



MICHIGAN SUGARBEET
REACH
Research Education Advisory Council

RESEARCH RESULTS 2025



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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ABBREVIATION KEY:

Rhizoc. - Rhizoctonia	SUC - Sucrose
Cerc. - Cercospora	CJP - Clear Juice Purity
RWST - Recoverable White Sugar per Ton	T/A - Tons per Acre
RWSA - Recoverable White Sugar per Acre	\$/A - Dollar per Acre

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RWST - Recoverable White Sugar per Ton	T/A - Tons per Acre
RWSA - Recoverable White Sugar per Acre	\$/A - Dollar per Acre



Rhizoctonia Crown Rot Product Efficacy Trial Blumfield West - Richville, MI - 2025 (Page 1 of 5)

Trial Quality: Fair
Variety: SX-2296N (No Rhizoc.)
Planted: April 24
Harvested: September 28
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches

Soil Info: Loam
% OM: 2.7 **pH:** 7.6 **CEC:** 10.8
P: Very High **K:** High
Mn: High **B:** Medium
Added N: 40 lbs. 2X2, 120 lbs. side-dress
Previous Crop: Wheat/Radish

Rhizoc. Level: Moderate
Cerc. Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 16.13 inches
Beets/100 ft.: 239

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	Applic. Timing	Applic. Method	Dead Beets/100 ft.		Vigor 1-10	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					12-Sep	21-Aug							
19	Excalia	2 oz.	6 lf	Broad	0.0	7.8	312	\$2,032	8272	26.5	17.5	98.1	
5	Quadris	10 fl. oz.	At Plant	In-Furrow	0.0	7.9	284	\$1,849	8546	30.2	16.1	97.6	
	Quadris	14.25 fl. oz.	6 lf	Banded									
22	Quadris + Proline	9.2 fl. oz. + 5.7 fl. oz.	At Plant	In-Furrow	0.0	8.0	302	\$2,152	9132	30.2	17.5	96.3	
	Proline	5.7 fl. oz.	6 lf	Banded									
11	Quadris + Serifel	10 fl. oz. + 4 oz.	At Plant	In-Furrow	0.2	7.8	315	\$2,256	9085	28.8	17.7	97.9	
16	Quadris	10 fl. oz.	At Plant	In-Furrow	0.2	7.9	291	\$1,979	8825	30.4	16.6	97.4	
	Proline	5.7 fl. oz.	6 lf	Banded									
10	Proline	5.7 fl. oz.	At Plant	In-Furrow	0.2	7.6	326	\$2,211	8590	26.4	18.4	97.4	
	Quadris	14.25 fl. oz.	6 lf	Banded									
3	Quadris	10 fl. oz.	At Plant	In-Furrow	0.2	7.8	282	\$1,684	7825	27.8	16.4	96.5	
9	Proline	5.7 fl. oz.	At Plant	In-Furrow	0.6	7.6	309	\$1,914	7883	25.5	17.6	97.1	
14	Quadris + Topsin 4.5 FL	10 fl. oz. + 20 fl. oz.	At Plant	In-Furrow	1.1	7.5	308	\$2,159	8904	28.9	17.3	97.9	
6	Quadris	15.5 fl. oz.	6 lf	Broad	1.3	7.9	302	\$1,969	8348	27.7	17.2	97.3	
15	Quadris + Topsin 4.5 FL	10 fl. oz. + 20 fl. oz.	At Plant	In-Furrow	1.3	8.0	307	\$1,783	7433	24.2	17.4	97.6	
	Quadris + Topsin 4.5 FL	14.25 fl. oz. + 20 fl. oz.	6 lf	Banded									
20	Excalia + Quadris	2 oz. + 15.5 fl. oz.	6 lf	Broad	1.3	7.5	301	\$2,000	8508	28.2	17.2	97.0	
4	Quadris	14.25 fl. oz.	6 lf	Banded	1.5	7.5	295	\$2,001	8734	29.6	16.8	97.3	
12	Propulse	13.6 fl. oz.	At Plant	In-Furrow	1.5	7.8	308	\$1,931	8050	26.2	17.5	97.3	
	Quadris	14.25 fl. oz.	6 lf	Banded									
2	Non-Inoculated Check				1.5	7.3	291	\$1,943	8624	29.7	16.7	96.8	
13	Propulse	13.6 fl. oz.	At Plant	In-Furrow	1.7	7.8	299	\$2,055	8869	29.7	17.0	97.1	
7	Quadris	12 fl. oz.	6 lf	Broad	2.4	7.6	304	\$1,930	8106	26.7	17.4	96.8	
21	Quadris	14.25 fl. oz.	At Plant	In-Furrow	2.4	7.5	300	\$2,068	8858	29.6	17.3	96.5	
	Excalia	2 oz.	6 lf	Broad									

Quadris not labeled for Broadcast / Topsin is not labeled for in-furrow applications.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Rhizoctonia Crown Rot Product Efficacy Trial Blumfield West - Richville, MI - 2025 (Page 2 of 5)

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Dead Beets/ 100 ft.	Vigor 1-10	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					12-Sep	21-Aug						
18	Excalia + Quadris	.64 fl. oz. + 14.25 fl. oz.	6 lf	Banded	2.8	7.5	300	\$2,106	8974	29.9	17.0	97.7
17	Excalia	.64 fl. oz.	6 lf	Banded	3.4	7.5	313	\$2,114	8576	27.4	17.8	97.3
1	Inoculated Rhizoc.				4.7	7.6	306	\$1,926	7992	26.1	17.1	98.4
8	Quadris	15.5 fl. oz.	18 lf	Broad	6.3	7.6	313	\$2,003	8105	25.8	17.7	97.5

Average	1.6	7.7	303	\$2,003	8465	28.0	17.2	97.3
LSD 5%	3.8	0.5	14.3	284.9	846.5	2.4	0.7	1.3
CV %	170.0	5.0	3.4	10.1	7.1	6.0	2.7	1.0

Quadris not labeled for Broadcast / Topsin is not labeled for in-furrow applications.

Comments: Study was designed to test products for efficacy on Rhizoctonia crown and root rot. All treatments were inoculated in this study. Low Rhizoctonia pressure.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Rhizoctonia Crown Rot Product Efficacy Trial Mennonite Church - Pigeon, MI - 2025 (Page 3 of 5)

Trial Quality: Poor
Variety: SX-2296N (No Rhizoc.)
Planted: May 27
Harvested: October 30
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches
Application: JD 3520 tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa - Foliar 7" band

Soil Info: Sandy Clay Loam
% OM: 1.8 **pH:** 7.7 **CEC:** 14.5
P: Low **K:** Medium
Mn: High **B:** Medium
Added N: 40 lbs. 2X2, 120 lbs. side-dress
Previous Crop: Corn

Rhizoc. Level: Moderate
Cerc. Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 14.7 inches
Beets/100 ft.: 142

Monosem 6-row Agronomy planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Dead Beets/100 ft.	Vigor 1-10	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					22-Sep	25-Jul						
22	Quadris + Proline	9.2 fl. oz. + 5.7 fl. oz.	At Plant	In-Furrow	0.0	6.5	243	\$457	3395	14.1	14.3	96.2
	Proline	5.7 fl. oz.	6 lf	Banded								
1	Inoculated Check				0.0	8.0	244	\$739	5067	20.6	15.0	93.9
11	Quadris + Serifel	10 fl. oz. + 4 oz.	At Plant	In-Furrow	0.0	7.6	229	\$560	4011	16.5	14.3	93.5
19	Excalia	2 oz.	6 lf	Broad	0.0	7.0	239	\$580	4127	17.0	14.9	93.3
16	Quadris	10 fl. oz.	At Plant	In-Furrow	0.0	7.5	232	\$450	3517	14.9	14.7	92.8
	Proline	5.7 fl. oz.	6 lf	Banded								
14	Quadris + Topsin 4.5 FL	10 fl. oz. + 20 fl. oz.	At Plant	In-Furrow	0.0	6.9	244	\$706	3630	12.5	15.4	92.6
20	Excalia + Quadris	2 oz. + 15.5 fl. oz.	6 lf	In-Furrow	0.2	6.9	249	\$475	3269	13.2	14.9	95.1
7	Quadris	12 fl. oz.	6 lf	Broad	0.2	7.5	235	\$488	3799	16.2	14.5	93.9
21	Quadris	14.25 fl. oz.	At Plant	In-Furrow	0.2	6.6	228	\$384	3145	13.6	14.2	93.5
	Excalia	2 oz.	6 lf	Broad								
8	Quadris	15.5 fl. oz.	18 lf	Broad	0.2	6.5	226	\$544	3753	15.2	14.6	92.0
6	Quadris	15.5 fl. oz.	6 lf	Broad	0.2	6.5	216	\$333	3140	14.2	14.3	90.9
13	Propulse	13.6 fl. oz.	At Plant	In-Furrow	0.2	7.5	240	\$594	4327	17.9	15.8	90.9
3	Quadris	10 fl. oz.	At Plant	In-Furrow	0.4	7.5	234	\$515	3718	15.4	14.1	95.0
4	Quadris	14.25 fl. oz.	6 lf	Banded	0.4	6.4	235	\$578	4299	18.0	14.7	93.4
12	Propulse	13.6 fl. oz.	At Plant	In-Furrow	0.4	5.9	230	\$308	2750	12.1	14.4	93.3
	Quadris	14.25 fl. oz.	6 lf	Banded								
17	Excalia	.64 fl. oz.	6 lf	Banded	0.4	7.1	236	\$443	4383	20.2	15.1	92.3
15	Quadris + Topsin 4.5 FL	10 fl. oz. + 20 fl. oz.	At Plant	In-Furrow	0.4	7.5	250	\$806	4190	14.4	14.7	96.3
	Quadris + Topsin 4.5 FL	14.25 fl. oz. + 20 fl. oz.	6 lf	Banded								
2	Non-Inoculated Check				0.4	7.4	238	\$609	3998	15.9	14.7	93.9

Quadris not labeled for Broadcast / Topsin is not labeled for in-furrow applications.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Rhizoctonia Crown Rot Product Efficacy Trial Mennonite Church - Pigeon, MI - 2025 (Page 4 of 5)

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Dead Beets/ 100 ft.	Vigor 1-10	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					22-Sep	25-Jul						
9	Proline	5.7 fl oz.	At Plant	In-Furrow	0.4	7.0	229	\$483	4199	18.6	15.3	90.6
18	Excalia + Quadris	.64 fl. oz. + 14.25 fl. oz.	6 lf	Banded	0.9	7.1	218	\$544	3466	13.5	14.1	92.1
10	Proline	5.7 fl. oz.	At Plant	In-Furrow	0.9	7.4	228	\$668	4203	16.2	14.7	91.8
	Quadris	14.25 fl. oz.	6 lf	Banded								
5	Quadris	10 fl. oz.	At Plant	In-Furrow	1.7	7.3	214	\$412	3615	16.0	14.7	89.7
	Quadris	14.25 fl. oz.	6 lf	Banded								

Average	0.4	7.1	233	\$531	3818	15.7	14.7	93.0
LSD 5%	1.3	1.6	30.5	457.5	1511.1	4.7	1.2	4.3
CV %	259.9	15.6	9.2	61.0	28.0	21.0	5.8	3.2

Quadris not labeled for Broadcast / Topsin is not labeled for in-furrow applications.

Comments: Study was designed to test products for efficacy on Rhizoctonia crown and root rot. All treatments were inoculated in this study. Low Rhizoctonia pressure.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Rhizoctonia Crown Rot Product Efficacy Trial Blumfield West & Mennonite Church - 2025

(Page 5 of 5)

No.	Treatment	Applic. Timing	Applic. Method	Blumfield West		Mennonite Church	
				Beets/100 ft.	Dead Beets/100 ft.	Beets/100 ft.	Dead Beets/100 ft.
				30-May	12-Sep	14-Jul	22-Sep
1	Inoculated Check			259.3	4.7	159.5	0.0
2	Non-Inoculated Check			226.7	1.5	136.0	0.4
3	Quadris	At Plant	In-Furrow	231.3	0.2	167.7	0.4
4	Quadris	6 lf	Banded	225.0	1.5	133.4	0.4
5	Quadris	At Plant	In-Furrow	241.2	0.0	155.4	1.7
	Quadris	6 lf	Banded				
6	Quadris	6 lf	Banded	247.6	1.3	126.9	0.2
7	Quadris	6 lf	Broad	234.3	2.4	148.5	0.2
8	Quadris	18 lf	Broad	248.1	6.3	131.3	0.2
9	Proline	At Plant	In-Furrow	233.0	0.6	142.7	0.4
10	Proline	At Plant	In-Furrow	238.6	0.2	136.2	0.9
	Quadris	6 lf	Banded				
11	Quadris + Serifel	At Plant	In-Furrow	237.3	0.2	146.1	0.0
12	Propulse	At Plant	In-Furrow	228.9	1.5	137.9	0.4
	Quadris	6 lf	Banded				
13	Propulse	At Plant	In-Furrow	245.7	1.7	155.8	0.2
14	Quadris + Topsin 4.5 FL	At Plant	In-Furrow	246.1	1.1	147.8	0.0
15	Quadris + Topsin 4.5 FL	At Plant	In-Furrow	247.4	1.3	162.3	0.4
	Quadris + Topsin 4.5 FL	6 lf	Banded				
16	Quadris	At Plant	In-Furrow	239.2	0.2	131.7	0.0
	Proline	6 lf	Banded				
17	Excalia	6 lf	Broad	235.6	3.4	139.4	0.4
18	Excalia + Quadris	6 lf	Broad	234.9	2.8	123.5	0.9
19	Excalia	6 lf	Broad	257.1	0.0	125.6	0.0
20	Excalia + Quadris	6 lf	Broad	237.1	1.3	120.0	0.2
21	Quadris	At Plant	In-Furrow	243.8	2.4	155.8	0.2
	Excalia	6 lf	Broad				
22	Quadris + Proline	At Plant	In-Furrow	230.8	0.0	149.6	0.0
	Proline	6 lf	Banded				
Average				239.5	1.6	142.4	0.4
LSD 5%				21.9	3.8	47.8	1.3
CV %				6.5	170.0	23.7	259.9

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

Quadris not labeled for Broadcast / Topsin is not labeled for in-furrow applications.



Valent Excalia Broadcast vs. Quadris Banded Blumfield West - Richville, MI - 2025

Trial Quality: Good

Variety: SX-2296N (No Rhizoc.)

Planted: April 24

Harvested: September 28

Plots: 6 rows X 38 feet, 5 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 15.3 gpa - Foliar 7" band

Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

Soil Info: Loam

% OM: 2.7 **pH:** 7.6 **CEC:** 10.8

P: Very High **K:** High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Wheat/Radish

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 16.13 inches

Beets/100 ft.: 241

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Dead Beets / 100 ft.	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP	Beets/ 100 ft.
					12-Sep							30-May
5	Excalia	2 fl. oz.	4 lf	Broad	0.5	304	\$2,295	9639	31.7	17.4	96.9	226.4
6	Excalia	2 fl. oz.	6 lf	Broad	0.6	297	\$2,043	8850	29.9	16.8	97.6	241.2
8	Excalia	2 fl. oz.	2 lf	Broad	0.7	307	\$2,144	8913	29.1	17.5	97.2	249.0
	Excalia	2 fl. oz.	8 lf	Broad								
10	Quadris	14.25 fl. oz.	6 lf	Broad	1.4	292	\$2,157	9541	32.7	16.8	96.9	242.9
7	Excalia	2 fl. oz.	8 lf	Broad	1.6	283	\$1,838	8506	30.1	16.3	96.5	245.7
4	Excalia	2 fl. oz.	2 lf	Broad	2.4	294	\$1,919	8465	28.9	16.8	97.2	229.3
3	Quadris	14.25 fl. oz.	6 lf	Banded	3.6	294	\$2,007	8784	29.9	16.7	97.6	231.9
11	Quadris	10 fl. oz.	At Plant	In-Furrow	4.1	300	\$2,041	8701	29.0	17.0	97.6	250.5
	Quadris	14.25 fl. oz.	6 lf	Broad								
1	Non-Inoculated Check				4.7	284	\$1,749	8093	28.7	16.6	96.0	260.5
9	Quadris	10 fl. oz.	At Plant	In-Furrow	5.2	289	\$1,800	8052	27.8	16.5	97.2	233.3
2	Inoculated Check				6.7	289	\$1,787	8009	27.7	16.7	96.7	243.1
Average					2.9	294	\$1,980	8687	29.6	16.8	97.0	241.3
LSD 5%					6.3	16.1	263.7	830.7	2.9	0.7	1.3	24.9
CV%					173.0	4.3	1.4	7.5	7.6	3.5	1.0	8.1

* Application Dates: 2-leaf - 5/28 4-leaf - 6/4
6-leaf - 6/10 8-leaf - 6/16

Comments: Study was designed to test Valent Excalia vs. Quadris Banded for efficacy on Rhizoctonia crown and root rot. All treatments were inoculated in this study. Low Rhizoctonia pressure was observed.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Inoculated Rhizoctonia Trial Blumfield West - Richville, MI - 2025 (Page 1 of 2)

Trial Quality: Fair
Variety: SX-2296N (No Rhizoc.)
Planted: April 24
Harvested: September 28
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches

Soil Info: Loam
% OM: 2.7 **pH:** 7.6 **CEC:** 10.8
P: Very High **K:** High
Mn: High **B:** Medium
Added N: 40 lbs. 2X2, 120 lbs. side-dress
Previous Crop: Wheat/Radish

Cerc. Control: Moderate
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 16.13 inches
Beets/100 ft.: 231

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	Applic. Timing	Applic. Method	Dead Beets/100 ft.	Vigor 1-10	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					12-Sep	21-Aug						
10	Curezin	48 fl. oz.	At Plant	In-Furrow	0.9	7.9	287	\$1,716	7791	27.2	16.6	96.6
	Quadris	14.25 fl. oz.	10-Jun	Banded								
9	Curezin	32 fl. oz.	At Plant	In-Furrow	1.9	7.5	276	\$1,594	7637	27.6	15.9	97.0
	Quadris	14.25 fl. oz.	10-Jun	Banded								
8	Curezin	16 fl. oz.	At Plant	In-Furrow	1.9	7.4	293	\$1,955	8584	29.2	17.0	96.5
	Quadris	14.25 fl. oz.	10-Jun	Banded								
6	Quadris	10 fl. oz.	At Plant	In-Furrow	3.0	7.8	306	\$2,077	8688	28.5	17.4	97.2
	Quadris + Romeo	14.25 fl. oz. + .25 lb.	10-Jun	Banded								
2	Quadris	10 fl. oz.	At Plant	In-Furrow	3.4	7.3	295	\$1,844	8047	27.3	16.9	97.0
	Quadris	14.25 fl. oz.	10-Jun	Banded								
4	Quadris	14.25 fl. oz.	10-Jun	Banded	3.7	7.6	302	\$2,257	9543	31.6	17.3	96.9
7	Bio-T + Humate + Z-Micro	1 lb. + 1 qt. + 16 fl. oz.	29-Apr	Banded	4.1	7.1	283	\$1,907	8777	31.0	16.3	96.7
3	Quadris	10 fl. oz.	At Plant	In-Furrow	6.3	6.9	295	\$2,040	8893	30.2	16.6	98.1
5	Quadris	10 fl. oz.	At Plant	In-Furrow	6.9	7.8	277	\$1,684	8044	29.0	16.0	96.9
	Quadris	14.25 fl. oz.	10-Jun	Banded								
1	Inoculated Check				8.4	7.1	274	\$1,414	6834	24.9	16.0	96.1
11	Non-Inoculated Check				11.9	7.3	280	\$1,766	8285	29.6	16.0	97.1
Average					4.8	7.4	288	\$1,841	8283.8	28.7	16.6	96.9
LSD %					11.1	0.9	21.2	392.3	1182.0	3.6	1.0	1.7
CV 5%					162.0	8.3	5.1	14.8	9.9	8.6	4.2	1.2

Vigor 0 to 10 ratings, 10 is best.

Comments: Study was designed to test products for efficacy on Rhizoctonia crown and root rot. All treatments were inoculated in this study. Low Rhizoctonia pressure.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Inoculated Rhizoctonia Trial Blumfield West - Richville, MI - 2025 (Page 2 of 2)

No.	Treatment	Applic. Timing	Applic. Method	Blumfield West	
				Stand B/100 ft.	Dead B/100 ft.
				30-May	12-Sep
1	Inoculated Check			228.7	8.4
2	Quadris	At Plant	In-Furrow	234.7	3.4
	Quadris	10-Jun	Banded		
3	Quadris	At Plant	In-Furrow	206.0	6.3
4	Quadris	10-Jun	Banded	225.4	3.7
5	Quadris	At Plant	In-Furrow	226.9	6.9
	Quadris	10-Jun	Banded		
6	Quadris	At Plant	In-Furrow	227.2	3.0
	Quadris + Romeo	10-Jun	Banded		
7	Bio-T + Humate + Z-Micro	29-Apr	Banded	231.7	4.1
8	Curezlin	At Plant	In-Furrow	237.1	1.9
	Quadris	10-Jun	Banded		
9	Curezlin	At Plant	In-Furrow	229.7	1.9
	Quadris	10-Jun	Banded		
10	Curezlin	At Plant	In-Furrow	224.6	0.9
	Quadris	10-Jun	Banded		
11	Non-Inoculated Check			269.8	11.9
Average				231.1	4.8
LSD				34.3	11.1
CV 5%				10.3	162.0

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

Disease Nurseries from USDA-ARS/BSDF/MSU Collaborative Research, 2025

Linda E. Hanson, Holly J. Corder, and T.R. Goodwill

(Page 1 of 2)

The *Rhizoctonia* root and crown rot screening nursery (Eastern division) in 2025 was a randomized complete-block design with five replications in 15-foot-long, one-row plots (20-inch row spacing), at the Saginaw Valley Research and Education Center near Frankenmuth, MI. The field was planted May 12. The field was managed with recommended practices for the region, except that seed was overplanted and thinned by hand with the generous help of Michigan Sugar Company. Inoculation with dry, ground, barley grain inoculum of *Rhizoctonia solani* isolate R-1 (AG-2-2) was applied to the crown of the beet on July 10 using a Gandy® electrically driven applicator, followed by watering to ensure sufficient moisture for infection. Disease progressed quickly and beets were harvested August 5, 7, and 8 based on damage observed on beets dug in sample plots. Harvest was done with a single row harvester. Each root was rated for rot on a scale of 0 (no damage) to 7 (dead plant with root completely rotted). A weighted average for disease severity per plot was determined (on a continuous scale between 0 and 7) to create a disease index (DI) for each entry.



FIGURE 1: 2025 *Rhizoctonia* nursery on June 10, during inoculations.

Rows were included on the outer edges of the nursery that were not inoculated to assess natural infection and to allow for comparison to inoculated plants for an experiment using drones to determine if disease severity could be estimated from foliar reading with visible wavelength light, near infrared, or other wavelengths.

continued on next page

Disease Nurseries from USDA-ARS/BSDF/MSU Collaborative Research, 2025

The lowest disease average disease index in the inoculated nursery was 3.5 with 53.2% “harvestable” (rating of 3 or less) and the highest was 5.5 with 7.1% harvestable. The averages for the resistant check, for the susceptible check, and for the non-inoculated controls from different regions of the field are shown in Table 1.

TABLE 1

Disease levels for two controls, susceptible or resistant to *Rhizoctonia* root and crown rot in trials from the 2025 *Rhizoctonia* crown and root rot nursery. Data for each trial is the average disease index (DI) from five replicates for each entry on a 0-7 scale where 0=no disease and 7=completely rotted followed by the percent harvestable (rating ≤ 3) in parentheses. Average for the entire nursery includes additional control rows. Included is data for non-inoculated plots (average of 10 replicates).

AVERAGE DI AND (% HARVESTABLE)

ENTRY	TRIAL 1	TRIAL 2	TRIAL 3	TRIAL 4	NOT INOCULATED	ENTIRE NURSERY
Susceptible	5.0 (11.6)	5.2 (10.8)	5.2 (14.2)	5.3 (11.1)	1.4 (88.6)	5.4 (7.7)
Resistant	3.7 (46.0)	3.7 (51.6)	3.5 (53.2)	3.9 (49.5)	0.9 (91.9)	3.9 (47.1)

Seedling Disease Survey in Michigan

Linda Hanson, Tom Goodwill, USDA-ARS,
and Pranavasri Maddi, Michigan State University

(Page 1 of 2)

DISEASE SURVEY:

A renewed survey of sugarbeet seedling diseases was conducted in Michigan from 2023 to the present in response to increased grower reports of poor stand establishment and rising diagnostic submissions. Seedlings exhibiting damping-off or symptoms such as yellowing or stunting were collected from commercial fields and research plots in Michigan. Samples are welcome from other areas. Each year, between three and six seedlings were sampled per field, with the number varying according to the level of disease observed. Results indicated a potential shift in the seedling pathogen complex compared with a previous assessment conducted in Michigan, 2008-2011. In the current survey *Fusarium* spp. were the most frequently isolated. In addition to *Fusarium* spp., three pathogens were consistently frequently isolated (Table 1). Other pathogens were found infrequently. Understanding the pathogens responsible for seedling diseases that affect stand establishment can inform the selection of appropriate varieties and targeted disease management practices.

TABLE 1
Percent of fields sampled for seedling disease that contained plant pathogenic organisms across three survey years (2023-2025) in Michigan sugarbeet fields.

PATHOGEN	FREQUENCY OF RECOVERY (% OF FIELDS)
<i>Fusarium</i> spp.	High ($\geq 60\%$)
<i>Alternaria</i> spp.	Moderate (45-60%)
<i>Rhizoctonia solani</i>	Moderate (35-45%)
<i>Aphanomyces cochlioides</i>	Moderate – Low (25-35%)
others	Low (0-25%)

Recovery frequency reflects isolation from at least one plant from a field during the survey year.

Pathogens were isolated by surface disinfecting seedlings and plating on general growth media to allow growth of diverse pathogens or in sterile water to enhance isolation of oomycetes. Pure cultures were obtained by hyphal-tip or single spore transfer (Lesile and Summerell 2006) and identified to genus by morphological methods. For further identification, a combination of morphology and DNA sequencing was used. *Fusarium* spp. were isolated from 60-80% of the fields surveyed, supporting *Fusarium* spp. as a major part of the seedling pathogen complex. *Fusarium* spp. were the most frequently isolated pathogen all three years of the current survey. When tested in greenhouse and growth chamber assays, multiple *Fusarium* spp. including *F. oxysporum*, *F. acuminatum*, and *F. avenaceum*, caused yellowing and damping-off of seedlings (Fig. 1) similar to prior reports (Ruppel 1991, Hanson and Hill 2004). Additional species are being screened.

Alternaria spp. were detected at a higher percentage than in earlier surveys and were the second most commonly isolated pathogen in 2025. Seedlings treated with *Alternaria alternata* showed chlorosis and stunting, similar to previous reports (Abada 1994), but no dead seedlings. In addition, an *Alternaria* sp. was isolated in the greenhouse from non-inoculated plants showing similar yellowing and stunting under stress conditions.

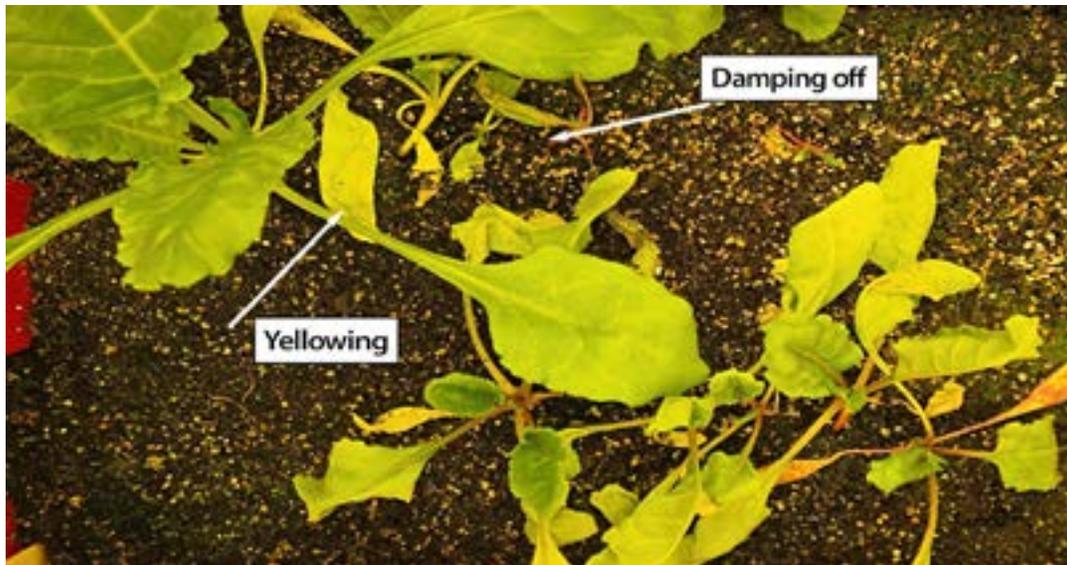


FIGURE 1: Example of beet seedlings with yellowing and damping-off symptoms caused by *Fusarium acuminatum* from Michigan.

Rhizoctonia solani remains an important pathogen but was isolated at lower frequency in the current than the last survey. Similarly, *Aphanomyces cochlioides*, previously a major contributor to damping-off (Harveson 2009) in Michigan, was isolated at low frequency. This likely indicates efficacy of the current management practices for these pathogens.

Several other genera were recovered at low levels during the survey, including *Colletotrichum*, *Mucor* and *Rhizopus*. *Mucor* (Abada 1994) and *Rhizopus* spp. have been reported as weak pathogens of sugarbeet seedlings. *Colletotrichum* spp. can cause seedling damage (Hanson et al. 2023) but was observed from only one field in 2025. Other known seedling pathogens were not isolated during the period.

REFERENCES:

- Abada, K.A. 1994. Fungi causing damping-off and root rot on sugar beet and their biological control with *Trichoderma harzianum*. *Agric., Ecosyst. Environ.* 51:333-337.
- Hanson, L.E., Goodwill, T.R., and McGrath, M.J. 2011. Seedling disease survey in Michigan. *Research Results 2011. REACH/ Sugarbeet Advancement*. Pp. 39-40.
- Harveson, R.M. 2009 Seedling disease. Pgs. 21-24 In: Harveson R.M., Hanson L.E., Hein G.L. (eds.) *Compendium of Beet Diseases and Pests*, 2nd ed. APS Press, St. Paul, MN. USA.
- Leslie, J.F., Summerell, B.A. 2006. *The Fusarium Laboratory Manual*. Blackwell Pub. Ames, IA
- Ruppel, E.G. 1991. Pathogenicity of *Fusarium* spp. from diseased sugar beets and variation among sugar beet isolates of *F. oxysporum*. *Plant Dis.* 75:486-489.



