

The logo for Superior Ag features three red, curved, parallel lines that sweep upwards and to the right, positioned above the company name.

Superior Ag

2023

Innovator Trial

Results

Hybrid Performance, Seasonal Weather

2023 Hybrid Heat Map



	Planting Date	4930DGVT2P	DKC111-35VT2P	5208VT2P	DKC62-70VT2P	P1222AM	5370VT2P	5497VT2P	DKC64-22VT2P	5550VT2P	5588DGVT2P	P1511	DKC66-06TRE	5760TRE	DKC67-94TRE	DKC68-35VT2P	DKC70-45VT2P	Plot Average
Aaron Krueger	5/24/2023		221.7	215.4	214.6	197.8	207.8	213.9	202.8	204.6		206.9	229.2	215.3		221.0	196.1	211.3
Ben Duttlinger	5/23/2023	226.8	266.9	258.4	271.5	242.3	265.2	240.3	276.2	239.7	278.0	251.9	266.9	242.5		269.7	256.2	256.8
Berg & Sons	5/6/2023	280.1	286.8	274.2	283.6	295.0	289.9	295.4	275.1	283.3	294.9	297.4	301.6	286.3	276.7	300.8	290.6	288.2
Cline	5/4/2023	238.1		235.7	238.3		232.2	255.7	250.3	252.3				248.1	249.4			244.5
Daryl Auffart	5/5/2023				288.1	298.0	274.5	287.2	304.2	293.7	292.1	300.2	323.9	289.1		309.4		296.4
El Pork Haven	5/4/2023	257.6	254.2	260.8		265.9	271.5	282.7	284.3	272.2		277.8	289.1	279.1	281.0	294.6		274.7
Gries & Sons	4/24/2023	289.3	289.1	277.2	273.7	283.0	296.5	297.9	297.7	290.5	286.5	280.6	311.6	318.3	295.3	319.0	306.8	294.6
Heritage Farms	5/3/2023	262.1	269.2	260.4	262.6	263.1	270.0	279.6	261.3	267.3	256.9	247.2	275.8	261.6	259.4	280.1	263.1	265.0
Hagan Bros	4/19/2023		234.3	235.7	234.0	227.8		249.3	244.1	220.3	231.5	238.9	257.1	238.0		255.8	230.9	238.3
Lueken Livestock	4/18/2023		252.0	243.4	260.3	253.2	244.1	268.3	239.9	225.1	251.8	214.5	278.8	262.6		239.7		248.7
Miley Farms	4/25/2023	255.7	255.6	253.4	251.4	255.7	248.0	263.9	254.1	245.9	243.4	255.8	269.9	278.4	259.6	277.5	255.5	257.7
Mundy Farms	5/3/2023	292.7	291.8	287.6	289.8	296.7	297.0	299.8	292.8	297.4	288.6	297.1	315.6	284.4	294.8	313.4	293.1	295.8
Peter Farms	5/25/2023		264.1	241.8	256.2	247.2	219.8	264.4	250.8	252.5		239.9	256.4	245.0		264.0	251.1	250.2
Reinke Farms	5/4/2023	276.3	265.3	253.1	256.8	263.7		251.5	268.1	261.5		263.1		269.2	253.4	260.0	271.8	262.6
Rudolph Bros	5/3/2023	252.2	275.4	260.0	270.0	236.2	288.4	284.8	282.3	277.6		269.3	275.8	276.9	277.9	298.2	272.5	273.2
Tim Denu	5/3/2023	258.6	256.3	257.4	251.0	280.0	282.6	278.0	275.1	262.9	266.9	269.3	291.5	289.6	259.9	306.6	282.3	273.0
Meyer Farms	4/24/2023	276.5	276.2	261.1	280.0	272.2	268.2	279.5	283.0	279.2	264.9	270.3	292.9	301.1	275.1	301.5	278.0	278.7
Anonymous	4/18/2023		269.5	266.6	269.4	289.0	288.8	291.9	292.9	293.6	284.7	286.9	315.2	306.9	283.7	310.6	282.6	288.8
Weisheit Bros	4/18/2023		267.6	262.4	264.0	267.9		288.2	285.2	285.1	278.9	267.0	302.0	291.0	272.4	305.6	280.0	279.8
Waninger	5/30/2023		282.5	263.3	291.8	299.6	274.0	282.4	287.1	274.2			294.5	264.4	283.4	291.9		282.4
Average		263.8	265.5	257.0	263.5	265.0	265.8	272.7	270.4	263.9	270.7	263.0	286.0	272.4	273.0	285.0	267.4	
# of Plots		12	18	19	19	19	17	20	20	20	13	18	18	20	14	19	15	
% Mean		97.0%	99.1%	96.4%	98.4%	98.4%	98.7%	101.8%	100.9%	98.5%	98.8%	97.9%	106.1%	101.6%	99.0%	105.8%	99.9%	



2023 Hybrid Heat Map w/o 66-06 & 68-35



	4930DGV2P	DKC111-35VT2P	5208VT2P	DKC62-70VT2P	P1222AM	5370VT2P	5497VT2P	DKC64-22VT2P	5550VT2P	5588DGV2P	P1511	5760TRE	DKC67-94TRE	DKC70-45VT2P	Plot Average
Aaron Krueger		221.7	215.4	214.6	197.8	207.8	213.9	202.8	204.6		206.9	215.3		196.1	208.8
Ben Duttlinger	226.8	266.9	258.4	271.5	242.3	265.2	240.3	276.2	239.7	278.0	251.9	242.5		256.2	255.1
Berg & Sons	280.1	286.8	274.2	283.6	295.0	289.9	295.4	275.1	283.3	294.9	297.4	286.3	276.7	290.6	286.4
Cline	238.1		235.7	238.3		232.2	255.7	250.3	252.3			248.1	249.4		244.5
Daryl Auffart				288.1	298.0	274.5	287.2	304.2	293.7	292.1	300.2	289.1			291.9
El Pork Haven	257.6	254.2	260.8		265.9	271.5	282.7	284.3	272.2		277.8	279.1	281.0		271.6
Gries & Sons	289.3	289.1	277.2	273.7	283.0	296.5	297.9	297.7	290.5	286.5	280.6	318.3	295.3	306.8	291.6
Heritage Farms	262.1	269.2	260.4	262.6	263.1	270.0	279.6	261.3	267.3	256.9	247.2	261.6	259.4	263.1	263.1
Hagan Bros		234.3	235.7	234.0	227.8		249.3	244.1	220.3	231.5	238.9	238.0		230.9	235.0
Lueken Livestock		252.0	243.4	260.3	253.2	244.1	268.3	239.9	225.1	251.8	214.5	262.6			246.8
Miley Farms	255.7	255.6	253.4	251.4	255.7	248.0	263.9	254.1	245.9	243.4	255.8	278.4	259.6	255.5	255.5
Mundy Farms	292.7	291.8	287.6	289.8	296.7	297.0	299.8	292.8	297.4	288.6	297.1	284.4	294.8	293.1	293.1
Peter Farms		264.1	241.8	256.2	247.2	219.8	264.4	250.8	252.5		239.9	245.0		251.1	248.4
Reinke Farms	276.3	265.3	253.1	256.8	263.7		251.5	268.1	261.5		263.1	269.2	253.4	271.8	262.8
Rudolph Bros	252.2	275.4	260.0	270.0	236.2	288.4	284.8	282.3	277.6		269.3	276.9	277.9	272.5	271.0
Tim Denu	258.6	256.3	257.4	251.0	280.0	282.6	278.0	275.1	262.9	266.9	269.3	289.6	259.9	282.3	269.3
Meyer Farms	276.5	276.2	261.1	280.0	272.2	268.2	279.5	283.0	279.2	264.9	270.3	301.1	275.1	278.0	276.1
Anonymous		269.5	266.6	269.4	289.0	288.8	291.9	292.9	293.6	284.7	286.9	306.9	283.7	282.6	285.1
Weisheit Bros		267.6	262.4	264.0	267.9		288.2	285.2	285.1	278.9	267.0	291.0	272.4	280.0	275.8
Waninger		282.5	263.3	291.8	299.6	274.0	282.4	287.1	274.2			264.4	283.4		280.3
Average	263.8	265.5	256.2	263.5	265.0	265.8	272.7	270.4	263.9	270.7	263.0	272.4	273.0	267.4	
# of Plots	12	18	19	19	19	17	20	20	20	13	18	20	14	15	
% Mean	97.7%	100.1%	97.0%	99.3%	99.3%	99.6%	102.7%	101.8%	99.4%	99.8%	98.9%	102.6%	99.9%	100.8%	

2023 Hybrid Heat Map 109-113 RM



	4930DGV2P	DKC111-35VT2P	5208VT2P	DKC62-70VT2P	P1222AM	5370VT2P	Plot Average
Aaron Krueger		221.7	215.4	214.6	197.8	207.8	211.5
Ben Duttlinger	226.8	266.9	258.4	271.5	242.3	265.2	255.2
Berg & Sons	280.1	286.8	274.2	283.6	295.0	289.9	284.9
Cline	238.1		235.7	238.3		232.2	236.1
Daryl Auffart				288.1	298.0	274.5	286.9
El Pork Haven	257.6	254.2	260.8		265.9	271.5	262.0
Gries & Sons	289.3	289.1	277.2	273.7	283.0	296.5	284.8
Heritage Farms	262.1	269.2	260.4	262.6	263.1	270.0	264.6
Hagan Bros		234.3	235.7	234.0	227.8		233.0
Lueken Livestock		252.0	243.4	260.3	253.2	244.1	250.6
Miley Farms	255.7	255.6	253.4	251.4	255.7	248.0	253.3
Mundy Farms	292.7	291.8	287.6	289.8	296.7	297.0	292.6
Peter Farms		264.1	241.8	256.2	247.2	219.8	245.8
Reinke Farms	276.3	265.3	253.1	256.8	263.7		263.0
Rudolph Bros	252.2	275.4	260.0	270.0	236.2	288.4	263.7
Tim Denu	258.6	256.3	257.4	251.0	280.0	282.6	264.3
Meyer Farms	276.5	276.2	261.1	280.0	272.2	268.2	272.4
Anonymous		269.5	266.6	269.4	289.0	288.8	276.7
Weisheit Bros		267.6	262.4	264.0	267.9		265.5
Waninger		282.5	263.3	291.8	299.6	274.0	282.2
Average	263.8	265.5	256.2	263.5	265.0	265.8	
# of Plots	12	18	19	19	19	17	
% Mean	99.0%	101.1%	98.1%	100.4%	100.4%	100.7%	



2023 Hybrid Heat Map 113-115 RM



	5370VT2P	5497VT2P	DKC64-22VT2P	5550VT2P	5588DGV2P	P1511	Plot Average
Aaron Krueger	207.8	213.9	202.8	204.6		206.9	207.2
Ben Duttlinger	265.2	240.3	276.2	239.7	278.0	251.9	258.6
Berg & Sons	289.9	295.4	275.1	283.3	294.9	297.4	289.3
Cline	232.2	255.7	250.3	252.3			247.6
Daryl Auffart	274.5	287.2	304.2	293.7	292.1	300.2	292.0
El Pork Haven	271.5	282.7	284.3	272.2		277.8	277.7
Gries & Sons	296.5	297.9	297.7	290.5	286.5	280.6	291.6
Heritage Farms	270.0	279.6	261.3	267.3	256.9	247.2	263.7
Hagan Bros		249.3	244.1	220.3	231.5	238.9	236.8
Lueken Livestock	244.1	268.3	239.9	225.1	251.8	214.5	240.6
Miley Farms	248.0	263.9	254.1	245.9	243.4	255.8	251.9
Mundy Farms	297.0	299.8	292.8	297.4	288.6	297.1	295.5
Peter Farms	219.8	264.4	250.8	252.5		239.9	245.5
Reinke Farms		251.5	268.1	261.5		263.1	261.1
Rudolph Bros	288.4	284.8	282.3	277.6		269.3	280.5
Tim Denu	282.6	278.0	275.1	262.9	266.9	269.3	272.5
Meyer Farms	268.2	279.5	283.0	279.2	264.9	270.3	274.2
Anonymous	288.8	291.9	292.9	293.6	284.7	286.9	289.8
Weisheit Bros		288.2	285.2	285.1	278.9	267.0	280.9
Waninger	274.0	282.4	287.1	274.2			279.4
Average	265.8	272.7	270.4	263.9	270.7	263.0	
# of Plots	17	20	20	20	13	18	
% Mean	99.1%	102.2%	101.3%	98.9%	99.5%	98.4%	



2023 Hybrid Heat Map 115+ RM



	5550VT2P	5588DGV2P	P1511	DKC66-06TRE	5760TRE	DKC67-94TRE	DKC68-35VT2P	DKC70-45VT2P	Plot Average
Aaron Krueger	204.6		206.9	229.2	215.3		221.0	196.1	212.2
Ben Duttlinger	239.7	278.0	251.9	266.9	242.5		269.7	256.2	257.8
Berg & Sons	283.3	294.9	297.4	301.6	286.3	276.7	300.8	290.6	291.5
Cline	252.3				248.1	249.4			249.9
Daryl Auffart	293.7	292.1	300.2	323.9	289.1		309.4		301.4
El Pork Haven	272.2		277.8	289.1	279.1	281.0	294.6		282.3
Gries & Sons	290.5	286.5	280.6	311.6	318.3	295.3	319.0	306.8	301.1
Heritage Farms	267.3	256.9	247.2	275.8	261.6	259.4	280.1	263.1	263.9
Hagan Bros	220.3	231.5	238.9	257.1	238.0		255.8	230.9	238.9
Lueken Livestock	225.1	251.8	214.5	278.8	262.6		239.7		245.4
Miley Farms	245.9	243.4	255.8	269.9	278.4	259.6	277.5	255.5	260.8
Mundy Farms	297.4	288.6	297.1	315.6	284.4	294.8	313.4	293.1	298.1
Peter Farms	252.5		239.9	256.4	245.0		264.0	251.1	251.5
Reinke Farms	261.5		263.1		269.2	253.4	260.0	271.8	263.2
Rudolph Bros	277.6		269.3	275.8	276.9	277.9	298.2	272.5	278.3
Tim Denu	262.9	266.9	269.3	291.5	289.6	259.9	306.6	282.3	278.6
Meyer Farms	279.2	264.9	270.3	292.9	301.1	275.1	301.5	278.0	282.9
Anonymous	293.6	284.7	286.9	315.2	306.9	283.7	310.6	282.6	295.5
Weisheit Bros	285.1	278.9	267.0	302.0	291.0	272.4	305.6	280.0	285.3
Waninger	274.2			294.5	264.4	283.4	291.9		281.7
Average	263.9	270.7	263.0	286.0	272.4	273.0	285.2	267.4	
# of Plots	20	13	18	18	20	14	19	15	
% Mean	97.4%	97.7%	96.8%	104.9%	100.5%	97.7%	104.8%	98.8%	



2023 Hybrid Heat Map 115+ RM w/o 66-06 & 68-35



	5550VT2P	5588DGV2P	P1511	5760TRE	DKC67-94TRE	DKC70-45VT2P	Plot Average
Aaron Krueger	204.6		206.9	215.3		196.1	205.7
Ben Duttlinger	239.7	278.0	251.9	242.5		256.2	253.7
Berg & Sons	283.3	294.9	297.4	286.3	276.7	290.6	288.2
Cline	252.3			248.1	249.4		249.9
Daryl Auffart	293.7	292.1	300.2	289.1			293.8
El Pork Haven	272.2		277.8	279.1	281.0		277.5
Gries & Sons	290.5	286.5	280.6	318.3	295.3	306.8	296.3
Heritage Farms	267.3	256.9	247.2	261.6	259.4	263.1	259.3
Hagan Bros	220.3	231.5	238.9	238.0		230.9	231.9
Lueken Livestock	225.1	251.8	214.5	262.6			238.5
Miley Farms	245.9	243.4	255.8	278.4	259.6	255.5	256.4
Mundy Farms	297.4	288.6	297.1	284.4	294.8	293.1	292.6
Peter Farms	252.5		239.9	245.0		251.1	247.1
Reinke Farms	261.5		263.1	269.2	253.4	271.8	263.8
Rudolph Bros	277.6		269.3	276.9	277.9	272.5	274.8
Tim Denu	262.9	266.9	269.3	289.6	259.9	282.3	271.8
Meyer Farms	279.2	264.9	270.3	301.1	275.1	278.0	278.1
Anonymous	293.6	284.7	286.9	306.9	283.7	282.6	289.7
Weisheit Bros	285.1	278.9	267.0	291.0	272.4	280.0	279.1
Waninger	274.2			264.4	283.4		274.0
Average	263.9	270.7	263.0	272.4	273.0	267.4	
# of Plots	20	13	18	20	14	15	
% Mean	99.2%	99.7%	98.7%	102.4%	99.2%	100.6%	



2023 Corn Hybrid Summary

Brand	Hybrid	% of Mean	Avg Yield	# of Plots
Croplan	4930DGVT2P	97.0%	263.8	12
Dekalb	DKC111-35VT2P	99.1%	265.5	18
Croplan	5208VT2P	96.4%	257.0	19
Dekalb	DKC62-70VT2P	98.4%	263.5	19
Pioneer	P1222AM	98.4%	265.0	19
Croplan	5370VT2P	98.7%	265.8	17
Croplan	5497VT2P	101.8%	272.7	20
Dekalb	DKC64-22VT2P	100.9%	270.4	20
Croplan	5550VT2P	98.5%	263.9	20
Croplan	5588DGVT2P	98.8%	270.7	13
Pioneer	P1511	97.9%	263.0	18
Dekalb	DKC66-06TRE	106.1%	286.0	18
Croplan	5760TRE	101.6%	272.4	20
Dekalb	DKC67-94TRE	99.0%	273.0	14
Dekalb	DKC68-35VT2P	105.8%	285.0	19
Dekalb	DKC70-45VT2P	99.9%	267.4	15

Overall Product Averages	Average % of Mean	269.1	+/- Plot Average
Croplan Plot Averages	99.0%	266.6	-2.4
Dekalb Plot Averages	101.3%	273.0	3.9
Pioneer Plot Averages	98.2%	264.0	-5.1

		Superior Ag adv	\$/ bag adv *
Croplan & Dekalb Avg	269.8	5.8	\$ 72.66

* based on 32K pop and \$5.00/bu corn

2018-2023 Performance Summary

Bushel per Acre

\$/bag advantage*

Croplan & Dekalb Advantage	8.7	\$108.62
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*based on 32K population & \$5.00/bu corn

2018-2023 Corn Hybrid Performance Summary

	Bushel per Acre	\$/ bag advantage *	
Croplan & Dekalb Advantage	8.7	\$	108.62

* based on 32K pop and avg of \$5.00/ bu corn

2023 Performance

	Bushel per Acre	+/- Plot Average		
Overall Plot Averages	269.1			
Croplan Plot Averages	266.6	-2.4		
Dekalb Plot Averages	273.0	3.9		
Pioneer Plot Averages	264.0	-5.1		
		Superior Ag adv	5.8	\$/ bag adv *
Croplan & Dekalb Avg	269.8			\$ 72.66

* based on 32K pop and \$5.000/ bu corn

2022 Performance

	Bushel per Acre	+/- Plot Average		
Overall Plot Averages	243.4			
Croplan Plot Averages	245.1	1.7		
Dekalb Plot Averages	245.0	1.6		
Pioneer Plot Averages	233.5	-9.9		
		Superior Ag adv	11.6	\$/ bag adv *
Croplan & Dekalb Avg	245.1			\$ 188.50

* based on 32K pop and \$6.000/ bu corn

2021 Performance

	Bushel per Acre	+/- Plot Average		
Overall Plot Averages	253.3			
Croplan Plot Averages	252.9	-0.1		
Dekalb Plot Averages	257.1	3.8		
Pioneer Plot Averages	247.2	-6.2		
Brevant	260.3	7.0		
		Superior Ag adv	7.8	\$/ bag adv *
Croplan & Dekalb Avg	255.0			\$ 107.56

* based on 32K pop and \$5.50/ bu corn

2020 Performance

	Bushel per Acre	+/- Plot Average		
Overall Plot Averages	241.4			
Croplan Plot Averages	243.4	1.9		
Dekalb Plot Averages	243.1	1.6		
Pioneer Plot Averages	231.8	-9.7		
		Superior Ag adv	11.5	\$/ bag adv *
Croplan & Dekalb Avg	243.2			\$ 107.45

* based on 32K pop and \$3.75/ bu corn

2019 Performance

	Bushel per Acre	+/- Plot Average		
Overall Plot Averages	215.0			
Croplan Plot Averages	217.3	2.3		
Dekalb Plot Averages	214.5	-0.5		
Pioneer Plot Averages	211.0	-4.0		
		Superior Ag adv	4.9	\$/ bag adv *
Croplan & Dekalb Avg	215.9			\$ 45.49

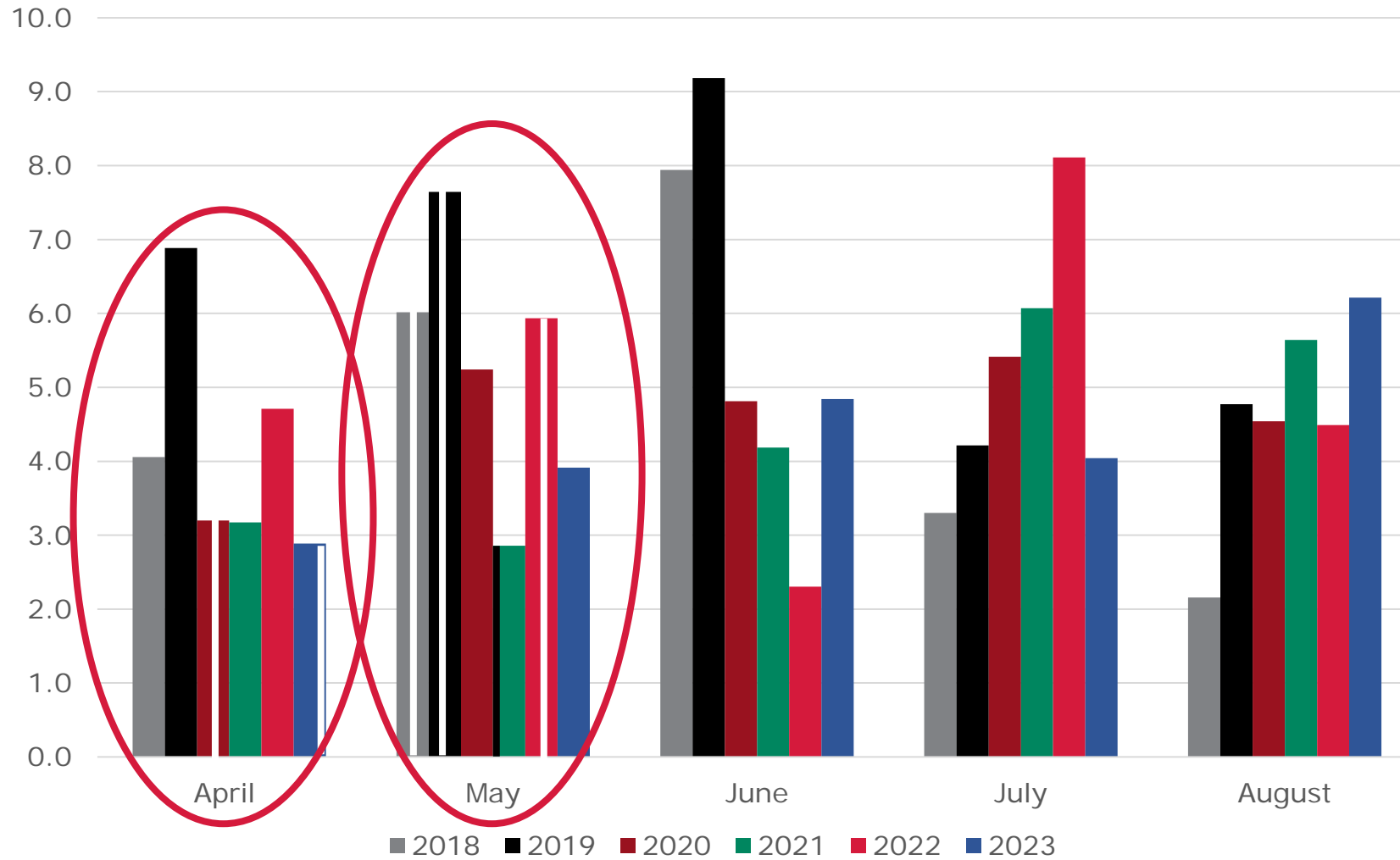
* based on 32K pop and \$3.75/ bu corn

2018 Performance

	Bushel per Acre	+/- Plot Average		
Overall Plot Averages	227.5			
Croplan Plot Averages	233.5	6.0		
Dekalb Plot Averages	231.7	4.2		
Pioneer Plot Averages	222.0	-5.5		
		Superior Ag adv	10.6	\$ / bag adv *
Croplan & Dekalb Avg	232.6			\$ 99.48

* based on 32K pop and \$3.75/ bu corn

Overall Rainfall Summary



SEED+GRAPHITE
A VERDESIA NUE SOLUTION®

What is SEED+GRAPHITE?

