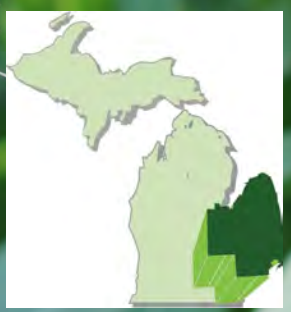
TARE
Thumb Ag Research & Education
2014 Field Trials



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Introduction

2014 TARE Plot Report

This report represents the tenth year of a multi-county strategy for evaluating corn hybrids and soybean varieties as well as agronomic practices. 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, or rainfall. An LSD at the 0.05, 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!

2014 MSU Extension Greater Thumb Area Field Crops Team

Bob Battel, Extension Educator, Corn and Soybeans

Phil Kaatz, Extension Educator, Forages & Field Crops

Martin Nagelkirk, Extension Educator, Wheat

Jim Vincent, Project Technician

Chad Alexander, Assistant Technician

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TARE
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Farm Cooperators:

Name	City	County	Planting Date	Harvest Date
Corn				
Rich D'Arcy	Kingston	Sanilac	5-20-14	11-07-14
Don Koning	Capac	St. Clair	5-25-14	11-10-14
Don Koth	Filion	Huron	5-28-14	11-11-14
Greg Wagner	Reese	Tuscola	5-10-14	11-14-14
Randy & David Reibling	Elkton	Huron	5-29-14	11-16-14
Ken Landsburg	Sandusky	Sanilac	5-24-14	11-17/24-14
Soybeans				
Steve Kalbfleisch	Brown City	St. Clair	6-02-14	11-01-14
Randy & David Reibling	Elkton	Huron	5-30-14	11-03-14
Rob Foster	Fairgrove	Tuscola	6-01-14	11-04-14
Ken Landsburg	Sandusky	Sanilac	6-04-14	11-05-14
Compost Trial				
Steve Listwak	North Branch	Lapeer	5/20/14	10/27/14
Gordon Spencer	Imlay City	Lapeer	6/04/14	10/24/14
Ryan Schweihofer	China	St. Clair	5/27/14	11/21/14
Wheat				
McConnachie Farms	Deckerville	Sanilac	10-03-13	07-24-14

TARE Committee Members:

Seth Broilat	Huron
Tom Durand	Sanilac
Jay Ferguson	St. Clair
Matt Frostic	Sanilac
Jason Haag	Tuscola
Mike Houghtaling	Saginaw
Bill Hunt	Genesee
Jeff Krohn	Huron
Dave Rupprecht	Tuscola

Agribusiness Representatives:	Company:
John Kohr	Monsanto
Dale Kundinger	CPS
Chuck Kunisch	MAC
Jeff Reinbold	Great Lakes Hybrids

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Pigeon/Bad Axe

	Precipitation				GDD			
	2014	2013	2012	Normal	2014	2013	2012	Normal
May	3.16	5.31	1.01	2.92	303	357	351	291
June	2.72	1.67	1.9	2.91	525	462	548	467
July	4.09	3.54	1.27	3.04	546	601	699	601
August	3.97	1.94	1.86	3.68	396	519	578	551
September	3.24	1.63	1.57	3.82	348	347	334	360
Total	17.18	14.09	7.61	16.37	2,118	2,286	2,510	2,270
	+4.9 %				-6.7 %			

Sandusky

	Precipitation				GDD			
	2014	2013	2012	Normal	2014	2013	2012	Normal
May	3.61	3.44	3.31	2.57	282	365	337	317
June	2.40	4.91	0.98	2.81	519	479	547	486
July	4.06	3.66	2.39	2.71	525	616	722	622
August	3.55	2.24	2.81	2.86	353	541	593	575
September	3.96	0.87	4.1	4.1	310	378	342	377
Total	17.58	15.12	13.59	15.05	1,989	2,379	2,541	2,377
	+16.8 %				-16.3 %			

Fairgrove/Caro

	Precipitation				GDD			
	2014	2013	2012	Normal	2014	2013	2012	Normal
May	3.15	2.99	4.31	2.86	340	402	360	353
June	2.87	1.16	1.81	3.3	553	503	552	519
July	4.26	2.07	3.65	2.75	524	609	780	644
August	4.54	1.39	4.34	3.26	549	549	589	594
September	2.89	1.22	1.45	4.22	371	403	356	402
Total	17.71	8.83	15.56	16.39	2,337	2,465	2,637	2,512
	+8.1 %				-7.0 %			

Emmett

	Precipitation				GDD			
	2014	2013	2012	Normal	2014	2013	2012	Normal
May	2.44	1.48	2.36	3.22	345	380	371	294
June	1.79	2.97	1.63	3.73	538	480	576	519
July	3.30	2.85	2.67	2.61	541	633	752	663
August	5.06	2.99	2.02	2.74	576	557	601	604
September	2.64	1.48	0.06	2.56	386	387	371	380
Total	15.23	11.77	8.74	14.85	2,386	2,437	2,671	2,460
	+2.6 %				-3.0 %			

Richville

	Precipitation				GDD			
	2014	2013	2012	Normal	2014	2013	2012	Normal
May	3.06	3.43	3.92	2.35	327	409	377	342
June	2.74	1.73	1.1	2.89	553	502	574	525
July	4.17	2.03	3.62	2.62	506	617	773	633
August	3.90	1.85	4.03	2.7	546	537	566	591
September	3.03	0.58	1.6	2.66	356	383	342	416
Total	16.90	9.62	14.27	13.22	2,288	2,449	2,632	2,507
	+27.8 %				-8.7 %			

MSU Enviro-weather Summary of Precipitation and Growing Degree Days 2014

http://enviroweather.msu.edu

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

[2]"Normal" is the average precipitation from 1971 –2000 and is based on data collected at Bad Axe, Caro and Sandusky.

Percent change based on normal for each location.

Corn Studies Introduction

Corn is established in 90 foot long by 15 foot wide plots. A planter modified for research is used for establishment. It plants six-30 inch wide rows. Plots are planted perpendicular to the tile.

Corn is harvested with a 2144 Case IH combine with an attached HarvestMaster weigh system that records weight, moisture and test weight. The center 10 feet (four rows) is harvested for data.

The target planted population was 34,000 seeds per acre. Corn population across all plots was assessed about a month after planting. Plant stands at that time were 30,600 plants per acre, or about 89.9% of target population. Plots are established in a randomized complete block design (RCB) with four replications.

Studies included 85-94 RM hybrids, 95-99 RM hybrids, 100-105 RM hybrids (not planted at the Filion site), nitrogen rates (Filion site), fungicide (Elkton and Kingston sites).

Planting was delayed by wet spring weather, and after planting began, further delays followed. The six plots went in over a 20 day window. Likewise, harvest was delayed by a cool summer, and wet corn. The Sandusky site had flooding in the 100-105 RM trials in addition to the harvest being compromised by snow and cold weather resulting in several studies being dropped. The Capac site had unreliable data sets in the 100-105 RM trials due to soil variations resulting in the study also being dropped.

In the results, a number of abbreviations were used under the Seed Treatment category. Refer to the following table for the full name of abbreviations.

Abbreviation	Seed Treatment
ACC	Acceleron
ACC 250	Acceleron / Poncho 250
ACC 500	Acceleron / Poncho 500
ACC/P500/VO	Acceleron / Poncho 500 / VOTiVO
ACC/VO	Acceleron/VOTiVO
AV CMP 500	Avicta Complete Corn 500
CR 250	Cruiser 250
CRMXX 250	Cruiser Maxx Corn 250
ESC	Escalate (Poncho 1250 / VOTiVO)
P500	Poncho 500
P500/VO	Poncho 500 / VOTiVO
P1250/VO	Poncho 1250/VOTiVO
VO	VOTiVO

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

TARE Thumb Ag Research & Education

Company - Hybrid	RM	Traits	Seed Trt	Average TW	Average MS %	Average Yield	Average Value
Beck's 5131AM	105	RR,Opt Acre Max (Hrclx1)	ESC	56.2	25.2	**207.4**	$543.80
Beck's 5140HR	105	RR,LL,Herculex 1	ESC	55.8	26.9	**204.6**	$543.95
Beck's 5246 HR	105	RR,LL,Herculex 1	ESC	55.7	27.1	**200.8**	$526.14
Channel 202-32STXRIB	104	SS	P500/VO	55.6	27.0	**204.5**	$545.85
Croplan 4975VT3P	102	VT3P,RR2	ACC	55.9	26.2	**201.4**	$537.36
Dairyland DS-3702-9	102	Agrisure 3000GT	CMX250	55.7	26.8	**197.4**	$539.73
Dairyland DS-9303RA	103	SSX	P250	55.6	26.1	**204.2**	$554.43
Dairyland DS-9903RA	104	SS LL RR	CRMX	55.4	26.8	**202.9**	$537.96
Dekalb DKC50-84	100	VT2P	ACC/VO	55.7	26.4	**196.0**	$530.20
Dekalb DKC52-84	102	SS	ACC/VO	55.7	26.8	**196.1**	$525.03
Dekalb DKC53-56	103	SS	ACC/VO	55.8	26.7	**207.3**	$541.53
Dyna-Gro D40SS48	100	Genuity SmartStax	ACC/P500/VO	56.0	26.7	**203.5**	$548.65
Dyna-Gro 42SS42	102	Genuity SmartStax	ACC/P500/VO	55.7	26.4	**201.0**	$545.74
Dyna-Gro 43VC50	103	VT DoublePro	ACC 500	55.5	27.0	**207.7**	$544.41
Golden Harvest G01P52-3011A	101	GT,CB,RW	AV CMP 500	55.6	27.0	**198.6**	$536.61
Great Lakes 5283	102	SmartStax RIB	P500/VO	55.2	27.2	**207.0**	$539.97
Great Lakes 5566	105	SmartStax	P500/VO	55.2	27.2	**206.5**	$546.84
Hyland 8505RA	100	SSX-RA	CRMXX 250	55.5	27.1	**204.9**	$536.87
Hyland 8552RA	103	SSX-RA	CRMXX 250	55.7	26.5	**201.4**	$531.97
Mycogen 2T498	100	SmartStax RA	CRMXX 250	56.1	26.0	194.7	$526.22
Mycogen 2A557	103	SmartStax RA	CRMXX 250	56.5	25.9	**196.4**	$538.18
Mycogen 2D599	105			56.1	26.2	**200.1**	$535.96
NK Brand NK45P-3011A	101	GT,CB,RW	AV CMP 500	55.9	26.1	191.9	$515.91
NuTech/G2 Gen 5H-502	102	HX1/RR2	P500/VO	55.8	26.4	**204.5**	$556.08
NuTech/G2 Gen 5Z-002	102	YGCB/HX1/RR2	P1250/VO	55.9	26.6	**201.1**	$533.17
NuTech/G2 Gen 5F-805	105	YGCB/HX1/RR2	P500/VO	55.6	27.1	**203.5**	$536.23
Rupp xr8414	100	GENSSX	ACC 250	55.4	26.9	**201.2**	$540.43
Rupp xrJ03-31	103	GENSSX	ACC 2150	55.8	26.8	**199.3**	$518.39
Stine R9424 SS	101	SS	ACC	56.2	26.3	193.4	$514.37
Yields adjusted to 15% moisture			Average	55.8	26.6	201.4	$536.97
			High	56.5	27.2	207.7	$556.08
Bolded yields are not statistically different than highest yielding hybrid in column.			Low	55.2	25.2	191.9	$514.37
			CV %			9.7	
			LSD (Bu/A)			15.8	

Averages are based on Kingston, Elkton, and Reese plots. Capac and Sandusky were not reported due to unreliable data sets.

Value = gross value/acre based on $3.25/Bu with drying charges deducted for moisture over 15.0%.

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Corn Hybrid Trial
100-105 Day RM
Glyphosate Resistant
Yield By Location

TARE Thumb Ag Research & Education

Company - Hybrid	RM	Kingston	Capac	Elkton	Reese	Sandusky
Beck's 5131AM	105	**221.8**		**194.7**	205.7	
Beck's 5140HR	105	**220.6**		**190.7**	202.5	
Beck's 5246 HR	105	**223.8**		178.5	200.0	
Channel 202-32STXRIB	104	**215.0**		176.5	**221.9**	
Croplan 4975VT3P	102	200.2		176.3	**227.6**	
Dairyland DS-3702-9	102	191.9		177.5	**223.0**	
Dairyland DS-9303RA	103	**212.8**		179.1	**220.8**	
Dairyland DS-9903RA	104	**218.1**		179.0	**211.6**	
Dekalb DKC50-84	100	194.9		179.7	**213.5**	
Dekalb DKC52-84	102	192.3		180.6	**215.4**	
Dekalb DKC53-56	103	**209.5**		**200.6**	**211.7**	
Dyna-Gro D40SS48	100	195.8		**191.6**	**223.0**	
Dyna-Gro 42SS42	102	205.1		176.1	**221.8**	
Dyna-Gro 43VC50	103	203.6		**197.0**	**222.5**	
Golden Harvest G01P52-3011A	101	199.9		177.8	**218.3**	
Great Lakes 5283	102	**229.8**		180.4	**210.9**	
Great Lakes 5566	105	**216.7**		**190.1**	**212.7**	
Hyland 8505RA	100	**220.5**		184.8	209.3	
Hyland 8552RA	103	206.1		**188.3**	209.8	
Mycogen 2T498	100	205.6		177.5	200.9	
Mycogen 2A557	103	200.3		**187.4**	201.5	
Mycogen 2D599	105	**217.1**		183.5	199.5	
NK Brand NK45P-3011A	101	196.9		177.4	201.5	
NuTech/G2 Gen 5H-502	102	**211.6**		**187.4**	**214.6**	
NuTech/G2 Gen 5Z-002	102	193.1		181.4	**228.8**	
NuTech/G2 Gen 5F-805	105	**217.1**		184.8	208.5	
Rupp xr8414	100	**209.7**		178.3	**215.7**	
Rupp xrJ03-31	103	188.0		**191.2**	**218.6**	
Stine R9424 SS	101	203.3		169.2	207.8	
Yields adjusted to 15.0 % moisture.		207.6		183.4	213.1	
		229.8		200.6	228.8	
		188.0		169.2	199.5	
Bolded yields are not statistically different than highest yielding hybrid in column.	CV %	6.3		4.8	5.1	
	LSD (Bu/A)	21.8		14.6	18.1	

Plot Data Not shown due to unreliable data sets.

Plot Data Not shown due to unreliable data sets.