Evaluating Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot Answer Plot - Bach, MI - 2025

(Page 1 of 3)

Trial Quality: Good

Variety: SX-2296N, BTS-123N

Planted: May 14

Harvested: October 28

Plots: 6 rows, 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 3.4 **pH:** 7.3 **CEC:** 12.4

P: Very High **K:** Very High

Mn: High **B:** Medium

Added N: 40 lb. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 14.62 inches

No.	Treatment	Variety	# of Applic.	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				18-Sep						
3	More Aggressive	SX-2296N	7	3.3	237	\$868	6984	29.5	14.8	93.3
5	Less Aggressive	SX-2296N	6	3.4	235	\$931	7507	31.9	14.8	93.0
2	35/35/35	SX-2296N	5	3.6	227	\$716	6393	28.2	14.4	92.6
4	1st and 15th	SX-2296N	6	4.3	231	\$776	6653	28.8	14.6	92.7
1	Untreated	SX-2296N	0	8.0	226	\$630	5370	23.7	14.2	93.1

8	More Aggressive	BTS-123N	7	3.0	227	\$930	8376	36.9	14.1	93.6
7	35/35/35	BTS-123N	5	3.5	239	\$1,115	8545	35.7	14.7	94.0
10	21 Day	BTS-123N	5	3.5	234	\$1,044	8512	36.4	14.6	93.5
9	55/55/55	BTS-123N	3	4.3	226	\$835	7432	32.9	14.2	93.2
6	Untreated	BTS-123N	0	5.8	208	\$502	5875	28.3	13.2	93.0

Average				4.3	229	\$835	7165	31.2	14.4	93.2
LSD 5%				0.8	13.0	210.8	642.1	1.9	0.8	0.8
CV				12.6	3.9	17.4	6.2	4.2	3.9	0.6

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to compare a CR+ variety to a conventional variety with multiple spray timings. Trial was harvested during permanent pile to allow full development of Cercospora infection.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Evaluating Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot Answer Plot - Bach, MI - 2025

(Page 2 of 3)

RWSA						
Program	Treatment	# Sprays	SX-2296N	Treatment	# Sprays	BTS-123N
Untreated	1	0	5370	6	0	5875
More Aggressive	3	7	6984	8	7	8376
Less Aggressive	5	6	7507	X	X	X
1st and 15th	4	6	6653	X	X	X
35/35/35	2	5	6393	7	5	8545
55/55/55	X	X	X	9	3	7432
21 Day	X	X	X	10	5	8512

RWST						
Program	Treatment	# Sprays	SX-2296N	Treatment	# Sprays	BTS-123N
Untreated	1	0	226	6	0	208
More Aggressive	3	7	237	8	7	227
Less Aggressive	5	6	235	X	X	X
1st and 15th	4	6	231	X	X	X
35/35/35	2	5	227	7	5	239
55/55/55	X	X	X	9	3	226
21 Day	X	X	X	10	5	234

% Leaf Damage						
Program	Treatment	# Sprays	SX-2296N	Treatment	# Sprays	BTS-123N
Untreated	1	0	8.0	6	0	5.8
More Aggressive	3	7	3.3	8	7	3.0
Less Aggressive	5	6	3.4	X	X	X
1st and 15th	4	6	4.3	X	X	X
35/35/35	2	5	3.6	7	5	3.5
55/55/55	X	X	X	9	3	4.3
21 Day	X	X	X	10	5	3.5



Evaluating Fungicide Application Timings (BEETcast) for Control of Cercospora Leafspot Answer Plot - Bach, MI - 2025

No.	Program	Treatment*	App.	Rate/Acre	Answer	
					Date	DSV
1	UTC - 2296N					
2	35/35/35 SX-2296N	EBDC	A	2 lbs.	30-Jun	43
		Revytek + EBDC	B	15 fl. oz. + 2 lbs.	16-Jul	81
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	28-Jul	105
		Inspire XT + EBDC	D	7 fl. oz. + 2 lbs.	15-Aug	142
		Super Tin + EBDC	E	8 fl. oz. + 2 lbs.	18-Sep	174
3	More Aggressive SX-2296N	EBDC	A	2 lbs.	7-Jul	59
		Revytek + EBDC	B	15 fl. oz. + 2 lbs.	17-Jul	84
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	28-Jul	105
		Inspire XT + EBDC	D	7 fl. oz. + 2 lbs.	5-Aug	120
		Super Tin + EBDC	E	8 fl. oz. + 2 lbs.	21-Aug	154
		Proline + EBDC	F	5.7 fl. oz. + 2 lbs.	8-Sep	165
		Badge + EBDC	G	2 pt. + 2 lbs.	18-Sep	174
4	1st & 15th SX-2296N	EBDC	A	2 lbs.	1-Jul	46
		Revytek + EBDC	B	15 fl. oz. + 2 lbs.	22-Jul	90
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	1-Aug	115
		Inspire XT + EBDC	D	7 fl. oz. + 2 lbs.	14-Aug	140
		Super Tin + EBDC	E	8 fl. oz. + 2 lbs.	2-Sep	162
		Proline + EBDC	F	5.7 fl. oz. + 2 lbs.	15-Sep	171
5	Less Aggressive SX-2296N	Delaro + Proline + EBDC	A	11 fl. oz. + 1.6 fl. oz. + 2 lbs.	7-Jul	59
		Super Tin + Topsin + EBDC	B	8 fl. oz. + 20 fl. oz. + 2 lbs.	22-Jul	90
		Inspire XT + EBDC	C	7 fl. oz. + 2 lbs.	5-Aug	120
		Super Tin + EBDC	D	8 fl. oz. + 2 lbs.	21-Aug	154
		Priaxor + Badge	E	8 fl. oz. + 2 pt.	8-Sep	165
		EBDC	F	2 lbs.	26-Sep	192
6	UTC - BTS - 123N					
7	35/35/35 BTS - 123N	EBDC	A	2 lbs.	30-Jun	43
		Revytek + EBDC	B	15 fl. oz. + 2 lbs.	16-Jul	81
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	28-Jul	105
		Inspire XT + EBDC	D	7 fl. oz. + 2 lbs.	15-Aug	142
		Super Tin + EBDC	E	8 fl. oz. + 2 lbs.	18-Sep	174
8	More Aggressive BTS - 123N	EBDC	A	2 lbs.	7-Jul	59
		Revytek + EBDC	B	15 fl. oz. + 2 lbs.	17-Jul	84
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	28-Jul	105
		Inspire XT + EBDC	D	7 fl. oz. + 2 lbs.	5-Aug	120
		Super Tin + EBDC	E	8 fl. oz. + 2 lbs.	21-Aug	154
		Proline + EBDC	F	5.7 fl. oz. + 2 lbs.	8-Sep	165
		Badge + EBDC	G	2 pt. + 2 lbs.	18-Sep	174
9	55/55/55 BTS - 123N	Badge + EBDC	A	2 pt. + 2 lbs.	7-Jul	59
		Revytek + Badge + EBDC	B	15 fl. oz. + 2 pt. + 2 lbs.	16-Jul	81
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	15-Aug	142
10	21 Day BTS - 123N	Badge + EBDC	A	2 pt. + 2 lbs.	1-Jul	46
		Revytek + Badge + EBDC	B	15 fl. oz. + 2 pt. + 2 lbs.	7-Jul	59
		Super Tin + Topsin + EBDC	C	8 fl. oz. + 20 fl. oz. + 2 lbs.	28-Jul	105
		Inspire XT + Badge + EBDC	D	7 fl. oz. + 2 pt. + 2 lbs.	21-Aug	154
		Super Tin + EBDC	E	8 fl. oz. + 2 lbs.	8-Sep	165

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz.

Cercospora Fungicide Efficacy Answer Plot - Bach, MI - 2025

Trial Quality: Good

Variety: SX-2296N

Planted: May 14

Harvested: October 28

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 3.4 **pH:** 7.3 **CEC:** 12.4

P: Very High **K:** Very High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 12.12 inches

No.	Treatment*	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
9	Super Tin	8 fl. oz.	A, C, E	3.5	227	\$751	6550	28.9	14.5	92.4
	EBDC	2 lbs.	B, D							
10	Super Tin + Topsin 4.5 FL	8 fl. oz. + 20 fl. oz.	A, C, E	3.5	222	\$751	7034	31.6	15.2	90.0
	EBDC	2 lbs.	B, D							
16	Badge SC	2 pt.	A, C, E	3.5	216	\$602	6217	28.8	14.7	89.9
	EBDC	2 lbs.	B, D							
21	Luna Flex + Propulse	13.6 fl. oz. +13.6 fl. oz.	A, C, E	3.8	234	\$814	6806	29.1	14.8	92.6
	EBDC	2 lbs.	B, D							
24	Phobos FC + Priaxor	7.6 fl. oz. + 8 fl. oz.	A, C, E	3.8	221	\$640	6567	29.8	14.4	91.5
	EBDC	2 lbs.	B, D							
20	Luna Flex	13.6 fl. oz.	A, C, E	3.8	214	\$577	6157	28.7	14.4	90.2
	EBDC	2 lbs.	B, D							
23	Phobos FC + Headline	7.6 fl. oz. +12 fl. oz.	A, C, E	4.0	232	\$842	7235	31.2	14.2	94.4
	EBDC	2 lbs.	B, D							
2	Inspire XT	7 fl. oz.	A, C, E	4.0	213	\$541	6000	28.2	13.8	92.0
	EBDC	2 lbs.	B, D							
19	EBDC	2 lbs.	A - E	4.0	227	\$770	6721	29.7	14.7	91.6
	Provysol	5 fl. oz.	A, C, E							
7	EBDC	2 lbs.	B, D	4.3	239	\$862	6580	27.5	14.6	94.5
	Revytek	15 fl. oz.	A, C, E							
15	EBDC	2 lbs.	B, D	4.3	209	\$445	5557	26.6	13.7	91.5
	Propulse	13.6 fl. oz.	A, C, E							
12	EBDC	2 lbs.	B, D	4.3	223	\$636	6145	27.6	14.6	91.3
	Phobos FC	7.6 fl. oz.	A, C, E							
22	EBDC	2 lbs.	B, D	4.3	217	\$562	5955	27.5	14.3	91.1
	Priaxor	8 fl. oz.	A, C, E							
8	EBDC		B, D	4.3	211	\$486	5811	27.6	14.3	90.0
	Proline	5.7 fl. oz.	A, C, E							
3	EBDC	2 lbs.	B, D	4.5	211	\$520	6055	28.7	14.0	91.5
	Minerva Duo	16 fl. oz.	A, C, E							
11	EBDC	2 lbs.	B, D	4.5	216	\$591	6183	28.6	14.2	91.3
	Topguard EQ	14 fl. oz.	A, C, E							
4	EBDC	2 lbs.	B, D	4.8	209	\$441	5476	26.1	13.4	92.7

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick

Cercospora Rate (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Fungicide Efficacy Answer Plot - Bach, MI - 2025

No.	Treatment	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
13	Delaro + Proline	11 fl. oz. + 1.6 fl. oz.	A, C, E	4.8	206	\$438	5755	27.9	13.6	91.3
	EBDC	2 lbs.	B, D							
14	Lucento	5.5 fl. oz.	A, C, E	4.8	204	\$413	5632	27.6	13.8	90.3
	EBDC	2 lbs.	B, D							
17	Priaxor + Topsin 4.5 FL	8 fl. oz. + 20 fl. oz.	A, C, E	4.8	208	\$466	5898	28.3	14.2	89.8
	EBDC	2 lbs.	B, D							
18	Veltyma	10 fl. oz.	A, C, E	5.0	212	\$456	5369	25.4	13.7	91.9
	EBDC	2 lbs.	B, D							
5	Enable	8 fl. oz.	A, C, E	5.0	209	\$489	5826	27.8	14.1	90.2
	EBDC	2 lbs.	B, D							
6	Minerva	13 fl. oz.	A, C, E	5.5	229	\$711	6095	26.6	14.3	93.4
	EBDC	2 lbs.	B, D							
1	Untreated			9.0	220	\$594	5575	25.4	13.8	93.3
Average				4.5	218	\$600	6133	28.1	14.2	91.6
LSD 5%				0.4	24.5	342.6	844.7	2.0	0.9	3.7
CV %				6.6	8.0	40.5	9.8	5.0	4.6	2.9

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick

Cercospora Rate (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test products for Cercospora leafspot efficacy. Heavy Cercospora and Alternaria leafspot was observed.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Fungicide Efficacy Mennonite Church - Pigeon, MI - 2025 (Page 3 of 6)

Trial Quality: Poor

Variety: SX-2296N

Planted: May 27

Harvested: October 30

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Sandy Clay Loam

% OM: 1.8 **pH:** 7.7 **CEC:** 14.5

P: Low **K:** Medium

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 14.62 inches

No.	Treatment*	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				10-Sep						
21	Luna Flex + Propulse	13.6 fl. oz. + 13.6 fl. oz.	A, C, E	3.1	235	\$429	3763	16.0	14.5	93.7
	EBDC	2 lbs.	B, D							
9	Super Tin	8 fl. oz.	A, C, E	3.4	240	\$573	4401	18.5	14.8	94.0
	EBDC	2 lbs.	B, D							
19	EBDC	2 lbs.	A - E	3.6	229	\$543	3745	15.0	13.9	94.7
10	Super Tin + Topsin 4.5 FL	8 fl.oz. + 20 fl.oz.	A, C, E	3.8	240	\$499	4403	19.3	14.6	94.8
	EBDC	2 lbs.	B, D							
7	ProvySol	5 fl. oz.	A, C, E	3.8	231	\$391	3451	15.0	14.2	94.1
	EBDC	2 lbs.	B, D							
13	Delaro + Proline	11 fl. oz.+1.6 fl. oz.	A, C, E	3.8	217	\$339	3622	16.6	13.5	93.9
	EBDC	2 lbs.	B, D							
23	Phobos FC + Headline	7.6 fl. oz.+12 fl. oz.	A, C, E	3.9	238	\$580	4071	15.9	14.6	94.1
	EBDC	2 lbs.	B, D							
20	Luna Flex	13.6 fl. oz.	A, C, E	3.9	230	\$509	4260	18.4	14.5	93.1
	EBDC	2 lbs.	B, D							
17	Priaxor + Topsin 4.5 FL	8 fl. oz. + 20 fl. oz.	A, C, E	3.9	237	\$388	3823	17.1	14.4	94.8
	EBDC	2 lbs.	B, D							
12	Propulse	13.6 fl. oz.	A, C, E	3.9	223	\$332	3442	15.4	14.1	93.1
	EBDC	2 lbs.	B, D							
2	Inspire XT	7 fl. oz.	A, C, E	4.0	227	\$472	4148	18.1	14.4	92.8
	EBDC	2 lbs.	B, D							
8	Priaxor	8 fl. oz.	A, C, E	4.0	231	\$423	3324	13.8	14.1	94.9
	EBDC	2 lbs.	B, D							
3	Proline	5.7 fl. oz.	A, C, E	4.0	230	\$522	3987	16.5	13.9	95.0
	EBDC	2 lbs.	B, D							
16	Badge SC	2 pt.	A, C, E	4.1	221	\$231	3574	17.9	13.8	93.4
	EBDC**	2 lbs.	B, D							
22	Phobos FC	7.6 fl. oz.	A, C, E	4.1	223	\$336	3840	17.9	13.8	94.2
	EBDC	2 lbs.	B, D							
6	Minerva	13 fl. oz.	A, C, E	4.1	216	\$322	3476	16.1	13.4	94.0
	EBDC	2 lbs.	B, D							

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick

Cercospora Rate (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Fungicide Efficacy Menonite Church - Pigeon, MI - 2025 (Page 4 of 6)

No.	Treatment*	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				10-Sep						
11	Minerva Duo	16 fl. oz.	A, C, E	4.3	234	\$465	4454	20.0	14.1	95.2
	EBDC	2 lbs.	B, D							
18	Veltyma	10 fl. oz.	A, C, E	4.4	232	\$321	3568	16.5	14.0	95.1
	EBDC	2 lbs.	B, D							
5	Enable	8 fl. oz.	A, C, E	4.4	227	\$413	3699	16.3	13.7	95.2
	EBDC	2 lbs.	B, D							
15	Revytek	15 fl. oz.	A, C, E	4.5	240	\$507	4259	18.2	14.9	93.7
	EBDC	2 lbs.	B, D							
24	Phobos FC + Priaxor	7.6 fl.oz.+ 8 fl.oz.	A, C, E	4.5	227	\$340	3437	15.2	14.1	93.9
	EBDC	2 lbs.	B, D							
14	Lucento	5.5 fl. oz. +	A, C, E	4.5	226	\$261	3175	15.0	13.9	94.1
	EBDC	2 lbs.	B, D							
4	Topguard EQ	14 fl. oz.	A, C, E	4.5	219	\$370	3915	17.8	13.7	93.3
	EBDC	2 lbs.	B, D							
1	Untreated			6.9	225	\$331	2917	13.0	13.7	94.7
Average				4.1	229	\$412	3781	16.6	14.1	94.2
LSD 5%				0.9	19.8	318.0	920.8	2.7	1.0	2.4
CV %				15.1	6.1	54.7	17.3	11.4	5.1	1.8

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick

Cercospora Rate (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test products for Cercospora leafspot efficacy. Trial was planted late and late planting along with drought led to stunted beet growth and limited Cercospora development.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Fungicide Efficacy Answer Plot, Bach & Mennonite Church Pigeon, MI - 2025

(Page 5 of 6)

No.	Treatment*	Application Timing	Answer Plot	Mennonite Church
			Date	Date
1	Untreated Check			
2	Inspire XT	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
3	Proline	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
4	Topguard EQ	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
5	Enable	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
6	Minerva	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
7	Provysol	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
8	Priaxor	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
9	Super Tin	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
10	Super Tin + Topsin 4.5 FL	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC**	B, D	7/22, 8/21	8/5, 9/9
11	Minerva Duo	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
12	Propulse	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
13	Delaro + Proline	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
14	Lucento	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
15	Revytek	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
16	Badge SC	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
17	Priaxor + Topsin 4.5 FL	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
18	Veltyma	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
19	EBDC	A-E	7/7, 8/5, 9/10	7/22, 8/22, 9/26

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick



Cercospora Fungicide Efficacy Answer Plot, Bach & Mennonite Church Pigeon, MI - 2025

No.	Treatment*	Application Timing	Answer Plot	Mennonite Church
			Date	Date
20	Luna Flex	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
21	Luna Flex + Propulse	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
22	Phobos FC	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
23	Phobos FC + Headline	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9
24	Phobos FC + Priaxor	A, C, E	7/7, 8/5, 9/10	7/22, 8/22, 9/26
	EBDC	B, D	7/22, 8/21	8/5, 9/9

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick

Cercospora Leafspot Programs Standard Answer Plot - Bach, MI - 2025

Trial Quality: Good

Variety: BTS-1183

Planted: May 14

Harvested: September 29

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 3.4 **pH:** 7.3 **CEC:** 12.4

P: Very High **K:** Very High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 12.12 inches

No.	Treatment	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				0-9						
				16-Sep						
18	EBDC	2 lbs.	A	3.0	253	\$1,314	8834	34.9	15.4	94.4
	EBDC + Proline	2 lbs.+5.7 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Revytek	2 lbs.+15 fl. oz.	F							
16	EBDC	2 lbs.	A	3.1	245	\$1,202	8755	35.8	14.9	94.6
	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Revytek	2 lbs.+ 15 fl. oz.	F							
4	EBDC	2 lbs.	A	3.3	260	\$1,364	8684	33.4	15.4	95.7
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Delaro + Proline	2 lbs.+ 11 fl. oz. + 1.6 fl. oz.	F							
6	EBDC	2 lbs.	A	3.3	258	\$1,380	8896	34.5	15.3	95.4
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	F							
23	EBDC	2 lbs.	A	3.4	270	\$1,636	9312	33.5	16.0	95.4
	EBDC + Revytek + Romeo	2 lbs.+15 fl. oz. + 2.5 lbs.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT + Romeo	2 lbs.+ 7 fl. oz. + 25 lbs.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	F							
	EBDC + Badge	2 lbs. + 2 pt.	G							

EBDC = Manzate Pro-stick

All treatments included MasterLock @ 6.4 fl. oz., except treatment 24-27.

Application dates for all treatments: A - 7/7, B - 7/17, C - 7/28, D - 8/14, E - 8/26, F - 9/12, G - 9/26

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury, and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Cercospora Leafspot Programs Standard Answer Plot - Bach, MI - 2025

No.	Treatment	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				0-9						
				16-Sep						
13	EBDC	2 lbs.	A	3.4	263	\$1,344	8925	35.0	15.7	95.4
	EBDC + Delaro + Proline + N. Demand + Boron 10%	2 lbs.+11 fl. oz.+ 1.6 fl. oz.+ 1 gal. + 1 qt.	B							
	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Provysol + N. Demand + Boron 10%	2 lbs. + 5 fl. oz. + 1 gal. + 1 qt.	D							
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	E							
	EBDC + Inspire XT + N.Demand + Boron 10%	2 lbs. + 7 fl. oz. + 1 gal. + 1 qt.	F							
11	EBDC + Delaro + Proline	2 lbs.+11 fl. oz. +1.6 fl. oz.	A	3.4	260	\$1,260	8773	35.1	15.5	95.3
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	B, E							
	EBDC + Priaxor + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	D							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	F							
24	EBDC + Domark	2 lbs.+ 6.9 fl. oz.	A	3.4	259	\$1,301	8804	35.0	15.7	94.8
	Super Tin + Topsin	8 fl. oz.+ 20 fl. oz.	B							
	EBDC + Headline	2 lbs.+ 9 fl. oz.	C							
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	C, F							
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	E							
26	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	A	3.5	249	\$1,190	8265	33.2	14.6	96.3
	Super Tin + Topsin	8 fl. oz. + 20 fl. oz.	B							
	EBDC + Headline	2 lbs.+ 9 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D, F							
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	E							
14	EBDC	2 lbs.	A	3.5	249	\$1,273	8890	35.7	14.7	95.9
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	B							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	C, E							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	D							
	EBDC + Priaxor + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	F							
3	EBDC	2 lbs.	A	3.5	247	\$1,188	8430	34.1	14.7	95.8
	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Provysol	2 lbs. + 5 fl. oz.	D							
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	E							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	F							

EBDC = Manzate Pro-stick

All treatments included MasterLock @ 6.4 fl. oz., except treatment 24-27.

Application dates for all treatments: A - 7/7, B - 7/17, C - 7/28, D - 8/14, E - 8/26, F - 9/12, G - 9/26

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury, and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Cercospora Leafspot Programs Standard Answer Plot - Bach, MI - 2025

No.	Treatment	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				0-9 16-Sep						
17	EBDC	2 lbs.	A	3.5	245	\$1,207	8635	35.1	14.6	95.7
	EBDC + Revytek	2 lbs.+ 15 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	F							
5	EBDC	2 lbs.	A	3.5	250	\$1,301	9001	36.0	14.9	95.5
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	B							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	C, F							
	EBDC + Priaxor + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	E							
22	EBDC	2 lbs.	A	3.5	261	\$1,513	9525	36.5	15.8	94.5
	EBDC + GF-4536	2 lbs.+ 20.5 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Delaro + Proline	2 lbs.+ 11 fl. oz. + 1.6 fl. oz.	F							
2	EBDC	2 lbs.	A	3.6	238	\$1,032	8075	33.9	14.1	96.0
	EBDC + Revytek	2 lbs.+ 15 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	F							
	EBDC + Badge	2 lbs.+ 2 pt.	G							
9	EBDC	2 lbs.	A	3.6	258	\$1,374	8884	34.4	15.4	95.3
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	B							
	EBDC + Priaxor + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Flint Extra	2 lbs.+ 3.6 fl. oz.	E							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	F							
12	EBDC	2 lbs.	A	3.6	258	\$1,305	8379	32.5	15.5	95.1
	EBDC + Badge	2 lbs.+ 2 pt.	B - F							
27	EBDC + GWN-10338	2 lbs.+ 19 fl. oz.	A	3.6	252	\$1,376	9214	36.5	15.2	94.7
	Super Tin + Topsin	8 fl. oz.+10 fl. oz.	B							
	EBDC + Headline	2 lbs.+ 9 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D, F							
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	E							

EBDC = Manzate Pro-stick

All treatments included MasterLock @ 6.4 fl. oz., except treatment 24-27.

Application dates for all treatments: A - 7/7, B - 7/17, C - 7/28, D - 8/14, E - 8/26, F - 9/12, G - 9/26

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury, and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Cercospora Leafspot Programs Standard Answer Plot - Bach, MI - 2025

No.	Treatment	Rate/Acre	Applic. Timing	CLS Rate 0-9	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
25	Badge + Domark	2 pt.+ 6.9 fl. oz.	A	3.6	242	\$1,069	7938	32.8	14.9	94.0
	Super Tin + Topsin	8 fl. oz. + 10 fl. oz.	B							
	Badge + Headline	2 pt. + 9 fl. oz.	C							
	Badge + Super Tin	2 pt.+ 8 fl. oz.	D, F							
	Badge + Provysol	2 pt.+ 5 fl. oz.	E							
15	EBDC	2 lbs.	A	3.8	245	\$1,127	8282	34.0	14.7	95.1
	EBDC + Revytek	2 lbs.+15 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Delaro + Proline	2 lbs.+11 fl. oz. + 1.6 fl. oz.	F							
7	EBDC	2 lbs.	A	3.8	251	\$1,302	8846	35.2	15.1	95.1
	EBDC + Topguard	2 lbs.+ 14 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Enable	2 lbs.+ 8 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Minerva	2 lbs.+ 13 fl. oz.	F							
10	EBDC + Topguard	2 lbs.+14 fl. oz.	B	3.9	245	\$1,073	7728	31.6	14.5	96.0
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Enable	2 lbs.+ 8 fl. oz.	D							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	E							
	EBDC + Eminent	2 lbs.+13 fl. oz.	F							
8	EBDC	2 lbs.	A	4.0	237	\$957	7544	31.7	14.0	96.4
	EBDC + Provysol	2 lbs.+ 5 fl. oz.	B							
	EBDC + Priaxor + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC + Badge	2 lbs.+ 2 pt.	E							
	EBDC + Delaro + Proline	2 lbs.+ 11 fl. oz. + 1.6 fl. oz.	F							
19	EBDC	2 lbs.	B, D, F	4.1	232	\$975	7952	34.2	14.4	93.9
	EBDC + Minerva	2 lbs.+ 13 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	E							
20	EBDC	2 lbs.	B, D, F	4.3	247	\$1,106	7801	31.7	14.6	95.9
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	E							

EBDC = Manzate Pro-stick

All treatments included MasterLock @ 6.4 fl. oz., except treatment 24-27.

Application dates for all treatments: A - 7/7, B - 7/17, C - 7/28, D - 8/14, E - 8/26, F - 9/12, G - 9/26

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury, and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Leafspot Programs Standard Answer Plot - Bach, MI - 2025

No.	Treatment	Rate/Acre	Applic. Timing	CLS Rate 0-9	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
21	EBDC + Minerva	2 lbs.+ 13 fl.oz.	B	4.3	249	\$1,167	7963	31.8	14.8	95.7
	Super Tin + Topsin	8 fl. oz. + 10 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC	2 lbs.	E							
	Headline + Super Tin	9 fl. oz.+ 8 fl. oz.	F							
1	Untreated Check			8.9	225	\$675	5833	25.9	13.4	96.0
Average				3.8	250	\$1,223	8451	33.9	14.9	95.3
LSD 5%				0.5	20.7	359.1	1040.3	3.0	1.1	2.0
CV %				9.5	5.9	20.9	8.7	6.3	5.2	1.5

EBDC = Manzate Pro-stick

All treatments included MasterLock @ 6.4 fl. oz., except treatment 24-27

Application dates for all treatments: A - 7/7, B - 7/17, C - 7/28, D - 8/14, E - 8/26, F - 9/12, G - 9/26

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury, and 9 = leaves completely dead

Comments: This study was designed to compare fungicide programs in conventional or less tolerant Cercospora leafspot varieties. Strong Alternaria and Cercospora leafspot pressure was observed.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Leafspot Programs CR+ Answer Plot - Bach, MI - 2025

Trial Quality: Good

Variety: C-G233

Planted: May 14

Harvested: September 29

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 3.4 **pH:** 7.3 **CEC:** 12.4

P: Very High **K:** Very High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2 + 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 12.12 inches

No.	Treatment*	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
11	EBDC + Badge	2 lb.+ 2 pt.	A - F	3.3	239	\$901	6943	29.1	14.9	93.2
24	EBDC + Minerva	2 lbs.+ 13 fl. oz.	B	3.5	214	\$650	6965	32.4	13.4	93.6
	Super Tin + Topsin	8 fl. oz.+10 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	D							
	EBDC	2 lbs.	E							
	Headline + Super Tin	9 fl. oz. + 8 fl. oz.	F							
12	EBDC	2 lbs.	B - F	3.5	216	\$713	7342	34.0	13.5	93.6
10	EBDC	2 lbs.	A - F	3.5	192	\$296	5847	30.4	12.4	92.5
13	EBDC + Badge	2 lbs.+ 2 pt.	B - F	3.6	200	\$422	6452	32.3	12.8	92.9
23	EBDC	2 lbs.	B, D, F	3.8	206	\$515	6636	32.2	13.1	93.1
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	E							
26	EBDC + Curezin + LI 700	2 lbs.+ 1.5 pt. + 3 fl. oz.	A - F	3.9	215	\$593	6371	29.7	13.4	93.8
19	EBDC	2 lbs.	A	3.9	203	\$401	5700	28.0	12.9	93.0
	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Revytek	2 lbs.+ 15 fl. oz.	F							
22	EBDC	2 lbs.	B, D, F	3.9	207	\$513	6354	30.6	13.2	92.7
	EBDC + Minerva	2 lbs. + 13 fl. oz.	C							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	E							
20	EBDC	2 lbs.	A	4.3	218	\$629	6389	29.3	13.5	94.0
	EBDC + Revytek	2 lbs. + 15 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	F							
2	EBDC	2 lbs.	A	4.3	195	\$301	5571	28.6	12.4	93.1
	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Provysol	2 lbs. + 5 fl. oz.	F							

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz., except for treatments 29 & 30

Application dates for all treatments: A - 6/23, B - 7/1, C - 7/15, D - 7/31, E - 8/15, F - 9/8

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Cercospora Leafspot Programs CR+ Answer Plot - Bach, MI - 2025

No.	Treatment*	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
8	EBDC	2 lbs.	A	4.5	200	\$388	5838	29.1	12.4	94.5
	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	D							
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	F							
3	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	B	4.5	203	\$438	6069	29.9	12.5	94.4
	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Provysol	2 lbs. + 5 fl. oz.	F							
21	EBDC	2 lbs.	A	4.5	220	\$613	6107	27.8	14.1	92.4
	EBDC + Proline	2 lbs. + 5.7 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Revytek	2 lbs. + 15 fl. oz.	F							
6	EBDC	2 lbs.	A	4.6	189	\$223	5267	27.8	11.8	94.1
	EBDC + Provysol	2 lbs. + 5 fl. oz.	B							
	EBDC + Priaxor + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	F							
4	EBDC	2 lbs.	A	4.6	169	\$139	4727	28.0	10.8	93.5
	EBDC + Minerva	2 lbs. + 13 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Enable	2 lbs. + 8 fl. oz.	F							
9	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	B, F	4.6	216	\$622	6473	30.0	14.0	91.8
	EBDC + Delaro + Proline	2 lbs. + 11 fl. oz. + 1.6 fl. oz.	D							
5	EBDC + Minerva	2 lbs. + 13 fl. oz.	B	4.9	199	\$370	5737	28.8	12.3	94.3
	EBDC + Super Tin + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Enable	2 lbs. + 8 fl. oz.	F							
7	EBDC + Provysol	2 lbs. + 5 fl. oz.	B	5.1	209	\$476	5767	27.6	13.5	92.1
	EBDC + Priaxor + Topsin	2 lbs. + 8 fl. oz. + 20 fl. oz.	D							
	EBDC + Super Tin	2 lbs. + 8 fl. oz.	F							
15	EBDC + Badge	2 lbs. + 2 pt.	A, B, D, F	5.3	220	\$625	6112	27.8	13.5	94.5

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz., except for treatments 29 & 30

Application dates for all treatments: A - 6/23, B - 7/1, C - 7/15, D - 7/31, E - 8/15, F - 9/8

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Leafspot Programs CR+ Answer Plot - Bach, MI - 2025

No.	Treatment*	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
14	EBDC	2 lbs.	A, B, D, F	5.6	197	\$342	5440	27.5	12.4	93.8
25	Curezin + LI 700	1.5 pt.+ 3 fl. oz.	A	5.9	183	\$120	4295	23.4	11.2	95.5
	Curezin + Delaro + Proline + LI 700	1.5 pt.+ 11 fl. oz.+ 1.6 fl. oz.+ 3 fl. oz.	B							
	Curezin + Super Tin + Topsin + LI 700	1.5 pt.+ 8 fl. oz.+ 20 fl. oz.+ 3 fl. oz.	D							
	Curezin + Provysol + LI 700	1.5 pt.+ 5 fl. oz.+ 3 fl. oz.	F							
17	EBDC + Badge	2 lbs. + 2 pt.	B, D, F	6.3	190	\$207	4568	24.1	12.2	92.9
16	EBDC	2 lbs.	B, D, F	6.5	197	\$343	5372	27.2	12.6	92.8
18	EBDC	2 lbs.	A	7.0	190	\$225	5211	27.4	12.3	92.4
	EBDC + Revytek	2 lbs.+ 15 fl. oz.	B							
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz.+ 20 fl. oz.	D							
	EBDC + Delaro + Proline	2 lbs.+ 11 fl. oz.+ 1.6 fl. oz.	F							
1	Untreated Check			9.0	183	\$139	4248	23.3	11.6	93.4
Average				4.8	203	\$431	5839	28.7	12.8	93.4
LSD 5%				0.9	15.6	232.1	826.6	2.9	0.9	1.6
CV %				13.9	5.5	38.2	10.1	7.2	5.1	1.2

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz., except for treatments 29 & 30

Application dates for all treatments: A - 6/23, B - 7/1, C - 7/15, D - 7/31, E - 8/15, F - 9/8

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: This study was designed to examine fungicide programs with a CR+ variety. Alternaria and Cercospora leafspot pressure was high.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Programs Ontario CR+ Answer Plot - Bach, MI - 2025

(Page 1 of 2)

Trial Quality: Good

Variety: C-G233

Planted: May 14

Harvested: October 29

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 3.4 **pH:** 7.3 **CEC:** 12.4

P: Very High **K:** Very High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 14.62 inches

No.	Treatment*	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
10	EBDC + ChampION	2 lbs.+ 2 lbs.	B, F, H	3.4	228	\$874	7648	33.5	14.0	94.3
	EBDC + ChampION + Cevya + Headline	2 lbs.+ 2 lbs.+ 5 fl. oz. +12 fl. oz.	D							
	EBDC + ChampION + Proline	2 lbs.+ 2 lbs.+ 5.7 fl. oz.	G							
11	EBDC + Kocide	2 lbs.+ 2 lbs.	B, F, H	3.6	235	\$939	7678	32.7	13.9	96.2
	EBDC + Kocide + Cevya + Headline	2 lbs.+ 2 lbs.+ 5 fl. oz.+ 12 fl. oz.	D							
	EBDC + Kocide + Proline	2 lbs.+ 2 lbs.+ 5.7 fl. oz.	G							
9	EBDC + ChampION	2 lbs.+ 2 lbs.	B, D, F, G, H	3.6	233	\$868	7046	30.3	14.4	93.8
8	EBDC	2 lbs.	A	4.0	221	\$753	7153	32.3	13.7	94.1
	EBDC + Cevya	2 lbs. + 5 fl.oz.	C							
	EBDC + ChampION	2 lbs. + 2 lbs.	E, H							
	EBDC + Proline	2 lbs. + 5.7 fl.oz.	G							
2	EBDC	2 lbs.	A, E, H	4.0	205	\$493	6355	30.9	12.9	93.7
	EBDC + Cevya	2 lbs.+ 5 fl. oz.	C							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	G							
6	EBDC	2 lbs.	B, D, F, G, H	4.1	224	\$832	7477	33.3	14.1	93.1
5	EBDC + Cevya	2 lbs.+ 5 fl. oz.	A, B	5.4	201	\$417	5976	29.6	13.0	92.5
	EBDC	2 lbs.	F							
	EBDC + Proline	2 lbs. + 5.7 fl. oz.	H							
3	EBDC	2 lbs.	A	5.8	208	\$488	6065	29.2	12.9	94.3
	EBDC + Cevya	2 lbs. + 5 fl. oz.	B							
	EBDC + Priaxor + Topsin 4.5 FL	2 lbs.+ 20 fl. oz.+ 20 fl. oz.	F							
	EBDC + Proline	2 lbs. + 5.7 fl. oz.	H							

*All treatments included MasterLock @ 6.4 fl. oz.

