

TARE

Thumb Ag Research & Education

2010 Field Trials



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Comments, Questions, Suggestions? Contact Emily Sneller, Statistician and Editor of the 2010 Tare Field Trial Report at (989) 758-2500 or snellere@anr.msu.edu.

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Introduction

2010 TARE Trial Report

This report represents the sixth year of a multi-county strategy for evaluating corn hybrids and soybean varieties as well as agronomic practices. The project is, and has been operated under the Thumb Ag Research and Education (TARE) organization. The TARE Committee, comprised of farmer and agribusiness representatives, serves as an advisory board, and provides oversight for the project's direction, finances and equipment needs. We gratefully acknowledge the committee's contributions and the support provided by our industry partners, listed on the back cover of this publication.

Each study is analyzed statistically to determine the Least Significant Difference (LSD) at the 0.05 (5%) level. The LSD represents the maximum difference between treatments (hybrid, variety, population, or evaluated input) for the difference to be attributed to the treatment rather than some external factor, like soil variability. An LSD at the 0.05, or 5% level means that statistically, we can be 95% confident with the results. Within studies any result that is **bolded** is statistically the same. Therefore, if a treatment is bolded, it yielded the same, statistically speaking, as the highest yielding treatment in that study. Any treatment result, within a study, that is not bolded yielded significantly less than the highest yielding treatment. We also include the Coefficient of Variation (CV). The CV is a measure of the variability of the data that cannot be explained by the statistics. The lower the CV, the more confident you can be that the data is good. Generally, a CV of less than 10% is good data. A CV of less than 5% is very good data.

We hope you find these results useful to your operation. Ultimately it is you, the grower, whom we aim to serve with this project!

Bob Battel, Project Leader

2010 Greater Thumb Area Field Crops Team

Bob Battel, Huron County

Emily Sneller, Saginaw County

Martin Nagelkirk, Sanilac County

Phil Kaatz, Lapeer County



Farm Cooperators:

NAME	CITY	COUNTY	PLANTING DATE	HARVEST DATE
<u>Corn</u>				
Don and Merle Koth	Filion	Huron	4/21/2010	10/13/2010
Huron Corn Growers	Pigeon	Huron	4/23/2010	10/08/2010
LARACHA Farms	Reese	Tuscola	4/28/2010	10/06/2010
Knoerr Farms	Sandusky	Sanilac	4/29/2010	10/21/2010
Lynn Island Farms	Capac	St. Clair	4/30/2010	10/25/2010
Mike Ziegler	Millington	Tuscola	5/04/2010	11/03/2010
<u>Soybeans</u>				
Ron Gerstenberger	Sandusky	Sanilac	5/20/2010	10/19/2010
Randy Sturm	Pigeon	Huron	5/24/2010	10/16/2010
Rob Foster	Fairgrove	Tuscola	5/25/2010	10/1/2010
<u>Alfalfa</u>				
Mike Lauwers	Capac	St. Clair	4/26/2010	
<u>Wheat</u>				
Stoutenburg Farms	Sandusky	Sanilac	9/25/2009	7/11/2010
Parrent Farms	Sandusky	Sanilac	10/16/2009	7/11/2009

Committee Members:

Mike Houghtailing	Saginaw	Saginaw
Tom VanSickle	Deckerville	Sanilac
Jon Oakes	St. Charles	Saginaw
Jay Ferguson	Brown City	St. Clair
Tom Durand	Croswell	Sanilac
Bill Hunt	Davison	Genesee
Jeff Krohn	Elkton	Huron
David Rupprecht	Vassar	Tuscola
Randy Sturm	Pigeon	Huron

Agribusiness Reps.

Jeff Leipprandt
 Chuck Kunisch
 John Kohr
 Dale Kundinger
 Jeff Reinbold
 Amy Sweeney

Company

Pioneer Hi-Bred, International
 MAC
 Monsanto
 CPS
 Great Lakes Hybrids
 Star of the West Milling Company

Summary of Precipitation and Growing Degree Days (May-September)

Fairgrove/Caro						
	Precipitation			GDD ¹		
	2010	2009 ²	Normal ³	2010	2009 ²	Normal ³
May	3.68	1.70	2.86	404	306	353
June	3.40	4.35	3.30	539	475	519
July	1.65	2.72	2.75	714	493	644
August	1.68	2.51	3.26	697	556	594
Sept	3.94	1.28	4.22	376	436	402
TOTAL	14.35	12.56	16.39	2730	2266	2,512

Sandusky						
	Precipitation			GDD ¹		
	2010	2009 ²	Normal ³	2010	2009 ²	Normal ³
May	2.92	2.14	2.57	397	281	317
June	3.16	4.31	2.81	528	433	486
July	2.43	3.66	2.71	713	500	622
August	0.56	2.42	2.86	690	547	575
Sept	4.60	1.51	4.10	372	417	377
TOTAL	13.67	14.04	15.05	2700	2178	2,377

Pigeon/Bad Axe						
	Precipitation			GDD ¹		
	2010	2009	Normal ³	2010	2009	Normal ³
May	3.46	2.34	2.92	385	271	291
June	4.41	3.98	2.91	483	408	467
July	3.53	3.41	3.04	683	489	601
August	0.81	2.44	3.68	665	516	551
Sept	2.94	1.38	3.82	346	395	360
TOTAL	15.15	13.55	16.37	2562	2079	2,270

¹GDD is the growing degree days based on 50° and 86° cutoff (corn method)

²2008 & 2009 data are based on the MAWN system in Pigeon, Fairgrove and Sandusky

³"Normal" is the average precipitation and GDD from 1971 to 2000 and is based on data collected at Bad Axe, Caro and Sandusky

Corn Hybrid Trials
Glyphosate Resistant
85-94 Day RM
Average of Locations



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Average of 5 Locations			
				Lodging [§]	Moisture %	Test Wt. bu / ac	Yield [¶]
<i>NK Syngenta N29T-GT/CB/LL</i> [#]	92	GT/CB/LL	C250	0.50	17.25	60.23	190.25
NuTech 5B-290 GT/CB/LL	90	GT/CB/LL	C250	0.83	17.21	60.29	182.48
Masters Choice MCT-493	93	RR/CB/RW	P250	0.17	17.30	60.25	177.00
NK Syngenta N33R-GT/CB/LL	94	GT/CB/LL	C250	0.83	16.92	60.47	175.51
G2 5H-696 RR/HX	94	RR/HX1/LL	C250	0.33	18.42	59.76	175.49
Croplan 3424	94	VT3	C	0.83	17.68	60.02	172.27
Great Lakes 4041G3	90	VT3	P250	0.67	17.40	60.15	170.76
Hyland HL CVR54	92	VT3	P250	0.50	16.78	60.46	170.00
Dekalb DKC42-72	92	VT3	AC	0.17	16.82	60.63	168.96
Heritage 4250VT3	94	VT3	AC	0.33	17.57	60.07	168.40
Hyland HL B32R	90	HX/RR	P250	0.33	17.13	60.23	168.34
Mycogen 2J337	92	VT3/RR	CLR	1.00	17.29	60.28	167.00
NuTech 5N-695 GT/CB/LL/RW	94	GT/CB/LL/RW	C250	1.00	17.43	60.11	166.08
Croplan 3114	91	VT3	C	0.50	17.31	60.31	165.70
NK Syngenta N27B-3000GT	91	GT/CB/RW/LL	C250	0.50	16.85	60.48	164.98
Mycogen 2C302	90	HX1,RR	CLR	1.00	17.44	60.16	164.40
Rupp xr 8002	94	VT3	MXL, C250	0.67	16.94	60.41	164.26
NK Syngenta N23K-3000GT	88	GT/CB/RW/LL	C250	0.33	17.06	60.39	163.61
Dyna-Gro D27GC19	87	GT/CB/LL	P250	0.17	16.85	60.63	157.60
Pioneer 38M58	94	HX1/LL/RR	C250	0.67	17.25	60.34	156.63
Garst 89K65-3000GT	89	GT/CB/RW/LL	C250	0.00	17.14	60.38	154.13
Pioneer 38N88	92	HX1/LL/RR	C250	0.83	17.22	60.18	149.14
Average				0.55	17.24	60.28	167.86
LSD @ 0.05							6.74
C.V. %							6.45

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, MXL = Maxim XL

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50

[¶] Corn yields have been adjusted to 15.5% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
85-94 Day RM
Yields by Location



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Yields by Location [§] bu / ac				
				Filion	Millington	Reese	Sandusky	Capac
<i>NK Syngenta N29T-GT/CB/LL</i> [¶]	92	GT/CB/LL	C250	212.97	175.27	165.50	210.64	186.86
NuTech 5B-290 GT/CB/LL	90	GT/CB/LL	C250	208.99	161.57	154.52	198.39	188.92
Masters Choice MCT-493	93	RR/CB/RW	P250	195.66	166.23	143.78	192.67	186.68
NK Syngenta N33R-GT/CB/LL	94	GT/CB/LL	C250	202.29	142.23	148.61	197.40	187.02
G2 5H-696 RR/HX	94	RR2/HX1/LL	C250	193.95	149.03	152.47	200.24	181.78
Croplan 3424	94	VT3	C	196.96	156.59	154.19	183.51	170.12
Great Lakes 4041G3	90	VT3	P250	188.90	148.05	151.54	189.94	175.36
Hyland HL CVR54	92	VT3	P250	201.84	152.61	142.27	184.86	168.43
Dekalb DKC42-72	92	VT3	AC	201.06	157.48	143.92	178.07	164.27
Heritage 4250VT3	94	VT3	AC	190.52	155.02	140.36	183.90	172.22
Hyland HL B32R	90	HX/RR	P250	197.43	155.63	148.57	178.88	161.21
Mycogen 2J337	92	VT3/RR	CLR	189.82	139.98	146.85	189.06	169.27
NuTech 5N-695 GT/CB/LL/RW	94	GT/CB/LL/RW	C250	181.28	147.73	137.38	183.37	180.64
Croplan 3114	91	VT3	C	188.38	149.65	140.15	186.60	163.74
NK Syngenta N27B-3000GT	91	GT/CB/RW/LL	C250	188.92	140.75	138.97	179.11	177.17
Mycogen 2C302	90	HX1,RR	CLR	181.84	155.56	129.26	182.93	172.42
Rupp xr 8002	94	VT3	MXL, C250	188.11	147.54	140.02	180.30	165.33
NK Syngenta N23K-3000GT	88	GT/CB/RW/LL	C250	189.45	148.27	144.23	168.36	167.74
Dyna-Gro D27GC19	87	GT/CB/LL	P250	183.77	146.08	125.73	163.33	169.11
Pioneer 38M58	94	HX1/LL/RR	C250	169.71	139.76	140.45	162.80	170.42
Garst 89K65-3000GT	89	GT/CB/RW/LL	C250	175.34	150.43	139.17	163.39	142.31
Pioneer 38N88	92	HX1/LL/RR	C250	175.49	126.54	143.36	153.68	146.66
Average				191.03	150.55	144.15	182.34	171.26
LSD @ 0.05				10.98	18.34	12.55	15.48	18.03
C.V. %				4.07	8.61	6.16	6.01	7.45

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, MXL = Maxim XL

[§] Corn yields have been adjusted to 15.5% moisture

[¶] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
95-99 Day RM
Average of Locations



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Average of 5 Locations			
				Lodging [§]	Moisture %	Test Wt. bu / ac	Yield [¶]
<i>Hyland HL CVR68[#]</i>	98	VT3	P250	0.50	18.65	59.65	192.06
<i>NK Syngenta N34N-3000GT</i>	95	GT/CB/RW/LL	C250	0.33	18.07	58.90	191.45
<i>G2 5H-700 RR/HX</i>	99	RR2/HX1/LL	C250	0.17	19.14	59.31	190.81
<i>Great Lakes 4727</i>	97	VT3	P250	0.17	19.26	59.23	189.01
<i>Croplan 388</i>	98	VT3	C	0.33	17.52	57.86	187.76
<i>G2 5H-597 RR/HX</i>	97	RR/HX1/LL	C250	0.17	18.59	59.49	186.64
<i>Great Lakes 4689GVT3</i>	96	VT3	P250	0.17	18.68	59.47	186.34
<i>Dekalb DKC46-61</i>	96	Smart Stax	AC	0.00	18.93	59.40	184.26
NuTech 3T-098 VT3	98	VT3	C250	0.17	18.68	59.47	183.94
Dyna-Gro D3883	98	VT3	P250	0.17	18.41	58.59	182.48
Mycogen 2C441	97	HXXtra/RR	CLR	0.33	18.67	59.51	181.84
Rupp XR 8052	96	VT3	MXL, C250	0.50	18.46	59.70	180.74
G2 5H-999 RR/HX	99	RR2/HX1/LL	C250	0.83	18.58	59.53	180.74
G2 5H-797 RR/HX	97	RR2/HX1/LL	C250	0.17	18.07	59.80	180.46
Mycogen 2H490	99	Smart Stax/RR	CLR	0.00	20.86	59.46	180.32
Pioneer P9623HR	96	HX1/LL/RR	C250	0.17	19.30	59.28	178.35
Dyna-Gro 54V78	96	VT3	P250	0.33	17.09	60.38	177.81
Pioneer 37Y14	99	HXX/LL/RR	AV, C500	0.50	18.05	58.47	177.07
Great Lakes 4664G3	96	VT3	P250	0.33	17.97	59.85	176.95
Dekalb DKC48-37	98	VT3	AC	0.17	18.76	59.51	176.46
Hyland HL CVR64	95	VT3	P250	0.33	18.04	59.87	176.35
Pioneer P9995XR	99	HXX/LL/RR	C250	0.33	18.34	58.59	174.81
Heritage 4272GENVT3P	96	VT3PRO	AC	0.50	18.03	59.95	174.29
Great Lakes 4840	98	VT3PRO	P250	0.33	17.94	59.91	173.94
Dekalb DKC45-52	95	Smart Stax	AC	0.33	17.92	59.95	173.53
Croplan 3456	95	VT3	C	0.50	17.97	59.94	173.43
G2 5X-500 RR/HXT	99	RR2/HXX/LL	C250	0.33	19.12	59.27	171.69
Dairyland 9395SSX	95	Smart Stax	P250	0.33	17.75	60.00	171.00
Mycogen 2P486	97	Smart Stax/RR	CLR	0.67	17.47	60.19	170.14
Heritage 4268VT3	95	VT3	AC	0.00	17.59	60.21	169.35
Heritage 4281VT3	99	VT3	AC	0.17	18.37	59.71	169.34
G2 5H-501 RR/HX	99	RR2/HX1/LL	C250	0.17	18.68	56.08	168.87
Average				0.30	18.40	59.36	179.13
LSD @ 0.05							7.80
C.V. %							7.01

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, C500 = Cruiser 500, AV = Avicta, MXL = Maxim XL