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

TARE
Thumb Ag Research & Education

Company Hybrid	RM	Traits	Seed Trt	Average TW	Average MS %	Average Yield	Average Value
Beck's 4321AM	99	GT,CB,WBC	AV CMP 500	55.6	26.1	178.2	$488.60
Channel 196-06VT3PRIB	96	SS	P500/VO	56.2	25.3	**183.2**	$509.30
Channel 197-33STXRIB	97	SmartStax RA	CRMXX 250	56.2	25.4	**182.4**	$505.78
Channel 197-68STXRIB	97	SmartStax	CRMXX 250	55.9	25.7	180.5	$498.91
Croplan 3533VT2P	96	VT2P,RR2	ACC	55.9	25.5	180.0	$498.44
Croplan 4099SS/RIB	99	SS,RR2	ACC	55.5	26.3	**182.6**	$499.37
Dekalb DKC45-65	95	SS	ACC/VO	56.1	25.8	**185.9**	$513.66
Dekalb DKC46-20	96	VT3P	ACC/VO	56.1	25.7	**183.8**	$508.08
Dekalb DKC48-12	98	SS	ACC/VO	56.0	25.7	**182.3**	$503.83
Dekalb DKC49-72	99	SS	ACC/VO	56.1	25.6	**183.2**	$506.30
Dyna-Gro D35VC95	95	VT3P	P500/VO	56.1	25.4	**182.6**	$505.12
Dyna-Gro D37SS60	97	SS	P500/VO	56.2	25.3	**190.5**	$528.04
Dyna-Gro D39VP 14	99	VT TriplePro	ACC 500	55.8	25.8	**186.1**	$512.93
Golden Harvest G97X48-3110	97	GT,CB,WBC	AV CMP 500	55.6	26.1	**182.0**	$498.59
Great Lakes 4548	95	YGCB/HX1/RR2	P500/VO	56.1	25.6	**189.9**	$524.48
Great Lakes 4699	96	YGCB/HX1/RR2	P500/VO	56.0	25.7	**187.3**	$517.64
Great Lakes 4879	98	VT3Pro RIB	P500/VO	56.2	25.3	**185.3**	$514.04
Hyland 8380	95	GT/CB/LL/RW	CRMXX 250	55.9	25.6	177.2	$489.69
Hyland 8445RA	99	SSX-RA	CRMXX 250	55.8	25.7	177.3	$489.24
Hyland 8450RA	98			55.7	26.0	181.4	$497.35
Mycogen 2Y479	98	Herculex 1,RR	ESC	55.5	26.4	**184.9**	$503.58
NK Brand NK36A-3220	96	GT,CB,WBC	AV CMP 500	55.8	26.1	181.2	$497.49
NuTech/G2 Gen 5F-198	98	VT DoublePro	ACC 500	56.0	25.6	**187.1**	$518.06
NuTech/G2 Gen 5F-399	99	SmartStax	ACC/P500/VO	56.0	25.7	179.5	$496.00
NuTech/G2 Gen 5Y-196	96	GT,CB,WBC	AV CMP 500	56.0	25.3	**185.7**	$515.16
NuTech/G2 Gen 5Z-295	95	SmartStax RIB	P500/VO	56.1	25.7	181.1	$499.55
Rupp 8xp280				55.7	26.4	175.3	$489.61
Rupp xrD97-56	97	GENVT2Pro	ACC 250	56.0	25.9	**183.1**	$504.30
Rupp xrD99-30	99			55.7	25.9	**182.5**	$501.81
Rupp xrJ97-17	97	GENSSX	ACC 250	56.0	25.9	179.3	$494.02
Stine R9313 VT2Pro RIB	95	YGCB/HX1/RR2	P1250/VO	56.0	25.3	179.8	$490.95
Stine R9417 VT3Pro RIB	98	YGCB/HXT/RR2	P1250/VO	55.8	25.6	180.3	$494.56

Average	182.5	$503.58
Max	190.5	$528.04
Min	190.5	$528.04
CV %	7.7	
LSD (Bu/A)	9.0	

Yields adjusted to 15% moisture

Bolded yields are not statistically different than highest yielding hybrid in column

Value = gross value/acre based on $3.25/Bu with drying charges deducted for moisture over 15.0%.

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Corn Hybrid Trial
95 - 99 Day RM
Glyphosate Resistant
Yield by Location

TARE Thumb Ag Research & Education

		Yield by Location Bu/A					
Company Hybrid	**RM**	**Kingston**	**Capac**	**Elkton**	**Filion**	**Reese**	**Sandusky**
Beck's 4321AM	99	**183.3**	161.5	172.7	178.4	185.6	**187.4**
Channel 196-06VT3PRIB	96	**188.4**	165.9	**201.8**	**190.2**	188.8	164.1
Channel 197-33STXRIB	97	**193.7**	167.9	**187.0**	**187.9**	188.9	169.1
Channel 197-68STXRIB	97	**189.2**	165.4	**192.2**	164.6	**204.3**	167.2
Croplan 3533VT2P	96	**188.0**	172.9	182.7	179.1	183.6	**173.4**
Croplan 4099SS/RIB	99	**197.9**	168.1	**183.8**	**188.7**	**190.2**	166.9
Dekalb DKC45-65	95	**192.8**	**175.6**	**186.9**	**186.7**	**204.7**	168.5
Dekalb DKC46-20	96	**189.0**	166.6	**192.9**	**188.2**	**196.7**	169.0
Dekalb DKC48-12	98	**183.5**	**175.0**	**194.2**	177.6	**192.0**	171.3
Dekalb DKC49-72	99	**183.2**	**177.9**	**186.4**	**192.3**	**189.4**	170.2
Dyna-Gro D35VC95	95	**192.1**	173.1	183.0	**180.4**	**189.4**	**177.6**
Dyna-Gro D37SS60	97	**193.2**	**184.9**	**195.1**	**202.2**	**193.0**	**174.4**
Dyna-Gro D39VP 14	99	**197.6**	**189.1**	183.0	**182.7**	**195.9**	168.2
Golden Harvest G97X48-3110	97	**191.6**	174.4	182.7	169.5	**191.4**	**182.3**
Great Lakes 4548	95	**196.5**	172.9	**196.1**	**196.4**	**196.5**	**180.8**
Great Lakes 4699	96	**189.7**	**180.6**	**200.9**	**182.3**	**192.8**	**177.5**
Great Lakes 4879	98	**181.5**	173.3	**192.8**	**191.5**	**192.3**	**180.4**
Hyland 8380	95	**182.9**	**179.4**	176.4	169.8	177.7	**177.2**
Hyland 8445RA	99	**184.7**	165.3	176.6	170.5	183.4	**183.5**
Hyland 8450RA	98	**189.6**	**179.1**	181.1	170.4	**189.2**	**178.9**
Mycogen 2Y479	98	**189.5**	**186.9**	**183.6**	**186.1**	**190.5**	**172.7**
NK Brand NK36A-3220	96	**182.9**	**174.8**	**190.4**	**181.6**	183.2	**174.6**
NuTech/G2 Gen 5F-198	98	**195.4**	**182.0**	175.3	**186.9**	**203.5**	**179.4**
NuTech/G2 Gen 5F-399	99	**190.5**	172.4	182.7	178.3	183.0	170.2
NuTech/G2 Gen 5Y-196	96	**189.2**	**177.7**	180.6	**184.6**	**195.7**	**186.8**
NuTech/G2 Gen 5Z-295	95	**181.6**	**179.0**	**183.5**	**183.3**	182.9	**176.5**
Rupp 8xp280		**193.2**	**183.6**	182.7	166.7	180.6	170.9
Rupp xrD97-56	97	**181.6**	159.7	**189.4**	**197.7**	188.8	**181.4**
Rupp xrD99-30	99	**188.1**	**177.0**	**196.0**	170.5	**189.1**	**174.3**
Rupp xrJ97-17	97	**187.9**	162.9	**184.2**	165.6	**199.1**	**175.9**
Stine R9313 VT2Pro RIB	95	**196.4**	165.5	**189.3**	157.9	**189.2**	162.6
Stine R9417 VT3Pro RIB	98	**182.8**	157.6	178.7	**191.7**	186.1	**177.1**
Average		189.0	173.4	186.4	181.2	190.5	174.7
Max		197.9	189.1	201.8	202.2	204.7	187.4
Min		181.5	157.6	172.7	157.9	177.7	162.6
CV %		5.7	5.2	5.9	7.4	4.9	5.2
LSD (Bu/A)		17.9	15.1	18.4	22.4	15.6	15.11

Yields adjusted to 15% moisture

Bolded yields are not significantly different than highest yielding hybrid in column.

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

TARE Thumb Ag Research & Education

Company Hybrid	RM	Trait	Seed Trt	Average TW	Average MS %	Average Yield	Average Value
Channel 192-09VT3PRIB	92	VT3P	P500/VO	56.6	24.8	**178.4**	$500.58
Croplan 3399SS/RIB	93	SS,RR2	ACC	56.4	25.0	**178.5**	$498.56
Croplan 3499VT3P	94	VT3P,RR2	ACC	56.4	24.9	**177.0**	$495.50
Dairyland DS-9791RA	91	SSX,RR2	SA1250	56.5	25.0	**175.5**	$489.64
Dekalb DKC43-10	93	VT2P	ACC/VO	56.8	24.4	**177.8**	$500.07
Dyna-Gro D29VC30	89	VT DoublePro	ACC 500	56.8	24.3	**172.0**	$484.52
Dyna-GroD32VC56	92	VT DoublePro	ACC 500	56.6	24.9	**175.9**	$492.27
Golden Harvest G92T43-3220	92	GT,CB,WBC	AV CMP 500	56.7	24.3	**177.1**	$498.78
Great Lakes 3847	88	VT2 RIB	P500/VO	56.9	24.1	**171.6**	$486.00
Great Lakes 4206	92	SmartStax RIB	P500/VO	56.7	24.7	**171.8**	$481.65
Great Lakes 4250	92	SmartStax	P500/VO	56.8	24.3	**175.9**	$496.03
Hyland 8295RA	90	SSX-RA	CRMXX 250	56.4	24.7	**173.6**	$486.21
Hyland 8202RA	91	SSX-RA	CRMXX 250	56.7	24.6	**177.6**	$498.42
Hyland 8315RA	92	SSX-RA	CRMXX 250	56.4	25.0	**176.8**	$493.27
Mycogen 2V357	93	SmartStax RA	CRMXX 250	56.2	25.2	**178.0**	$494.69
Mycogen 2K395	94	SmartStax RA	CRMXX 250	56.1	25.3	**170.1**	$473.19
NK Brand NK29T-3220	92	GT,CB,WBC	AV CMP 500	56.6	24.7	**173.3**	$486.93
NuTech/G2 Gen 5X-894	94	HXT/RR2	P500/VO	56.8	24.4	**173.6**	$488.90
Rupp xrD90-64	90	AgriSure VIP3220	CR 250	56.7	24.7	168.2	$471.64
Rupp xrT94-06	94	GENVT3Pro	ACC 250	56.6	24.7	**175.6**	$492.21
Stine 9207 GTCBLL	90	GTCBLL	ACC	56.7	24.4	**176.3**	$497.10
Stine R9209 VT2Pro RIB	90	VT2Pro	ACC	56.4	25.1	**175.1**	$487.85
			Average	56.6	24.7	175.0	$490.64
Yields adjusted to 15% moisture			Max	56.9	25.3	178.5	$500.58
			Min	56.1	24.1	168.2	$471.64
Bolded yields are not statistically different than highest yielding hybrid in column			CV %			7.4	
			LSD (Bu/A)			8.7	

Value = gross value/acre based on $3.25/Bu with drying charges deducted for moisture over 15.0%.

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Corn Hybrid Trial
85 - 94 Day RM
Glyphosate Resistant
Yield by Location

TARE
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		Yield by Location Bu/A					
Company - Hybrid	**RM**	**Kingston**	**Capac**	**Filion**	**Sandusky**	**Elkton**	**Reese**
Channel 192-09VT3PRIB	92	**178.9**	**168.3**	**182.3**	**168.5**	**170.3**	**202.1**
Croplan 3399SS/RIB	93	**177.7**	**171.2**	**182.5**	**171.0**	**180.1**	**188.6**
Croplan 3499VT3P	94	**176.0**	**179.1**	**174.0**	**170.7**	**172.9**	**189.7**
Dairyland DS-9791RA	91	**172.7**	**172.7**	**180.7**	**169.7**	**168.8**	**188.6**
Dekalb DKC43-10	93	**183.1**	**170.5**	**177.8**	**172.8**	**166.9**	**196.0**
Dyna-Gro D29VC30	89	**179.0**	161.5	**175.2**	163.9	**163.6**	**188.8**
Dyna-GroD32VC56	92	**176.6**	**167.9**	171.1	**173.1**	**174.3**	**192.4**
Golden Harvest G92T43-3220	92	**176.9**	**172.9**	**173.8**	**175.9**	**177.9**	**185.4**
Great Lakes 3847	88	**175.0**	**163.9**	**174.0**	165.5	**165.1**	**185.8**
Great Lakes 4206	92	**168.1**	**171.0**	**174.6**	163.4	**168.7**	**184.8**
Great Lakes 4250	92	**179.8**	162.9	**189.4**	156.9	**169.1**	**197.1**
Hyland 8295RA	90	**172.7**	155.8	**182.0**	**179.6**	**170.6**	**180.8**
Hyland 8202RA	91	**173.2**	162.0	**185.3**	**185.6**	**175.1**	**184.3**
Hyland 8315RA	92	165.7	**170.2**	**175.1**	**184.3**	**179.7**	**185.6**
Mycogen 2V357	93	**176.8**	163.5	**175.4**	**180.5**	**178.4**	**193.4**
Mycogen 2K395	94	**170.6**	**169.1**	165.3	154.8	**173.8**	**187.0**
NK Brand NK29T-3220	92	**179.8**	163.3	**175.8**	**171.5**	**164.8**	**184.5**
NuTech/G2 Gen 5X-894	94	**177.2**	**169.2**	**182.5**	154.5	**173.7**	**184.3**
Rupp xrD90-64	90	**177.5**	155.3	169.2	165.8	**161.7**	**179.4**
Rupp xrT94-06	94	**178.6**	**171.3**	**184.0**	166.2	**162.2**	**191.0**
Stine 9207 GTCBLL	90	**176.3**	**174.9**	168.2	166.7	**167.2**	**204.3**
Stine R9209 VT2Pro RIB	90	**173.6**	162.6	**183.4**	**167.8**	**169.8**	**193.2**
Average		175.7	167.2	177.3	169.5	170.7	189.4
Max		183.1	179.1	189.4	185.6	180.1	204.3
Min		165.7	155.3	165.3	154.5	161.7	179.4
CV %		5.5	5.5	5.4	6.4	6.8	5.7
LSD (Bu/A)		16.3	15.5	16.2	18.3	19.6	18.1

Yields adjusted to 15% moisture

Bolded yields are not statistically different than highest yielding hybrid in column.

Corn Fungicide Study

Purpose:

To compare the effect of two fungicides, sprayed at a vegetative growth stage, and an untreated check on corn yield.

Methods:

Priaxor (8 oz./A) and Stratego YLD (5 oz./A) were sprayed on corn at growth stages V5 (Elkton site) and V6 (Kingston site). Applications were made at 40 psi, and 15 gallons per acre. The applications were made at each site on June 27 and were 28 days, and 37 days after planting at the Elkton and Kingston sites, respectively.

Results:

	Elkton	Kingston	Average
Treatment	**Yield Bu/A**	**Yield Bu/A2**	**Yield Bu/A3**
Priaxor	175.0	174.6	174.8
Stratego	174.5	173.2	173.8
Untreated Check	173.6	173.3	173.4
p Value	0.66	0.84	0.8
	ns	ns	ns

The statistical analysis was conducted on the MSU campus, in cooperation with the Dr. Martin Chilvers Field Crops Pathology Lab. The lab reports *p* Values, rather than CV % and LSD. A *p* Value of greater than 0.05 should be viewed as non-significant. Therefore, there were no significant differences among any treatment at either site, and no significant differences when the data sets were combined.

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Corn Nitrogen Rate Study

TARE Thumb Ag Research & Education

Corn Nitrogen Study

Purpose: To compare the effect of nitrogen fertilizer applied at six rates as a sidedress application on yield in a high yielding environment.