EBDC = Manzate Pro-Stick

Application Dates for all treatments: A - 6/23, B - 7/1, C - 7/7, D - 7/15, E - 7/24, F - 7/31, G - 8/15, H - 9/8

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Programs Ontario CR+ Answer Plot - Bach, MI - 2025

No.	Treatment*	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
4	EBDC + Cevya	2 lbs.+ 5 fl. oz.	B	5.9	208	\$498	6140	29.5	13.3	92.6
	EBDC + Priaxor + Topsin 4.5 FL	2 lbs.+ 8 fl. oz.+ 20 fl. oz.	F							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	H							
7	EBDC + ChampION + Cevya	2 lbs.+ 2 lbs.+ 5 fl. oz.	B	6.3	209	\$473	5710	27.3	12.8	94.9
	ChampION + Priaxor + Topsin 4.5 FL	2 lbs.+ 8 fl. oz.+ 20 fl. oz.	F							
	EBDC + ChampION + Proline	2 lbs.+ 2 lbs.+ 5.7 fl. oz.	H							
1	Untreated Check			8.6	197	\$336	5134	26.0	12.0	95.3
Average				5.0	215	\$634	6580	30.4	13.4	94.1
LSD 5%				0.6	18.3	285.8	830.2	2.0	0.8	2.2
CV%				8.4	5.9	31.2	8.7	4.5	4.4	1.6

*All treatments included MasterLock @ 6.4 fl oz.

EBDC = Manzate Po-Stick

Application Dates for all treatments: A - 6/23, B - 7/1, C - 7/7, D - 7/15, E - 7/24, F - 7/31, G - 8/15, H - 9/8

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to examine fungicide programs with chemistry available in Ontario with a CR+ variety. Alternaria and Cercospora pressure was high.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Evaluate Sticker / Spreaders Added to Fungicides for Cercospora Blumfield East - Richville, MI - 2025

Trial Quality: Fair
Variety: HIL-2332NT
Planted: May 30
Harvested: October 16
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches
Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam
%OM: 2.1 **pH:** 7.8 **CEC:** 12.0
P: High **K:** Medium
Mn: High **B:** Medium
Added N: 40 lbs. 2X2, 120 lbs. side-dress
Previous Crop: Clover

Rhizoc. Level: Low
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 15.41 inches
Beets/100 ft.: 203

No.	Sticker	Rate/Acre	Applic. Timing	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				2-Sep						
5	Reguard + Diligence	12 fl. oz.+ 1.5 fl. oz.	A-F	3.6	208	\$323	4021	19.3	14.5	94.3
6	MasterLock + Reguard	6.4 fl. oz.+ 12 fl. oz.	A-F	3.8	213	\$362	4095	19.2	14.7	94.7
9	WC-835	8 fl. oz.	A-F	3.8	201	\$262	3859	19.2	14.3	93.6
7	WC-250	8 fl. oz.	A-F	3.9	198	\$240	3902	19.7	14.2	93.4
3	MasterLock	6.4 fl. oz.	A-F	3.9	218	\$358	3608	16.6	15.5	93.2
4	Reguard	12 fl. oz.	A-F	3.9	207	\$286	3756	18.2	14.9	92.8
8	WC-450	3 fl. oz.	A-F	3.9	203	\$257	3601	17.7	14.8	92.5
2	No Sticker			4.1	197	\$234	3852	19.5	14.2	93.0
1	Untreated Check			6.6	197	\$181	2534	12.9	14.0	93.9
Average				4.2	205	\$278	3692	18.0	14.6	93.5
LSD 5%				0.6	12.2	128.4	551.3	2.2	0.6	1.9
CV%				10.4	4.1	31.6	10.2	8.4	2.7	1.4

Spray Program for Treatments

- A. EBDC (2 lbs.) + Sticker
- B. EBDC (2 lbs.) + Provysol (5 fl. oz.) + Sticker
- C. EBDC (2 lbs.) + Super Tin (8 fl. oz.) + Sticker
- D. EBDC (2 lbs.) + Priaxor (8 fl. oz.) + Sticker
- E. EBDC (2 lbs.) + Proline (5.7 fl. oz.) + Sticker
- F. EBDC (2 lbs.) + Super Tin (8 fl. oz.) + Sticker

EBDC = Manzate Pro-Stick

Application dates for all treatments: A = 7/21, B = 8/4, C = 8/18, D = 9/2, E = 9/15, F = 9/30

Cercospora Rating (0-9 Scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: This study was designed to test adjuvants for improvement in Cercospora leafspot control with a fungicide program.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Contract Trials Mennonite Church - Pigeon, MI - 2025

Trial Quality: Poor

Variety: SX-2296N

Planted: May 27

Harvested: October 30

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Sandy Clay Loam

% OM: 1.8 **pH:** 7.7 **CEC:** 14.5

P: Low **K:** Medium

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 14.7 inches

No.	Treatment	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				10-Sep						
2	EBDC + Revytek	2 lbs.+ 15 fl. oz.	A	3.1	232	\$528	4122	17.6	14.1	94.6
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	E							
4	EBDC + Phobos FC	2 lbs.+ 7.6 fl. oz.	A	3.3	216	\$402	3687	16.5	13.3	94.1
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Proline	2 lbs.+ 6.4 fl. oz.	E							
5	EBDC + Revytek	2 lbs.+ 15 fl. oz.	A	3.5	187	\$70	2547	13.6	12.1	92.8
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Phobos FC	2 lbs.+ 7.6 fl. oz.	E							
3	Siphite + Metabolic HV1	1 qt.+ 16.8 fl. oz.	A, C, E	3.8	200	\$221	3122	15.4	13.0	92.1
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
1	Untreated Check			6.8	177	\$35	1918	9.1	11.3	93.4
Average				4.1	203	\$251	3079	14.5	12.8	93.4
LSD 5%				0.4	25.4	285.1	1351.5	5.8	1.4	2.5
CV%				7.1	8.1	73.6	28.5	26.0	7.0	1.8

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz.

Application Dates for all treatments: A - 7/22, B - 7/30, C - 8/15, D - 9/2, E - 9/15

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test products for Cercospora leafspot efficacy. Trial was planted late and the late planting in combination with drought led to stunted beet growth and limited Cercospora development.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora Contract Trials Trost - Pigeon, MI - 2025

Trial Quality: Good

Variety: SX-2296N

Planted: May 13

Harvested: October 31

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Clay Loam

% OM: 2.6 **pH:** 7.5 **CEC:** 12.6

P: Very High **K:** High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 15.57 inches

No.	Treatment*	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				10-Sep						
5	EBDC + Revytek	2 lbs.+ 15 fl. oz.	A	3.5	243	\$1,171	8423	34.4	14.8	94.5
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Phobos FC	2 lbs.+ 7.6 fl. oz.	E							
	EBDC + Badge	2 lbs.+ 2 pt.	F							
2	EBDC + Revytek	2 lbs.+ 15 floz.	A	3.7	237	\$1,060	8210	34.6	15.3	93.4
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Proline	2 lbs.+ 5.7 fl. oz.	E							
	EBDC + Badge	2 lbs.+ 2 pt.	F							
4	EBDC + Phobos FC	2 lbs.+ 7.6 fl. oz.	A	4.2	261	\$1,496	9254	35.3	15.6	95.1
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Inspire XT	2 lbs.+ 7 fl. oz.	C							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Proline	2 lbs.+ 6.4 fl. oz.	E							
	EBDC + Badge	2 lbs.+ 2 pt.	F							
3	Siphite + Metabolic HV1	1 qt.+ 16.8 fl. oz.	A, C, E	5.5	220	\$694	6694	30.4	13.7	93.8
	EBDC + Super Tin + Topsin	2 lbs.+ 8 fl. oz. + 20 fl. oz.	B							
	EBDC + Super Tin	2 lbs.+ 8 fl. oz.	D							
	EBDC + Badge	2 lbs.+ 2 pt.	F							
1	Untreated Check			9.0	213	\$307	4728	24.0	12.7	96.1
Average				5.2	235	\$945	7462	31.7	14.4	94.6
LSD 5%				0.2	27.0	550.7	1862.9	6.2	1.0	2.2
CV%				2.9	8.6	43.4	18.6	14.6	5.0	1.7

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz.

Application Dates for all treatments: A - 7/8, B - 7/24, C - 7/30, D - 8/15, E - 9/2, F - 9/15

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test products for Cercospora leafspot efficacy. Heavy Cercospora and Alternaria leafspot was observed.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora VM AgriTech Trial 1 Answer Plot - Bach, MI - 2025

(Page 1 of 2)

Trial Quality: Good

Variety: BTS-1183

Planted: May 14

Harvested: September 29

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 3.4 **pH:** 7.3 **CEC:** 12.4

P: Very High **K:** Very High

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 12.12 inches

No.	Treatment	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
2	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A	3.5	236	\$1,036	8375	35.5	14.8	93.2
	EBDC + Revytek + MasterLock	2 lbs.+ 15 fl. oz. + 6.4 fl. oz.	B							
	EBDC + Super Tin + Topsin + MasterLock	2 lbs.+ 8 fl. oz.+ 20 fl. oz.+ 6.4 fl. oz.	C							
	EBDC + Inspire XT + MasterLock	2 lbs.+ 7 fl. oz. + 6.4 fl. oz.	D							
	EBDC + Super Tin + MasterLock	2 lbs.+ 8 fl. oz. + 6.4 fl. oz.	E							
	EBDC + Proline + MasterLock	2 lbs.+ 5.7 fl. oz. + 6.4 fl. oz.	F							
8	EBDC + Curezin + LI 700	2 lbs.+ 1.5 pt. + 3 fl.oz.	A	3.7	249	\$1,208	8624	34.7	15.2	94.0
	EBDC + Curezin + Revytek + LI 700	2 lbs.+ 1.5 pt.+ 15 fl. oz.+ 3 fl. oz.	B							
	EBDC + Super Tin + Topsin + MasterLock	2 lbs.+ 8 fl. oz.+ 20 fl. oz.+ 6.4 fl. oz.	C							
	EBDC + Curezin + Inspire XT + LI 700	2 lbs.+ 1.5 pt.+ 7 fl. oz. + 3 fl. oz.	D							
	EBDC + Super Tin + MasterLock	2 lbs.+ 8 fl. oz. + 6.4 fl. oz.	E							
	EBDC + Curezin + Proline + LI 700	2 lbs.+ 1.5 pt.+ 5.7 fl. oz.+ 6.4 fl. oz.	F							
7	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A	4.0	236	\$939	7645	32.4	14.7	93.6
	Curezin + Revytek + LI 700	3 pt.+ 15 fl. oz. + 3 fl. oz.	B							
	EBDC + Super Tin + Topsin + MasterLock	2 lbs.+ 8 fl.oz.+ 20 fl.oz.+ 6.4 fl.oz.	C							
	Curezin + Inspire XT + LI 700	3 pt.+ 7 fl. oz. + 3 fl.oz.	D							
	EBDC + Super Tin + MasterLock	2 lbs.+ 8 fl. oz. + 6.4 fl. oz.	E							
	Curezin + Proline + LI 700	3 pt.+ 5.7 fl. oz. + 3 fl. oz.	F							
3	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A-F	4.2	230	\$914	7711	33.5	14.6	92.8

EBDC = Manzate Pro-Stick

Application Dates for all treatments: A - 6/23, B - 7/7, C - 7/22, D - 7/31, E - 8/14, F - 9/8

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Cercospora VM AgriTech Trial 1 Answer Plot - Bach, MI - 2025

No.	Treatment	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				16-Sep						
5	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A	4.3	262	\$1,546	8810	33.6	15.8	94.6
	Curezin + Revytek + LI 700	2 pt.+ 15 fl. oz. + 4 fl. oz.	B							
	EBDC + Super Tin + Topsin + MasterLock	2 lbs.+ 8 fl. oz. + 20 fl. oz.+ 6.4 fl. oz.	C							
	Curezin + Inspire XT + LI700	2 pt.+ 7 fl. oz. + 4 fl. oz.	D							
	EBDC + Super Tin + MasterLock	2 lbs.+ 8 fl. oz. + 6.4 fl. oz.	E							
	Curezin + Proline + LI 700	2 pt.+ 5.7 fl. oz. + 4 fl. oz.	F							
6	Curezin + LI 700	3 pt.+ 3 fl. oz.	A	5.0	226	\$959	7710	34.0	14.5	92.3
	Curezin + Revytek + LI 700	3 pt.+ 15 fl. oz. + 3 fl. oz.	B							
	Curezin + Super Tin + Topsin + LI 700	3 pt.+ 8 fl. oz.+ 20 fl. oz.+ 3 fl. oz.	C							
	Curezin + Inspire XT + LI 700	3 pt.+ 7 fl. oz. + 3 fl. oz.	D							
	Curezin + Super Tin + Topsin + LI 700	3 pt.+ 8 fl. oz. + 3 fl. oz.	E							
	Curezine + Proline + LI 700	3 pt.+ 5.7 fl. oz. + 3 fl. oz.	F							
4	Curezin + LI 700	2 pt.+ 4 fl. oz.	A	5.3	230	\$798	7055	30.7	14.4	93.2
	Curezin + Revytek + LI 700	2 pt.+ 15 fl. oz. + 4 fl. oz.	B							
	Curezin + Super Tin + Topsin + LI 700	2 pt.+ 8 fl. oz.+ 20 fl. oz.+ 4 fl. oz.	C							
	Curezin + Inspire XT + LI 700	2 pt.+ 7 fl. oz. + 4 fl. oz.	D							
	Curezin + Super Tin + LI 700	2 pt.+ 8 fl. oz. + 4 fl. oz.	E							
	Curezin + Proline + LI 700	2 pt.+ 5.7 fl. oz. + 4 fl. oz.	F							
1	Untreated Check			8.5	215	\$535	5470	25.5	13.1	94.7
Average				4.8	235	\$992	7675	32.5	14.6	93.6
LSD 5%				0.4	21.0	443.2	735.3	2.2	1.2	1.6
CV%				5.3	5.1	25.5	5.5	3.9	4.8	1.0

EBDC = Manzate Pro-Stick

Application Dates for all treatments: A - 6/23, B - 7/7, C - 7/22, D - 7/31, E - 8/14, F - 9/8

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test products for Cercospora leafspot efficacy. Heavy Cercospora and Alternaria leafspot pressure was present.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Cercospora VM AgriTech Trial 2

Trost - Pigeon, MI - 2025

Trial Quality: Good

Variety: BTS-1183

Planted: May 13

Harvested: October 31

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Clay Loam

% OM: 2.6 **pH:** 7.5 **CEC:** 12.6

P: Very High **K:** Very High

Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 15.67 inches

No.	Treatment	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				10-Sep						
5	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A, C, E	7.3	216	\$636	6712	31.1	13.0	95.3
	Proline + VMA-M002 + MasterLock	5.7 fl. oz. + 32 fl. oz. + 6.4 fl. oz.	B, D							
2	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A, C, E	7.3	218	\$657	6528	29.8	13.6	93.7
	Proline + MasterLock	5.7 fl. oz.+ 6.4 fl. oz.	B, D							
4	EBDC + MasterLock	2 lbs.+ 6.4 fl.oz.	A, C, E	7.3	223	\$716	6660	29.8	14.0	93.4
	Proline + Curezin + MasterLock	5.7 fl. oz. + 32 fl. oz. + 6.4 fl.oz.	B, D							
3	EBDC + MasterLock	2 lbs.+ 6.4 fl. oz.	A, C, E	7.5	216	\$654	6810	31.5	13.6	93.3
	Proline + Curezin + MasterLock	5.7 fl. oz.+ 16 fl. oz. + 6.4 fl. oz.	B, D							
7	Curezin + LI 700	48 fl. oz.+ 4 fl. oz.	A, C, E	8.1	217	\$579	6309	29.5	13.6	93.5
	Proline + MasterLock	5.7 fl. oz.+ 6.4 fl. oz.	B, D							
6	Curezin + LI 700	32 fl. oz.+ 4 fl. oz.	A, C, E	8.4	211	\$656	6246	28.2	13.3	93.2
	Proline + MasterLock	5.7 fl. oz. + 6.4 fl. oz.	B, D							
8	Curezin + LI 700	32 fl. oz.+ 4 fl. oz.	A, D	8.8	209	\$482	5862	28.0	13.0	93.9
	Curezin + Delaro + Proline + MasterLock	32 fl. oz. +11 fl. oz. +1.6 fl. oz.+6.4 fl. oz.	B							
	Curezin + Topsin + MasterLock	48 fl. oz.+ 20 fl. oz. + 6.4 fl. oz.	C							
	EBDC + Proline + MasterLock	2 lbs.+ 1.6 fl. oz. + 6.4 fl. oz.	E							
1	Untreated Check			9.0	212	\$530	5637	26.6	13.3	93.8
10	Curezin + VMA-M002 + LI 700	32 fl. oz.+ 32 fl. oz. + 6 fl.oz.	A-E	9.0	216	\$560	5812	26.9	13.6	93.1
11	Curezin + VMA-M002 + LI 700	16 fl. oz. + 48 fl. oz. + 6 fl. oz.	A-E	9.0	214	\$547	5773	26.9	13.6	93.0
9	Curezin + LI 700	48 fl. oz. + 6 fl. oz.	A-E	9.0	211	\$490	5605	26.6	13.4	93.0
Average				8.2	215	\$591	6178	28.6	13.5	93.6
LSD 5%				0.4	17.0	263.3	704.9	2.0	0.9	1.9
CV%				3.0	5.5	30.8	7.9	4.8	4.5	1.4

EBDC = Manzate Pro-Stick

*All treatments included MasterLock @ 6.4 fl. oz.

Application Dates for all treatments: A = 7/8, B = 7/24, C = 8/5, D = 8/21, E = 9/4

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test products for Cercospora leafspot efficacy. Heavy Cercospora and Alternaria leafspot pressure was present.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Rovensa Cercospora Trial

Blumfield East - Richville, MI - 2025

Trial Quality: Fair

Variety: BTS-1183

Planted: May 30

Harvested: October 16

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 100 psi, 25 gpa

Soil Info: Loam

% OM: 1.6 **pH:** 7.9 **CEC:** 14.8

P: High **K:** Medium

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Clover

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 13.49 inches

Beets/100 ft.: 228

No.	Treatment	Rate/Acre	Applic. Date	CLS Rate	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				21-Aug						
6	Inspire XT + Koverall + PREV-AM	7 fl. oz. + 2 lbs. + 12.8 fl. oz.	A	4.3	173	\$50	3989	23.0	13.6	89.7
	Koverall + PREV-AM	2 lbs. + 12.8 fl. oz.	B							
	Agri-Tin + Topsin + PREV-AM	8 fl. oz. + 20 fl. oz. + 12.8 fl. oz.	C							
	Minerva + Koverall + PREV-AM	13 fl. oz. + 2 lbs. + 12.8 fl. oz.	D							
	Koverall + PREV-AM	2 lbs. + 12.8 fl. oz.	E							
	Priaxor + Agri-Tin + PREV-AM	8 fl. oz. + 8 fl. oz. + 12.8 fl. oz.	F							
2	Manzate Pro-Stick + Revytek + MasterLock	2 lbs. + 15 fl. oz. + 6.4 fl. oz.	A	4.6	187	\$161	3667	19.8	13.8	92.2
	Manzate Pro-Stick + Super Tin + Topsin + MasterLock	2 lbs. + 8 fl. oz. + 20 fl. oz. + 6.4 fl. oz.	B							
	Manzate Pro-Stick + Inspire XT + MasterLock	2 lbs. + 7 fl. oz. + 6.4 fl. oz.	C							
	Manzate Pro-Stick + Super Tin + MasterLock	2 lbs. + 8 fl. oz. + 6.4 fl. oz.	D							
	Manzate Pro-Stick + Proline + MasterLock	2 lbs. + 5.7 fl. oz. + 6.4 fl. oz.	E							
	Manzate Pro-Stick + Badge SC + MasterLock	2 lbs. + 2 pt. + 6.4 fl. oz.	F							
5	Inspire XT + Koverall	7 fl. oz. + 2 lbs.	A	4.6	184	\$145	3609	19.6	14.2	90.2
	Koverall	2 lbs.	B, E							
	Agri-Tin + Topsin	8 fl. oz. + 20 fl. oz.	C							
	Minerva + Koverall	13 fl. oz. + 2 lbs.	D							
	Koverall	2 lbs.	E							
	Priaxor + Agri-Tin	8 fl. oz. + 8 fl. oz.	F							
4	Inspire XT + Typhoon + Squall	7 fl. oz. + 16 fl. oz. + 8 fl. oz.	A	5.6	179	\$78	3098	17.4	13.5	91.4
	Typhoon + Squall	16 fl. oz. + 8 fl. oz.	B, E							
	Agri-Tin + Topsin	8 fl. oz. + 20 fl. oz.	C							
	Minerva + Typhoon + Squall	13 fl. oz. + 16 fl. oz. + 8 fl. oz.	D							
	Typhoon + Squall	16 fl. oz. + 8 fl. oz.	E							
	Priaxor + Agri-Tin	8 fl. oz. + 8 fl. oz.	F							
3	Typhoon + Squall	16 fl. oz. + 8 fl. oz.	A - F	6.1	177	\$56	2366	13.3	13.1	92.3
1	Untreated Check			6.6	179	\$59	2070	11.6	13.2	92.3
Average				5.3	180	\$91	3133	17.5	13.6	91.3
LSD 5%				0.6	19.0	144.8	657.3	3.6	0.7	3.4
CV%				7.3	7.0	105.1	13.9	13.6	3.2	2.5

Application Dates for all treatments: A - 7/21, B - 8/4, C - 8/18, D - 9/3, E - 9/15, F - 9/30

Cercospora Rating (0-9 scale): 0 = no spots, 1 = very few spots, 5 = up to 25% injury and 9 = leaves completely dead

Comments: Study was designed to test Rovensa biologicals for Cercospora leafspot efficacy. Heavy Cercospora and Alternaria pressure was present.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Cercospora Leafspot Screening Nursery

The Cercospora leafspot screening nursery in 2025 was a randomized complete-block design with four replications in 15-foot-long, two-row plots (20-inch row spacing), at the Saginaw Valley Research and Education Center near Frankenmuth, MI. Seed was planted April 30 with Quadris applied at planting for seedling Rhizoctonia control. The seed was overplanted, and the field was thinned by hand with the generous help of Michigan Sugar Company. Weed management included one application of ethofumesate and one application each of glyphosate and acetochlor, followed by hand weeding for the remainder of the season. Excalia was applied on June 2 to help manage Rhizoctonia root and crown rot. Inoculation with a liquid spore suspension was applied July 1 at approximately 10^3 spores/ml, approximately 10 ml/plant. Spores were obtained from symptomatic leaves collected from the 2024 nursery. In the previous three years, no leaves were collected from CR+ beets to reduce risk of selecting for resistance-breaking strains. The day after inoculation, beets were irrigated lightly to enhance leaf wetness for infection. No further irrigation was done due to the irrigator being damaged, but disease progressed without additional irrigation.

For the last five years, table beets have been included in the nursery. In all five years, the first Cercospora leafspots were observed on one of the table beet varieties. In 2025, spots were observed on the table beet June 26. The first spots were confirmed in the field on sugarbeet a week later. Spots have consistently been observed seven to 10 days earlier on the table beet varieties than on susceptible sugarbeet. This could be useful as an early warning system for Cercospora leafspot. Note that the table beet was planted at the same time as the sugarbeet.

Beets were rated starting July 30 with weekly ratings until August 20, when regrowth outpaced new disease development on more than five entries. Each plot was given a plot rating using a scale of 0 (no damage) to 10 (complete defoliation). The disease was severe, with ratings starting about a week later than in 2024 (started July 23) but was earlier than in 2023 (first rating in 2023 was August 2 with final rating September 6).

The highly resistant check was a CR+ variety. As in 2024, this material did not show significant differences observed in the years before 2024. The first spots observed on sugarbeet were on a CR+ variety in 2025 and the disease severity was not significantly different from the non-CR+ resistant check at the later rating dates.

In addition to rating for Cercospora leafspot, in 2025 two Alternaria leafspots ratings were added. These were an early rating (at the time of the first Cercospora rating) and a late rating (September 18). No inoculation was done for Alternaria leafspot.

Average Cercospora ratings across the nursery in 2025 ranged from a low of 4.3 to a high of 6.8 among the commercial sugarbeet varieties at the final rating date (8/20). Results for the check varieties are shown in Table 2. In comparison, the average for the highly resistant variety on September 8 in 2023 was 3.9 and in 2024, on August 20, it was 5.7.

TABLE 2

Response of sugarbeet check varieties to Cercospora leafspot in 2025. Disease severity was rated on a 0 to 10 scale for entire plots where 0 was no visible spots and 10 was complete defoliation. Each value is an average of 15 replicate plot ratings across the nursery \pm standard deviation.

ENTRY	7/30	8/6	8/14	8/20
Susceptible	2.6 \pm 0.51	3.3 \pm 0.50	5.3 \pm 0.83	5.9 \pm 0.61
Resistant	2.2 \pm 0.75	3.2 \pm 0.44	4.5 \pm 0.51	5.2 \pm 0.47
Highly resistant	1.4 \pm 0.51	2.5 \pm 0.52	4.1 \pm 0.52	4.8 \pm 0.41

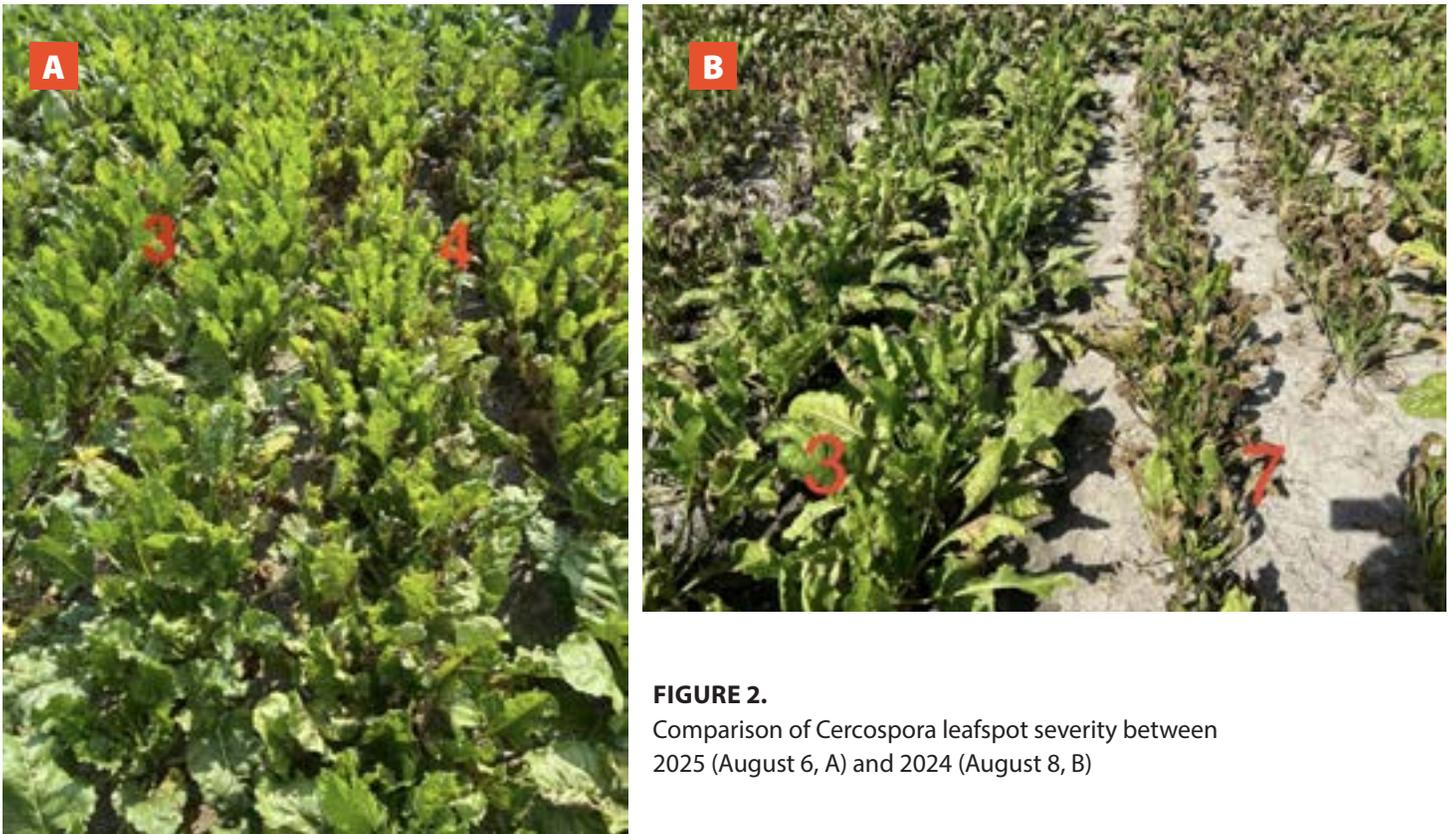


FIGURE 2.
Comparison of Cercospora leafspot severity between 2025 (August 6, A) and 2024 (August 8, B)

Alternaria ratings were fairly low, with only one variety in the field having an average rating significantly higher than 3.0. A rating of three is when lesions are coalescing, but no whole leaves are dead. A higher rating indicated loss of leaves.