- Blend of talc+graphite enables excellent seed lubricity and placement through every planter delivery system

What does SEED+GRAPHITE do?

- Improves germination, crop emergence, early seedling vigor, and plant tolerance to environmental stresses

Early season advantages:

- High antioxidant activity
- Provides essential nutrients for improved plant growth, development, and vigor
- Increased prominence of fine root hairs
- Supports seedlings by protecting plant cell function during harsh environmental conditions

NUTRIENT ANALYSIS

	CALCIUM	SULFUR	COBALT	COPPER	IRON	MANGANESE	MOLYBDENUM	ZINC
SEED+GRAPHITE	4.0%	5.0%	0.07%	0.09%	1.0%	0.7%	0.08%	2.0%



SEED+GRAPHITE



SEED+GRAPHITE

Untreated



SEED+GRAPHITE

Untreated



SEED+GRAPHITE



Untreated

SEED+GRAPHITE

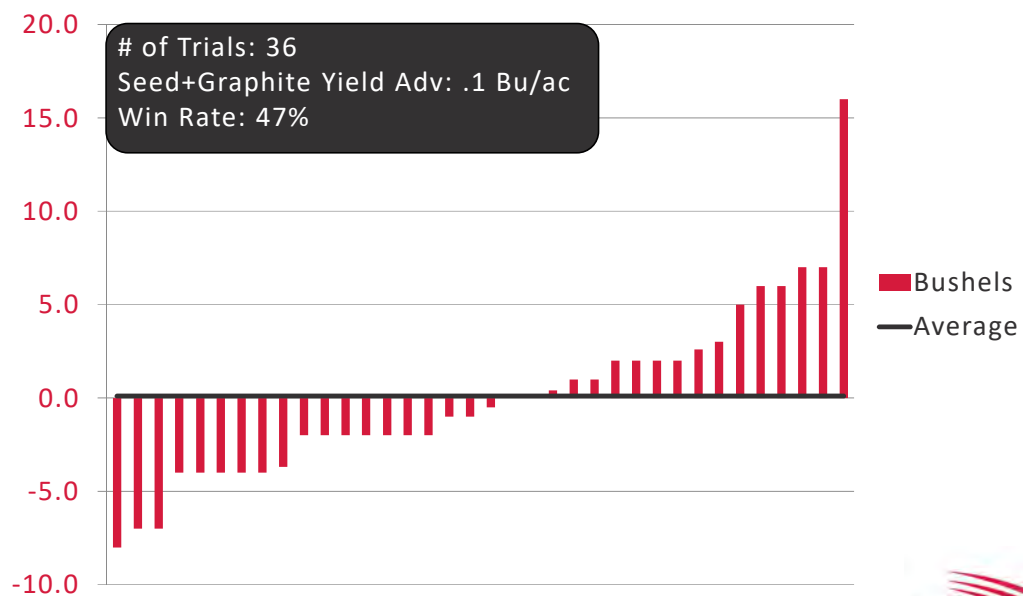


Untreated

SEED+GRAPHITE



2023 Corn SEED+GRAPHITE Summary



Row Starter, Conceal, In-Furrow, Xyway

No 2X2 vs 2X2



In-Furrow with No
2x2

In-Furrow and
2x2

No 2X2 vs 2X2



In-Furrow Only
NO 2X2

In-Furrow and
2x2



In-Furrow Only
NO 2X2

In-Furrow
and 2x2



No 2X2 vs 2X2

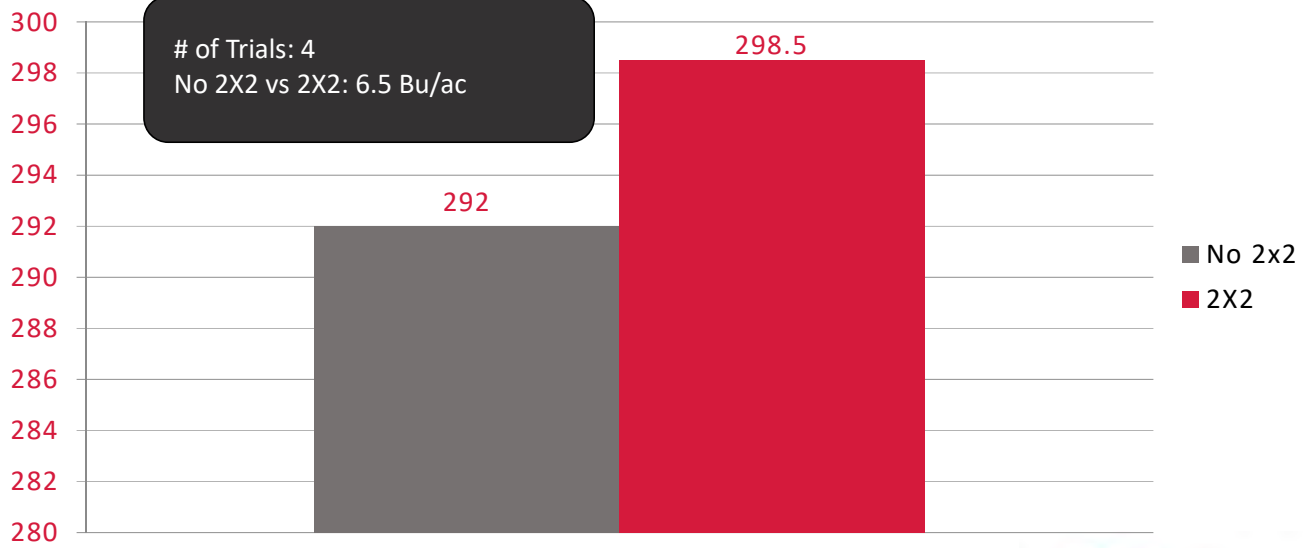


In-Furrow Only NO 2X2

In-Furrow with 2X2



2023 2X2 Trial



Why Conceal?



Nitrogen
Damage from
2x2 Overlap



2x2 Coulters in the Front of the
Planter Bar



Why Conceal?



Conceal

Conceal 2x2x2

Conceal 2x2

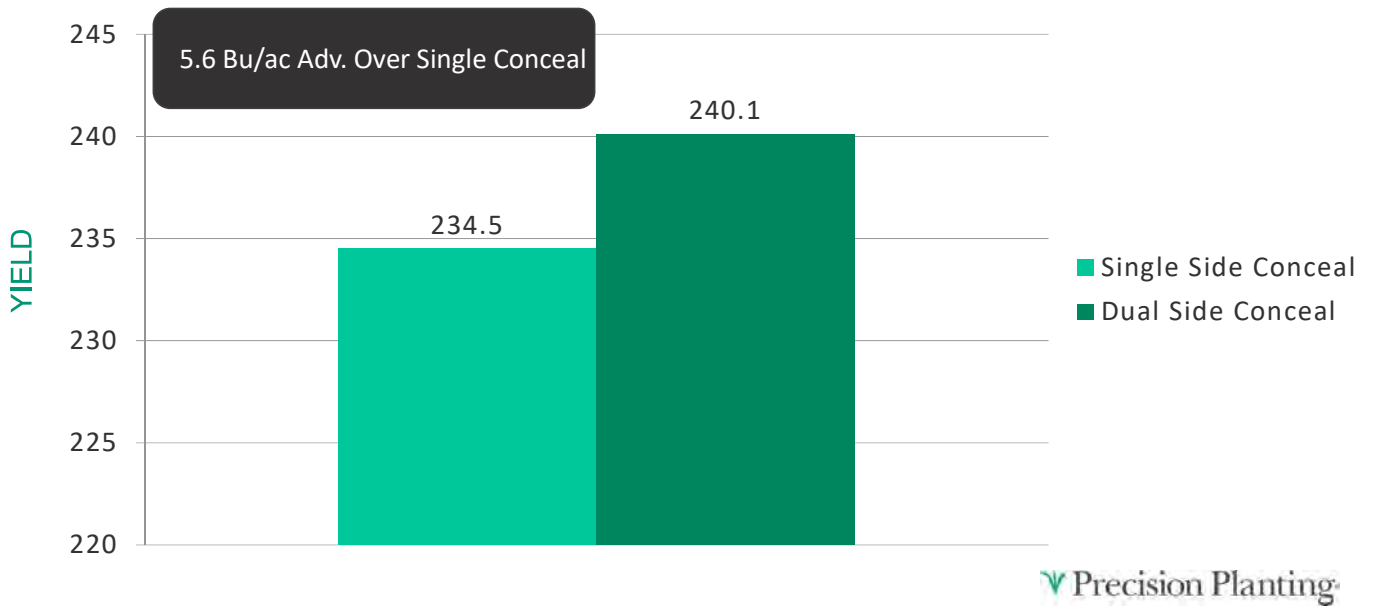


Conceal 2x2x2

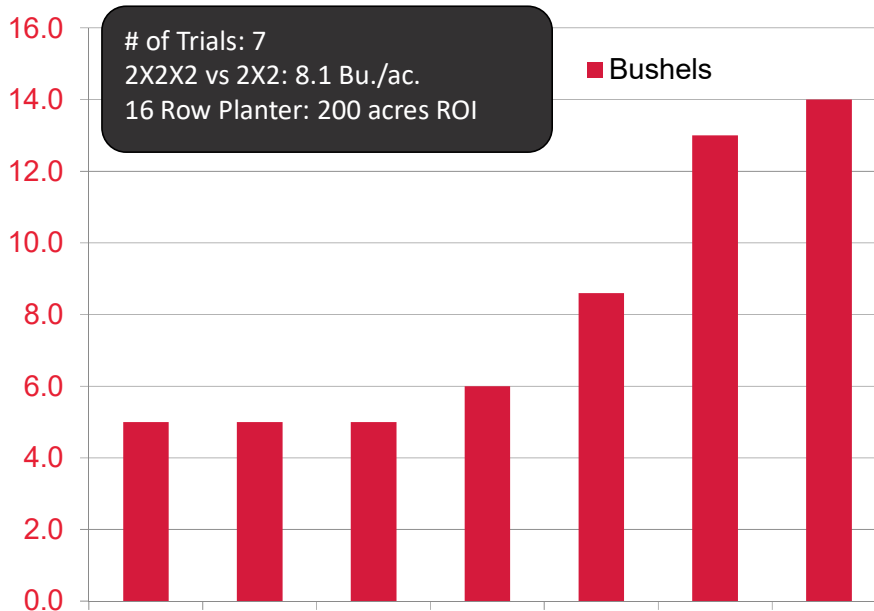
Conceal 2x2



2022 Single Side vs. Dual Side Conceal Study



2022-2023 Conceal Summary



- Same products and same rates of products were used.
- 8 Rows of 2x2x2 & 8 Rows of 2x2 both through Conceal.
- One nozzle was plugged and orifices resized to achieve equal rates.



In-Furrow Starter



2x2 Only, No In-Furrow

In-Furrow & 2X2

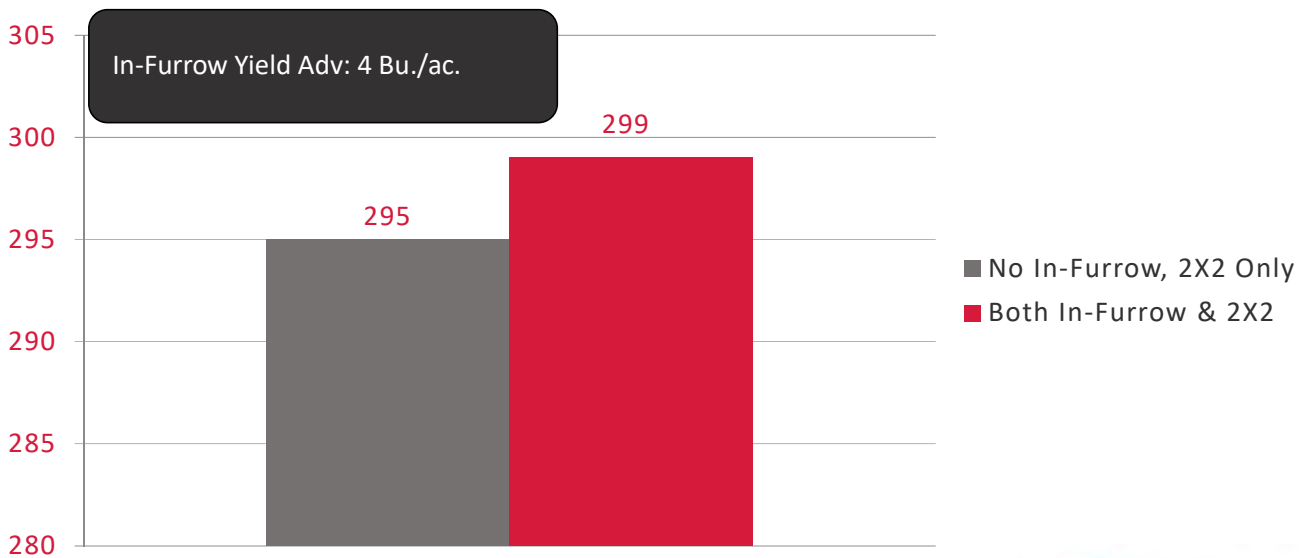


2x2 Only, No In-Furrow

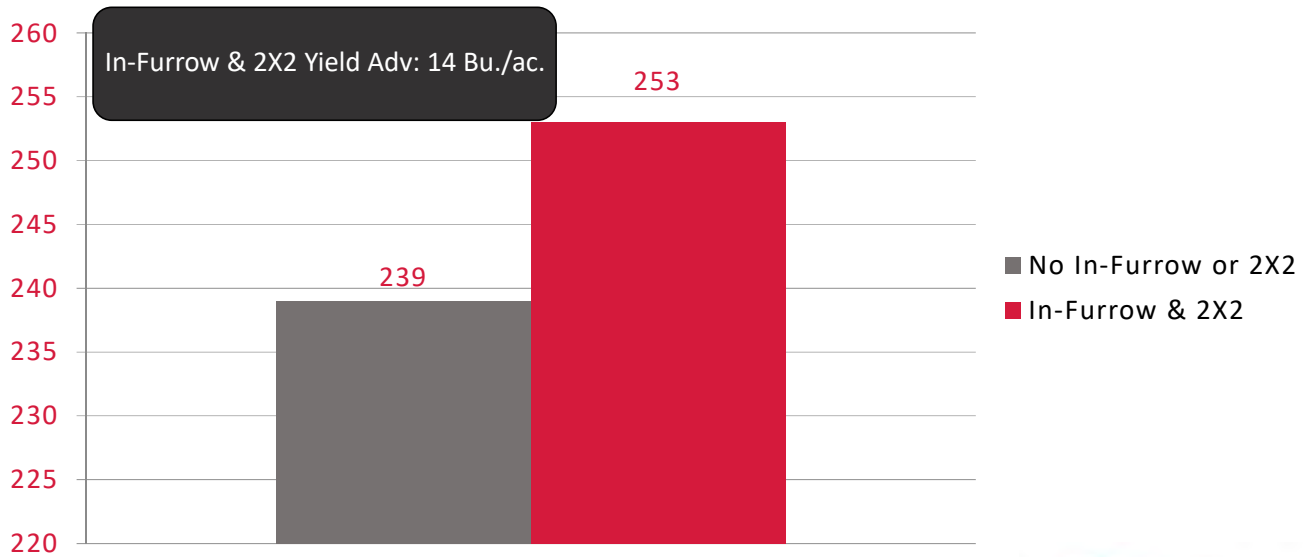
In-Furrow & 2X2



2023 In-Furrow Trial



2023 Row Starter System Trial



- Liquid Fertilizer Ready, Flutriafol Fungicide
- Systemic movement to provide disease protection throughout the plant.
- Labeled to help suppress early infection of: Grey Leaf Spot, Northern Corn Leaf Blight, Common Rust & Southern Corn Leaf Blight.
- Possibility to help suppress stalk and root rots.



Xyway

Untreated

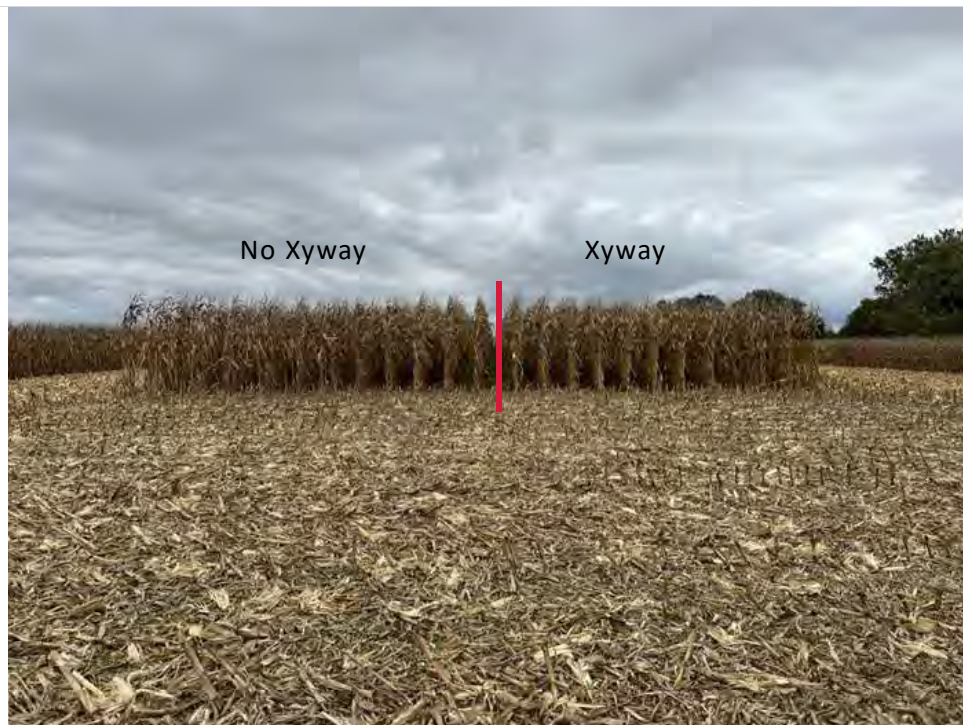




Untreated-42% good stalks



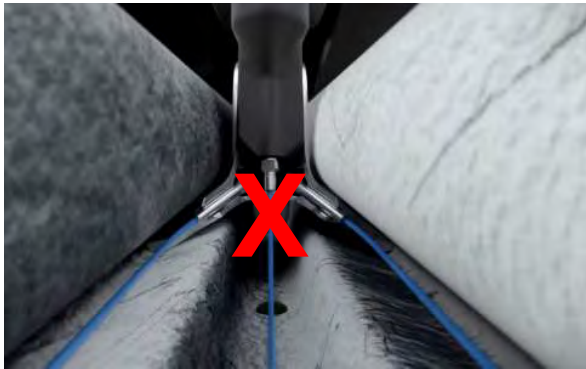
Xyway-59% good stalks



2023 Xyway Recommendation

Recommend placement: Off or away from the seed by a *minimum of 0.5 inch*.

FurrowJet



Xyway™ LFR® fungicide can be delivered through the wings (3/4" away from the seed) but not through the center nozzle. **Center nozzle MUST BE PLUGGED**

Conceal

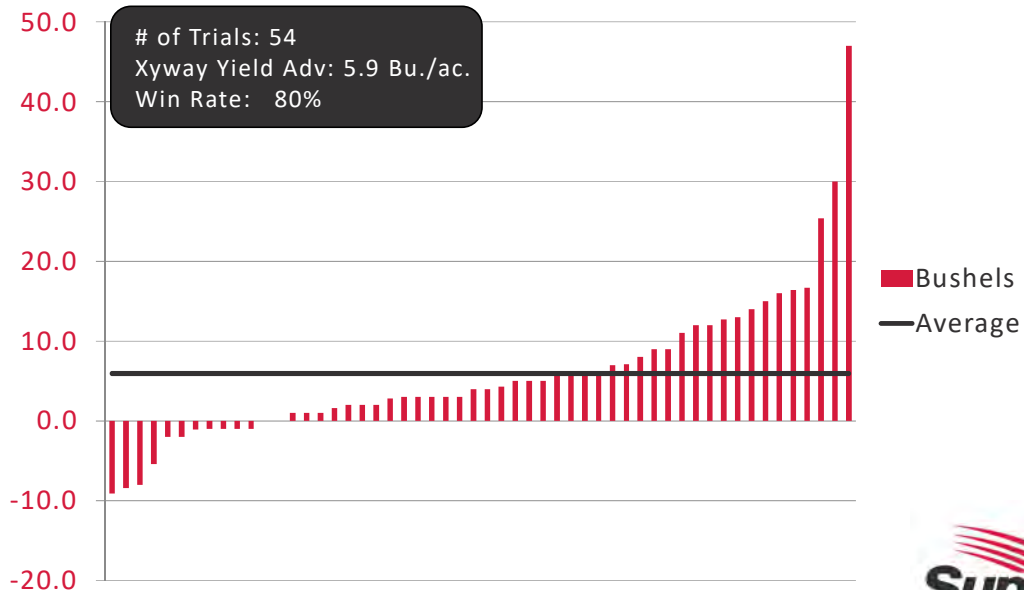


Xyway™ LFR® fungicide can be delivered through 2X2, 2X2X2 or 2X0.

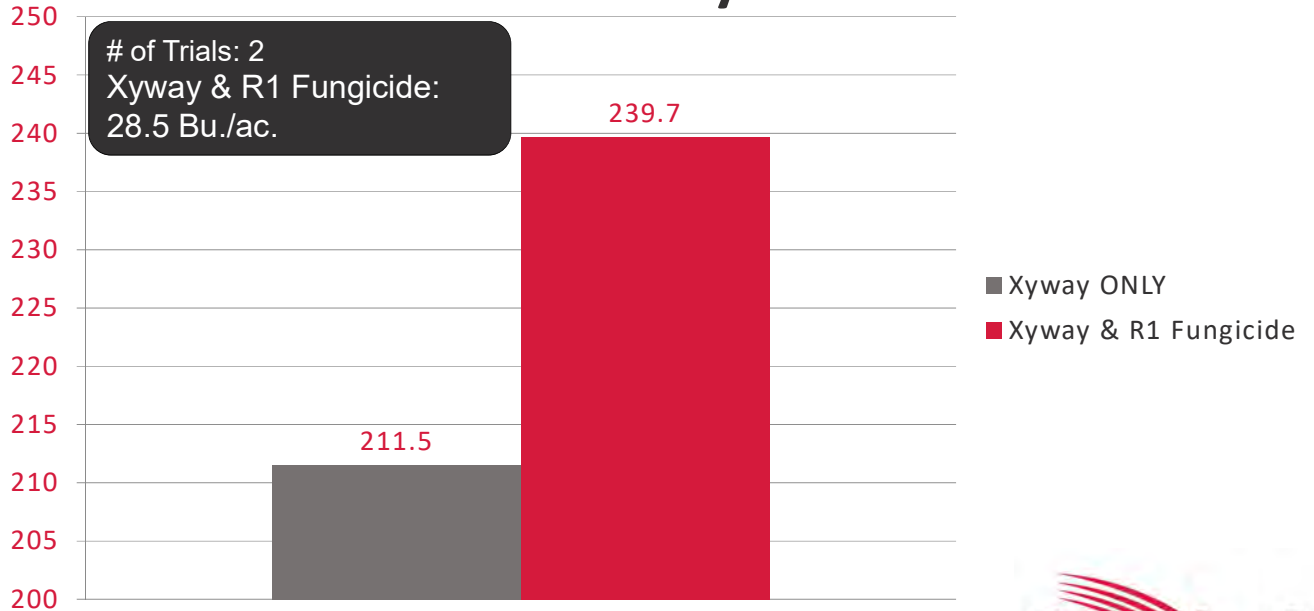


* Examples provided are not an endorsement of an individual brand or manufacturer. This is not an all-inclusive list of effective, alternative application options.