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50

[¶] Corn yields have been adjusted to 15.5% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
95-99 Day RM
Yields by Location



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Yields by Location [§]				
				Filion	Pigeon	Millington	Sandusky	Capac
				bu / ac				
<i>Hyland HL CVR68</i> [¶]	98	VT3	P250	201.00	194.25	163.06	211.18	190.79
<i>NK Syngenta N34N-3000GT</i>	95	GT/CB/RW/LL	C250	196.37	193.09	175.58	211.31	180.88
<i>G2 5H-700 RR/HX</i>	99	RR2/HX1/LL	C250	204.81	175.50	180.09	210.29	183.38
<i>Great Lakes 4727</i>	97	VT3	P250	200.35	183.00	166.59	215.30	179.80
<i>Croplan 388</i>	98	VT3	C	207.02	183.09	150.85	215.30	182.54
<i>G2 5H-597 RR/HX</i>	97	RR/HX1/LL	C250	199.16	183.34	165.40	206.64	178.44
<i>Great Lakes 4689GVT3</i>	96	VT3	P250	195.61	195.92	159.32	202.74	178.12
<i>Dekalb DKC46-61</i>	96	Smart Stax	AC	192.89	178.50	179.46	197.00	179.44
NuTech 3T-098 VT3	98	VT3	C250	193.84	190.18	157.14	203.73	174.83
Dyna-Gro D3883	98	VT3	P250	187.78	185.74	156.67	202.63	179.59
Mycogen 2C441	97	HXXtra/RR	CLR	184.64	173.92	155.45	211.60	183.57
Rupp XR 8052	96	VT3	MXL, C250	187.77	189.61	165.06	180.88	180.38
G2 5H-999 RR/HX	99	RR2/HX1/LL	C250	199.45	178.82	152.49	203.65	169.29
G2 5H-797 RR/HX	97	RR2/HX1/LL	C250	180.66	210.42	146.56	188.53	175.93
Mycogen 2H490	99	Smart Stax/RR	CLR	192.15	168.60	161.75	203.57	175.56
Pioneer P9623HR	96	HX1/LL/RR	C250	193.48	165.15	160.33	190.70	182.08
Dyna-Gro 54V78	96	VT3	P250	193.16	173.43	155.53	191.19	175.76
Pioneer 37Y14	99	HXX/LL/RR	AV, C500	184.26	162.93	168.72	197.92	171.55
Great Lakes 4664G3	96	VT3	P250	195.94	161.42	158.11	192.09	177.20
Dekalb DKC48-37	98	VT3	AC	197.42	173.70	160.83	183.57	166.76
Hyland HL CVR64	95	VT3	P250	190.47	174.24	155.72	185.64	175.68
Pioneer P9995XR	99	HXX/LL/RR	C250	188.96	160.98	150.11	209.15	164.88
Heritage 4272GENVT3P	96	VT3PRO	AC	194.91	177.10	139.78	196.16	163.51
Great Lakes 4840	98	VT3PRO	P250	195.06	166.96	152.70	189.55	165.43
Dekalb DKC45-52	95	Smart Stax	AC	195.86	178.72	141.10	191.91	160.04
Croplan 3456	95	VT3	C	186.88	178.33	138.18	192.85	170.90
G2 5X-500 RR/HXT	99	RR2/HXX/LL	C250	188.40	163.40	147.12	178.96	180.36
Dairyland 9395SSX	95	Smart Stax	P250	194.15	166.49	142.01	182.15	169.64
Mycogen 2P486	97	Smart Stax/RR	CLR	191.07	163.97	143.52	186.91	165.85
Heritage 4268VT3	95	VT3	AC	190.08	164.68	142.23	183.81	165.93
Heritage 4281VT3	99	VT3	AC	179.94	167.07	148.42	185.81	165.46
G2 5H-501 RR/HX	99	RR2/HX1/LL	C250	198.35	142.20	134.16	201.13	168.52
Average				193.18	175.59	155.44	197.01	174.44
LSD @ 0.05				11.50	21.96	22.42	12.57	16.56
C.V. %				4.24	8.90	10.27	4.54	6.76

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, C500 = Cruiser 500, AV = Avicta, MXL = Maxim XL

[§] Corn yields have been adjusted to 15.5% moisture

[¶] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
100-105 Day RM
Average of Locations



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Average of 4 Locations			
				Lodging [§]	Moisture %	Test Wt. bu / ac	Yield [¶]
<i>Dekalb DKC53-45[#]</i>	103	Smart Stax	AC	0.17	19.55	59.07	184.43
<i>Heritage 4294VT3</i>	102	VT3	AC	0.50	19.18	59.37	178.97
<i>NuTech 5N-803 GT/CB/LL/RW</i>	103	GT/CB/LL/RW	C250	0.33	19.37	59.18	177.04
<i>Pioneer 35F40</i>	105	HX1/LL/RR	C250	0.00	20.23	58.82	176.76
<i>Mycogen 2A551</i>	103	HX Xtra/RR	CLR	0.00	19.64	59.13	175.54
Dekalb DKC51-86	101	VT3	AC	0.17	17.96	59.93	175.01
Great Lakes 5090GVT3	100	VT3	P250	0.50	18.51	59.63	174.85
NK Syngenta N46F-3000GT	101	GT/CB/LL/RW	C250	0.33	19.09	59.30	174.75
NuTech 3T-401 VT3	101	VT3	C250	0.33	19.91	58.99	174.31
Garst 86J49-3000GT	102	GT/CB/RW/LL	C250	0.33	19.08	59.35	173.70
Dekalb DKC52-59	102	VT3	P250	0.33	18.55	59.60	173.48
Heritage 8390GENSS	104	Smart Stax	AC	0.17	19.56	59.11	173.44
NK Syngenta N53W-3000GT	105	GT/CB/LL/RW	C250	0.17	19.57	59.08	173.40
Dekalb DKC53-78	103	Smart Stax	AC	0.17	19.04	59.29	172.71
Dyna-Gro D40SS09	101	Smart Stax	AC	0.17	19.31	59.19	172.46
Croplan 5338	103	VT3	C	0.33	19.14	59.31	171.79
Great Lakes 5211	102	Smart Stax	AC	0.83	19.18	59.30	171.73
G2 5H-502 RR/HX	102	RR2/HX1/LL	C250	0.17	18.81	59.44	170.21
Mycogen 2J597	105	Smart Stax/RR	CLR	0.50	20.15	58.81	169.08
NK Syngenta N49J-3000GT	103	GT/CB/LL/RW	C250	0.33	19.38	59.20	168.38
Dyna-Gro D44SS49	104	Smart Stax	AC	0.33	19.43	59.19	167.46
Hyland HLCVR74	103	VT3	P250	0.00	18.52	59.51	167.31
Dyna-Gro D40Q09	100	3000GT	P250	0.17	18.23	59.76	167.14
Pioneer 36V53	102	HX1/LL/RR	AV, C500	0.33	18.66	59.47	165.49
Rupp XR 8534	105	GT	MXL, C250	0.17	19.88	58.91	165.01
Dairyland 9500SSX	100	Smart Stax	P250	0.17	19.91	58.93	164.29
Heritage 8222GENVT3	102	VT3PRO	AC	0.17	18.58	59.51	163.38
NuTech G2 5N-102 GT/CB/LL/RW	102	GT/CB/LL/RW	C250	0.50	18.29	59.62	163.16
Rupp xr 8088	100	GT 3000	MXL, C250	0.00	18.88	59.39	162.57
Heritage 8310GENSS	101	Smart Stax	AC	0.33	18.19	59.81	159.33
Pioneer P1025HR	100	HX1/LL/RR	C250	0.17	19.21	59.79	156.54
Average				0.26	19.13	59.32	170.44
LSD @ 0.05							9.30
C.V. %							7.84

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, C500 = Cruiser 500, AV = Avicta, MXL = Maxim XL

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50

[¶] Corn yields have been adjusted to 15.5% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
100-105 Day RM
Yields by Location



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Yields by Location [§]			
				Fillion	Millington	Reese	Capac
				bu / ac			
<i>Dekalb DKC53-45</i> [¶]	103	Smart Stax	AC	207.64	173.37	178.83	177.89
<i>Heritage 4294VT3</i>	102	VT3	AC	178.80	173.50	163.83	199.76
<i>NuTech 5N-803 GT/CB/LL/RW</i>	103	GT/CB/LL/RW	C250	191.04	171.19	166.20	179.74
<i>Pioneer 35F40</i>	105	HX1/LL/RR	C250	174.36	179.91	180.31	172.47
<i>Mycogen 2A551</i>	103	HX Xtra/RR	CLR	185.28	180.23	148.28	188.36
Dekalb DKC51-86	101	VT3	AC	171.03	168.65	169.84	190.52
Great Lakes 5090GVT3	100	VT3	P250	181.05	166.68	171.03	180.65
NK Syngenta N46F-3000GT	101	GT/CB/LL/RW	C250	188.84	171.31	166.47	172.36
NuTech 3T-401 VT3	101	VT3	C250	188.74	170.01	161.70	176.82
Garst 86J49-3000GT	102	GT/CB/RW/LL	C250	192.97	164.03	157.64	180.15
Dekalb DKC52-59	102	VT3	P250	185.24	161.05	168.41	179.21
Heritage 8390GENSS	104	Smart Stax	AC	184.64	169.21	155.85	184.04
NK Syngenta N53W-3000GT	105	GT/CB/LL/RW	C250	183.46	163.04	168.20	178.89
Dekalb DKC53-78	103	Smart Stax	AC	186.07	168.75	166.27	169.74
Dyna-Gro D40SS09	101	Smart Stax	AC	185.13	167.86	160.44	176.40
Croplan 5338	103	VT3	C	180.74	162.91	155.98	187.53
Great Lakes 5211	102	Smart Stax	AC	186.10	164.54	147.96	188.32
G2 5H-502 RR/HX	102	RR2/HX1/LL	C250	173.63	157.67	165.15	184.40
Mycogen 2J597	105	Smart Stax/RR	CLR	186.72	166.24	155.30	168.07
NK Syngenta N49J-3000GT	103	GT/CB/LL/RW	C250	187.20	155.49	165.24	165.58
Dyna-Gro D44SS49	104	Smart Stax	AC	184.74	156.04	150.41	178.64
Hyland HLCVR74	103	VT3	P250	186.16	169.49	152.98	160.60
Dyna-Gro D40Q09	100	3000GT	P250	172.74	168.12	151.44	176.25
Pioneer 36V53	102	HX1/LL/RR	AV, C500	167.59	165.44	167.23	161.71
Rupp XR 8534	105	GT	MXL, C250	182.06	147.63	170.38	159.94
Dairyland 9500SSX	100	Smart Stax	P250	170.85	160.62	148.18	177.52
Heritage 8222GENVT3	102	VT3PRO	AC	167.42	162.22	158.07	165.80
NuTech G2 5N-102 GT/CB/LL/RW	102	GT/CB/LL/RW	C250	175.97	173.62	144.08	158.96
Rupp xr 8088	100	GT 3000	MXL, C250	166.40	167.60	154.30	161.98
Heritage 8310GENSS	101	Smart Stax	AC	165.68	151.61	159.55	160.50
Pioneer P1025HR	100	HX1/LL/RR	C250	144.17	159.54	152.99	169.45
Average				180.08	165.73	160.73	175.23
LSD @ 0.05				24.22	16.88	13.29	18.63
C.V. %				9.57	7.24	5.88	7.56

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, C500 = Cruiser 500, AV = Avicta, MXL = Maxim XL

[§] Corn yields have been adjusted to 15.5% moisture

[¶] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
Refuge (no Bt)
Average of Locations



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Average of 5 Locations			
				Lodging [§]	Moisture %	Test Wt. bu / ac	Yield [¶]
<i>NuTech 3A-100 RR</i> [#]	99	RR2	C250	1.00	19.51	58.90	184.16
<i>Great Lakes 4689RR</i>	96	RR	P250	0.17	19.01	59.19	179.26
Dyna-Gro D32RR29	92	RR	P250	0.33	17.68	59.93	176.99
Dairyland 6992	92	RR	P250	0.50	17.71	59.98	176.86
Mycogen 2A397	94	RR	CLR	0.33	17.72	59.84	175.26
NuTech 3A-889 RR	89	RR2	AV	1.00	17.60	59.94	174.40
Rupp 8xp67	92	RR	MXL, C250	0.17	17.59	59.97	174.09
Great Lakes 4481RR	94	RR	P250	0.67	17.11	60.32	173.62
Masters Choice MCT-480	90	RR	P250	0.67	18.05	59.72	167.77
	Average			0.54	18.00	59.74	175.82
	LSD @ 0.05						5.50
	C.V. %						5.00

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, AV = Avicta, MXL = Maxim XL

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50

[¶] Corn yields have been adjusted to 15.5% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Corn Hybrid Trials
Glyphosate Resistant
Refuge (no Bt)
Yields by Location



Hybrid	RM [†] days	Traits	Seed Trt [‡]	Yields by Location [§]				
				Fillion	Pigeon	Reese	Sandusky	Capac
<i>NuTech G2 3A-100 RR[¶]</i>	99	RR2	C250	193.77	198.21	135.31	200.24	186.98
<i>Great Lakes 4689RR</i>	96	RR	P250	192.87	185.72	155.20	194.85	167.66
Dyna-Gro D32RR29	92	RR	P250	193.51	165.39	144.91	207.16	173.99
Dairyland 6992	92	RR	P250	195.95	172.07	153.48	202.27	160.56
Mycogen 2A397	94	RR	CLR	190.90	164.70	149.67	206.19	164.85
NuTech G2 3A-889 RR	89	RR2	AV	188.75	169.24	148.25	197.75	168.02
Rupp 8xp67	92	RR	MXL, C250	189.42	169.74	148.23	197.91	165.16
Great Lakes 4481RR	94	RR	P250	189.14	166.95	154.27	201.15	156.61
Masters Choice MCT-480	90	RR	P250	180.32	169.67	142.62	184.71	161.54
Average				190.51	173.52	147.99	199.14	167.26
LSD @ 0.05				6.25	9.71	10.83	16.36	16.22
C.V. %				3.98	3.83	5.01	5.61	6.64

[†] Relative Maturity

[‡] Seed Treatment Abbreviations: C = Cruiser, P250 = Poncho 250, CLR = Cruiser LR, AC = Acceleron, C250 = Cruiser 250, AV = Avicta, MXL = Maxim XL

[§] Corn yields have been adjusted to 15.5% moisture

[¶] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

TARE 2010 Corn Population Study



The purpose of this study is to evaluate the effect on yield of planting populations in 30 inch row corn

Methods and Materials:

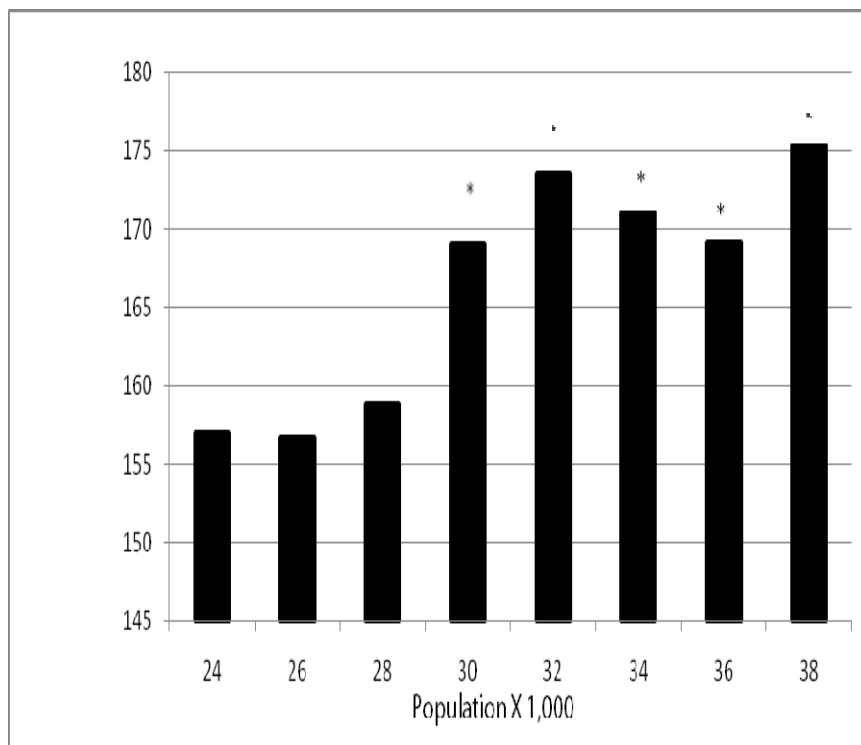
Great Lakes 4689GVT3 corn was planted at eight populations ranging from 24,000 seeds per acre to 38,000 seeds per acre in increments of 2,000 seeds. Plots were established in a randomized complete block design with 4 replications at three TARE trial locations. The plots were 100 feet long and 15 feet wide with yields being measured from the middle 10 feet.