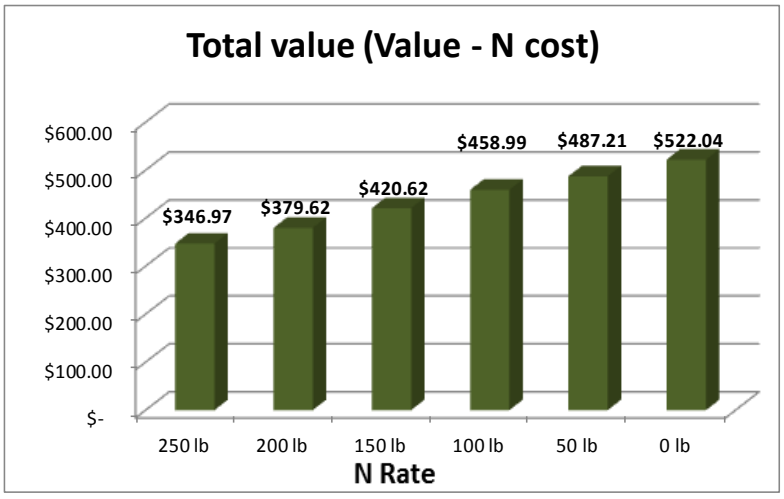
Methods: 28% UAN was applied at six rates – 0, 50, 100, 150, 200, 250 pounds per acre. The application was made as a sidedress application at the V5 growth stage, on June 27.

Pre-Sidedress nitrate samples were pulled prior to the fertilizer application. The results showed that the nitrate level was 30ppm, **giving a nitrogen credit of 180 pounds per acre**.

This study was conducted at the Filion site, a heavy textured soil. No pre-plant nitrogen fertilizer was applied. The previous crop was sugar beets. The average cost of N/lb. applied during the summer was $460/T of 28% UAN.

Results: Results show that only the 0 pound per acre rate yielded significantly less than the other rates. All other nitrogen fertilizer rates yielded statistically similar to the 250 pound per acre rate, which was the highest rate, and the highest yield.

N Rate	MS %	Yield Bu/A		Value	N cost:	Total value (Value - N cost)
250 lb N/A	29.1	211.4	a	$ 551.97	$205.00	$ 346.97
200 lb N/A	28.7	206.6	a	$ 543.62	$164.00	$ 379.62
150 lb N/A	29.0	206.6	a	$ 543.62	$123.00	$ 420.62
100 lb N/A	29.1	202.3	a	$ 540.99	$82.00	$ 458.99
50 lb N/A	28.8	205.6	a	$ 528.21	$41.00	$ 487.21
0 lb N/A	28.8	198.4	b	$ 522.04	$0.00	$ 522.04
Average	28.9	205.2				
CV (%)		5.6				
LSD Bu/A		12.6				



Discussion: Value = gross value/acre based on $3.25/Bu with drying charges deducted for moistures over 15.0%. Total value = value minus the cost of nitrogen ($0.82/lb) applied per treatment.

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Corn Depth of Planting Trial

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Purpose:

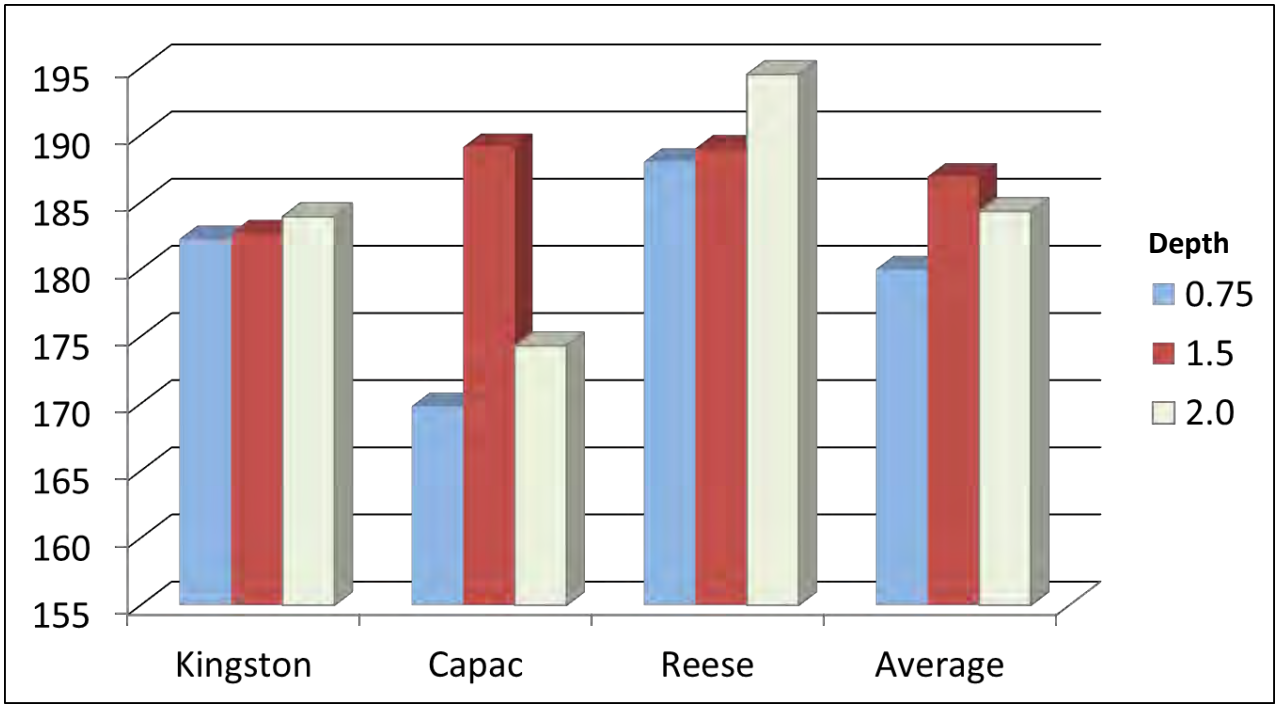
The purpose of this study was to evaluate the effect of planting depth on corn yield.

Methods:

Corn was planted at three depths – 0.75 in. (shallow depth), 1.5 in. (standard depth), and 2.0 in (deep depth) at three locations – Kingston, Capac, Reese. The hybrid Great Lakes 4567VT3PRIB was **used at all three sites.**

Results:

Statistics were not run on these results. However, the standard 1.5 in. depth appears to provide for the greatest yield, and the shallow 0.75 in. depth appears to provide for the least yield. The average yield of the 1.5 in. depth was 2.6 bushels per acre greater than the 2.0 in. depth, and 6.9 bushels per acre greater than the 0.75 depth.



Purpose:

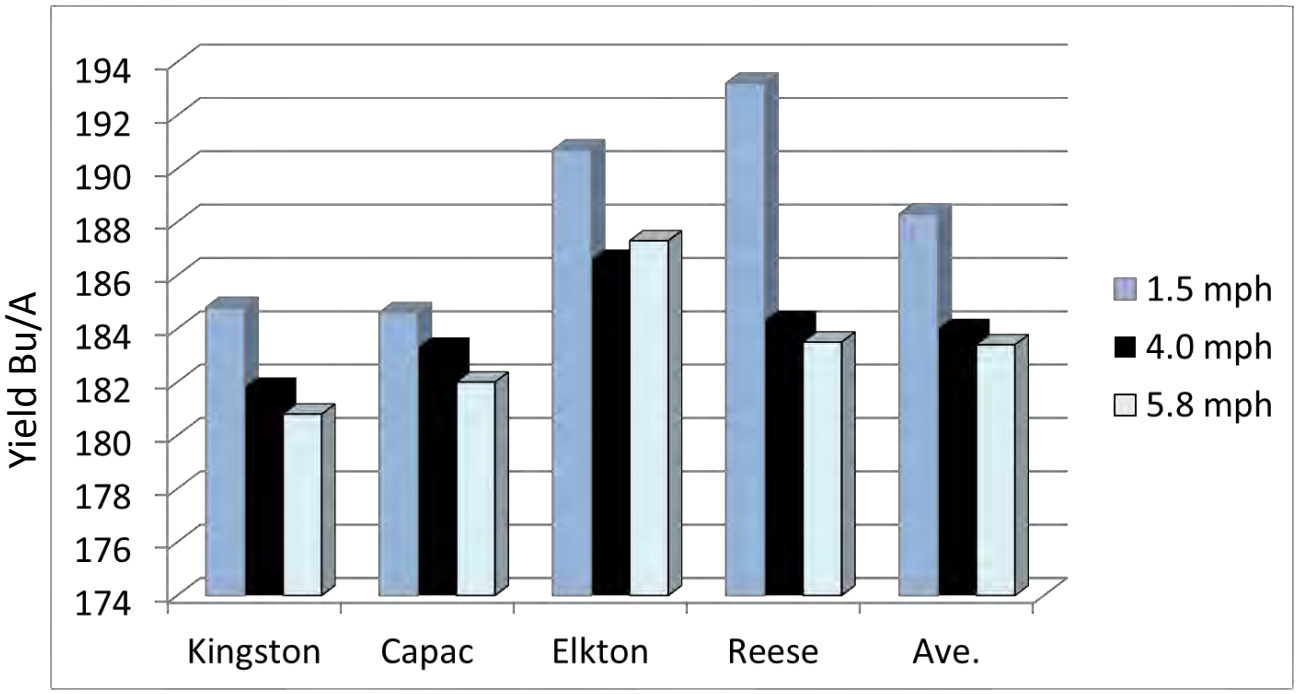
The purpose of this study was to evaluate the effect of planting speed on corn yield.

Methods:

Corn was planted at three speeds – 1.5 mph (slow speed), 4.0 mph (standard speed), and 5.8 mph (fast speed at four locations – Kingston, Capac, Elkton, Reese. Great Lakes Hybrid 4567VT3PRIB was used at all four sites.

Results:

Statistics were not run on these results. However, there appears to be an increasing trend in yield as speeds decrease. The average yield of the 1.5 mph planting was 4.3 bushels per acre greater than the 4.0 mph planting, and 4.9 bushels per acre greater than the 5.8 mph planting.



Corn Seed Treatment Study: Poncho/VOTiVO

Purpose:

The purpose of this study was to compare corn yields of two seed treatments on corn at each location of the TARE Trials. Poncho is a systemic insecticide corn seed treatment for the control of certain insect pests and VOTiVO is a biological seed treatment for protection from soil nematodes. The cost of the additional VOTiVO seed treatment is approximately $6.80/acre.

Current company yield data shows that 60% of the sites have a positive response with the addition of VOTiVO with 40% having very little yield differences. The highest responses have been shown to occur in light textured soils. Differences would be attributed to the amount of insect and soil nematode pressure within any particular field. The TARE sites have historically been planted in locations that are rotated with several crops that would reduce the incidence of insect and nematode pressure on corn.

Method:

The two seed treatments were applied to Great Lakes Hybrid 4879 RR planted within the TARE Trials at each of the location sites and replicated four times. The average of the results were statistically analyzed to determine any significant differences between the Poncho vs Poncho/VOTiVO seed treatments.

Results:

Two of the five plots had a positive response with the addition of VOTiVO. However, when the plots were averaged, there was no significant differences between treatments.

	- - - Yield Bu/A - - -					
Treatment	**Capac**	**Elkton**	**Filion**	**Kingston**	**Reese**	**Average**
Poncho 500/VOTiVO	179.5	255.5	199.6	185.8	211.4	206.4
Poncho 250	181.2	260.6	203.7	182.7	203.0	206.2
					CV (%)	5.7
					LSD (bu/A)	17.6

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Soybean Studies Introduction

Soybeans are established in 75 foot long by 15 foot wide plots. A planter modified for research is used for establishment. It plants six-30 inch wide rows. Plots are planted perpendicular to the tile.

Soybeans are harvested with a 2144 Case IH combine with an attached HarvestMaster weigh system that records weight, moisture and test weight. All six rows are harvested for data.

The target population was 130,000 seeds per acre at four sites. Stand counts were taken in June, and it was determined that plant stands were 125,790, or 96.7% of target population. The Elkton site was planted to 160,000 seeds per acre, and the plant stand was 118,900 plants per acre, or 74.3% of target population. Plots are established in a randomized complete block design (RCB). The Fairgrove and Sandusky sites were replicated four times, and the Elkton and Brown City sites were replicated three times.

Studies include conventional varieties (Elkton site only), Liberty Link (Elkton site only), Group 1.9 and less, Group 2.0-2.2, and Group 2.3 and more. Agronomic studies included Foliar Feed, planted at the Elkton site.

Varieties were scored for white mold severity on a 0-3 scale, where 0 = no infection, 1 = infection only on branches, 2 = infection on the main stem but pod fill was normal, and 3 = infection on the main stem resulting in plant death and poor pod fill. Three plants were inspected in 20 random spots in the center of each plot. The 20 scores were totaled, and divided by 60 (the total if all 20 scores were given a rating of 3) and multiplied by 100 to give a disease severity index (DSI). A DSI of 100 would be given to a plot where all evaluated plants had a rating of 3. A DSI of 0 would be given to a plot where all evaluated plants had a rating of 0.

White mold infected soybean plant.
"Reflections of 2014 soybean crop in Michigan's Thumb."
Photo courtesy of Martin Chilvers

In the results, a number of abbreviations were used under the Seed Treatment category. Refer to the following table for the full name of abbreviations.

Abbreviation	Seed Treatment
ACC	Acceleron
APV	Acceleron/Poncho/VOTiVO
CMT O 400	CMT Opt 400
CMV	Cruiser Maxx/VOTiVO
CRMX	Cruiser Maxx
CRMX/AM/V/CL	CM,AM,Vibrance,Clariva
P/VO	Poncho/VOTiVO
SCE	SmartCote Extra
WAR CX	Warden CX
CRMX V	Cruiser Maxx Vibrance

Michigan Soybean Promotion Committee
www.michigansoybean.org
This project had funds provided by the Michigan Soybean Promotion Committee

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Soybean Variety Trials
Late Maturity 2.3 or More
Glyphosate Resistant
Average of Locations

TARE
Thumb Ag Research & Education

Company Variety	Mat	SCN Source	Average T.W.	Average MS %	Average Bu/A	Average Value	White Mold (DSI)
Asgrow AG2433	2.4	PI88788	58.0	14.5	48.5	$468.42	53.0
Asgrow AG2632	2.6	PI88788	57.8	14.7	**50.2**	$484.37	52.5
Beck's 229NR	2.3	PI88788	58.3	14.1	**52.7**	$510.59	49.7
Beck's 241NR	2.4	PI88788	58.0	14.5	**50.3**	$486.50	47.8
Beck's 278R4	2.7	PI88788	58.0	14.6	**50.8**	$490.93	39.7
Channel 2306R2	2.3	PI88788	58.0	14.4	**52.1**	$504.16	50.2
Channel 2508	2.5	PI88788	58.2	14.3	**53.0**	$512.36	51.7
Croplan R2C2394	2.3	PI88788	58.1	14.4	**51.6**	$499.18	59.5
Dairyland DSR-2612R2Y	2.6	PI88788	58.0	14.6	**52.2**	$505.14	46.7
DF Seeds DF 5244 N R2Y	2.4	PI88788	58.0	14.5	**51.8**	$500.06	63.0
DF Seeds DF 5263 R2Y/STS	2.5	None	57.8	14.7	**51.3**	$495.20	64.9
Dyna-Gro S24RY65	2.4	PI88788	57.8	14.7	**51.6**	$498.67	56.7
Dyna-Gro S25RY44	2.5	PI88788	58.0	14.5	**52.1**	$503.52	56.0
Dyna-Gro S26RS75	2.6	PI88788	57.8	14.8	**50.9**	$491.06	58.3
Great Lakes 2319 R2	2.3	PI88788	58.1	14.4	**50.8**	$490.84	58.6
Great Lakes 2469 R2	2.4	PI88788	57.8	14.7	49.8	$481.24	51.8
Hyland HS 24RY05	2.4	None	58.1	14.3	**53.8**	$520.54	52.9
Hyland 5A255RR2	2.5	PI88788	57.8	14.8	**50.3**	$485.43	45.9
Hyland HS 25RYS47	2.5	PI88788	57.9	14.6	**50.4**	$487.14	65.4
Hyland HS 26RYS16	2.6	PI88788	57.8	14.7	**51.2**	$493.81	50.9
Mycogen 2N263R2	2.4	None	58.2	14.4	**51.3**	$496.66	43.4
NuTech 7233 G2 Genetics	2.3	PI88788	58.1	14.4	**51.9**	$502.06	50.7
NuTech 7240 G2 Genetics	2.4	Peking	58.0	14.6	**50.7**	$489.95	54.7
NuTech 7250 G2 Genetics	2.5	Peking	58.0	14.6	49.6	$479.63	54.5
NuTech 7261 G2 Genetics	2.6	PI88788	57.9	14.6	**52.6**	$508.18	43.0
Rupp rs7245	2.4	PI88788	58.0	14.6	**51.4**	$496.09	59.0
Rupp rs7251	2.5	PI88788	58.0	14.5	**52.8**	$510.75	55.0
Rupp rs7262	2.6	PI88788	58.0	14.6	49.1	$473.64	60.0
Stine 24RE03	2.4	PI88788	57.8	14.8	**52.6**	$507.37	52.2
				Average	51.3	$495.64	53.4
				High	53.8	$520.54	65.4
				Low	48.5	$468.42	39.7
				CV (%)	6.1		
				LSD (Bu/A)	3.9		

Yield adjusted to 13.0 % moisture

Bolded yields are not statistically different than the highest yielding variety in column.