2021-2023 Xyway vs. Starter ONLY: Summary

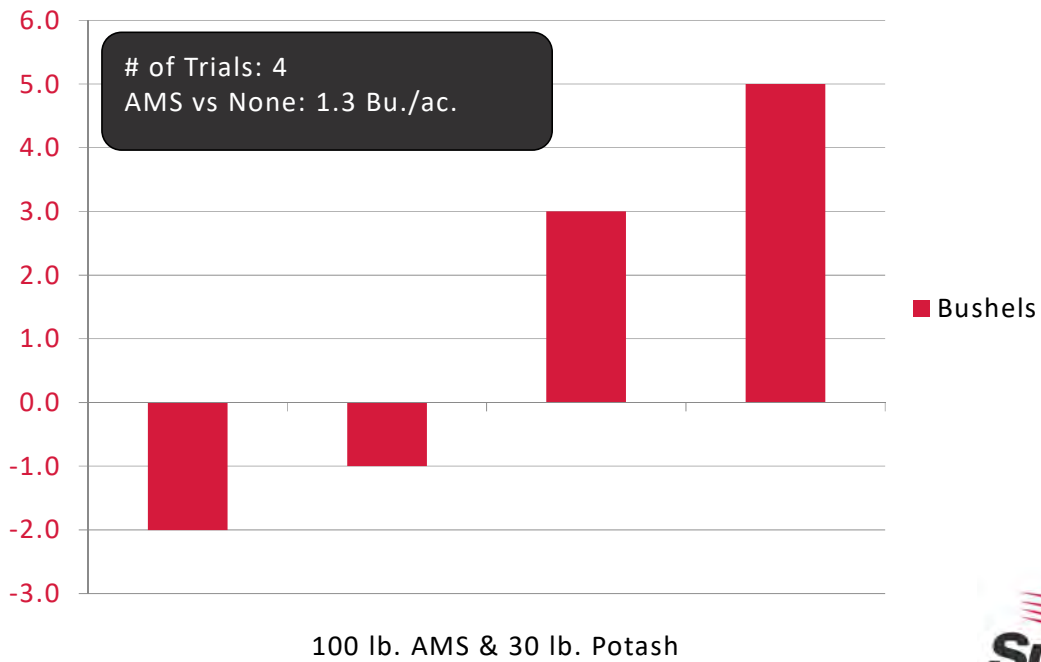


Xyway vs. Xyway & R1 Fungicide: Summary



Top-Dress Corn

2023 AMS Top-Dress Summary



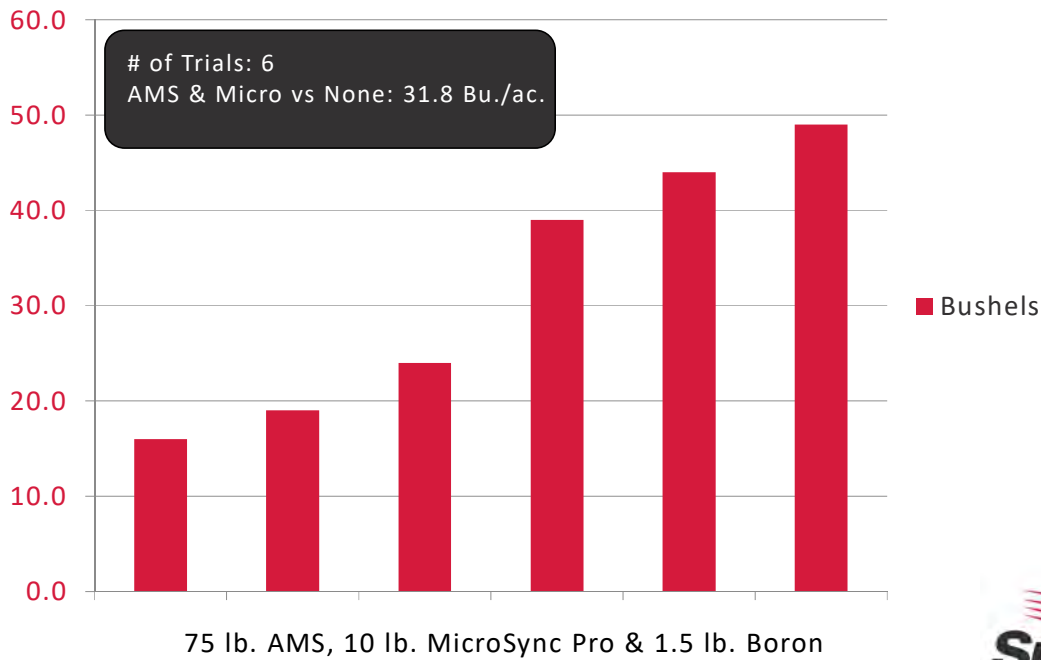
2023 AMS & Micro Yield Map



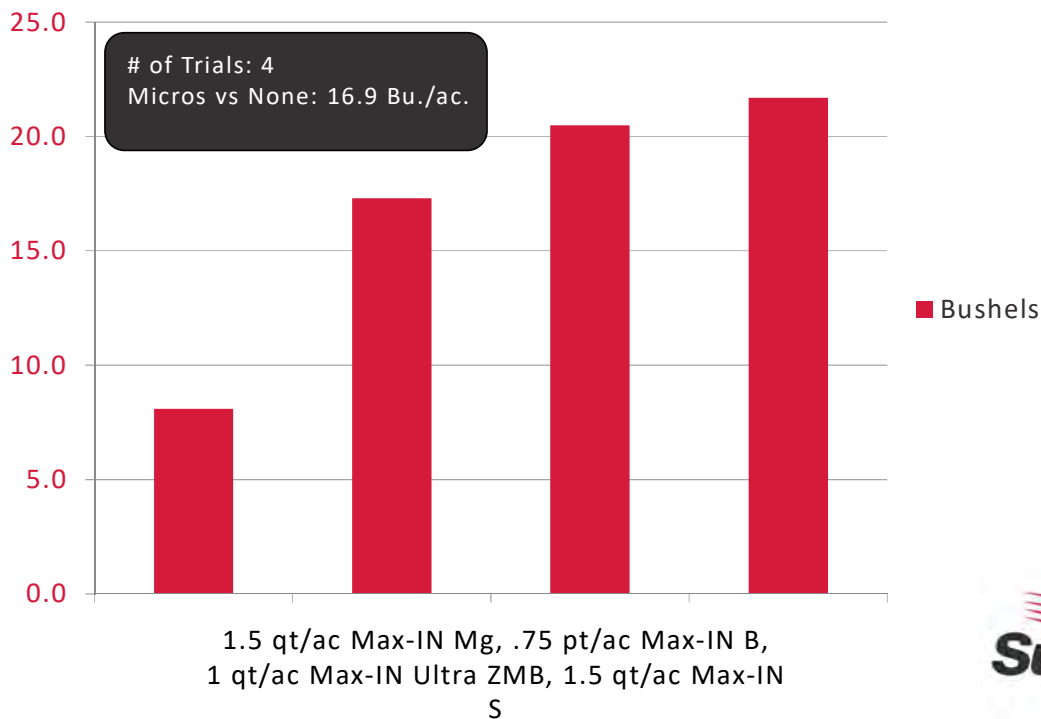
75 lb. AMS, 10 lb. MicroSync Pro & 1.5 lb. Boron



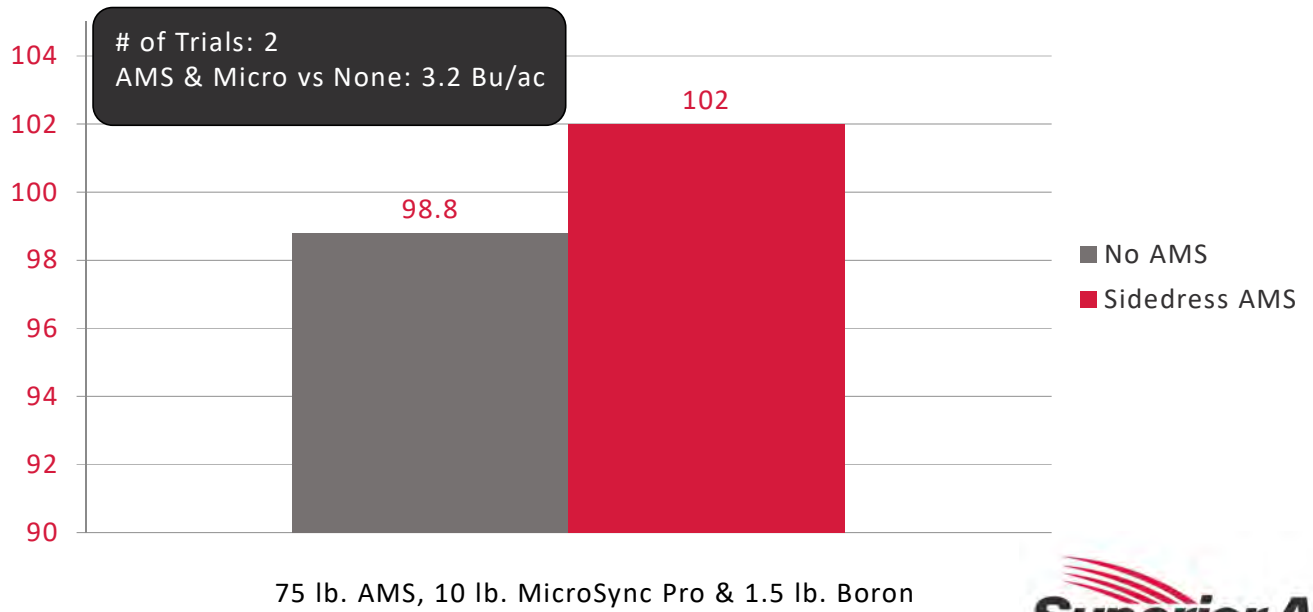
2023 AMS & Micro Top-Dress Summary



2023 Foliar Micronutrient Corn Summary



2023 AMS & Micro Top-Dress Trial



YieldOn, Weather, Utrisha N

- **YieldON®** is a **stress mitigation** biostimulant that can potentially increase row crop yields during adverse conditions by modulating cell division and expansion while improving transport of sugars and nutrients
- 3-0-3 - 0.5% Zn - 0.5% Mn - 0.2% Moly
- **Application timing:** Later in the season – R1-R3 on beans, V10-R3 on corn
- **Rate:** 1.5 pt/A foliar application
- Highly compatible with fungicides
- Designed for row crops using the latest technology



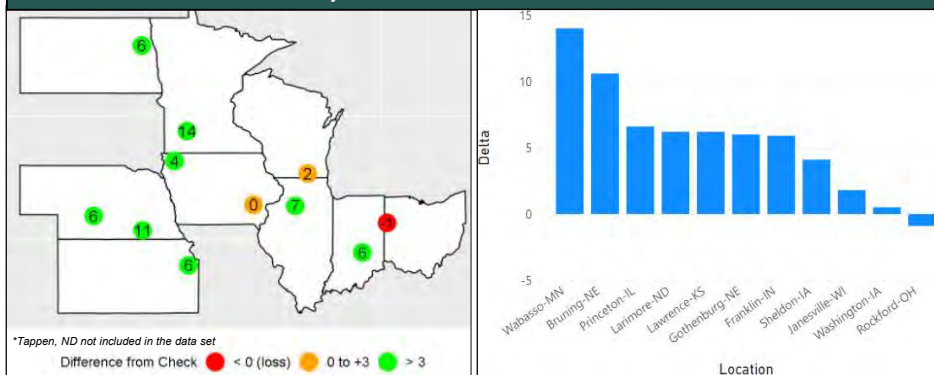
YIELDON | ACROSS THE BOARD RESULTS

Winfield Trial Plots Only

Mgt	Seed trt	In-furrow	V4-V6	VT/R1
System + YieldON	Croplan base	10-34-0 (4 gal) Ultra-Che Zn (32 oz)	MAX-IN Ultra ZMB Plus (32 oz) MasterLock (6.4 oz)	TrivaPro (13.7 oz) YieldON (24 oz) MasterLock (6.4 oz)
Omission (Non-YieldON Treated)		10-34-0 (4 gal) Ultra-Che Zn (32 oz)	MAX-IN Ultra ZMB Plus (32 oz) MasterLock (6.4 oz)	TrivaPro (13.7 oz) MasterLock (6.4 oz)

Croplan base includes Acceleron + Intego + Fortivent Zn + Poncho Votivo 500 + Precise Polymer

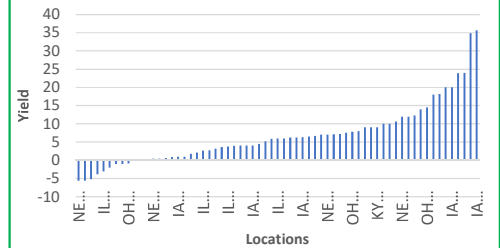
System + YieldON vs Omission



Treatment Name	MEAN_EFF	COUNT	WINS	PERC_WIN	AVG_WIN	P
Standard N + YieldON Foliar	5.5	11	10	90.9%	6.2 bushels/a	0.002

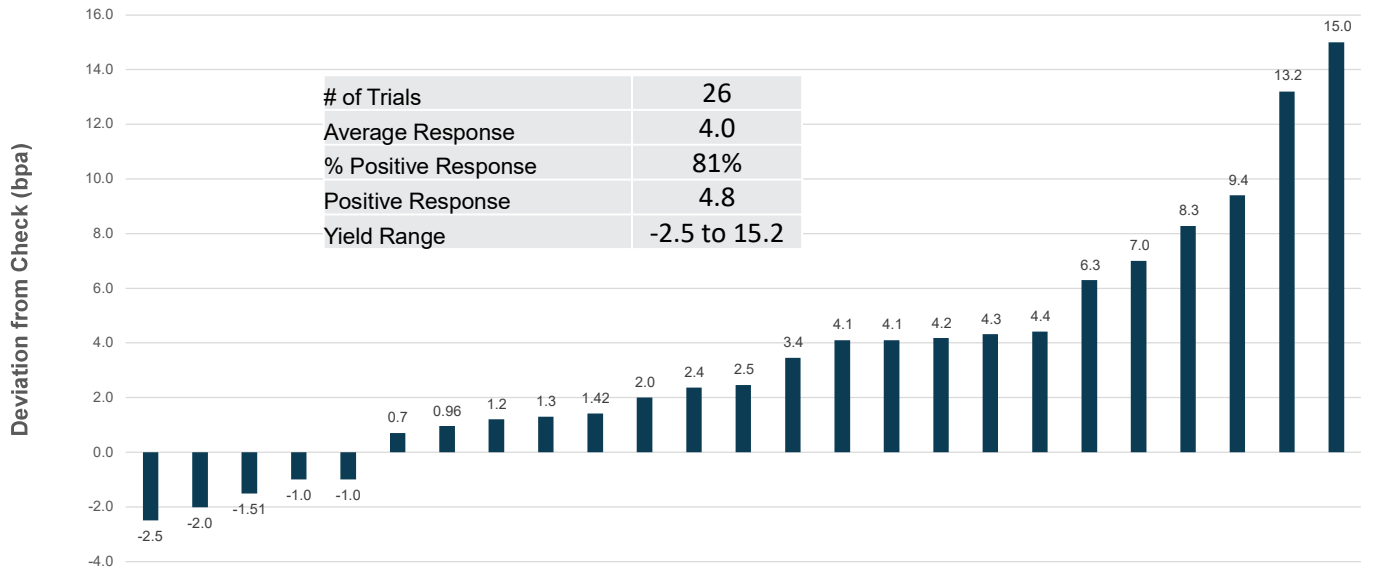
Cumulative Trials Collected by Valagro Market Partners Research

Corn Trials 2021: Yield response to YieldON Application Delta BU/A



64 corn trials in 2021
YieldON application resulted in **positive yield response** in 83% of trials
With an **average bu/A increase of 6.8 Bu/A**

2022 YieldON Performance-Corn



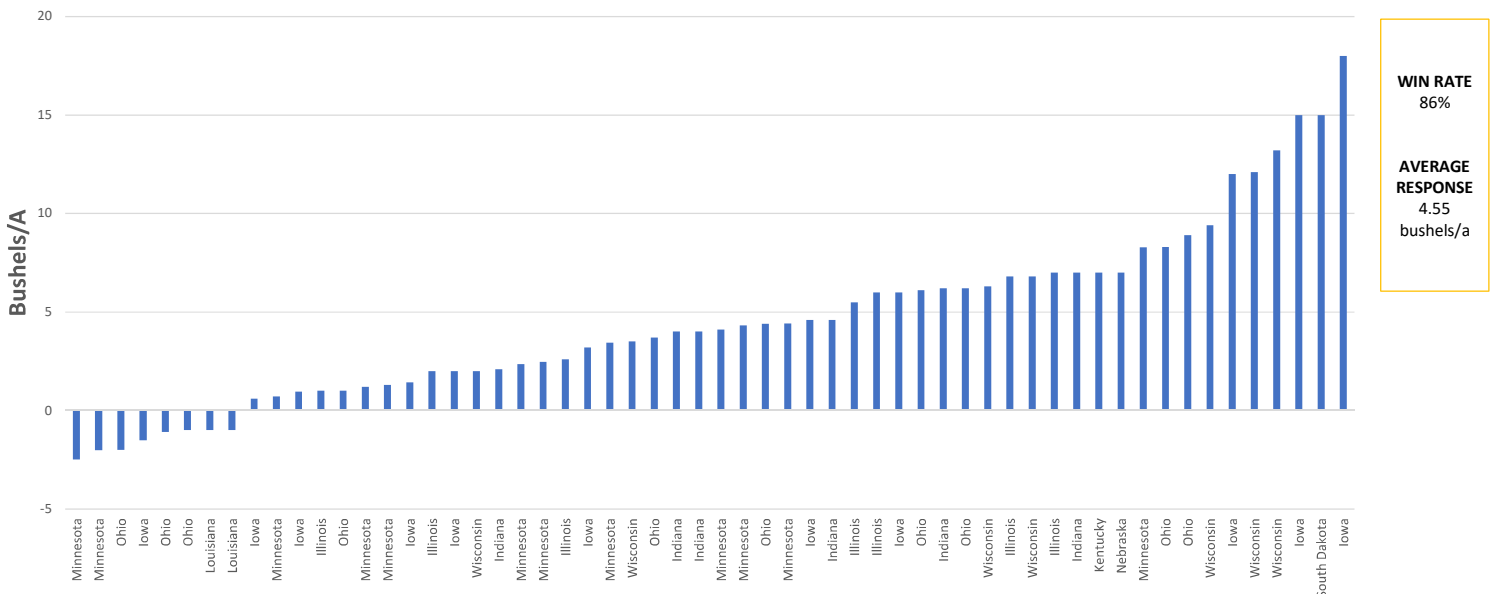
45



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YIELDON | 2022 CORN TRIALS

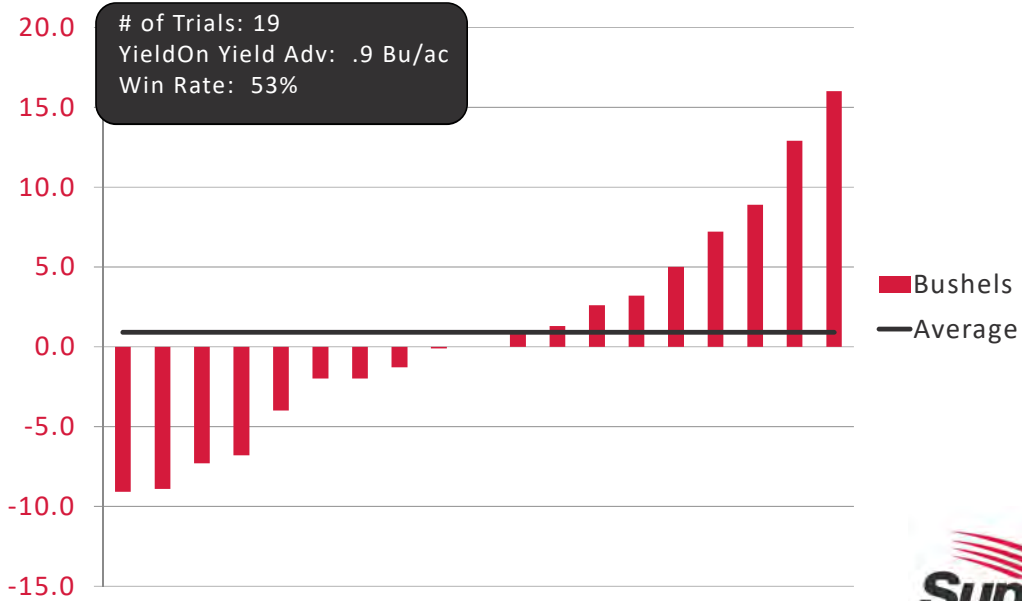
Corn Response to YieldON® Application



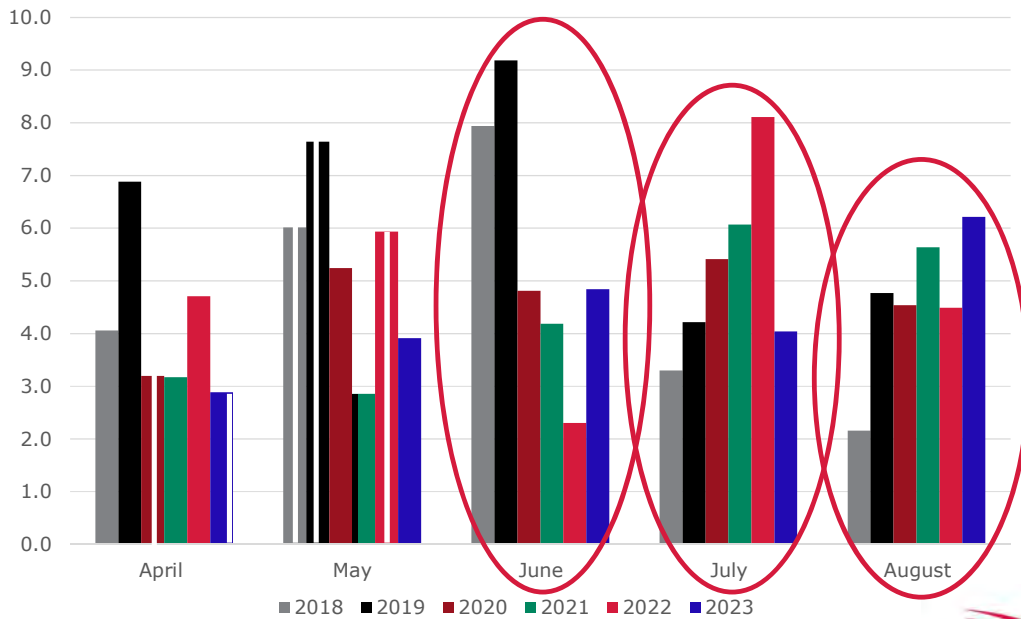
Strictly confidential



2023 YieldON Corn Trial Summary



Overall Rainfall Summary



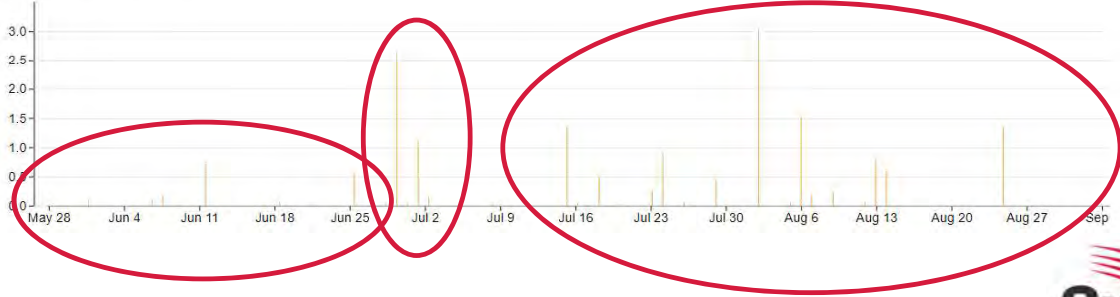
Past Weather:

Start date: May 27, 2023
End date: Sep 3, 2023

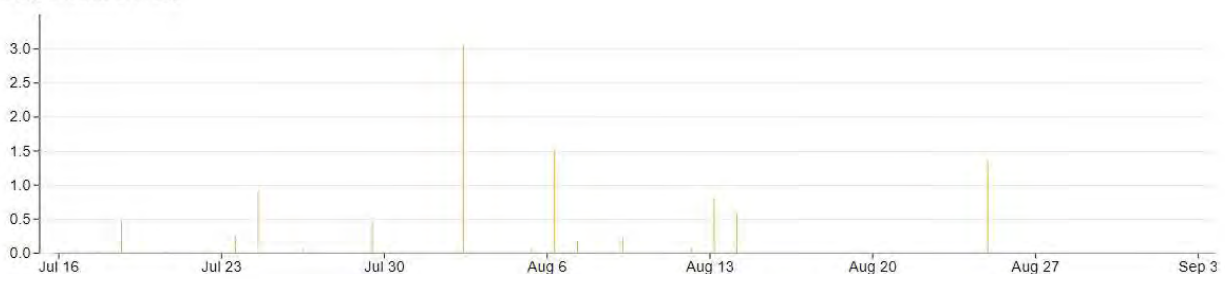
Accumulated Precipitation



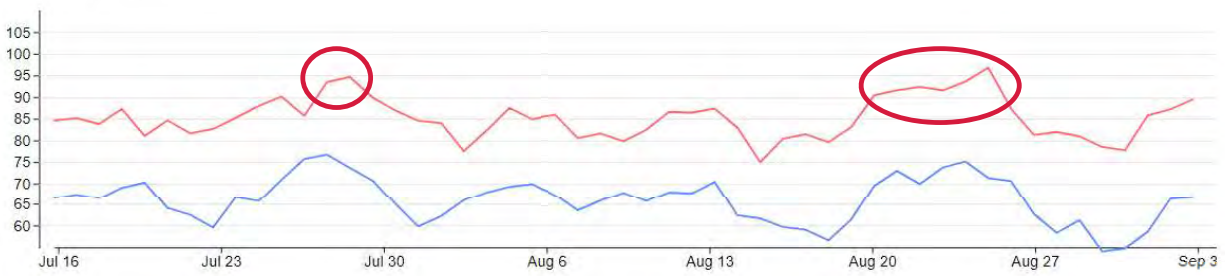
Daily Amounts of Precip



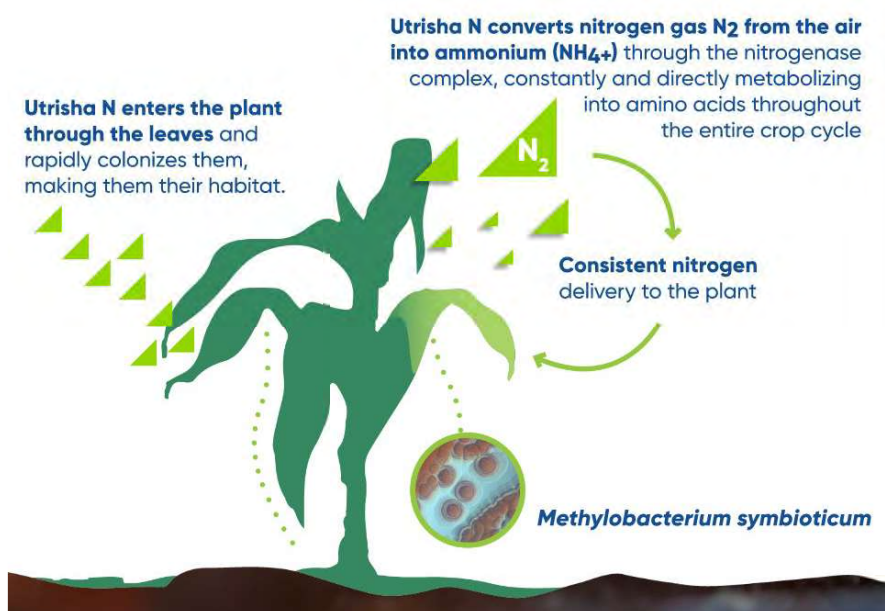
Daily Amounts of Precip



High and Low Temperatures



How Utrisha N Works



Application

Formulation	Dry powder
Application Timing	Apply to growth stage V4-V8
Rate	5 oz/A
Max Applications /Crop Cycle	1



INDEX

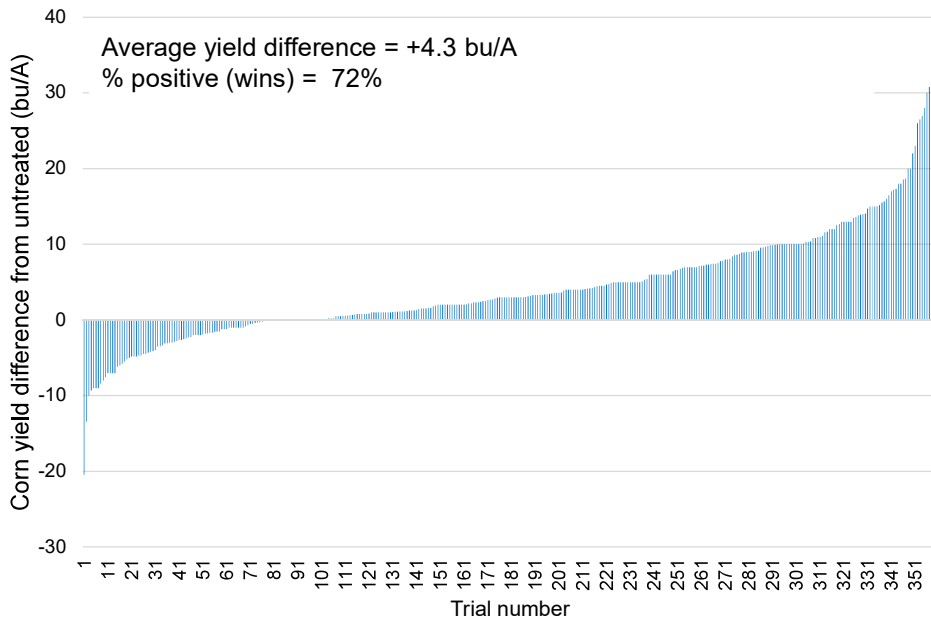
Additional Application Recommendations

- Best applied in the early morning, when a greater number of stomata are open
- Apply in healthy, actively growing crops unaffected by poor nutrition or other biotic/abiotic stresses
- Apply with sufficient plant biomass, when the crop canopy presents good soil coverage
- Apply to standard sidedressing fertilization timing as closely as possible
- Spray volume: between 10 and 25 GPA
- Water total chlorine content: < 2 ppm
- Solution pH: between 5 and 8
- Rain fast: one hour after application



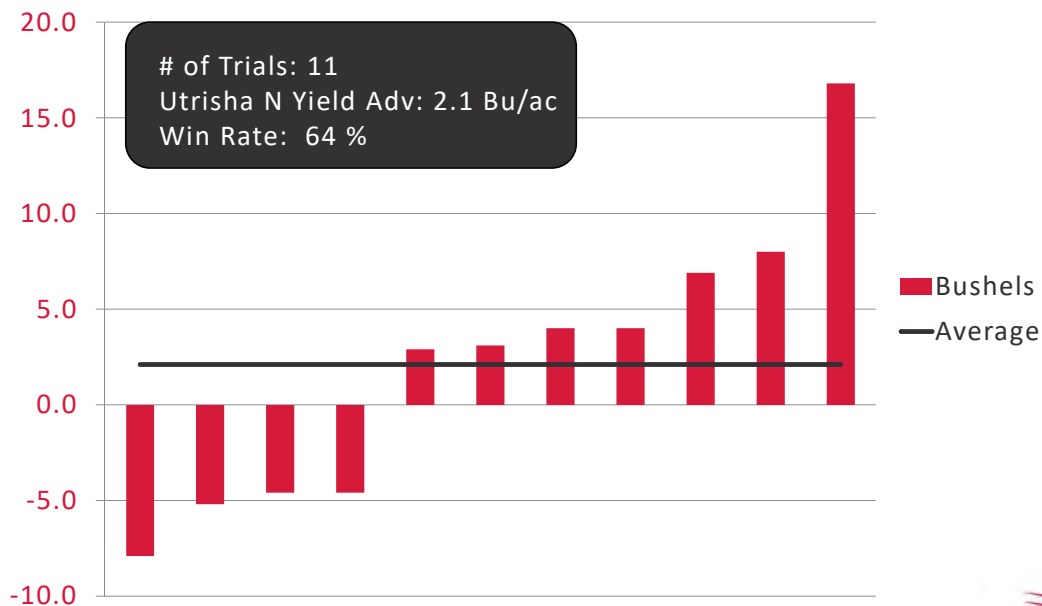
Corn yield response to Utrisha™ N in field demonstrations

Strip trial results 2021 and 2022, 360 trials

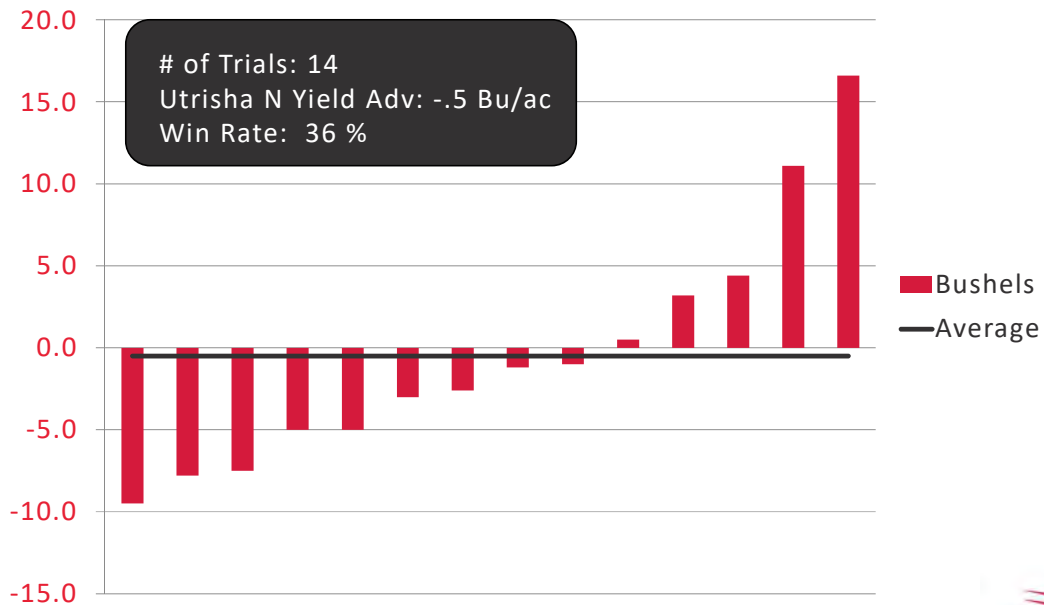


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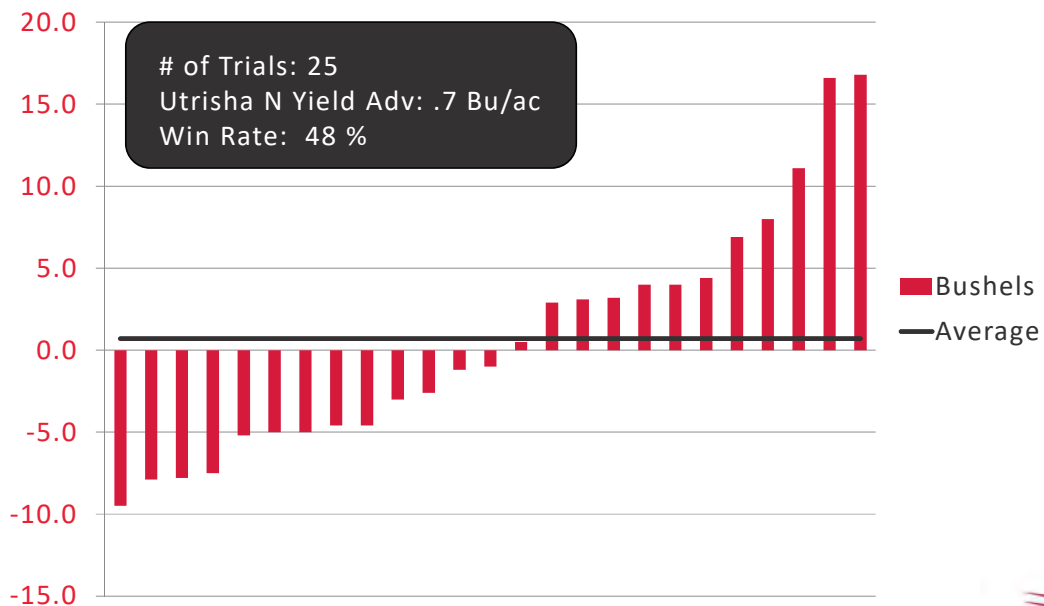
2022 Utrisha N Corn Summary



2023 Utrisha N Corn Summary

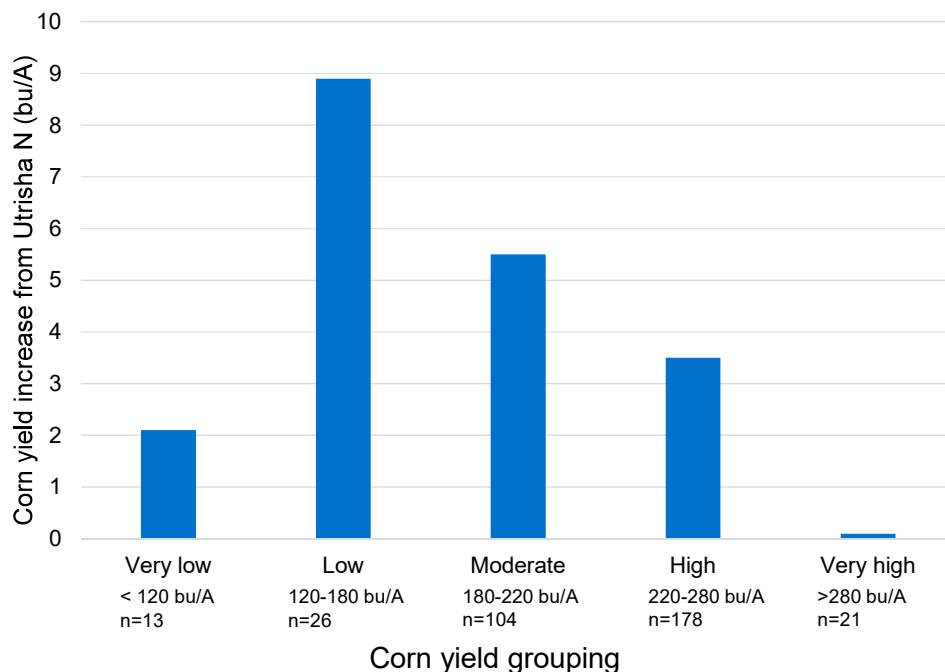


2022-2023 Utrisha N Corn Summary



Corn yield increase from Utrisha™ N related to yield potential

Strip trial results 2021 and 2022, 360 observations



- Utrisha N provides greatest yield increase at low to moderate yielding fields where N may be limiting, yet the crop is not significantly stressed
- Less yield increase in very low yielding fields as stress factors becoming the primary limiting factor for yield
- No yield increase in very high yielding fields as nutrient availability is sufficient
- Still some yield increase (3.5 bu/A) in “high” yielding fields demonstrating potential positive returns even in these conditions

Trial conditions:

- Standard nitrogen practices, no N reduction in Utrisha N treatments
- Field strip trials conducted in 2021 and 2022 in standard production fields across the Midwestern and Southern US

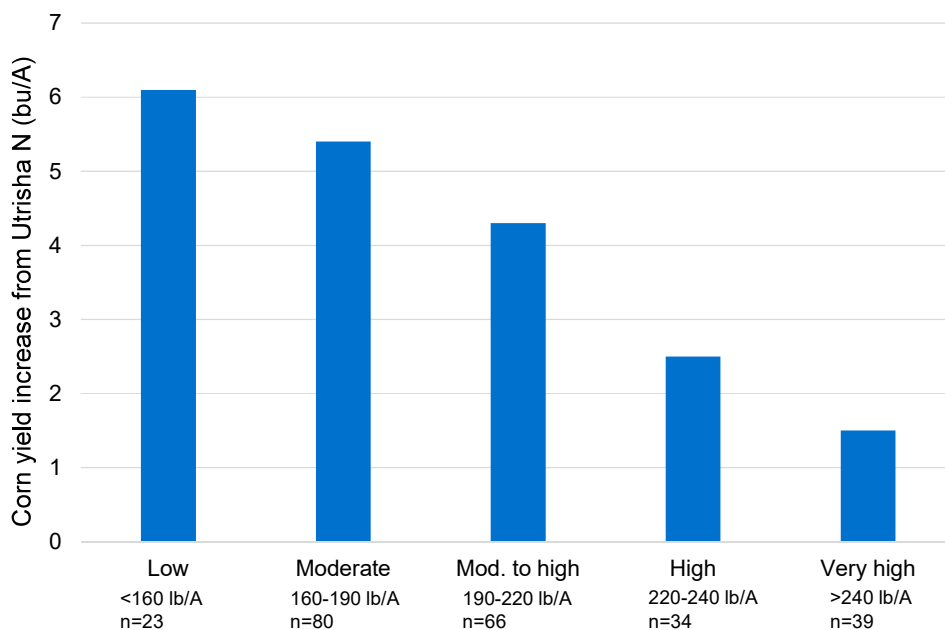


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Corn yield increase from Utrisha™ N related to nitrogen rates

Strip trial results 2021 and 2022, 242 observations



- Greatest yield increases from Utrisha N in fields with low to high yield potential, whereas yield gains decline at high to very high yielding environments, likely due to greater nutrient availability

Trial conditions:

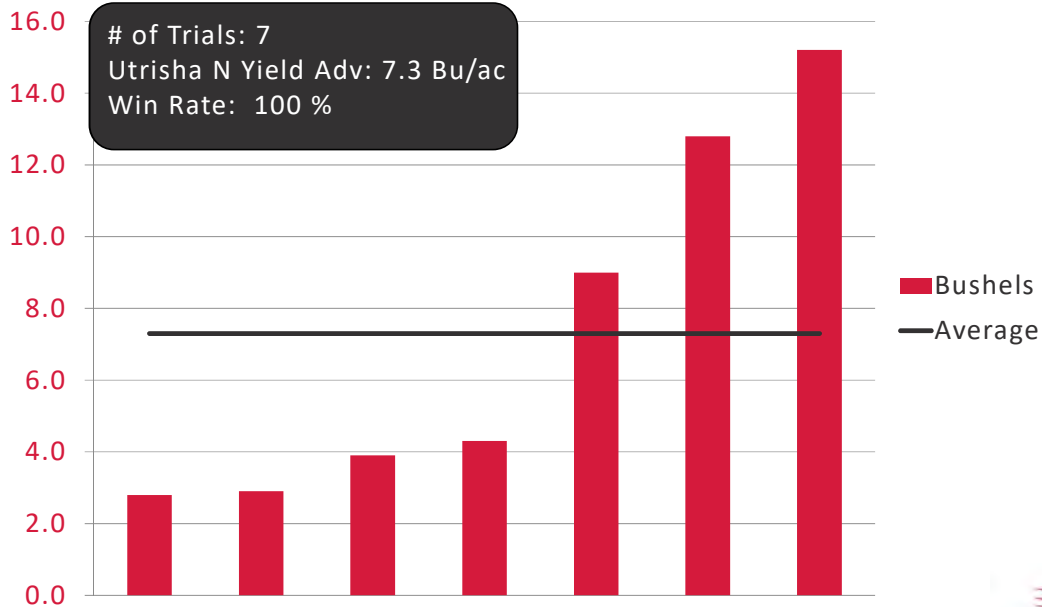
- Standard nitrogen practices, no N reduction in Utrisha N treatments
- Nitrogen programs include 1 to 4 applications per season
- Field strip trials conducted in 2021 and 2022 in standard production fields across the Midwestern and Southern US



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2023 Utrisha N Wheat Summary



Aerial Application Setup and Operation

Aerial Application Setup & Operation



Aerial Application Setup & Operation



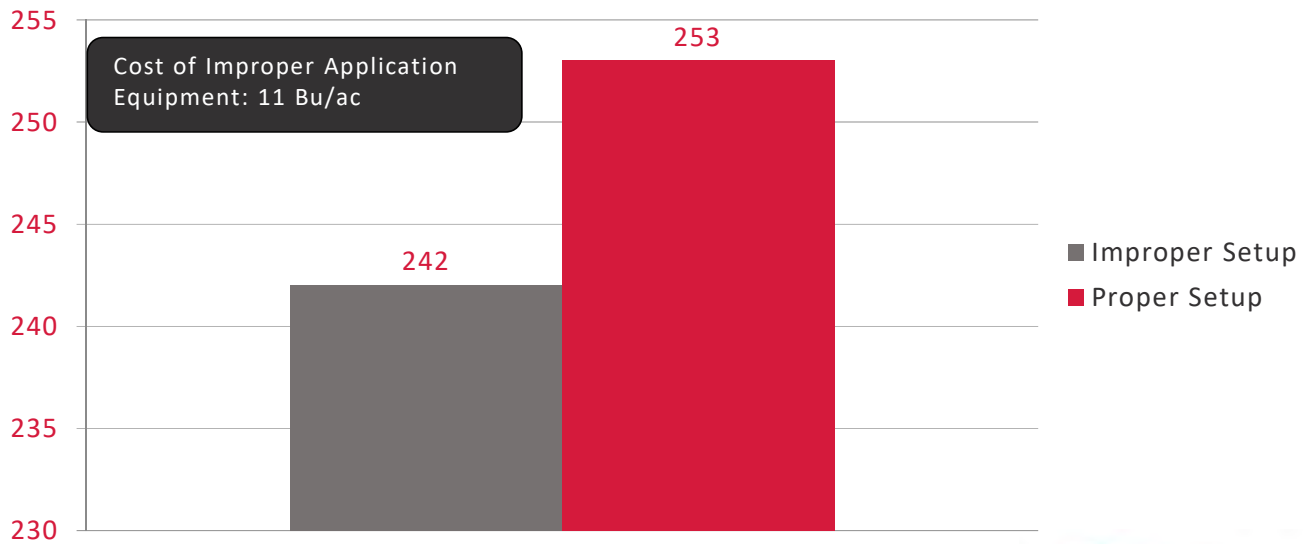
Aerial Application Setup & Operation



Aerial Application Setup & Operation

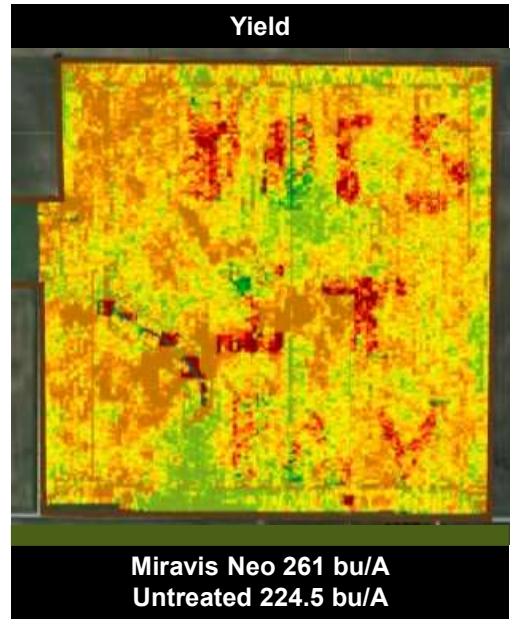
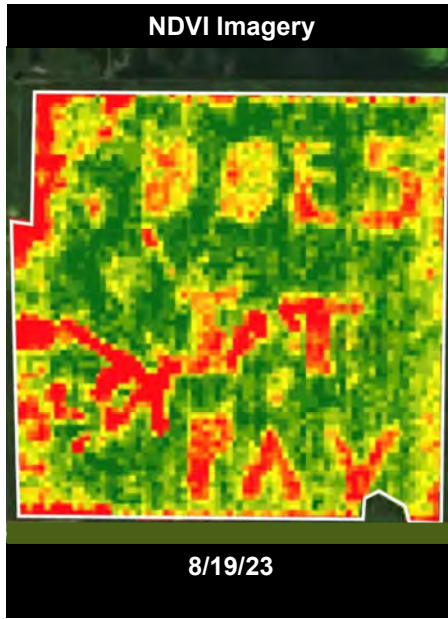


Aerial Application Setup & Operation



Corn Fungicide

See The Difference



Miravis Neo 13.7 fl oz/A at VT/R1 vs Untreated on Farm Corn Trial 2023 – Coulter, IA
JBG – 10/24/2023 – Results may vary by geography

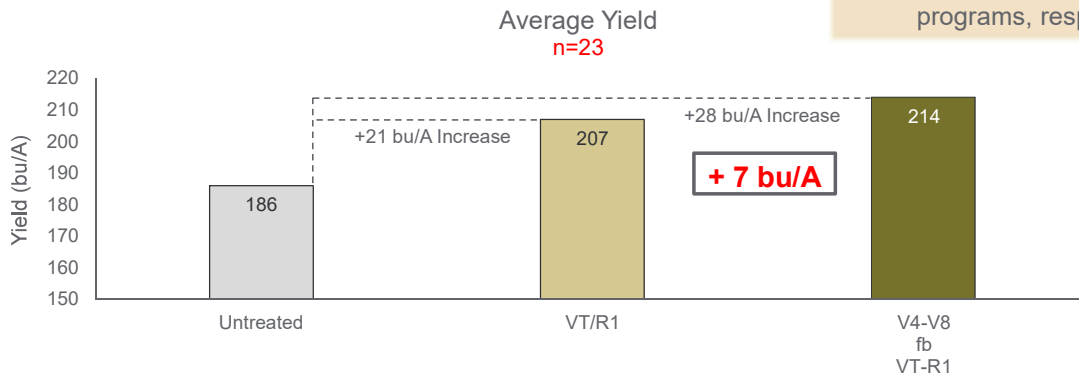
Classification: PUBLIC
Product performance assumes disease presence.
© 2023 Syngenta. Important: Always read and follow label instructions. Some products may not be registered for sale or use in all states or counties. Please check with your local extension service to ensure registration status. The Syngenta logo is a trademark of a Syngenta Group Company.