Results and Conclusions:

Corn yields at planting populations of 30,000 seeds per acre and greater were significantly greater than all lower populations. These result differ from previous year studies in 2008 and 2009 where corn yields were not significantly different from planting populations of 28,000 and greater.

Population	Average of Locations		
	Moisture	Test Wt.	Yield
	%	— bu / ac —	
24000	17.82	59.76	156.96
26000	18.13	59.57	156.70
28000	18.16	59.56	158.80
30000	17.17	60.12	169.03
32000	17.63	59.84	173.56
34000	17.4	59.97	170.98
36000	17.15	60.1	169.16
38000	17.23	60.03	175.34
Avg.			166.32
LSD@0.05			7.34
C.V. %			5.41

† Bold, Italicized yields are not significantly different from the highest yielding variety within that column



Corn Sidedress Nitrogen Rate Study: Multi-County Approach



Michigan State University has recently introduced new nitrogen fertilizer recommendations that are based on applying the economic optimum nitrogen rate (EONR) rather than fertilizing to meet a yield goal. These recommendations are aimed at giving growers the maximum return to nitrogen (MRTN). The purpose of this study is to further evaluate these recommendations on a local basis.

Materials and Methods:

Four nitrogen application rate studies were established around the Thumb and Saginaw Valley. All studies were randomized complete block design (RCBD) with 4 replications. At the Saginaw, Huron, and Sandusky sites plots were 100 feet by 15 feet. No starter fertilizer was applied at the Saginaw and Sandusky sites while approximately 30 lbs per acre was applied at the Huron site. Sidedress applications of nitrogen were applied at rates of 40, 80, 120, 160, 200 and 240 lbs per acre as well as a zero nitrogen control treatment at all three sites. Yields were measured from the middle 10 feet.

At the St. Clair county site, approximately 38 lbs N per acre starter fertilizer was applied with sidedress applications rates of 40, 80, 120, 160, and 200 lbs per acre as well as a zero sidedress nitrogen control. Plots were field length strip plots.

Results and Conclusions:

On the following pages are the details for each study location along with a Table displaying yield data and statistical analysis for each study. At the locations which received starter fertilizer, Huron County and St. Clair County, no significant difference was observed in yields at sidedress nitrogen application rates of 80 lbs per acre and above (Tables 1 and 2). For the nitrogen plot in Sanilac County, there was no significant difference in yields at sidedress (total) nitrogen rates of 80 lbs per acre and above (Table 3). This is with the exception of the 160 lbs per acre treatment which was significantly lower than the other higher yielding treatments. Differing from the other locations, the Tuscola County site displayed no significant difference in yields at 120 lbs per acre and above (Table 4).

This suggests that for the 2010 growing season in the Thumb region, approximately 80 to 120 lbs of nitrogen per acre was sufficient for maximum corn yield. Nitrogen rates in this range differ slightly from the 2009 growing season where maximum yields were met at 120 lbs of nitrogen per acre.

County:	Tuscola
Cooperator:	Saginaw Valley Research & Extension Center
Nearest Town:	Richville, MI
Soil Type:	Tappan-Londo Loam
Tillage:	Fall Chisel Plow
Previous Crop:	Soybeans
Planting Date:	April 20, 2010
Fertilizer:	No starter, 28-0-0 at sidedress
Herbicide:	Roundup
Row Width:	30"
Hybrid:	Bayside 4757
Planting	
Population:	30,000 per acre
Harvest Date:	September 24, 2010
Experimental	
Design:	RCBD

Table 1. Tuscola County Corn Nitrogen Rate Study

Total N	Moisture	Yield @ 15.5%[†]
— lb N / a —	%	— bu / a —
0	12.8	107.8 c
40	13.8	108.3 c
80	13.5	117.4 bc
120	13.4	135.9 a
160	13.3	126.8 ab
200	14.1	131.1 a
240	13.6	131.4 a
LSD @ 0.05		14.7
C.V. %		7.9

[†] Yields with the same letter are not significantly different from each other

County:	Sanilac
Cooperator:	Knoerr Farms
Nearest Town:	Deckerville, MI
Soil Type:	Parkhill Loam
Tillage:	Chisel plow
Previous Crop:	Soybeans
Planting Date:	April 29, 2010
Fertilizer:	28-0-0 at sidedress
Herbicide:	Roundup & Dual
Row Width:	30"
Hybrid:	Great Lakes 4689 GVT3
Planting	
Population:	32,000 per acre
Harvest Date:	October 21, 2010
Experimental	
Design:	RCBD, 4 reps

Table 2. Sanilac County Corn Nitrogen Rate Study

Total N	Moisture	Yield @ 15.5%[†]
— lb N / a —	%	— bu / a —
0	18.4	156.6 d
40	18.8	182.5 c
80	18.9	197.4 ab
120	19.4	204.6 a
160	19.1	195.4 b
200	19.7	205.1 a
240	19.1	199.8 ab
LSD @ 0.05		8.1
C.V. %		2.8

[†] Yields with the same letter are not significantly different from each other

County:	Huron
Cooperator:	Don & Merle Koth
Nearest Town:	Filion, MI
Soil Type:	Shebeon Loam
Tillage:	Minimum Till
Previous Crop:	Sugar Beets
Planting Date:	April 21, 2010
Fertilizer:	10 gal 28-0-0 starter, 28-0-0 at sidedress
Herbicide:	Roundup WeatherMax
Row Width:	30"
Hybrid:	Great Lakes 4689 GVT3
Planting	
Population:	32,000 per acre
Harvest Date:	October 13, 2010
Experimental	
Design:	RCBD, 4 reps

Table 3. Huron County Corn Nitrogen Rate Study

Sidedress N[†]	Moisture	Yield @ 15.5%[‡]
— lb N / a —	%	— bu / a —
0	21.2	167.8 b
40	21.0	173.5 b
80	21.0	195.6 a
120	21.4	209.0 a
160	21.9	204.7 a
200	21.7	205.4 a
240	21.8	202.8 a
LSD @ 0.05		17.4
C.V. %		6.0

[†] Approximately 30 lbs of N / a was applied at starter

[‡] Yields with the same letter are not significantly different from each other

County:	St. Clair
Cooperator:	Ron Beier
Nearest Town:	St. Clair, MI
Soil Type:	Conover-Parkhill Loam
Tillage:	No-Till
Previous Crop:	Soybeans
Planting Date:	April 21, 2010
Fertilizer:	10 gal 28-0-0 starter, 7 gal 10-34-0 starter, 28-0-0 at sidedress
Herbicide:	Basis & Status
Row Width:	30"
Hybrid:	Pioneer 36V53
Planting	
Population:	33,000 per acre
Harvest Date:	October 28, 2010
Experimental	
Design:	RCBD, 4 reps

Table 4. St. Clair County Corn Nitrogen Rate Study

Sidedress N[†]	Moisture	Yield @ 15.5%[‡]
— lb N / a —	%	— bu / a —
0	15.2	107.2 c
40	15.3	128.5 b
80	15.0	139.9 ab
120	14.9	144.9 a
160	14.9	140.4 a
200	14.9	140.2 ab
LSD @ 0.05		11.7
C.V. %		5.8

[†] Approximately 38 lbs of N / a was applied at starter

[‡] Yields with the same letter are not significantly different from each other

Evaluation of Accolade seed treatment on corn growth



The product Accolade is labeled as a biological growth enhancer for corn, small grains, grain sorghum, and non-legume forage grasses. The purpose of this study was to evaluate the effectiveness of the seed treatment Accolade as a biological growth enhancer which results in increased corn yields.

Materials and Methods:

The product Accolade-P was applied to seed corn and was mixed thoroughly for even coating of seed. The study consisted of 2 treatments, a control and Accolade treated seed. Plots were established in a randomized complete block design (RCBD) with 4 replications. Plots were 100 feet in length and 15 feet wide (6- 30 inch rows). This study was established at 5 TARE plot locations throughout the Thumb region (the Filion, Reese, Millington, Sandusky, and Capac sites). Yield measurements were taken from the center 4 rows.

Results and Conclusions:

The Table below displays the yield of each treatment for each separate location. Additionally, the Table contains the percent moisture, test weight, and yield of each treatment averaged across all locations.

Statistical analysis of this data showed no significant difference between treatments at any location or between treatments when averaged across all locations (LSD @ 0.05). This is one year of data at multiple locations. For the 2010 growing season, Accolade-P did not significantly increase corn yields.

Table. Corn yields results of Accolade-P seed treatment study

Population	Yield by Location					Average of Locations		
	Filion	Reese	Millington	Sandusky	Capac	Moisture	Test Wt.	Yield
	bu / ac					%	bu / ac	
Control	212.53	158.71	142.32	204.22	186.07	18.30	59.66	180.77
Accolade	211.46	147.52	143.93	206.14	179.55	18.29	59.66	177.72
Average	211.99	153.11	143.13	205.18	182.51	18.29	59.66	179.24
LSD @ 0.05	22.46	12.33	18.64	23.58	13.73			5.60
C.V. %	4.71	3.58	5.79	5.11	3.34			4.64

† No significant difference between treatments was found based on least significant difference (LSD) values.

Variety	Maturity Group	Seed Trt [†]	Hilum Type	Spec. Qual. [‡]	Cyst Resist	Protein % DM	Oil % DM	Sandusky Location			
								Lodging [§]	Moisture %	Test Wt — bu / ac —	Yield [¶]
DF 230N[#]	2.3	CM	Buff		PI88788	37.5	17.7	2.0	17.00	57.93	57.02
DF 241		CM				37.4	17.5	2.0	16.85	57.98	56.93
DF 155 F	2.5	CM				37.0	18.0	3.0	17.48	57.70	56.17
Syngenta CAN S-18R6	1.8				R(3,14)	36.2	18.5	1.0	17.45	57.70	55.38
Pioneer 92M10	1.0					36.1	18.0	2.0	17.20	57.85	55.05
ZF Select 251	2.5	C	Black	LS		36.8	17.5	1.0	17.10	57.90	53.87
Syngenta CAN S-20G7	2.0					37.7	17.9	1.0	17.48	57.70	53.85
ZF Select 725	2.5	C	Black	LS		36.3	17.5	1.0	17.28	57.80	53.58
DF 9161	1.6	CM		LB		35.8	18.2	1.0	18.10	57.50	52.47
ZF Select 291	2.9	C	Black	LS		36.4	17.6	2.0	16.05	58.25	51.18
Syngenta CAN S-23T5	2.3				R(3,14)	37.0	17.6	2.0	17.53	57.75	49.99
ZF Select 823	2.3	C	Black	LL		37.8	17.1	3.0	16.65	58.10	49.06
ZF Select 923	2.3	C	Black	LS		36.7	17.4	2.0	17.00	57.88	48.31
ZF Select 728	2.6	C	Black	LL		38.0	17.4	2.0	16.90	57.95	47.28
DF 222 Super 2	2.3	C	Grey			37.4	18.2	1.0	17.25	57.80	45.19
Iowa State IA2067	2.0					39.0	17.3	3.0	17.00	57.90	45.08
Syngenta CAN S-26F9	2.6				R(3,14)	37.5	18.0	2.0	17.48	57.70	43.77
Iowa State IA1008LF	1.8				yes	38.6	17.4	1.0	17.73	57.70	43.59
Iowa State IA2041	2.1					39.0	15.9	2.0	17.38	57.80	43.49
	Average							1.8	17.20	57.84	50.59
	LSD @ 0.05										6.88
	C.V. %										9.59

[†] Seed Treatment Abbreviations: C = Cruiser, CM = Cruiser Maxx

[‡] Speciality Qualities Abbreviations: LS = Low Saturated Fat, LL = Low Linolenic, LB = LibertyLink

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50%

[¶] Soybean yields are adjusted to 13% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Soybean Variety Trials
Glyphosate Resistant
2.2 and less
Average of Locations