TABLE 3

Examples of some average Alternaria leafspot ratings for sugarbeet varieties in the 2025 leafspot nursery. An early (7/30) and a late (9/18) were taken for each plot. The entire plot was rated using a 0 to 5 scale where 0 was no visible spots and 5 was 50% or more defoliation. Ratings for some varieties could not be taken on 9/18 due to loss of leaf tissue from Cercospora leafspot.

ENTRY	EARLY RATING (7/30)	Late rating (9/18)
CERCOSPORA HIGHLY RESISTANT	1.6 ± 0.51	3.0 ± 0.65
CERCOSPORA RESISTANT	1.6 ± 0.50	2.6 ± 0.50
CERCOSPORA SUSCEPTIBLE	1.5 ± 0.50	2.8 ± 0.47
COMMERCIAL ENTRY 1	1.5 ± 0.57	3.0 ± 0.82
COMMERCIAL ENTRY 2	1.3 ± 0.50	2.3 ± 0.50
COMMERCIAL ENTRY 3	1.0 ± >0.01	3.0 ± >0.01
COMMERCIAL ENTRY 4	2.0 ± >0.01	3.8 ± 0.50

Thank you to American Crystal, Betaseed, and United Beet Seed for providing check varieties.

Investigation of Cover Crops for Cercospora Leafspot Control in Sugarbeets, 2024-25

(Page 1 of 2)

Alexandra P. Hernandez¹, Emily Jordyn Weedon¹, Chris Bloomingdale¹, Linda Hanson^{1,2} and Jaime F. Willbur¹;
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Investigating the interactions between various cover crops and *C. beticola* could inform the potential use of these practices in CLS management. This study aims to determine the impact of common cover crops on *C. beticola* growth and CLS on sugarbeet in Michigan. This research will provide valuable insights for sustainable management strategies for CLS on sugarbeet.

METHODS:

In 2021-22, 2023-24, and 2024-25, fall-planted cover crop treatments were tested in field trials at the Saginaw Valley Research and Extension Center (SVREC). Treatments were replicated four times in 10 ft. by 60 ft. (3 m by 18 m) plots using a randomized complete block design with 10 ft. wheat buffers. Cover crop treatments, including rye, radish, and a combination of oat and clover, were planted after sugarbeet harvest with the aim to decrease *C. beticola* inoculum survival. The seeding rates for Wheeler rye (Moore Seed Farm, Elsie, MI), Defender oilseed radish (P. H. PETERSEN, Lundsgaard, Schleswig-Holstein, Germany), common oats (Johnny's Selected Seeds, Winslow, ME), and Crimson clover (Johnny's Selected Seeds, Winslow, ME) were 100, 35, 8, and 9 pounds per acre, respectively. In 2024, cover crops were planted Oct. 3. In the spring of 2025, highly CLS-susceptible sentinel beets were placed bi-weekly into the plots to measure CLS pressure from May to July. One week of data was collected before the termination of the cover crops, and subsequent sampling took place after chemical termination using Roundup (Bayer, Leverkusen, Germany). While results are not discussed here, fall and spring biomass, stand counts, and soil sample analyses were obtained from cover crop treatments in both the 2023-24 and 2024-25 studies. In 2025, susceptible sugarbeet variety HIL-2332NT was planted after cover crop termination, and wheat buffers were left standing for the duration of the season. CLS severity ratings (0-10) were collected from ten mid-canopy leaves of ten different plants located in the center two rows of each plot on Aug. 6, Aug. 26, and Sept. 5. A CLS severity index (DX, %) was calculated by multiplying the incidence (%) by the average severity of symptomatic leaves (%) divided by 10. Final in-field area under the disease progress curve (AUDPC) was calculated across these dates.

RESULTS:

In 2021-22 no significant differences in leaf degradation, *C. beticola* sporulation or viability, sentinel beet lesions, yield, percent sugar, RWSH, and RWS were observed for the Wheeler rye (or factory lime) treatments compared to the non-treated control ($P > 0.05$). However, the Wheeler rye cover crop significantly reduced AUDPC the following season compared to the non-treated control ($P < 0.0001$; data not shown). While some numerical trends were evident, no significant difference between the CLS lesions on sentinel beets was observed in the 2023-24 (data not shown) or the 2024-25 studies ($P > 0.05$, Figure 1).

However, CLS severities ($P < 0.01$) and AUDPC ($P < 0.001$), measured from HIL-2332NT sugarbeets planted after cover crop termination, were significantly reduced following fall-planted rye (Figure 2). Of note, the oats and clover treatment resulted in significantly greater in-field AUDPC than the non-treated control. These results support our previous laboratory observations and field experiments indicating fall-planted rye cover crops have potential to suppress CLS inoculum significantly reducing CLS severities in sugarbeet planted the following year. Further investigation of these and other cover crop options may be of interest in future studies.

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Investigation of Cover Crops for Cercospora Leafspot Control in Sugarbeets, 2024-25

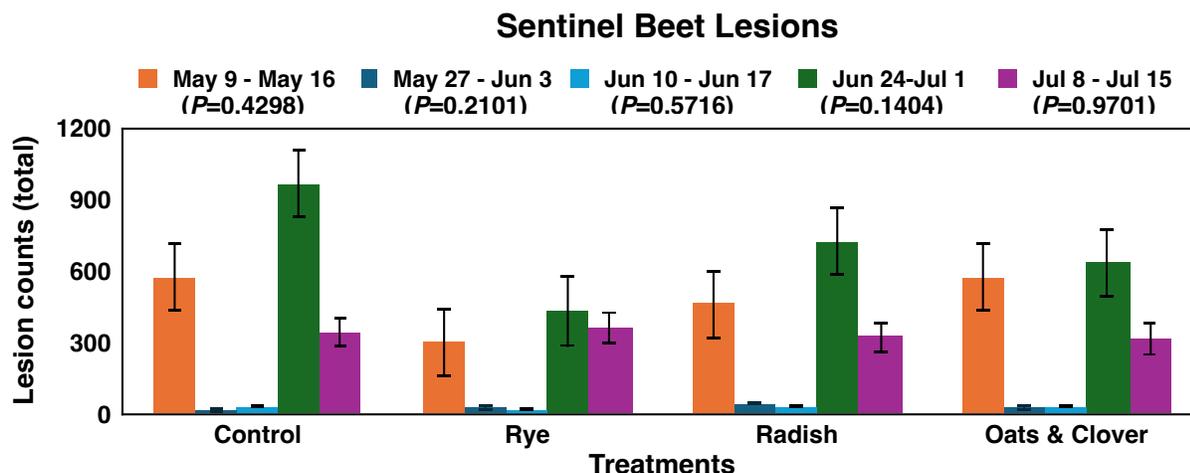


FIGURE 1. From 2024-25 field studies, average CLS lesion counts on highly susceptible sentinel beets (F1042) exposed for one week in field plots then incubated in a humidity chamber for 3 days and monitored at ambient conditions for 3 weeks. Cover crop treatments represent Wheeler rye, Defender oilseed radish, and common oats mixed with Crimson clover compared to a non-treated control.

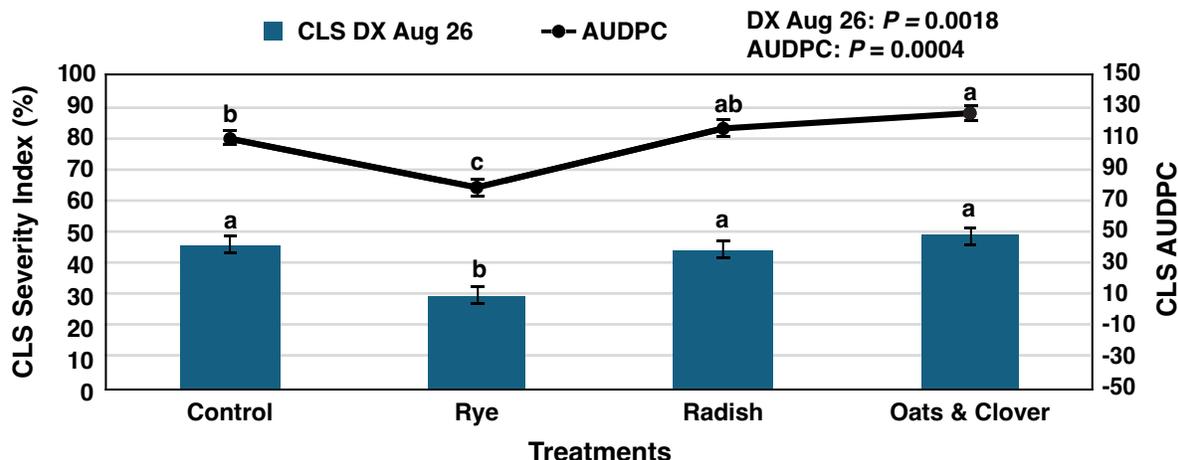


FIGURE 2. Cercospora leafspot severity index (%) and area under the disease progress curve (AUDPC) calculated from CLS severities (KWS, 0-10) collected from HIL-2332NT sugarbeets planted after cover crop termination. Cover crop treatments represent Wheeler rye, Defender oilseed radish, and common oats mixed with Crimson clover compared to a non-treated control. Significant differences indicated by different letters based on Fisher's Protected LSD ($\alpha=0.05$).

OVERALL SUMMARY:

- Based on laboratory assays, Crimson clover and Wheeler rye showed potentially useful inhibitory effects on *C. beticola* growth in culture (Hernandez et al., REACH 2025).
- In field studies, significant suppression of CLS development was also observed following a fall-planted rye cover crop (2021-22 and 2024-25).

ACKNOWLEDGEMENTS:

We thank the Michigan sugarbeet industry, Michigan Sugarbeet Advancement, and the Michigan Sugar Company for guidance and support of this work. Funding is provided by the Michigan Sugar Company, MSU Project GREEN, and USDA Sustainable Sugar Beet Research Initiative.

Validation of a Spore-based *Cercospora beticola* Risk Model for Improved Application Timing & Management of *Cercospora* Leafspot on Sugarbeets, 2025

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METHODS:

A preliminary model was created in 2021 to predict elevated *C. beticola* spore numbers using a threshold of 35 spores (Hernandez et al. 2025). The model was created using daily numbers of aerial spores collected in sugarbeet fields using Burkard spore traps in Michigan from 2019-2022 and in Ontario, Canada from 2019-2021 early in the season (May to July). Environmental factors were evaluated for their impact of spore number. Stepwise regression analyses were conducted to assess potential models.

Weather variables highly correlated to spore counts were identified and logistic modeling was used to predict elevated spore levels ($R^2 = 0.18$, $P < 0.0001$). The model predicted the chance that daily spore abundance was ≥ 35 (Spore35) based on number of hours with leaf wetness ($\geq 25\%$) from 11AM to 10AM (DurLW), average daily air temperature ($^{\circ}\text{C}$) from 11AM to 10AM (AvgTemp), and maximum daily wind speed (km/h) (MaxWS). The following equation was used to predict risk for elevated aerial spores:

$$\text{Spore35} = 0.1132 * \text{DurLW} + 0.1285 * \text{AvgTemp} + 0.0369 * \text{MaxWS} - 5.0814$$

A validation field study was conducted to test the ability of this model to assist in fungicide application timing and improved management (details below). Treatments were designed to: a) compare a model-based initiation timing to standard initiation corresponding with cumulative BEETcast daily disease severity values of 45 DSV for a CLS-susceptible variety, and b) to assess efficacy of model-based timings when varying the first fungicide product applied (Table 1). The treatments were arranged in a randomized complete block design with six treatments applied in 2025. Regardless of initiation date, a total of six applications were applied in each program at application intervals of 10-14 days.

Location: Frankenmuth, MI (SVREC)	Treatment Timings: See Table
Planting Dates: May 11, 2025 (Harvest: September 11)	Pesticides: See Table
Soil Type: Loam	O.M.: 5.0 pH: 7.5
Replicates: 4	Variety: HIL-2332NT

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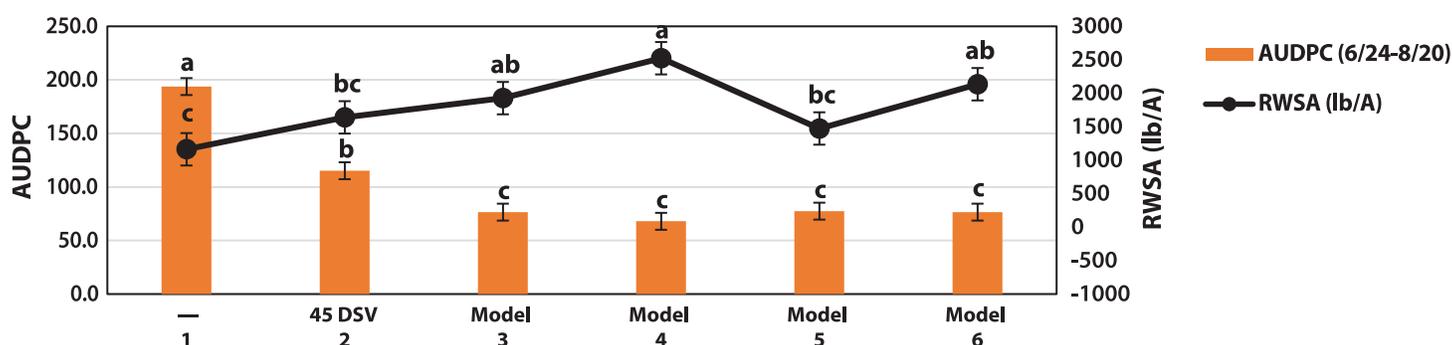
TABLE 1. Model validation treatment programs tested in 2025. All model programs were based on the Spore35 model initiation criteria. After initiation, all subsequent spray timings followed a 14-day interval.

Treatment	PROGRAM ^a	Initiation Criteria ^b	Actual Initiation Date	# Applications	Application Interval	1ST APPLICATION Active Ingredients (FRAC Groups)
1	Non-treated control	—	—	—	—	—
2	Dithane F45 (1.6 qt.) ABCDE + Proline 480 SC (5.7 fl. oz.) B + Super Tin (8 fl. oz.) C + Domark 230 ME (6.9 fl. oz.) D + Badge (2 pt.) F	45 DSV	7/1/25	6	14-day	mancozeb (M3)
3	Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	6/24/25	6	14-day	mancozeb (M3)
4	Inspire XT (7 fl. oz.) G + Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	6/24/25	6	14-day	difenoconazole (3) + propiconazole (3)
5	Lucento (5.5 fl. oz.) G + Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	6/24/25	6	14-day	flutriafol (3) + bixafen (7)
6	Veltyma (10 fl. oz.) G + Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	6/24/25	6	14-day	mefentrifluconazole (3) + pyraclostrobin (11)

^a Application letters code for the following dates: A=July 1, B=July 15, C=July 29, D=Aug. 14, E=Aug. 26, F=Sept. 9; for model-based dates: G=June 24, H=July 8, I=July 22, J=Aug. 5, K=Aug. 20, L=Sept. 2. MasterLock 0.25% V/V was added to all treatments.

^b Model programs (Trt 3-6) were initiated based on the Spore35 model threshold of 50% likelihood of 35 or more *C. beticola* spores paired with a BEETcast DSV value of 3 or 4 on the same day. The first elevated risk incidence occurred June 19, however, rain and soil conditions delayed initiation of model-based programs until June 24.

FIGURE 1. Area under the disease progress curve was calculated using disease severity scores (0-10 scale) collected June 24 to Aug. 20. Significant differences indicated by different letters based on Fisher's Protected LSD ($\alpha=0.05$).



SUMMARY: The treatments in this study resulted in significant differences in area under the disease progress curve (AUDPC, $P < 0.0001$), yield ($P < 0.01$), and pounds of recoverable white sugar per acre (RWSA, $P < 0.01$) (Table 2). While all treatments resulted in significantly reduced AUDPC compared to the non-treatment control, model-based treatments resulted in significantly lower AUDPC compared to the grower standard program initiated at a cumulative BEETcast threshold of 45 DSV (Figure 1).

Of the tested fungicides applied first in these programs, only model-based spray programs started with products containing mancozeb, difenoconazole, or mefentrifluconazole+pyraclostrobin resulted in significantly greater yield and RWSA than the non-treated control. These observations indicate that CLS control was improved using model-based initiation thresholds, however, improvement in sugar yield further depended on the fungicides used at initiation timings. Further model validation is in progress.

Validation of a Spore-based *Cercospora beticola* Risk Model, continued

(Page 3 of 3)

TABLE 2.

Model validation treatment programs tested in 2025. All model programs were based on the Spore35 model initiation criteria. After initiation, all subsequent spray timings followed a 14-day interval.

Treatment	PROGRAM ^a	Initiation Criteria ^b	Final CLS (0-10) (Aug. 20)	Final AUDPC (June 24–Aug. 20) ^{b,c}	Yield (T/A)	RWSA (lb./Acre)
1	Non-treated control	—	9.8	193.8 ^a	5.4 ^c	1,163 ^c
2	Dithane F45 (1.6 qt.) ABCDE + Proline 480 SC (5.7 fl. oz.) B + Super Tin (8 fl. oz.) C + Domark 230 ME (6.9 fl. oz.) D + Badge (2 pt.) F	45 DSV	6.4	115.2 ^b	7.7 ^{bc}	1,640 ^{bc}
3	Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	5.0	76.5 ^c	8.8 ^b	1,927 ^{ab}
4	Inspire XT (7 fl. oz.) G + Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	4.6	67.9 ^c	11.8 ^a	2,523 ^a
5	Lucento (5.5 fl. oz.) G + Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	5.4	77.4 ^c	7.2 ^{bc}	1,474 ^{bc}
6	Veltyma (10 fl. oz.) G + Dithane F45 (1.6 qt.) GHIJK + Proline 480 SC (5.7 fl. oz.) H + Super Tin (8 fl. oz.) I + Domark 230 ME (6.9 fl. oz.) J + Badge (2 pt.) L	Model 50%	5.0	76.5 ^c	9.7 ^{ab}	2,135 ^{ab}
	Standard Error		0.2	7.9	1.0	242
	P-Value		—	<0.0001	0.0032	0.0091
	Fisher's LSD		—	19.1	2.7	681

^a Application letters code for the following dates: A=July 1, B=July 15, C=July 29, D=Aug. 14, E=Aug. 26, F=Sept. 9; for model-based dates: G=June 24, H=July 8, I=July 22, J=Aug. 5, K=Aug. 20, L=Sept. 2. MasterLock 0.25% V/V was added to all treatments.

^b Area under the disease progress curve based on disease severities collected Jun 24, Jul 29, Aug 13, and Aug 20. Disease severity based on a 0-10 scale: 1=0.1% (1-5 spots/leaf), 2=0.35% (6-12 spots/leaf), 3=0.75% (13-25 spots/leaf), 4=1.5% (26-50 spots/leaf), 5=2.5% (51-75 spots/leaf), 6=3%, 7=6%, 8=12% 9=25%, 10=50%.

^c Column values followed by the same letter not significantly different based on Fisher's Protected LSD ($\alpha=0.05$).

ACKNOWLEDGEMENTS:

Efforts to develop and validate the tested spore-based model were published in: Hernandez, A. P., Bloomingdale, C., Ruth, S., Cushnie, E., Trueman, C., Hanson, L. E., and Willbur, J. F. 2025. Early-season predictions of aerial spores to enhance infection model efficacy for *Cercospora* leafspot management in sugarbeet. *Plant Dis.* 109: 1865–1878. <https://doi.org/10.1094/PDIS-10-24-2153-RE>. This work is supported by the Michigan Sugar Company, USDA-ARS, Project GREEN, and the USDA National Institute of Food and Agriculture, Hatch project 1020281.

Evaluating Fungicide Resistance in Leafspot Pathogens of Michigan Sugarbeet, 2025-26

(Page 1 of 5)

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BACKGROUND:

Leafspot management in Michigan relies heavily on the application of fungicides to control diseases such as *Cercospora* leafspot (CLS) and *Alternaria* leafspot (ALS) throughout the season. Fungicides registered to manage these two diseases include benzimidazoles (FRAC Group 1), demethylase inhibitors (DMI or triazoles; FRAC Group 3), quinone outside inhibitors (Qol; FRAC Group 7) and organotin fungicides (FRAC Group 30). Reports of reduced sensitivity and decreased fungicide efficacy have been documented in Michigan populations of *Cercospora beticola* (Rosenzweig et al. 2015; Rosenzweig et al. 2020), and *Alternaria* spp. (Rosenzweig et al. 2017). The work done in the current study summarizes the fungicide sensitivities of recent and current isolates of *C. beticola* and *Alternaria* spp. impacting Michigan sugarbeets.

OBJECTIVE 1: CHARACTERIZE FUNGICIDE SENSITIVITY IN *C. BETICOLA* ISOLATES

Isolates were collected from symptomatic sugarbeet tissue sourced from fields across nine Michigan counties from 2021-2025. In vitro fungicide sensitivity testing was conducted on plates amended with fungicide using the gradient spiral dilution method (Förster et al. 2004) and spore suspensions from pure isolate cultures were streaked onto the plates. Using a standardized template, the effective concentration of fungicide to inhibit mycelial growth by 50% (EC₅₀) was calculated for seven active ingredients registered for leafspot management in Michigan including: difenoconazole, mefentrifluconazole, tetraconazole, prothioconazole, pyraclostrobin (with the addition of SHAM preceding 2024) triphenyltin hydroxide, and thiophanate-methyl. To further characterize *C. beticola* isolate responses, sensitivity thresholds were established in k-means clustering analyses using data from 2021-2022 isolates (Hernandez et al. 2025). Using silhouette and elbow plot visualizations to confirm cluster numbers, natural groupings within the responses were identified based on isolate responses. Isolates clustering in the most sensitive group established the baseline sensitivity for each active ingredient, with any responses greater than the baseline being identified as resistant.

RESULTS:

The distributions of EC₅₀ values for *C. beticola* were compared from samples tested across 2021 to 2025 (Figure 1). The calculated sensitivity thresholds for the *C. beticola* isolates were: 5.11 ug/ml for difenoconazole, 3.26 ug/ml for mefentrifluconazole, 9.65 ug/ml for prothioconazole, 6.91 ug/ml for tetraconazole, and 2.55 ug/ml for triphenyltin hydroxide (Table 1). Based on previous work conducted, sensitivity thresholds for pyraclostrobin (Bolton et al. 2012b; Secor et al. 2010) and thiophanate-methyl (Jones et al. 1987; Koenraadt et al. 1992) for *C. beticola* were 1 and 5 ug/ml, respectively. The number of clusters ranged from 4-7 for the DMI fungicides, and 10 for triphenyltin hydroxide (Table 1).

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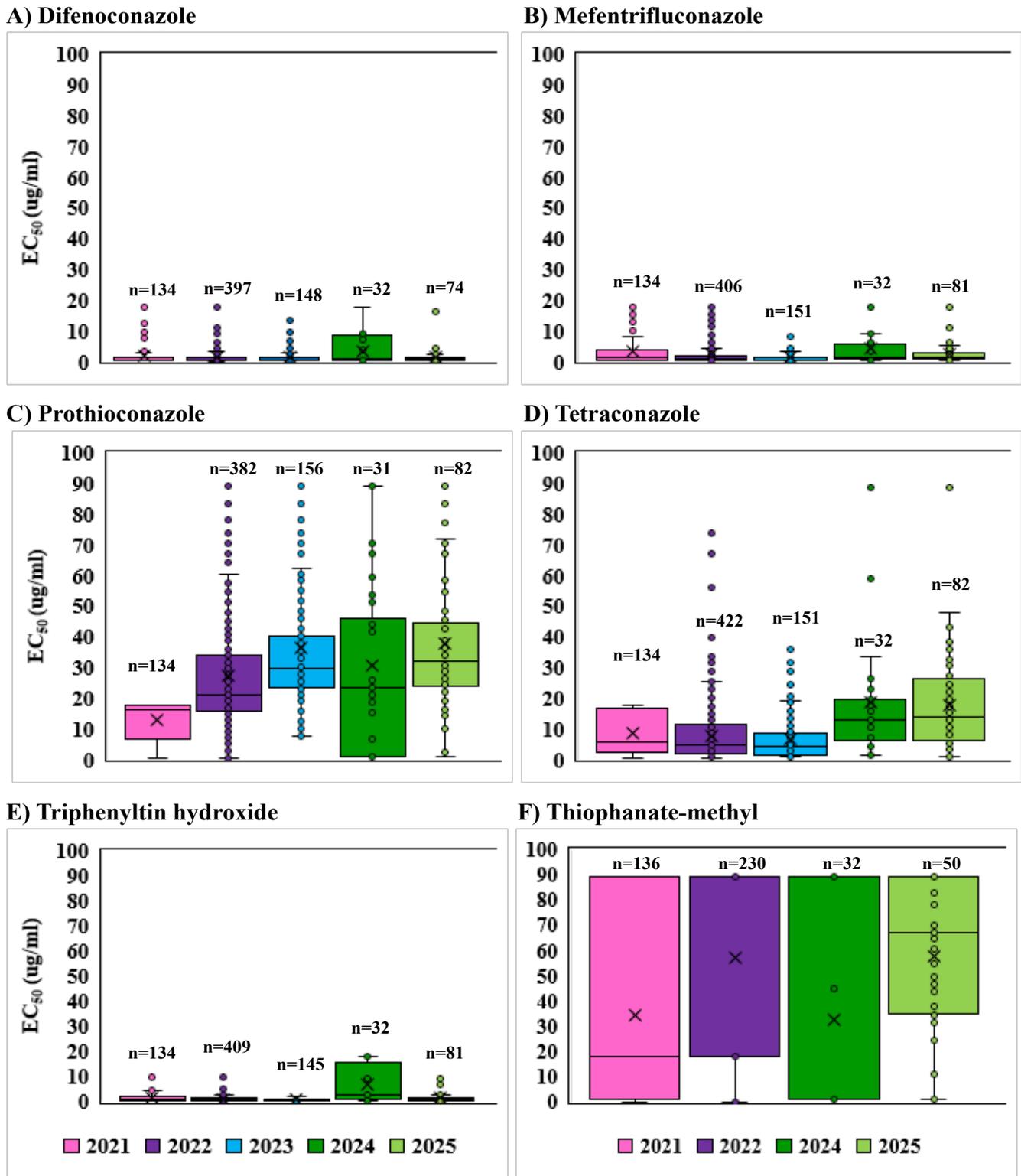


FIGURE 1: Boxplots illustrating the distribution of *C. beticola* fungicide sensitivities of **A)** difenoconazole (n=785), **B)** mefentrifluconazole (n=804), **C)** prothioconazole (n=785), **D)** tetraconazole (n=821), **E)** triphenyltin hydroxide (n=801), and **F)** thiophanate-methyl (n=466) from 2021 to 2025. The boxes represent the interquartile interval where 50% of the data points were found. The line that divides the box is the median and “X” represents the mean. The extended vertical lines show variability outside of the interquartile interval. The “n” number of isolates screened are shown.

TABLE 1:

Percentage of 2025 C. beticola isolates assigned least and most sensitive groups based on k-means cluster analysis conducted using isolates from 2021-2022.

ACTIVE INGREDIENT	# OF CLUSTERS	SENSITIVITY THRESHOLD (µg/ml)	2025	
			% IN MOST SENSITIVE CLUSTER	% IN LEAST SENSITIVE CLUSTER
Difenoconazole	4	5.11	99%	0%
Mefentrifluconazole	7	3.26	79%	2%
Prothioconazole	4	9.56	2%	95%
Tetraconazole	5	6.91	30%	66%
Pyraclostrobin (+SHAM) ^a	-	1.0 ^b	6%	94%
Thiophanate-methyl	-	5.0 ^c	24%	76%
Triphenyltin hydroxide	10	2.55	88%	5%

a Isolates were screened with pyraclostrobin without SHAM in 2021 and 2022.

b Pyraclostrobin threshold was based on prior research (Bolton et al. 2012b; Secor et al. 2010).

c Thiophanate-methyl threshold was based on prior research (Jones et al., 1987; Koenraadt et al., 1992).

OBJECTIVE 2: CHARACTERIZE FUNGICIDE SENSITIVITY IN ALTERNARIA SPP. ISOLATES

Across three years (2022, 2023, and 2025), *Alternaria* spp. isolates were collected from symptomatic sugarbeet tissue sourced from fields in six Michigan counties. The fungicide sensitivities to difenoconazole, mefentrifluconazole, prothioconazole, tetraconazole, thiophanate methyl, triphenyltin hydroxide, and pyraclostrobin (with SHAM) were determined using a similar gradient spiral dilution method as the one previously described in the first objective. Additionally, isolate responses were used in a k-mean clustering analysis to establish sensitivity thresholds as described previously for *C. beticola* isolates.

RESULTS:

The distributions of EC₅₀ values for *Alternaria* spp. were compared from samples tested across 2022, 2023, and 2025 (Figure 2). The calculated sensitivity threshold for the *Alternaria* spp. isolates were: 0.46 µg/ml for difenoconazole, 0.16 µg/ml for mefentrifluconazole, 7.33 µg/ml for prothioconazole, 18.19 µg/ml for tetraconazole, 70.18 µg/ml for thiophanate-methyl, 17.05 µg/ml for pyraclostrobin and SHAM, and 2.56 µg/ml for triphenyltin hydroxide (Table 2). The number of clusters for each active ingredient were: 4 clusters for mefentrifluconazole and tetraconazole, 5 clusters for difenoconazole and prothioconazole, and 9 clusters for triphenyltin hydroxide. Thiophanate-methyl and pyraclostrobin responses grouped into two and three clusters, respectively (Table 2).