SYNGENTA 2-PASS VS 1-PASS FUNGICIDE PERFORMANCE IN CORN

V4-V8 FB VT/R1 APPLICATIONS
DATA FROM 20 REPLICATED TRIALS FROM 2018-2023

Syngenta fungicide programs brought revenues of **\$105/A** and **\$140/A*** for 1-pass and 2-pass programs, respectively.



*Revenue based off a corn price of \$5.00/bu

Trial Information:
Locations: IL (5), IN (1), KY (3), MI (1), MO (1), OH (1), TN (3), TX (2), VA (1), WI (2)
Plot Size: Min. 200 ft² Repts: 2-6.
• Application Rates: Miravis® Neo and Trivapro® at 13.7 fl oz/A applied at V4-V8 and VT/R1 corn.
NOTE: Fungicide products assessed individually i.e. Miravis Neo 1-pass vs Miravis Neo 2-pass.

Summary provided by Technical Services



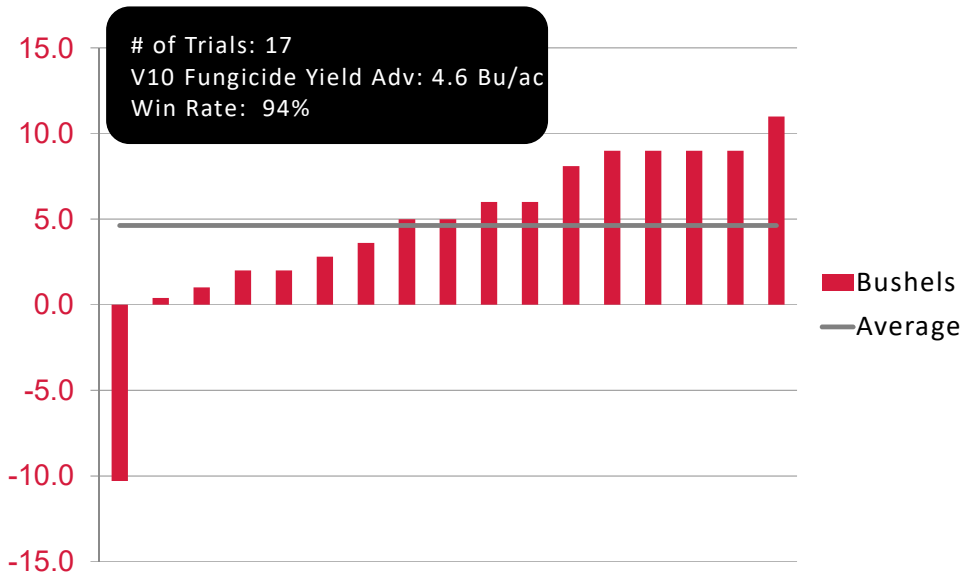
Classification: Public, Not For Distribution



Product performance assumes disease presence.
Performance assessments are based upon results or analysis of public information, field observations and/or internal Syngenta evaluations. Trials reflect treatment rates commonly recommended in the marketplace.
© 2023 Syngenta. Important: Always read and follow label instructions. Some products may not be registered for sale or use in all states or counties. Please check with your local extension service to ensure registration status. Better Yield is the Better Deal™, Miravis®, Trivapro® and the Syngenta logo are trademarks of a Syngenta Group Company.



2021-2023 V10 Corn Fungicide Summary



1st pass @ V10 with untreated check(s)

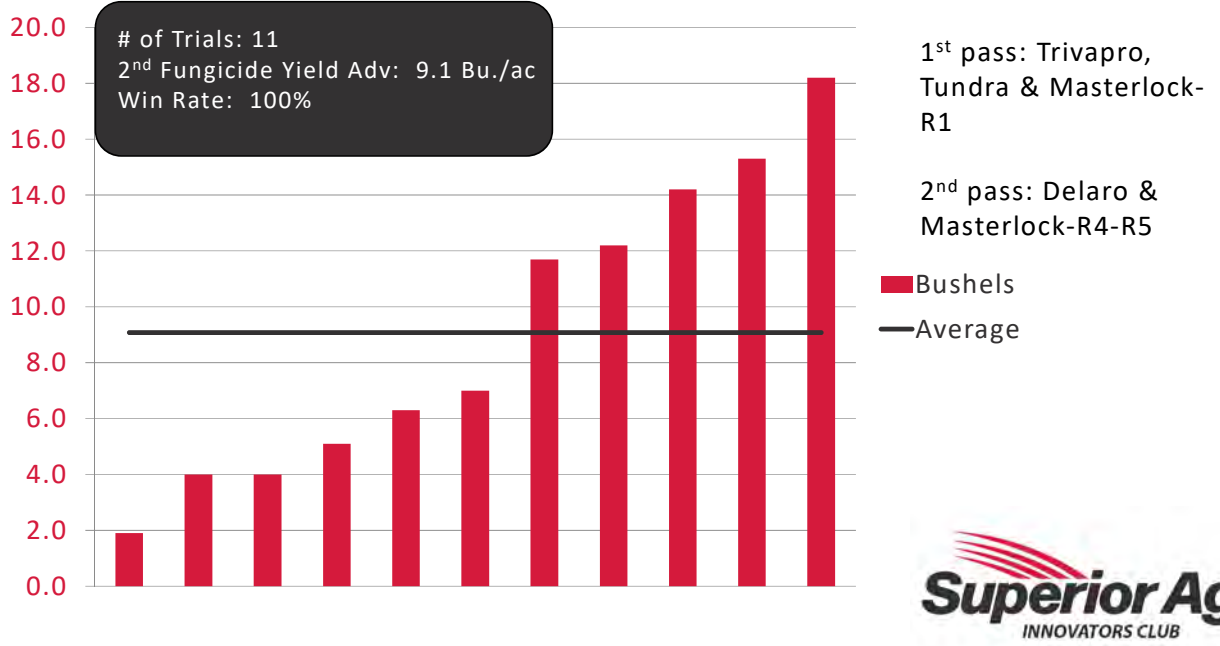
2nd pass @ R1-R2. Entire field sprayed



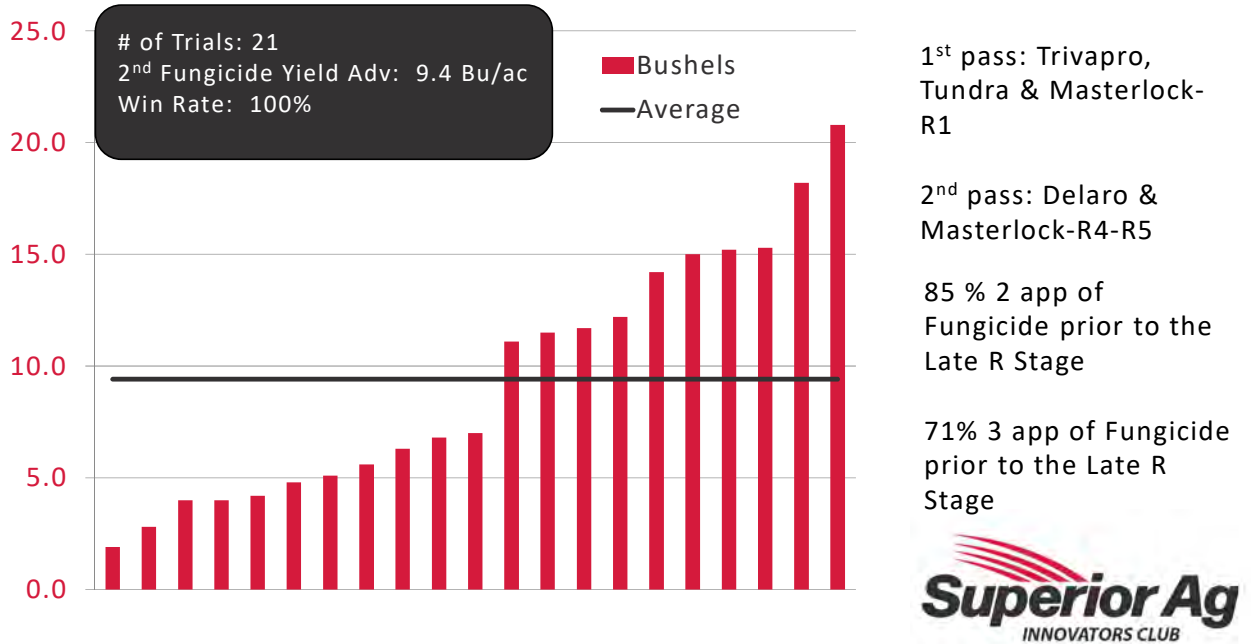
2nd Aerial Pass Fungicide



2023 2nd R Stage Corn Fungicide Trial Summary



2021-2023 2nd R Stage Corn Fungicide Trial Summary



Strip-Till/Fertility

Strip-Till Trial



Conventional Tillage with NH_3

Spring Strip-Till



Strip-Till Trial



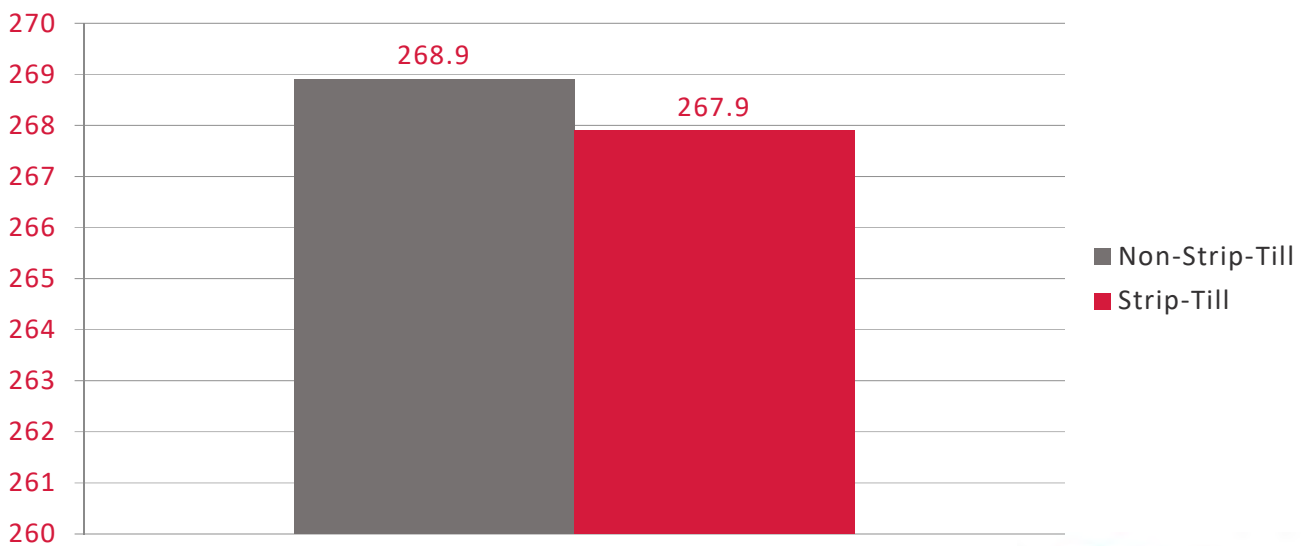
Conventional Tillage with NH₃
Avg. Population 35,000



Strip-Till
Avg. Population 34,000



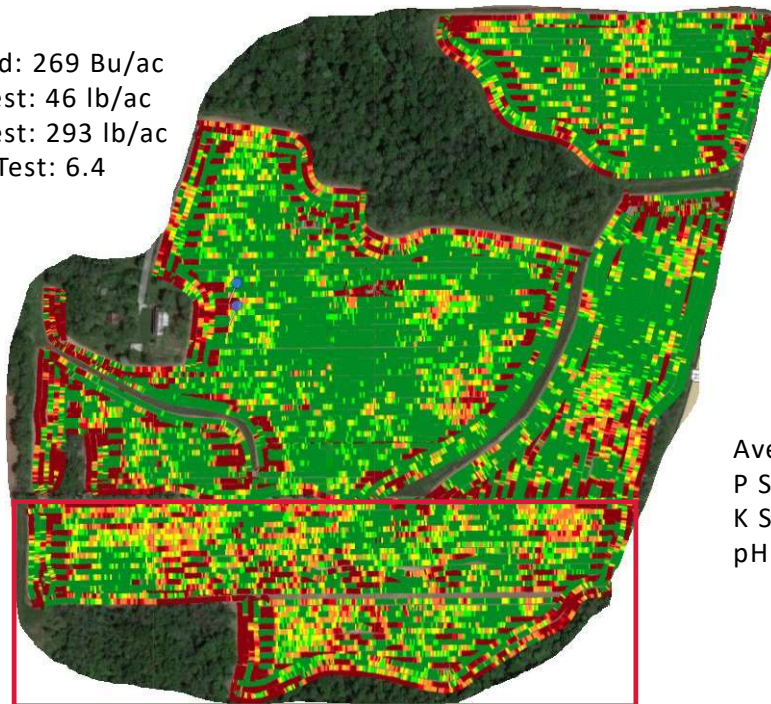
2023 Strip-Till Trial



Does Fertility Impact Yield?

Yield by Fertility

Ave Yield: 269 Bu/ac
P Soil Test: 46 lb/ac
K Soil Test: 293 lb/ac
pH Soil Test: 6.4



Ave Yield: 246 Bu/ac
P Soil Test: 19 lb/ac
K Soil Test: 165 lb/ac
pH Soil Test: 5.7



Soybean Row Spacing, Planting Date, Seed Treatment

Soybean Planting Width



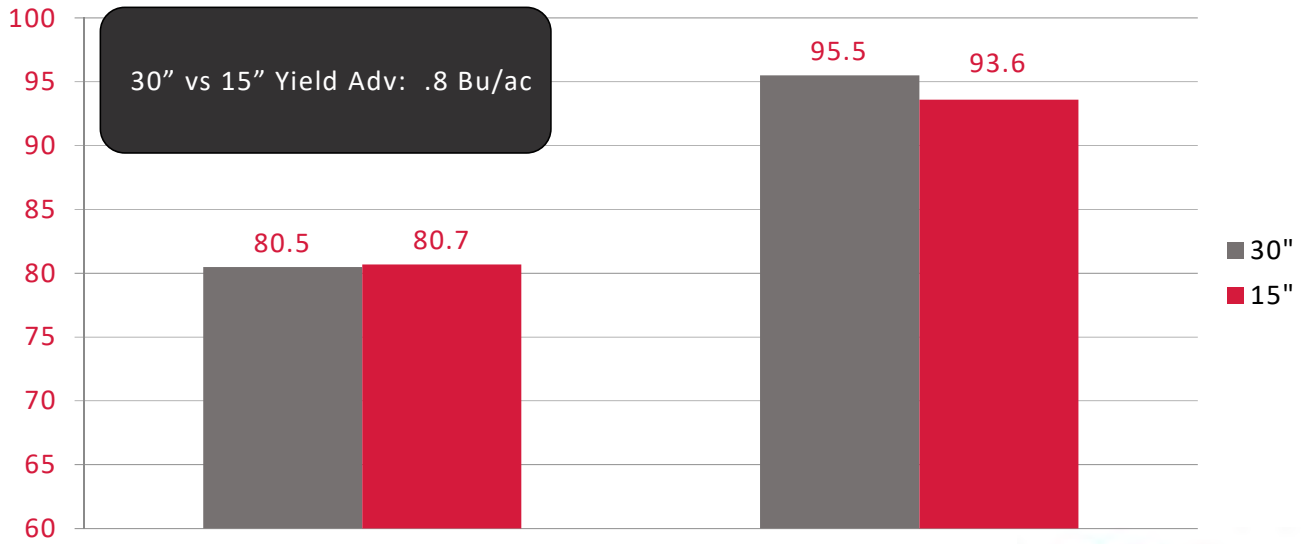
Left: 30" Spacing Right: 15" Spacing

Left: 30" Spacing

Right: 15" Spacing



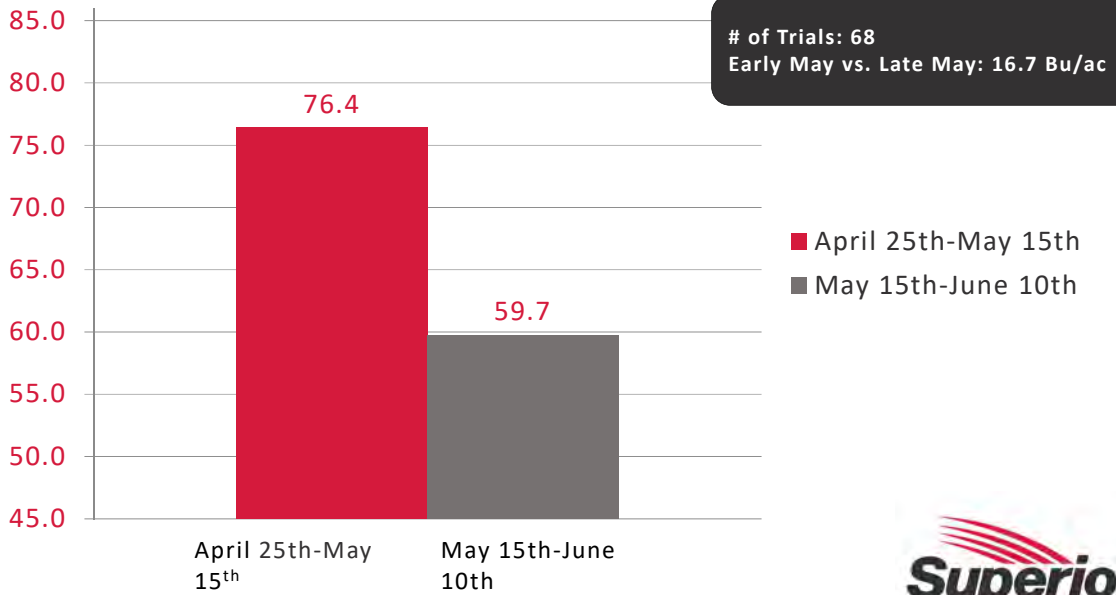
2023 Soybean Row Spacing Trial



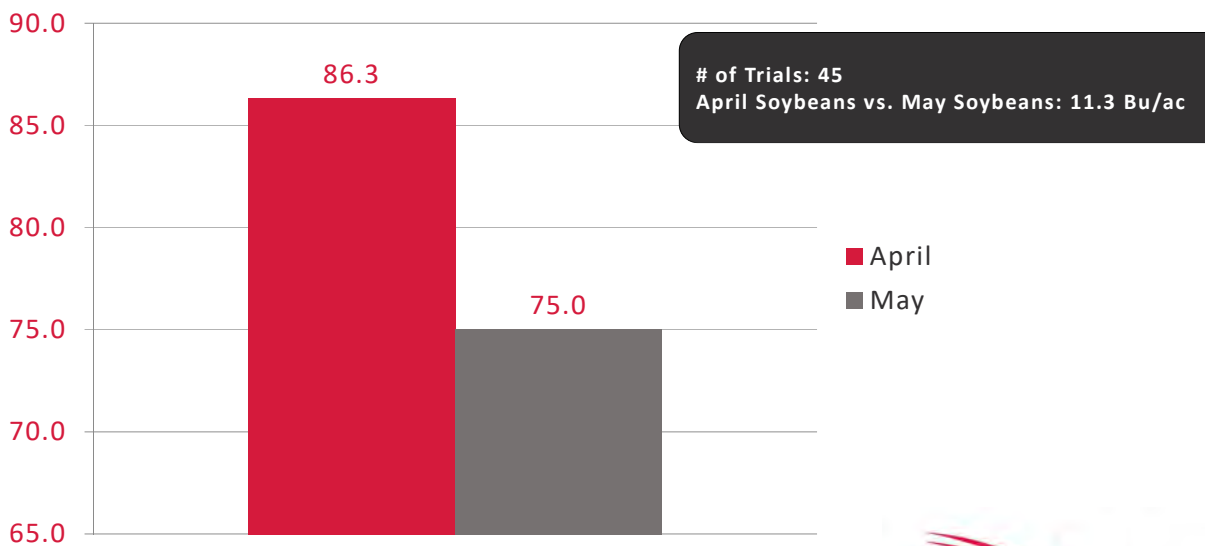
Does Soybean Planting Date Matter?



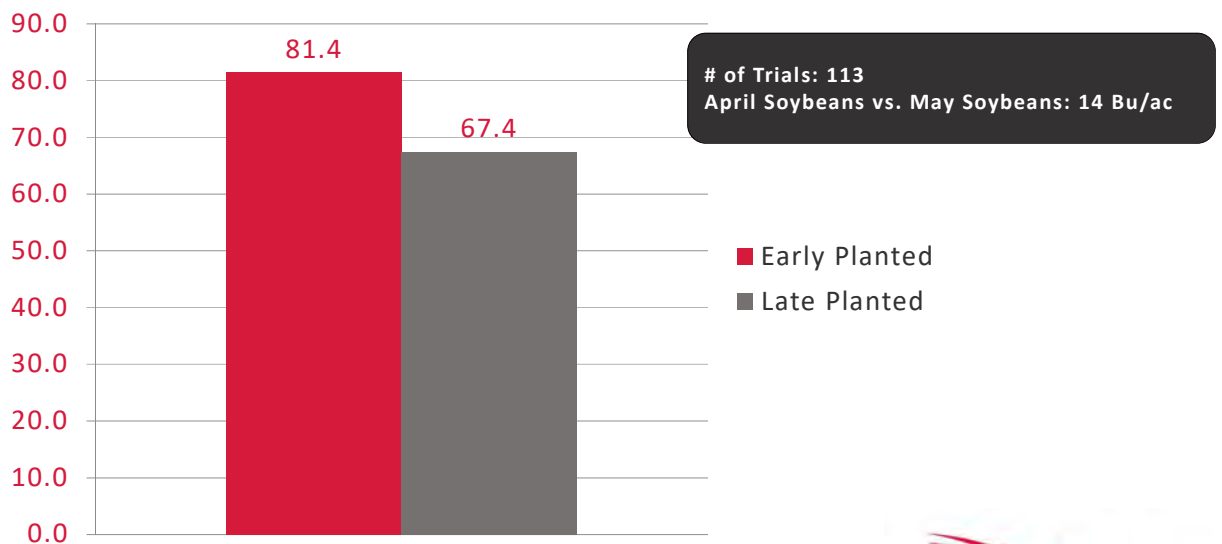
2022 Soybean Planting Date Summary



2020-2021, 2023 Soybean Planting Date Summary

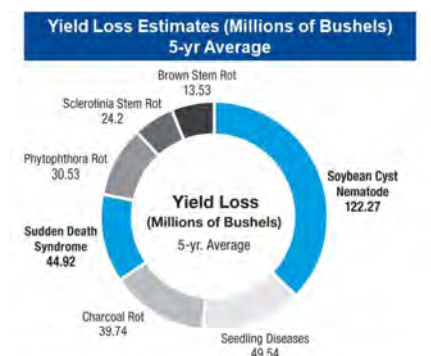


2020-2023 Soybean Planting Date Summary



Why Should You Use a Soybean Seed Treatment

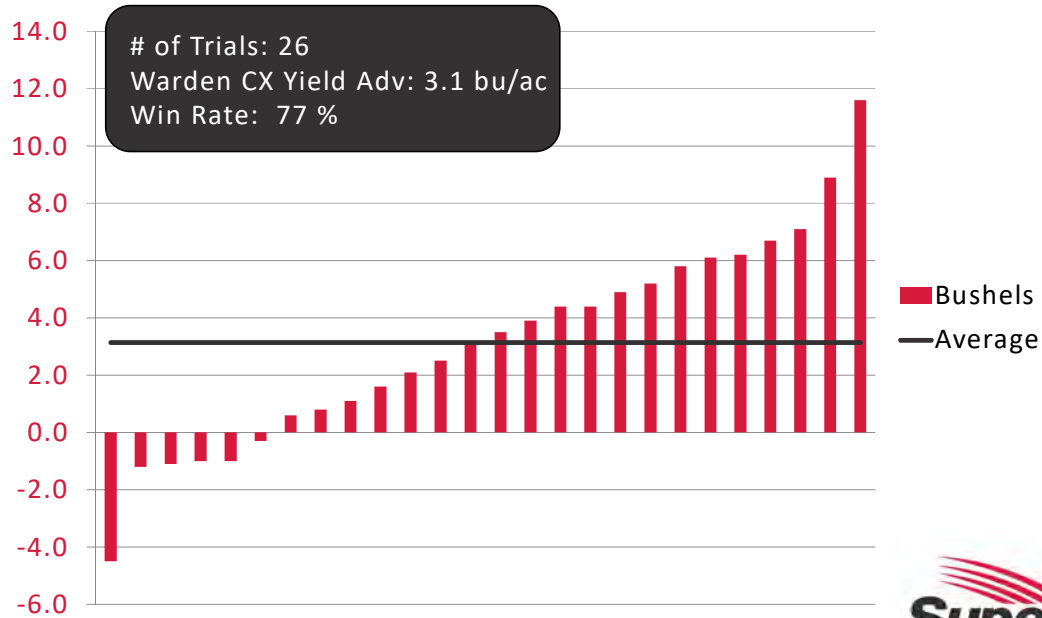
- **Warden CX**
 - Helps optimize yield potential, improve root health & plant vigor
 - 3 fungicides for multiple modes of action
 - Insecticide for seed & foliar insects
- **Preside Ultra**
 - Nitrogen fixing Bradyrhizabium
- **Saltro**
 - Protection against SDS with activity against soybean nematodes
 - Limits plant stress that other SDS fungicides may introduce.