Value = gross value/acre based on $9.75/Bu with discounts of $0.05/point of moisture over 13%.

White Mold Disease Severity Index (DSI) ratings are an average rating and were taken at the Elkton, Fairgrove and Sandusky locations. A "0" rating represents no infection, and a "3" represents infection on the main stem resulting in plant death and or pod fill. See explanation of White Mold DSI on page 16, Soybean Introduction.

Michigan Soybean Promotion Committee
www.michigansoybean.org
This project had funds provided by the Michigan Soybean Promotion Committee

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Soybean Variety Trials
Late Maturity 2.3 or More
Glyphosate Resistant
Yield By Location

TARE
Thumb Ag Research & Education

				Yield By Location Bu/A			
Company Variety	**Mat**	**Trait**	**Seed Trt**	**Brown City**	**Elkton**	**Fair-grove**	**Sandusky**
Asgrow AG2433	2.4	RR2Y	ACC	44.0	**53.4**	47.3	**49.1**
Asgrow AG2632	2.6	RR2Y	ACC	46.1	**52.8**	**52.3**	**49.5**
Beck's 229NR	2.3	RR, SCN	ESC	**52.1**	**54.2**	**56.5**	48.0
Beck's 241NR	2.4	RR, SCN	ESC	**47.1**	52.1	**54.1**	48.0
Beck's 278R4	2.7	RR, SCN	ESC	**48.1**	**55.2**	**50.5**	**49.6**
Channel 2306R2	2.3	R2	ACC	**50.6**	**54.3**	**54.9**	**48.8**
Channel 2508	2.5	R2	ACC	**53.5**	**54.8**	**53.0**	**50.7**
Croplan R2C2394	2.3	RR2/SCN	WAR CX	**49.2**	**53.7**	**53.1**	**50.6**
Dairyland DSR-2612R2Y	2.6	R2Y,Rpslk	CMT O 400	**51.0**	**54.5**	**52.7**	**50.7**
DF Seeds DF 5244 N R2Y	2.4	R2Y	APV	**51.6**	**56.0**	48.2	**51.3**
DF Seeds DF 5263 R2Y/STS	2.5	STS R2Y	APV	**49.7**	**53.6**	**54.9**	46.9
Dyna-Gro S24RY65	2.4	RR2Y	ACC	**52.1**	**53.1**	**51.8**	**49.6**
Dyna-Gro S25RY44	2.5	RR2Y	ACC	**49.1**	**52.4**	**54.7**	**52.1**
Dyna-Gro S26RS75	2.6	RR2YSTS	ACC	**52.1**	**52.5**	**51.2**	47.8
Great Lakes 2319 R2	2.3	R2	P/VO	46.9	**54.1**	**53.3**	**48.7**
Great Lakes 2469 R2	2.4	R2	P/VO	**47.5**	**52.4**	46.1	**53.4**
Hyland HS 24RY05	2.4	RR2Y	CMV	**53.8**	**56.8**	**53.5**	**51.2**
Hyland 5A255RR2	2.5	RR2Y/SCN	CMV	**48.8**	**52.3**	**50.4**	**49.7**
Hyland HS 25RYS47	2.5	RR2Y/SCN	CMV	**47.0**	**54.8**	**52.0**	48.1
Hyland HS 26RYS16	2.6	RR2Y/SCN	CMV	**51.3**	51.9	**52.0**	**49.4**
Mycogen 2N263R2	2.4	RR2	CRMX	**50.0**	52.2	**50.9**	**52.2**
NuTech 7233 G2 Genetics	2.3	RR1	SCE	**49.3**	**56.2**	**51.1**	**51.1**
NuTech 7240 G2 Genetics	2.4	RR1	SCE	**48.5**	51.8	**50.8**	**51.5**
NuTech 7250 G2 Genetics	2.5	RR1	SCE	45.1	**53.3**	**51.8**	48.4
NuTech 7261 G2 Genetics	2.6	RR1	SCE	**51.9**	**57.0**	**52.5**	**49.0**
Rupp rs7245	2.4	RR2Y	CRMX	**52.5**	**54.5**	48.0	**50.5**
Rupp rs7251	2.5	RR2Y	CRMX	**51.2**	**53.1**	**54.8**	**52.2**
Rupp rs7262	2.6	RR2Y	CRMX	44.6	**52.3**	**50.8**	**48.6**
Stine 24RE03	2.4	RR2		**53.0**	**53.1**	**52.7**	**51.5**
Yield adjusted to 13.0% moisture			Average	49.6	53.7	51.9	49.9
			High	53.8	57.0	56.5	53.4
			Low	44.0	51.8	46.1	46.9
Bolded yields are not statistically different than the highest yielding variety in column.			CV (%)	7.4	4.5	7.7	5.8
			LSD (Bu/A)	7.2	4.7	6.7	4.8

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Soybean Variety Trials
Mid Maturity 2.0 - 2.2
Glyphosate Resistant
Average of Locations

TARE
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Variety	Mat	SCN Source	Average T.W.	Average MS %	Average Bu/A	Average Value	White Mold (DSI)
Asgrow AG2031	2.0	PI88788	57.7	14.8	51.9	$500.40	44.4
Asgrow AG2035	2.0	PI88788	58.0	14.3	**52.9**	$512.33	39.6
Asgrow AG2232	2.2	PI88788	58.3	14.2	51.5	$498.55	43.0
Channel 2108	2.1	PI88788	58.0	14.5	**55.2**	$533.16	28.7
Channel 2105R2	2.1	PI88788	58.4	14.1	**52.9**	$512.45	36.5
Croplan R2C2072	2.0	PI88788	58.3	14.1	**55.0**	$532.14	32.9
Croplan R2C2124	2.1	PI88788	58.2	14.3	**53.1**	$514.05	47.5
Dairyland DSR-2105R2Y	2.1	PI88788	58.2	14.2	**53.9**	$521.35	45.0
DF Seeds DF 5213 N R2Y	2.1	Peking	58.1	14.4	51.5	$497.81	38.2
Dyna-Gro S20RY45	2.0	PI88788	57.8	14.6	51.7	$499.15	41.6
Dyna-Gro S20RY94	2.0	PI88788	58.0	14.5	**55.2**	$534.05	39.5
Dyna-Gro S22RY64	2.2	PI88788	57.8	14.6	50.5	$487.75	43.1
Great Lakes 2019 R2	2.0	PI88788	57.7	14.7	50.7	$489.91	46.6
Great Lakes 2039 R2	2.0	PI88788	58.1	14.3	**52.6**	$509.48	38.9
Great Lakes 2289 R2	2.2	PI88788	57.8	14.7	51.7	$498.39	42.9
Hyland HS 22RYS03	2.2	PI88788	57.9	14.5	**52.9**	$510.87	45.4
Mycogen 5N206R2	2.0	PI88788	57.6	14.9	**53.3**	$513.86	41.3
Mycogen 5N223R2	2.2	PI88788	58.1	14.3	**53.2**	$514.17	41.2
NK Brand S20-T6	2.0	PI88788	58.1	14.3	**54.0**	$506.32	41.0
NK Brand S22-S1	2.2	PI88788	58.3	14.2	**53.8**	$517.76	42.3
NuTech 7204R2 G2 Gen	2.0	PI88788	58.0	14.5	**52.3**	$506.54	37.3
NuTech 7216 G2 Gen	2.1	PI88788	58.1	14.4	**53.4**	$512.25	28.1
Rupp rs7222	2.2	PI88788	58.0	14.5	**52.4**	$495.25	44.2
Stine 20RD20	2.0	PI88788	58.1	14.3	**53.0**	$521.96	45.5
Stine 22RD00	2.2	PI88788	58.3	14.1	51.3	$521.33	39.3
Yields adjusted to 13.0% moisture				Average	52.8	$510.45	40.6
				High	55.2	$534.05	47.5
Bolded yields are not statistically different than the highest yielding variety in column.				Low	50.5	$487.75	28.1
				CV (%)	6.3		
				LSD (Bu/A)	3.1		

Value = gross value/acre based on $ 9.75/Bu with discounts of $0.05/point of moisture over 13%.

White Mold Disease Severity Index (DSI) ratings are an average rating and were taken at the Elkton, Fairgrove and Sandusky locations. A “0” rating represents no infection, and a “3” represents infection on the main stem resulting in plant death and poor pod fill. See explanation of White Mold DSI on page 16, Soybean Introduction.

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Soybean Variety Trials
Mid Maturity 2.0 - 2.2
Glyphosate Resistant
Yield By Location

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				Yield by Location Bu/A			
Company Variety	**Mat**	**Trait**	**Seed Trt**	**Brown City**	**Elkton**	**Fair-grove**	**Sandusky**
Asgrow AG2031	2.0	RR2Y	ACC	45.2	51.4	**55.5**	**55.3**
Asgrow AG2035	2.0	RR2Y	ACC	44.0	**56.0**	**55.6**	**56.1**
Asgrow AG2232	2.2	RR2Y	ACC	44.2	53.5	52.1	**56.3**
Channel 2108	2.1	R2	ACC	**53.8**	**59.8**	**57.0**	50.1
Channel 2105R2	2.1	R2	ACC	**50.0**	54.7	52.5	**54.4**
Croplan R2C2072	2.0	RR2/SCN	WAR CX	**46.7**	**60.9**	**56.2**	**56.1**
Croplan R2C2124	2.1	RR2/SCN	WAR CX	**47.2**	55.3	53.9	**56.1**
Dairyland DSR-2105R2Y	2.1	R2Y,Rpslk	CMT O 400	**47.5**	**57.4**	**57.6**	53.1
DF Seeds DF 5213 N R2Y	2.1	R2Y	APV	44.1	53.0	**56.1**	52.8
Dyna-Gro S20RY45	2.0	RR2Y	ACC	43.6	**55.8**	**55.2**	52.1
Dyna-Gro S20RY94	2.0	RR2Y	ACC	**51.7**	53.7	**59.8**	**55.8**
Dyna-Gro S22RY64	2.2	RR2Y	ACC	42.0	52.6	**59.4**	48.1
Great Lakes 2019 R2	2.0	R2	P/VO	**48.1**	53.0	53.5	48.4
Great Lakes 2039 R2	2.0	R2	P/VO	**50.2**	55.1	51.6	**53.5**
Great Lakes 2289 R2	2.2	R2	P/VO	43.0	55.3	**56.1**	52.2
Hyland HS 22RYS03	2.2	RR2Y/SCN	CMV	44.4	**57.5**	**57.6**	52.0
Mycogen 5N206R2	2.0	RR2	CRMX	**49.4**	**55.9**	53.3	**54.5**
Mycogen 5N223R2	2.2	RR2	CRMX	**48.5**	52.0	**60.7**	51.4
NK Brand S20-T6	2.0	RR2Y	CRMX/AM/V/CL	44.8	**60.3**	**55.5**	**55.3**
NK Brand S22-S1	2.2	RR2Y	CRMX/AM/V/CL	**47.3**	53.6	**59.7**	**54.7**
NuTech 7204R2 G2 Genetics	2.0	RR2 Yield	SCE	**48.8**	53.4	**57.2**	49.9
NuTech 7216 G2 Genetics	2.1	RR1	SCE	**49.4**	**55.4**	**57.2**	51.8
Rupp rs7222	2.2	RR2Y	CRMX	46.0	54.2	**57.8**	51.7
Stine 20RD20	2.0	RR2	None	42.5	**57.7**	52.8	**59.0**
Stine 22RD00	2.2	RR2	None	40.3	52.7	**60.6**	51.5
			Average	46.5	55.2	56.2	53.3
Yields adjusted to 13.0% moisture			High	53.8	60.9	60.7	59.0
			Low	40.3	51.4	51.6	48.1
			CV (%)	8.1	5.1	7.1	6.1
			LSD (Bu/A)	7.4	5.5	6.7	5.5

Bolded yields are not statistically different than the highest yielding variety in the column.

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Soybean Variety Trials
Early Maturity 1.9 or Less
Glyphosate Resistant
Average of Locations

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Company Variety	Mat	SCN Source	Average T.W.	Average MS %	Average Bu/A	Average Value	White Mold (DSI)
Asgrow AG1832	1.8	PI88788	58.1	14.4	**50.7**	$490.17	36.9
Asgrow AG1835	1.8	PI88788	58.2	14.3	**49.1**	$475.74	36.0
Asgrow AG1935	1.9	PI88788	58.1	14.5	**51.8**	$500.59	43.6
Croplan R2C1770	1.7	PI88788	58.1	14.3	**50.2**	$486.06	30.8
Croplan R2C1873	1.8	PI88788	58.1	14.4	**50.7**	$490.89	29.7
Dairyland DSR-1515R2Y	1.5	PI88788	58.1	14.4	**52.4**	$507.19	33.9
DF Seeds DF 51931 N R2Y	1.9	PI88788	58.1	14.3	**52.3**	$506.58	30.6
Dyna-Gro 34RY17	1.7	PI88788	58.1	14.3	**52.1**	$504.23	34.4
Great Lakes 1441 R2	1.4	None	58.1	14.4	**52.5**	$507.64	28.1
Great Lakes 1689 R2	1.6	PI88788	58.2	14.3	**51.7**	$500.65	30.5
Great Lakes 1829 R2	1.8	PI88788	58.2	14.3	**52.5**	$508.08	41.0
Hyland HS 14RYS44	1.4	PI88788	58.1	14.4	**50.5**	$488.63	17.4
Hyland HS 15RYS45	1.5	PI88788	58.0	14.4	**50.6**	$489.03	25.8
Hyland HS 18RY09	1.8	None	58.0	14.4	**50.2**	$485.84	35.1
Hyland HS 18RYS13	1.8	PI88788	57.9	14.6	48.7	$471.20	37.8
Mycogen 5B130R2	1.3	None	58.2	14.2	**51.0**	$493.80	20.4
NuTech 7157 G2 Genetics	1.5	PI88788	58.1	14.3	**51.3**	$496.54	27.7
Rupp rs7184	1.8	PI88788	58.0	14.5	**51.9**	$502.31	32.3
Stine 14RD62	1.4	PI88788	58.1	14.4	**52.4**	$507.03	23.9
Syngenta NK Brand S19-Z9	1.9	PI88788	58.2	14.3	**50.8**	$491.32	35.5
Yields adjusted to 13.0 % moisture				Average	51.2	$495.18	31.6
				High	52.5	$508.08	43.6
Bolded yields are not statistically different than the highest yielding variety.				Low	48.7	$471.20	17.4
				CV (%)	6.9		
				LSD Bu/A	3.5		

Value = gross value/acre based on $ 9.75/Bu with discounts of $0.05/point of moisture over 13.0 %.

