

# On-Farm Network Appreciation Event

Preliminary 2019 Research Results

December 16, 2019



# on-farm network

**PARTICIPATORY • PRECISE • PROACTIVE**



204-745-6488



204-745-6661



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## Welcome to the 2019 On-Farm Network Appreciation Dinner!

This growing season, with your participation and support, a total of 85 on-farm trials were completed across MPSG, MWBGA and MCGA. We would like to thank each of you for your interest in conducting on-farm research and we hope to help facilitate future research trials on each of your farms!

**In this book you will find** important information for interpretation of single page reports followed by summary tables and reports for each trial type. The data presented are strictly for 2019 trials – future analyses will investigate probabilities and patterns of response across site-years. Keep an eye out for this at future events and in publications such as MPSG's Pulse Beat magazine.

Additionally, results from the 2019 MPSG soybean rolling trials (recommended timing) are not presented here, as collaborative data collected from the trials with PAMI and the U of M are still being synthesized. Those results will be released as soon as data analysis is complete.

**Thank you** for your participation and continued support. This farmer-first research would not be possible without you!



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## Important Information to Interpret On-Farm Network Single Page Reports

On-Farm Network field trials are set up using a randomized complete block design (RCBD). An analysis of variance (ANOVA) has been conducted on all 2019 trials, treating site as a fixed effect and replicate (block) as a random effect. All single page reports and summaries within this document are based on a single-site analysis, ie., site-years are not combined. Therefore, the effect of treatment across site-years should not be interpreted until a combined analysis has been presented.

### Definitions

**Site-year:** A site-year, identified by a unique trial ID, is one research trial location in one year. For example, a seeding rate trial conducted in a field near Carman would be one site-year.

**Confidence level:** A 95% confidence level is used within our trials. This means we can say we are 95% certain of the outcome.

**P-value:** A calculated probability used in statistics to either accept or reject the null hypothesis. The null hypothesis for our trials is that there is no difference between treatment means. A p-value of less than 0.05 suggests that there is enough evidence to reject the null hypothesis, meaning there is a significant difference between treatment means. If the p-value is greater than 0.05, then there is not enough evidence to conclude that the observed treatment differences are due to our applied treatment at a 95% confidence level.

**Coefficient of Variation (CV):** The statistical measure of random variation in a trial. The lower the value, the less variable the data.

MPSG, MWBGA, and MCGA do not endorse the use of products tested in the On-Farm Network. Although trials are conducted at multiple sites under varying conditions, your individual results may vary. Contents of this research publication can only be reproduced with the permission of MPSG, MWBGA, and MCGA.

### Contacts and Questions

For any questions about existing trial data, data analysis, or for assistance with future trial establishment of an existing or new trial type, please contact your commodity organizations.



**Objective:** Quantify the agronomic impacts of inoculated dry beans compared to non-inoculated dry beans

**Summary:** There was no significant yield difference between inoculated and non-inoculated dry beans for this 2019 site-year.

Table 1. Summary of 2019 dry bean inoculant trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Nodule Rating @ R1		Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
			0-5 Scale		Single	None				
			Single	None	lb/ac	bu/ac				
DBI01	Rhineland	May 23	3.4	3.6	1514.0	1516.0	2.0	0.9	0.7654	No

## Dry Bean Inoculant Trial

**Trial ID:** 2019-DBI01 – R.M. of Rhineland

**Objective:** Quantify the agronomic impacts of seed applied inoculant in dry bean

**Summary:** Nodulation ratings at R1 did not differ agronomically between inoculated and non-inoculated dry beans. There was no significant yield difference between inoculated and non-inoculated dry beans.

### Trial Information

<b>Treatment</b>	BOS Peat Inoculant
<b>Years Since Dry Beans</b>	14
<b>Rural Municipality</b>	Rhineland, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Corn
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 23
<b>Variety</b>	T9905
<b>Seeding Rate</b>	105 000 seeds/ac
<b>Row Spacing</b>	30"
<b>Applied N</b>	15 lb N/ac
<b>Plant Stand @ V1</b>	76 000 plants/ac
<b>Harvest Date</b>	September 19

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	56.4	85.2	75.4	65.5
<b>Rainfall</b>	44.9	44.3	59.9	38.4

### Nodulation

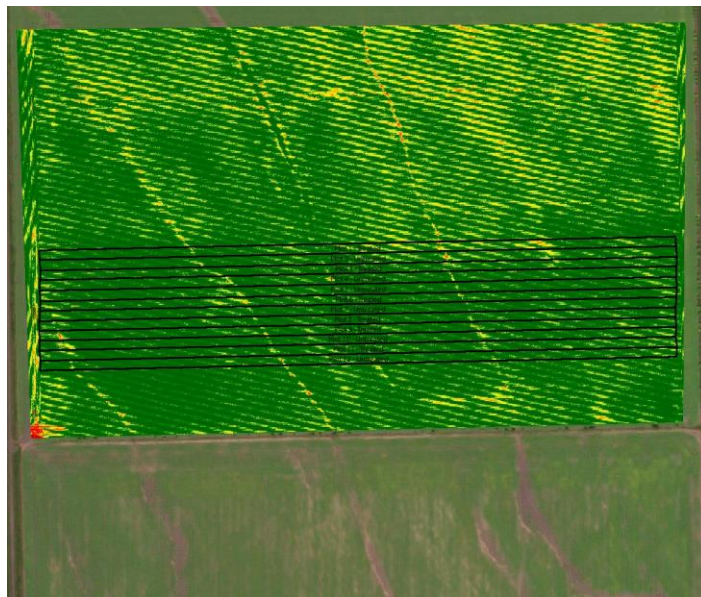
	Average Nodulation Rating @ R1†
<b>None</b>	3.6
<b>Single</b>	3.4

† 0 = no nodules, 1 = Poor (<5/plant), 2 = Fair (<10/plant), 3 = Good (<20/plant), 4 = Excellent (>20/plant)

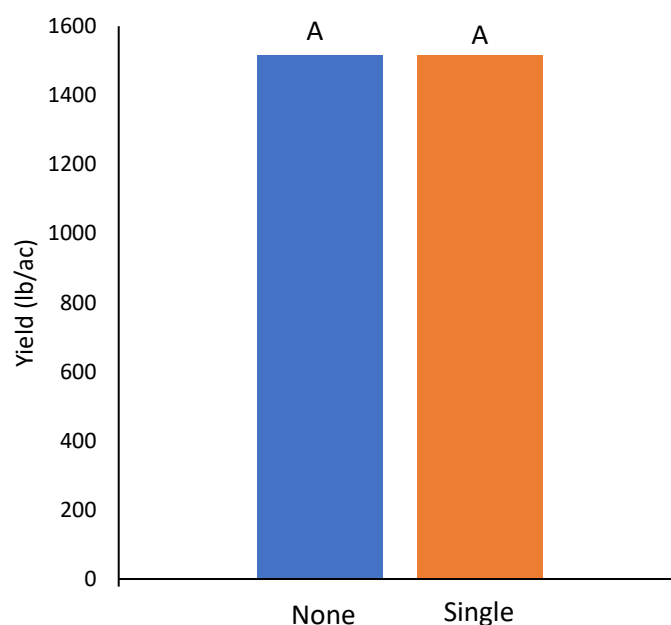
### Overall Yield

	Mean (lb/ac)
<b>Single</b>	1514
<b>None</b>	1516
<b>Yield Difference</b>	2
<b>P-Value</b>	0.7654
<b>CV</b>	0.9%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – July 7, 2019



### Yield by Treatment



# Dry Bean Nitrogen Fertility Trial

**Objective:** Quantify the agronomic impacts of nitrogen fertilizer rates in dry beans

**Summary:** There was no significant yield difference between nitrogen fertilizer rates for either 2019 site-year.

Table 2. Summary of 2019 dry bean nitrogen fertility trial yield results, by site-year

Trial ID	Rural Municipality	Placement	Seeding Date	Spring Soil N (0-24") lb/ac	Yield			CV %	P-Value	Statistically Significant @ 95%	
					140 lb N/ac	70 lb N/ac	40 lb N/ac				0 lb N/ac
DBN01	Nothfolk Treherne	Broadcast/Incorporated	May 28	20	2642.0	2570.0	n/a	2339.0	9.4	0.0841	No
DBN03	Rhineland	Broadcast/Incorporated	May 20	58	1978.0	1967.0	1893.0	1825.0	6.4	0.0529	No

