vertical tillage to reduce compaction caused by the tractor and planter. This attachment may reduce planter pinch row effect or wheel compaction in the tire rows of the planter. Two trials where conducted on sugarbeets planted in 22 inch rows with a 24 row planter (John Deere DB44 CCS). Only the center 8 rows were harvested for comparison with and without TrackTill for yield and quality. Trial #1 did show a significant improvement in RWSA. In this trial a track tractor was used for planting. The tractor axle was extended so that the track would be in the same row as one of the planter wheels in an effort to avoid creating pinch rows. The revenue per acre calculated only for the 8 rows of the planter that was harvested and does not include the whole planter pass.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

TrackTill® Planter Attachment - Trial #2

D & B Karg Farms, Section Line Road - 2016

Trial Quality: Excellent
Variety: B-149N
Planted: April 20
Harv/Samp: Nov 9 / Oct 18
Plot Size: 4 reps
Row Spacing: 22 inch
Seeding Rate: 61,000

Soil Info: Loam
Fertilizer: Fall: VRT Potash; 2x2: 50#-60#-25# + Micros; S.D.: 80# of N by AA
Prev Crop: Wheat / Radish
Weather: Dry through out season

Rhiz Control: Excellent Control: Quadris I.F. (7 oz) & 10 leaf (14 oz)
Cerc Control: Good Control: 1. EBDC, 2. Inspire + EBDC, 3. EBDC, 4. Inspire + EBDC, 5. EBDC + Copper
Other Pests: None

Treatment	$/A	RWSA	RWST	T/A	% Sugar	% CJP	Population 100 Ft. 46 Day
Check	$1,732	**11481**	**277**	**41.5**	**18.6**	**95.2**	**158**
TrackTill	$1,731	**11478**	**269**	**42.7**	**18.3**	**94.7**	**166**

Average	1732	11480	273	42.1	18.5	94.9	162
LSD 5%	—	ns (656)	ns (13)	ns (1.9)	ns (0.6)	ns (0.7)	ns (52)
CV %	—	3	2	2.0	1.5	0.3	14

Comments: TrackTill is a planter attachment manufactured by Yetter that provides vertical tillage to reduce compaction caused by the tractor and planter. This attachment may reduce planter pinch row effect or wheel compaction in the tire rows of the planter. Two trials where conducted on sugarbeets planted in 22 inch rows with a 24 row planter (John Deere DB44 CCS). This trial was planted into a stale seedbed (no spring tillage). Only the center 8 rows were harvested for comparison with and without TrackTill for yield and quality. In this trial there was no significant differences found, but the tonnage did average higher for the Track Till. In this trial a track tractor was used for planting. The tractor axle was extended so that the track would be in the same row as one of the planter wheels in an effort to avoid creating pinch rows. The revenue per acre calculated only for the 8 rows of the planter that was harvested and does not include the whole planter pass.

$/A: Gross payment unless noted as net. Calculated assuming a $35 payment and an average RWST of 232.

Bold: Results are not statistically different from top ranking treatment in each column.

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