White Mold Disease Severity Index (DSI) ratings are an average rating and were taken at the Elkton, Fairgrove and Sandusky locations. A "0" rating represents no infection, and a "3" represents infection on the main stem resulting in plant death and poor pod fill. See explanation of White Mold DSI on page 16, Soybean Introduction.

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Soybean Variety Trials
Early Maturity 1.9 or Less
Glyphosate Resistant
Yield By Location

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				Yield By Location Bu/A			
Company Variety	**Mat**	**Trait**	**Seed Trt**	**Brown City**	**Elkton**	**Fair-grove**	**Sandusky**
Asgrow AG1832	1.8	RR2Y	ACC	**39.8**	**56.2**	**58.0**	48.9
Asgrow AG1835	1.8	RR2Y	ACC	33.8	**55.0**	**56.4**	**51.4**
Asgrow AG1935	1.9	RR2Y	ACC	**38.4**	**55.7**	**56.8**	**56.2**
Croplan R2C1770	1.7	RR2/SCN	WAR CX	33.1	**56.1**	**58.1**	**53.5**
Croplan R2C1873	1.8	RR2/SCN	WAR CX	**39.4**	**56.6**	55.4	**51.5**
Dairyland DSR-1515R2Y	1.5	R2Y,Rpslk	CMT O 400	**45.1**	**55.8**	55.5	**53.4**
DF Seeds DF 51931 N R2Y	1.9	R2Y	APV	**44.8**	**53.7**	**58.2**	**52.7**
Dyna-Gro 34RY17	1.7	RR2Y	ACC	**45.8**	**53.1**	**56.7**	**52.9**
Great Lakes 1441 R2	1.4	R2	P/VO	**38.4**	**55.6**	**61.3**	**54.6**
Great Lakes 1689 R2	1.6	R2	P/VO	**38.2**	**56.3**	**57.7**	**54.7**
Great Lakes 1829 R2	1.8	R2	P/VO	**43.0**	**58.2**	54.0	**54.8**
Hyland HS 14RYS44	1.4	RR2Y/SCN	CMV	35.7	**55.4**	**57.6**	**53.5**
Hyland HS 15RYS45	1.5	RR2Y/SCN	CMV	**40.4**	**53.2**	**56.9**	**51.8**
Hyland HS 18RY09	1.8	RR2Y	CMV	36.7	**52.8**	**58.4**	**53.0**
Hyland HS 18RYS13	1.8	RR2Y/SCN	CMV	**39.8**	51.6	55.5	48.0
Mycogen 5B130R2	1.3			**41.0**	**55.8**	**56.3**	**50.9**
NuTech 7157 G2 Genetics	1.5	RR1	SCE	**41.5**	**54.4**	**57.4**	**51.9**
Rupp rs7184	1.8	RR2Y	CRMX	**42.1**	**55.9**	**57.4**	**52.4**
Stine 14RD62	1.4	RR2	None	**39.7**	**56.8**	**60.0**	**53.0**
Syngenta NK Brand S19-Z9	1.9	RR2Y	CRMX/AM/V/CL	**39.7**	**54.5**	**57.0**	**51.9**
Yields adjusted to 13.0% moisture			Average	39.8	55.1	57.2	52.5
Bolded yields are not statistically different than the highest yielding variety in column.			High	45.8	58.2	61.3	56.2
			Low	33.1	51.6	54.0	48.0
			CV (%)	9.9	6.0	5.5	7.4
			LSD (Bu/A)	7.8	6.5	5.3	6.6

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Soybean Variety Trial
Liberty Link
Specialty Soybeans

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Company Variety	Mat	Seed Trt	SCN Source	TW	MS%	Yield Bu/A
DF Seeds DF 9182 N LL	1.8	APV	PI88788	58.0	14.4	50.5
DF Seeds DF 9221 N LL	2.2	APV	PI88788	57.8	14.9	50.6
DF Seeds DF 9251 N LL	2.5	APV	None	57.7	15.1	**56.0**
Great Lakes 2239 LL	2.2		None	57.8	14.8	**54.4**
NuTech 3153L	1.5	SCE	PI88788	57.8	14.9	**55.0**
NuTech 3181L	1.8	SCE	PI88788	57.7	14.9	**53.4**
NuTech 3223L	2.2	SCE	PI88788	57.8	14.9	51.9
NuTech 3248L	2.4	SCE	PI88788	57.8	14.8	**55.5**
Stine 22LD23	2.2		PI88788	57.8	14.9	52.3
Stine 24LD00	2.4		PI88788	57.9	14.8	**53.3**
Yields adjusted to 13.0% moisture			Ave	57.8	14.8	53.3
			High	58.0	15.1	56.0
			Low	57.7	14.4	50.5
			CV (%)			2.87
			LSD (Bu/A)			3.2

Bolded yields are not statistically different than the highest yielding variety.

According to USDA, in 2012, soybean exports increased 40% through the year with $668.7 million in exports.

Michigan Soybean Checkoff
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Soybean Variety Trial

Conventional Non-GMO
Sandusky, MI

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Company Variety	Mat	Traits	Seed Trt	SCN Source	T.W.	MS%	Yield Bu/A	DM Prot %	DM Oil %
DF Seeds D 251 N/S	2.5	Non GMO	APV	PI88788	58.0	14.6	**53.3**	41.0	19.6
DF Seeds DF 155 F	2.5	Non GMO	APV	None	57.9	14.9	**53.9**	42.1	20.1
DF Seeds DF 242 N/S	2.4	Non GMO	APV	PI88788	58.0	14.6	**53.0**	43.1	20.5
DF Seeds Lily	2.5	Non GMO	APV	None	58.0	14.8	**48.3**	43.4	19.6
DR Seeds Jackson F	2.5	Non GMO	APV	None	57.8	15.2	**49.4**	43.1	19.8
Huron Commodities OAC Avatar	1.9		CRMX V		57.9	14.8	**55.8**	40.8	20.3
Huron Commodities OAC Brooke	2.2		CRMX V		58.1	14.4	**55.5**	43.9	19.5
Huron Commodities OAC Marvel	2.1		CRMX V	PI88788	58.0	14.7	**48.7**	42.9	20.6
Huron Commodities SG 2311	2.3		CRMX V		57.8	15.0	**52.6**	42.7	20.3
Hyland HS 21CS43	2.1	SCN	CMV	PI88788	58.1	14.6	**49.6**	41.8	20.6
Schillinger 247r	2.4				57.9	15.0	46.3	45.5	19.7
Schillinger r S20-G7	2.0				57.9	14.9	**50.9**	43.7	20.4
ZFSelect 1326	2.6		P/VO	PI88788	58.0	14.8	**54.6**	41.2	20.3
ZFSelect 1407	0.7				57.8	15.0	**49.9**	45.9	19.2
ZFSelect 1414	1.4				57.8	15.0	**51.3**	44.0	19.8
ZFSelect 1420 LS	2.2	Low Sat Oil	CRMX	None	57.9	14.8	**51.7**	41.1	19.2
ZFSelect 251 LS	2.5	Low Sat Oil	P/VO	None	58.0	14.8	**53.8**	41.2	20.3
ZFSelect 728 LL	2.7	Low Linolenic	P/VO	None	57.9	14.8	**49.0**	42.1	20.3
ZFSelect eMerge 1993	1.9		CRMX	PI88788	58.2	14.5	47.5	40.5	19.3
Yields adjusted to 13.0% moisture				Average	57.9	14.8	51.3	42.6	20.0
				High	58.2	15.2	55.8	45.9	20.6
				Low	57.8	14.4	46.3	40.5	19.2
Bolded yields are not statistically different than the highest yielding variety.				CV (%)			7.6		
				LSD (Bu/A)			7.8		

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Soybean Trial

Foliar Feed Fertilizer

TARE Thumb Ag Research & Education

Purpose: The purpose of this trial was to observe two foliar fertilizer products, and their effect on soybean yield. The field used for this study had optimum to above optimum fertility, according to the MSU Soil and Plant Nutrient Lab.

Method: The two foliar feed products were Nachurs TMRF and Nachurs SRN. According to the manufacturer, Nachrurs TMRF contains: 3.4% total nitrogen, 1.82% available phosphate, 1.82% soluble potash, .27% manganese, and .0008% molybdenum. The SRN product contains 28% nitrogen, 72% of which is slow release. The three treatments were TMRF at 1 gallon per acre, TMRF + SRN at one gallon per acre each, and an untreated check (UTC). The application was made at soybean stage R1. The manufacturer recommends a second application 1.5 gal./A TMRF and 1.5 gal./A SRN at R3. That application was not made on this study.

The soil at the site was analyzed prior to planting. The fertility results were: pH - 7.5; Phosphorus - 22 ppm; Potassium - 155 ppm; and CEC - 13.4.

The cooperating grower supplied liquid fertilizers at the bottom of a 9" strip tillage slot, including 2 gal/A 28% N, 4 gal/A Nachurs TMR-DP (2-8-11-1.2S), and 1.5 qt/A Nachurs Soy Grow micro mix. These products were mixed together. Additionally, 3 gal/A Nachurs G20 (6-24-6), and 3.5 gal/A Nachurs K-Thiol (0-0-25-17S) were applied. The grower cooperator recommends that you consult an agronomist for your own fertility needs. Cost for both products is $12.26/acre.

The products were sprayed 49 days after planting on July 18, 2014.

Thanks to Randy and David Reibling for cooperating and supplying product.

Results and Discussion: There were no statistical differences between treatments. According to MSU Fertilizer recommendations, a response would not be expected.

Treatment	Yield Bu/A	
UTC	59.2	a
TMR-F	58.5	a
SRN+TMR-F	57.7	a
CV (%)	3.2	
LSD Bu/A	ns	

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Soybean Trial
Depth of Planting
Speed of Planting

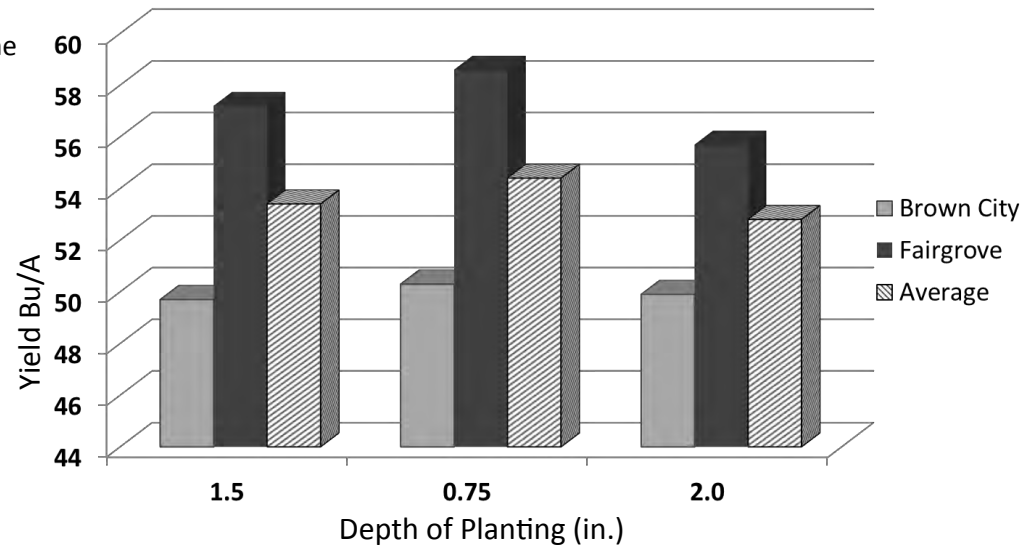
TARE Thumb Ag Research & Education

Depth of Planting Study

Purpose: The purpose of this study was to evaluate the effect of planting depth on soybean yield.

Methods: Soybean was planted at three depths – 0.75 inch; 1.5 inch; and 2.0 inches at two locations – Brown City and Fairgrove. The variety NK S20-T6 was used at both sites.

Results: Statistics were not run on these results. While the 0.75 in. depth treatment did yield the greatest, all yields appear to be similar.

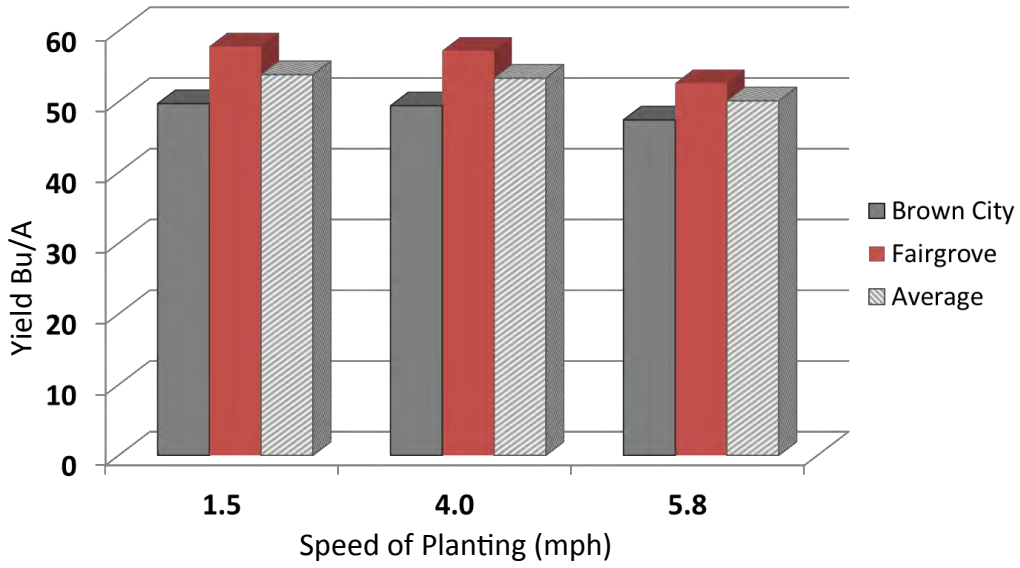


Speed of Planting Study

Purpose: The purpose of this study was to evaluate the effect of planting speed on soybean yield.

Methods: Soybean was planted at three speeds – 1.5 mph (slow speed), 4.0 mph (standard speed), and 5.8 mph (fast speed) at two locations – Brown City and Fairgrove. The variety NK S20-T6 was used at both sites.

Results: Statistics were not run on these results. The 1.5 and 4.0 mph speeds appeared to yield similarly, and greater than the 5.8 mph speed.



Michigan Soybean Promotion Committee www.michigansoybean.org
This project had funds provided by the Michigan Soybean Promotion Committee

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Soybean
Clariva ™ Complete Beans
Seed Treatment Trial

TARE
Thumb Ag Research & Education

Purpose: The purpose of this trial was to evaluate the effect of the *Pasturia nishizawae* contained in Clariva Complete Beans on SCN populations and soybean yields in 2014.

Procedure: Two seed treatments (Clariva Complete Beans and CruserMaxx + Vibrance) were applied to SCN-resistant soybean seed and compared at four locations in Michigan in 2014. Each treatment was replicated six times in the Ingham trial, four times in the TARE trials in Tuscola. (The St. Clair and Sanilac County trials had no detectable SCN and were not used in the data summary.) A RCB experimental design was used at each location. Soil samples were taken at planting and harvest to determine the effect of the treatments on SCN populations.

Results: The Clariva Complete Beans seed treatment did not improve soybean yields at any of the four locations when compared to the CruiserMaxx + Vibrance seed treatment. SCN was present at the TARE site in Tuscola County and in the Ingham County trials and the Clariva Complete Beans seed treatment did not affect soybean yields at either of these sites or when the two sites were combined and analyzed. The Ingham County location had the highest SCN population so the PI, PF and PF/PI are reported for this location. The Clariva Complete Beans seed treatment did not significantly affect SCN development at this location.