Source: 2015 yield loss: Dr. Carl Bradley, University of Kentucky
Source: "Estimates of Soybean Yield Reductions Caused by Diseases in the United States," United Soybean Board. <https://www.ussoybean.org/~/media/USBB/2015/2015-USBB-Report-on-Soybean-Yield-Losses.pdf>



2021-2022 Warden CX Summary

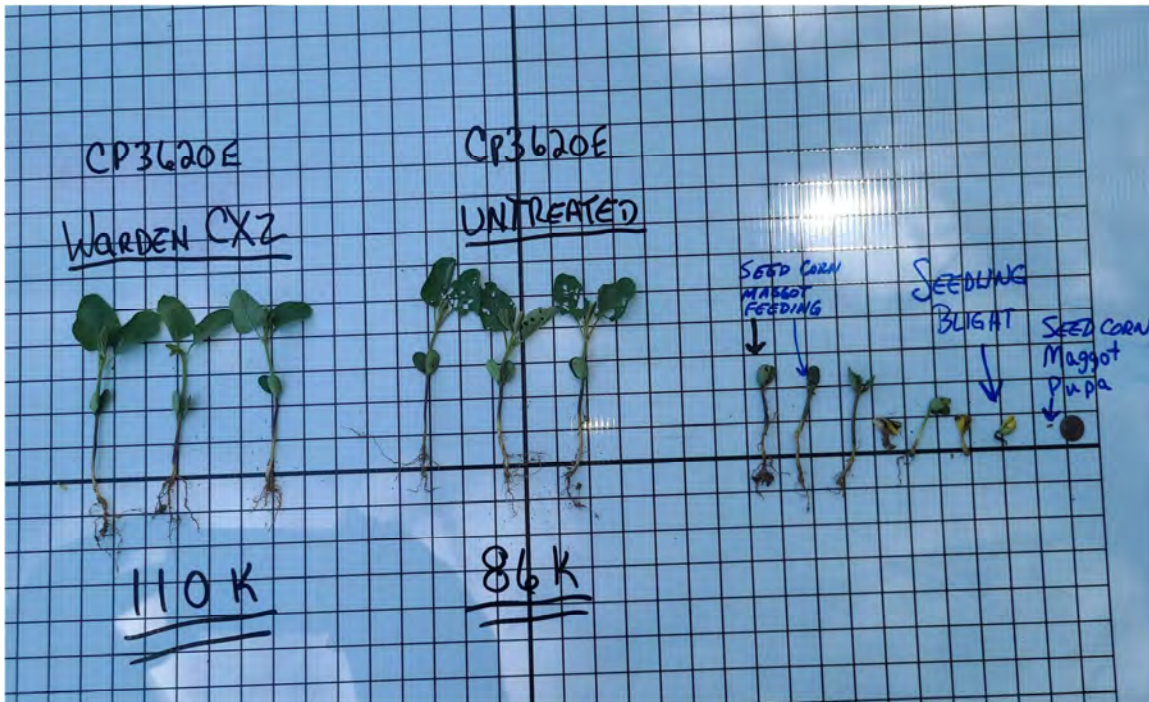


Warden CXII

- **What it is?**
 - Current Warden CX active ingredients and rates, + NEW Fungicide Vayantis®* (PCBX) + additional polymer and color.
 - Low application rate 4.2 fl oz/cwt in an all-in-one pre-mix formulation
- **Why is it better?**
 - Improved fungal pathogen performance on oomycetes – water molds – Vayantis is 100 to 1,000 times more active on pythium species than metalaxyl and ethaboxam.
 - Controls all pythium species , including metalaxyl and ethaboxam tolerant strains
 - Improved activity on phytophthora
 - Additional polymer for improved seed flow and handling
 - Brighter more vivid red color
 - Improved yield potential
 - **BEST PREMIUM SEED TREATMENT ON THE MARKET FOR SOYBEANS! PERIOD!**



Warden CXII vs Untreated



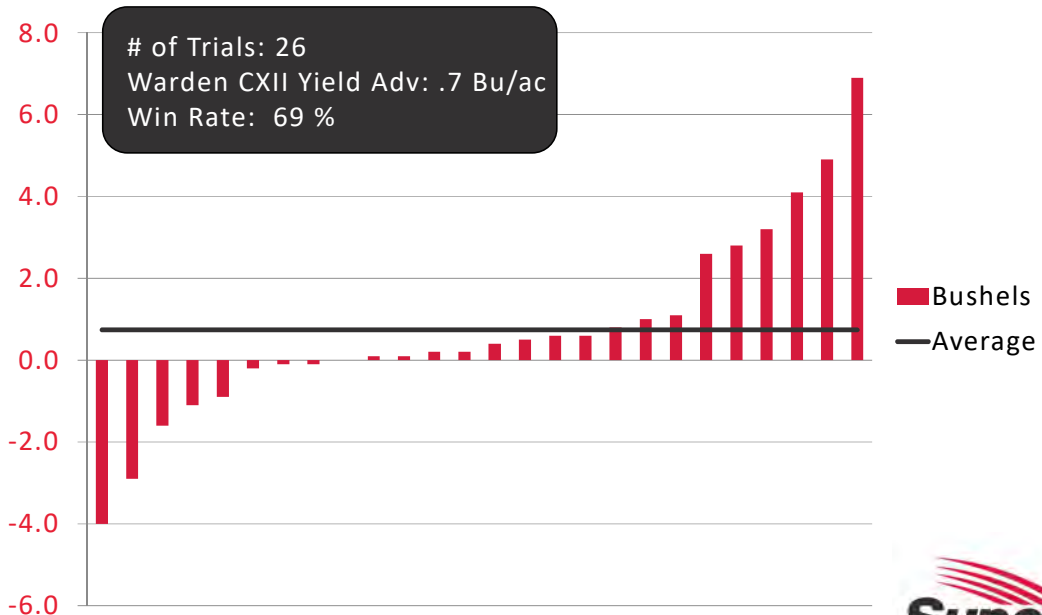
2022-2023 Seed Treatment Stand Counts



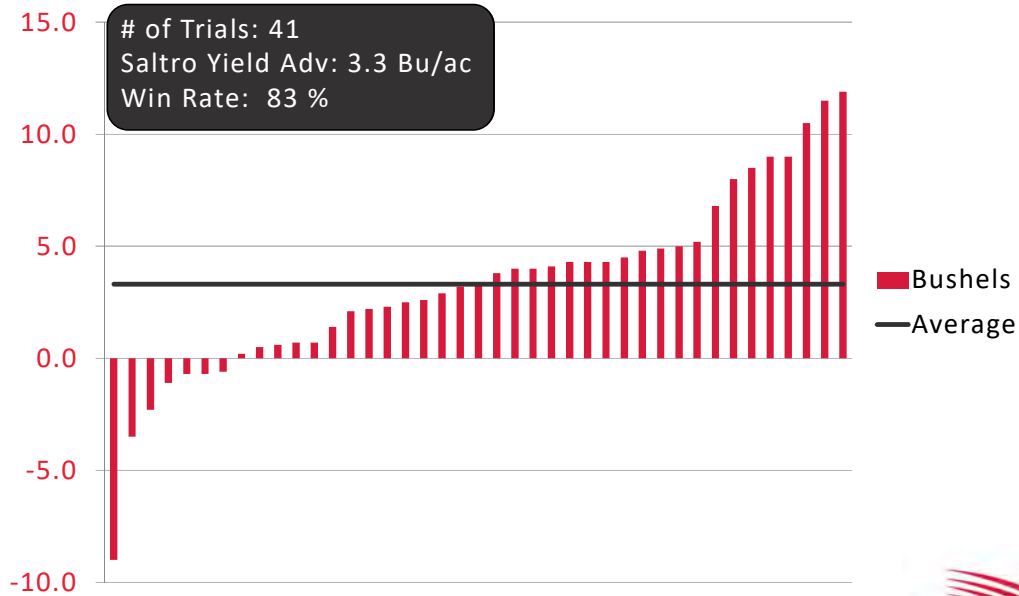
15 Plots



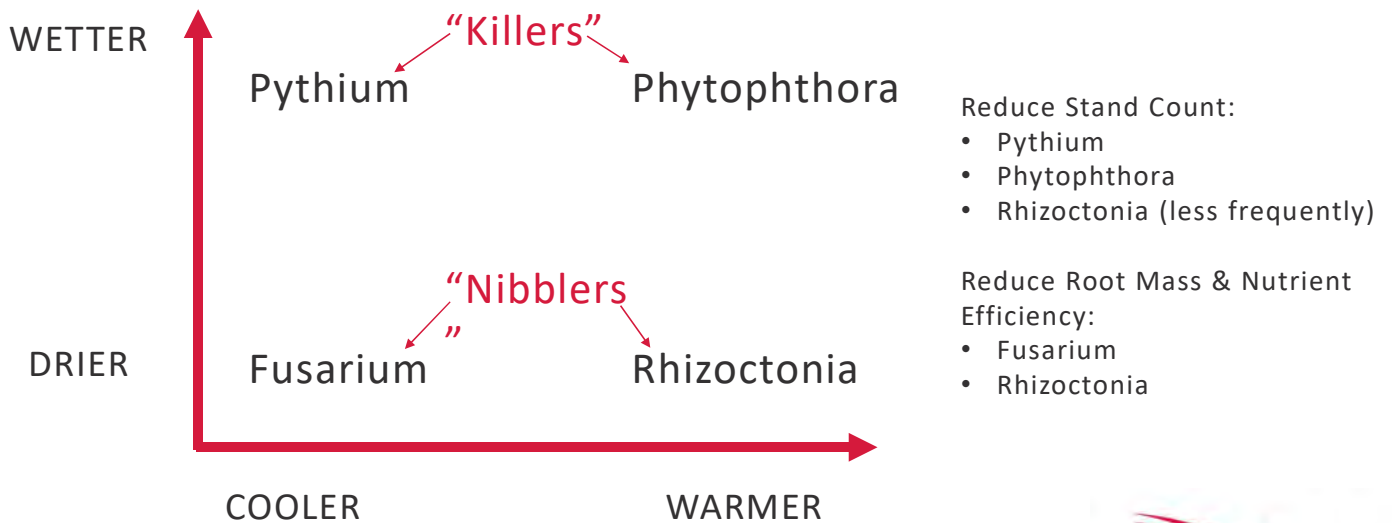
2022-2023 Warden CXII Summary



2020-2023 Soybean Saltro Summary



Planting early offers greater yield potential but comes with increased disease



Red Crown Rot

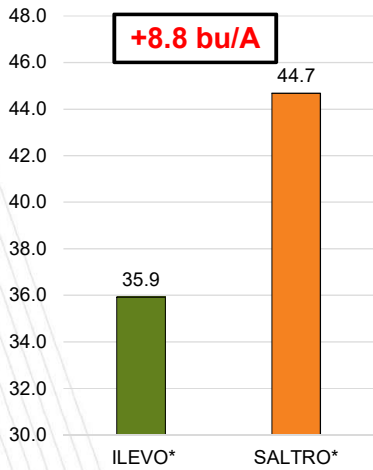


Red Crown Rot



See the difference – Saltro Performance on Red Crown Rot (1.428oz/unit)

Southern Illinois



*Application Rates: **SALTRO®** applied at 1.428 oz/unit and **ILEVO® HL** applied at 1 oz/unit

- Diseases present: Red Crown Rot
- Other: split planter experimental design

On Farm Trials – Southern IL – 8/16/2023
MCG – 08/2023. Results may vary by geography
Classification: PUBLIC

Product performance assumes disease presence. Performance assessments are based upon results or analysis of public information, field observations and/or internal Syngenta evaluations. Trials reflect treatment rates commonly recommended in the marketplace. All photos are either the property of Syngenta or are used with permission.



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See the difference with 2x rate Saltro seed treatment on Red Crown Rot

Southern Illinois

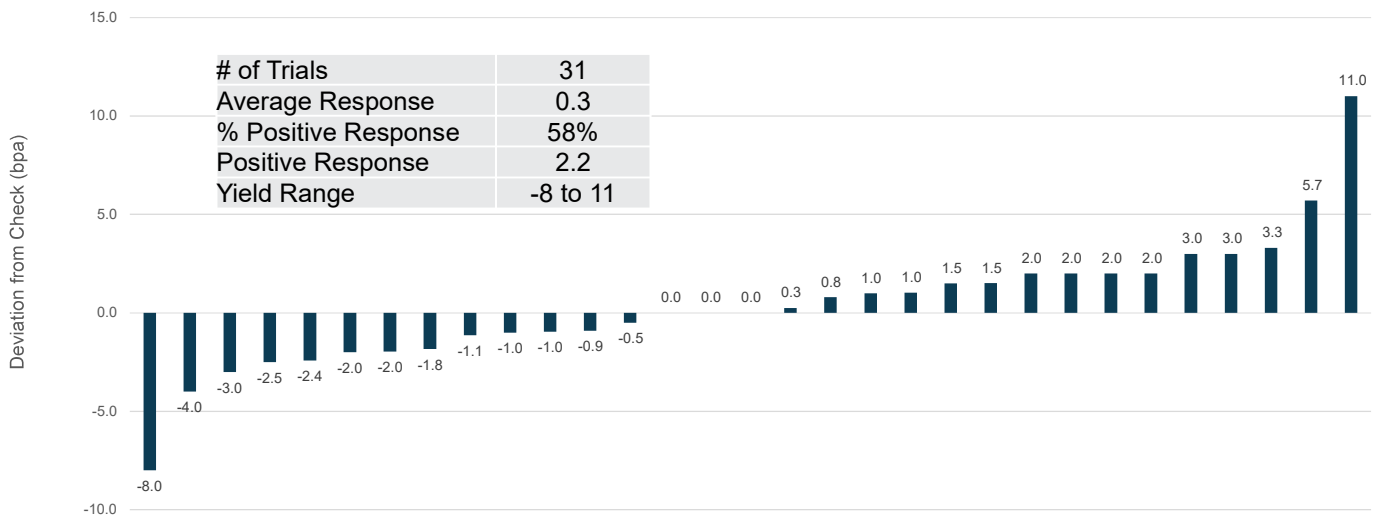


Results may vary by geography. Product performance assumes disease presence. All photos are either the property of Syngenta or are used with permission. Performance assessments are based upon results or analysis of public information, field observations and/or internal Syngenta evaluations. Trials reflect treatment rates commonly recommended in the marketplace. ©2021 Syngenta. Important: Always read and follow label instructions. Some products may not be registered for sale or use in all states or counties. Please check with your local extension service to ensure registration status. AAtrex 4L, AAtrex Nine-O, Acuron, Agri-Flex, Agri-Mek 0.15EC, Agri-Mek SC, Avicta 500FS, Avicta Complete Beans 500, Avicta Complete Corn 250, Avicta Complete Corn 500, Avicta Duo Corn, Avicta Duo Cotton, Avicta Duo COT202, Besiege, Bicep II Magnum, Bicep II Magnum FC, Bicep Lite II Magnum, Callisto Xtra, Cyclone SL 2.0, Denim, Endigo ZC, Endigo ZCX, Epi-Mek 0.15EC, Expert, Force, Force 3G, Force CS, Force Evo, Force 6.5G, Gramoxone SL, Gramoxone SL 2.0, Gramoxone SL 3.0, Karate with Zeon Technology, Lamcap, Lamcap II, Lamdec, Lexar, Lexar EZ, Lumax, Lumax EZ, Medal II ATZ, Minecto Pro, Proclaim, Tavium Plus VaporGrip Technology, Vollam Xpress and Warrior II with Zeon Technology are Restricted Use Pesticides. The trademarks or service marks displayed or otherwise used herein are the property of a Syngenta Group Company. VaporGrip® is a trademark of, and used under license from, Monsanto Technology, LLC. All other trademarks are the property of their respective owners.



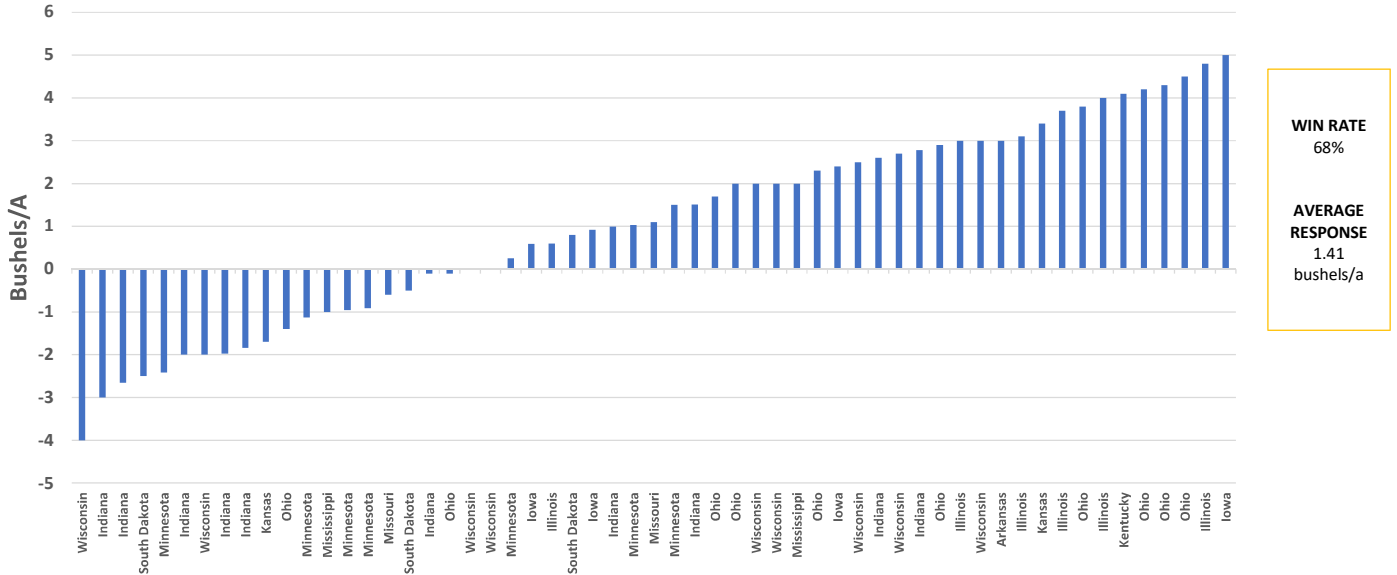
YieldOn, Utrisha N

2022 YieldON Performance-Soybeans

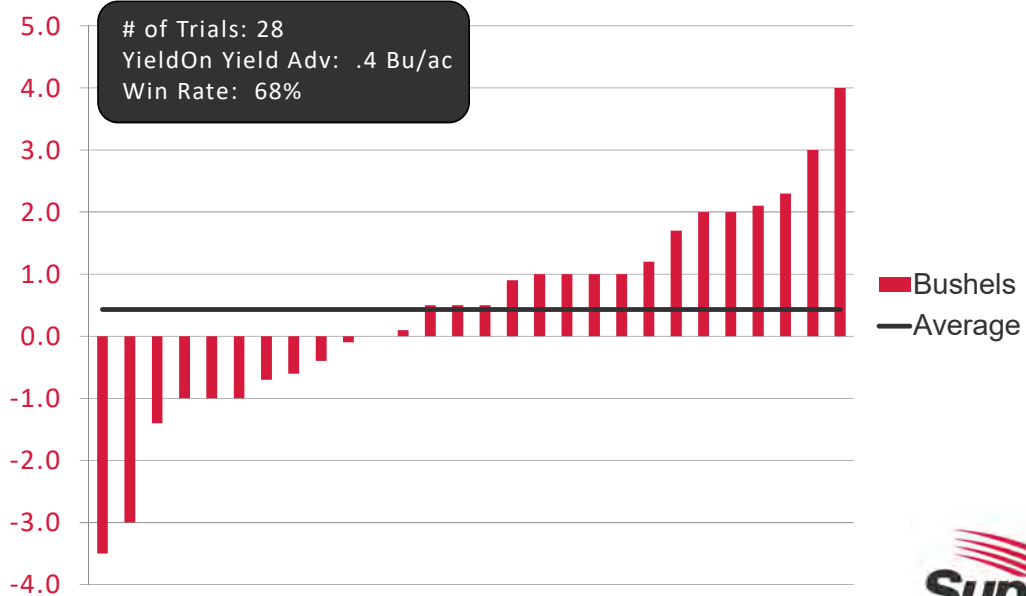


YIELDON | 2022 SOYBEAN TRIALS

Soybean Response to YieldON Applications

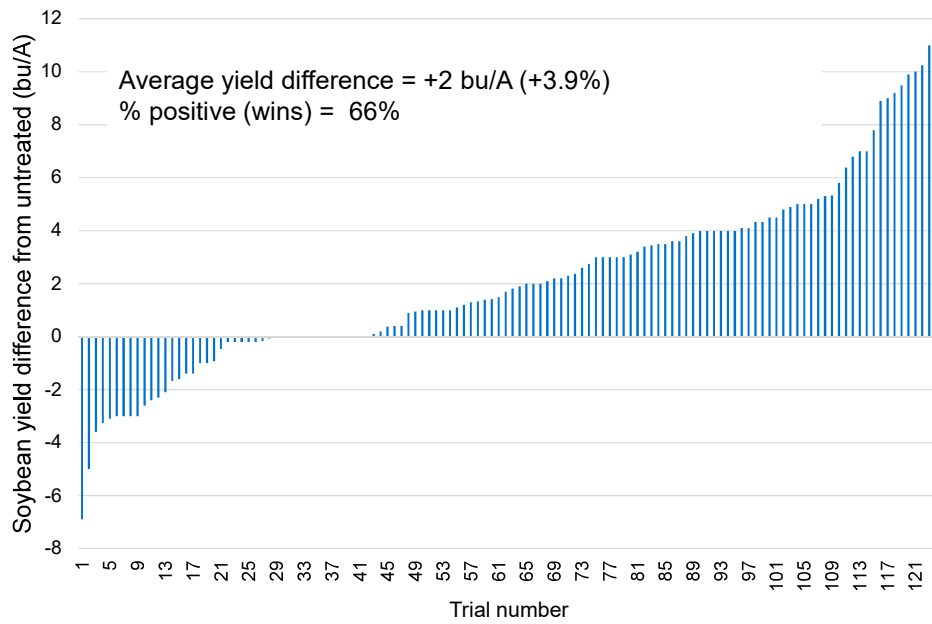


2023 YieldOn Soybean Trial Summary



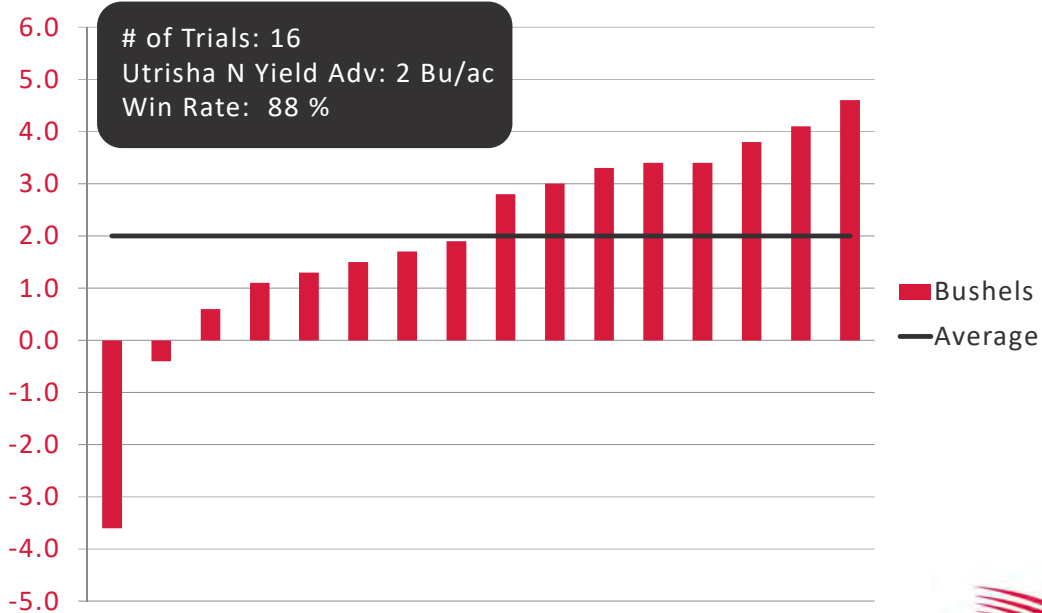
Soybean yield response to Utrisha™ N in field demonstrations