Variety	Maturity Group	Cyst Resist	Traits	Seed Trt [†]	Average of 3 Locations			
					Lodging [‡]	Moisture %	Test Wt ——— bu / ac ———	Yield [¶]
<i>NK Syngenta S21-B1</i> #	2.1	PI88788	RR	CM	1.33	16.88	57.97	51.80
<i>NK Syngenta S19-A6</i>	1.9	PI88788	RR	CM	0.67	17.26	57.78	50.82
Asgrow AG2031	2.0	R3	RR2Y	AC	0.33	17.53	57.73	49.36
Hyland HS 18RY09	1.8		RR2Y	CM	1.00	17.58	57.69	48.95
DF 5191	1.8	yes	RR2Y/STS	CM	1.33	17.71	57.66	48.92
Hyland HS 22RY03	2.2	yes	RR2Y	CM	0.67	17.65	57.67	48.53
NK Syngenta S21-N6	2.1		RR	CM	1.33	16.28	52.85	48.44
Hyland HS 19RY03	1.9		RR2Y	CM	1.33	17.47	57.71	48.43
Heritage Diener 2212CR2	2.2	PI88788	RR2Y	AC	1.67	17.45	57.74	48.36
DF 8225	2.2	yes	RR	CM	1.33	17.91	57.58	48.28
Heritage Diener 2032R2	2.0		RR2Y	AC	2.00	17.49	57.72	48.28
G2 Genetics 7208	2.0	PI88788	RR		1.33	17.24	57.81	47.93
Dyna-Gro 35RY18	1.8	PI88788	RR	AC	1.33	17.66	57.63	47.74
Dyna-Gro 39RY16	1.6	PI88788	RR	AC	1.00	17.94	57.61	47.69
Croplan RC 2020	2.0		RR		1.00	17.37	57.78	47.15
Dyna-Gro 37R17	1.7		RR	AC	1.00	18.10	57.49	46.63
Great Lakes 2019	2.1	PI88788	RR2Y	AC	0.67	17.86	57.64	46.23
Great Lakes 2119	2.2	PI88788	RR	CM	1.00	17.88	57.61	46.19
Dyna-Gro 32RY22	2.2	PI88788	RR2Y	AC	0.67	17.61	57.71	46.13
Asgrow AG1931	2.1	R3	RR2Y	AC	1.00	17.81	57.62	45.99
Asgrow AG2130	1.6		RR2Y	AC	1.00	18.08	57.52	45.72
Great Lakes 1609	2.2	PI88788	RR2Y	AC	1.00	17.31	57.78	45.71
Rupp RS 7220	2.2	PI88788	RR	CM	0.67	17.46	57.73	45.48
Pioneer 92Y20	2.0	Peking	RR	TX	1.33	16.38	52.81	45.12
Dairyland 2132	2.1		RR		1.33	17.11	57.87	45.10
G2 Genetics 7226	2.2	Peking	RR		1.00	17.31	57.82	44.81
G2 Genetics 7180	1.8		RR		1.00	17.13	57.89	43.83
Croplan RC 2068	2.0		RR		1.33	17.60	57.72	43.36
Average					1.10	17.47	57.36	47.18
LSD @ 0.05								2.01
C.V. %								5.30

[†] Seed Treatment Abbreviations: C = Cruiser, CM = Cruiser Maxx

[‡] Speciality Qualities Abbreviations: LS = Low Saturated Fat, LL = Low Linolenic, LB = LibertyLink

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50%

[¶] Soybean yields are adjusted to 13% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Soybean Variety Trials
Glyphosate Resistant
2.2 and less
Yields by Location



Variety	Maturity Group	Cyst Resist	Traits	Seed Trt [†]	Yields by Location [‡]		
					Fairgrove	Pigeon bu / ac	Sandusky
<i>NK Syngenta S21-B1</i> [§]	2.1	PI88788	RR	CM	45.64	55.82	53.94
<i>NK Syngenta S19-A6</i>	1.9	PI88788	RR	CM	43.74	54.88	53.83
Asgrow AG2031	2.0	R3	RR2Y	AC	42.36	53.21	52.51
Hyland HS 18RY09	1.8		RR2Y	CM	43.78	52.75	50.32
DF 5191	1.8	yes	RR2Y/STS	CM	41.93	53.73	51.11
Hyland HS 22RY03	2.2	yes	RR2Y	CM	42.66	52.66	50.28
NK Syngenta S21-N6	2.1		RR	CM	42.30	51.41	51.60
Hyland HS 19RY03	1.9		RR2Y	CM	44.38	52.90	48.00
Heritage Diener 2212CR2	2.2	PI88788	RR2Y	AC	43.63	53.98	47.47
DF 8225	2.2	yes	RR	CM	42.85	51.04	50.94
Heritage Diener 2032R2	2.0		RR2Y	AC	44.44	49.20	51.21
G2 Genetics 7208	2.0	PI88788	RR		42.29	49.33	52.17
Dyna-Gro 35RY18	1.8	PI88788	RR	AC	43.12	53.18	46.94
Dyna-Gro 39RY16	1.6	PI88788	RR	AC	42.90	50.36	49.80
Croplan RC 2020	2.0		RR		44.36	46.18	44.81
Dyna-Gro 37R17	1.7		RR	AC	41.51	47.62	52.31
Great Lakes 2019	2.1	PI88788	RR2Y	AC	41.85	50.60	47.43
Great Lakes 2119	2.2	PI88788	RR	CM	42.28	47.72	48.70
Dyna-Gro 32RY22	2.2	PI88788	RR2Y	AC	45.00	48.99	44.59
Asgrow AG1931	2.1	R3	RR2Y	AC	39.03	50.80	48.56
Asgrow AG2130	1.6		RR2Y	AC	39.23	49.81	48.94
Great Lakes 1609	2.2	PI88788	RR2Y	AC	41.58	47.98	47.60
Rupp RS 7220	2.2	PI88788	RR	CM	44.70	46.56	45.88
Pioneer 92Y20	2.0	Peking	RR	TX	43.24	44.84	48.37
Dairyland 2132	2.1		RR		40.67	45.69	48.92
G2 Genetics 7226	2.2	Peking	RR		42.31	46.26	45.84
G2 Genetics 7180	1.8		RR		43.05	46.58	41.87
Croplan RC 2068	2.0		RR		40.25	46.20	43.64
Averages					42.68	50.01	48.84
LSD @ 0.05					3.91	3.09	3.52
C.V. %					6.50	4.39	5.12

[†] Seed Treatment Abbreviations: AC = Acceleron, CM = Cruiser Maxx, TX = Trilex 6000

[‡] Soybean yields are adjusted to 13% moisture

[§] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Soybean Variety Trials
Glyphosate Resistant
2.3 and above
Average of Locations



Variety	Maturity Group	Cyst Resist	Traits	Seed Trt [†]	Average of 3 Locations			
					Lodging [‡]	Moisture %	Test Wt ——— bu / ac ———	Yield [¶]
<i>Hyland HS 24RY05</i> [#]	2.4		RR2Y	CM	1.33	15.75	58.37	49.05
<i>Great Lakes 2555</i>	2.5		RR	CM	2	16.24	58.14	48.64
<i>Rupp RS 4259</i>	2.5		RR	CM	1	16.02	58.25	48.37
<i>Hyland HS 23R55</i>	2.3		RR2Y	CM	1.33	16.18	58.17	48.30
<i>DF 8244</i>	2.4	Field Tol	RR	CM	1.33	15.98	58.23	48.20
<i>G2 Genetics 7250</i>	2.5		RR		1	16.12	58.21	48.08
<i>Heritage Diener 2502CR2</i>	2.5	PI88788	RR2Y	AC	1	15.81	58.39	48.02
<i>Pioneer 92Y53</i>	2.5	Peking	RR	TX	1	16.63	58.02	47.68
<i>Dairyland 2560RR</i>	2.5		RR		1	15.8	58.35	47.32
<i>Hyland HS 24RYS01</i>	2.4	yes	RR2Y	CM	1.67	15.76	58.37	47.09
<i>Pioneer 92M61</i>	2.6	PI88788	RR	TX	1	16.17	58.21	46.85
<i>NK Syngenta S24-J1</i>	2.4		RR	CM	1	15.37	58.53	46.83
<i>G2 Genetics 7230</i>	2.3		RR		1	15.37	58.55	46.56
<i>Great Lakes 2449</i>	2.4	PI88788	RR2Y	AC	1.67	16.26	58.18	46.37
<i>Croplan R2C 2459</i>	2.4		RR2Y		1.33	16.13	58.19	46.36
<i>Pioneer 92Y51</i>	2.5	PI88788	RR	TX	0.67	16.19	58.22	46.35
<i>Great Lakes 2662</i>	2.4		RR2Y	CM	1	16.13	58.17	46.26
Heritage Diener 2621CR2	2.6	PI88788	RR2Y	AC	1.67	16.02	58.25	46.11
Asgrow AG2330	2.3	R3	RR2Y	AC	1.67	16.38	58.07	46.03
Heritage Diener 2580CR	2.5	PI88788	RR	AC	1	15.45	58.54	45.91
Dyna-Gro D34Ry24	2.4	PI88788	RR2Y	AC	2	16.5	58.04	45.78
Asgrow AG2531	2.5	MR3	RR2Y	AC	1	15.8	58.37	45.45
Dyna-Gro V25N9	2.5	PI88788	RR2Y	CM	1.33	15.56	58.48	45.39
Heritage Diener 2382RR	2.3		RR	AC	1.33	16.01	58.25	44.88
Rupp RS 7244	2.4		RR2Y	CM	1	15.93	58.33	44.71
Croplan RC 2539	2.5		RR		1	16.4	58.12	44.63
Pioneer 92Y30	2.3	PI88788	RR	TX	1	15.92	58.3	44.54
Pioneer 92Y50	2.5	PI88788	RR/LowLin	TX	1	16.37	58.12	43.90
Asgrow AG2430	2.4	R3	RR2Y	AC	1	16.15	58.19	43.89
G2 Genetics 7260	2.6		RR		1.33	15.83	58.33	42.75
Great Lakes 2715	2.7		RR2Y	AC	1.67	16.37	58.14	42.53
Average					1.24	16.02	58.26	46.22
LSD @ 0.05								2.81
C.V. %								7.57

[†] Seed Treatment Abbreviations: C = Cruiser, CM = Cruiser Maxx

[‡] Speciality Qualities Abbreviations: LS = Low Saturated Fat, LL = Low Linolenic, LB = LibertyLink

[§] Lodging Score Ratings: 0 = 0%, 1 = < 20%, 2 = 20 - 50%, 3 = > 50%

[¶] Soybean yields are adjusted to 13% moisture

[#] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

Soybean Variety Trials
Glyphosate Resistant
2.3 and above
Yields by Location



Variety	Maturity Group	Cyst Resist	Traits	Seed Trt [†]	Yields by Location [‡]		
					Fairgrove	Pigeon	Sandusky
					bu / ac		
<i>Hyland HS 24RY05</i> [§]	2.4		RR2Y	CM	40.02	53.71	53.42
<i>Great Lakes 2555</i>	2.5		RR	CM	42.25	53.49	50.19
<i>Rupp RS 4259</i>	2.5		RR	CM	44.03	51.53	49.55
<i>Hyland HS 23R55</i>	2.3		RR2Y	CM	41.95	51.43	51.51
<i>DF 8244</i>	2.4	Field Tol	RR	CM	40.59	53.04	50.98
<i>G2 Genetics 7250</i>	2.5		RR		45.43	49.80	49.03
<i>Heritage Diener 2502CR2</i>	2.5	PI88788	RR2Y	AC	43.54	51.52	49.01
<i>Pioneer 92Y53</i>	2.5	Peking	RR	TX	42.77	47.71	52.58
<i>Dairyland 2560RR</i>	2.5		RR		42.68	51.91	47.38
<i>Hyland HS 24RYS01</i>	2.4	yes	RR2Y	CM	43.02	49.49	48.78
<i>Pioneer 92M61</i>	2.6	PI88788	RR	TX	44.09	47.75	48.72
<i>NK Syngenta S24-J1</i>	2.4		RR	CM	44.77	50.66	45.06
<i>G2 Genetics 7230</i>	2.3		RR		43.25	49.50	46.93
<i>Great Lakes 2449</i>	2.4	PI88788	RR2Y	AC	41.98	51.86	45.26
<i>Croplan R2C 2459</i>	2.4		RR2Y		44.62	49.28	45.19
<i>Pioneer 92Y51</i>	2.5	PI88788	RR	TX	43.22	47.93	47.89
<i>Great Lakes 2662</i>	2.4		RR2Y	CM	40.78	49.38	48.63
Heritage Diener 2621CR2	2.6	PI88788	RR2Y	AC	42.24	52.25	43.84
Asgrow AG2330	2.3	R3	RR2Y	AC	41.66	49.21	47.21
Heritage Diener 2580CR	2.5	PI88788	RR	AC	45.47	49.96	42.30
Dyna-Gro D34Ry24	2.4	PI88788	RR2Y	AC	39.68	41.08	46.58
Asgrow AG2531	2.5	MR3	RR2Y	AC	44.33	46.67	45.36
Dyna-Gro V25N9	2.5	PI88788	RR	CM	44.22	49.85	42.09
Heritage Diener 2382RR	2.3		RR	AC	42.73	45.84	46.07
Rupp RS 7244	2.4		RR2Y	CM	41.15	49.78	43.18
Croplan RC 2539	2.5		RR		40.94	48.20	44.75
Pioneer 92Y30	2.3	PI88788	RR	TX	42.71	43.32	47.58
Pioneer 92Y50	2.5	PI88788	RR/LowLin	TX	42.70	44.40	44.60
Asgrow AG2430	2.4	R3	RR2Y	AC	42.41	47.48	41.78
G2 Genetics 7260	2.6		RR		44.15	42.96	41.13
Great Lakes 2715	2.7		RR2Y	AC	37.33	41.86	48.39
Averages					42.60	49.12	46.93
LSD @ 0.05					5.14	4.76	4.84
C.V. %					8.59	6.89	7.34

[†] Seed Treatment Abbreviations: AC = Acceleron, CM = Cruiser Maxx, TX = Trilex 6000

[‡] Soybean yields are adjusted to 13% moisture

[§] Bold, Italicized yields are not significantly different from the highest yielding variety within that column

TARE 2010 Soybean Population Study



The purpose of this study is to evaluate the effect of planting population in 30 inch row soybeans.

Methods and Materials:

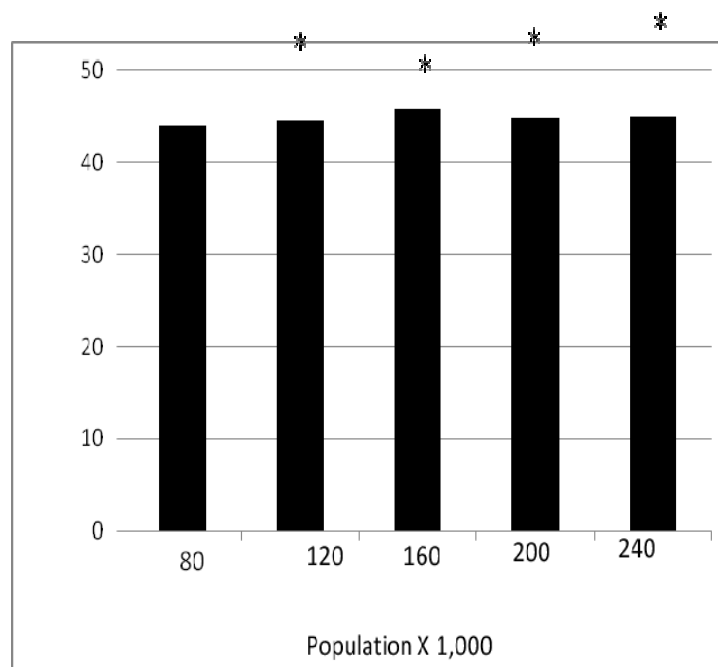
Pioneer 92Y30 soybeans were planted at five populations ranging from 80,000 seeds per acre to 240,000 seeds per acre in increments of 40,000 seeds. Plots were established in a randomized complete block design with 4 replications at the three TARE trial locations. The plots were 100 feet long and 15 feet wide with yields being measured from the full 15 ft. width.