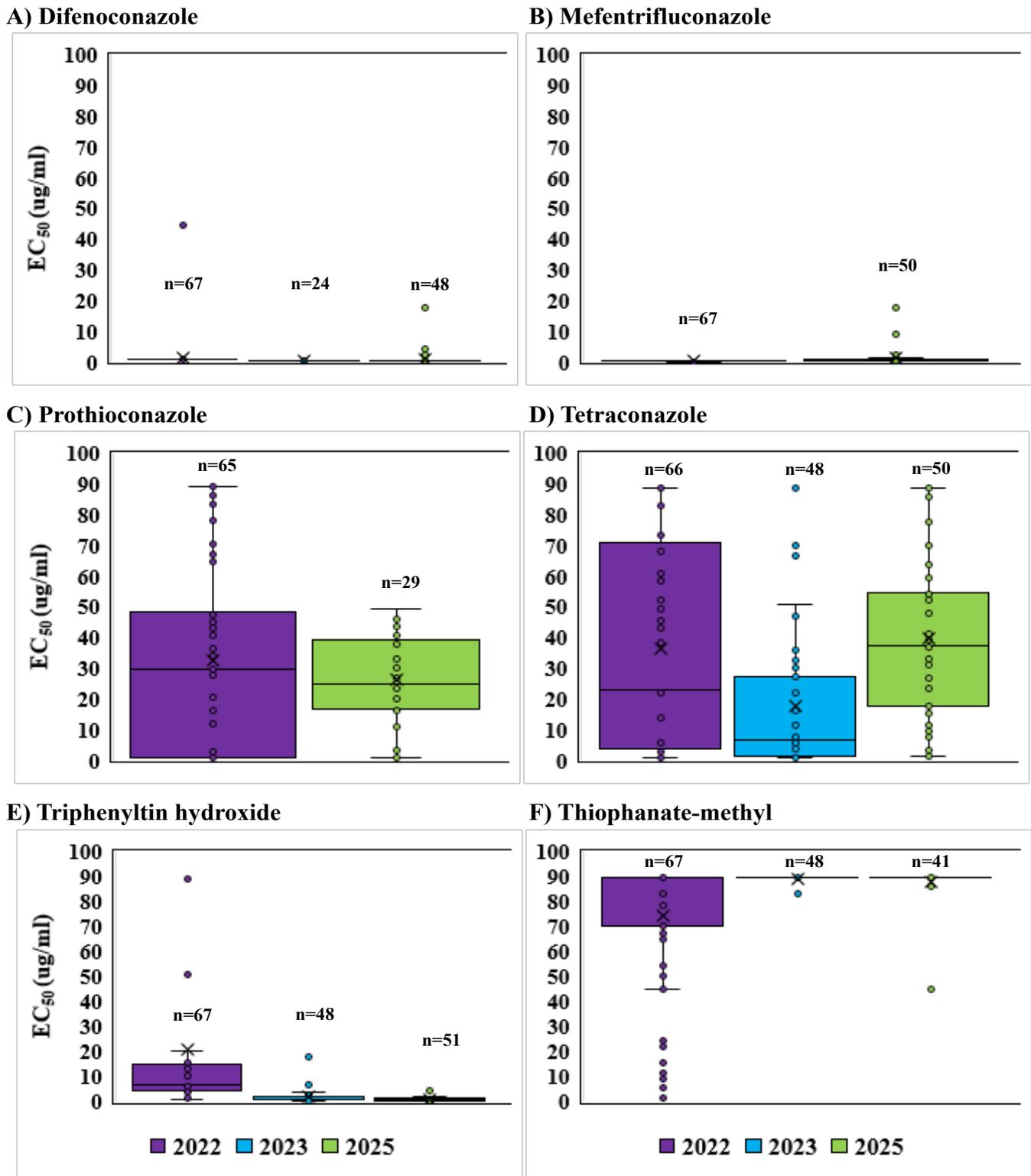


FIGURE 2: Boxplots illustrating the distribution of *Alternaria* spp. fungicide sensitivities of **A)** difenoconazole (n=139), **B)** mefentrifluconazole (n=117), **C)** prothioconazole (n=114), **D)** tetraconazole (n=164), **E)** triphenyltin hydroxide (n=166), and **F)** thiophanate-methyl (n=156) across 2022-2025. The boxes represent the interquartile interval where 50% of the data points were found. The line that divides the box is the median and "X" represents the mean. The extended vertical lines show variability outside of the interquartile interval. The "n" number of isolates screened are shown.

TABLE 2:

Percentages of 2022-2023 and 2025 *Alternaria* spp. isolates assigned into each least and most sensitive groups, based on k-means cluster analyses conducted with isolates from 2022-2023.

ACTIVE INGREDIENT	# OF CLUSTERS	SENSITIVITY THRESHOLD (µg/ml)	2022-2023		2025	
			% IN MOST SENSITIVE CLUSTER	% IN LEAST SENSITIVE CLUSTER	% IN MOST SENSITIVE CLUSTER	% IN LEAST SENSITIVE CLUSTER
Difenoconazole	5	0.46	23%	1%	79%	6%
Mefentrifluconazole	4	0.16	81%	6%	40%	24%
Prothioconazole	5	7.33	47%	22%	8%	8%
Tetraconazole	4	18.19	55%	21%	26%	16%
Pyraclostrobin (+SHAM)	3	17.05	39%	52%	6%	80%
Thiophanate-methyl	2	70.18	7%	93%	2%	98%
Triphenyltin hydroxide	9	2.56	36%	1%	96%	0%

OVERALL SUMMARY:

- Sensitivity thresholds for *C. beticola* and *Alternaria* spp. can differ between active ingredients. The use of k-means analysis could identify potential thresholds that could identify earlier signs of resistance development especially in the DMI fungicides.
- For the DMI fungicides, distributions for difenoconazole and mefentrifluconazole generally followed similar patterns; this was also observed for prothioconazole and tetraconazole.
- A majority (>80%) of *in vitro* screened sensitivities to difenoconazole were below the respective sensitivity thresholds for both pathogens, supporting continued use for leafspot management.
- The high prevalence of tin-sensitive *C. beticola* (88%) and *Alternaria* spp. (96%) isolates from 2025 supports continued use of organotin fungicides for leafspot management.
- The high prevalence of thiophanate-methyl resistance in *C. beticola* (76%) and *Alternaria* spp. (98%) isolates indicates this product may be ineffective in leafspot management programs.

FUTURE DIRECTIONS:

Fungicide sensitivity characterizations for *C. beticola* and *Alternaria* spp. are still ongoing for 2025 isolates. In the future, a panel of current and recent sugarbeet varieties will be used to characterize *C. beticola* isolates collected from the growing season of 2025 to investigate potential changes in morphological characteristics of lesions. Additionally, the inclusion of regional information will be analyzed to investigate potential geographical differences in fungicide sensitivities of both *Alternaria* spp. and *C. beticola* populations across the state.

ACKNOWLEDGEMENTS:

We thank the Michigan sugarbeet industry for access to field sites and thank Michigan Sugarbeet Advancement and the Michigan Sugar Company for collection of sample materials. This work is supported by the Michigan Sugar Company, Michigan State University Project GREEN, and USDA-ARS.

Cover Crops for Managing Sugarbeet Cyst Nematode in Michigan

Ali Yaghoubi and Marisol Quintanilla, Michigan State University, Department of Entomology

Cover crops can play a practical role in managing sugarbeet cyst nematode (SBCN; *Heterodera schachtii*) in Michigan when the right species and cultivars are chosen. In greenhouse and microplot evaluations conducted at Michigan State University, a suite of Brassicaceae and Poaceae cover crops showed important, cultivar-specific differences in their capacity to support SBCN reproduction and influence egg and juvenile (J2) densities in soil.

In tightly controlled greenhouse trials, several cultivars consistently supported no SBCN egg or J2 production, indicating non-host behavior under the conditions tested. Notably, oilseed radish ‘Concord’ and ‘Control’ and daikon radish ‘EcoTill’ showed zero eggs + J2 per 100 cm³. In contrast, oilseed radish ‘Nitro’ supported measurable reproductions in both experiments, making clear that susceptibility varies at the cultivar level even within the same species (Fig. 1). These greenhouse results demonstrate that simply choosing a brassica cover crop is not sufficient, cultivar selection matters.

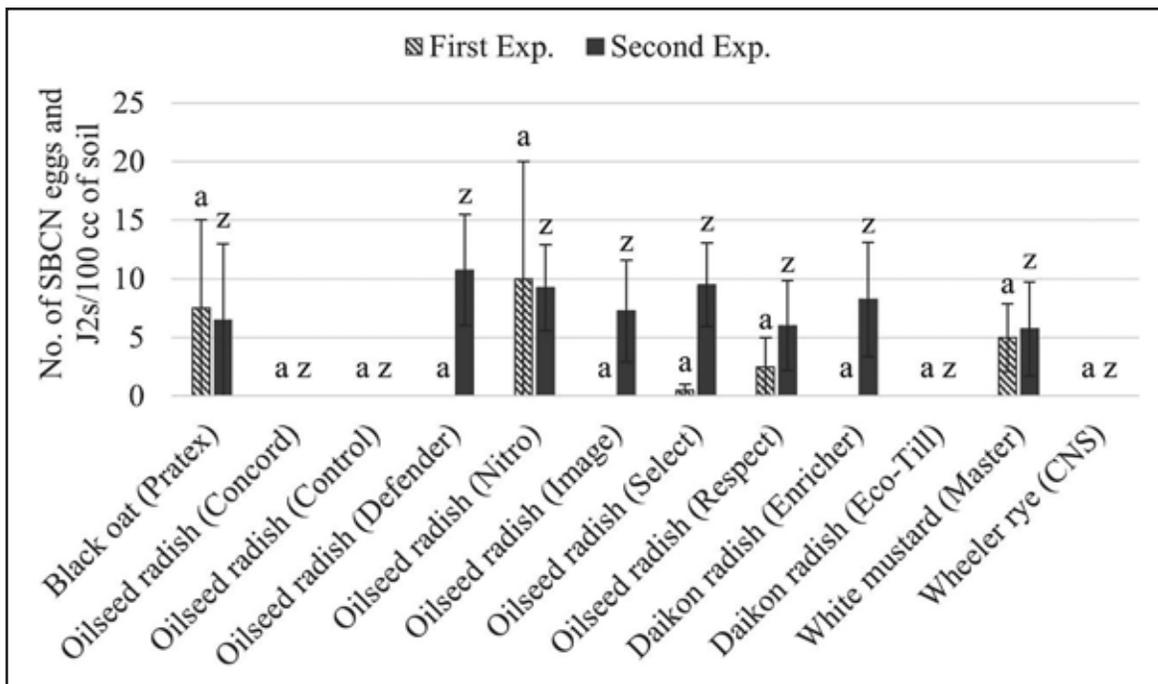


FIGURE 1. Mean (±SE) number of sugarbeet cyst nematode (SBCN) eggs and second-stage juveniles (J2) per 100 cc of soil 75 days after planting cover crops in greenhouse.

Field-relevant microplot experiments conducted in 2023 and 2024 complemented the greenhouse work by evaluating cover crop effects under more natural soil conditions. In the 2024 microplot trial, several cover crops reduced egg and J2 densities relative to a fallow control. White mustard ‘Master’ and daikon radish ‘EcoTill’ produced the largest reductions in eggs + J2 (approximately 67% and 65.8% reductions, respectively), while other treatments produced smaller but meaningful decreases. Some cultivars showed little to no benefit or even small increases in eggs + J2 compared with fallow (Fig. 2)

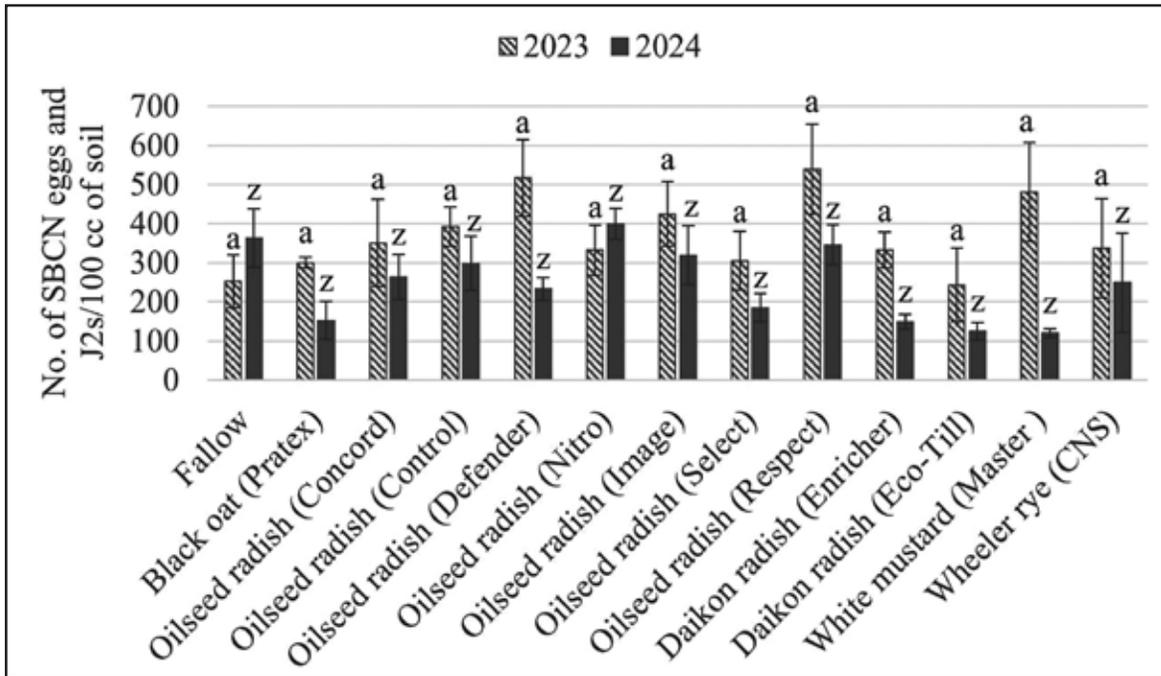


FIGURE 2. Mean (±SE) number of sugarbeet cyst nematode (SBCN) eggs and second-stage juveniles (J2) per 100 cc of soil 75 days after planting cover crops in microplots during the 2023 and 2024 fall seasons

Taken together, the greenhouse and microplot results indicate two useful patterns for Michigan growers: (1) certain cultivars behave as nonhosts and are unlikely to increase SBCN inoculum, and (2) some cover crops can reduce eggs and J2 in soil under field conditions. These mechanisms are not mutually exclusive; a cultivar that is a nonhost in greenhouse tests and that also promotes residue-driven suppression in the field (for example, through glucosinolate hydrolysis in brassicas) offers the most reliable advantage for SBCN management.

Practical implications are straightforward. When adopting cover crops in SBCN-infested fields, producers should prioritize cultivars with documented nonhost status or demonstrated suppressive effects in field trials. Daikon ‘EcoTill’ and some oilseed radish cultivars fit this profile in the Michigan trials and warrant consideration where SBCN pressure exists. Conversely, cultivars such as oilseed radish ‘Nitro’ that supported measurable reproduction in greenhouse trials should be avoided in heavily infested fields. Integration with other practices — use of resistant sugarbeet varieties and soil health improvements — will maximize long-term control and sustain yield.

RESEARCH SUPPORT

This work was supported by Michigan Sugar Company and USDA-NIFA.



Nitrogen Application Strategies Trial Gruehn - Pigeon, MI - 2025

Trial Quality: Good

Variety: C-G227

Planted: April 30

Harvested: October 6

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: Pre-plant was applied broadcast. 2X2 was applied with the planter. 6 and 12 lf applications were applied as a fluted coulter application or streamed on with a sprayer.

Soil Info: Loam

% OM: 2.9 **pH:** 7.1 **CEC:** 12.1

P: Very High **K:** Very High

Mn: High **B:** High

Added N: See Individual Treatments

Previous Crop: Corn

Rhizoc. Level: Low

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 13.96 inches

Beets/100 ft.: 127

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					0-10 22-Aug						
1	Untreated				6.8	253	\$789	4582	18.1	14.7	96.9
2	Nitrogen	160 lbs.	29-Apr	PPI	7.6	246	\$980	6079	24.7	14.3	96.7
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
3	Nitrogen	120 lbs.	29-Apr	PPI	7.5	303	\$1,676	7373	24.3	17.5	96.6
	Nitrogen*	40 lbs.	At Plant	2X2							
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
4	Nitrogen	60 lbs.	29-Apr	PPI	8.3	293	\$1,992	9176	31.3	16.9	96.6
	Nitrogen*	40 lbs.	At Plant	2X2							
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	60 lbs. + 2.64 fl.oz.	6 lf	Streamer							
5	Nitrogen*	40 lbs.	At Plant	2X2	8.0	278	\$1,521	7616	27.5	15.9	97.2
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	60 lbs. + 2.64 fl.oz.	6 lf	Streamer							
	Nitrogen + Anvol	60 lbs. + 2.64 fl.oz.	12 lf	Streamer							
6	Nitrogen*	40 lbs.	At Plant	2X2	7.9	301	\$1,868	8294	27.6	17.4	96.6
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer							
7	Nitrogen	60 lbs.	29-Apr	PPI	7.8	278	\$1,589	7920	28.5	16.1	96.7
	Nitrogen*	40 lbs.	At Plant	2X2							
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	60 lbs. + 2.64 fl.oz.	6 lf	Fluted Coulter							
8	Nitrogen*	40 lbs.	At Plant	2X2	8.3	289	\$1,725	8133	28.2	17.0	95.6
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Fluted Coulter							
9	Nitrogen*	40 lbs.	At Plant	2X2	8.3	261	\$1,289	7057	26.9	15.2	96.8
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	12 lf	Streamer							

*Treatment includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

**Treatment includes Sulfur (Thio-sul, 4 gal.)

6-leaf application date: 6/17, 12-leaf application date: 6/25

Vigor 0 to 10 ratings, 10 is the best

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Application Strategies Trial Gruehn - Pigeon, MI - 2025

(Page 2 of 2)

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					0-10 22-Aug						
10	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow	7.8	271	\$1,301	6730	24.8	15.6	97.0
	Nitrogen + Anvol**	160 lbs. + 6.57 fl.oz.	6 lf	Streamer							
11	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow	8.4	282	\$1,571	7630	27.0	16.7	95.3
	Nitrogen + Anvol**	160 lbs. + 6.57 fl.oz.	6 lf	Fluted Coulter							
12	Nitrogen*	40 lbs.	At Plant	2X2	7.5	278	\$1,373	6649	23.5	16.2	96.6
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
13	Nitrogen**	60 lbs.	29-Apr	PPI	7.9	275	\$1,460	7354	26.7	15.8	97.1
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	100 lbs. + 4.26 fl.oz.	6 lf	Streamer							
14	Nitrogen**	40 lbs.	29-Apr	PPI	7.5	274	\$1,296	6610	24.1	15.7	97.3
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	60 lbs. + 2.64 fl.oz.	6 lf	Streamer							
15	Nitrogen	80 lbs.	29-Apr	PPI	7.5	284	\$1,335	6380	22.5	16.3	96.8
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
16	Nitrogen	80 lbs.	29-Apr	PPI	8.0	282	\$1,629	7918	28.1	16.2	96.9
	Nitrogen*	40 lbs.	At Plant	2X2							
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
17	Nitrogen	80 lbs.	29-Apr	PPI	8.3	289	\$1,825	8563	29.6	17.0	95.7
	Nitrogen*	40 lbs.	At Plant	2X2							
	Azteroid FC 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
Average					7.8	279	\$1,483	7298	26.1	16.2	96.6
LSD 5%					0.6	33.1	535.9	1487.6	3.8	1.9	1.3
CV%					5.5	8.4	25.4	14.3	10.3	8.3	0.9

*Treatment includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

**Treatment includes Sulfur (Thio-sul, 4 gal.)

6-leaf application date: 6/17, 12-leaf application date: 6/25

Vigor 0 to 10 ratings, 10 is the best

Comments: This trial is designed to examine nitrogen application strategies. Nitrogen was applied as 28% UAN in most cases, unless noted differently above.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



N & K Fertility Trial Early Harvest Blumfield East - Richville, MI - 2025

Trial Quality: Fair
Variety: C-G233
Planted: May 30
Harvested: September 29
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches
Application: 2X2 with planter

Soil Info: Loam
% OM: 1.6 **pH:** 7.9 **CEC:** 14.8
P: High **K:** Medium
Mn: High **B:** Medium
Added N: See Individual Treatments
Previous Crop: Clover

Rhizoc. Level: Low
Cerc. Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 13.49 inches
Beets/100 ft.: 209

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP	
					0-10							
					21-Aug							
1	Untreated Check				6.5	218	\$333	2905	13.3	13.8	92.9	
2	Nitrogen*	40 lbs.	At Plant	2X2	6.5	227	\$478	3687	16.2	14.0	93.9	
3	Potassium	150 lbs.	May 30	PPI	6.9	244	\$525	3491	14.3	15.1	93.5	
	Nitrogen*	40 lbs.	At Plant	2X2								
4	Potassium	300 lbs.	May 30	PPI	7.5	249	\$828	5213	20.8	15.4	93.4	
	Nitrogen*	40 lbs.	At Plant	2X2								
5	Nitrogen*	40 lbs.	At Plant	2X2	7.3	230	\$599	4388	19.0	14.7	92.3	
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer								
6	Potassium	150 lbs.	May 30	PPI	7.4	234	\$623	4676	20.2	14.8	92.7	
	Nitrogen*	40 lbs.	At Plant	2X2								
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer								
7	Potassium	300 lbs.	May 30	PPI	8.0	226	\$598	5049	22.4	14.6	91.9	
	Nitrogen*	40 lbs.	At Plant	2X2								
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer								
8	Nitrogen*	40 lbs.	At Plant	2X2	7.3	223	\$531	4382	19.7	13.9	93.7	
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer								
9	Potassium	150 lbs.	May 30	PPI	7.6	230	\$698	5302	23.0	14.6	92.6	
	Nitrogen*	40 lbs.	At Plant	2X2								
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer								
10	Potassium	300 lbs.	May 30	PPI	7.5	236	\$794	5730	24.2	15.2	91.9	
	Nitrogen*	40 lbs.	At Plant	2X2								
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer								
11	Nitrogen*	40 lbs.	At Plant	2X2	7.6	211	\$431	4553	21.7	13.5	92.4	
	Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer								
12	Potassium	150 lbs.	May 30	PPI	7.9	226	\$579	4847	21.6	14.3	92.9	
	Nitrogen*	40 lbs.	At Plant	2X2								
	Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer								
13	Potassium	300 lbs.	May 30	PPI	7.6	225	\$575	4898	21.8	14.4	92.5	
	Nitrogen*	40 lbs.	At Plant	2X2								
	Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer								
Average					7.3	229	\$584	4548	19.9	14.5	92.8	
LSD 5%					1.2	16.2	223.2	1020.3	4.2	0.8	1.5	
CV%					11.5	4.9	26.7	15.7	14.9	4.0	1.1	

All treatments included Azteroid FC 3.3 @ 6.3 fl.oz.

*Treatment includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

Conversions: 150 lbs. of actual potassium (250 lbs. Potash), 300 lbs. potassium (500 lbs. Potash), 40 lbs. of actual nitrogen (13 gal./A UAN 28%), 60 lbs. N (20 gal./A UAN 28%), 120 lbs. N (40 gal./A UAN 28%), 160 lbs. N (53 gal./A UAN 28%).

6-leaf application date: 6/17

Vigor 0 to 10 ratings, 10 is the best

Comments: This trial compared nitrogen and potassium rates and the impact on yield and sugar when harvested late in the season.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



N & K Fertility Trial Late Harvest

Blumfield East - Richville, MI - 2025

Trial Quality: Good

Variety: C-G233

Planted: May 30

Harvested: October 16

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: 2X2 with planter

Soil Info: Loam

% OM: 1.6 **pH:** 7.9 **CEC:** 14.8

P: High **K:** Medium

Mn: High **B:** Medium

Added N: See Individual Treatments

Previous Crop: Clover

Rhizoc. Level: Low

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 15.41 inches

Beets/100 ft.: 231

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					0-10						
					21-Aug						
1	Untreated				7.3	217	\$496	4505	20.8	14.8	95.2
2	Nitrogen*	40 lbs.		2X2	6.8	209	\$479	5042	24.1	14.6	94.3
3	Potassium	150 lbs.	May 30	2X2	7.6	227	\$685	5547	24.4	15.4	95.3
	Nitrogen*	40 lbs.	6 lf	Streamer							
4	Potassium	300 lbs.	May 30	PPI	7.5	219	\$558	5233	23.8	15.2	94.5
	Nitrogen*	40 lbs.	At Plant	2X2							
5	Nitrogen*	40 lbs.	At Plant	2X2	7.5	205	\$436	5200	25.5	14.5	93.7
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
6	Potassium	150 lbs.	May 30	PPI	7.8	220	\$647	5843	26.6	15.2	94.4
	Nitrogen*	40 lbs.	At Plant	2X2							
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
7	Potassium	300 lbs.	May 30	PPI	8.0	208	\$451	5385	26.0	14.5	94.3
	Nitrogen*	40 lbs.	At Plant	2X2							
	Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
8	Nitrogen*	40 lbs.	At Plant	2X2	8.0	205	\$450	5445	26.7	14.7	92.8
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer							
9	Potassium	150 lbs.	May 30	PPI	8.1	223	\$723	6290	28.3	15.6	94.1
	Nitrogen*	40 lbs.	At Plant	2X2							
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer							
10	Potassium	300 lbs.	May 30	PPI	7.9	230	\$834	6564	28.4	15.9	94.4
	Nitrogen*	40 lbs.	At Plant	2X2							
	Nitrogen + Anvol	120 lbs. + 5.12 fl.oz.	6 lf	Streamer							
11	Nitrogen*	40 lbs.	At Plant	2X2	7.8	201	\$380	5008	25.0	14.2	93.9
	Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer							
12	Potassium	150 lbs.	May 30	PPI	8.3	211	\$534	5753	27.3	14.9	93.6
	Nitrogen*	40 lbs.	At Plant	2X2							
	Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer							
13	Potassium	300 lbs.	May 30	PPI	7.6	220	\$650	6041	27.5	15.5	93.6
	Nitrogen*	40 lbs.	At Plant	2X2							
	Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer							
Average					7.7	215	\$563	5527	25.7	15.0	94.2
LSD 5%					0.8	10.3	163.2	1114.3	5.5	0.7	0.8
CV%					7.4	3.4	20.2	14.1	14.8	3.2	0.6

All treatments included Azteroid FC 3.3 @ 6.3 fl.oz.

*Treatment includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

Conversions: 150 lbs. of actual potassium (250 lbs. Potash), 300 lbs. potassium (500 lbs. Potash), 40 lbs. of actual nitrogen (13 gal./A UAN 28%), 60 lbs. N (20 gal./A UAN 28%), 120 lbs. N (40 gal./A UAN 28%), 160 lbs. N (53 gal./A UAN 28%).

6-leaf application date: 6/17

Vigor 0 to 10 ratings, 10 is the best

Comments: This trial compared nitrogen and potassium rates and the impact on yield and sugar when harvested late in the season.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Rates - PPI Gruehn - Pigeon, MI - 2025

Trial Quality: Good
Variety: C-G233, C-G229
Planted: April 30
Harvested: October 6
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches

Soil Info: Loam
% OM: 2.9 **pH:** 7.1 **CEC:** 12.1
P: Very High **K:** Very High
Mn: High **B:** High
Added N: See Individual Treatments
Previous Crop: Corn

Rhizoc. Level: Low
Cerc. Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 13.96 inches
Beets/100 ft.: 128

Application: Pre-plant was applied broadcast. 2X2 was applied with the planter. 6-leaf applications were applied streamed on with a sprayer.

No.	Variety	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug						
1	C-G229	Untreated				7.5	277	\$1,172	5829	21.1	15.5	98.5
2	C-G233	Untreated				7.3	269	\$1,101	5612	20.6	15.4	97.5
3	C-G229	Nitrogen	40 lbs.	29-Apr	PPI	8.0	339	\$2,143	8262	24.4	19.2	97.2
4	C-G233	Nitrogen	40 lbs.	29-Apr	PPI	8.0	334	\$2,232	8751	26.2	18.8	97.7
5	C-G229	Nitrogen	40 lbs.	29-Apr	PPI	7.8	305	\$1,927	8372	27.4	17.7	96.3
		Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
6	C-G233	Nitrogen	40 lbs.	29-Apr	PPI	7.9	314	\$2,035	8515	27.0	17.8	97.4
		Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
7	C-G229	Nitrogen	40 lbs.	29-Apr	PPI	7.6	289	\$1,534	7179	24.8	16.9	96.0
		Nitrogen + Anvol	80 lbs.+ 3.36 fl.oz.	6 lf	Streamer							
8	C-G233	Nitrogen	40 lbs.	29-Apr	PPI	8.0	287	\$1,642	7763	27.1	16.4	97.3
		Nitrogen + Anvol	80 lbs.+ 3.36 fl.oz.	6 lf	Streamer							
9	C-G229	Nitrogen	40 lbs.	29-Apr	PPI	7.8	293	\$1,719	7893	26.9	16.9	96.8
		Nitrogen + Anvol	120 lbs.+ 5.12 fl.oz.	6 lf	Streamer							
10	C-G233	Nitrogen	40 lbs.	29-Apr	PPI	8.0	281	\$1,586	7758	27.7	16.2	96.8
		Nitrogen + Anvol	120 lbs.+ 5.12 fl.oz.	6 lf	Streamer							
11	C-G229	Nitrogen	40 lbs.	29-Apr	PPI	8.3	291	\$1,800	8327	28.6	17.2	95.5
		Nitrogen + Anvol	160 lbs.+ 6.57 fl.oz.	6 lf	Streamer							

All Treatments included Azteroid FC 3.3 @ 6.3 fl.oz.

6-leaf application date: June 17

Vigor 0 to 10 ratings, 10 is the best

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Rates - PPI Gruehn - Pigeon, MI - 2025

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No.	Variety	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug						
12	C-G233	Nitrogen	40 lbs.	29-Apr	PPI	8.4	302	\$2,006	8901	29.6	17.4	96.5
		Nitrogen + Anvol	160 lbs. + 6.57 fl.oz.	6 lf	Streamer							
13	C-G229	Nitrogen	40 lbs.	29-Apr	PPI	8.4	276	\$1,483	7442	26.9	17.1	93.2
		Nitrogen + Anvol	200 lbs. + 8.52 fl.oz.	6 lf	Streamer							
14	C-G233	Nitrogen	40 lbs.	29-Apr	PPI	8.4	278	\$1,578	7825	28.1	16.1	96.6
		Nitrogen + Anvol	200 lbs. + 8.52 fl.oz.	6 lf	Streamer							
Average						7.9	295	\$1,711	7745	26.2	17.0	96.6
LSD 5%						0.5	26.6	411.4	1122.2	3.1	1.5	1.4
CV %						4.3	6.3	16.8	10.13	8.2	6.0	1.0

All Treatments included Azteroid FC 3.3 @ 6.3 fl.oz.

6-leaf application date: June 17

Vigor 0 to 10 ratings, 10 is the best

Comments: This trial is designed to examine nitrogen application strategies and 2 varieties. C-G229 is a high sugar variety. C-G233 is a higher tonnage variety.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Rates Early Harvest Gruehn - Pigeon, MI - 2025

(Page 1 of 2)

Trial Quality: Good
Variety: C-G233, C-G229
Planted: April 30
Harvested: October 6
Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches

Soil Info: Loam
% OM: 2.9 **pH:** 7.1 **CEC:** 12.1
P: Very High **K:** Very High
Mn: High **B:** High
Added N: See Individual Treatments
Previous Crop: Corn

Rhizoc. Level: Low
Cerc. Control: Good
Problems: None
Seeding Rate: 4.1 inch
Rainfall: 13.96 inches
Beets/100 ft.: 123

Application: Pre-plant was applied broadcast. 2X2 was applied with the planter. 6-leaf applications were applied streamed on with a sprayer.