Treatment	Ingham	Tuscola	**Average	Average Income ($/ac)
		- - - Yield (Bu/A) - - -		
CruiserMaxx + Vibrance	51.6 a	51.4 a	51.5 a	$499
Clariva Complete Beans	52.2 a	52.9 a	52.5 a	$498
$LSD_{0.10}$	2.1	5.9	2.0	
Soybean price = $10.00 per bushel				
Clariva Complete Beans seed treatment cost = $26.80 per acre				
CruiserMaxx + Vibrance seed treatment cost = $16.10 per acre				

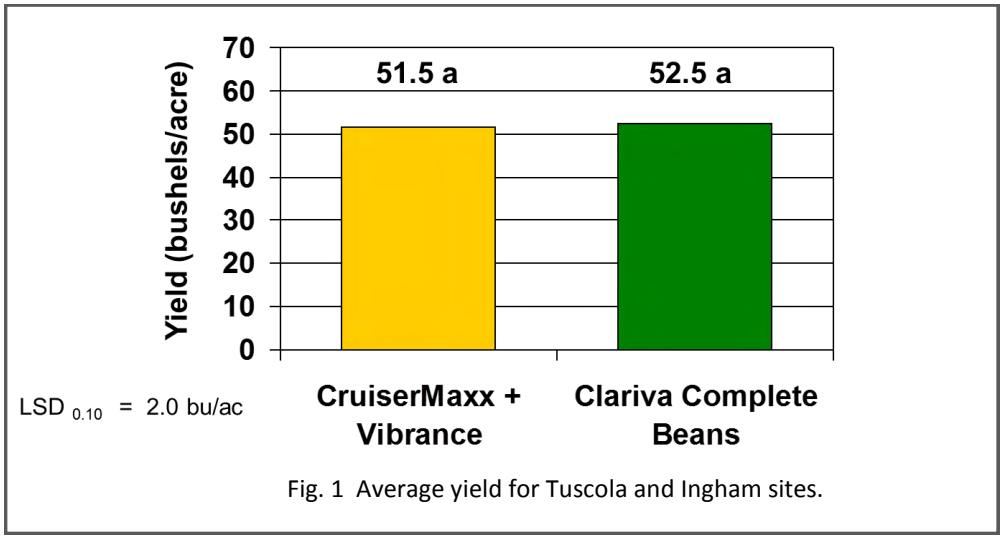

Fig. 1 Average yield for Tuscola and Ingham sites.

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Soybean Variety Study
Soybean Cyst Nematode Resistance Analysis

TARE Thumb Ag Research & Education

Purpose:

Soybean cyst nematode (*Heterodera glycines),* or SCN, remains the number one cause of yield loss for soybeans in the United States. In order to determine the significance of this pest at sites in the Thumb area, the Michigan Soybean Promotion Committee funded this project to measure the effect that variety selection has on SCN. Identifying varieties that are able to yield in environments that have confirmed SCN will enable producers to make informed decisions about resistance management.

Since each site is unique and may have different types of SCN. **The ability to withstand SCN at one site may not indicate the ability of the variety to withstand SCN at other farms and field sites.** Several genes provide resistance to SCN in soybeans for each of the sources of resistance (PI88788, Peking, etc.). And not every soybean variety described as resistant to SCN necessarily possesses all of the resistance genes. Therefore, SCN-resistant soybean varieties can vary greatly in the amount for nematode resistance they possess, as well as in their agronomic performance.

Methods:

At the Fairgrove soybean variety trials for TARE, each of the four replications for each variety (20 early, 25 mid, and 29 late maturity) was sampled for SCN. The sampling of each treatment was done at the time of planting (Pi) and after harvest (Pf) to detect if there had been an increase in SCN during the growing season. The four treatment samples were combined according to variety and submitted to the MSU Diagnostic Lab for detection of SCN cysts, SCN eggs, and SCN juveniles. The samples from this site will also be type tested to determine which population of SCN is predominant at this site. Other TARE soybean sites were not tested.

Results:

The results for this study are reported by group in Table 1. The SCN reproduction factor is: (Pf) # SCN eggs & juveniles at harvest divided by (Pi) # SCN eggs & juveniles at planting (Pf/Pi=SCN reproduction factor). A SCN reproduction factor of 1.0 or less indicates that there was no increase or a reduction in SCN eggs & juveniles during the growing season.

Table 1.	Early Varieties			Mid Varieties			Late Varieties		
SCN Source	Susceptible	Peking	PI88788	Susceptible	Peking	PI88788	Susceptible	Peking	PI88788
Number	3	---	17	---	1	24	4	2	23
Yield Bu/A	58.7	---	56.9	---	56.1	56.2	52.2	52.2	51.8
	Average - Nematodes per 100 cm3 soil								
Planting SCN Eggs + Juv (Pi)	160	---	213	---	1	217	104	132	197
Harvest SCN Eggs & Juv (Pf)	4960	---	1655	---	5920	2054	597	2560	2202
	Pf/Pi = SCN Reproduction Factor								
P *factor*	1481	---	382	---	5920	306	93	389	733

Michigan Soybean Promotion Committee www.michigansoybean.org

This project had funds provided by the Michigan Soybean Promotion Committee

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Yard Compost in a Corn/ Soybean Rotation Study

TARE Thumb Ag Research & Education

Purpose: The purpose of this study is to evaluate the use of compost generated from yard waste that can be used as a soil amendment applied in a corn/soybean rotation. The goal is to determine if an economical rate can be applied that will maintain crop yields, increase soil quality, and reduce commercial fertilizer use. This study is funded as a Farmer/Rancher grant by North Central SARE for two years.

Methods: Three farmers were selected in Lapeer and St. Clair County that have a corn/soybean rotation. Each farm had soil tests done by the Michigan State University Soil Lab (Table 1.) and the Woods End Soil Laboratory in Mount Vernon, ME. The Woods End Laboratory is utilizing the USDA-ARS **H_3A Extraction Method** Soil Test to evaluate soil health. A comparison of the soil tests will be done at the end of the trial. 5 tons/acre was applied in a RCB with four replications.

Results: Two locations had a 6.2 % yield response, however only one of the responses was significantly better than the control. The average of all plots shows a trend for a positive yield response of 3.7 %, however, it was not significantly better than the control (Table 2).

Table 1. MSU Soil Lab - Spring 2014 Soil Test Results

Site:	North Branch	Almont	China
Soil type:	Boyer Loamy Sand	Conover Loam	Allendale-Lenawee-Toledo Complex
pH:	6.6	6.3	6.8
Phosphorus (P) ppm:	41	55	51
Potassium (K) ppm:	90	190	60
Magnesium (Mg) ppm:	131	191	171
Calcium (Ca) ppm:	770	1725	1255
CEC:	5.2	11.9	7.9
Fertilizer applied:	100 lbs. 0 - 0 - 60	none	120 lbs. 0 - 0 - 60
Other:			5 lbs. 20-20-20 Foliar
Variety:	Lilly	Asgrow 2632	Croplan R2C 2980
Previous crop:	corn	corn	corn
Plant date:	20-May-14	4-Jun-14	27-May-14
Harvest date:	27-Oct-14	24-Oct-14	28-Nov-14

Table 2.

	Location							
	North Branch		Almont		China		Average	
Treatment	- - - Yield Bu/A - - -							
Control	44.4	a	53.3	a	47.7	a	48.5	a
5 Ton/A	47.1	a	53.0	a	50.7	b	50.3	a
CV (%)	3.0		1.0		1.2		7.3	
LSD (Bu/A)	ns		ns		1.9		ns	

NORTH CENTRAL SARE Sustainable Agriculture Research & Education

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Huron Conservation District Phosphorus Reduction Study

TARE Thumb Ag Research & Education

This field has had 4 randomized and replicated strips of 3 different rates of P_2O_5 since 2008. The strips are no phosphorus (P), low phosphorus, and a high rate of phosphorus. The strips have remained constant since the plot work started. The 2013 crop was sugar beets and annual rye grass was flown on 15 days prior to harvest. Once harvested, 100 lbs/A of potash (K_2O) was applied to the whole field; no fall tillage was performed.

Annual rye grass burn-down occurred June 3, and a deep tillage occurred on June 9 (strip-tilled) to remove compaction from sugar beet harvest. The following day a vertical tillage tool was used to level the site. Ten gallons of 28% nitrogen (N), ten gallons of water along with 1.33 pint of Dual Magnum was broadcast and incorporated with the vertical tillage tool. Black bean variety 06252, upright, was planted June 16 in 7.5 in. twin rows over the slotted strips at 117,000 seeds per acre, and rolled prior to planting. The post emergent weed control program was Basagran 10 oz; Reflex 7 oz; Raptor 3 oz; crop oil and AMS. Basagran was applied a second time at 10 oz. A white mold preventive spray was applied Aug 1st using Propluse. There was some white mold damage and an additional application for white mold prevention would have been beneficial.

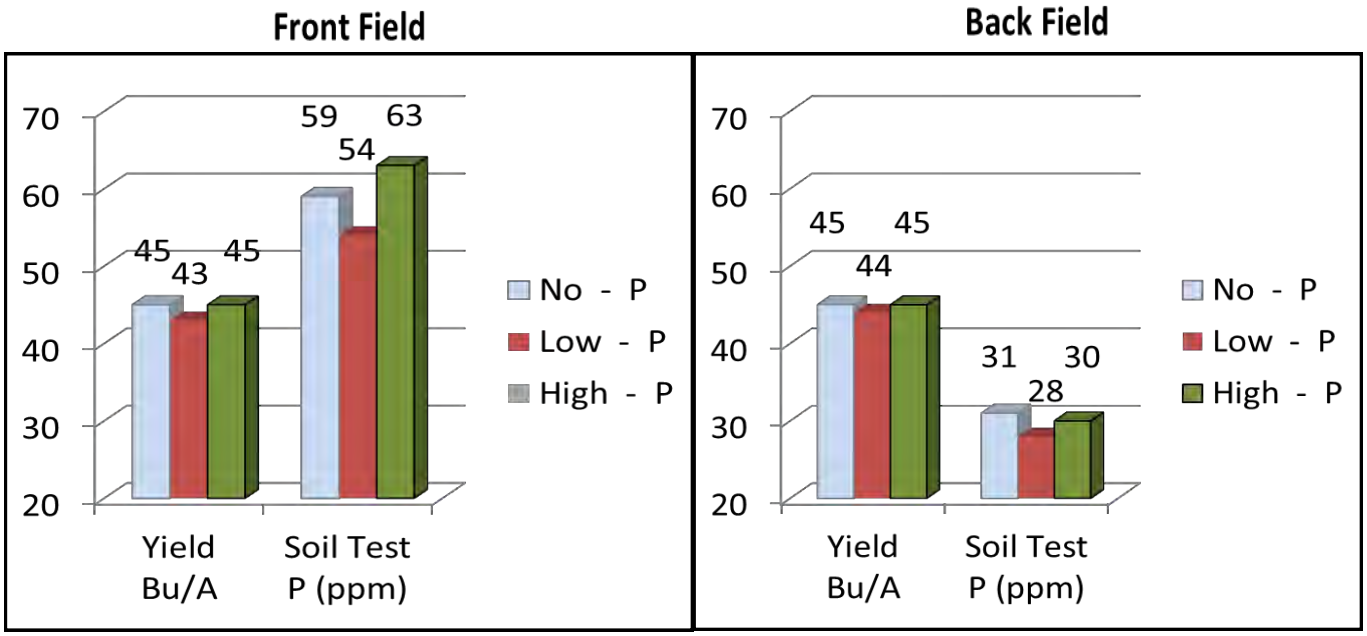
Fertilizer applied on the No-P strips was 3 gallons of 0-0-25 and 3 gallons of 28% N, for a total of 39 lbs. N, 0 lbs. P, and 9 lbs. potassium (K).

Fertilizer applied on the Low-P strips was 5.2 gallons of 6-24-6; 2 gallons of 0-0-25; and 2 gallons of 28% N, for a total of 39lbs. N, 14 lbs. P, and 9.8 lbs K.

Fertilizer applied on the High-P strips was 15 gallons of 6-24-6 for a total of 39 lbs. N, 40.5 lbs. P, and 10.5 lbs. K.

The site is comprised of 2 fields: the front field and back field. The soil type in the front field is a Kilmanagh loam and the back field is a Shebeon loam.

In the fall of 2014, fertilizer was applied using three rates of phosphorus and planted to wheat using a no-till drill. Soil samples will be taken after wheat harvest to determine draw down and in preparation for next year's trial.



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TARE Thumb Ag Research & Education

Effect of fungicides on the performance of winter wheat, 2014

Martin Nagelkirk, Michigan State University Extension

Each year a fungicide efficacy trial is conducted on soft winter wheat in collaboration with industry to observe the performance of various fungicide products. A randomized complete block design with four replications was superimposed on a commercial stand of Ambassador soft white winter wheat. The variety is particularly susceptible to Septoria leaf spot, Stagonospora leaf blotch and Fusarium head blight.

The fungicide products, rates and application timings are provided in Table 1 below. The fungicides were applied using a tractor mounted boom sprayer. Alll treatments included a nonionic surfactant (Induce) at the rate of 0.125 percent. The T1, (feekes growth stages 6) applications were made on May 9; the T1.5 (growth stage 7) on May 19; and the T2 (growth stage 9) on May 29. These three application timings were made using 16 gallons of water per acre, 45 psi and Turbo TeeJet 11002 nozzles. The early flower treatment timing (T3; growth stage 10.51) was applied on June 10 using Turbo TeeJet Duo bodies with double 11001 nozzles, 16 gallons of water per acre, and 45 psi.

Location:	JGDM McConnachie Farms
Collaborators:	Deckerville, MI DuPont, Bayer, BASF
Soil Type	Parkhill silt loam
Previous crop:	dry beans
Variety:	Ambassador
Nitrogen rate:	110 lbs/ac
Plot design:	RCB
Replications:	four
Plot area:	18 x 65 ft
Treatment area:	17 x 65 ft
Harvest area:	15 x 60 ft
Planting date:	Oct 3, 2013
Seeding rate:	1.8 m/ac
Harvest date:	July 24, 2014
Herbicide:	none
Insecticide:	none

Other than a trace of Septoria leafspot and powdery mildew, leaf diseases were not found throughout the vegetative stages. However, during grain-fill both leaf rust and Stagonospora leaf blotch levels became notable. In addition to rating leaf diseases, the severity and incidence of fusarium head blight was estimated.

The trial was harvested on July 9 using an International 2144 combine equipped with a Juniper HarvestMaster system that provided grain weight, test weight, and moisture. Grain samples were collected to test for DON levels. Statistical analysis was performed by the Adam Byrne, Research Associate, MSU.

Although the site had a relatively consistent stand, the wheat exhibited considerable variability in growth presumably due to inconsistent levels of winter injury and variable soil conditions.