Results and Conclusions:

Soybean populations of 80,000 seeds per acre yielded significantly less than all other populations in the 2010 growing season. These results differ from those in 2009, when the 200,000 and 240,000 population yields were significantly greater than other populations. This study will be repeated in 2011 to further data comparison.

Population	Average of Locations		
	Moisture	Test Wt.	Yield [†]
	%	— bu / ac —	
80000	15.07	58.73	43.99
120000	14.91	58.83	44.52
160000	15.01	58.78	45.84
200000	15.02	58.78	44.79
240000	14.93	58.85	44.95
Avg.			44.82
LSD @ 0.05			1.83
C.V. %			4.90

[†] Bold, Italicized yields are not significantly different from the highest yielding variety within that column



TARE 2010 Soybean Fungicide Trials



The purpose of this study is to evaluate the effect of three different fungicides on soybean yield.

Methods and Materials:

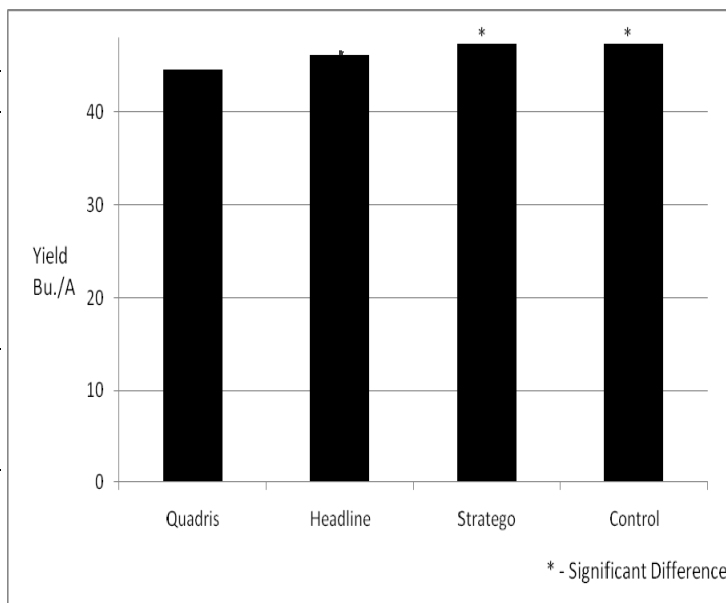
Pioneer 92Y30 soybeans were planted in 30 inch rows. Plots were established in a randomized complete block design with 4 replications at the three TARE trial locations. The plots were 100 feet long and 15 feet wide with yields being measured from the full 15 ft. width. Treatments consisted of Quadris, Headline, Stratego, and an untreated control. Fungicides were sprayed at the R3 growth stage.

Results and Conclusions:

Soybeans yields from the Headline and Stratego fungicide treatments resulted in yields that were statistically similar to the untreated control. The fungicide treatment Quadris resulted in yields that were significantly lower than the untreated control. Results from the 2010 growing season indicate that a fungicide application did not improve soybean yields.

Fungicide	Average of Locations		
	Moisture %	Test Wt. — bu / ac —	Yield
Quadris	15.71	58.34	44.60
Headline	15.88	58.28	46.20
Stratego	15.72	58.33	47.32
Control	15.86	58.28	47.43
Avg.			46.39
LSD @ 0.05			2.52
C.V. %			6.48

† Bold, Italicized yields are not significantly different from the highest yielding variety within that column



Soybean yield response from Primo seed inoculant



Primo is a product labeled for soybeans as a growth promoter and liquid inoculant. The purpose of this study is to evaluate the effect of Primo on soybean yields in comparison to untreated seed and other similar products.

Methods and Materials:

Soybean seed was treated according to label instructions with Primo, Optimize, and Hi-Stick Inoculant. These three treatments and an untreated control were established in a randomized complete block design (RCBD) with 4 replications at 2 of the TARE soybean trial locations, Pigeon in Huron County and Sandusky in Sanilac County. Plots were 100 feet long and 15 feet wide and yield measurements were taken from the full 15 foot width.

Results and Conclusions:

The Table displays the average yield of each treatment by location as well as the yields of each treatment averaged across the two locations. Additionally, percent moisture and test weight are averaged across both locations.

Statistical analysis of the yield data showed that there was no significant difference between the untreated control and the three seed treatments, Primo, Optimize, and Hi-Stick inoculant at both locations and when averaged across locations. This data suggests that during the 2011 growing season, Primo did not have a significant effect on yield greater than the other seed treatments nor did any of the treatments out yield the untreated control.

Table. Soybean yields of the Primo/Seed Treatment Study

Population	Yield by Location		Average of Locations		
	Huron	Sanilac	Moisture	Test Wt.	Yield
	— bu / ac —		%	— bu / ac —	
Primo	46.25	50.65	15.24	58.68	48.45
Optimize	43.11	50.26	15.33	58.65	46.68
Inoculant	45.11	50.54	15.33	58.65	47.83
Control	45.62	51.08	15.13	58.73	48.35
Average	45.02	50.63	15.25	58.68	47.82
LSD @ 0.05	4.41	4.49			2.91
C.V. %	6.01	5.55			5.77

† No significant difference between treatments was found based on least significant difference (LSD) values.

Effect of fungicide products on the performance of winter wheat

Martin Nagelkirk, Michigan State University Extension,
Sandusky, MI, 2010



A field trial was conducted to measure the effect of various fungicide products on wheat performance and disease severity.

Method

During early April, a trial was established within a field of Hopewell soft red winter wheat. Several fungicide products were applied at various stages of wheat development. The treatments, including products, rates and timings, are listed in the table below. The fungicides were applied using a tractor mounted boom sprayer, 19 gallons of water per acre, a nonionic surfactant (0.125%) and 45 psi. The trial was harvested with an International 2144 combine equipped with a Juniper HarvestMaster system that provided grain yield, test weight, and grain moisture.

Statistical analysis was performed for grain yield, test and moisture by the Statistical Consulting Center at MSU. There were significant differences for yield and moisture, but not for test weight ($p < 0.05$). The DON levels are being determined by the University of Minnesota.

Location:	Stoutenburg
Fms,	Sandusky, MI
Soil Type	Parkhill silt loam
Soil pH:	6.5
Previous crop:	dry beans
Plot area:	22 x 84 ft
Treatment area:	20 x 84 ft
Harvest area:	16.5 x 78.5 ft
Planting date:	Sept 25
Harvest date:	July 11
Seeding rate:	1.8 m/ac
Fert N rate:	90 lbs/ac N
Herbicide:	none
Insecticide:	none

Results

Foliar diseases were apparent throughout the season and their ratings are reported in the table below. Leaf blotch (*Stagonospora nodorum*) was the most pronounced and significant disease. The untreated control and the Kocide treatment resulted in significantly lower yields than all other treatments. The highest yields were attained when Prosaro was applied at the boot stage (g.s. 9) and where Prosaro was applied at flowering following an application of Stratego Pro at jointing.

Table: The effect of fungicides on winter wheat performance and disease severity, Sandusky, MI, 2010

Treatment	yield 13% M bu:ac	harv. moist %	test weight lbs	pow mildew ¹ % (DAT)	leaf blotch ² 1 to 5 (DAT)	color score ³ 1 to 5 (DAT)	FHB ⁴ #	DON ppm
untreated control	96.4 a	14.9 a	60.6	4.3	3.3	3.6	2.5	-
Headline, 4 oz, gs 5	102.5 bc	15.4 bc	60.3	0.5 (18)	3.3 (45)	3.2 (55)	0.8	-
Twinline, 9 oz, gs 9	100.1 ab	15.7 ab	60.1	—	1.5 (25)	2.4 (35)	2.0	-
Caramba, 13.5 oz, gs 10.5	102.9 bc	14.9 bc	60.5	—	1.9 (16)	2.3 (26)	1.0	-
Headline, 4 oz, gs 5								
Caramba, 13.5 oz, gs 10.5	104.2 cd	15.2 cd	60.5	0.4 (18)	2.0 (45/16)	2.1 (55/26)	0.8	-
Stratego Pro, 2 oz, gs 6	100.9 abc	14.9 abc	60.6	0.8 (13)	2.5 (40)	3.3 (50)	2.3	-
Stratego Pro, 2 oz, gs 9	99.0 ab	15.0 ab	60.5	—	2.3 (25)	2.9 (35)	1.5	-
Prosaro, 6.5 oz, gs 9	105.9 d	15.3 d	60.3	—	1.0 (25)	2.7 (35)	2.5	-
Prosaro, 6.5 oz, gs 10.5	102.4 bc	15.4 bc	60.3	—	1.5 (16)	1.9 (26)	1.3	-
Stratego Pro, 2 oz, gs 6,								
Prosaro, 6.5 oz, gs 10.5	106.6 d	15.8 d	60.1	1.5 (13)	1.5 (40/16)	1.80 (50/26)	1.5	-
Kocide 3000, 0.75 lb, gs 5	97.3 a	14.4 a	60.8	4.5 (18)	4.0 (45)	3.6 (55)	2.3	-
Kocide 3000, 0.5 lb, gs 5								
Headline, 3 oz, gs 5	99.8 ab	14.6 ab	60.7	1.3 (18)	3.8 (45)	3.6 (55)	3.0	-

¹ Powdery mildew rating as percent of third leaf having visual evidence of disease (1st leaf equates to flag leaf).

² *Stagonospora nodorum* relative rating from 1 to 5 with 1 denoting lowest disease level.

³ Color score as relative rating of 1 to 5 with 1 denoting brightest coloration.

⁴ Number of heads exhibiting Fusarium head scab in an area measuring 3 ft by 4 rows.

Performance of five winter wheat varieties with selected fungicide treatments, 2010



Martin Nagelkirk & Kyle McCarty,
MSU Extension, Sandusky, MI



For the third year, and with support from Michigan Crop Improvement Association, the performance of five soft winter wheat varieties and four fungicide treatments were evaluated. *[A full report is available upon request]*

Methods:

Two soft red winter varieties (Hopewell and Red Ruby) and three soft white winter wheat varieties (Crystal, D8006 and Coral) were planted no-till with a JD 1590 drill. Four replications were created using a split block design.

The foliar fungicides included Tilt (2 oz./ac), applied at full tillering (Feekes growth stage 6) on May 5; Headline (3 oz./ac) with a NIS, applied at flag leaf emergence (growth stage 8/9) on May 24; and Prosaro (6.5 oz /ac) with a NIS, applied at flowering (growth stage 10.51) on June 1. A fourth treatment used all three of the individual treatments. The fungicides were applied using a five foot hand-held boom sprayer with TJ 60 8002 VS nozzles, 12 gallons of water per acre, and 30 pounds pressure.

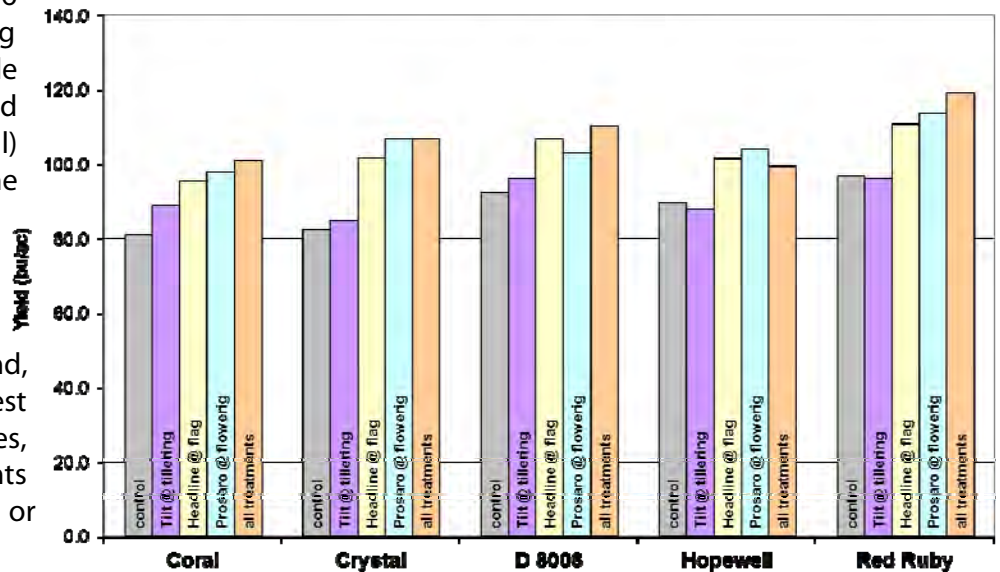
2010 background:	
Location:	Parrent Farms, Sandusky, MI
Soil type	Capac silt loam
Soil pH:	6.9
Soil P & K:	75 & 95 ppm
Previous crop:	soybeans
Plot area:	15 x 48 ft.
Treatmt area:	6.7 x 48 ft.
Harvest area:	4 x 42.5 ft.
Planting date:	Oct 16, 2009
Harvest date:	July 11, 2010
Seeding rate:	1.8 m/ac.
Fert N rate:	90 lbs./ac.
Fungicide:	various
Herbicide:	Affinity Brdspec
Insecticide:	none

In mid-June, a visual estimate was made of the area of the flag leaf showing evidence of Stagonospora leaf blotch, striped rust and leaf rust. The wheat was harvested with a mechanical small-plot combine and the grain was collected to determine grain weights, moistures and test weights. The thousand-kernel weights of the white varieties were also measured. In addition, samples were submitted for DON testing.

Results and Comments:

Red Ruby and D8006 were the highest yielding of the five varieties (table 1). The red varieties (Red Ruby and Hopewell) tended to have the highest test weights. The 2010 season provided the greatest foliar disease pressure of the past three years and, therefore, the greatest effect from fungicides, particularly treatments containing Headline or

Effect of foliar fungicides on grain yields of five varieties, 2010



Prosaro. Averaging across all varieties, the plots that received a treatment at flowering (“Prosaro” and “all treatments”) out-yielded the untreated control plots by approximately 18 bushels per acre.

Stagonospora leaf blotch developed aggressively in late May, and both leaf rust and striped rust were evident soon after flowering. Crystal and D8006 were the most susceptible to leaf blotch, while Hopewell was the most susceptible to leaf rust. DON test results are pending.