## Dry Bean Nitrogen Fertility Trial

**Trial ID:** 2019DBN01 – R.M. of Norfolk Treherne

**Objective:** Quantify the agronomic impacts of nitrogen fertilizer rates in dry beans

**Summary:** There was no significant dry bean yield difference between 0 lb N/ac, 70 lb N/ac and 140 lb N/ac.

### Trial Information

<b>Treatment</b>	0 lbs vs 70 lbs vs 140 lbs
<b>Rural Municipality</b>	Norfolk Treherne
<b>Soil Texture</b>	Loamy Fine Sand
<b>Previous Crop</b>	Corn
<b>Tillage</b>	Conventional
<b>Spring Soil N (0-24")</b>	20 lb/ac
<b>Seeding Date</b>	May 28
<b>Variety</b>	T9905
<b>Seeding Rate</b>	96 240 seeds/ac
<b>Row Spacing</b>	20"
<b>Plant Stand @ VC</b>	52 000 plants/ac
<b>Harvest Date</b>	October 8

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	58	77.1	76.5	58.7
<b>Rainfall</b>	46.3	31.2	102.6	32.1

### Nodulation

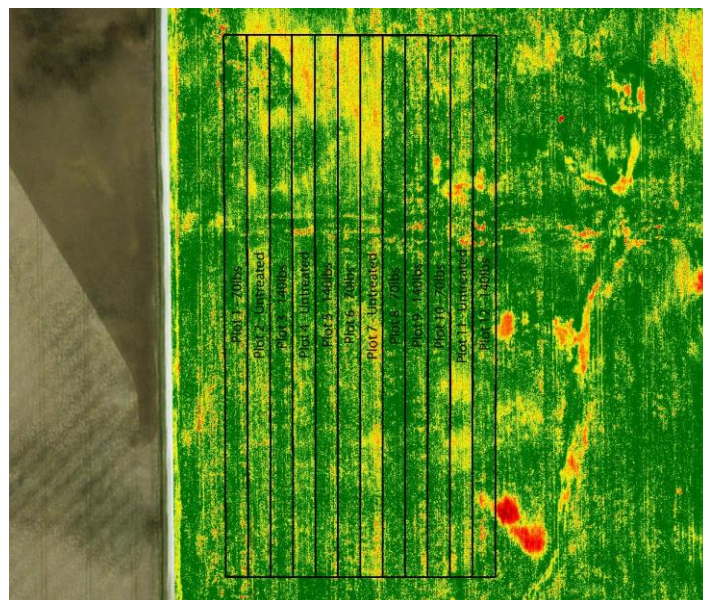
	Average Nodulation Rating @R2†
<b>0 lb N/ac</b>	3.5
<b>70 lb N/ac</b>	3.5
<b>140 lb N/ac</b>	2.9

† 0 = no nodules, 1 = Poor (<5/plant), 2 = Fair (<10/plant), 3 = Good (<20/plant), 4 = Excellent (>20/plant)

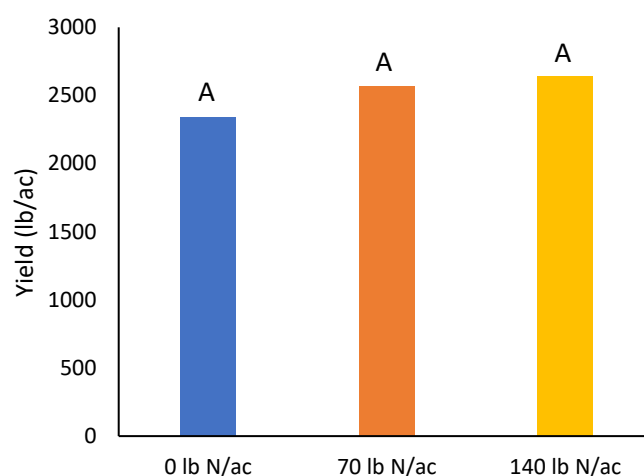
### Overall Yield

	Mean (bu/ac)
<b>0 lb N/ac</b>	2339
<b>70 lb N/ac</b>	2570
<b>140 lb n/ac</b>	2642
<b>P-Value</b>	0.0841
<b>CV</b>	9.4%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – July 17, 2019



### Yield by Treatment



## Dry Bean Nitrogen Fertility Trial

**Trial ID:** 2019DBN03 – R.M. of Rhineland

**Objective:** Quantify the agronomic impacts of nitrogen fertilizer rates in dry beans

**Summary:** There was no significant seed yield difference between 0 lb N/ac, 40 lb N/ac, 70 lb N/ac and 140 lb N/ac.

### Trial Information

<b>Treatment</b>	0lbs vs 40lbs vs 70lbs vs 140lbs
<b>Rural Municipality</b>	Rhineland, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Corn
<b>Tillage</b>	Conventional
<b>Spring Soil N (0-24")</b>	58 lb N/ac
<b>Seeding Date</b>	May 20
<b>Variety</b>	Windbreaker Pinto
<b>Seeding Rate</b>	96 000 seeds/ac
<b>Row Spacing</b>	22"
<b>Plant Stand @ VC</b>	73 000 plants/ac
<b>Harvest Date</b>	September 19

### Nodulation

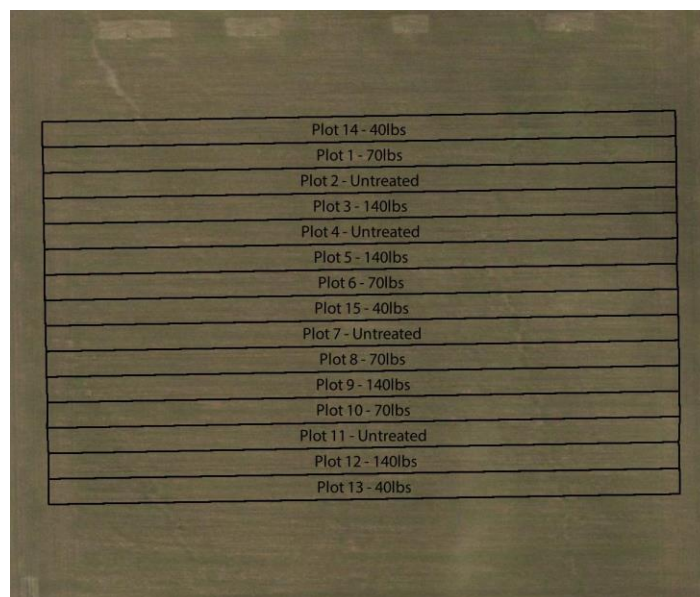
	<b>Average Nodulation Rating @R1†</b>
<b>0 lb N/ac</b>	3.9
<b>40 lb N/ac</b>	3.8
<b>70 lb N/ac</b>	3.6
<b>140 lb N/ac</b>	2.9

† 0 = no nodules, 1 = Poor (<5/plant), 2 = Fair (<10/plant), 3 = Good (<20/plant), 4 = Excellent (>20/plant)

### Overall Yield

	<b>Mean (lb/ac)</b>
<b>0 lb N/ac</b>	1825
<b>40 lb N/ac</b>	1893
<b>70 lb N/ac</b>	1967
<b>140 lb N/ac</b>	1978
<b>P-Value</b>	0.0529
<b>CV</b>	6.4%
<b>Significance</b>	<b>No</b>

### Field Image†

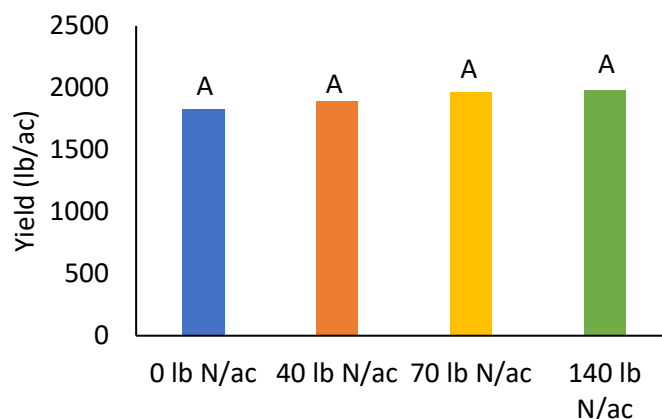


† No 2019 field imagery available due to conflicts with nearby airfield

### Precipitation (mm)

	<b>May</b>	<b>June</b>	<b>July</b>	<b>August</b>
<b>Normal</b>	56.4	85.2	75.4	65.5
<b>Rainfall</b>	44.9	44.3	59.9	38.4

### Yield by Treatment





**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in dry beans, compared to no fungicide applied

**Summary:** There was no significant yield difference between dry beans with and without fungicide application at either 2019 site-year.