Table 1: Effect of fungicides on the grain moisture, test weight and yield of soft winter wheat, Deckerville,MI 2014

	fungicide treatment [1]	timing				harvested grain					
		T1	T1.5	T2	T3	moist. %		tst wt lbs		yield [3] bu/ac	
1	non treated control					14.5	a	61.4	a	107.5	e
2	Apr Prima 6.8oz			x		14.5	a	61.4	a	112.9	cde
3	Aproach 3oz, Apr Prima 6.8oz.	x		x		14.5	a	61.4	a	111.3	cde
4	Apr Prima 3.4oz., Prosaro 6.5 oz.			x	x	14.7	a	61.2	a	114.5	bcde
5	Apr Prima 6.8oz, Prosaro 6.5oz	x			x	14.5	a	61.4	a	116.2	bcd
6	Stratego 4oz			x		14.5	a	61.4	a	111.5	cde
7	Prosaro 6.5oz			x		14.7	a	61.2	a	109.6	cde
8	Prosaro 6.5oz & Baythroid 2oz				x	14.6	a	61.3	a	109.0	de
9	Prosaro 6.5				x	14.5	a	61.4	a	112.3	cde
10	Prosaro 8oz				x	14.6	a	61.4	a	114.1	bcde
11	Stratego 2oz ,Prosaro 6.5oz	x			x	14.7	a	61.3	a	114.0	bcde
12	Priaxor 2oz, Caramba 13.5oz		x		x	14.5	a	61.4	a	117.0	bc
13	Priaxor 2oz, Caramba 13.5oz, (extra N)[2]		x		x	14.7	a	61.4	a	121.2	ab
14	Priaxor 4oz, Caramba 13.5oz (extra N)[2]		x		x	14.6	a	61.2	a	117.1	bc
15	Priaxor 2oz, Caramba 17 oz (extra N)[2]		x		x	14.6	a	61.4	a	125.0	a
16	Caramba 13.5oz				x	14.4	a	61.4	a	111.1	cde

[1] all fungicides applied with Induce nonionic surfactant at 0.125% ;

[2] received 45 lbs additional N fertilzer per acre [3] reported as dry grain (13% moisture)

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Table 1 provides the results pertaining to the grain's moisture and test weight at harvest, and grain weight expressed as yield in bushels per acre of dry grain (13 percent moisture content). All fungicide treatments resulted in an increase in grain yield ranging from 4 to 10 bushels per acre. However, only the highest yielding treatments proved statistically significant. Where a fungicide was combined with an extra 45 lbs of fertilizer N, yields were further improved (note treatments 13, 14, and 15). At harvest, there were no significant differences in test weight or grain moisture. Grain samples were sent to the University of Minnesota to determine DON levels.

All fungicide applications significantly reduced levels of Leaf rust, Septoria leaf spot, and Stagonospora leaf blotch (table 2). Where Prosaro or Caramba was applied at early flower (T3), the average Don levels were reduced by a third. In addition, these products at this timing consistently and significantly reduced both Fusarium incidence and index. The Fusarium severity rating was not altered by any fungicide treatment.

Stagonospora leaf blotch was the dominant disease on flag leaves.

Table 2: Effect of fungicides on leaf diseases and Fusarium head blight if winter wheat, Deckerville, MI, 2014

	fungicide treatment [1]	timing				Lf rust rated June 23 [3]		Septoria rated June 23 [3]		Lf rust rated July 2 [4]		Stag. rated July 2 [4]		Fusarium head blight ratings: incid.		sev.		index		DON	
		T1	T1.5	T2	T3																
1	non treated control					2.6	*a*	4.1	*a*	3.3	*a*	10.9	*a*	15	*a*	56	*a*	8.2	*a*	0.52	*ab*
2	Apr Prima 6.8oz			x		0.5	*bc*	1.4	*bcd*	0.3	*b*	4.0	*bcd*	15	*a*	56	*a*	8.4	*a*	0.55	*a*
3	Aproach 3oz, Apr Prima 6.8oz.	x		x		0.9	*bc*	1.8	*bc*	0.3	*b*	3.8	*bcd*	13	*ab*	63	*a*	7.9	*a*	0.44	*abcd*
4	Apr Prima 3.4oz., Prosaro 6.5 oz.			x	x	0.3	*c*	1.4	*bcd*	0.0	*b*	2.5	*d*	9	*bc*	39	*a*	3.5	*b*	0.41	*abcd*
5	Apr Prima 6.8oz, Prosaro 6.5oz	x			x	0.5	*bc*	2.0	*bc*	0.0	*b*	4.6	*bc*	7	*cd*	34	*a*	2.4	*b*	0.31	*cdef*
6	Stratego 4oz			x		0.3	*c*	1.3	*bcd*	0.1	*b*	3.8	*bcd*	16	*a*	45	*a*	7.3	*a*	0.41	*abcd*
7	Prosaro 6.5oz			x		0.4	*bc*	1.1	*cd*	0.1	*b*	4.1	*bcd*	13	*ab*	58	*a*	7.1	*a*	0.45	*abc*
8	Prosaro 6.5oz & Baythroid 2oz				x	0.4	*bc*	2.0	*bc*	0.3	*b*	4.4	*bcd*	8	*cd*	48	*a*	3.4	*b*	0.18	*f*
9	Prosaro 6.5				x	0.9	*bc*	2.1	*b*	0.3	*b*	5.4	*b*	8	*cd*	50	*a*	3.7	*b*	0.37	*abcde*
10	Prosaro 8oz				x	0.8	*bc*	1.5	*bcd*	0.1	*b*	5.0	*b*	7	*cd*	50	*a*	3.6	*b*	0.26	*def*
11	Stratego 2oz ,Prosaro 6.5oz	x			x	0.6	*bc*	1.8	*bc*	0.1	*b*	4.1	*bcd*	6	*cd*	43	*a*	2.3	*b*	0.38	*abcd*
12	Priaxor 2oz, Caramba 13.5oz		x		x	0.6	*bc*	1.5	*bcd*	0.0	*b*	4.0	*bcd*	7	*cd*	56	*a*	3.9	*b*	0.33	*cdef*
13	Priaxor 2oz, Caramba 13.5oz, (extra N)[2]		x		x	1.3	*b*	1.6	*bcd*	0.3	*b*	4.1	*bcd*	5	*d*	53	*a*	2.7	*b*	0.27	*cdef*
14	Priaxor 4oz, Caramba 13.5oz (extra N)[2]		x		x	0.4	*bc*	0.8	*d*	0.1	*b*	3.8	*bcd*	6	*cd*	48	*a*	2.7	*b*	0.36	*bcdef*
15	Priaxor 2oz, Caramba 17 oz (extra N)[2]		x		x	0.8	*bc*	1.3	*bcd*	0.0	*b*	2.6	*cd*	6	*cd*	50	*a*	2.7	*b*	0.26	*def*
16	Caramba 13.5oz				x	0.9	*bc*	1.9	*bc*	0.0	*b*	4.4	*bcd*	6	*cd*	45	*a*	2.5	*b*	0.19	*ef*

[1] all fungicides applied with Induce nonionic surfactant at 0.125%;

[2] received 45 lbs additional N fertilzer per acre

[3] leaf rust on flag leaf as %; Septoria leaf spot given as relative score on no. 2 leaf

[4] leaf rust and Stagonospora leaf blotch on flag leaf surface as percent

MICHIGAN WHEAT PROGRAM

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TARE Thumb Ag Research & Education

Effect of fungicide application timing on head blight, 2014

Martin Nagelkirk, MSU Extension

Martin Chilvers, MSU Pant, Soil & Microbial Sciences

As part of a multi-state research study, a field trial was conducted to measure the effect of various fungicide application timings on the level of Fusarium head blight (FHB) and mycotoxin production (DON).

Prosaro was applied at the rate of 6.5 oz. per acre at three day intervals beginning with heading (Feekes growth stage 10.5) on June 7, and concluding 12 days later. In addition, a treatment was included where Prosaro was applied at early flower followed three days later by an application of Caramba (13.5 oz/ac) . To keep foliar diseases in check, Stratego fungicide was applied at 4 oz per acre soon after first joint (growth stage 7). The fungicides were applied with Induce nonionic surfactant (0.125%) using a tractor mounted boom sprayer, Turbo TeeJet Duo bodies with 11001 nozzles, 14 gallons of water per acre, and 45 psi.

The trial was harvested on July 9 using an International 2144 combine equipped with a Juniper HarvestMaster system that provided grain yield, test weight, and moisture. Grain samples were collected and mailed to the University of Minnesota to determine DON levels. Statistical analysis was performed by Adam Byrne, MSU Research Associate.

Cooperator:	McConnachie
Farms	Deckerville, MI
Collaborators:	US Scab Initiative
Soil Type	Parkhill silt loam
Soil pH:	6.5
Previous crop:	Dry beans
Variety:	Ambassador
Nitrogen rate:	95 lbs/a
Plot design:	RCB
Replications:	four
Plot area:	20 x 65 ft
Treatment area:	17 x 65 ft
Harvest area:	15 x 60 ft
Planting date:	Oct 7, 2012
Seeding rate:	1.8 m/ac
Harvest date:	July 21, 2014
Herbicide:	none
Insecticide:	none

Dry weather conditions at the time of flowering resulted in low levels of FHB. Nevertheless, there were differences within the various measurements used for indicating the presence of FHB as well as DON (table 1). The following are some summary comments:

1) An application at heading, before flowers emerged, did not significantly reduce DON;
2) Applications 3 and 6 days after 10.51 reduced FHB and DON more than any other treatments;
3) The application made 9 days following 10.51 reduced the incidence and severity of FHB but not the number of damaged kernels (DON is not reported as samples were lost);
4) A double application of fungicides (Prosaro followed 3 days later by Caramba) did not reduce FHB or DON more than a single application of Prosaro at either 3 or 6 days after 10.51;
5) *The fungicides did not improve yields or test weights due, in part, to an early application of Stratego.*
6) These results will be combined with those from other participants in this multi-state study.

Table 1: The effect of fungicide application timing on Fusarium head blight, Deckerville, MI 2014

Prosaro application timing [1]	Foliar disease % [2]		Fusarium head blight										Harvested grain			
			incidence /100 ft		severity %		index		FDK per 1000 k [4]		DON ppm [5]		moisture. %	test wt lbs	1000 K wt (g)	yield bu/A 13%
nontreated	10.6	a	29.5	a	67.1	a	0.61	a	2.50	a	0.60	a	15.1	61.4	43.6	101
g.s. 10.5 (heading)	4.9	b	26.0	a	68.7	a	0.54	a	0.25	b	0.49	ab	14.8	61.6	44.1	100
g.s. 10.51 (early flower)	5.6	b	17.8	b	60.1	ab	0.33	b	0.25	b	0.46	ab	14.7	61.7	43.5	103
g.s. 10.51 plus 3 days	1.0	c	8.3	cd	46.4	bc	0.11	cd	0.75	b	0.15	c	14.9	61.6	44.0	101
g.s. 10.51 plus 6 days	1.6	c	12.0	bc	33.7	c	0.14	cd	0.75	b	0.13	c	15.0	61.6	44.4	100
g.s. 10.51 plus 9 days	1.5	c	12.4	bc	39.5	c	0.15	c	2.25	a	?	?	15.1	61.5	44.1	100
g.s. 10.51 & Caramba [3]	1.4	c	5.0	d	39.8	c	0.06	d	0.75	b	0.21	bc	15.1	61.4	43.8	102
	*		*		*		*		*		*		*NS*	*NS*	*NS*	*NS*
	P<0.0001		*P<0.0001*		*P=0.0021*		*P<0.0001*		*p=0.0005*		*p=0.0083*		*P=0.3349*	*P=0.3340*	*P=.2282*	*P=0.4583*

[1] all fungicides applied with Induce nonionic surfactant at 0.125%
[2] leaf rust and Stagonospora on flag leaf surface as percent
[3] Prosaro applied at 10.51; Caramba applied at 10.51 plus 3 days
[4] percent FHB incidence X severity / 100
[5] number of Fusarium damaged kernels per 1000
[6] deoxynivalenol or vomitoxin (Univ. of Minn)

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TARE Thumb Ag Research & Education

The effect of Palisade EC plant growth regulator on the performance of soft winter wheat, 2014

Martin Nagelkirk, MSU Extension Educator

For a third year, a field trial was conducted to observe the effect of Palisade®EC plant growth regulator on the performance of soft winter wheat. A randomized complete block design with four replications was superimposed on a commercial stand of Ambassador soft white winter wheat. The Palisade treatments, listed in table 1, include a split application, and applications at various growth stages (Feekes), and several product rates. These treatments were applied to plots that received 165 lbs/ac of fertilizer nitrogen (N). In addition, treatments included variable N rates with a single rate and timing (12 oz. at gs 7) of Palisade. A tractor mounted boom sprayer that delivered 14 gal/ac of water through Turbo TeeJet 02 nozzles with a pressure of 40 psi. All treatments received Prosaro fungicide at early flowering.

Varying application timings and rates of Palisade had little effect on grain yield. However, increasing rates of fertilizer N did improve grain yields and the use of Palisade protected against plant lodging. Statistical analysis will be reported once completed and the data will be combined with that from the past two years to create a three year summary.

Trial Information

Collaborator:	JGDM McConnachie Farms Deckerville, MI
Soil Type:	Parkhill silt loam
Previous crop:	Dry beans
Wheat variety:	Ambassador
Planting date:	October 3, 2013
Harvest date:	July 24, 2014
Plot design:	RCB
Replications:	Four
Plot size:	18 x 65 ft.
Treatment area:	17 x 65 ft.
Harvest area:	15 x 65 ft.
Fertilizer N rate:	Various
Herbicide:	None
Fungicide:	Prosaro
Insecticide:	None

Table 1: Effect of Palisade on the performance of soft winter wheat, Deckerville MI, 2014

Comparisons	Treatment (oz/ac & growth stage)	Grain yield bu/ac	Harv. Moist. %	Test weight lbs.	Plant height in.	Plant lodging %	heads # per foot of row	kernels per head #	1,000 kernel wt, g
nontreated:	control	110.7	15.1	60.9	34.4	14.5	35.4	26.3	42.7
split application:	6 oz at g.s. 7 & 8	113.1	15.1	60.9	33.7	0.0	37.0	26.1	42.1
application timings:	10 oz at 5	113.2	15.1	60.9	35.3	1.8	35.2	26.7	43.3
	10 oz at g.s. 7 *	113.0	15.1	60.9	33.4	0.3	36.0	26.2	41.7
	10 oz. g.s. 8	113.7	15.2	60.9	34.1	8.0	36.2	27.0	43.5
application rates:	8 oz. at g.s.7	113.9	15.2	60.9	33.6	0.0	37.6	26.2	42.9
	10 oz at g.s.7 *	113.0	15.1	60.9	33.4	0.3	36.0	26.2	41.7
	12 oz at g.s. 7 **	112.8	15.2	60.9	33.3	1.5	36.5	25.9	42.4
	14 oz. at g.s.7	110.3	15.1	60.9	32.3	0.0	35.9	26.5	42.6
	16oz at g.s.7	112.1	15.2	60.9	33.4	1.8	37.4	26.7	42.9
90	control	106.2	15.2	60.9	34.3	1.8	33.9	25.0	44.0
varialble N *90*	12 oz at g.s.7	102.7	15.1	60.9	33.1	1.5	33.6	26.2	42.7
rates (lb/ac) *110*	12 oz at g.s.7	108.5	15.2	60.9	34.0	0.3	34.2	26.5	43.3
165	12 oz at g.s.7 **	112.8	15.2	60.9	33.3	1.5	36.5	25.9	42.4

* same data source used for application timing and rate comparisons.