No.	Variety	Treatment*	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug						
1	C-G229	Untreated Check				6.6	278	\$950	4656	16.66	15.8	97.7
2	C-G233	Untreated Check				6.8	252	\$630	3715	14.7	14.3	98.3
3	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	8.0	292	\$1,413	6490	22.2	16.8	96.7
4	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	7.5	267	\$1,291	6769	25.2	15.3	97.6
5	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	7.8	279	\$1,297	6364	22.7	16.0	97.2
		Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
6	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	7.9	287	\$1,550	7220	24.9	16.3	97.5
		Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streamer							
7	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	7.9	300	\$1,682	7471	24.8	17.3	96.6
		Nitrogen + Anvol	80 lbs. + 3.36 fl.oz.	6 lf	Streamer							
8	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	7.6	275	\$1,328	6686	24.2	15.8	97.3
		Nitrogen + Anvol	80 lbs. + 3.36 fl.oz.	6 lf	Streamer							
9	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	7.6	304	\$1,821	7997	26.3	17.5	96.7
		Nitrogen + Anvol	120 lbs. + 5.04 fl.oz.	6 lf	Streamer							
10	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	7.9	260	\$1,220	6793	26.1	16.3	92.8
		Nitrogen + Anvol	120 lbs. + 5.04 fl.oz.	6 lf	Streamer							
11	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	8.1	288	\$1,574	7443	25.9	16.9	95.7
		Nitrogen + Anvol	160 lbs. + 6.72 fl.oz.	6 lf	Streamer							
12	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	8.1	283	\$1,655	8030	28.4	16.9	94.9
		Nitrogen + Anvol	160 lbs. + 6.72 fl.oz.	6 lf	Streamer							

* Treatments include Azteroid FC 3.3 @ 6.3 fl.oz. in-furrow

** Nitrogen includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

6-leaf application date: June 17

Vigor 0 to 10 ratings, 10 is the best

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Rates Early Harvest Gruehn - Pigeon, MI - 2025

(Page 2 of 2)

No.	Variety	Treatment*	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug						
13	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	8.4	304	\$1,913	8413	27.7	18.0	95.3
		Nitrogen + Anvol	200 lbs. + 8.4 fl.oz.	6 lf	Streamer							
14	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	8.4	274	\$1,573	8029	29.3	16.4	94.9
		Nitrogen + Anvol	200 lbs. + 8.4 fl.oz.	6 lf	Streamer							

Average	7.8	282	\$1,421	6863	24.2	16.4	96.4
LSD 5%	0.5	28.3	411.6	1020.5	2.3	1.5	1.6
CV	4.3	7.0	20.3	10.4	6.6	6.4	1.2

* Treatments include Azteroid FC 3.3 @ 6.3 fl.oz. in-furrow

** Nitrogen includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

6-leaf application date: June 17

Vigor 0 to 10 ratings, 10 is the best

Comments: This trial is designed to examine nitrogen application strategies and 2 varieties. C-G229 is a high sugar variety. C-G333 is a higher tonnage variety.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Rates Late Harvest Gruehn - Pigeon, MI - 2025

Trial Quality: Good **Soil Info:** Loam **Rhizoc. Level:** Low
Variety: C-G233, C-G229 **% OM:** 2.9 **pH:** 7.1 **CEC:** 12.1 **Cerc. Control:** Good
Planted: April 30 **P:** Very High **K:** Very High **Problems:** None
Harvested: October 27 **Mn:** High **B:** High **Seeding Rate:** 4.1 inch
Plots: 6 rows X 38 feet, 4 reps **Added N:** See Individual Treatments **Rainfall:** 17.56 inches
Row Spacing: 22 inches **Previous Crop:** Corn **Beets/100 ft.:** 121
Application: Pre-plant was applied broadcast. 2X2 was applied with the planter. 6- and 12-leaf applications were applied streamed on with a sprayer.

No.	Variety	Treatment*	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug						
1	C-G229	Untreated Check				6.6	227	\$483	4114	18.1	12.9	98.5
2	C-G233	Untreated Check				6.9	233	\$566	4430	18.9	13.8	96.2
3	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	7.6	239	\$908	6847	28.8	14.2	95.7
4	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	7.8	273	\$1,321	7486	27.4	16.1	96.0
5	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	7.6	252	\$1,102	7291	29.0	14.7	96.6
		Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streammer							
6	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	8.0	275	\$1,482	8087	28.9	15.8	97.2
		Nitrogen + Anvol	40 lbs. + 1.68 fl.oz.	6 lf	Streammer							
7	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	7.6	250	\$995	6702	26.8	14.9	95.4
		Nitrogen + Anvol	80 lbs. + 3.36 fl.oz.	6 lf	Streammer							
8	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	7.9	258	\$1,118	6920	26.5	15.4	95.6
		Nitrogen + Anvol	80 lbs. + 3.36 fl.oz.	6 lf	Streammer							
9	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	8.0	270	\$1,454	8351	30.7	15.8	96.3
		Nitrogen + Anvol	120 lbs. + 5.04 fl.oz.	6 lf	Streammer							
10	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	8.0	271	\$1,355	7734	28.4	15.5	97.4
		Nitrogen + Anvol	120 lbs. + 5.04 fl.oz.	6 lf	Streammer							
11	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	8.3	256	\$1,390	8884	34.7	15.1	96.1
		Nitrogen + Anvol	160 lbs. + 6.72 fl.oz.	6 lf	Streammer							
12	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	8.4	265	\$1,398	8353	31.4	15.5	96.3
		Nitrogen + Anvol	160 lbs. + 6.72 fl.oz.	6 lf	Streammer							

* Treatments include Azteroid FC 3.3 @ 6.3 fl.oz. in-furrow
 ** Nitrogen includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

6-leaf application date: June 17
 Vigor 0 to 10 ratings, 10 is the best

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Nitrogen Rates Late Harvest Gruehn - Pigeon, MI - 2025

No.	Variety	Treatment*	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug						
13	C-G229	Nitrogen**	40 lbs.	At Plant	2X2	8.3	245	\$1,085	7916	32.8	15.0	94.1
		Nitrogen + Anvol	200 lbs. + 8.4 fl. oz.	6 lf	Streamer							
14	C-G233	Nitrogen**	40 lbs.	At Plant	2X2	8.1	240	\$1,093	8082	33.7	14.5	95.3
		Nitrogen + Anvol	200 lbs. + 8.4 fl. oz.	6 lf	Streamer							

Average	7.8	254	\$1,125	7228	28.3	14.9	96.2
LSD 5%	0.5	22.2	386.5	1312.3	4.1	1.18	2.8
CV	4.2	6.1	24.0	12.7	10.1	5.5	2.0

* Treatments include Azteroid FC 3.3 @ 6.3 fl.oz. in-furrow

** Nitrogen includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

6-leaf application date: June 17

Vigor 0 to 10 ratings, 10 is the best

Comments: This trial is designed to examine nitrogen application strategies and 2 varieties. C-G229 is a high sugar variety. C-G233 is a higher tonnage variety.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Phase II Wadsworth - Sandusky, MI - 2025

Trial Quality: Fair
Variety: C-G206NT

Planted: May 19

Harvested: October 15

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

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

Soil Info: Loam

% OM: 6.3 **pH:** 7.6 **CEC:** 16.8

P: Very High **K:** High

Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn/Grain

Rhizoc. Level: Low

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 11.92 inches

Beets/100 ft.: 204

No.	Treatment*	Rate/Acre	Applic. Timing	Applic. Method	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP	Beets/100 ft
											8-Jul
3	Nitrogen**	40 lbs.	At Plant	2X2	249	\$938	6035	24.2	14.6	96.6	186.2
	Nitrogen	80 lbs.	6 lf	Fluted Coulter							
	Phase II Research Blend	3 gal.	24-Jun	Broadcast							
	Phase II Research Blend	3 gal.	23-Jul	Broadcast							
6	Nitrogen**	40 lbs.	At Plant	2X2	248	\$906	5849	23.6	14.9	95.3	192.5
	Nitrogen	60 lbs.	6 lf	Fluted Coulter							
	Phase II 4-0-0 + Nitrogen	2 gal. + 2 gal.	24-Jun	Broadcast							
	Phase II 4-0-0 + Nitrogen	2 gal. + 2 gal.	23-Jul	Broadcast							
5	Nitrogen**	40 lbs.	At Plant	2X2	242	\$839	5718	23.5	14.5	95.5	206.3
	Nitrogen	80 lbs.	6 lf	Fluted Coulter							
	Phase II 3-6-9	3 gal.	24-Jun	Broadcast							
	Phase II 3-6-9	3 gal.	24-Jul	Broadcast							
4	Nitrogen**	40 lbs.	At Plant	2X2	241	\$808	5651	23.4	15.2	92.8	223.3
	Nitrogen	60 lbs.	6 lf	Fluted Coulter							
	Phase II 4-0-0 + Nitrogen	2 gal. + 2 gal.	24-Jun	Broadcast							
	Phase II 4-0-0 + Nitrogen	2 gal. + 2 gal.	23-Jul	Broadcast							
	Phase II 4-0-0 + Nitrogen	2 gal. + 2 gal.	25-Aug	Broadcast							
2	Nitrogen**	40 lbs.	At Plant	2X2	230	\$647	5122	22.2	14.5	93.0	191.6
	Nitrogen	80 lbs.	6 lf	Fluted Coulter							
	Phase II 4-0-0	3 gal.	24-Jun	Broadcast							
	Phase II 4-0-0	3 gal.	23-Jul	Broadcast							
1	Untreated Check				225	\$647	5099	22.6	15.3	89.7	222.4
Average					239	\$797	5579	23.3	14.8	93.8	203.7
LSD 5%					29.7	379.4	1006.4	2.4	1.1	3.4	28.5
CV%					8.2	31.6	12.0	6.8	4.8	2.4	9.3

*Treatments include Azteroid FC 3.3 @ 6.3 fl.oz. in-furrow

**Nitrogen includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

Comments: Phase II is a product designed to enhance yield and sugar content.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Plant Health Trial

Wadsworth - Sandusky, MI - 2025

(Page 1 of 2)

Trial Quality: Fair

Variety: C-G206NT

Planted: May 15

Harvested: October 13

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

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

Soil Info: Loam

% OM: 6.3 **pH:** 7.6 **CEC:** 16.8

P: Very High **K:** High

Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn/Grain

Rhizoc. Level: Low

Cerc. Control: Moderate

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 13.45 inches

Beets/100 ft.: 254

No.	Treatment	Rate/Acre	Applic. Timing/ Date	Applic. Method	RWST	Vigor	Net \$/A	RWSA	T/A	% SUC	% CJP	Beets/ 100 ft
						0-10						8-Jul
5	Gantec, Inc.				259	8.0	\$1,050	6083	23.5	15.6	94.6	275.4
	UAN 28 % + 10-34-0 + Thio-Sul	8 gal.+ 6 gal. + 4 gal.	At Plant	2X2								
	Azteroid F.C. 3.3 + Gantec Pro 100	6.3 fl. oz. + 12 fl. oz.	At Plant	In-Furrow								
	Gantec Pro 100	12 fl. oz.	24-Jun	Banded								
	Gantec Pro 100	12 fl. oz.	11-Aug	Banded								
7	Sound Agriculture				256	8.1	\$910	5478	21.5	15.0	96.1	245.0
	UAN 28% + 10-34-0 + Thio-Sul	8 gal.+ 6 gal. + 4 gal.	At Plant	2X2								
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow								
	UAN 28% + Source	26.7 gal. + 1 oz.	26-Jun	Fluted Coulter								
4	Sure Crop				254	7.9	\$942	5696	22.4	15.8	93.3	254.3
	UAN 28 % + 10-34-0 + Thio-Sul + Sure Crop 2X2 Additive + Sure Crop Power NK	8 gal. +6 gal. + 4 gal. + .75 gal. + 1 gal.	At Plant	2X2								
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow								
	UAN 28% + Sure Crop Power NK	26.7 gal. + 2 gal.	26-Jun	Fluted Coulter								
6	Agrauxine				249	7.9	\$841	5270	21.1	15.6	92.9	242.5
	UAN 28% + 10-34-0 + Thio-Sul	8 gal. +6 gal. + 4 gal.	At Plant	2X2								
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow								
	Smartfoil	1.5 pt.	1-Aug	Broad								
	Smartfoil	1.5 pt.	15-Aug	Broad								
1	UAN 28 % + 10-34-0 + Thio-Sul	8 gal.+ 6 gal. + 4 gal.	At Plant	2X2	245	8.0	\$708	4549	18.5	14.7	95.4	268.8
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow								

Vigor 0 to 10 ratings, 10 is the best

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Plant Health Trial Wadsworth - Sandusky, MI - 2025

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No.	Treatment	Rate/Acre	Applic. Timing/Date	Applic. Method	RWST	Vigor	Net \$/A	RWSA	T/A	% SUC	% CJP	Beets/
						0-10						100 ft.
						22-Aug						8-Jul
3	Sure Crop				240	7.8	\$726	5052	21.1	14.5	94.9	242.7
	UAN 28% + 10-34-0 + Thio-Sul + Sure Crop 2X2 Additive	8 gal.+ 6 gal. + 4 gal. + .75 gal.	At Plant	2X2								
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow								
2	UAN 28 % + 10-34-0 + Thio-Sul	8 gal.+ 6 gal. + 4 gal.	At Plant	2X2	232	8.1	\$664	5014	21.6	14.5	93.4	251.1
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow								
	UAN 28%	26.7 gal.	26-Jun	Fluted Coulter								
Average					248	8.0	\$834	5306	21.4	15.1	94.4	254.2
LSD 5%					23.5	0.7	330.9	1190.4	4.1	0.9	2.7	21.7
CV %					6.4	6.0	26.7	15.1	13.0	4.1	2.0	5.7

Vigor 0 to 10 ratings, 10 is the best

Comments: Study was designed to test products for sugar and yield improvements.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Foliar CHS Plant Health Wadsworth - Sandusky, MI - 2025

Trial Quality: Fair

Variety: C-G206NT

Planted: May 19

Harvested: October 15

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 15.3 gpa - Foliar 7" band

Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

Soil Info: Loam

% OM: 6.3 **pH:** 7.6 **CEC:** 16.8

P: Very High **K:** High

Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn/Grain

Rhizoc. Level: Low

Cerc. Control: Moderate

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 11.92 inches

Beets/100 ft.: 176

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	RWST	Vigor	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 22-Aug					
4	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	237	8.0	\$765	5370	22.6	14.5	94.5
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow							
	WC-596 + WC-835	1 pt. + 8 fl. oz.	2-Jul	Broad							
6	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	234	7.6	\$756	5507	23.5	14.6	93.4
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	WC-872 + WC-835	8 fl.oz. + 8 fl. oz.	2-Jul	Broad							
3	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	234	7.6	\$681	4980	21.3	14.1	95.2
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	WC-648 + WC-835	4 fl.oz. + 8 fl. oz.	2-Jul	Broad							
5	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	231	7.6	\$658	4905	21.1	14.4	93.7
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	WC-597 + WC-835	1 pt. + 8 fl. oz.	2-Jul	Broad							
1	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	228	7.8	\$654	5075	22.2	14.1	94.1
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow							
2	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	228	7.8	\$655	5171	22.7	13.7	95.5
	Azteroid F.C. 3.3	6.3 fl. oz.	At Plant	In-Furrow							
	WC-835	8 fl. oz.	2-Jul	Broad							
Average					232	7.7	\$695	5168	22.2	14.2	94.4
LSD 5%					22.4	0.5	283.3	817.0	2.2	0.8	3.3
CV%					6.4	4.5	27.1	10.5	6.6	3.8	2.3

Vigor 0 to 10 ratings, 10 is the best

Comments: This study was designed to test CHS plant health products for an improvement in sugar and yield.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Envita Plant Health Mennonite Church - Pigeon, MI - 2025

Trial Quality: Poor

Variety: SX-2296N

Planted: May 27

Harvested: October 30

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 15.3 gpa - Foliar 7" band

Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

Soil Info: Sandy Clay Loam

% OM: 1.8 **pH:** 7.7 **CEC:** 14.5

P: Low **K:** Medium

Mn: High **B:** Medium

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Corn

Rhizoc. Level: Low

Cerc. Control: Moderate

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 14.7 inches

Beets/100 ft.: 178

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	RWST	Vigor	Net \$/A	RWSA	T/A	% SUC	% CJP
						0-10 25-Jul					
2	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	221	8.4	\$532	4396	21.1	13.7	94.2
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	UAN 28%	26.7 gal.	6 lf								
1	UAN 28 % + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	232	8.0	\$546	4138	17.9	14.1	94.6
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
6	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	208	7.9	\$288	3801	16.2	12.7	94.8
	Azteroid F.C. 3.3 + Envita WG	6.3 fl.oz. + 5 g.	At Plant	In-Furrow							
	UAN 28%	26.7 gal.	6 lf	Fluted Coulter							
	Envita WG	5 g.	6 lf	Banded							
4	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	226	7.6	\$463	4149	17.3	14.0	93.9
	Azteroid F.C. 3.3 + Envita WG	6.3 fl.oz. + 5 g.	At Plant	In-Furrow							
	UAN 28%	26.7 gal.	6 lf	Fluted Coulter							
	Envita WG	5 g.	6 lf	Banded							
3	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	211	7.5	\$322	3502	16.6	13.0	94.6
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	UAN 28%	26.7 gal.	6 lf	Fluted Coulter							
	Envita WG	5 g.	6 lf	Banded							
5	UAN 28% + 10-34-0 + Thio-Sul	8 gal. + 6 gal. + 4 gal.	At Plant	2X2	185	7.4	\$78	3209	17.7	13.4	88.2
	Azteroid F.C. 3.3 + Envita WG	6.3 fl.oz. + 5 g.	At Plant	In-Furrow							
	UAN 28%	26.7 gal.	6 lf	Fluted Coulter							
	Envita WG	5 g.	6 lf	Banded							
Average					214	7.8	\$371	3866	17.8	13.5	93.4
LSD 5%					28.5	0.9	257.2	1049.2	4.1	1.1	4.7
CV%					8.9	7.3	46.0	18.0	15.3	5.5	3.4

Vigor 0 to 10 ratings, 10 is the best

6-leaf applications were made 7/1.

Comments: This study was designed to test Envita plant health products for an improvement in sugar and yield. Trial was planted late and due to late planting and drought, beet growth was stunted.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Ostara Nitrogen Trial Gruehn - Pigeon, MI - 2025

Trial Quality: Good

Variety: C-G227

Planted: April 30

Harvested: October 6

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: Pre-plant was applied broadcast. 2X2 was applied with the planter. 6-leaf applications was applied streamed on with a sprayer.

Soil Info: Loam

% OM: 2.9 **pH:** 7.1 **CEC:** 12.1

P: Very High **K:** Very High

Mn: High **B:** High

Added N: See Individual Treatments

Previous Crop: Corn

Rhizoc. Level: Low

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 13.96 inches

Beets/100 ft.: 128

No.	Treatment	Rate/Acre	Applic. Timing	Applic. Method	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
					0-10 22-Aug						
3	Crystal Green	40 lbs.	29-Apr	PPI	8.0	278	\$1,518	7630	27.5	16.3	96.0
	Nitrogen*	40 lbs.	At Plant	2X2							
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	120 lbs.+ 5.12 fl.oz.	6 lf	Streamer							
2	Nitrogen*	40 lbs.	At Plant	2X2	7.5	303	\$1,669	7373	24.3	17.5	96.6
	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	In-Furrow							
	Nitrogen + Anvol	120 lbs.+ 5.12 fl.oz.	6 lf	Streamer							
1	Untreated Check				6.8	253	\$792	4582	18.1	14.7	96.9
Average					7.4	278	\$1,326	6528	23.3	16.2	96.5
LSD 5%					1.2	52.3	730.3	2105.6	7.1	3.2	1.8
CV%					9.3	10.9	31.8	18.6	17.6	11.4	1.1

*Treatment includes Sulfur (Thio-Sul, 4 gal.) + Phosphorus (10-34-0, 6 gal.)

6-leaf application date: 6/17

Vigor 0 to 10 ratings, 10 is the best

Comments: Crystal Green is a targeted release phosphorus fertilizer. Study was designed to compare the same rates of N, P and S provided by Crystal Green compared to 10-34-0. The rates compared provided 24 lbs. of P205 for each treatment.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Syngenta Wadsworth - Sandusky, MI - 2025

(Page 1 of 2)

Trial Quality: Fair
Variety: C-G206NT

Planted: May 19
Harvested: October 13

Plots: 6 rows X 38 feet, 4 reps
Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 15.3 gpa

Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

Soil Info: Loam
% OM: 6.3 **pH:** 7.6 **CEC:** 16.8

P: Very High **K:** High
Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress
Previous Crop: Corn/Grain

Rhizoc. Level: Low

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 11.88 inches

Beets/100 ft.: 171

No.	Treatment	Rate/Acre	Applic. Timing	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				1-10 22-Aug						
10	Azteroid F.C. 3.3 + ID 2020	6.3 fl.oz. + 32 oz.	At Plant	8.3	238	\$779	5468	23.0	14.8	93.6
	Round Up + Stinger + Outlook + GEA 1019	24 fl.oz. + 2 fl.oz. + 1 pt. + 1.5 pt.	16-Jun							
	Quadris + SWEET	10.5 fl.oz. + 20 oz.	2-Jul							
7	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	8.1	210	\$434	4630	22.1	13.1	93.9
	Round Up + Stinger + Outlook + GEA 1019	24 fl.oz. + 2 fl.oz. + 1 pt. + 1.5 pt.	16-Jun							
	Quadris + SWEET	10.5 fl.oz. + 20 oz.	2-Jul							
	SWEET	20 oz.	11-Aug							
2	Azteroid F.C. 3.3 + ID 2020	6.3 fl.oz. + 32 oz.	At Plant	8.1	222	\$663	5615	25.3	13.8	93.7
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	Quadris	10.5 fl.oz.	2-Jul							
12	Azteroid F.C. 3.3 + ID 2020	6.3 fl.oz. + 32 oz.	At Plant	8.1	230	\$777	5916	25.7	14.3	93.4
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	Quadris	10.5 fl.oz.	2-Jul							
	SWEET	20 oz.	11-Aug							
4	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	8.0	234	\$816	5990	25.7	14.5	93.6
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	Quadris + SWEET	10.5 fl.oz. + 20 oz.	2-Jul							
11	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	8.0	228	\$740	5764	25.2	14.3	93.5
	Round Up + Stinger + Outlook + GEA 1019	24 fl.oz. + 2 fl.oz. + 1 pt. + 1.5 pt.	16-Jun							
	Quadris + SWEET	10.5 fl.oz. + 20 oz.	2-Jul							
3	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	8.0	217	\$612	5599	25.7	13.7	93.2
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	GEA 1019 + Quadris	1.5 pt. + 10.5 fl.oz.	2-Jul							
9	Azteroid F.C. 3.3 + ID 2020	6.3 fl.oz. + 32 oz.	At Plant	7.9	222	\$596	5126	23.1	13.6	94.3
	Round Up + Stinger + Outlook + GEA 1019	24 fl.oz. + 2 fl.oz. + 1 pt. + 1.5 pt.	16-Jun							
	Quadris	10.5 fl.oz.	11-Aug							

All treatments received Dual Magnum (8 oz.), pre-emerge on May 19.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Syngenta Wadsworth - Sandusky, MI - 2025

No.	Treatment	Rate/Acre	Applic. Timing	Vigor	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
				1-10 22-Aug						
6	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	7.9	232	\$731	5467	23.6	14.3	94.0
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	Quadris + SWEET	10.5 fl. oz. + 20 oz.	2-Jul							
	SWEET	20 oz.	11-Aug							
8	Azteroid F.C. 3.3 + ID 2020	6.3 fl.oz. + 32 oz.	At Plant	7.9	237	870	6042	25	14.7	93.7
	Round Up + Stinger + Outlook + GEA 1019	24 fl.oz. + 2 fl.oz. + 1 pt. + 1.5 pt.	16-Jun							
	Quadris + SWEET	10.5 fl.oz. + 20 oz.	2-Jul							
	SWEET	20 oz.	11-Aug							
1	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	7.9	228	\$779	6012	26.3	14.3	93.1
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	Quadris	10.5 fl.oz.	2-Jul							
5	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	7.5	239	\$884	6072	25.4	14.9	93.3
	Round Up + Stinger + Outlook	24 fl.oz. + 2 fl.oz. + 1 pt.	16-Jun							
	Quadris	10.5 fl.oz.	2-Jul							
	SWEET	20 oz.	11-Aug							
Average				8.0	228	\$723	5642	24.7	14.2	93.6
LSD 5%				0.7	16.0	238.9	801.6	2.6	0.9	1.0
CV%				6.4	4.9	23.0	9.9	7.3	4.5	0.8

All treatments received Dual Magnum (8 oz.), pre-emerge on May 19.

Comments: This study was designed to test Syngenta plant health products for an improvement in sugar and yield.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

Trial Quality: Good

Harvest Samples: 11/08/25

Seeding Rate: 66,000 seeds/acre

Harvest: 11/08/25

Plot Size: 9 rows

Row Spacing: 20 inches

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
No ZyDrive	\$2,657	310	12514	40.4	16.6	96.5
ZyDrive	\$2,589	314	12367	39.4	17.1	96.7
Average	\$2,623	312	12257	39.3	16.8	96.6
LSD 5%	4762.5	213.3	11718.9	9.3	5.6	7.7
CV %	14.3	5.4	8	1.9	2.6	0.6

Comments: This trial consisted of two passes of each treatment in a two-block format with or without ZyDrive. Four sugar samples of each treatment were analyzed at the Michigan Sugar Company Research Center.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Wishowski Nitrogen Trial - 2025

Trial Quality: Excellent
Seeding Rate: 52,000 seeds/acre
Plot Size: 4 rows
Row Spacing: 30 inches

Harvest Samples: 10/28/25
Harvest: 10/29/25
Num. of Reps: 3

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
160 # - 20 gal.	\$1,784	271	10159	37.5	15.1	96.4
180 # - 27 gal.	\$1,636	263	9819	37.3	14.8	96.1
Average	\$1,710	267	9989	37.4	15.0	96.3
LSD 5%	1323.3	66.2	3476.6	5.4	3.4	0.8
CV %	22.0	7.1	9.9	4.1	6.4	0.2

Comments: Two different nitrogen rates were applied (side-dress) in each of the three reps. 12 sugar/quality samples were taken from each treatment. Good Cercospora control.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Schindler Nitrogen Rate Trial Early Dig, Location 1 - 2025

Trial Quality: Excellent
Seeding Rate: 63,000 seeds/acre
Plot Size: 8 rows
Row Spacing: 22 inches

Harvest Samples: 9/11/25
Harvest: 9/11/25

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
34 gal./140 lbs.	\$1,711	285	8988	31.5	15.9	96.8
26 gal./120 lbs.	\$1,470	275	8215	29.9	15.6	96.2
46 gal./180 lbs.	\$1,414	272	8028	29.5	15.6	95.3
40 gal./160 lbs.	\$1,336	264	7986	30.3	15.5	95.5
Average	\$1,483	274	8305	30.3	15.6	96.0
LSD 5%	815.9	57.2	1853.8	2.6	2.1	1.1
CV%	17.3	6.6	7.0	2.7	4.2	0.4

Comments: Four different nitrogen rates were applied in each of the three reps. This trial had good Cercospora control. Schindler early dig and permanent pile trials were completed in two different fields. They were harvested roughly 50 days apart to highlight potential differences.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Trial Quality: Good
Plot Size: 6 rows
Row Spacing: 22 inches

Harvest Samples: 10/27/25
Harvest: 10/27/25

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
Wheat						
With Zironar	\$2,209	322	9935	30.8	16.9	98.3
Without Zironar	\$1,905	302	9255	30.6	17.1	97.3
Dry Beans						
With Zironar	\$2,519	310	11886	38.4	16.7	97.9
Without Zironar	\$2,478	306	11876	38.9	16.6	97.7
Average	\$2,278	310	10738	34.7	16.7	97.8
LSD 5%	626.0	45.0	1286.1	1.5	1.7	1.3
CV%	8.6	4.6	3.8	1.3	3.2	0.4

Comments: Data generated from: One year/one location. 8 oz./acre of Zironar was applied at planting (in-furrow). Cover crop following wheat; sunflower, oats; sorghum, sudan and radish. Cover crop following dry beans; rye. This field was split in 2024, wheat on one half and dry beans on the other. Sugarbeets were planted in 2025 the length of the field crossing both wheat and dry bean areas. The stand was thinner and root disease pressure was higher in the wheat area of the field at harvest compared to the dry bean area of the field.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Richmond Cover Crop Trial - 2025

Trial Quality: Good
Plot Size: 8 rows
Row Spacing: 22 inches

Harvest Samples: 11/10/25
Harvest: 11/13/25
Num. of Reps: 3

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
Sudex	\$2,989	354	12223	34.5	19.1	97.1
A.Rye(25#)+Radish(2#)	\$2,799	341	11874	34.8	18.8	96.7
Radish(5#)+Oats(35#)	\$2,750	341	11655	34.1	18.4	97.2
Untreated Check	\$2,415	319	11013	34.6	18.3	95.8
Average	\$2,738	339	11691	34.5	18.7	96.7
LSD 5%	497.1	28.1	1160.4	0.7	0.8	1.4
CV%	9.1	4.2	5.0	1.0	2.2	0.7

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

Comments: This is a multi-year trial that includes dry bean production. The three above-listed cover crops were planted after dry beans were harvested in 2024. Due to the extremely dry fall in 2024, there was limited growth of any listed cover crop. Above-ground foliage, and dry matter weights were collected; Scott Bales, M.S., MSU Department

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.



Sugarbeet Soil Nitrification Patterns and Accumulation in Response to Nitrogen Strategies

Kurt Steinke, Professor, Soil Fertility and Nutrient Management; Andrew Chomas, Research Associate, Soil Fertility and Nutrient Management, Michigan State University

See soil.msu.edu for more information

LOCATION: Saginaw Valley Research & Extension Center
POPULATION: 52,000 seeds/A (4-in. spacing; 30 in. rows)
SOIL TYPE: Tappan-Londo-Loam (clay loam)
PLANTING DATE: 24 April 2025
CONV. HARVEST: 14 Oct. 2025

VARIETY: C-G229
TILLAGE: Conventional
REPLICATIONS: 4
PRE-PLANT SOIL: 7.9 pH, 2.6 % OM, 15 CEC, 10 ppm Olsen P, 132 ppm K

SUMMARY:

Trial quality was fair as cool and moist early-season conditions combined with dry late-season soil conditions decreased sugarbeet growth and development especially during the late-autumn bulking period. Trial was established to monitor soil ammonium and nitrate concentrations at a 0-1 foot and 1-2-foot depths throughout the growing season for potential impacts on sugarbeet quality. Four N rates (0, 80, 160, and 240 lbs. N) with three different individual or combination of application methods at each N rate were studied. Nitrogen strategies included pre-plant incorporated (PPI), at-plant 2x2 application (2 inches to the side and 2 inches beneath the seed), and sidedress application (6-leaf growth stage surface applied with a urease inhibitor). Sidedress N applications occurred on 27 May. Treatments were arranged as a randomized complete block with four replications.

Soil temperatures did not rise above 50F permanently until May 9. However, soils tended to stay warmer longer into the autumn season as the first cool night did not occur until October 16 with consistent cooler nighttime air temperatures not occurring until October 25. Soil temperatures did not drop below 50F permanently until November 7. Although precipitation was above 30-year means in May and June, cool temperatures moderated early season growth potential. Precipitation was below average for the months of July and August but well below average (-61% from 30-year mean) during September. Dry late-season soil conditions combined with warm air and soil temperatures inhibited sugarbeet growth, root bulking, and sugar accumulation toward the end of the growing season, and sugar quality and tonnage were noticeably reduced from typical Michigan expectations.

Due to the dry soil conditions, N strategy only affected yield and purity (Table 1). Nitrogen strategies with a percentage or all N applied pre-plant incorporated tended to add more tonnage than strategies without a PPI component. Again this result will change each year based on weather conditions. Another interesting note on the yield data was that adding additional N did not improve yield, sugar, or income. When averaged across 80N, 160N, and 240N, income was \$789 vs. \$886 vs. \$677 per acre, respectively. As expected with drier weather conditions, the later N was applied and at greater N rates, the greater the negative impact on purity. No significant reductions were observed in stand counts either at 30 days after plant or at harvest across N strategies with all treatments obtaining similar counts as the non-treated check.