Table 3. Summary of 2019 dry bean foliar fungicide trial yield results, by site-year

Trial ID	Rural Municipality	Bean Class	Product	Seeding Date	Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
					Treated	Untreated				
					lb/ac		lb/ac	%		
DBF01	Montcalm	Navy	Cotegra	May 18	1500	1494	6	11.0	0.8181	No
DBF02	Glenboro-South Cypress	Navy	Lance AG		2510	2461	50	2.9	0.3343	No

## Dry Bean Fungicide Trial

**Trial ID:** 2019DBF01 – R.M. of Montcalm

**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in dry bean

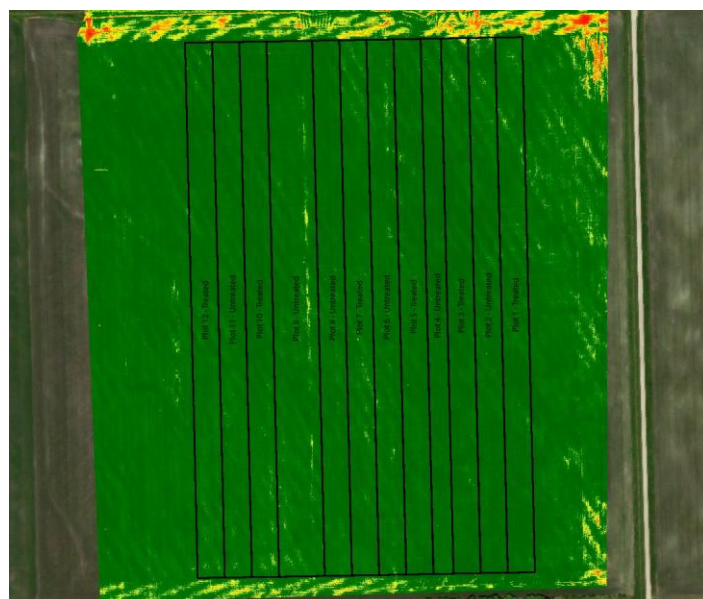
**Summary:** There was no significant yield difference between dry beans with a single application of fungicide and dry beans without fungicide.

### Trial Information†

<b>Treatment</b>	Cotegra
<b>Application Timing</b>	R3
<b>Application Date</b>	July 25
<b>Application Rate</b>	25 ac/jug
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Montcalm, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Corn
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 18
<b>Variety</b>	T9905 Navy Bean
<b>Seeding Rate</b>	120 000 seeds/ac
<b>Row Spacing</b>	30"
<b>Plant Stand @ R7</b>	74 000 plants/ac
<b>Harvest Date</b>	September 18

† No post-application disease ratings were taken at this site-year

### NDVI Field Image – August 7, 2019



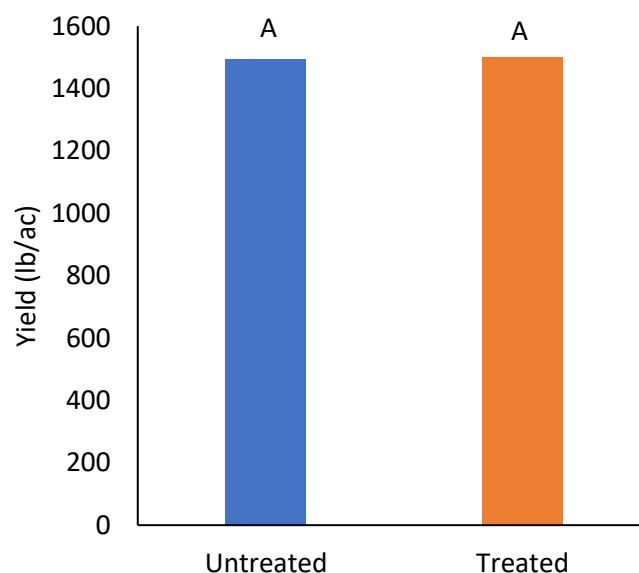
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	56.4	85.2	75.4	65.5
<b>Rainfall</b>	44.9	44.3	59.9	38.4

### Overall Yield

	Mean (lb/ac)
<b>Treated</b>	1500
<b>Untreated</b>	1494
<b>Yield Difference</b>	6
<b>P-Value</b>	0.8181
<b>CV</b>	11%
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Dry Bean Fungicide Trial

**Trial ID:** 2019DBF02 – R.M. of Glenboro-South Cypress

**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in dry bean

**Summary:** There was no significant yield difference between a single application of fungicide applied at R3 and the untreated check. No fungal diseases were identified at R6.

### Trial Information

<b>Treatment</b>	Lance AG
<b>Application Timing</b>	R3
<b>Application Date</b>	July 19
<b>Application Rate</b>	50 ac/case
<b>Application Method</b>	Aerial
<b>Rural Municipality</b>	Glenboro-South Cypress
<b>Soil Texture</b>	Silty Clay Loam
<b>Row Spacing</b>	30"
<b>Plant Stand @ R6</b>	89 000 plants/ac
<b>Harvest Date</b>	September 23

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	51.2	72.8	74.4	67.5
<b>Rainfall</b>	38	109.7	106.2	58.9

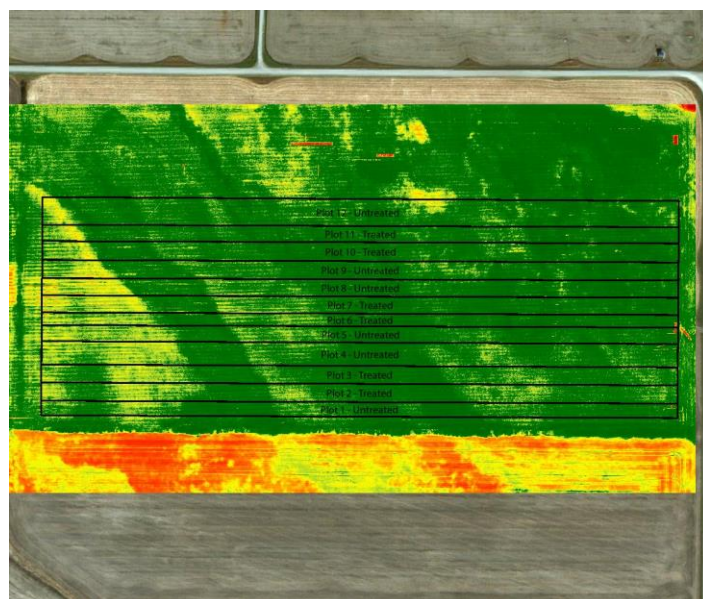
### Summary of Disease Rating (R6)

	Disease	Avg Incidence
<b>On-label</b>	None identified	n/a
<b>Other</b>	Bacterial blight	68%

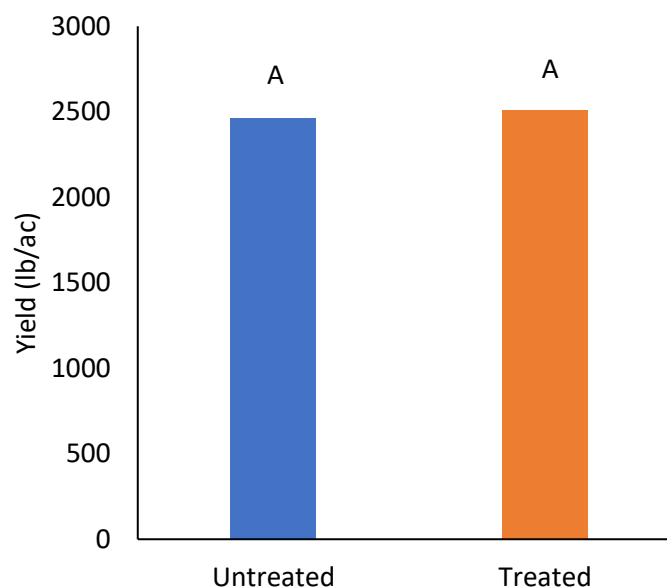
### Overall Yield

	Mean (lb/ac)
<b>Treated</b>	2510
<b>Untreated</b>	2461
<b>Yield Difference</b>	50
<b>P-Value</b>	0.3343
<b>CV</b>	2.9%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 11, 2019



### Yield by Treatment





# Field Pea Foliar Fungicide Trial

**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas, compared to no fungicide applied

**Summary:** Two site-years had significant yield increases with foliar fungicide application, compared to no application. The other five site-years did not have significant yield differences between field pea with and without fungicide.