** same data source used for application timing and rate comparisons.

M Nagelkirk, 2014

2014 Custom Machine and Work Rate Estimates

FIRM Team Fact Sheet Number 13-06
Available at http://www.firm.msue.msu.edu
Author : Dennis Stein, District Farm Business Management Educator
Michigan State University Extension • November 2013

LABOR:

Farm Labor Unskilled[7] = $ 13.17 per hour — $3.60 per gallon of fuel

Farm Labor Skilled[7] = $ 16.08 per hour — $3.96 per gallon lube & fuel cost

TRACTORS ONLY:		max.	min.	Custom $/Hour	Machine Cost $/Hour	Est. Fuel Gal. / Hour	Est. Fuel Cost per Hour
No Driver or fuel costs	MFWD - +260 hp.	$ 143.00	$ 143.00	$143.00	$111.17	9.95	$39.40
	MFWD - 200 hp.	$ 125.00	$ 55.47	$86.44	$77.13	7.04	$27.88
	MFWD - 130 hp.	$ 80.60	$ 42.60	$63.57	$51.25	5.72	$22.65
Est. Tractor Cost $0.27/hp/hr.	2- WD - 75 hp.	$ 56.88	$ 20.25	$36.13	$23.30	3.3	$13.07
Est. Fuel use .044 gal. diesel/PTO hp / hour	2- WD - 40 hp.			$25.00	$11.66	1.76	$6.97
Auto Steer systems charge per acre				$2.29			

TILLAGE OPERATIONS:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour[4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Plowing: Moldboard (6 bottom)	**$18.69**	$ 21.34	$ 14.67	**$23.38**	$97.49	4.17	1.32
Chisel Plow (23 ft.)	**$16.65**	$ 20.50	$ 11.65	**$11.14**	$145.15	13.03	0.60
Chisel – front disk (16.3 ft.)	**$16.68**			**$13.87**	$127.74	9.21	0.97
Vertical tillage	**$19.25**	$ 22.45	$ 15.48				
Disk-V.Ripper combo (17.5 ft)	**$20.53**	$ 21.00	$ 19.50	**$21.60**	$194.83	9.02	1.47
Subsoiler 30" - 10ft (12-15")	**$18.98**	$ 21.67	$ 15.56				
Discing - tandem (21 ft)	**$14.42**	$ 20.40	$ 9.96	**$10.67**	$130.39	12.22	0.58
Field Cultivator (23 ft.) + incorp.	**$13.34**	$ 13.35	$ 12.69	**$11.75**	$194.93	16.59	0.38
Field Cultivator (23 ft.)	**$12.45**			**$6.46**	$107.17	16.59	0.32
Harrow	**$11.04**	$ 17.00	$ 7.43				
Soil Finisher	**$15.99**	$ 18.44	$ 13.85				
Strip tillage	**$18.71**						
Row Cultivate (12 rows)	**$12.84**	$ 14.50	$ 9.56	**$7.39**	$114.18	15.45	0.46
Row Cultivate-high residue (12rows)	**$15.58**						
Stalk Shredder (20 ft.)	**$14.38**	$ 16.88	$ 11.40	**$13.13**	$101.89	7.76	0.74
Rotary Hoe (21 ft.)	**$8.81**	$ 9.15	$ 8.14	**$2.62**	$68.02	25.96	0.18
Land Rolling	**$8.10**						
Highboy spraying	**$7.69**						
Boom Sprayer-self-Prop.80ft.	**$7.85**	$ 11.20	$ 5.56	**$6.58**	$290.31	44.12	0.14
Boom Sprayer-pull type 50ft.	**$6.69**			**$3.70**	$94.76	25.61	0.10
Spraying- road ditches/ hr	**62.83/hr**						

PLANTING:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Planter- conventional (12row) w/fert 30" corn-soys	**$18.84**	$ 21.77	$ 14.29	**$11.92**	$166.88	14.00	0.32
Planter- soybean 15" rows	**$17.37**	$ 21.11	$ 14.62				
Planter- No Till w/fert (12 row)	**$20.33**	$ 22.56	$ 17.54				
Planter- Min Till (12 row)	**$19.78**	$ 21.60	$ 17.00	**$15.12**	$192.48	12.73	0.53
GPS mapping addition to planting	**$2.51**						
Variable rate seeding	**$2.51**						
Air Seeder Drill w/cart 52ft	**$18.14**			**$18.50**	$408.11	22.06	0.45
Drill Soybeans Conventional	**$17.43**	$ 19.90	$ 15.75				
Drill-AirSeeder with cart	**$19.58**						
Drill- No Till (15 ft.)	**$18.60**	$ 22.07	$ 16.01	**$24.29**	$154.48	6.36	0.81
Drill- No Till - drill only no tractor	**$12.25**						

PLANTING:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Drill press wheels - (20 ft)	**$16.26**	$ 20.90	$ 12.46	**$12.81**	$108.63	8.48	0.61
Grain drill- only-no tractor	**$10.17**						
Seed Tender	**$3.13**						
Pest Control- scouting	**$5.00**						
SUGAR BEETS:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Sugar Beets - Planting (12 row)	**$28.25**				$0.00	4.67	0.99
Sugar Beet Cultivation	**$14.91**				$0.00	5.60	0.81
Sugar Beet Topper (8 rows)	**$15.63**				$0.00	7.13	0.56
Sugar Beet Harvester (6 rows)	**$97.38**				$0.00	3.03	2.22
Sugar Beet Cart (20 ton)	**$35.88**				$0.00	5.20	1.80
HARVESTING:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Combine - (Corn -8 row head)	**$31.15**	$ 32.90	$ 26.36	**$43.53**	$295.57	6.79	2.35
Combine - stalk chopper head	**$33.18**	$ 38.00	$ 26.41				
Combine Small grains (20 ft head)	**$28.95**	$ 32.10	$ 22.00	**$0.00**	$0.00	6.79	1.49
Combine Soybeans (25 ft. head)	**$30.72**			**$0.00**	$0.00	7.42	1.95
Combine Soybeans- air reel- flex	**$38.21**	$ 39.55	$ 35.00				
Combine, cart, haul to storage - Corn	**$42.87**	$ 46.15	$ 37.50				
Combine, cart, haul to storage - Soybeans	**$36.99**	$ 43.80	$ 29.45				
GPS mapping addition to harvesting	**$2.51**						
Picker 2 row- Ear Corn + 3 wagons	**$28.24**						
Combine Field Beans (belt pickup)	**$33.75**			**$33.90**	$226.79	6.69	1.81
Pulling Dry Beans (knife 6 row)	**$9.50**			**$0.00**	$0.00	8.73	0.66
Pulling Dry Beans (rod 6 row)	**$8.50**			**$0.00**	$0.00	8.73	0.66
Dry Bean – windrowing (6 row)	**$9.50**			**$21.34**	$186.30	8.73	0.66
Grain Cart- corn / acre	**$6.30**	$ 6.80	$ 5.50	**$0.00**	$0.00	6.87	1.44
Chopping Forage - Pull type (2 Row corn head) / ton	**$6.12/ ton**	$ 6.50	$ 5.45	**$60.27**	$83.17	1.38	3.35
Chopping Forage - Pull type Pickup head-10ft/hr.	**$9.45/ ton**			**$25.00**	$101.75	4.07	1.40
Chopping Forage-Self-propelled (6 row corn head)	**$247/ hr.**			**$47.61**	$65.70	1.38	2.35
Silo Filling-Tower silo: 1 Tractor, 1Chopper & Driver, Wagons	**$9.53/ ton**	$ 13.62	$ 7.90				
Bunker: Chopper and forage wagons or trucks & packer	**$13/ ton**						
Haylage	**$9.50/ ton**						
Silage Bagging per ft. (9 ft diameter)	**$8.54/ ton**	$ 10.15	$ 4.85				
Mowing	**$15.14**	$ 20.33	$ 11.45				
Raking – Hay 9ft.	**$8.00**	$ 13.85	$ 4.19	**$6.04**	$21.08	3.49	0.50
Tedding	**$6.27**						
Windrowing - hay or straw	**$12.30**	$ 12.50	$ 11.50				
Mower-Conditioner Pull-type (9 ft.)	**$15.55**	$ 19.35	$ 12.62	**$13.50**	$59.27	4.39	0.40
Mower-Conditioner- Self Propelled (16ft)	**$16.13**	$ 19.35	$ 13.00	**$0.00**	$0.00	7.76	0.64
Mower - Conditioner- Rotary (12ft)	**$14.99**	$ 15.75	$ 13.49	**$9.28**	$72.01	7.76	0.38
Small Square Baling Hay	**$0.82 per bale**	$ 0.97	$ 0.60	**$13.95**	$48.83	3.50	0.40
Straw	**$0.75 per bale**	$ 0.85	$ 0.55				
Mow, Rake, Baler & Handle - small square	**$1.77 per bale**	$ 2.00	$ 1.45				
Baler, Rake & Handle: Lrg Round	**$20.50/bale**						
Complete Hay harvesting per ton	**$34.44**						
Baling Round- 600-800 # per bale	**$9.00 per bale**	$ 10.00	$ 7.70				
Baling Round -1200 -1500 #	**$11.23 per bale**						
Baler 1000# Round/ with wrapper	**$11.97 per bale**	$ 12.36	$ 11.00	**$9.18**	$27.63	3.01	0.35
Mow-Rake-Bale-fld Haul- Lrg. Round/bale	**$19.76 per bale**	$ 20.05	$ 18.50				
Baling -1500 #- Lrg. Round - stalks/straw	**$12.47 per bale**	$ 14.00	$ 11.00				
Baling -1500 #- Lrg. Round stalks / straw - with wrap	**$13.82 per bale**	$ 15.45	$ 12.00	**$13.00**	$39.52	3.04	0.49
Baling – Lrg Sqr. Hay 4x3x6	**$10.58 per bale**	$ 12.17	$ 8.35	**$12.96**	$150.85	11.64	0.49
Baling – Lrg Sqr. Hay 4x3x8	**$13.98 per bale**	$ 14.02	$ 13.25				

FERTILIZER:	Custom $/Acre [1]	max.	min.	Total Machine Cost/ Ac [3]	Machine Rate per Hour [4]	Acres/Hr. [5]	Est. Fuel Gal./Acre[6]
Fertilizer Dry Bulk: Spreading	$6.99	$ 10.70	$ 4.95				
Lime application	$9.29	$ 12.90	$ 6.30				
Fertilizer- Liquid-Knifed In	$11.18	$ 12.30	$ 8.94				
Liquid-Sprayed:	$7.60	$ 11.30	$ 5.37				
Fertilizer- Anhydrous: 21 ft.	$12.10	$ 12.40	$ 10.99				
Manure Hauling-semi-solid - Load&Spread / hr.	87.59 per hr	$ 126.00	$ 54.20	$38.66	$77.32	2.00	2.31
Liquid Manure Haul - Injected Spreader- 1000 gal.	11.22 per 1000 gal.	$ 11.90	$ 10.00	$11.35	$5.68	0.50	2.86
Manure Pump, Hauling, Spreading - liquid (9500 gallon cap.) per hour	$92 / hour						
Manure Pump, Hauling, Injecting 1000 gal. - liquid (9500 gallon cap.)	$12.50 per 1000 gal.						
Bobcat/Skid Loader / hr.	$75.85 per hr.	$ 76.00	$ 72.00				
Ditch Mowing	$59.81 per hour						
Brush Hogging	$22.05	$ 28.60	$ 14.46				
Grain Drying- continuous flow / point / bu.	$0.04/pt./bu.	$ 0.05	$ 0.03				
Grain Drying- in bin dryer / point / bu.	$0.06/pt/bu.	$ 0.07	$ 0.04				
Grain Auger / bu.	$0.07 per bu.						
Grain Storage / mo.	$0.05/bu./mo.	$ 0.06	$ 0.03				
Grain Storage for season	$ 0.21 per bu.						
Grain Haul - per bu.- field to farmstead	$0.09/ up to 10 miles			.16/25mi			
Grain Haul - per bu.- farm to market - 25mi	$0.17/ up to 25 miles	$ 0.18	$ 0.16				
Power Washing per hr.	42.38						
Rock picking	$13.79						
Custom Farming- Corn	$115.44	$ 126.65	$ 95.00	(all machine operations for growing & harvest)			
Custom Farming- Soybeans	$97.18	$ 112.40	$ 80.00	(all machine operations for growing & harvest)			
Custom Farming- Small Grains	$85.00	$ 89.50	$ 76.67	(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.

$3.60 Fuel Price : $3.960 ** base fuel & lube price used

1 Custom $ per acre: Represents the rate obtained from surveys of actual farm data surveys for 2012 & 2013 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 there locations. This numbers includes machine, power unit & operator where needed. Values have been adjusted higher to reflect the change in power fuel costs noted above. Rate adjusted 2.5% above 2013 values.

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 2012, 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 operational and ownership cost of machinery supported by ©University of Minnesota, Machinery Economic cost estimates for 2012. If the machine is run at full capacity (or engine clock hours) this per acre rate should be in 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 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 hoursepower-hour on an average. Your individual machines fuel use may vary from this number.

7 Labor cost : Charged for this table at a rate of $15.00 per hour for unskilled tasks and $20.00 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.

Major shifts in power fuel cost during the past few year 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%.

- **University of Minnesota: Machinery Economic cost estimates for 2013 © -- http://faculty.apec.umn.edu/wlazarus/documents/machdata.pdf**
- **Iowa State University: 2013 Iowa Farm Custom Rate Survey - Ag Decision Maker @ http://www.extension.iastate.edu/agdm/crops/html/a3-10.html**
- **Kansas State Univeristy: 2013 Projected Custom Rates for Kansas @ http://www.agmanager.info/farmmgt/machinery/Tools/KCD_CustomRates(Sep2013).pdf**
- **Texas A&M University: 2011 Texas Agricultural Custom Rates @ http://agecoext.tamu.edu/files/2013/08/2011TxCustomRates04-22-11.pdf**
- **NASS- USDA & Pennsylvania Department of Ag: 2013 Machinery Custom Rates- Adam Pike, April 2013 http://pss.uvm.edu/vtcrops/articles/PA_CustomRates_2013.p**
- **University of Kentucky: Custom Machinery Rates March 2013 @ http://www2.ca.uky.edu/cmspubsclass/files/ghalich/CustomMachineryRatesKentucky2013.pdf**
- **Purdue Extension: 2013 Indiana Farm Custom Rates 06-13 @ http://www.extension.purdue.edu/extmedia/ec/ec-130-w.pdf**
- **University of Illinois: Machinery Cost Estimates© 5-2012, Univ. of Illinois @ http://farmdoc.illinois.edu/manage/machinery/summary%202012.pdf**
- **University of Nebraska Lincoln: 2012 Nebraska Farm Custom Rates May2012 @ http://ianrpubs.unl.edu/epublic/live/ec823/build/ec823.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.**

This document was compiled by: Dennis Stein, District Farm Business Management, Extension Educator, Michigan State University Extension. revised 11/2013
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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 DIRTI 5:

1. **D**epreciation: $\frac{\text{original cost - salvage value}}{\text{years of use}}$		$ _____
2. **I**nterest: interest rat x AIV[a]		$ _____
3. **R**epairs: estmated 2 to 5 % of original cost		$ _____
4. **T**axes: (0 in Michigan - i.e., no taxes on personal property used in agriculture)		$ _____
5. **I**nsurance: (estimated 0.5% x AIV for insurance premium)		$ _____
6. Total ownership cost per year (add lines 1 thru 5)		$ _____
A. Ownership cost per unit: total ownership cost ÷ 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) Line C x [1+(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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MICHIGAN STATE UNIVERSITY Extension

2014 Participating Seed Companies:

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

BECK'S SUPERIOR HYBRIDS
Beck's Hybrids
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Atlanta, IN 46031
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www.channel.com

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St. Paul, MN 55164-5324
www.croplangenetics.com

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www.dfseeds.com

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www.dairylandseed.com

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Crop Production Services
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www.dyna-groseed.com

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Minnetonka, MN 55305
www.syngentaseeds.com

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www.greatlakeshybrids.com

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www.hylandseeds.com

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Indianapolis, IN 46268
www.mycogen.com

NU TECH/G2 GENETICS
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Ames, IA 50010
www.nutechseed.com

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www.ruppseeds.com

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www.stineseed.com

ZF SELECT
Zeeland Farm Services, Inc.
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Zeeland, MI 49464
www.zfsinc.com

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The 2014 TARE Trials were made successful by the generous support of the following organizations:

Corn Marketing Program of Michigan

Crop Production Services

Great Lakes Hybrids

Indian Summer Compost

Michigan Crop Improvement Association

Michigan Soybean Promotion Committee

Michigan Wheat Program

North Central S.A.R.E.

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