TABLE 1. Sugarbeet 2025 yield, recoverable sugar per acre (RWSA), recoverable sugar per ton (RWST), sugar %, clear juice purity (CJP), and income as affected by nitrogen strategy, Richville, MI.

N Strategy	Yield ^{††}	RWSA	RWST ^{††}	Sugar	CJP	Income [‡]
80N	—Tons—	—lbs—	—lbs—	—%—	—%—	—\$/A—
80 PPI	27 ab*	6983 a	260.0 a	13.63 a	97.12 a	1,126
60 PPI, 20 2x2	31 a	6566 a	211.9 a	12.74 a	95.48 cde	611
40 2x2, 40 SD 6LF	25 bc	5585 a	225.1 a	12.30 a	96.38 abc	629
160 N						
160 PPI	29 ab	7399 a	252.9 a	14.55 a	96.16 bc	1,162
120 PPI, 40 2x2	26 ab	6190 a	234.7a	13.48 a	95.71 bcd	834
60 PPI, 40 2x2, 60 SD 6LF	27 ab	5996 a	224.0 a	13.37 a	95.01 de	662
240 N						
240 PPI	30 a	6329 a	212.8 a	12.66 a	94.76 e	580
70 PPI, 60 2x2, 110 SD 6LF	28 ab	6285 a	216.7 a	13.17 a	94.72 e	719
140 PPI, 60 2x2, 40 SD 6LF	28 ab	6314 a	225.0 a	12.93 a	94.71 e	732
P > F	0.09	NS[†]	NS	NS	<0.001	-----
CHECK	22 c	4963 a	227.7 a	12.82 a	96.53 ab	576

*Values followed by the same lowercase letter in the same column are not significantly different at $\alpha = 0.10$.

† NS = not significantly different at $\alpha = 0.10$.

††2025 Early Delivery Program Compensation Factors are already factored into the yield and RWST values.

‡ Calculated using the new quality payment system incorporating financial values from the post-harvest forecast.



Soil warmed above 50F several weeks later in 2025 as compared to 2024 but this did not seem to inhibit nitrification of applied N. At one month after planting and SD N not yet applied, 0–12-inch nitrate concentrations were greater with PPI applications and increased with greater N rates as expected. At two months after planting in late June, no differences were observed across 80N strategies with 160 N and 240 N PPI both displaying slightly elevated nitrate concentrations compared to other N strategies. At three months after planting, 240 N strategies displayed greater nitrate concentrations than lower N rates. Within the 240N strategies, splitting N applications via sidedress was evident with slightly elevated nitrate concentrations nearly two months after the sidedress N application as compared to PPI strategies. At four to five months after planting, few biologically significant differences in nitrate concentrations at the 0–12-inch soil depth occurred with many values similar to the non-treated check.

TABLE 2. Sugarbeet 0–12-inch soil ammonium and nitrate concentrations during the 2025 growing season at 1, 2, and 3 months after planting as affected by nitrogen strategy, Richville, MI.

N Strategy	0-12 in. Ammonium 27 May	0-12 in. Nitrate 27 May	0-12 in. Ammonium 23 June	0-12 in. Nitrate 23 June	0-12 in. Ammonium 22 July	0-12 in. Nitrate 22 July
80N						
-----ppm-----						
80 PPI	4.8 a	13.3 de	3.5 a	11.0 cd	4.9 a	4.1 d
60 PPI, 20 2x2	7.0 a	25.5 abc	3.8 a	11.0 cd	3.9 a	3.9 d
40 2x2, 40 SD6LF	7.8 a	11.2 e	4.5 a	10.0 cd	4.7 a	5.6 cd
160 N						
160 PPI	5.0 a	21.5 bd	3.3 a	17.7 ab	4.8 a	7.1 bcd
120 PPI, 40 2x2	5.8 a	27.2 ab	4.5 a	13.3 bcd	4.9 a	8.5 bc
60 PPI, 40 2x2, 60 SD6LF	6.5 a	14.9 de	5.0 a	16.0 abc	5.7 a	13.5 ab
240 N						
240 PPI	12.5 a	37.1 a	31.8	21.3 a	5.4 a	10.1 abc
70 PPI, 60 2x2, 110 SD6LF	4.5 a	15.9 cde	3.8 a	12.0 bcd	5.3 a	18.3 a
140 PPI, 60 2x2, 40SD6LF	4.5 a	25.7 abc	4.8 a	14.0 bcd	5.5 a	16.6 a
<i>P > F</i>	NS	<0.001	NS	0.07	NS	0.002
CHECK	4.0 a	5.5 f	4.5 a	9.0 d	6.2 a	6.4 cd

TABLE 3. Sugarbeet 0–12-inch soil ammonium and nitrate concentrations during the 2025 growing season at 4 and 5 months after planting as affected by nitrogen strategy, Richville, MI.

N Strategy	0-12 in. Ammonium 26 Aug	0-12 in. Nitrate 26 Aug	0-12 in. Ammonium 02 Oct	0-12 in. Nitrate 02 Oct
80N				
-----ppm-----				
80 PPI	3.8 a	4.1 cd	5.0 a	3.2 a
60 PPI, 20 2x2	3.5 a	3.8 d	4.5 a	2.5 a
40 2x2, 40 SD6LF	6.0 a	7.1 bc	4.4 a	2.9 a
160 N				
160 PPI	6.0 a	6.2 bcd	4.2 a	2.7 a
120 PPI, 40 2x2	4.5 a	7.7 b	5.7 a	4.1 a
60 PPI, 40 2x2, 60 SD6LF	5.5 a	6.3 bcd	5.2 a	3.2 a
240 N				
240 PPI	5.5 a	8.2 ab	4.5 a	4.9 a
70 PPI, 60 2x2, 110 SD6LF	8.5 a	13.2 a	5.4 a	4.1 a
140 PPI, 60 2x2, 40SD6LF	4.3 a	7.7 b	5.0 a	3.9 a
<i>P > F</i>	NS	0.01	NS	NS
CHECK	3.3 a	3.9 d	4.7 a	3.4 a



At one month after planting and sidedress N not yet applied, 12–24-inch nitrate concentration was not significant across 80 N strategies but was significant 160 and 240 N PPI strategies indicating N had moved quickly to this soil depth which was a result not observed in 2024. Splitting N applications at the 160 and 240 N rates was evident with lower nitrate concentrations at that point of the growing season. No other statistically significant differences at the 12–24-inch soil depth occurred until late July nearly three months after planting. At that time all 240 N and split 160N strategies displayed greater nitrate concentrations than 80N strategies. However, it is important to note here that greater nitrate at this soil depth and during this period did NOT improve yield, RSWT, RWSA, or income but did have a negative effect on purity at the end of the season. At five months after planting at the 12–24-inch depth, no differences among N strategies were observed, and non-treated check nitrate values were similar to N-treated plots. The four to eight week “flash droughts” that have become commonplace over the last several growing seasons will continue to have a significant impact on sugar production so growers will need to continue to modify and adapt N management strategies accordingly.

TABLE 4. Sugarbeet 12–24-inch soil ammonium and nitrate concentrations during the 2025 growing season at 1, 2, and 3 months after planting as affected by nitrogen strategy, Richville, MI.

N Strategy	12-24 in. Ammonium 27 May	12-24 in. Nitrate 27 May	12-24 in. Ammonium 23 June	12-24 in. Nitrate 23 June	12-24 in. Ammonium 22 July	12-24 in. Nitrate 22 July
-----ppm-----						
80N						
80 PPI	5.5 a	9.8 cd	2.5 a	6.7 a	3.9 a	3.7 d
60 PPI, 20 2x2	4.8 a	9.3 cd	3.5 a	7.6 a	4.3 a	3.5 d
40 2x2, 40 SD6LF	6.5 a	8.0 d	5.5 a	8.7 a	4.9 a	4.7 cd
160 N						
160 PPI	5.8 a	12.7 bc	5.3 a	12.2 a	6.4 a	8.7 bc
120 PPI, 40 2x2	6.3 a	16.2 b	2.5 a	6.6 a	4.1 a	10.6 ab
60 PPI, 40 2x2, 60 SD6LF	4.3 a	6.9 de	2.5 a	8.4 a	4.2 a	12.5 ab
240 N						
240 PPI	17.3 a	25.4 a	4.3 a	12.1 a	5.7 a	15.9 ab
70 PPI, 60 2x2, 110 SD6LF	3.8 a	7.9 d	2.8 a	7.1 a	4.7 a	16.4 ab
140 PPI, 60 2x2, 40SD6LF	5.3 a	16.8 b	2.0 a	6.7 a	4.0 a	18.5 a
P > F	NS	<0.001	NS	NS	NS	<0.001
CHECK	4.5 a	4.7 e	2.0 a	4.2 a	5.4 a	3.5 d

TABLE 5. Sugarbeet 12–24-inch soil ammonium and nitrate concentrations during the 2025 growing season at 4 and 5 months after planting as affected by nitrogen strategy, Richville, MI.

N Strategy	12-24 in. Ammonium 26 Aug	12-24 in. Nitrate 26 Aug	12-24 in. Ammonium 02 Oct	12-24 in. Nitrate 02 Oct
-----ppm-----				
80N				
80 PPI	3.7 a	3.2 a	3.9 a	2.3 a
60 PPI, 20 2x2	4.2 a	3.1 a	3.9 a	1.5 a
40 2x2, 40 SD6LF	3.4 a	2.8 a	3.7 a	1.8 a
160 N				
160 PPI	2.5 a	3.4 a	3.2 a	1.3 a
120 PPI, 40 2x2	2.2 a	3.7 a	3.7 a	2.5 a
60 PPI, 40 2x2, 60 SD6LF	2.5 a	2.8 a	3.9 a	2.0 a
240 N				
240 PPI	2.3 a	3.4 a	3.7 a	4.8 a
70 PPI, 60 2x2, 110 SD6LF	2.5 a	4.4 a	3.5 a	2.3 a
140 PPI, 60 2x2, 40SD6LF	3.7 a	4.2 a	3.5 a	3.0 a
P > F	NS	NS	NS	NS
CHECK	2.7 a	1.9 a	3.2 a	1.5 a



Adjusting Sugarbeet Nitrogen Application Strategies in Response to Harvest Timing and Variety Selection

Kurt Steinke, Professor, Soil Fertility and Nutrient Management; Andrew Chomas, Research Associate, Soil Fertility and Nutrient Management, Michigan State University

See soil.msu.edu for more information

LOCATION: Saginaw Valley Research & Extension Center
POPULATION: 52,000 seeds/A (4-in. spacing; 30 in. rows)
SOIL TYPE: Tappan-Londo-Loam (clay loam)
PLANTING DATE: 24 April 2025
EARLY HARVEST: 2 Sept. 2025; Conv. Harvest: 14 Oct. 2025

VARIETY: C-G229 and BTS-1183
TILLAGE: Conventional
REPLICATIONS: 4
PRE-PLANT SOIL: 7.7 pH, 2.9 % OM, 17 CEC, 12 ppm Olsen P, 167 ppm K

TABLE 1. Overview of sugarbeet nitrogen application rate, timing, and method of application across both early and conventional harvest and two varieties.

TREATMENT	RATE	TIMING	METHOD	N TOTAL (LBS./ACRE)
Check	0 lb. A	No N application	-----	0
28-0-0	80 lb. A	Sidedress (5/27)	Coulter inject SD	80
28-0-0	60 lb. A	Planting	2x2 [†]	60
28-0-0 28-0-0	60 lb. A 80 lb. A	Planting Sidedress (5/27)	2x2 Coulter inject SD	140

[†] Two inches below and two inches to the side of the seed.

SUMMARY:

Trial quality was fair as cool and moist early-season conditions combined with dry late-season soil conditions decreased sugarbeet growth and development. Trial was established to better determine how grower N strategy may be adjusted or affected by both harvest timing and variety selection. Researchers evaluated the use of starter fertilizer individually, sidedress N individually, and starter and sidedress N combinations on sugarbeet yield and quality as impacted by harvest timing and variety selection. Two harvest timings (early and conventional) were monitored across treatments in addition to a more aggressive variety (high sugar, high tonnage) compared to a more defensive variety (less sugar, less tonnage, but better disease tolerance). More aggressive varieties typically take better advantage of early season and starter fertilizer applications if soil moisture is not limited.

Four N strategies (no N, sidedress N, 2x2 N at-plant, and 2x2 at-plant with sidedress) with two harvest timings and two sugarbeet varieties resulted in a total of 16 different treatments. Sidedress N applications occurred on 27 May. Treatments were arranged as a randomized complete block with four replications.

TABLE 2. Sugarbeet yield, RWSA, RWST, % sugar, purity, and income as affected by harvest timing, variety, and nitrogen strategy.

Treatment	Yield ^{††}	RWSA	RWST ^{††}	Sugar	CJP	Income [‡]
Harvest Timing	—Tons—	—lbs—	—lbs—	—%—	—%—	—\$/A—
Early	25 b*	6818 a	275.9 a	14.16 a	95.77 a	1,208
Conventional	28 a	5645 b	204.4 b	12.12 b	95.52 a	418
P > F	0.02	0.003	<0.001	0.001	NS[†]	-----
Variety						
C-G229	25 b	5782 b	240.1 a	13.01 b	95.92 a	722
BTS-1183	28 a	6668 a	240.2 a	13.28 a	95.38 b	899
P > F	0.04	0.03	NS	0.09	0.03	-----
N Strategy						
Check	22 b	5328 c	244.3 a	13.10 a	96.20 a	747
80N SD	28 a	6219 b	225.7 a	12.82 a	95.01 c	688
60 N 2x2	25 b	5931 bc	241.2 a	13.13 a	95.96 ab	792
60 N 2x2 + 80N SD	31 a	7489 a	249.2 a	13.53 a	95.42 bc	1,044
P > F	<0.001	0.001	NS	NS	0.01	-----

*Values followed by the same lowercase letter in the same column are not significantly different at $\alpha = 0.10$.

[†] NS = not significantly different at $\alpha = 0.10$.

^{††}2025 Early Delivery Program Compensation Factors are already factored into the yield and RWST values.

[‡]Calculated using the new quality payment system incorporating financial values from the post-harvest forecast.



TABLE 3. Interaction between sugarbeet variety and harvest timing on percent sugar.

Variety	Harvest Timing	
	Early	Conventional
	-----%-----	
C-G229	14.33 a*	11.68 c
BTS-1183	14.00 a	12.57 b
<i>P > F</i>	0.004	

*Values followed by the same lowercase letter in the same column are not significantly different at $\alpha = 0.10$.

TABLE 4. Interaction between sugarbeet variety and harvest timing on recoverable white sugar per ton (RWST).

Variety	Harvest Timing	
	Early	Conventional
	----- lbs.†† -----	
C-G229	280.4 a*	199.7 d
BTS-1183	271.4 b	209.0 c
<i>P > F</i>	0.01	

*Values followed by the same lowercase letter in the same column are not significantly different at $\alpha = 0.10$.

††2025 Early Delivery Program Compensation Factors are already factored into the yield and RWST values.

Soil temperatures did not rise above 50F permanently until May 9. However soils tended to stay warmer longer into the autumn season as the first cool night did not occur until October 16 with consistent cooler nighttime air temperatures not occurring until October 25. Soil temperatures did not drop below 50F permanently until November 7. Although precipitation was above 30-year means in May and June, cool temperatures moderated early season growth potential. Precipitation was below average for the months of July and August but well below average (-61% from 30-year mean) during September. Dry late-season soil conditions combined with warm air and soil temperatures inhibited sugarbeet growth and sugar accumulation toward the end of the growing season.

Despite moderate gains in tonnage for conventional harvest, early harvest out-paced conventional harvest for RWSA, RWST, % sugar, and income (Table 2). Environmental conditions severely limited growth potential and sugar production from the September through mid-October timeframe. The more aggressive variety in the current study (C-G229) tended to decrease in tonnage, RWSA, % sugar, and income from the dry, warmer late-season soil conditions as compared to the more disease tolerant variety (BTS-1183) (Table 2). Nitrogen strategies with both 2x2 N and SD N increased yield, RWSA, and income when considered across both harvest timings and varieties (Table 2). When compared to SD individually, starter fertilizer individually produced slightly lower yield but similar RWSA, RWST, and perhaps most importantly greater income.

A variety by harvest timing interaction did occur for % sugar and RWST (Tables 3 and 4). In both cases, early harvest produced greater sugar concentration for each variety and greater RWST for each variety. For the conventional harvest window, the more aggressive variety produced lower sugar % and decreased RWST when compared to the more disease tolerant variety. Soil moisture status and autumn temperatures have a profound effect on typical sugarbeet bulking patterns. The four to eight week “flash droughts” that have become commonplace over the last several growing seasons will continue to have a significant impact on sugar production so growers will need to continue to modify and adapt N management strategies accordingly.



Starter Fertilizer Gradient and Sidedress Nitrogen Combinations as Affected by Sugarbeet Harvest Timing

Kurt Steinke, Professor, Soil Fertility and Nutrient Management; Andrew Chomas, Research Associate, Soil Fertility and Nutrient Management, Michigan State University

See soil.msu.edu for more information

LOCATION: Saginaw Valley Research & Extension Center
POPULATION: 52,000 seeds/A (4-in. spacing; 30 in. rows)
SOIL TYPE: Tappan-Londo-Loam (clay loam)
PLANTING DATE: 24 April 2025
EARLY HARVEST: 2 Sept. 2025; Conv. Harvest: 14 Oct. 2025

VARIETY: C-G229
TILLAGE: Conventional
REPLICATIONS: 4
PRE-PLANT SOIL: 7.9 pH, 2.6 % OM, 15 CEC, 10 ppm Olsen P, 132 ppm K

SUMMARY:

Trial quality was fair as cool and moist early-season conditions combined with dry late-season soil conditions decreased sugarbeet growth and development especially during the late-autumn bulking period. Although there are growing seasons where starter N can be sufficient all the way through to early harvest, few data are available on how much starter N is required and how sidedress N timing affects starter N requirements. Additionally few data are available on how both starter and sidedress N may impact sugar quality or how starter and sidedress N combinations and ensuing sugar quality may be impacted by harvest timing. Nitrogen strategies need to remain fluid based on climate conditions. If nitrogen management must be adjusted either early-season or in-season based on growing conditions or sugarbeet performance from early yield estimates, what percentage or tonnage may sugar or yield increase or decrease?

Researchers evaluated six rates of starter fertilizer with no sidedress N, six rates of starter fertilizer with 80 lbs. N/A applied late May, and six rates of starter fertilizer with 80 lbs. N/A applied late June for impacts on sugarbeet yield and quality as impacted by harvest timing. Two harvest timings (early and conventional) were monitored across all treatments.

Six starter N strategies applied with no sidedress N, late May 80N sidedress, and late June 80N sidedress with two harvest timings resulted in a total of 36 different treatments. Sidedress N applications occurred on 27 May as coulters inject between the rows or 30 June as Y-drop to soil surface. Treatments were arranged as a randomized complete block with four replications.

TABLE 1.
Overview of sugarbeet starter fertilizer gradient and sidedress nitrogen combinations across both early and conventional harvest periods.

Treatment (2x2, SD)	2x2 N Rate (lbs./A) [†]	SD N Rate and Timing (lbs./A) ^{††}	N Total (lbs./A)
Check	0	0	0
20, 0	20	0	20
40, 0	40	0	40
60, 0	60	0	60
80, 0	80	0	80
100, 0	100	0	100
0, 80 Early	0	80 - May 27	80
20, 80 Early	20	80 - May 27	100
40, 80 Early	40	80 - May 27	120
60, 80 Early	60	80 - May 27	140
80, 80 Early	80	80 - May 27	160
100, 80 Early	100	80 - May 27	180
0, 80 Late	0	80 - June 30	80
20, 80 Late	20	80 - June 30	100
40, 80 Late	40	80 - June 30	120
60, 80 Late	60	80 - June 30	140
80, 80 Late	80	80 - June 30	160
100, 80 Late	100	80 - June 30	180

[†] Two inches below and two inches to the side of the seed.

^{††} Early sidedress N was coulters inject while late sidedress N was Y-drop to soil surface.



Soil temperatures did not rise above 50F permanently until May 9. However, soils tended to stay warmer longer into the autumn season as the first cool night did not occur until October 16 with consistent cooler nighttime air temperatures not occurring until October 25. Soil temperatures did not drop below 50F permanently until November 7. Although precipitation was above 30-year means in May and June, cool temperatures moderated early season growth potential. Precipitation was below average for the months of July and August but well below average (-61% from 30-year mean) during September. Dry late-season soil conditions combined with warm air and soil temperatures inhibited sugarbeet growth, root bulking, and sugar accumulation towards the end of the growing season.

Early harvest out-performed conventional harvest for RWSA, RWST, % sugar, and income based on the new quality payment system (Table 2). Environmental conditions severely limited growth potential and sugar production from September through mid-October. Nitrogen strategies had few impacts on RWSA, RWST, or % sugar mostly due to lack of soil moisture impacting N availability (Table 2).

TABLE 2. Sugarbeet yield, RWSA, RWST, % sugar, purity, and income as affected by harvest timing and nitrogen strategy.

Treatment	Yield ^{††}	RWSA	RWST ^{††}	Sugar	CJP	Income [‡]
Harvest Timing	—Tons—	—lbs—	—lbs—	—%—	—%—	—\$/A—
Early	25 a*	6311 a	264.4 a	13.72 a	95.58 a	970
Conventional	24 a	4618 b	198.3 b	11.77 b	95.64 a	254
P > F	NS[†]	0.03	0.002	0.008	NS	-----
N Strategy (2x2, SD)						
Check	18 g	4378 a	250.6 a	13.34 a	96.35 ab	620
20, 0	20 fg	4681 a	233.8 a	12.96 a	95.88 abcd	603
40, 0	21 fg	4746 a	240.3 a	12.71 a	96.51 a	554
60, 0	23 cdef	5539 a	242.0 a	13.09 a	95.98 abc	767
80, 0	23 def	5119 a	232.8 a	12.86 a	95.95 abc	569
100, 0	28 ab	6554 a	243.8 a	13.49 a	95.84 abcd	845
0, 80 Early	27 ab	5838 a	222.4 a	12.49 a	95.47 cde	588
20, 80 Early	24 bcdef	5235 a	228.6 a	12.49 a	95.59 bcde	544
40, 80 Early	27 abc	5968 a	228.7 a	12.36 a	95.90 abcd	649
60, 80 Early	28 ab	5941 a	217.6 a	12.47 a	94.95 ef	557
80, 80 Early	26 abcd	5643 a	228.8 a	12.55 a	95.14 def	577
100, 80 Early	30 a	6329 a	219.8 a	12.60 a	94.62 f	580
0, 80 Late	21 efg	4689 a	226.8 a	12.41 a	95.45 cde	527
20, 80 Late	23 def	4935 a	224.5 a	12.64 a	95.50 cde	483
40, 80 Late	26 abcd	6096 a	244.4 a	12.92 a	95.96 abc	790
60, 80 Late	25 bcde	5373 a	219.2 a	12.53 a	95.36 cdef	530
80, 80 Late	23 def	5027 a	234.9 a	12.77 a	95.65 bcde	526
100, 80 Late	26 abcd	5685 a	225.7 a	12.80 a	94.89 ef	597
P > F	0.0001	NS	NS	NS	0.006	-----

*Values followed by the same lowercase letter in the same column are not significantly different at $\alpha = 0.10$.

[†] NS = not significantly different at $\alpha = 0.10$.

^{††} 2025 early delivery program compensation factors are already factored into the yield and RWST values.

[‡] Calculated using the new quality payment system incorporating financial values from the post-harvest forecast.



Differences were evident with N strategy for yield, purity, and income. Data allow one to observe which factors may have a greater influence within the new quality-focused payment system. When averaged between starter with no SD, starter with early SD, and starter with late SD, income was \$660 vs. \$583 vs. \$576 per acre, respectively. Under the cool, moist early and the dry, warm late-season conditions, income appeared to favor the higher rates of starter N early with little to no sidedress N later in the season. Dry conditions undoubtedly impacted the efficacy of SD N applications and the ability of the plant to utilize N and bulk later in the season. However, getting N to the plant early tends to support the Start Right to Finish Well mentality for optimal sugar production. Soil moisture status and autumn temperatures have a profound effect on typical sugarbeet bulking patterns. The four to eight week “flash droughts” that have become commonplace over the last several growing seasons will continue to have a significant impact on sugar production so growers will need to continue to modify and adapt N management strategies accordingly.



Herbicide Trial Sylvester - Quanicassee, MI - 2025

(Page 1 of 2)

Trial Quality: Good

Variety: C-G229

Planted: April 28

Harvested: October 2

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 inches

Application: JD 3520 tractor mounted plot sprayer, compressed air, 30 psi, 15.3 gpa

Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

Soil Info: Loam

% OM: 3.1 **pH:** 7.1 **CEC:** 13.5

P: High **K:** Very High

Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Wheat/Rye

Rhizoc. Level: Low

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 15.39 inches

Beets/100 ft.: 175

No.	Treatment	Rate/Acre	Applic. Timing	% Spray Damage	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP	Beets/100ft.	Dead Beets/100ft.
				* 0-100							13-May	15-Sep
1	Dual Magnum	8 fl.oz.	28-Apr	0.0	327	\$2,870	11341	34.7	18.8	96.4	157.3	1.7
	Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	24 fl.oz.+17 lbs.+ 2 fl.oz.+ 4 fl.oz.+ 2 fl.oz.	28-May									
2	Dual Magnum + Ethotron	8 fl.oz. + 2 pt.	28-Apr	0.0	311	\$2,546	10648	34.2	18.4	95.0	172.6	1.1
	Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	24 fl.oz.+17 lbs.+ 2 fl.oz.+ 4 fl.oz.+ 2 fl.oz.	28-May									
3	Ethotron	3 pt.	28-Apr	0.0	313	\$2,522	10461	33.4	18.1	96.2	194.8	1.7
	Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	24 fl.oz.+17 lbs.+ 2 fl.oz.+ 4 fl.oz.+ 2 fl.oz.	28-May									
4	Ethotron	2 pt.	28-Apr	0.0	312	\$2,509	10453	33.5	18.2	95.8	177.4	1.5
	Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	24 fl.oz.+17 lbs.+ 2 fl.oz.+ 4 fl.oz.+ 2 fl.oz.	28-May									
5	Dual Magnum	8 fl.oz.	28-Apr	55.0	327	\$2,790	11023	33.7	19.1	95.8	170.9	1.9
	Outlook+ Roundup Powermax + AMS + Stinger Mustang Maxx + Excalia	1 pt.+ 24 fl.oz.+ 17 lbs.+ 2 fl.oz.+ 4 fl.oz. + 2 fl.oz.	28-May									
6	Dual Magnum + Ethotron	8 fl.oz. + 2 pt.	28-Apr	47.5	311	\$2,423	10150	32.7	18.1	95.8	162.9	2.4
	Outlook+ Roundup Powermax + AMS + Stinger Mustang Maxx + Excalia	1 pt.+ 24 fl.oz.+ 17 lbs.+ 2 fl.oz.+ 4 fl.oz.+ 2 fl.oz.	28-May									
7	Ethotron	3 pt.	28-Apr	35.0	310	\$2,188	9231	29.8	18.2	95.4	188.8	1.9
	Outlook+ Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	1 pt. + 24 fl.oz. + 17 lbs. + 2 fl.oz. + 4 fl.oz. + 2 fl.oz.	28-May									
8	Ethotron	2 pt.	28-Apr	55.0	310	\$2,471	10398	33.6	18.4	95.1	180.0	1.5
	Outlook+Roundup Powermax + AMS + Stinger Mustang Maxx + Excalia	1 pt.+ 24 fl.oz. + 17 lbs.+ 2 fl.oz.+ 4 fl.oz.+ 2 fl.oz.	28-May									
9	Dual Magnum	8 fl.oz.	28-Apr	35.5	319	\$2,653	10787	33.8	18.7	95.5	163.8	1.9
	Warrant + Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	3 pt. + 24 fl.oz. + 17 lbs. + 2 fl.oz. + 4 fl.oz. + 2 fl.oz.	28-May									

Spray Damage* Ratings are on a scale of 0-100, 0 = no spray damage and 100 = total spray damage

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

No.	Treatment	Rate/Acre	Applic. Timing	% Spray Damage * 0-100	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP	Beets/ 100ft.	Dead Beets/ 100ft.
				13-Jun							13-May	15-Sep
10	Dual Magnum + Ethotron	8 fl.oz. + 2 pt.	28-Apr	32.5	298	\$2,306	10235	34.4	17.7	94.9	164.7	1.9
	Warrant + Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	3 pt. + 24 fl.oz. + 17 lbs. + 2 fl.oz. + 4 fl.oz. + 2 fl.oz.	28-May									
11	Ethotron	3 pt.	28-Apr	47.5	311	\$2,530	10610	34.1	18.2	95.5	177.6	1.5
	Warrant + Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	3 pt. + 24 fl.oz. + 17 lbs. + 2 fl.oz. + 4 fl.oz. + 2 fl.oz.	28-May									
12	Ethotron	2 pt.	28-Apr	5.0	312	\$2,475	10333	33.1	18.4	95.3	193.5	1.1
	Warrant + Roundup Powermax + AMS + Stinger + Mustang Maxx + Excalia	3 pt. + 24 fl.oz. + 17 lbs. + 2 fl.oz. + 4 fl.oz. + 2 fl.oz.	28-May									
Average				26.1	313	\$2,523	10472	33.4	18.4	95.6	175.4	1.7
LSD 5%				25.9	16.6	328.6	847.9	2.1	0.7	2.2	23.3	2.6
CV %				69.0	3.7	9.1	5.6	4.3	2.5	1.6	9.2	107.8

Spray Damage* Ratings are on a scale of 0-100, 0 = no spray damage and 100 = total spray damage

Comments: Study was designed to study the safety of pre and post emergence herbicides on sugarbeets.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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



Pre-Emerge Trial Sylvester - Fairgrove, MI - 2025

Trial Quality: Good

Variety: C-G229

Planted: April 28

Harvested: October 2

Plots: 6 rows X 38 feet, 4 reps

Row Spacing: 22 in.