Table 4. Summary of 2019 field pea foliar fungicide trial yield results, by site-year

Trial ID	Rural Municipality	Product	Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
			Treated	Untreated				
			----- bu/ac -----		bu/ac	%		
PF01	Rhineland	Delaro	29.2	27.8	1.4	3.8	0.004	Yes
PF02	Rockwood	Priaxor	68.3	65.0	3.2	4.0	0.9033	No
PF03	Louise	Priaxor	45.1	44.6	0.5	2.7	0.6309	No
PF04	Elton	Headline EC	68.4	67.1	1.3	2.2	0.2942	No
PF05	Two Borders	Delaro	66.1	62.1	4.0	9.3	0.3454	No
PF07	Swan Valley West	Dyax	74.7	72.4	2.3	3.1	0.0244	Yes
PF08	Livingston	Cotegra	67.0	65.7	1.3	10.2	0.4788	No

## Pea Fungicide Trial

**Trial ID:** 2019PF01 – R.M. of Rhineland

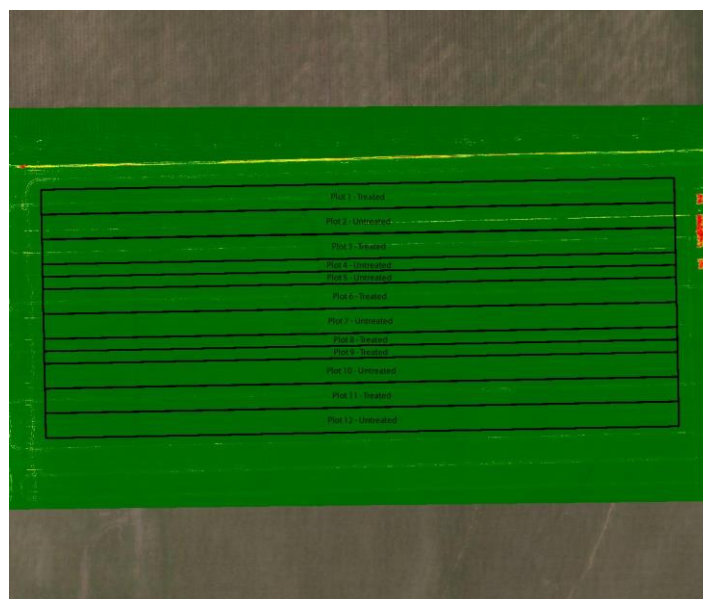
**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was a significant seed yield increase of pea with a single fungicide application compared to pea with no fungicide application.

### Trial Information

<b>Treatment</b>	Delaro
<b>Application Timing</b>	R2
<b>Application Date</b>	July 1
<b>Application Rate</b>	20 ac/jug
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Rhineland, RM of
<b>Soil Texture</b>	Clay / Loam
<b>Previous Crop</b>	Wheat
<b>Seeding Date</b>	May 7
<b>Variety</b>	AAC Lacombe
<b>Seeding Rate</b>	3.2 bu/ac
<b>Row Spacing</b>	7"
<b>Plant Stand @ R3.5</b>	208 000 plants/ac
<b>Harvest Date</b>	August 20

### NDVI Field Image – July 16, 2019



### Summary of Disease Rating (R3.5) †

	Ascochyta Foliar		Ascochyta Stem		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	70%	35%	5%	2%	8%	27%
<b>Severity</b>	1.1	0.5	0.1	0.0	0.1	0.0

† Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale

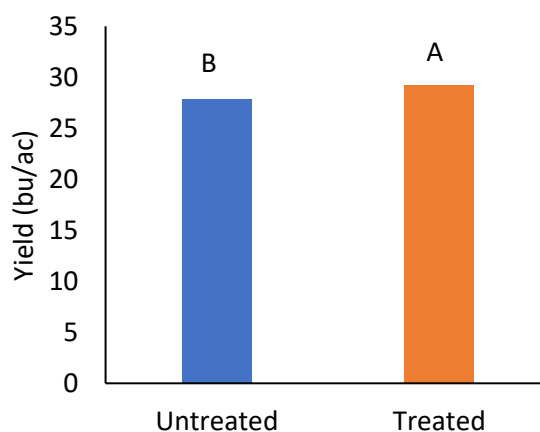
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	56.4	85.2	75.4	65.5
<b>Rainfall</b>	44.9	44.3	59.9	38.4

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	29.2
<b>Untreated</b>	27.8
<b>Yield Difference</b>	1.4
<b>P-Value</b>	0.004
<b>CV</b>	3.8%
<b>Significance</b>	Yes

### Yield by Treatment



## Pea Fungicide Trial

**Trial ID:** 2019PF02 – R.M. of Rockwood

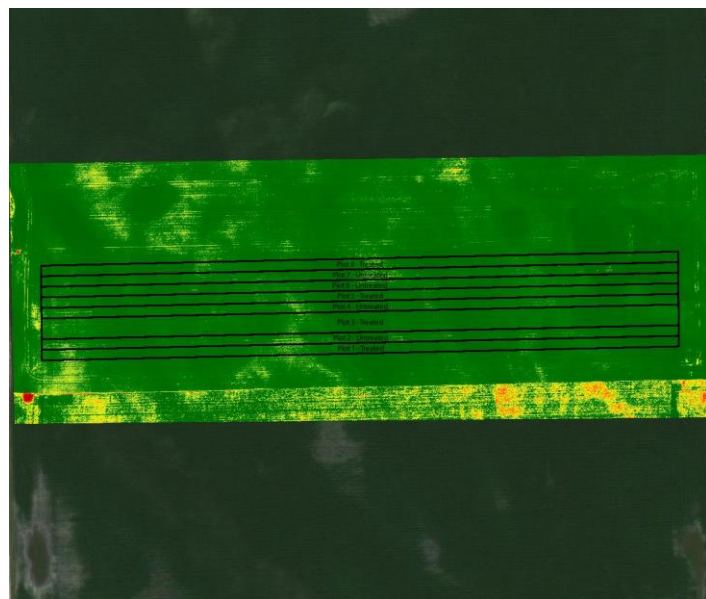
**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was no significant yield difference between pea with a single fungicide application and without fungicide.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R2
<b>Application Date</b>	July 3
<b>Application Rate</b>	160 ac/case
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Rockwood, RM of
<b>Soil Texture</b>	Very Fine Sandy Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 10
<b>Variety</b>	AAC Carver
<b>Seeding Rate</b>	3 bu/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	167 000 plants/ac
<b>Harvest Date</b>	August 17

### NDVI Field Image – July 18, 2019



### Summary of Disease Rating (R4)†

	Ascochyta Foliar		Ascochyta Stem		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	15%	25%	0%	0%	0%	0%
<b>Severity</b>	0.15	0.25	0	0	0	0

† Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale

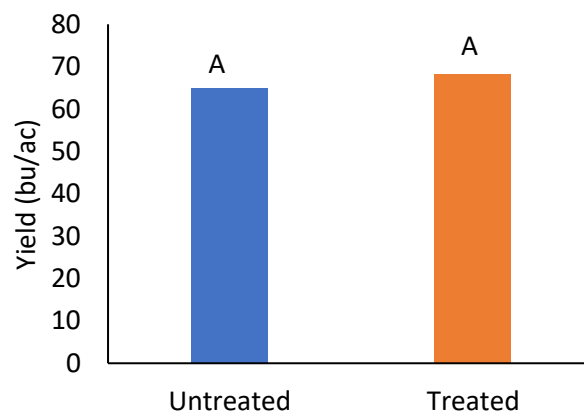
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.8	92	66.4	63.3
<b>Rainfall</b>	18.6	46.5	55.7	38.1

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	68.3
<b>Untreated</b>	65.0
<b>Yield Difference</b>	3.2
<b>P-Value</b>	0.1593
<b>CV</b>	4.3%
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Pea Fungicide Trial

**Trial ID:** 2019PF03 – R.M. of Louise

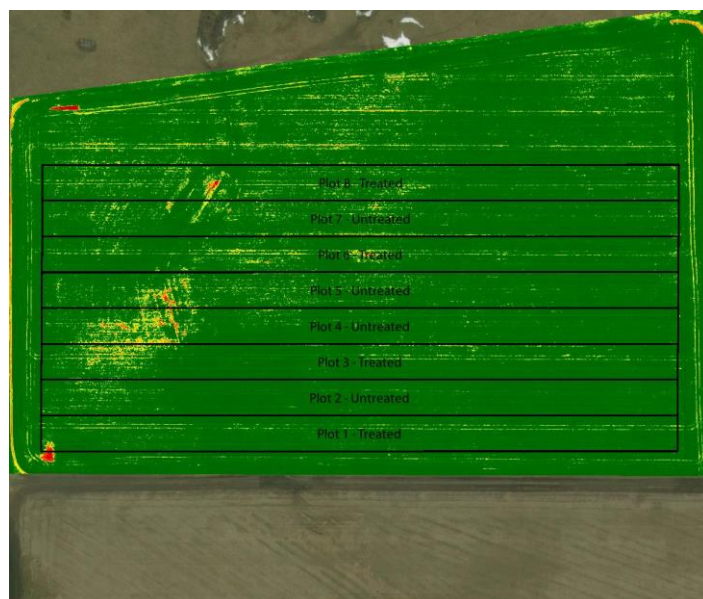
**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was no significant yield difference between pea with a single fungicide application and pea without fungicide application.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	Early Flower
<b>Application Date</b>	July 6
<b>Application Rate</b>	120 ml/ac
<b>Application Method</b>	Broadcast
<b>Rural Municipality</b>	Louise, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 13
<b>Variety</b>	CDC Jasper
<b>Seeding Rate</b>	2.75 bu/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R3.5</b>	119 000 plants/ac
<b>Harvest Date</b>	August 30

### NDVI Field Image – July 17, 2019



### Summary of Disease Rating (R3.5) †

	Ascochyta Foliar		Ascochyta Stem		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	95%	98%	20%	15%	0%	0%
<b>Severity</b>	1.75	1.8	0.2	0.15	0.0	0.0

† Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale

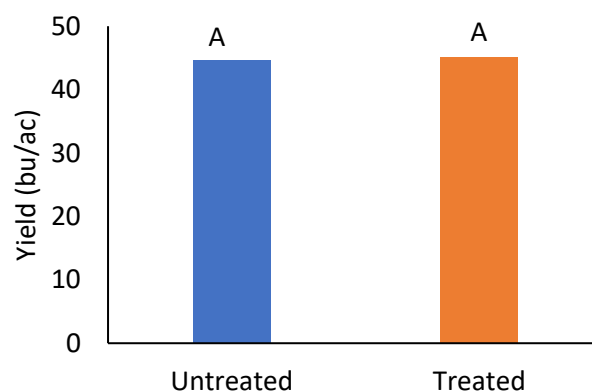
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	61.1	89.8	68.3	72.3
<b>Rainfall</b>	21.6	75.7	119.1	53.2

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	45.1
<b>Untreated</b>	44.6
<b>Yield Difference</b>	0.48
<b>P-value</b>	0.6309
<b>CV</b>	2.7
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Pea Fungicide Trial

**Trial ID:** 2019PF04 – R.M. of Elton

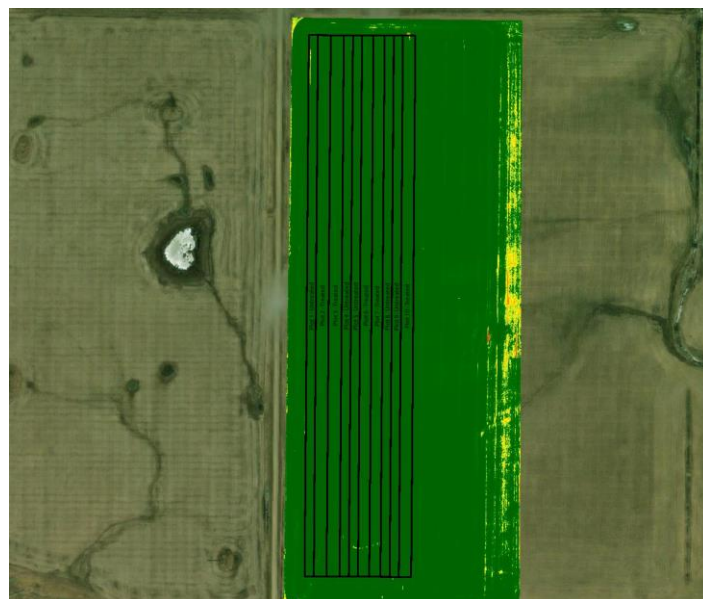
**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was no significant yield difference between pea with a single fungicide application and pea without fungicide.

### Trial Information

<b>Treatment</b>	Headline EC
<b>Application Timing</b>	R1
<b>Application Date</b>	July 6
<b>Application Rate</b>	20 ac/jug
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Elton, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Zero Tillage
<b>Seeding Date</b>	April 25
<b>Variety</b>	CDC Amarillo
<b>Seeding Rate</b>	3 bu/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R6</b>	175 000 plants/ac
<b>Harvest Date</b>	August 20

### NDVI Field Image July 17, 2019



### Summary of Disease Rating (R3.5) †

	Ascochyta Foliar		Ascochyta Stem		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	58%	66%	62%	74%	0%	0%
<b>Severity</b>	0.6	0.7	0.7	1.1	0.0	0.0

† Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale

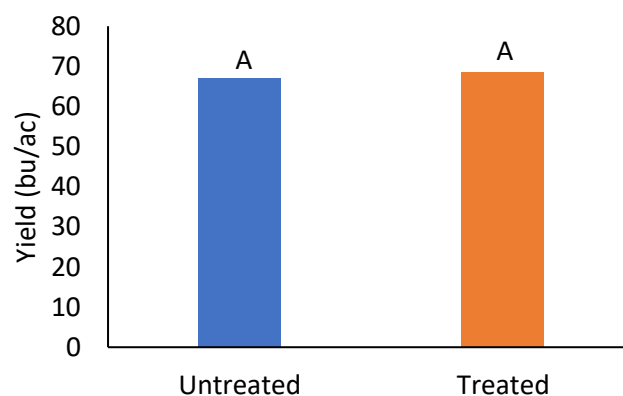
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	51.2	72.8	74.4	67.5
<b>Rainfall</b>	29.3	69.8	83.8	83.4

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	68.4
<b>Untreated</b>	67.1
<b>Yield Difference</b>	1.3
<b>P-Value</b>	0.2942
<b>CV</b>	2.2%
<b>Significance</b>	<b>No</b>

### Yield by Treatment





## Pea Fungicide Trial

**Trial ID:** 2019PF05 – R.M. of Two Borders

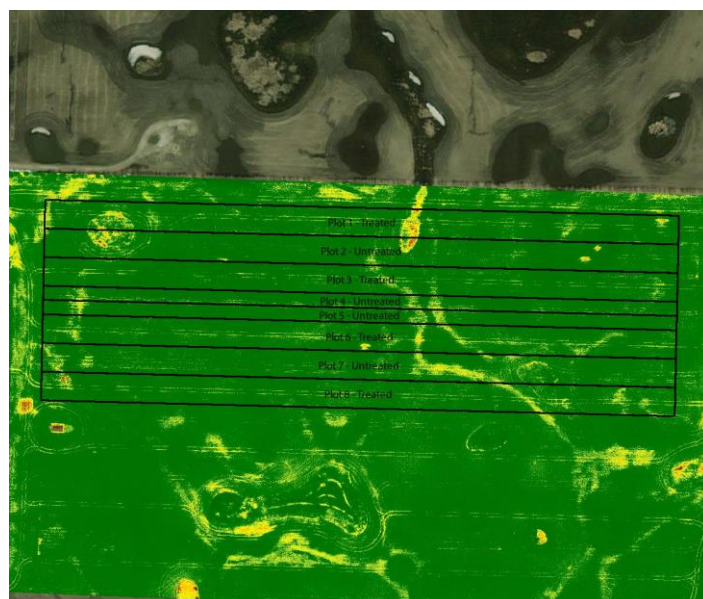
**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was no significant yield difference between pea with a single fungicide application and pea without fungicide.