Strip trial results 2021 and 2022, 123 trials

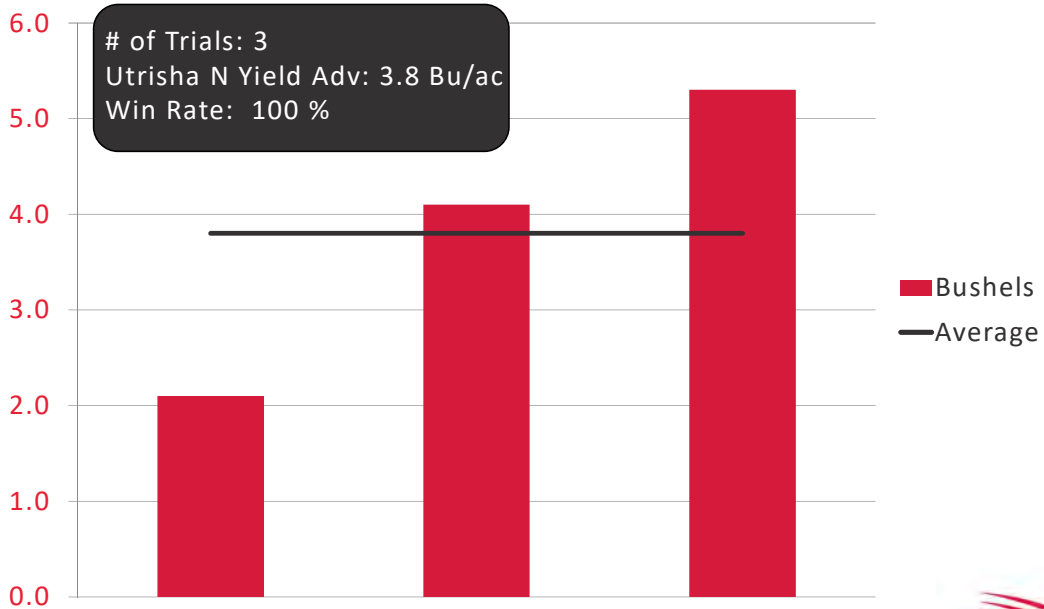


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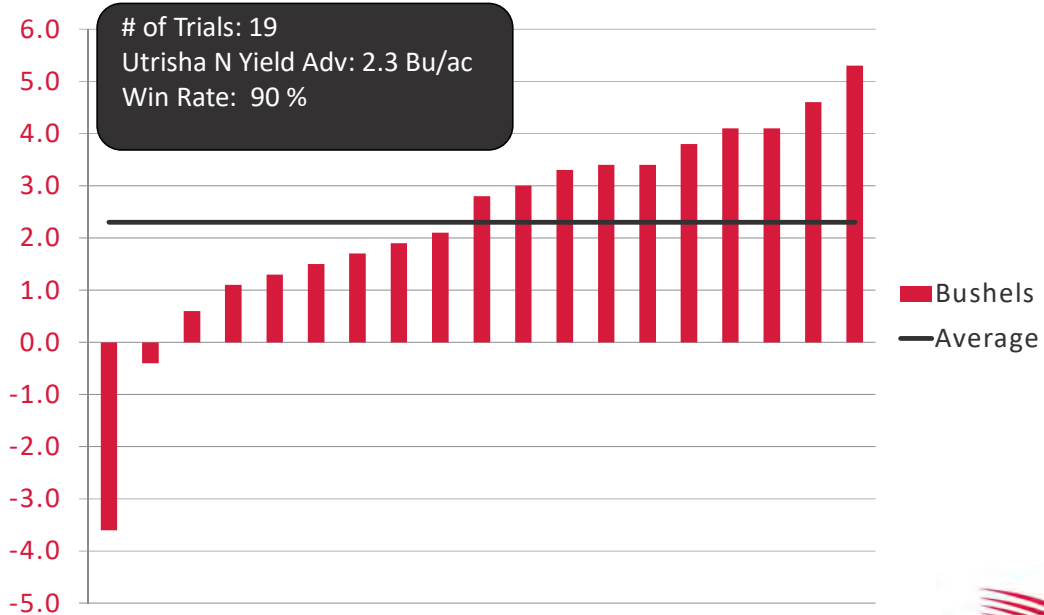
2022 Utrisha N Soybean Summary



2023 Utrisha N Soybean Summary

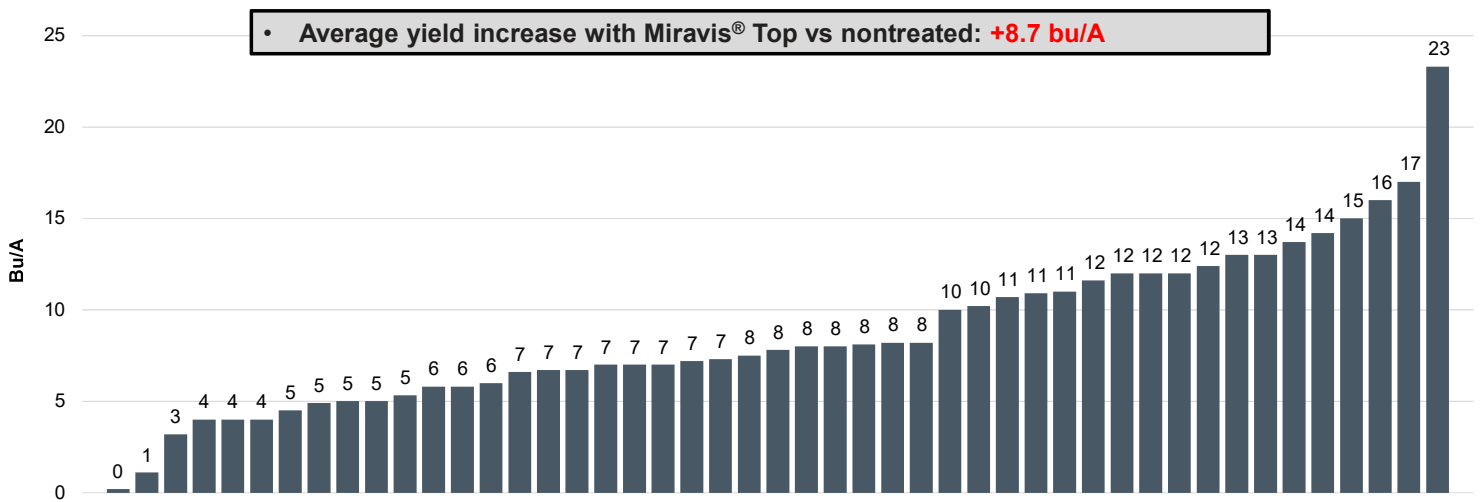


2022-2023 Utrisha N Soybean Summary



Soybean Fungicide

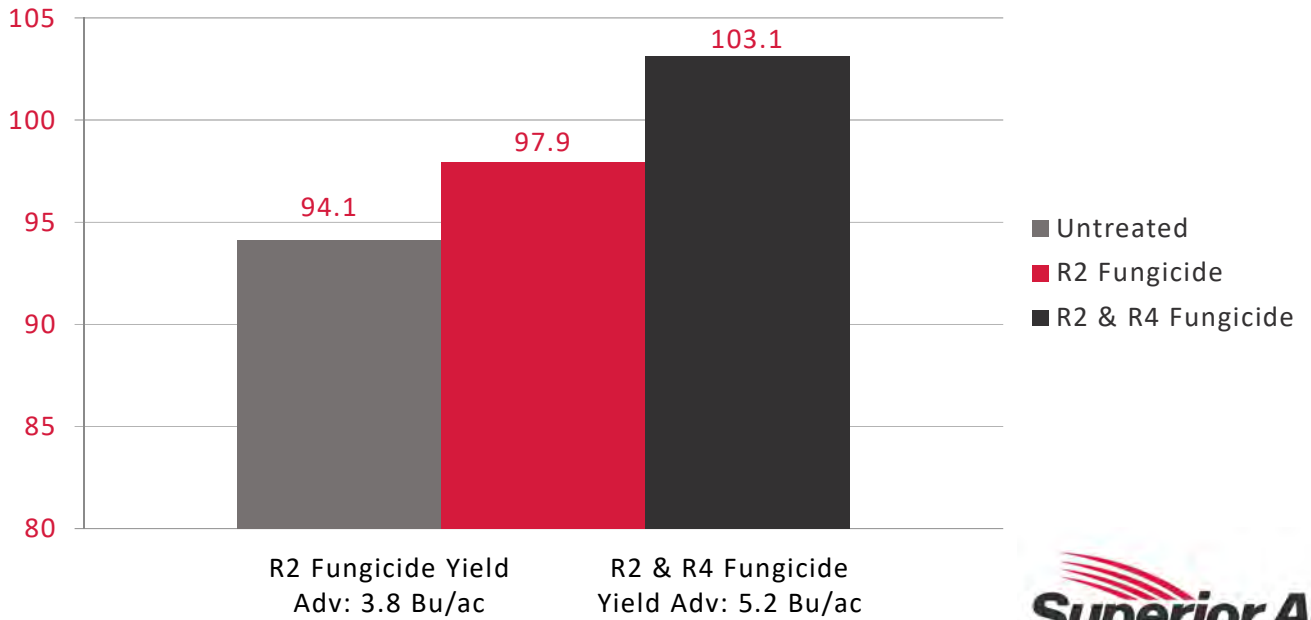
3 Year Miravis Top Fungicide performance in Southern IL and SW IN 2019-2021. 48 on farm trials



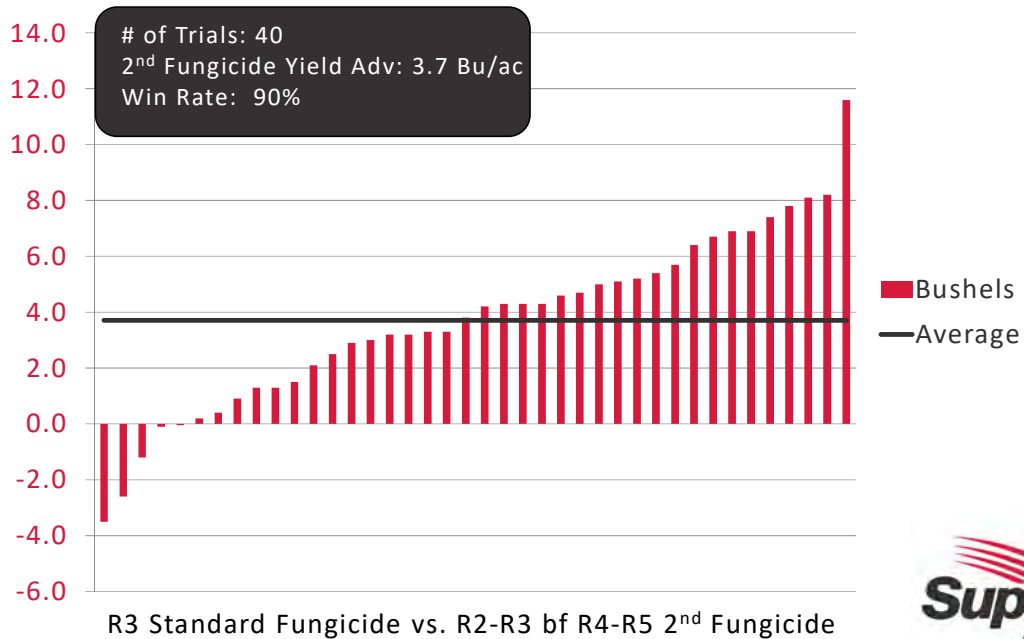
- Location: Southern IL and Southwest IN
- Plot Size: On-farm field scale trials
- Rates: Miravis Top 13.7 oz/A Applied At R3 Application Timing

Classification: PUBLIC
 Results may vary by geography. All photos are either property of Syngenta or are used with permission. Product performance assumes disease presence.
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2023 Fungicide Soybeans Trial

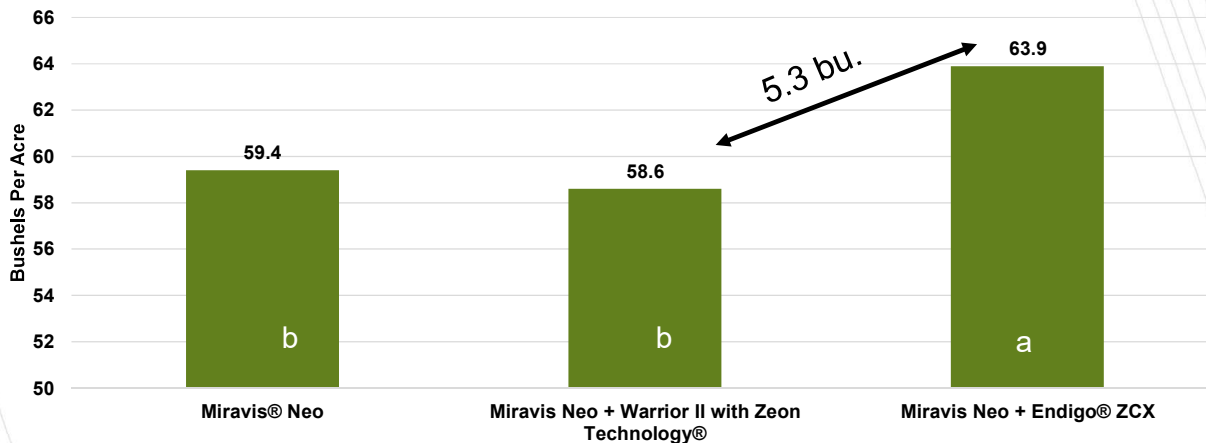


2019-2023 2nd R Stage Soybean Fungicide Trial Summary



Endigo ZCX Insecticide on Soybean

Purdue University, West Lafayette, IN



Trial: Purdue Soy23-28 Syngenta2.Acre – 4 replications

Rates Per Acre: Miravis Neo 13.7 fl.oz., Endigo ZCX 4 fl.oz., Warrior II with Zeon Technology 1.6 fl.oz.

Application Timing: R3

Key Pest: Bean Leaf Beetle

JJL 10/23

Classification Public, Not for Distribution

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Truterra Update



Truterra Update

Reviewing 2023 and looking forward to 2024


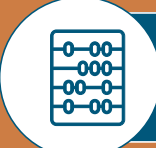



Discussion Topics

- 2023 Review
 - Program Participation
 - Market Observations
- 2024 Program Launch

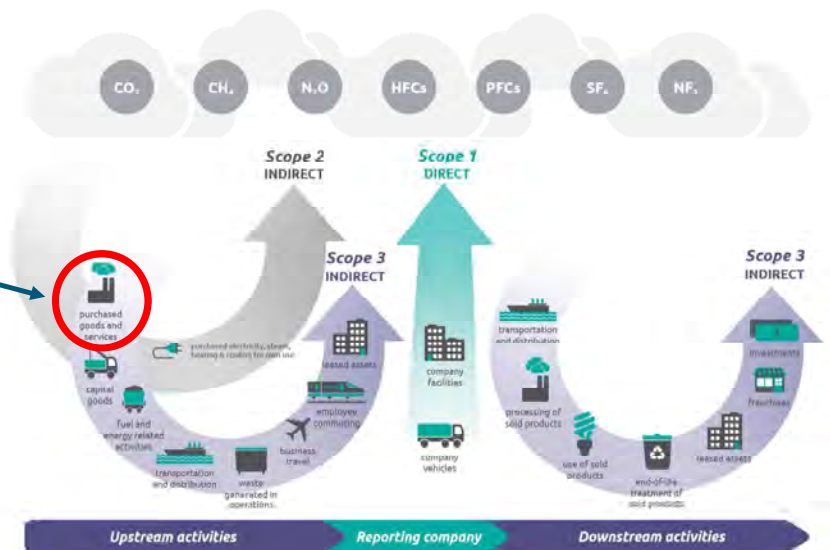


Market Observations

- 
Changing Guidance on ESG Reporting
- 
Emissions Factors/C.I. Scoring
- 
USDA Climate SMART Awards

Changing Guidance on ESG Reporting

- Food, Fuel, Fiber, and Feed companies have made commitments to reduce their environmental impact in a variety of areas, most importantly the agricultural commodities they source.
 - Most organizations' emissions are within their value chain (outside of their companies direct operational control)
- Sustainability programs & projects are developed to enable reporting on the reduction of environmental impact or emissions in specific areas of the sourcing footprint.

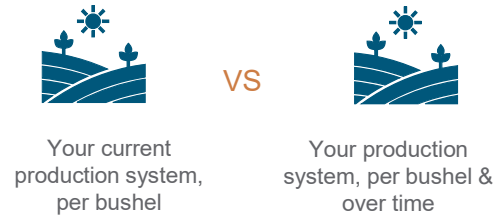


Emissions Factors / Carbon Intensity Scoring

- Carbon offset models quantified difference in carbon storage in the soil + the carbon emissions from management practices, based on a recent practice change.



- Emissions Factors represent the amount of GHG's emitted per unit of activity. It is a more comprehensive quantification, including all emission scopes.



- Farmers were **incentivized on the annual carbon storage of their current production system compared to previous seasons.**

- Farmers can be **incentivized on the reduction of their overall emissions footprint over time.**



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USDA Climate SMART Awards

- What is it?
 - In late 2021, the USDA announced \$3.1 billion of funding for pilot projects :
 - Implement Climate-SMART conservation
 - Monitor & quantify GHG impacts & benefits
 - Scale Climate-SMART conservation systems to reduce emissions and catalyze carbon market opportunities
 - Organizations submitted applications and awards were confirmed in early 2022.
 - Land O'Lakes received one of the 5 largest awards
 - 141 projects were funded at various levels







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2024 Program Launch



Key changes to 2024 programs

-  Innovative solution for eligible long-term adopters to get rewarded for the positive impact of continuing sustainable practices
-  Truterra's first large-scale nitrogen management program following pilots
-  Truterra's first USDA program supports eligible farmers' conversion to strip/no-till and addition of cover crops by providing potential financial assistance and expanded knowledge sharing
-  Streamlined Truterra MyPortal farmer/retailer experience to reduce program eligibility uncertainty and make it easier for farmers to take advantage of program opportunities

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2024 TRUTERRA PROGRAMS

Program	Farmer Incentive	Crop	Field Practices	Practice Change Year	Program Enrollment
Truterra financial assistance – a USDA-supported program	\$25/acre – tillage conversion \$55/acre – cover crop addition \$80/acre – combined practices above	CY 2024 corn, soybeans, wheat, cotton	Must convert to strip/no-till <i>and/or</i> add a cover crop for crop year 2024 (i.e., new practices only)	2024 <u>only</u>	Dec 1 – Feb 2, 2024
Carbon program for near-term adopters	\$30 per tonne with a \$2/acre minimum for the program	Corn (grain), soybeans, wheat (grain), cotton in 2022 - 2024	Strip/no-till <i>and/or</i> use of cover crops on eligible crops in 2022 - 2024	2022, 2023, 2024	Dec 1 – July 31, 2024
Carbon program for long-term adopters	\$30 per tonne with a \$2/acre minimum for the program	Corn (grain), soybeans, wheat (grain), cotton in 2022 - 2024	Strip/no-till <i>and/or</i> use of cover crops on eligible crops in 2022 - 2024	2021 or earlier	Dec 1 – July 31, 2024
Nitrogen management program	\$5/acre	CY 2024 corn	≥ 20 lbs. reduction in N applied per acre <i>and/or</i> addition of enhanced efficiency fertilizer	2024	Dec 1 – July 31, 2024

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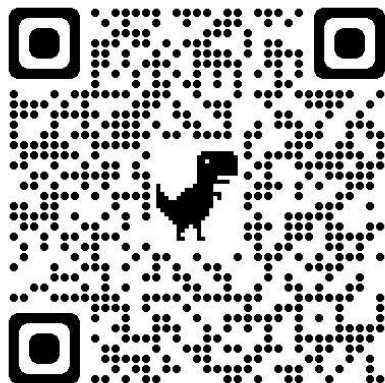
2024 TRUTERRA PROGRAMS – DATA COLLECTION REQUIREMENTS

Program	Data Collection	Data Collection Deadline
Truterra financial assistance – a USDA-supported program	3 years or a full rotation of historic data (which ever is longer)	December 1, 2024
Carbon program (for near & long-term adopters)	Full data collection from 2018-2024.	2018-2023 data: July 31, 2024 2024 data: December 1, 2024
Nitrogen management program	2024 corn + 3 years historical corn = 4 total years of data collection. *Rotational crops between corn <i>do not</i> need to be collected.	December 1, 2024

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Get started on your enrollment today!

www.truterraag.com/enroll



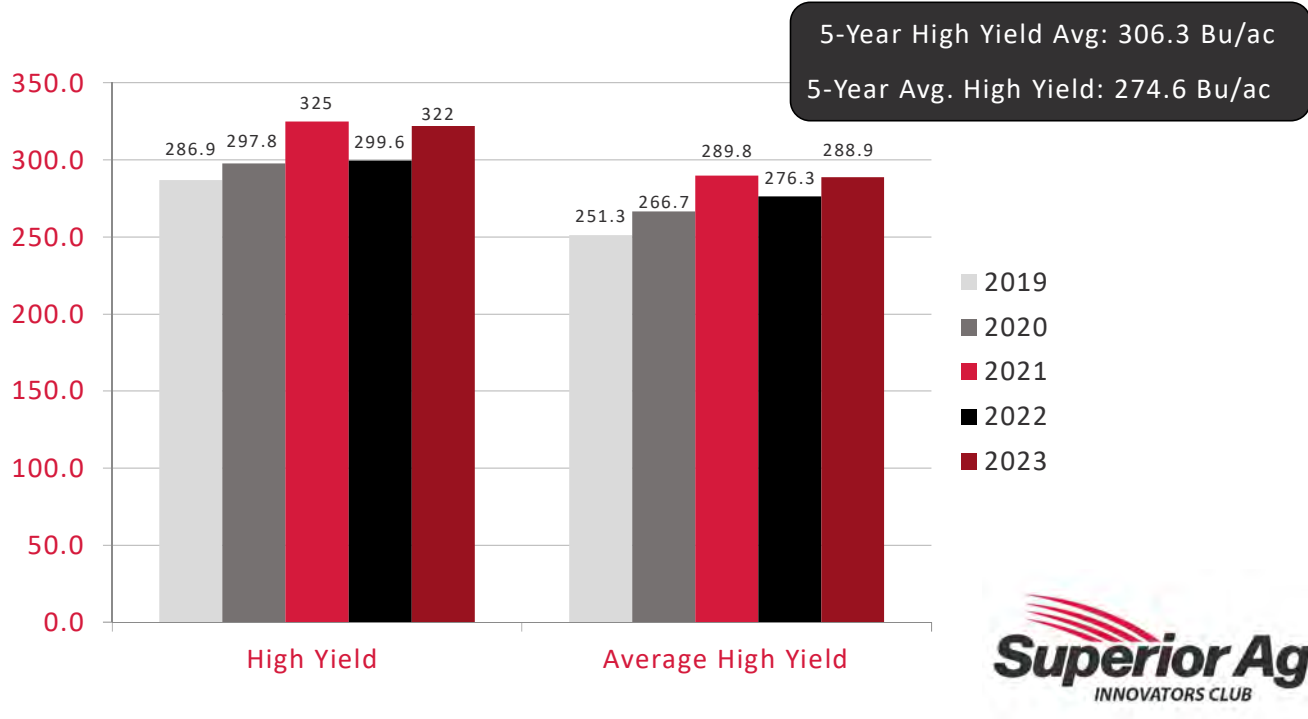
Be sure to select Superior Ag as your retailer!