Application: JD 3520 tractor mounted plot sprayer, compressed air, 15.3 gpa

Monosem 6-row Agronomy Planter, compressed air, 30 psi, 9 gpa - IF, 3.5" band

Soil Info: Loam

% OM: 3.1 **pH:** 7.1 **CEC:** 13.5

P: High **K:** Very High

Mn: High **B:** High

Added N: 40 lbs. 2X2, 120 lbs. side-dress

Previous Crop: Wheat/Rye

Rhizoc. Level: Low

Cerc. Control: Good

Problems: None

Seeding Rate: 4.1 inch

Rainfall: 15.39 inches

Beets/100 ft.: 171

No.	Treatment	Rate/Acre	Applic. Timing	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
1	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	278	\$1,607	7724	27.6	16.2	96.4
	Dual Magnum	8 oz.	Pre-Emerge						
2	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	282	\$1,758	8403	29.8	16.8	95.0
	Dual Magnum + Ethotron	8 oz. + 8 fl.oz.	Pre-Emerge						
3	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	302	\$2,036	8808	29.1	17.3	96.8
	Ethotron	8 oz.	Pre-Emerge						
4	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	272	\$1,566	7883	28.9	16.1	95.3
	Dual Magnum + Ethotron	8 oz. + 16 oz.	Pre-Emerge						
5	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	296	\$1,946	8602	28.9	16.9	97.1
	Ethotron	16 oz.	Pre-Emerge						
6	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	297	\$2,015	8940	30.1	17.7	94.9
	Dual Magnum + Ethotron	8 oz. + 24 oz.	Pre-Emerge						
7	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	270	\$1,534	7751	28.5	16.2	95.0
	Ethotron	24 oz.	Pre-Emerge						
8	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	289	\$1,777	8210	28.5	17.1	95.2
	Dual Magnum + Ethotron	8 oz. + 32 oz.	Pre-Emerge						
9	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	305	\$2,272	9696	31.7	17.6	96.6
	Ethotron	32 oz.	Pre-Emerge						
10	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	280	\$1,596	7636	27.1	16.7	95.0
	Dual Magnum + Ethotron	8 oz. + 48 oz.	Pre-Emerge						
11	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	301	\$2,118	9214	30.6	17.5	96.2
	Ethotron	48 oz.	Pre-Emerge						
12	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	297	\$1,896	8432	28.4	16.9	97.4
	Dual Magnum	8 oz.	Pre-Emerge						
13	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	297	\$1,990	8860	29.8	17.6	95.2
	Dual Magnum + Ethotron	8 oz. + 8 oz.	Pre-Emerge						
14	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	301	\$2,008	8765	29.1	17.6	96.1
	Ethotron	8 oz.	Pre-Emerge						
15	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	313	\$2,266	9445	30.1	17.9	96.9
	Dual Magnum + Ethotron	8 oz. + 16 oz.	Pre-Emerge						
16	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	284	\$1,807	8509	29.8	16.9	95.0
	Ethotron	16 oz.	Pre-Emerge						

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

No.	Treatment	Rate/Acre	Applic. Timing	RWST	Net \$/A	RWSA	T/A	% SUC	% CJP
17	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	282	\$1,762	8394	29.6	16.6	95.7
	Dual Magnum + Ethotron	8 oz. + 24 oz.	Pre-Emerge						
18	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	292	\$2,000	9089	31.1	17.3	95.1
	Ethotron	24 oz.	Pre-Emerge						
19	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	294	\$1,923	8702	29.6	17.4	95.2
	Dual Magnum + Ethotron	8 oz. + 32 oz.	Pre-Emerge						
20	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	285	\$1,823	8606	30.2	17.2	94.3
	Ethotron	32 oz.	Pre-Emerge						
21	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	296	\$1,781	7970	26.9	17.4	95.6
	Dual Magnum + Ethotron	8 oz. + 48 oz.	Pre-Emerge						
22	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	299	\$2,108	9286	31.0	17.5	95.8
	Ethotron	48 oz.	Pre-Emerge						
Average				291	\$1,890	8588	29.4	17.1	95.7
LSD 5%				27.3	512.9	1333.7	2.8	1.3	2.1
CV%				6.6	19.2	11.0	6.7	5.4	1.6

Comments: Study was designed to test injury from pre-emergence herbicides. No stand loss was observed from the treatments.

Net \$/A is calculated using early delivery adjustment where necessary, the new Quality Payment System incorporating financial values from the post-harvest forecast minus fungicide and application cost.

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

No.	Treatment	Rate/Acre	Applic. Timing	Beets/100 ft.	Dead Beets/100 ft.
				13-May	15-Sep
1	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	165.5	2.6
	Dual Magnum	8 oz.	Pre-Emerge		
2	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	158.8	0.2
	Dual Magnum + Ethotron	8 oz. + 8 fl.oz.	Pre-Emerge		
3	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	185.1	4.1
	Ethotron	8 oz.	Pre-Emerge		
4	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	152.8	6.7
	Dual Magnum + Ethotron	8 oz. + 16 oz.	Pre-Emerge		
5	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	183.6	3.7
	Ethotron	16 oz.	Pre-Emerge		
6	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	171.6	1.7
	Dual Magnum + Ethotron	8 oz. + 24 oz.	Pre-Emerge		
7	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	162.7	1.9
	Ethotron	24 oz.	Pre-Emerge		
8	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	151.7	2.4
	Dual Magnum + Ethotron	8 oz. + 32 oz.	Pre-Emerge		
9	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	191.8	2.2
	Ethotron	32 oz.	Pre-Emerge		
10	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	151.5	5.2
	Dual Magnum + Ethotron	8 oz. + 48 oz.	Pre-Emerge		
11	Azteroid F.C. 3.3	6.3 fl.oz.	At Plant	176.3	2.6
	Ethotron	48 oz.	Pre-Emerge		
12	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	173.9	5.0
	Dual Magnum	8 oz.	Pre-Emerge		
13	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	174.8	3.0
	Dual Magnum + Ethotron	8 oz. + 8 oz.	Pre-Emerge		
14	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	181.0	3.7
	Ethotron	8 oz.	Pre-Emerge		
15	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	158.8	2.8
	Dual Magnum + Ethotron	8 oz. + 16 oz.	Pre-Emerge		
16	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	184.3	3.0
	Ethotron	16 oz.	Pre-Emerge		
17	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	174.1	2.2
	Dual Magnum + Ethotron	8 oz. + 24 oz.	Pre-Emerge		
18	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	178.0	3.4
	Ethotron	24 oz.	Pre-Emerge		

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

No.	Treatment	Rate/Acre	Applic. Timing	Beets/100 ft.	Dead Beets/100 ft.
				13-May	15-Sep
19	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	167.9	3.7
	Dual Magnum + Ethotron	8 oz. + 32 oz.	Pre-Emerge		
20	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	190.7	2.2
	Ethotron	32 oz.	Pre-Emerge		
21	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	161.0	4.5
	Dual Magnum + Ethotron	8 oz. + 48 oz.	Pre-Emerge		
22	Azteroid F.C. 3.3 + Sure Crop Pop Up 5-20-5	6.3 fl.oz. + 3 gal.	At Plant	187.3	3.4
	Ethotron	48 oz.	Pre-Emerge		
Average				172.0	3.2
LSD 5%				20.8	3.9
CV %				8.6	86.1

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



Weed Control and Sugarbeet Tolerance with Torero

Christy Sprague and Brian Stiles II, Michigan State University

LOCATION: Richville (SVREC)

PLANTING DATE: April 24, 2025

SOIL TYPE: Clay loam

REPLICATED: 4 times

APPLICATION TIMINGS: PRE (April 24)

HERBICIDES: See Treatments

O.M.: 2.3 **pH:** 7.6

VARIETY: Crystal G229RR

TABLE 1.

Common lambsquarters control from PRE herbicide applications 28, 56, and 63 days after planting (DAP). Yield and RWSA are reported for all treatments.

PRE herbicide treatments ^a	Common lambsquarters control			Sugarbeet	
	28 DAP	56 DAP	63 DAP	Yield	RWSA
	— % —	— % —	— % —	— ton/A —	— lbs./A —
None	0	0	0	28.8	7,515
Goltix (64 fl. oz.)	100	100	100	30.6	8,431
Ethofumesate (48 fl. oz.)	53*	64*	50*	31.2	8,401
Goltix (28 fl. oz.) + Ethofumesate (17.5 fl. oz.)	100	95	88	30.9	8,748
Goltix (40 fl. oz.) + Ethofumesate (25 fl. oz.)	100	100	99	33.0*	8,191
Goltix (52 fl. oz.) + Ethofumesate (32.5 fl. oz.)	100	100	100	32.8*	9,352*
Goltix (64 fl. oz.) + Ethofumesate (40 fl. oz.)	100	100	100	33.5*	9,076
TemperMore ^c (41 fl. oz.)	43*	53*	33*	33.7*	9,589*
LSD_{0.05}^d	5.4	6.9	12.9	3.5	1,636

^a All treatments had Roundup PowerMax 3 (30 fl. oz./acre) + AMS (17 lbs./100 gal.) applied POST at 63 days after planting (DAP).

^b Weed control data with asterisks (*) are different than the highest control and yield and recoverable white sugar per acre (RWSA) data with asterisks (*) are different than the no PRE treatment.

^c TemperMore is a premixture of glufosinate (Liberty) + s-metolachlor (Dual Magnum, etc.).

^d Means within a column greater than least significant difference (LSD) value are different from each other.

SUMMARY:

Torero is a new soil-applied premix herbicide being developed by ADAMA that contains ethofumesate (Nortron, Ethotron, etc.) and metamiltron (Goltix). Metamiltron is not currently labeled for use in Michigan, although it has a Section 18 label in the Western Growing Region for Palmer amaranth control. Our previous evaluations of metamiltron for waterhemp control in Michigan have not shown the same level of efficacy observed on Palmer amaranth. This study also included evaluation of another premix herbicide, TemperMore (glufosinate + S-metolachlor), as a potential new PRE option. The objectives of this trial were to assess sugarbeet tolerance to these herbicides applied at increasing rates and to evaluate control of common lambsquarters. Soil-applied treatments were evaluated through 63 days after planting, followed by a POST application of Roundup PowerMax 3. Overall, treatments containing metamiltron provided excellent control of common lambsquarters across all rates and were substantially more effective than ethofumesate alone or TemperMore. No visible crop injury was observed from any PRE treatments, and there were no reductions in sugarbeet yield or recoverable white sugar per acre (RWSA) compared with the no-PRE check. Average sugarbeet yield was 32.2 tons/acre with an RWSA of 8,827 lbs./acre. Future research will continue to evaluate the potential role of these premix herbicides in Michigan sugarbeet production systems.



Comparison of Different PRE Programs for Waterhemp Control in Sugarbeet

Christy Sprague and Brian Stiles II, Michigan State University

LOCATION: Shiawassee County
PLANTING DATE: May 12, 2025
SOIL TYPE: Clay loam
REPLICATED: 4 times

APPLICATION TIMINGS: PRE (May 12), 2-leaf beets (June 10), 6-leaf beets (June 24), 12-leaf beets (July 8)
HERBICIDES: See Treatments
O.M.: 2.3 **pH:** 7.5
VARIETY: Crystal G229RR

TABLE 1.
Waterhemp control throughout the growing season comparing different soil-applied herbicides.

Herbicide treatments ^a		Waterhemp control ^b			
		June 10 (29 DA- PRE)	June 24 (14 DA-2 lf)	July 22 (14 DA-12 lf)	Aug. 12 (35 DA-12 lf)
<i>PREs</i>	<i>POST applications</i> (2-lf, 6-lf, 12-lf beets)	—%—	—%—	—%—	—%—
None	Roundup PowerMax 3 (30/20/20 fl. oz.)	0	15	16	0
Dual Magnum (0.5 pt.)	Dual Magnum (0/1.3/0 pt.)	97*	74	68	60
Ethofumesate (3 pt.)	Dual Magnum (0/1.3/0 pt.)	100*	100*	100*	94*
Dual Magnum (0.5 pt.) + Ethofumesate (3 pt.)	Dual Magnum (0/1.3/0 pt.)	100*	100*	98*	96*
Goltix (64 fl. oz.) + Ethofumesate (2.5 pt.)	Dual Magnum (0/1.3/0 pt.)	100*	99*	97*	96*
LSD_{0.05}^c		3.3	10.6	12.8	13.9

^a Roundup PowerMax 3 was included in all POST treatments at the rates listed in the first treatment. These treatments also included AMS at 17 lbs./100 gal. Dual Magnum at 1.3 pt./acre was included in the 6-leaf application to help with season-long waterhemp control.

^b Waterhemp control evaluations with asterisks (*) are similar to the best waterhemp control treatment.

^c Means within a column greater than least significant difference (LSD) value are different from each other.

SUMMARY:

Residual herbicide programs are currently one of the few effective options for managing glyphosate-resistant (GR) waterhemp in sugarbeet. In 2025, we evaluated several questions related to herbicide programs for GR waterhemp control, which are addressed across three summary reports. This summary focuses on comparing the effectiveness and duration of control provided by potential PRE herbicides for early-season GR waterhemp management. Treatments included the 24(c)-label rate of Dual Magnum at 0.5 pt./acre, ethofumesate at 3 pt./acre, and a tank mix of Dual Magnum plus ethofumesate. These programs were also compared with the premix Torero (Goltix + ethofumesate). All PRE treatments initially provided excellent waterhemp control for approximately 30 days after application. As the season progressed, treatments containing ethofumesate, either alone or in combination, maintained excellent control for an additional 14 days compared with Dual Magnum alone. To evaluate extended-season control, an overlapping Group 15 herbicide (Dual Magnum) was applied later in the season. Results indicate that when waterhemp emerged before the overlapping Group 15 application-applied later than the 2-leaf sugarbeet stage or beyond 30 days after planting, ethofumesate alone or tank-mixed with Dual Magnum at 0.5 pt./acre provided the longest-lasting control. These findings suggest that, from a consistency standpoint, PRE applications of ethofumesate alone or in combination with Dual Magnum (0.5 pt./acre) offer a strong foundation for early-season waterhemp control. However, a POST application of a Group 15 herbicide (Dual Magnum, Outlook, or Warrant) remains necessary and must be applied before any waterhemp emergence to maintain season-long control. We thank Michigan Sugar Company for their support of this research.



Waterhemp Control with Overlapping Residual Herbicides in Sugarbeet

Christy Sprague and Brian Stiles II, Michigan State University

LOCATION: Shiawassee County
PLANTING DATE: May 12, 2025
SOIL TYPE: Clay loam
REPLICATED: 4 times

APPLICATION TIMINGS: PRE (May 12), 2-leaf beets (June 10), 6- to 8-leaf beets (June 24), 12-leaf beets (July 8)
HERBICIDES: See Treatments
O.M.: 2.3 **pH:** 7.5
VARIETY: Crystal G229RR

TABLE 1.

Waterhemp control throughout the season comparing overlapping residuals with two different PRE programs, Dual Magnum (0.5 pt./acre) and Dual Magnum (0.5 pt./acre) + Ethofumesate (3 pt./acre).

Herbicide treatments ^a		Waterhemp control ^b		
		June 24 (14 DA-2 lf)	July 22 (14 DA-12 lf)	Aug. 12 (35 DA-12 lf)
<i>PREs</i>	<i>POST applications</i> (2-1f, 6-1f, 12-1f beets)	—%—	—%—	—%—
None	Roundup PowerMax 3 (30/20/20 fl. oz.)	15	16	0
Dual Mag. ^c (0.5 pt.)	Dual Magnum (1/1/0 pt.)	91	87	80
Dual Mag. (0.5 pt.)	Warrant (3/3/0 pt.)	90	87	83
Dual Mag. (0.5 pt.)	Outlook (12/12/0 fl. oz.)	96*	91*	86
Dual (0.5 pt.) + Etho (3 pt.)	Dual Magnum (1/1/0 pt.)	98*	96*	95*
Dual (0.5 pt.) + Etho (3 pt.)	Warrant (3/3/0 pt.)	100*	100*	99*
Dual (0.5 pt.) + Etho. (3 pt.)	Outlook (12/12/0 fl oz.)	100*	98*	96*
LSD_{0.05}^d		8.3	9.8	11.7

^a Roundup PowerMax 3 was included in all POST treatments at the rates listed in the first treatment. These treatments also included AMS at 17 lbs./100 gal.

^b Waterhemp control evaluations with asterisks (*) are similar to the best waterhemp control treatment.

^c Dual Mag. = Dual Magnum; Etho. = Ethofumesate (i.e., Nortron, Ethotron, etc.)

^d Means within a column greater than least significant difference (LSD) value are different from each other.

SUMMARY:

Residual herbicide programs are currently among the most effective options for managing glyphosate-resistant (GR) waterhemp in sugarbeet. A field trial was conducted to evaluate weed control programs that incorporated overlapping Group 15 herbicides (Dual Magnum, Outlook, and Warrant) applied POST at the 2-leaf and 6- to 8-leaf sugarbeet growth stages. All programs were preceded by a PRE application of either Dual Magnum (0.5 pt./acre) alone or Dual Magnum (0.5 pt./A) plus ethofumesate (3 pt./acre). Early-season waterhemp control exceeded 90% across all treatments. As the season progressed, programs that included Dual Magnum (0.5 pt./acre) plus ethofumesate (3 pt./acre) applied PRE, followed by any overlapping Group 15 herbicide applied POST, consistently resulted in 95% or greater waterhemp control. Overlapping POST residual treatments consisted of sequential applications at the 2- and 6-leaf sugarbeet stages of Dual Magnum (1.3/1.3 pt./acre), Outlook (12/12 fl. oz./acre), or Warrant (3/3 pt./acre). A key takeaway from this trial is that a PRE application containing ethofumesate at 3 pt./acre, with or without the 24(c) label rate of Dual Magnum at 0.5 pt./acre, is critical for effective early-season waterhemp control. In addition, sequential applications of Group 15 herbicides are necessary to maintain season-long control. However, overlapping residual applications must be made prior to any waterhemp emergence to achieve optimal results. Research will continue to develop, evaluate, and refine waterhemp management strategies in sugarbeet. We thank Michigan Sugar Company for their support of this research.



Ultra Blazer as a Rescue Treatment for Waterhemp Control

Christy Sprague and Brian Stiles II, Michigan State University

LOCATION: Shiawassee County
PLANTING DATE: May 12, 2025
SOIL TYPE: Clay loam
REPLICATED: 4 times

APPLICATION TIMINGS: PRE (May 12), 2-leaf beets (June 10), 6- to 8-leaf beets (June 24), 12-leaf beets (July 8)
HERBICIDES: See Treatments
O.M.: 2.3 **pH:** 7.5
VARIETY: Crystal G229RR

TABLE 1.
Waterhemp control throughout the season with Ultra Blazer as a rescue treatment with and without Warrant.

Herbicide Treatments ^a	Waterhemp control ^b		
	June 24 (14 DA-2-lf)	July 22 (14 DA-12-lf)	Aug. 12 (35 DA-12-lf)
<i>PREs</i> <i>POST applications</i> (2-leaf, 6-leaf, 12-leaf beets)	—%—	—%—	—%—
None Roundup PowerMax 3 (30/20/20 fl. oz.)	15	16	0
Dual Mag. ^c Warrant (3/3/0 pt.)	96*	91	86*
Dual Mag. Warrant (3/0/0 pt.) + Ultra Blazer (1 pt.) - 6-leaf	90*	96*	89*
Dual Mag. Warrant (3/3/0 pt.) + Ultra Blazer (1 pt.) - 6-leaf	90*	97*	92*
Dual Mag. Warrant (3/0/0 pt.) + Ultra Blazer (1 pt.) - 12-leaf	94*	99*	94*
Dual Mag. Warrant (3/0/3 pt.) + Ultra Blazer (1 pt.) - 12-leaf	95*	99*	94*
LSD_{0.05}^d	<i>10.3</i>	<i>6.7</i>	<i>10.3</i>

^a Roundup PowerMax 3 was included in all POST treatments at the rates listed in the first treatment. These treatments also included AMS at 17 lb/100 gal.
^b Waterhemp control evaluations with asterisks (*) are similar to the best waterhemp control treatment.
^c Dual Mag. = Dual Magnum was applied at 0.5 pt/A.
^d Means within a column greater than least significant difference (LSD) value are different from each other.

SUMMARY:

Options for POST control of glyphosate-resistant (GR) waterhemp in sugarbeet are extremely limited. Ultra Blazer (acifluorfen) is a Group 14 herbicide with activity on pigweed species, provided populations are not resistant to Group 14 herbicides. Over the past several years, we have evaluated sugarbeet tolerance to POST applications of Ultra Blazer, which has resulted in a Section 18 label allowing a single application at 1 pt./acre once sugarbeet reach the 6-leaf stage. However, by the time Ultra Blazer can be applied, waterhemp plants are often too large for consistent control. As a result, effective waterhemp management in sugarbeet relies heavily on overlapping residual herbicide programs. If residual applications are delayed, waterhemp may emerge and will not be controlled by Group 15 herbicides applied after emergence. In 2025, we evaluated a series of treatments to assess control of waterhemp that had already emerged following a residual herbicide application. We also examined whether adding Warrant to Ultra Blazer increased sugarbeet injury. Overall, Ultra Blazer applied at either the 6- or 12-leaf sugarbeet stage provided control of small waterhemp plants that had escaped residual herbicide programs. In addition, sugarbeet injury was similar to, or lower than, Ultra Blazer alone when Warrant was included in the tank mix. These results support Michigan’s current Section 18 registration for Ultra Blazer applied at 1 pt./acre to sugarbeet at the 6-leaf stage or later and provide preliminary evidence that Warrant may be safely included with Ultra Blazer in future applications.



Waterhemp Control in Truvera Sugarbeet

Michael Dodde, Christy Sprague, and Brian Stiles II, Michigan State University

LOCATION: Shiawassee County

PLANTING DATE: May 12, 2025

SOIL TYPE: Loam

REPLICATED: 4 times

APPLICATION TIMINGS: PRE (May 12), 2-leaf beets (June 10), 6- to 8-leaf beets (June 24), 12-leaf beets (July 8)

HERBICIDES: See Treatments

O.M.: 2.2 **pH:** 7.2

VARIETY: Truvera

TABLE 1.

Waterhemp control at the 6-leaf, 12-leaf, and 35 days after the 12-leaf herbicide application.

Herbicide Treatments ^b		Waterhemp control ^a		
		June 24 (At 6-lf)	July 8 (At 12-lf)	Aug. 12 (35 DA-12-lf)
<i>PREs</i>	<i>POST applications^c</i> (2-leaf / 6-leaf beets)	—%—	—%—	—%—
None	Roundup PowerMax 3 (30/20 fl. oz.)	36	25	3
None	Liberty (29/29 fl. oz.)	92*	92*	78*
None	Liberty (29/29 fl. oz.) + PowerMax (30/20 fl. oz.)	94*	94*	70*
None	Warrant (3/0 pt.) + Liberty (29/29 fl. oz.) + PowerMax (30/20 fl. oz.)	71	85*	60*
None	Warrant (3/3 pt.) + Liberty (29/29 fl. oz.) + PowerMax (30/20 fl. oz.)	76	93*	77*
None	XtendiMax (22/0 fl. oz.) + PowerMax (30/20 fl. oz.) fb. Liberty (0/29 fl. oz.)	80	86*	60*
XtendiMax ^d	None	52	21	0
XtendiMax	Roundup PowerMax 3 (30/20 fl. oz.)	69	51	9
XtendiMax	Liberty (29/29 fl. oz.)	97*	90*	78*
XtendiMax	Liberty (29/29 fl. oz.) + PowerMax (30/20 fl. oz.)	97*	91*	75*
XtendiMax	Warrant (3/0 pt.) + Liberty (29/29 fl. oz.) + PowerMax (30/20 fl. oz.)	93*	88*	65*
XtendiMax	Warrant (3/3 pt.) + Liberty (29/29 fl. oz.) + PowerMax (30/20 fl. oz.)	94*	92*	80*
XtendiMax	XtendiMax (22/0 fl. oz.) + PowerMax (30/20 fl. oz.) fb. Liberty (29 fl. oz.)	93*	77*	51*
Dual Mag. (0.5 pt.)	Liberty (29/29 fl. oz.)	97*	95*	80*
Dual Mag. (0.5 pt.) + XtendiMax	Liberty (29/29 fl. oz.)	99*	94*	83*
Etho. (3 pt.)	Liberty (29/29 fl. oz.)	99*	97*	85*
Etho. (3 pt.) + XtendiMax	Liberty (29/29 fl. oz.)	99*	97*	85*

^a Waterhemp control evaluations with asterisks (*) are similar to the best waterhemp control treatment.

^b Abbreviations: PowerMax = Roundup PowerMax 3; Dual Mag. = Dual Magnum; Etho. = ethofumesate. All PowerMax and Liberty applications included AMS, XtendiMax applications included a drift reducing agent and a vapor reducing agent.

^c Roundup PowerMax 3 (20 fl. oz.) + AMS was applied to all treatments with POST applications at the 12-leaf sugarbeet stage.

^d XtendiMax was applied at 22 fl. oz./acre.

**SUMMARY:**

There are limited options to control waterhemp in glyphosate-resistant sugarbeet. Truvera sugarbeet is a new trait package that is currently not registered and is resistant to dicamba (XtendiMax), glufosinate (Liberty), and glyphosate (Roundup). The ability to apply these herbicides provides growers additional herbicide options. Therefore, a field trial was conducted to evaluate various herbicide programs in Truvera sugarbeet for waterhemp control with and without XtendiMax PRE. Additionally, Dual Magnum at 0.5 pt and ethofumesate at 3 pt. were applied alone and tank-mixed with XtendiMax PRE and were followed by two applications of Liberty at the 2- and 6-leaf sugarbeet stages. None of the herbicides used resulted in sugarbeet injury. Applications of Roundup PowerMax 3 alone did not provide sufficient waterhemp control (36%). The addition of Liberty to postemergence herbicide treatments was beneficial in controlling waterhemp. Liberty applied twice at the 2- and 6-leaf growth stage resulted in $\geq 92\%$ control of waterhemp at the 12-leaf evaluation. The addition of Dual Magnum, XtendiMax, ethofumesate, or a combination applied PRE resulted in the greatest level of waterhemp control ($\geq 80\%$) 35 days after the 12-leaf application. Based on this research, the introduction of Truvera sugarbeet allows growers additional herbicide options to control glyphosate-resistant waterhemp without crop injury. Additional work should be done to develop herbicide programs that provide season-long waterhemp control.

Trial Quality: Excellent
Seeding Rate: 63,000 seeds/acre
Plot Size: 8 rows x 950 feet
Row Spacing: 22 inches

Harvest Samples: 09/17/25
Harvest: 09/17/25
Number of Reps: 3
(passes each defoliator)

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
Scalped	\$2,655	327	11758	35.9	17.9	97.1
Not Scalped	\$2,267	314	10532	33.6	17.6	96.5
Average	\$2,461	320	11145	34.8	17.8	96.8
LSD 5%	530.4	32.7	1214.6	1.6	2.8	0.3
CV %	6.1	2.9	3.1	1.3	4.4	0.1

Comments: Each pass had even and consistent plant spacing with some variation in crown height. The grower's defoliator was a WIC/Amity with rubber flails on all 3 drums. The defoliator used for the scalping passes was an Amity 3550 with steel flails on the front drum, studded rubber center drum, and split flails with sweeper flails on the outside of the rear drum. The scalper was a plate/knife design. Each row has parallel arms (similar to a planter unit) for independent height control. This defoliator is also designed with Active Height Control (AHC). Sensors mounted on the rear of the machine monitor the average beet height in comparison to the ground level, keeping the defoliator adjusted both front to back and left to right.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Trial Quality: Excellent
Seeding Rate: 63,500 seeds/acre
Plot Size: 8 rows
Row Spacing: 22 inches

Harvest Samples: 09/29/25
Harvest: 09/29/25
Number of Reps: 3
 (passes each Defoliator)

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
East B-1276						
Scalped	\$2,571	326	11051	33.9	17.7	97.4
Not Scalped	\$2,252	309	10382	33.6	19.9	96.1
West C-233						
Scalped	\$2,012	294	10025	34.1	16.5	96.2
Not Scalped	\$1,174	251	8258	32.9	15.1	95.2
Average	\$2,002	295	9929	33.6	17.3	96.2
LSD 5%	1495.8	63.2	4550.8	8.3	3.6	0.3
CV %	20.3	6.0	12.7	7.0	6.0	0.1

Comments: A consistent stand and low/even crown height allowed both defoliators to accurately represent its capabilities. The grower's defoliator was an Alloway with rubber flails on all three drums. The defoliator used for the scalping passes was an Amity 3550 with steel flails on the front drum, studded rubber center drum, and split flails with sweeper flails on the outside of the rear drum. The scalper was a plate/knife design. Each row has parallel arms (similar to a planter unit) for independent height control. This defoliator is also designed with Active Height Control (AHC). Sensors mounted on the rear of the machine monitor the average beet height in comparison to the ground level, keeping the defoliator adjusted both front to back and left to right. Sprayer tracks were avoided to eliminate the variable.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Trial Quality: Excellent
Seeding Rate: 58,000 seeds/acre
Plot Size: 8 rows
Row Spacing: 22 inches

Harvest Samples: 09/16/25
Harvest: 09/16/25
Number of Reps: 3
(passes each Defoliator)

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
Scalped	\$2,389	337	10269	30.5	18.3	96.8
Not Scalped	\$2,330	328	10287	31.4	17.9	96.5
Average	\$2,360	333	10278	30.9	18.1	96.6
LSD 5%	95.0	24.8	580.4	3.9	0.1	1.3
CV %	1.2	2.1	1.6	3.6	0.2	0.4

Comments: A consistent stand and low/even crown height allowed both defoliators to accurately represent its capabilities. The grower's defoliator was an Alloway with steel flails on the front drum and the Richmond flail setup on the second and third drums. The defoliator used for the scalping passes was an Amity 3550 with steel flails on the front drum, studded rubber center drum, and split flails with sweeper flails on the outside of the rear drum. The scalper was a plate/knife design. Each row has parallel arms (similar to a planter unit) for independent height control. This defoliator is also designed with Active Height Control (AHC). Sensors mounted on the rear of the machine monitor the average beet height in comparison to the ground level, keeping the defoliator adjusted both front to back and left to right.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

Trial Quality: Excellent
Seeding Rate: 63,000 seeds/acre
Plot Size: 8 rows
Row Spacing: 22 inches

Harvest Samples: 9/11/25
Harvest: 9/11/25
Number of Reps: 3
(passes each Defoliator)

Treatment	\$/Acre	RWST	RWSA	T/A	% SUC	% CJP
Not Scalped	\$1,902	301	9298	30.9	16.8	95.8
Scalped	\$1,776	296	8878	30.0	16.4	95.8
Average	\$1,839	298	9088	30.5	16.6	95.8
LSD 5%	239.8	18.1	977.3	3.9	0.4	2.1
CV %	3.7	1.7	3.1	3.6	0.6	0.6

Each pass had even and consistent plant spacing and crown height. The grower's defoliator was a WIC/Amity with Richmond rubber flails on all three drums. The defoliator used for the scalping passes was an Amity 3550 with steel flails on the front drum, studded rubber center drum, and split flails with sweeper flails on the outside of the rear drum. The scalper was a plate/knife design. Each row has parallel arms (similar to a planter unit) for independent height control. This defoliator is also designed with Active Height Control (AHC). Sensors mounted on the rear of the machine monitor the average beet height in comparison to the ground level, keeping the defoliator adjusted both front to back and left to right.

\$/A is calculated using the new Quality Payment System incorporating values from the post-harvest forecast.

REACH/SUGARBEET ADVANCEMENT COMMITTEE LIST 2025 VOTING MEMBERSHIP

23 VOTING MEMBERS

COMPANY	NAME	TERMS EXPIRE Annual Meeting
Michigan Sugar Company	Dan Gowan	Permanent
	Joe Hodder	Permanent
	Zach Young	Permanent
	Corey Guza	Permanent
Michigan Sugar Company Agronomy Managers (4 years)	Robert Stoutenburg	2028
	Kevin Messing	2026
	Brice Stine	2027
Michigan Sugar Company District Board Members (1 year)	James Guza	2026
	Brandon Bauer (Secretary)	2026
	Ben Chaffin (Treasurer)	2026
Michigan Sugar Company At-large Growers (3 years)	Troy Gingrich	2026
	Kyle Crumbaugh	2028
	Eric Gentner (Vice Chair)	2026 (*2/3)
	Mark Sylvester (Chairman)	2026 (*2/3)
Michigan State University, University of Guelph, and USDA (3 years)	Linda Hanson	2027
	Jocelyn Smith	2028
	Jaime Willbur	2028
Sugarbeet Seed Company (2 years)	Dan Bjur	2028
Agri-business Retail (2 years)	JJ Metz	2026
Agri-business Manufacturing (2 years)	Brian Devine	2027
Michigan Sugar Company Co-op Board of Directors (1 year)	Mike Leen	2026
	Dexter Auernhamer	2026
Sugarbeet Advancement Director	David Wishowski	Permanent

**Term Limits (current term/terms allowed)*

EX-OFFICIO MEMBERS

TITLE/COMPANY	NAME
Chairman • Michigan Sugar Company Co-op Board of Directors	Adam Herford
President & CEO • Michigan Sugar Company	Neil Juhnke



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