### Trial Information

<b>Treatment</b>	Delaro
<b>Application Timing</b>	Early Flower / Seeds Forming
<b>Application Date</b>	July 2 / July 15
<b>Application Rate</b>	356 ml/ac
<b>Application Method</b>	Broadcast
<b>Rural Municipality</b>	Two Borders, RM of
<b>Soil Texture</b>	Loamy Clay Loam
<b>Previous Crop</b>	Barley
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 6
<b>Variety</b>	CDC Amarillo
<b>Seeding Rate</b>	3 bu/ac
<b>Row Spacing</b>	12"
<b>Plant Stand @ R5</b>	218 000 plants/ac
<b>Harvest Date</b>	August 17

### NDVI Field Image – July 22, 2019



### Summary of Disease Rating (R3.5)<sup>†</sup>

	Ascochyta Foliar		Ascochyta Stem		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	98%	95%	30%	13%	0%	0%
<b>Severity</b>	2.73	1.95	1.13	0.45	0.0	0.0

<sup>†</sup> Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale

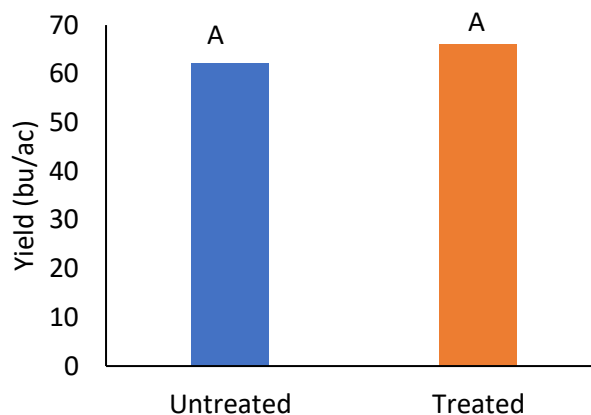
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	46.9	83.7	65.2	57.6
<b>Rainfall</b>	21.6	81	52.2	90.8

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	66.1
<b>Untreated</b>	62.1
<b>Yield Difference</b>	4
<b>P-Value</b>	0.3454
<b>CV</b>	9.3%
<b>Significance</b>	No

### Yield by Treatment



## Pea Fungicide Trial

**Trial ID:** 2019PF07 – R.M. of Swan Valley West

**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was a significant seed yield increase of pea with a single fungicide application compared to pea with no fungicide application.

### Trial Information

<b>Treatment</b>	Dyax
<b>Rural Municipality</b>	Swan Valley West, RM of
<b>Soil Texture</b>	Clay Loam
<b>Row Spacing</b>	10"
<b>Plant Stand @ R3</b>	144 000 plants/ac
<b>Harvest Date</b>	August 13

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	45.4	84.2	85.6	68.3
<b>Rainfall</b>	23.3	30.1	69.6	53

### Summary of Disease Rating (R3)<sup>†</sup>

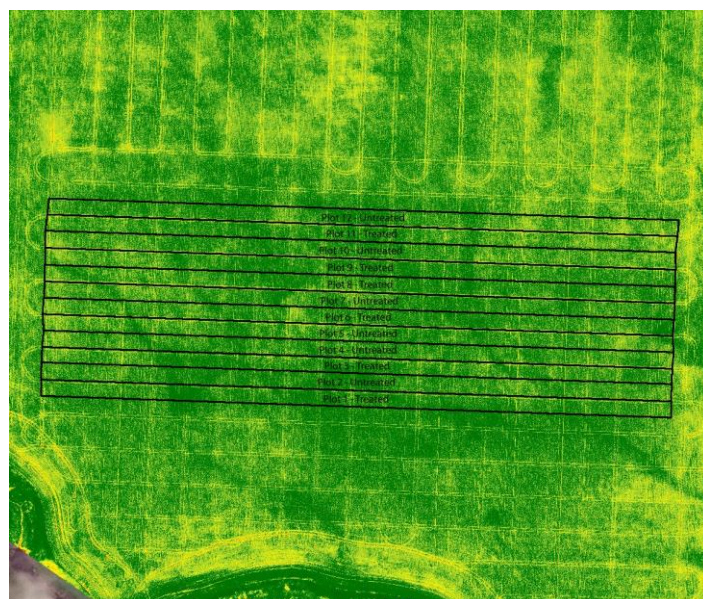
	Ascochyta Foliar		Ascochyta Stem		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	24%	35%	0%	0%	12%	8%
<b>Severity</b>	0.24	0.35	0.0	0.0	0.08	0.12

<sup>†</sup> Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale

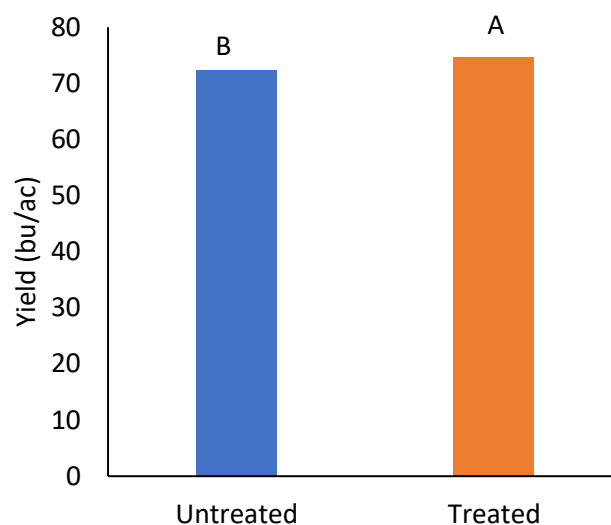
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	74.7
<b>Untreated</b>	72.4
<b>Yield Difference</b>	2.3
<b>P-Value</b>	0.0244
<b>CV</b>	3.1
<b>Significance</b>	<b>Yes</b>

### NDVI Field Image – July 21, 2019



### Yield by Treatment



## Pea Fungicide Trial

**Trial ID:** 2019PF08 – R.M. of Livingston

**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in field peas

**Summary:** There was no significant yield difference between pea with a single fungicide application and pea without fungicide.