Table 1. Effect of foliar fungicides on the performance of five soft winter wheat varieties, Sandusky, MI, 2010

Treatment variety	fungicide ²	timing	Yield @ 13%M		Moist (%)		Test Wt		1000 K wt	
			2010	3yr ¹	2010	3yr	2010	3 yr	2010	3yr
Coral¹	control	---	81	84	16	18	54	54	39	43
	Tilt 2 oz	gs 5/6	89	89	16	16	55	55	43	44
	Headline 3oz	gs 9	95	95	16	16	55	55	41	45
	Prosaro 6.5 oz	gs 10.51	98	97	17	18	56	56	43	45
	all treatments	all timing	101	99	17	18	56	56	42	46
	<i>average</i>		93	93	16	17	55	55	41	45
Crystal	control	---	82	92	14	15	54	56	32	38
	Tilt 2 oz	gs 5/6	85	93	14	15	54	56	32	38
	Headline 3oz	gs 9	102	102	14	16	55	57	35	39
	Prosaro 6.5 oz	gs 10.51	107	106	15	16	56	58	36	41
	all treatments	all timing	107	105	16	17	55	57	38	41
	<i>average</i>		97	100	15	16	55	57	35	39
D 8006	control	---	92	93	16	16	55	57	39	43
	Tilt 2 oz	gs 5/6	96	95	16	16	55	57	40	43
	Headline 3oz	gs 9	107	103	16	17	56	58	42	45
	Prosaro 6.5 oz	gs 10.51	103	103	16	18	55	58	40	46
	all treatments	all timing	110	105	16	18	56	57	43	48
	<i>average</i>		102	100	16	17	55	57	41	45
Hopewell	control	---	90	92	16	16	56	57	-	-
	Tilt 2 oz	gs 5/6	88	92	16	16	56	57	-	-
	Headline 3oz	gs 9	101	101	16	16	56	58	-	-
	Prosaro 6.5 oz	gs 10.51	104	101	16	17	56	58	-	-
	all treatments	all timing	99	99	17	17	56	58	-	-
	<i>average</i>		96	97	16	16	56	58	-	-
Red Ruby	control	---	97	96	16	18	56	58	-	-
	Tilt 2 oz	gs 5/6	96	97	15	17	56	58	-	-
	Headline 3oz	gs 9	111	103	16	19	57	58	-	-
	Prosaro 6.5 oz	gs 10.51	114	105	16	20	57	58	-	-
	all treatments	all timing	119	106	16	20	57	58	-	-
	<i>average</i>		107	101	16	19	57	58	-	-

¹ Coral was grown in only two seasons: 2009 and 2010

² Headline was applied at 3 oz/ac in 2010, but 6 oz/ac in 2008 and 2009

Response of winter wheat to various fertilizer nitrogen materials

Kyle McCarty, Martin Nagelkirk,
MSU Extension, Sanilac County, MI



A field trial was conducted to measure the effect of multiple fertilizer materials. The materials include several conventional fertilizer nitrogen (N) products, and an organic fertilizer product derived from worm castings.

Method:

Multiple varieties of soft winter wheat were planted on October 16, 2009. On April 17 (Feekes' growth stage 4), 90 lbs. of N per acre was applied in the forms of 1) urea 46%; 2) urea plus ESN (1:1 mixture); 3) UAN 28 %; and 4) UAN 28% plus Thiosul at 0.75 gallon per acre. In addition; an organic fertilizer product (derived from the leachate from worm castings) was applied at a rate of 45 gal per acre providing 0.86 lbs. per acre of total N, 3.75 lbs. of phosphorous, and 58.11 lbs. of potassium. The liquid fertilizers were applied with a small tractor mounted sprayer (Tee Jet sj3-02 nozzles), and solid products were broadcasted by hand. The 4 foot x 42.5 foot plots were harvested with a small plot combine, which measured yield, test weight, and moisture. Heads per foot of row were also measured.

Results/Comments:

The trial consisted of five varieties and each was treated as an individual replication.

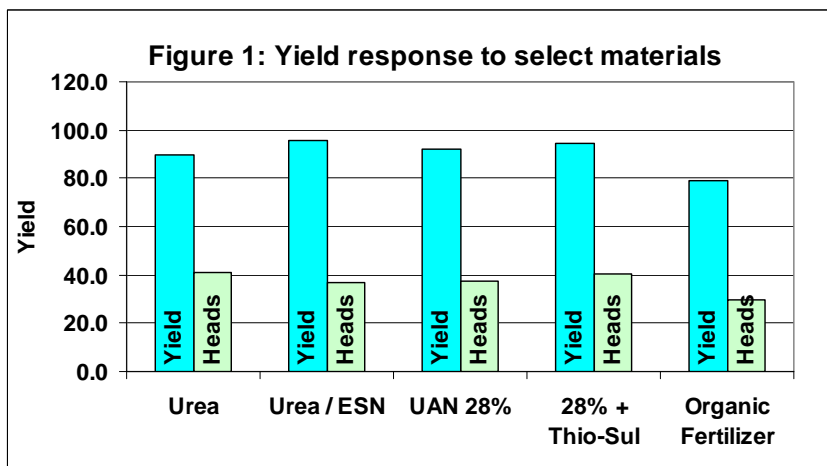
The results (see table) show that yields varied depending on the amount of the nitrogen in the source material. The organic fertilizer had a lot lower nitrogen level and, therefore, yielded less than the other treatments. Of the conventional products, there was no significant advantage to any product, with the possible exception of Urea + ESN outperforming straight urea.

There was no correlation between head number and yield, nor was there significant differences in test weights and moisture in this trial.

Location:	Parrent Farms, Sandusky, MI
Soil Type	Capac silt loam
Soil pH:	6.9
Soil P & K:	75 & 95 ppm
Previous crop:	soybeans
Plot area:	15 x 48 ft
Treatmt area:	6.7 x 48 ft
Replications:	5
Harvest area:	4 x 42.5ft
Planting date:	Oct 16, 2009
Harvest Date:	July 11, 2010
Seeding rate:	1.8 m/ac
Fert N Rate:	variable
Fungicide:	none
Herbicide:	Affinity Brdspec
Insecticide:	none

Table: Response of wheat to various N products Sandusky, MI, 2010

Nitrogen source	grain yield	heads/ft of row	test wt	harv moist
	bu/ac		lbs	%
Urea	90	41	55	14
Urea + ESN	96	37	56	15
UAN 28%	92	38	56	14
UAN 28% + Thio-sul	95	41	56	14
organic fertilizer	79	30	56	15



Performance of five winter wheat varieties with increasing rates of fertilizer N, 2010 and multi-year summary



Martin Nagelkirk and Kyle McCarty
MSU Extension, Sandusky, MI



For the third year, with the support of Michigan Crop Improvement Association, the performance of five soft winter wheat varieties using increasing rates of fertilizer nitrogen was observed.

Methods:

Two soft red winter varieties and three soft white wheat varieties were planted using a 15 foot JD 1590 drill. In the spring, plot lengths of 48 feet were established for individual fertilizer nitrogen (N) treatments with four replications. On April 17 (growth stage 3/4), 28% UAN was applied at rates of 0, 45, 90, 135 and 180 lbs N/acre using streamer nozzles. The trial was harvested with a small plot combine.

Results and Comments:

The table on page 2 provides the results from the 2010 season, as well as averages across 2008, 2009 and 2010. Grain yields are also illustrated for the 2010 season in figure 1 and for three years in figure 2.

In 2010, each incremental increase in N resulted in additional yield, except for Coral and Crystal which peaked at 135 lbs. Based on the three year summary, variety yields tended to respond very similarly to additions of N. Head numbers did as well, with the possible exception of Red Ruby. In both 2009 and 2010, Coral produced substantially fewer heads than the other varieties, presumably placing greater emphasis on kernel number and /or kernel weight. Test weights and harvest moistures across all varieties were largely unaffected by N rates.

2010 background:	
Location:	Parrent Farms, Sandusky, MI
Soil type	Capac silt loam
Soil pH:	6.9
Soil P & K:	75 & 95 ppm
Previous crop:	soybeans
Plot area:	15 x 48 ft
Treatmt area:	6.7 x 48 ft
Replications:	4
Harvest area:	4 x 42.5 ft
Planting date:	Oct 16, 2009
Harvest date:	July 11, 2010
Seeding rate:	1.8 m/ac
Fert N rate:	variable
Fungicide:	none
Herbicide:	Affinity Brdspec
Insecticide:	none

Figure 1: Yield response of wheat varieties to increasing rates of fertilizer nitrogen- 2010.

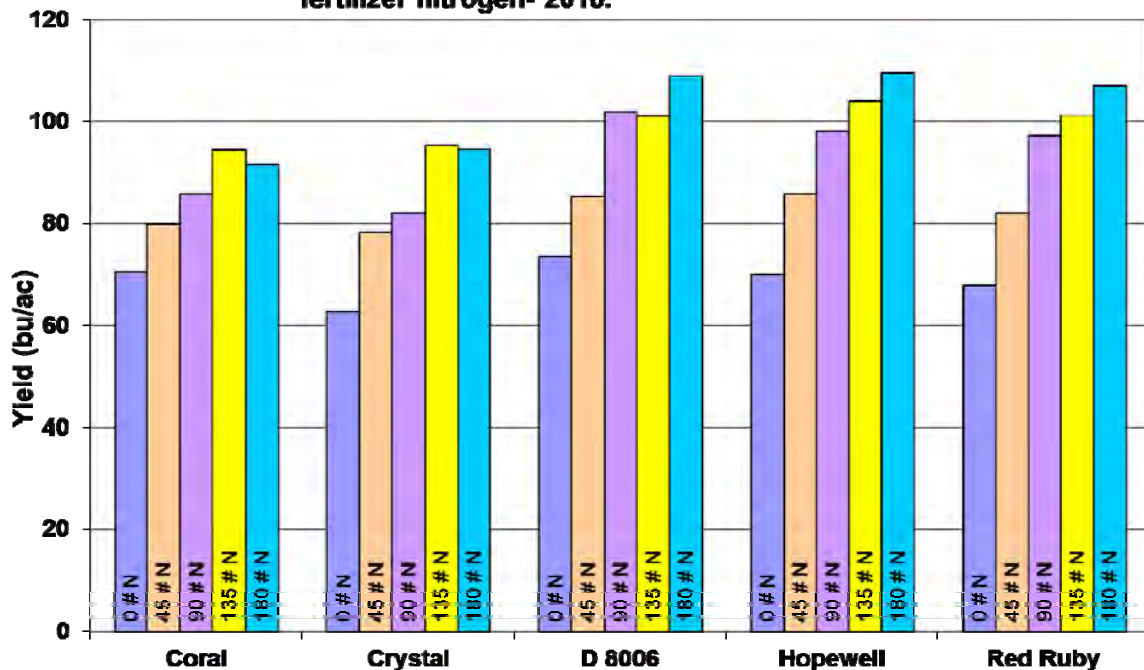
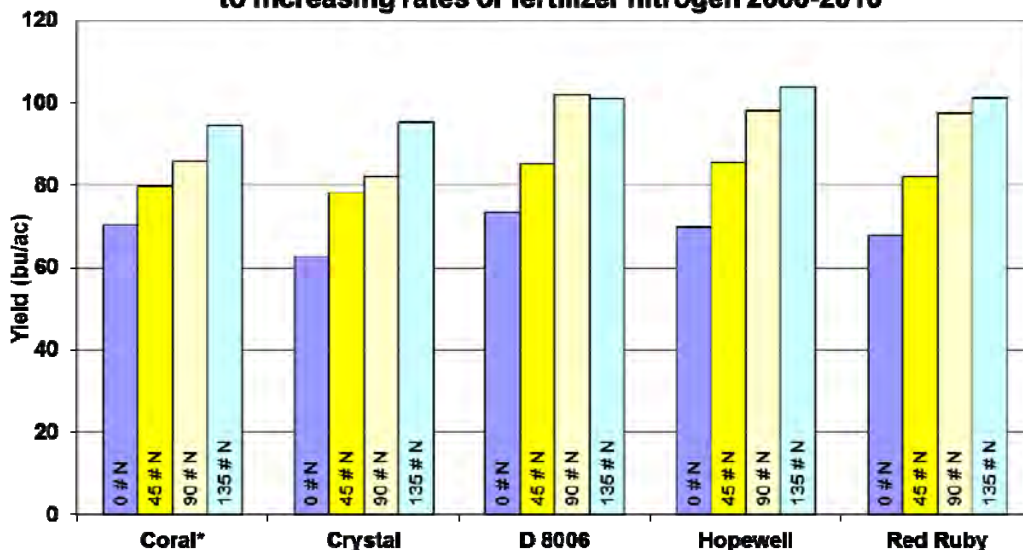


Table: Effect of varieties and fertilizer nitrogen on wheat performance

Variety	Treatment	yield (13%)		moisture		test wt		head/ft row ¹	
		2010	3 yr ave	2010	3 yr ave	2010	2 yr	2010	3 yr ave
Coral	0	70.4	78.0	16.0	18.1	55.0	55.0	25	31
	45	79.8	86.1	15.9	18.0	54.8	54.8	26	30
	90	85.8	90.7	15.9	18.4	54.7	54.7	32	33
	135	94.5	96.4	15.6	18.9	54.7	54.7	30	32
	180	91.8	---	15.7	---	54.0	---	32	---
	average		84.5	87.8	15.8	18.4	54.6	54.8	29
Crystal	0	62.8	82.2	14.6	15.6	54.2	56.3	32	36
	45	78.1	91.4	14.3	15.5	53.7	56.3	31	42
	90	82.1	94.7	13.9	15.6	53.3	56.1	43	48
	135	95.4	101.2	14.0	16.2	54.5	56.6	46	49
	180	94.7	---	14.1	---	54.3	---	44	---
	average		82.6	92.4	14.2	15.7	54.0	56.3	39
D8006	0	73.4	79.7	15.9	16.5	55.5	57.0	29	32
	45	85.2	89.2	15.8	16.6	54.8	56.8	33	35
	90	101.9	99.1	15.6	16.4	55.2	57.2	37	41
	135	101.0	101.4	16.1	17.0	55.0	57.2	43	42
	180	108.9	---	15.6	---	55.0	---	41	---
	average		94.1	92.4	15.8	16.6	55.1	57.0	37
Hopewell	0	69.9	77.9	16.3	16.5	56.0	57.1	32	34
	45	85.7	88.4	16.0	16.4	54.8	56.7	38	39
	90	98.1	96.6	16.3	16.7	55.2	57.0	37	42
	135	104.0	102.2	16.3	16.2	54.7	56.8	41	42
	180	109.6	---	16.5	---	55.0	---	41	---
	average		93.5	91.3	16.3	16.4	55.1	56.9	38
Red Ruby	0	67.8	81.6	15.6	17.6	56.2	58.0	29	34
	45	82.1	88.9	15.6	18.0	54.8	57.6	36	39
	90	97.3	98.8	15.4	18.4	56.3	58.3	40	45
	135	101.3	102.9	15.2	18.1	55.9	58.2	44	45
	180	107.1	---	15.1	---	55.9	---	48	---
	average		91.1	93.0	15.4	18.0	55.8	58.0	40

Figure 2: Yield response of wheat varieties to increasing rates of fertilizer nitrogen 2008-2010



* Coral yields are derived from only 2 years of trials.