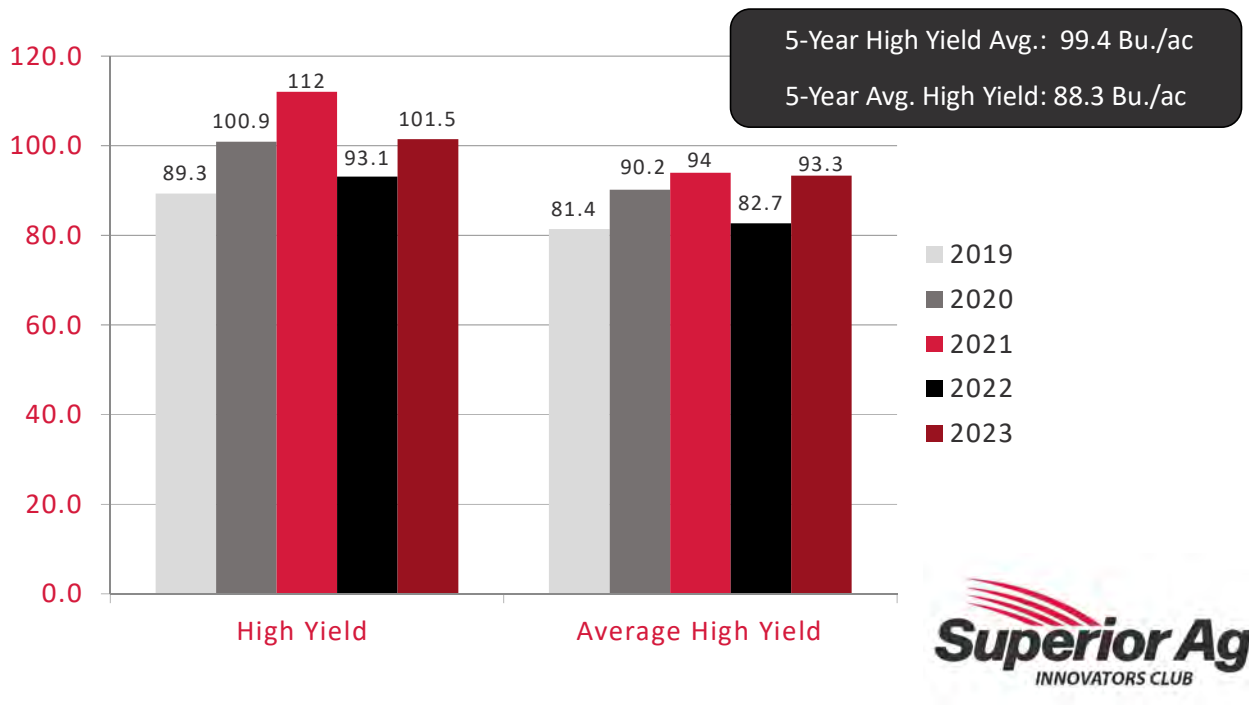
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Superior Acre/High Yield

2023 High Yield Corn Summary



2023 High Yield Soybean Summary



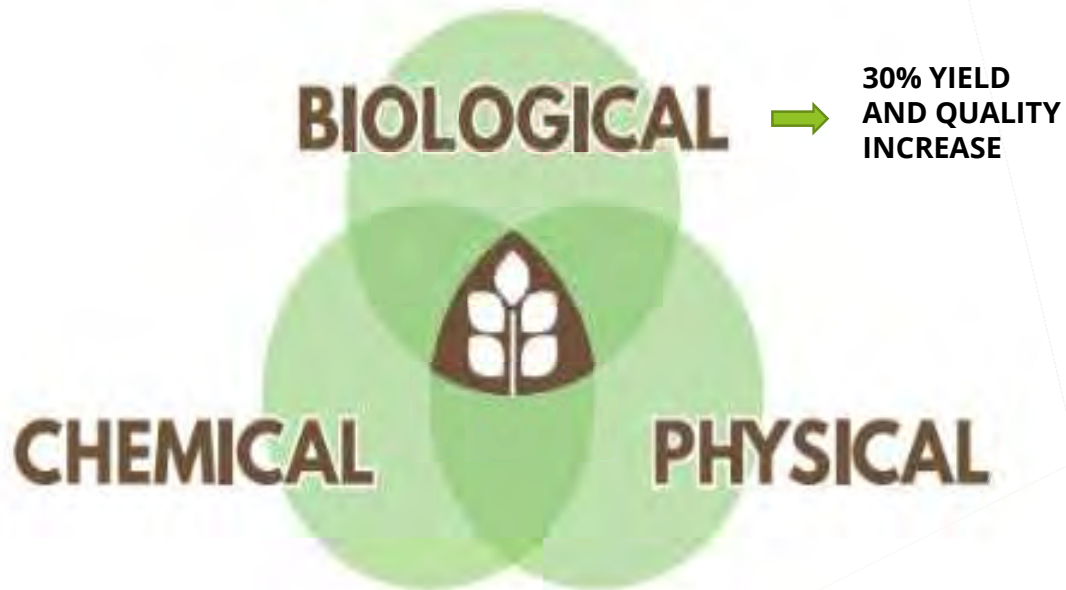
INTRODUCING: Superior Acre Program

- Enhancement to the Superior Ag High Yield Challenge
- Customized agronomic prescription
 - Fertility
 - Hybrid/variety selection
 - Planter setup
 - Population recommendations
 - Seed treatments
 - Row starter options/additives
 - Fungicide application(s) and timing(s)
 - Top dress—N, P, K, micros
- More to come!



Biologicals: Signal vs Noise

3 Components of Soil Health



US Biologicals Market

2016: \$1.47 B

2020: \$9.9 B

2025: \$18.9 B

Market Drivers:

- Higher necessity for agricultural sustainability
- Favorable regulatory framework
- High growth prospects for organic food
- Promotion by govt organizations

Market Restraints:

- Technological and Environmental Restraints
- Perception of Low Efficacy of biologicals
- Limited product availability



*Research conducted by Markets and Markets

Biodiversity is the Key



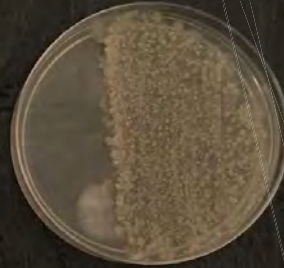
VIRGIN SAGEBRUSH SOIL

**HIGH YIELD OUTPUT
MODERATE NPK INPUT
HIGH BIOLOGICAL OUTPUT**



FARMED ORGANIC SOIL 4-5 YRS

**HIGH YIELD OUTPUT
HIGH COMPOST INPUT
HIGH BIOLOGICAL INPUT**



FARMED VAPAM SOIL

**HIGH YIELD OUTPUT
HIGH NPK INPUT
HIGH CHEMICAL USE**

Every time we touch the soil the microbiome changes

How Does It Work?


BIG 4 mechanisms

- I. Improves nutrient availability**
- I. Acts as a biocontrol agent**
- I. Produces compounds that directly stimulate plant growth**
- I. Reduces plant stress**



Superior Ag Biological

- ▶ Three Functional Groups
 - Aerobes
 - Facultative Anaerobes
 - Fungi
- ▶ Species selected for specific soil/plant functions
- ▶ Guaranteed counts by species



EXPO NENT

CONTAINS NON-PLANT FOOD INGREDIENTS	
<i>Bacillus amyloliquefaciens</i>	1.58x10 ¹⁰ cfu/ml
<i>Bacillus licheniformis</i>	4.50x10 ¹⁰ cfu/ml
<i>Bacillus megaterium</i>	1.10x10 ¹⁰ cfu/ml
<i>Bacillus pasteurii</i>	8.10x10 ¹⁰ cfu/ml
<i>Bacillus subtilis</i>	4.02x10 ¹⁰ cfu/ml
<i>Bacillus subtilis var natto</i>	1.50x10 ¹⁰ cfu/ml
<i>Bacillus thuringiensis</i>	6.48x10 ¹⁰ cfu/ml
<i>Bacillus firmus</i>	2.33x10 ¹⁰ cfu/ml
<i>Bacillus pumilus</i>	2.20x10 ¹⁰ cfu/ml
<i>Bacillus pasteurii</i>	4.02x10 ¹⁰ cfu/ml
<i>Aspergillus niger</i>	6.40x10 ¹⁰ cfu/ml
<i>Aspergillus terreus</i>	1.35x10 ¹⁰ cfu/ml
<i>Aspergillus fumigatus</i>	1.25x10 ¹⁰ cfu/ml
<i>Aspergillus nidulans</i>	1.13x10 ¹⁰ cfu/ml
<i>Aspergillus oryzae</i>	2.70x10 ¹⁰ cfu/ml
<i>Aspergillus nidulans</i>	2.03x10 ¹⁰ cfu/ml
<i>Aspergillus niger</i>	4.50x10 ¹⁰ cfu/ml
<i>Aspergillus terreus</i>	1.38x10 ¹⁰ cfu/ml
<i>Aspergillus nidulans</i>	2.25x10 ¹⁰ cfu/ml
<i>Aspergillus fumigatus</i>	2.03x10 ¹⁰ cfu/ml
<i>Aspergillus nidulans</i>	2.25x10 ¹⁰ cfu/ml
<i>Aspergillus oryzae</i>	2.70x10 ¹⁰ cfu/ml
<i>Aspergillus nidulans</i>	3.30x10 ¹⁰ cfu/ml
<i>Aspergillus terreus</i>	4.50x10 ¹⁰ cfu/ml
<i>Aspergillus niger</i>	4.50x10 ¹⁰ cfu/ml
Total Biological Consortium	6.32x10¹⁰ cfu/ml


Derived From: 100% Probiotic Fermentation Media

Expires _____ Density (80F) 8.4 lbs. per gallon (U.S.)

Net Volume _____ (U.S. Gallons/Liters)

Information regarding the contents and levels of metals in this product is available on the internet at <http://www.aspfcio.org/metals.htm>

GENERAL INFORMATION
 MADE IN THE USA
 Biorem Inc.
 P.O. Box 1461
 Idaho Falls, ID 83403
 208-552-1500
 VISIT US ON THE WEB:
www.pharmgrade.com



PRODUCT INFORMATION

NITROS is a concentrated biological inoculum formulated with broad spectrum, beneficial bacillus and Trichoderma fungi species. *NITROS* is known as a Plant Growth Promoting Rhizobacteria (PGPR). This inoculum provides more than traditional plant nutrient uptake by promoting healthy soil biofilm on strategic root and plant surfaces. These AGBIOPILM[®] layers become strategic exchanges for nutrient flow and relief of crop stress. Carbon flows efficiently back and forth through these layers carrying nutrient to the plant and sugars back to the microbes. This exchange is the key for effective yield increase. *NITROS* is rich in food for microbes. *NITROS* is a liquid substrate to establish AGBIOPILM[®] ecosystems in the soil, on the leaf surface and the root rhizosphere. *NITROS* applications provide the best means to transport, propagate, and stabilize biological cultures on these AGBIOPILM[®] surfaces. *NITROS* may stimulate root development, increase plant vigor, yield and quality of produce.

RECOMMENDED APPLICATION

For use on all agricultural crops and applications. Application and Rates: Apply 3-7 gallon per acre 3-4 times per year on all field crops. This product can also be used in the following ways: foliar, fertigation, root drench, and in furrow at planting. Mix 1.5-2.5oz per gallon of water to apply as a root dip, foliar feed or to pre irrigate rows. Apply 1 gallon of mix per 100 linear feet of row. For more specific application rates contact a local PHARMGRADE representative for more specific rates and instructions.

This product may be mixed with a variety of fertilizers and pesticides. Please call for further directions. Always perform a jar test to ensure compatibility.

HANDLING AND STORAGE

Follow appropriate safety procedures. Skin contact may cause temporary staining. In case of accidental exposure, flush with plenty of water. Product is non-hazardous.

Storage in a cone-bottomed tank to facilitate agitation is recommended. When stored in a cone-bottomed tank, agitate 10 minutes before application or transfer. When stored in a flat-bottomed tank agitate 30 minutes before application or transfer. Avoid airblast agitation or over the top rotation as foaming will result. If foaming does occur through normal agitation, use an approved defoamer. Agitation is recommended once every four weeks. Agitation prior to production transfer and application is required. Storage for longer than 12 months is not recommended.

CAUTION KEEP OUT OF REACH OF CHILDREN. CONTACT POISON CONTROL IF INGESTED.

WARRANTY

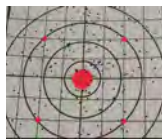
Biorem Inc. is not responsible for the use or misuse of this product. To the extent allowable by state law, buyer's guarantee is limited to label claims.

WHY PHARMGRADE vs. others?

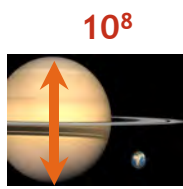
3 Key Factors for more consistent results



VS



VS



Biodiversity

- Restores natural checks and balances
- Multiple effective cultures for each problem
- Strains selected for specific mechanisms vs. bio-stimulant

Concentration

- Concentration difference 100yds vs. diameter of Saturn
- Gallons vs. Ounces for price
- CFU's /ml or gram is measure of AI

Logistics

- Stabilized for tank mixes
- No refrigeration or special handling
- Can be applied through spray rigs, pivot injection, drip

Biggest Bio-Bang for the \$

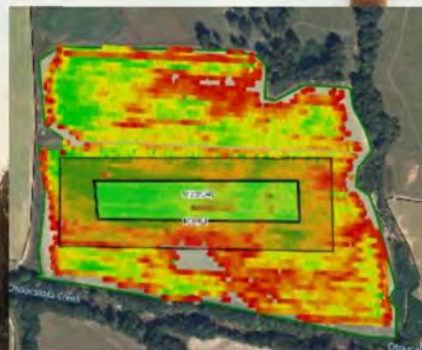
USE CASES

Corn Trials 2022

Trial Information:

County, State: Yalobusha, MS
Crop: Corn
Hybrid/Variety: DKC 7027VT2P
Planting Date: 4/27/2022
Seeding Rate: 34k
Row Spacing: 38"
Soil Type: Sandy Loam
Irrigation: Pivot
Replication: No

- Great return on investment by supercharging an already great fertility program.
- You know what's best for your ground, a great biological can make it go even further



TRT	AVE
NTC	109
BIOLOGICAL	123

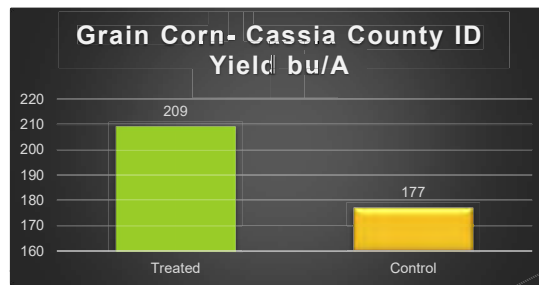
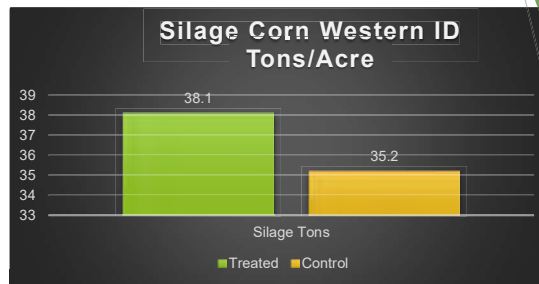
Corn

PROTOCOL

- ▶ 4-6 Gallons of Exponent added to the grower standard fertility program
 - ▶ 4 Gallons at v6
 - ▶ 3 Gallons pre tassle

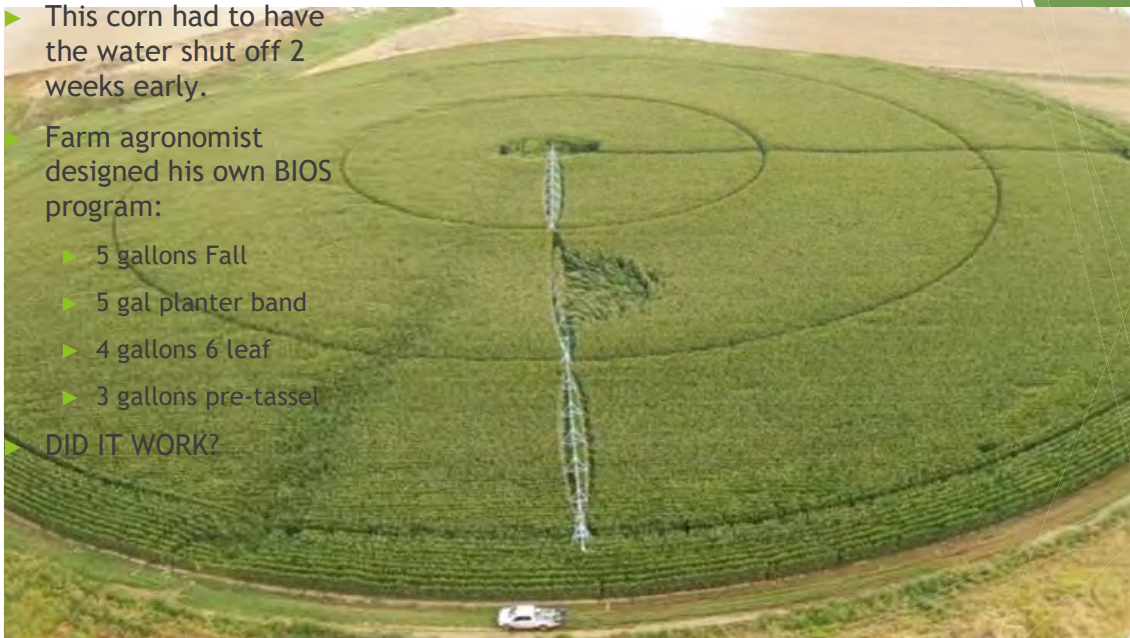
RESULTS:

- ▶ 3 Tons (9%) increase in yields for silage
- ▶ 32 Bushel (18%) increase in grain corn yield



Corn

- ▶ This corn had to have the water shut off 2 weeks early.
- ▶ Farm agronomist designed his own BIOS program:
 - ▶ 5 gallons Fall
 - ▶ 5 gal planter band
 - ▶ 4 gallons 6 leaf
 - ▶ 3 gallons pre-tassel
- ▶ DID IT WORK?



Residue Mgt

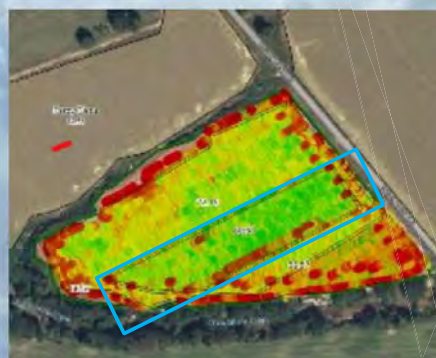
- ▶ Stubble digestion continues to be a very successful entry point into new growers.
- ▶ 4 gals applied on right side vs. grower standard of 32 and Petrik bugs. Owner had to cut the grower standard with a knife, treated went to dust in his hands.
- ▶ Unexpected carry-over effects have helped us to sell even more product across other applications and crops in the following year.



Soybean Trial 2022

Trial Information:

County, State: Yalobusha, MS
 Crop: Soybean
 Hybrid/Variety: P44A21X
 Planting Date: 5/10/2022
 Seeding Rate: 107k
 Row Spacing: 38"
 Soil Type: Sandy Loam
 Irrigation: Furrow
 Replication: No



TRT	AVE
NTC	72
BIOLOGICAL	81

One of the best sources of overall ROI is bringing your tough ground in the same field up to par.

Dry Beans

Idaho Bean Commission Study

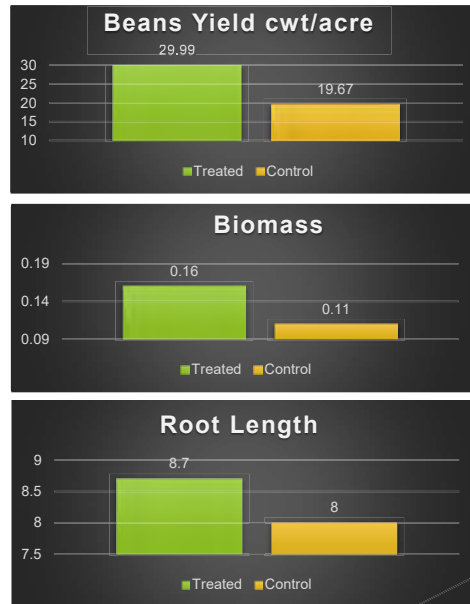
For several years the commission sponsored a 3rd party study comparing biological treatments that were used in bean cultivation. In each year, Pharmgrade placed #1 in each of the overall success categories.

PROTOCOL

- ▶ 12 gallons Exponent applied in the fall.
- ▶ 6 gallons in planter band tank mix
- ▶ 6 Gallons spoon fed through summer in 2 gallon shots (3x)

RESULTS:

- ▶ 53% increase in yield: 30 lbs treated vs 19.6 lbs in the check
- ▶ 45% increase in biomass
- ▶ 9% increase in root length



Pharmgrade
pharmgrade.com

As a staunch advocate of sustainable agriculture, Idaho-based Pharmgrade offers breakthrough, probiotic multi-strain biologicals to help farmers and farming corporations ensure superior soil health and increased fertility. Pharmgrade offers breakthrough, sustainable probiotic eco-solutions to enable growers to achieve huge ROIs.

Biovante
biovante.com

Biovante provides growers with a range of biological soil seed, and crop treatment solutions that enhance soil health and improve crop yields. The company restores soil fertility through its innovative suite of biologically-driven technologies that reduces dependency on chemicals.

Janerette's Eco-Friendly Fungi
janerettesfungi.com

Janerette's Eco-Friendly Fungi is an innovative research and development institution active in producing bio-stimulants derived from fungi using mycorrhizal technology to create sustainable agriculture and forestry solutions and to combat environmental crisis.

SCD Probiotics
scdprobiotics.com

SCD Probiotics manufactures bio-based products for agricultural, industrial, and consumer applications. The company takes advantage of microbes as probiotics to manufacture fertilizers, supplements for livestock and honeybees, barn cleaners, manure treatment, microbial inoculants, and soil amendments for agricultural purposes.

Trilogene Seeds
trilogenseeds.com

Trilogene Seeds, with a footprint in 29 countries across the globe, is increasing the efficiency of a farmer's growing operations with its feminized hemp seeds and cutting-edge cultivars, offering strains that adapt well to specific climates and photoperiods, with a boost from its specialized cultivation techniques.

ADAMA
adama.com

With one of the most comprehensive and diversified portfolios of differentiated, high-quality products, and state-of-the-art R&D, manufacturing and formulation facilities, ADAMA's reach farmers providing them with solutions to control weeds, insects and disease and improve their yields.

Bayer
bayer.com

Bayer is a global enterprise with core competencies in the Life Science fields of health care and agriculture. Their products and services are designed to benefit people and improve their quality of life. Bayer's Climate FieldView™ is a unique platform that gives you the power to put your solutions in front of farmers across the country and around the world.

Corteva
corteva.com

Corteva Agriscience™ brings the world's most recognized and premium agricultural solutions, featuring Proseco® and Rowant™ Seeds, award-winning Crop Protection products, Enforcer® and Granula® software tools and services. They provide agronomic support and services to help increase farmer productivity and profitability.

Marrone Bio Innovations
marronebio.com

Marrone Bio Innovations strives to lead the movement to a more sustainable world through the discovery, development and commercialization of biological products for crop protection and plant health. MBI's effective and environmentally responsible pest management solutions help customers operate more sustainably while uniquely improving plant health and increasing crop yields.

Valent BioSciences
valentbiosciences.com

Valent BioSciences is a worldwide leader in the research, development and commercialization of bio-rational products for the agricultural, public health and forest health markets. Valent BioSciences offers a wide range of proprietary and environmentally compatible bioinsecticides that provide a strong and measurable return on investment.

THANK YOU!