### Trial Information

<b>Treatment</b>	Cotegra
<b>Application Timing</b>	50% flower
<b>Application Date</b>	July 3
<b>Application Rate</b>	35 ac/jug
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Livingston, RM of
<b>Soil Texture</b>	Loamy Fine Sand
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 14
<b>Seeding Rate</b>	240 lb/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R3</b>	255 000 plants/ac
<b>Harvest Date</b>	August 22

### Summary of Disease Rating (R3) †

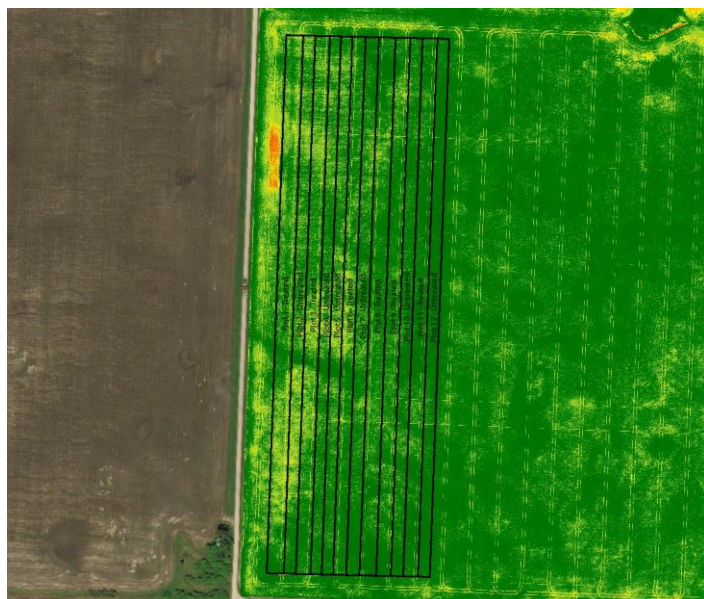
	Ascochyta Foliar		Ascochyta Stem	
	UN	TRT	UN	TRT
<b>Incidence</b>	42%	48%	3%	0%
<b>Severity</b>	0.4	0.8	0.0	0.0

† Ascochyta Foliar 0 – 6 rating scale, Ascochyta Stem % affected (0-100%), White Mold 0 – 5 rating scale; white mold was not rated at this location

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	67.0
<b>Untreated</b>	65.7
<b>Yield Difference</b>	1.3
<b>P-Value</b>	0.4788
<b>CV</b>	10.2%
<b>Significance</b>	<b>No</b>

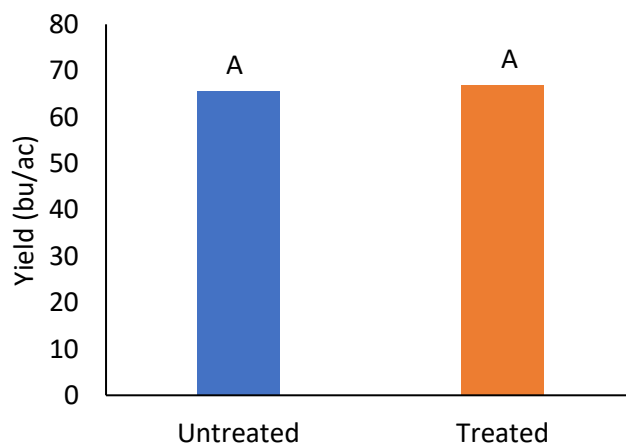
### NDVI Field Image – July 21, 2019



### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	45.4	84.2	85.6	68.3
<b>Rainfall</b>	23.3	30.1	69.6	53

### Yield by Treatment





# Soybean Foliar Fungicide Trial

**Objective:** Quantify the agronomic impacts of single foliar fungicide application in soybean, compared to soybean without fungicide

**Summary:** There was no significant yield difference between soybean with a single foliar fungicide application compared to soybean without fungicide for any 2019 site-year

Table 5. Summary of 2019 soybean foliar fungicide trial yield results, by site-year

Trial ID	Rural Municipality	Product	Row Spacing	Plant Stand Midseason	Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
					Treated	Untreated				
			inch	'000/ac	bu/ac		bu/ac	%		
SF01	St. Andrews	Priaxor	10"	132	31.9	30.7	1.2	3.9	0.2215	No
SF02	Dauphin	Priaxor	10"	181	36.0	35.3	0.7	4.1	0.2255	No
SF03	Prairie Lakes	Priaxor	10"	144	35.1	35.5	-0.4	8.4	0.7644	No
SF04	Two Borders	Cotegra	10"	148	32.3	33.4	-1.1	6.8	0.5434	No
SF06	Morris	Cotegra	15"	157	22.6	22.6	0.0	11.8	0.8981	No
SF07	Brokenhead	Priaxor	10"	283	35.9	35.1	0.8	4.7	0.1395	No
SF08	Bifrost-Riverton	Priaxor	10"	132	19.1	2.0	-0.4	6.2	0.4999	No
SF09	Bifrost-Riverton	Priaxor	10"	173	24.1	24.1	0.0	8.0	1.0000	No

## Soybean Fungicide Trial

**Trial ID:** 2019-SF01 – R.M. of St. Andrews

**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no significant yield difference between soybeans with a single fungicide application and soybeans without.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R1-R2
<b>Application Date</b>	July 9
<b>Application Rate</b>	180 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	St. Andrews, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	132 000 plants/ac
<b>Harvest Date</b>	October 28

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	46.2	92	66.4	63.3
<b>Rainfall</b>	15.3	30.5	75.4	26.1

### Summary of Disease Rating (R4)<sup>†</sup>

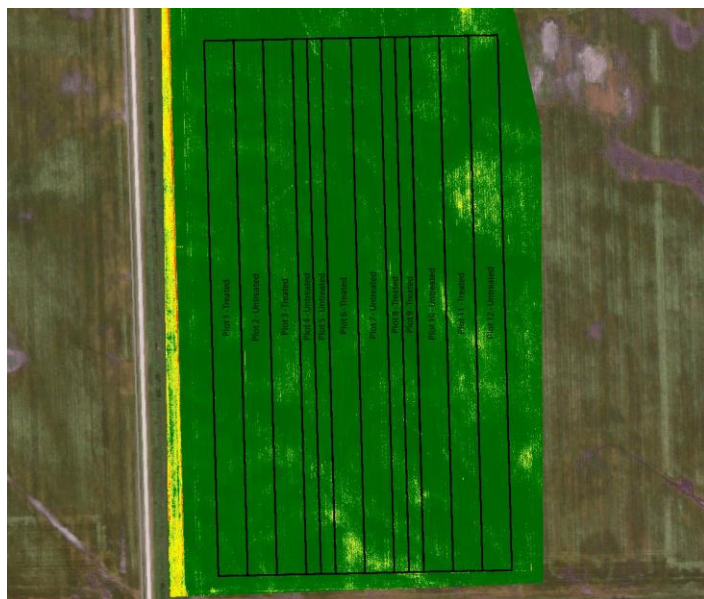
	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	0%	100%	53%	0%	0%
<b>Severity</b>	n/a	n/a	1.95	0.67	0.0	0.0

<sup>†</sup> Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

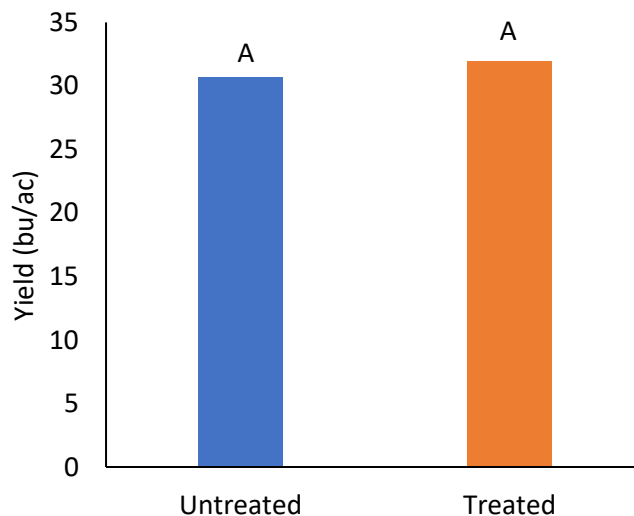
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	31.9
<b>Untreated</b>	30.7
<b>Yield Difference</b>	1.2
<b>P-Value</b>	0.2215
<b>CV</b>	3.9%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 6, 2019