Applying liquid dairy manure on soft winter wheat

Martin Nagelkirk, MSUE, Sanilac County, MI
Kurt Kreger, Kreger Farms, Snover, MI



Field research was conducted to observe the effect of using liquid dairy manure as the principle nitrogen (N) source for winter wheat. This work was part of a multi-state manure management project.

Methods

The trial was superimposed on an existing commercial stand of soft red winter wheat (cv. Hopewell). Nine 600 foot strips were established to allow for three treatments and three replications. On March 26, at the beginning of green-up, a 9,500 gallon tank applicator was used to applied liquid dairy manure at rates of 4,000 and 8,000 gallons per acre on frozen ground. The third treatment received conventional fertilizer N (urea/ESN/ammonium sulfate) applied later that same day through a spinner spreader at a rate that provided 90 pounds of actual N per acre.

The plot was harvested with a conventional combine equipped with a Juniper HarvestMaster system which provided grain weight, test weight and moisture. The day of harvest, a soil sample was taken from each plot to submit for testing of its nitrate content. All results are summarized in the table below.

Results

The manure application did not result in a loss of wheat plants despite being nearly submersed at the 8,000 gallon level. As the season progressed, the wheat within the trial area clearly responded to the N supplied by both the manure and commercial fertilizer. The tire tracks of the manure spreader were evident all season, giving some advantage, presumably, to the urea/ESN treatments.

In this trial, the results suggest that 8,000 gallons of the liquid manure was able to give comparable results to that of commercial fertilizer relative to grain yield and test weight. Manure may prove to be more advantageous if a drag hose is used to minimize heavy traffic.

Location:	Snover, MI
Soil type:	Capac loam
Soil pH:	6.9
Soil P & K:	79 & 146 ppm
Previous crop:	Dry beans
Plot area:	34 x 600 ft
Harvest area:	16.5 x 600 ft
Variety:	Hopewell
Planting date:	Sep. 25, 2009
Seeding rate:	1.8 m/ac
Herbicide:	Husky, Osprey
Insecticide:	none
Fungicide:	Headline, Caramba
Harvest Date:	July 11, 2010
Manure Analysis:	
solids	12.0 %
total N	28.7 #/1000 gal
ammonium N	15.1 #/1000 gal
organic N:	13.7 #/1000 gal
phosphate	7.4 #/1000 gal
potash	18.2 #/1000 gal



Spreading dairy manure at 4000 and 8000 gal. per acre

Table: Comparison of fertilizer N to liquid dairy manure on the performance of soft winter wheat, Snover MI, 2010

treatment	rate	yield	harvest moist.	test weight	soil NO3
	unit/ac	bu/ac @ 13.5%	%	lbs	ppm
Urea /ESN	90 lbs N	84	15.0	60	2.0
manure	8,000 gals	83	15.8	59	2.1
manure	4,000 gals	69	15.4	60	1.7



Untreated vs. 8,000 gal. per acre (on rt.)

Michigan State University
Alfalfa Variety Trial Yield
 North Branch, Lapeer Co.



Michigan State University has established thirty-three variety trials since 2003 in four locations across the state to evaluate forage varieties in an unbiased manner.

Methods:

Plant breeders, developers, and marketers submit both commercial and experimental alfalfa varieties to MSU for testing. Varieties in these trials are evaluated for yield, persistence and forage quality for at least three years.

Results:

Yield is expressed in dry matter tons per acre as an average over years. A percentage of the check variety (Vernal) is presented in each table as a means for comparison. Vernal is an old variety with fall dormancy of 2 and has little disease resistance, but many producers are familiar with it, and it is often the lowest price seed available.

Location:	Chris Howland
Farm	North Branch, MI
Soil Type:	Brookston Loam
Soil pH:	7.4
Soil P & K:	193 & 369 ppm
Plot area:	3 X 25 ft.
Replications:	Four
Prev. Crop:	Soybeans
Planting Date:	Apr 2008
Lime Rate:	none
Fert. Rate:	0-78-234 + 3 boron lbs./A
Herbicide:	none
Insecticide:	Dimethoate after 1 and 2 cutting

Entry	27-May	24-Jun	29-Jul	30-Aug	14-Oct	2010	2009	total	% of Check
Pioneer 55V48	2.16	1.71	2.36	1.24	0.85	8.31	8.44	16.75	124
Ameristand 407TQ	2.12	1.72	2.38	1.14	0.72	8.07	8.45	16.52	122
FSG505	2.18	1.62	2.39	1.32	0.71	8.22	8.16	16.37	121
PGI 459	2.11	1.71	2.60	1.21	0.70	8.33	7.80	16.12	119
Garst 6552	2.06	1.68	2.30	1.30	0.78	8.12	7.95	16.07	118
WL363HQ	2.05	1.60	2.35	1.28	0.75	8.03	7.96	15.99	118
Ascend	2.04	1.62	2.31	1.17	0.67	7.81	7.97	15.78	116
WL343HQ	2.07	1.61	2.30	1.24	0.62	7.84	7.92	15.76	116
FSG351	2.03	1.46	2.22	1.21	0.66	7.57	7.93	15.50	114
Genoa	2.12	1.63	2.31	1.13	0.72	7.91	7.57	15.49	114
FSG528SF	2.00	1.51	2.12	1.15	0.74	7.52	7.86	15.38	113
FSG406	2.14	1.56	2.11	1.05	0.58	7.43	7.93	15.36	113
Garst 6417	1.91	1.51	2.24	1.15	0.73	7.53	7.76	15.29	113
DKA43-13	2.10	1.52	2.14	1.20	0.69	7.64	7.61	15.25	112
DK140	2.01	1.44	2.11	1.08	0.61	7.24	7.95	15.19	112
Velocity	1.98	1.53	2.14	1.14	0.65	7.43	7.73	15.16	112
FSG408DP	2.05	1.47	2.15	1.21	0.62	7.50	7.36	14.86	110
Pioneer 5312	1.99	1.28	1.96	1.19	0.66	7.07	7.53	14.60	108
PLH-resistant check	1.89	1.23	1.82	0.88	0.49	6.32	7.53	13.85	102
Vernal	1.84	1.28	1.92	1.05	0.57	6.66	6.90	13.56	100
Mean	2.04	1.53	2.21	1.17	0.67	7.63	7.81	15.44	
CV%	9	10	10	14	17	8	8	7	
LSD 5%	0.24	0.21	0.32	0.22	0.13	0.89	0.84	1.60	

Alfalfa/Grass winter hardiness and heaving trial

Mineral Clay Soils & Muck
Capac, MI



Due to the soil structure of many farms in the Thumb, heaving and winterkill are frequently the cause of stand losses for alfalfa growers and grazers.

The research in these plots will help to identify if different grass species help keep alfalfa stands in rotation longer in non-tiled mineral and muck soils.

Purpose:

- Educate growers about the potential opportunities for growing alfalfa and grass varieties together and the management for high quality stands.
- Identify types of alfalfa and grass combinations that will maintain forage stands in rotation.
- Provide an analysis on quality (Relative Feed Value (RFV)) for each treatment.

Results:

In the plots, there are two different types of alfalfa planted in combination with different species of grass. There is a laterally branched alfalfa and a predominantly tap rooted alfalfa planted alone and with the following grasses in replicated plots:

Seeding Rates lbs/A

- | | | |
|----------------------|-----|------------|
| ▪ Orchard grass | 6 | Alfalfa 10 |
| ▪ Meadow Fescue | 15 | Alfalfa 10 |
| ▪ Perennial ryegrass | 15 | Alfalfa 10 |
| ▪ Tall fescue | 15 | Alfalfa 10 |
| ▪ Reed canary grass | 6 | Alfalfa 10 |
| ▪ No grass | --- | Alfalfa 18 |

Location:	Mike Lauwers Capac, MI
Soil Type:	Blount Loam
Soil pH:	5.9
Soil P & K:	64 & 169 ppm
Plot area:	3 X 25 ft.
Replications:	Four
Prev. Crop:	Soybeans
Planting Date:	4/23/2010
Lime Rate:	2.2 ton/A
Fert. Rate:	None
Herbicide:	none
Tillage:	Conventional

Location:	Mike Lauwers Capac, MI
Soil Type:	Linwood Muck
Soil pH:	6.8
Soil P & K:	85 & 171 ppm
Plot area:	3 X 25 ft.
Replications:	Four
Prev. Crop:	Soybeans
Planting Date:	4/23/2010
Lime Rate:	None
Herbicide:	2, 4DB
Rate:	2 quart/A
Tillage:	Conventional

Alfalfa/Grass winter hardiness and heaving trial

Mineral Clay Soils & Muck
Capac, MI
(cont.)



Mineral	Grass Variety	Grass Species	Alfalfa Variety	24-Jun	29-Jul	30-Aug	Total	Relative Feed Value			
				dry matter tons/acre				cut 1	cut 2	cut 3	Ave.
	Pradel	Meadow fescue	WL 348 AP	0.66	1.52	0.76	2.93	171	137	165	158
	Pradel	Meadow fescue	Magnum VI WET	0.68	1.46	0.71	2.85	166	141	165	158
	Intensiv	Orchardgrass	WL 348 AP	0.55	1.34	0.65	2.53	163	115	165	148
	Intensiv	Orchardgrass	Magnum VI WET	0.57	1.52	0.78	2.86	156	124	157	146
	Remington	Perennial ryegrass	WL 348 AP	0.54	1.28	0.65	2.47	157	139	177	158
	Remington	Perennial ryegrass	Magnum VI WET	0.57	1.51	0.76	2.84	159	123	151	144
	Palaton	Reed canarygrass	WL 348 AP	0.75	1.35	0.82	2.91	167	135	168	157
	Palaton	Reed canarygrass	Magnum VI WET	0.68	1.46	0.81	2.95	172	136	153	154
	STF43	Tall fescue	WL 348 AP	0.64	1.33	0.85	2.82	181	129	178	163
	STF43	Tall fescue	Magnum VI WET	0.70	1.57	0.77	3.04	143	132	148	141
	none		WL 348 AP	0.76	1.56	0.85	3.17	161	153	184	166
	none		Magnum VI WET	0.83	1.59	0.83	3.25	174	147	187	169
	Mean			0.66	1.45	0.77	2.88	164	134	167	155
	LSD (0.05)			0.21	0.12	0.11	0.32				
	Muck										
	Pradel	Meadow fescue	WL 348 AP	0.89	1.44	0.61	2.93	131	117	149	132
	Pradel	Meadow fescue	Magnum VI WET	0.83	1.52	0.50	2.85	128	124	147	133
	Intensiv	Orchardgrass	WL 348 AP	0.83	1.45	0.64	2.92	126	115	165	136
	Intensiv	Orchardgrass	Magnum VI WET	0.80	1.62	0.73	3.15	128	123	151	134
	Remington	Perennial ryegrass	WL 348 AP	0.83	1.52	0.70	3.05	143	126	143	137
	Remington	Perennial ryegrass	Magnum VI WET	0.91	1.46	0.69	3.06	142	133	148	141
	Palaton	Reed canarygrass	WL 348 AP	0.87	1.42	0.69	2.98	123	120	157	133
	Palaton	Reed canarygrass	Magnum VI WET	0.95	1.46	0.78	3.18	123	127	150	133
	STF43	Tall fescue	WL 348 AP	0.69	1.43	0.83	2.96	143	112	148	134
	STF43	Tall fescue	Magnum VI WET	0.75	1.70	0.89	3.34	112	131	146	130
	none		WL 348 AP	0.94	1.59	0.74	3.28	140	133	167	146
	none		Magnum VI WET	1.12	1.64	0.86	3.63	144	138	167	150
	Mean			0.87	1.52	0.72	3.11	132	125	153	137
	LSD (0.05)			0.14	0.15	0.13	0.31				

2011 Custom Machine and Work Rate Estimates

Edited by: Dennis Stein, Extension Educator, District Farm Business Management, Michigan State University Extension
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2011 Production Season Costs						Updated 09.30.10
Farm Labor Unskilled ⁷ = \$ per hour	\$12.27					\$2.56 per gallon of fuel
Farm Labor skilled ⁷ = \$ per hour	\$14.73					\$2.820 per gallon lube & fuel cost
TRACTORS ONLY:		Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵		Est. Fuel Gal./Acre ⁶
No driver or fuel cost						
	4WD - 260 hp.	\$54.21	\$81.20	11.44		32.26
	MFWD - 200 hp.	\$40.09	\$64.88	8.8		24.82
	MFWD - 130 hp.	\$31.17	\$45.05	5.72		16.13
Est. Tractor Cost \$0.24 / hp / hr.	2- WD - 75 hp.	\$26.93	\$19.38	3.3		9.31
Est. Fuel use .044 gal. diesel / PTO hp	2- WD - 40 hp.	\$20.90	\$11.23	1.76		4.96
Auto Steer systems charge per acre		\$2.29				
TILLAGE OPERATIONS:	Custom \$/Acre ¹	Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵		Est. Fuel Gal./Acre ⁶
Plowing: Moldboard (6 bottom)	\$17.36	\$20.15	\$70.12	3.48		1.29
Chisel Plow (23 ft.)	\$12.23	\$10.09	\$85.77	8.50		0.64
Chisel - front disk (16.3 ft.)	\$14.01	\$12.46	\$114.76	9.21		1.04
Disk - V.Ripper combo (17.6 ft. +15" deep)	\$17.22	\$17.76	\$197.67	11.13		1.10
Subsoiler 30" - 10ft (12 - 15")	\$16.07	\$0.00	\$0.00	7.00		1.30
Discing - tandem (21 ft)	\$10.93	\$8.85	\$108.15	12.22		0.49
Field Cultivator (23 ft.) + incorp.	\$10.98	\$5.96	\$97.74	16.40		0.34
Field Cultivator (23 ft.)	\$10.15	\$5.47	\$90.75	16.59		0.34
Harrow	\$7.90					
Soil Finisher	\$11.35					
Strip tillage	\$15.54					
Row Cultivate (12 rows)	\$9.44	\$5.66	\$87.45	15.45		0.44
Row Cultivate - high residue (12 rows)	\$12.45	\$0.00	\$0.00	15.45		0.64
Stalk Shredder (20 ft.)	\$9.71	\$12.28	\$95.29	7.76		0.74
Rotary Hoe (21 ft.)	\$6.62	\$2.49	\$64.64	25.96		0.18
Land Rolling	\$7.25					
High clearance self propelled sprayer	\$7.00					
Boom Sprayer - self-Prop. 60ft.	\$5.45	\$5.25	\$173.72	33.09		0.11
Boom Sprayer - pull type 50ft.	\$5.44	\$2.64	\$67.61	25.61		0.10
Spraying - road ditches / hr	\$52.05					
PLANTING:	Custom \$/Acre ¹	Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵		Est. Fuel Gal./Acre ⁶
Planter - conventional w/ fert 30" corn-soys	\$13.92	\$10.85	\$151.90	14.00		0.34
Planter - soybean 15" rows	\$14.44					
Planter - No Till w/fert (12 row)	\$15.29	\$0.00	\$0.00	12.00		0.65
Planter - Minimal Till (12 row)	\$15.38	\$13.60	\$173.13	12.73		0.53
Planter - soybean 15" rows	\$14.98					
GPS mapping addition to planting	\$2.20	\$2.20				
Drill Soybeans Conventional	\$13.47					
Drill - No Till (15 ft.)	\$14.66	\$18.70	\$118.93	6.36		0.81
Drill - No Till - drill only no tractor	\$10.00					
Drill press wheels - (20 ft)	\$12.91	\$11.76	\$99.72	8.48		0.64
Grain drill - only	\$10.25					
Pest Control - scouting	\$4.50					
SUGAR BEETS:	Custom \$/Acre ¹	Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵		Est. Fuel Gal./Acre ⁶
Sugar Beets - Planting (12 row)	\$19.58	\$28.79	\$287.90	10.00		0.65
Sugar Beet Cultivation	\$13.00	\$14.44	\$80.86	5.60		0.81
Sugar Beet Topper (6 rows)	\$12.50	\$15.41	\$82.14	5.33		0.58
Sugar Beet Harvester (6 rows)	\$75.00	\$78.97	\$239.28	3.03		2.24
Sugar Beet Cart (20 ton)	\$25.00	\$30.19	\$156.99	5.20		1.80
HARVESTING:	Custom \$/Acre ¹	Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵		Est. Fuel Gal./Acre ⁶
Combine - (Corn - 8 row head)	\$28.20	\$32.23	\$135.37	4.20		1.93
Combine - stalk chopper head	\$33.45					
Combine Small grains (20 ft head)	\$24.63	\$28.27	\$191.95	6.79		1.31
Combine Soybeans (25 ft. head)	\$27.48	\$27.90	\$149.27	5.35		2.02
Combine Soybeans - air reel	\$29.75					
Combine, cart, haul to storage - Corr.	\$34.08					
Combine, cart, haul to storage - Soybeans	\$31.47					
GPS mapping addition to harvesting	\$2.20	\$2.20				
Picker 2 row - Ear Corn + 3 wagons	\$28.58					
Combine Field Beans (belt pickup)	\$29.80	\$30.74	\$115.28	3.75		3.40
Pulling Dry Beans (knife 6 row)	\$9.00	\$9.94	\$86.78	8.73		0.66

HARVESTING:	Custom \$/Acre ¹	Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Pulling Dry Beans (rod 6 row)	\$8.00	\$8.71	\$76.04	8.73	0.66
Dry Bean - windrowing (6 row)	\$9.50	\$13.80	\$120.47	8.73	0.66
Grain Cart - corn / acre	\$6.35				
Chopping Forage - Pull type (2 row corn head,	\$3.00-\$4.50 per Ton	\$55.21	\$76.19	1.38	3.35
Chopping Forage - w/kernel processor	\$4.25-\$4.75 per Ton				
Chopping Forage - Pull type Pickup head - 12ft	\$5.72 per Ton	\$37.39	\$152.18	4.07	1.86
Chopping Forage - Self-propelled (3 row corn head,	\$4.50- \$6.00 per Ton	\$54.33	\$74.98	1.38	3.35
Silo Filling - Tower silo: 1 Tractor, 1 Chopper & Driver, 2 Wagons	\$6.50-\$7.50 per Ton				
Bunker Filling: Chopper and 3 forage wagons or 2 trucks & packer	\$7.50 \$8.50 per Ton				
Silage Bagging per ft. (9 ft diameter)	\$4.65 per ft.				
Mowing	\$11.83				
Raking - Hay 9ft.	\$5.28	\$6.00	\$20.94	3.49	0.50
Tedding	\$6.68				
Windrowing - hay or straw	\$12.15	\$15.04	\$52.49	3.49	0.50
Mower - Conditioner Pull-type (9 ft.)	\$13.37	\$13.17	\$57.82	4.39	0.40
Mower - Conditioner - Self Propelled (16 ft)	\$16.75	\$22.18	\$172.12	7.76	0.40
Mower - Conditioner - Rotary (12 ft)	\$10.50	\$8.51	\$66.04	7.76	0.40
Small Square Baling Hay	\$0.66 per bale	\$12.58	\$44.03	3.50	0.75
Straw	\$0.57 per bale				
Mow, Rake, Baler & Handle - small sqr.	\$2.00- \$3.00 per bale				
Baler, Rake & Handle - Lrg Round	\$10.50-\$13.50 per bale				
Complete Hay harvesting takes % of crop per bale	52%				
Baling Round - 600-800 # per bale	\$9.00	\$7.63	\$20.98	2.75	1.00
Baling Round - 1200 - 1500 #	\$10.44 per bale	\$8.27	\$25.14	3.04	0.77
Baler 1000# Round / with wrapper	\$10-\$12.50 per bale	\$8.52	\$25.65	3.01	0.88
Baling - 1500 # - Lrg. Round-stalks/straw	\$11.40 per bale	\$12.25	\$37.24	3.04	1.00
Baling - 1500 # - Lrg. Round-stalks/straw-with wrap	\$13.40 per bale	\$0.25	\$0.76	3.04	1.00
Baling - Lrg Sqr. Hay 4x3x6	\$10.50-\$12.75 per bale	\$11.85	\$137.93	11.64	0.49
Baling - Lrg Sqr. Hay 4x3x8	\$12-\$13.50 per bale				
FERTILIZER:	Custom \$/Acre ¹	Total Machine Cost/ Acre ³	Machine Rate per Hour ⁴	Acres/Hr. ⁵	Est. Fuel Gal./Acre ⁶
Fertilizer Dry Bulk: Spreading	\$4.96				
Lime application	\$6.25				
Fertilizer - Liquid-Knifed In	\$10.45				
Liquid - Sprayed:	\$5.95				
Fertilizer - Anhydrous: 21 ft.	\$10.32				
Fertilizer - Anhydrous NoTill 32 ft.	\$11.24				
GPS mapping addition to fertilization	\$2.20	\$2.20			
Manure Hauling-semi-solid - Load&Spread / hr.	\$75.69 per hr				
Liquid Manure Injected Spreader / 1000 gal.	\$11.95 per 1000 gal.				
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.)	\$9.00 per 1000 gal.				
Manure Pump, Hauling, Injecting - 1000 gal. liquid (9500 gallon cap.)	\$12.50 per 1000 gal.				
Bobcat/Skid Loader / day	\$75 to \$130 per day				
Ditch Mowing	\$57 per hour				
Brush Hogging	\$60 to \$70 per hour				
Grain Drying - continuous flow / point / bu.	\$0.046/pt./bu.				
Grain Drying - inbin dryer /point/bu.	\$0.052/pt/bu.				
Grain Auger / bu.	\$0.050 per bu.				
Grain Storage / mo.	\$0.032/bu./mo.				
Grain Storage /yr	\$ 0.164 per bu.				
Grain Haul - per bu. - field to farmstead	\$0.09 /up to10 mi / bu.				
Rock picking	\$11.70				
Custom Farming - Corn	\$100 to \$122.55	(all machine operations for growing & harvest)			
Custom Farming - Soybeans	\$89 to \$122.62	(all machine operations for growing & harvest)			
Custom Farming - Sm Grains	\$79 to \$101.21	(all machine operations for growing & harvest)			

Fuel cost is calculated by adding fuel, oil and lube calculated by adding 10% to the power fuel cost \$2.56 Diesel Price ==> **\$2.82** ** base fuel & lube price used

1 Custom \$ per acre: Represents the rate obtained from surveys of actual farm data surveys for 2009 & 2010 from Universities listed below to do this type of machine work for another farm on a general basis. Higher or lower rates apply in each situation depending on crop conditions soil conditions, size of fields and their locations. These numbers include cost for the machine, power un & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above.

3 Total Machine Cost/Acre: Includes tractor, fuel cost**, lubricants, repairs, maintenance, labor and overhead costs including depreciation. This could be considered as an estimate of the ownership cost and operation of this machine on a per acre basis. No profit or return to management, which would be necessary for on going enterprises, were included in this number. Values are based on "Farm Machinery Economic Cost Estimates for 2010", University of Minnesota.

4 Machine Rate per Hour: This number takes the Total Machine Cost per Acre and factors in the estimated Acres per Hour to give a value that represents an estimate of the hourly operation and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2010. If the machine is run at full capacity (or engine clock hours) this per acre rate should be the custom work value generated.

5 Acres/ Hour: This is an estimate of the acres this machine should average on a per hour basis with normal down time

6 Est. Fuel Gal/ Acre: This is an estimated machine use of fuel consumed to do this activity and is based on a factor of 0.044 gallons of diesel fuel per PTO horsepower per hour on an average. Your individual machine's fuel use may vary from this number.

7 Labor cost: Charged for this table at a rate of \$14.00 per hour unskilled tasks and \$17.50 per hour for skilled labor (planter, sprayer, harvester).

Costs were developed as an adjusted estimate of common rates being used by farms in this area to cover their cost of operation. The references listed below were used collectively to build the summary information listed above:

- Michigan State University Extension - E-2131 *Custom Work Rates in Michigan - 10/2002* at <http://www.aec.msu.edu/agecon/aecreports/aec613.pdf>
- University of Minnesota - *Machinery Economic Cost Estimates for 2010* © --2010 at <http://www.apec.umn.edu/faculty/wlazarus/documents/machdata.pdf>
- Iowa State University - *2010 Iowa Farm Custom Rate Survey -FM1698* at <http://www.extension.iastate.edu/publications/fm1698.pdf>
- The Ohio State University - *Ohio Farm Custom Rates*©-2008 at <http://lagvanwert.files.wordpress.com/2010/06/32543328-oam-custom-rates-1.pdf>
- University of Illinois - *Machinery Cost Estimates*© 4-2010 at <http://www.farmdoc.illinois.edu/manage/machinery/machinery%20summary%202010.pdf>
- University of Nebraska Lincoln - *2010 Nebraska Farm Custom Rates* at <http://www.agecon.unl.edu/resource/2010Part1.pdf>
- Kansas State Univeristy - *2009 Kansas Farm Custom Rates* at http://www.nass.usda.gov/Statistics_by_State/Kansas/Publications/Custom_Rates/custom09.pdf

* This report is a summary of information extracted from various sources. Your actual cost may vary greatly from the numbers presented. It is recommended that you calculate your own cost and economic returns necessary for the operation of machinery and equipment on your individual farm.

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Major shifts in power fuel cost during the past few years has had an impact on and has changed the cost of machine operational cost.

As a thumb rule it is estimated that each \$1.00 increase in fuel cost will increase most machine operations by an additional 15%.

HOW TO FIGURE YOUR MACHINE WORK RATES

If you are hiring or doing custom work, the following will help you determine the custom rate. Custom rates are based on tradition or usual rates set in the community, the bargaining positions of both parties (i.e., availability of machinery services and demand for machinery services in your local area) and cost of operating the machines on your farm.

Cost of ownership and operation can be determined as follows:

Ownership cost per unit (e.g., acre, bushel, ton, hour) using the DIRT 5:

1. Depreciation: $\frac{\text{original cost} - \text{salvage value}}{\text{years of use}}$		\$	
2. Interest: $\text{interest rate} \times \text{AIV}^a$		\$	
3. Repairs: estimated 2 to 5 % of original cost		\$	
4. Taxes: (0 in Michigan -i.e., no taxes on personal property used in agriculture)		\$	
5. Insurance: (estimated 0.5% x AIV for insurance premium,		\$	
6. Total ownership cost per year (add lines 1 thru 5)		\$	
A. Ownership cost per unit: $\text{total ownership cost} \div \text{estimated annual use (acre, hour, bushel, ton)}$	(A)	\$	

Operating Cost per (acre, hour, bushel, ton)

1. Tractor: fuel (gallon fuel per unit x price/gallon) x 1.15 ^b		\$	
2. Machine: gas or fuel gallons per unit x 1.15^b		\$	
3. Labor: hours per unit x wage rate (if labor wage unit is per acre, bushel or ton multiply this wage by acres bushels or tons per hour to determine wage/hour)		\$	
B. Total operating cost per unit	(B)	\$	
C. Total ownership and operating cost per unit	(A+B)	\$	
D. Desired profit margin and / or risk premium	%		
E. Custom Rate (per acre, hour, bushel, ton) $\text{Line C} \times [1 + (\text{Line D}/100)]$		\$	

a Average investment value (AIV) = (original cost basis = salvage value) ÷ 2.
b The addition of 15 percent above fuel cost is for oil & lube. maintenance.

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ASGROW / DEKALB

Monsanto Company
800 N. Lindbergh Blvd.
St. Louis, MO 63167
www.monsanto.com

CROPLAN

Croplan Genetics
P.O. Box 64281
St. Paul, MN 55164-5324
www.croplangenetics.com

D.F. SEEDS

D.F. Seeds, Inc.
905 S. Jackson St.
Dansville, MI 48819
www.dfseeds.com

DAIRYLAND

Dairyland Seed Company
P.O. Box 958
West Bend, WI 53095
www.dairylandseed.com

DYNA-GRO

Crop Production Services
443 Allenby Drive
Marysville, OH 43040
www.dyna-groseed.com

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G2 Genetics
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www.greatlakeshybrids.com

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Reynolds, IN 47980
www.heritageseeds.com

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Grand Forks, ND 58203
www.hylandseeds.com

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Inc.
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Marlette, MI 48453
www.michiganag.com

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Masters Choice Seed
3010 St. Rt. 146 E
Anna, IL 62906
www.seedcorn.com

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Indianapolis, IN 46268
www.mycogen.com

NK BRAND

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7500 Olsen Memorial Hwy
Golden valley, MN 55427
www.nk.com

NuTech

Nutech Seed, LLC
36131 Highway 69
Forest City, IA 50436
www.yieldleader.com

PIONEER

Pioneer Hi-Bred
International, Inc.
151 St Andrews Court,
Suite 910
Mankato, MN 56001
www.pioneer.com

RUPP

Rupp Seeds, Inc.
17919 Co. Rd. B
Wauseon, OH 43567
www.ruppseeds.com

ZEELAND

Zeeland Farm Services, Inc.
2525 84th Avenue, Zeeland,
MI 49464
www.zfsinc.com

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