### Yield by Treatment



## Soybean Fungicide Trial

**Trial ID:** 2019-SF02 – R.M. of Dauphin

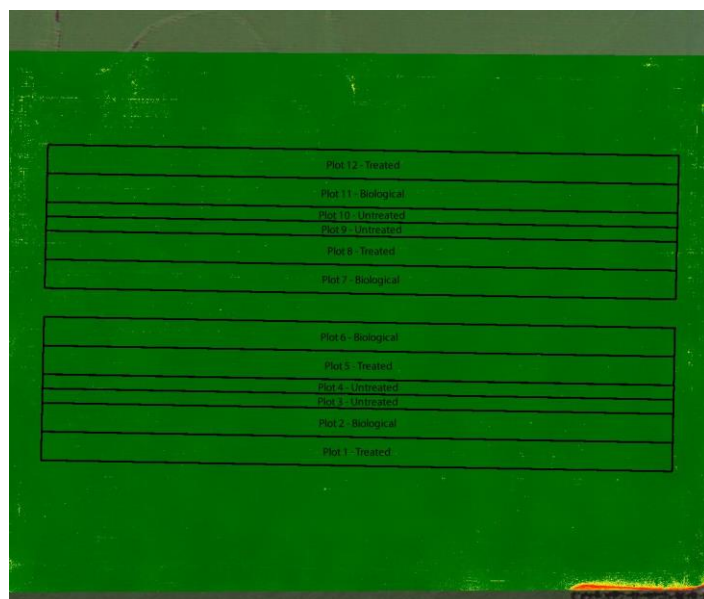
**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no statistically significant yield difference between soybean with a single fungicide application and soybean without.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R1-R2
<b>Application Date</b>	July 10
<b>Application Rate</b>	180 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 13
<b>Variety</b>	DKB005-52
<b>Seeding Rate</b>	185 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	181 000 plants/ac
<b>Harvest Date</b>	October 8

### NDVI - Field Image August 6, 2019



### Summary of Disease Rating (R4)<sup>†</sup>

	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	8%	8%	100%	75%	0%	0%
<b>Severity</b>	n/a	n/a	1.63	0.95	0.0	0.0

<sup>†</sup> Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

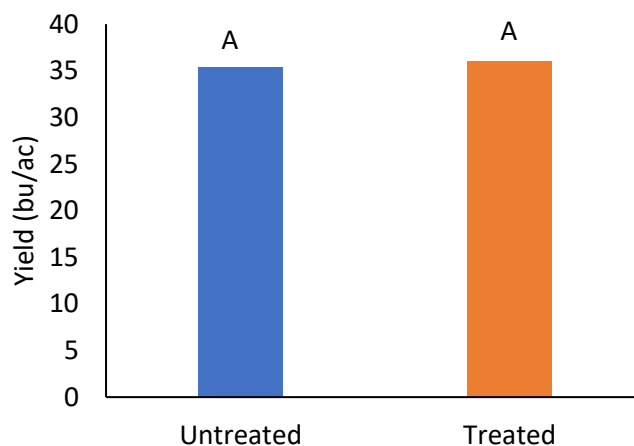
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	10.9	60.3	65.6	45.9

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	36.0
<b>Untreated</b>	35.3
<b>Yield Difference</b>	0.7
<b>P-Value</b>	0.2255
<b>CV</b>	4.1%
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Soybean Fungicide Trial

**Trial ID:** 2019-SF03 – R.M. of Prairie Lakes

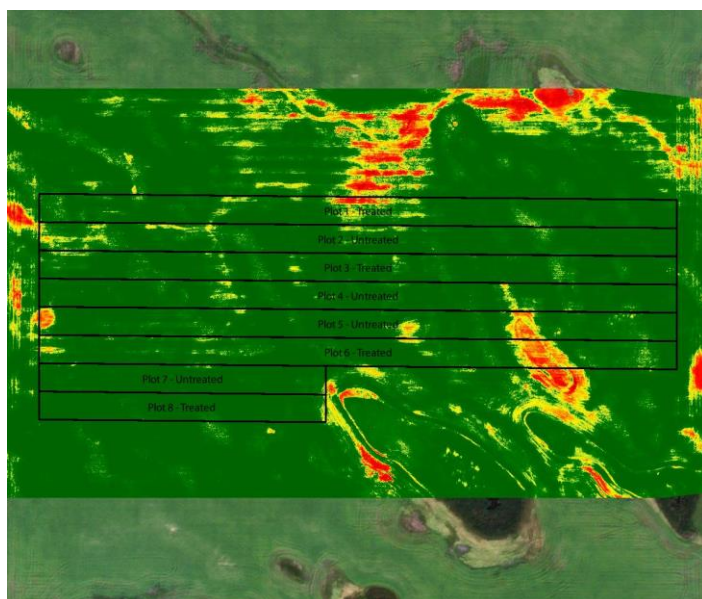
**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no significant yield difference between soybeans with a single fungicide application and soybeans without fungicide.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R2
<b>Application Date</b>	July 11
<b>Application Rate</b>	180 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Prairie Lakes, RM of
<b>Soil Texture</b>	Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 22
<b>Variety</b>	23-60RY
<b>Seeding Rate</b>	210 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand R3.5</b>	144 000 plants/ac

### NDVI Field Image – August 11, 2019



### Summary of Disease Rating (R4) †

	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	0%	100%	100%	0%	0%
<b>Severity</b>	0.0	0.0	2.93	2.95	0.0	0.0

† Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

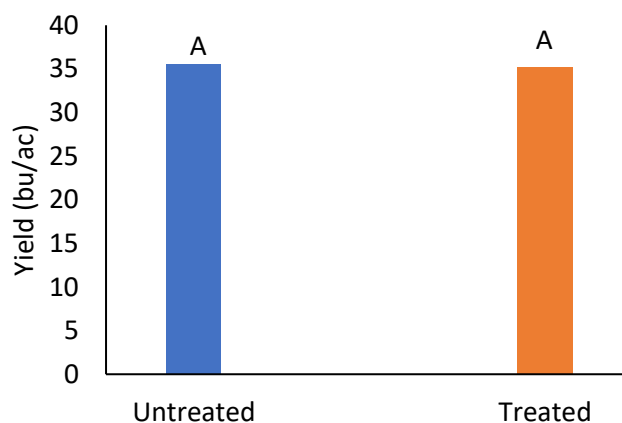
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	61.1	89.8	68.3	72.3
<b>Rainfall</b>	21.1	124.4	116.2	57.1

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	35.1
<b>Untreated</b>	35.5
<b>Yield Difference</b>	-0.37
<b>P-Value</b>	0.7644
<b>CV</b>	8.4%
<b>Significance</b>	No

### Yield by Treatment



## Soybean Fungicide Trial

**Trial ID:** 2019-SF04 – R.M. of Two Borders

**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no significant yield difference between soybeans with a fungicide application and soybeans without.

### Trial Information

<b>Treatment</b>	Cotegra
<b>Application Timing</b>	R2
<b>Application Date</b>	July 11
<b>Application Rate</b>	280 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Two Borders, RM of
<b>Soil Texture</b>	Loam
<b>Previous Crop</b>	Wheat
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	148 000 plants/ac
<b>Harvest Date</b>	October 8

### Summary of Disease Rating (R4)†

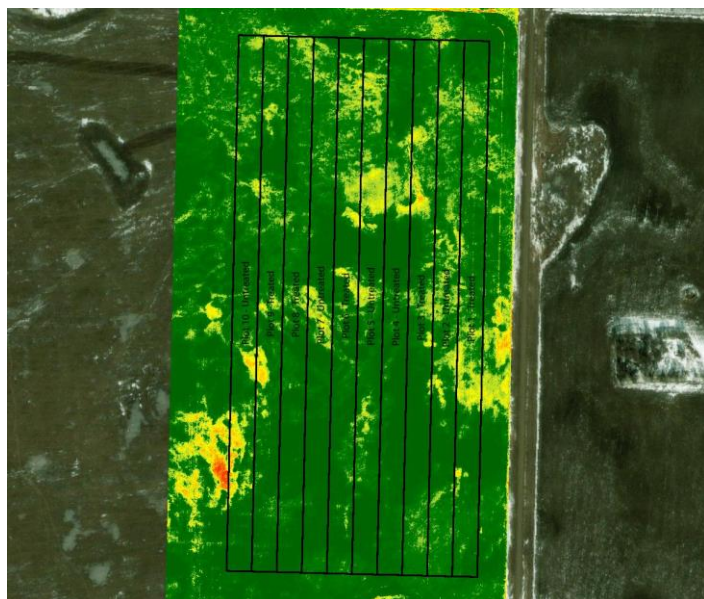
	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	0%	92%	98%	0%	0%
<b>Severity</b>	n/a	n/a	1.84	1.68	0.0	0.0

† Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

### Overall Yield

	Mean (bu/ac)
<b>Treatment</b>	32.3
<b>Untreated</b>	33.4
<b>Yield Difference</b>	-1.1
<b>P-Value</b>	0.5434
<b>CV</b>	6.8%
<b>Significance</b>	No

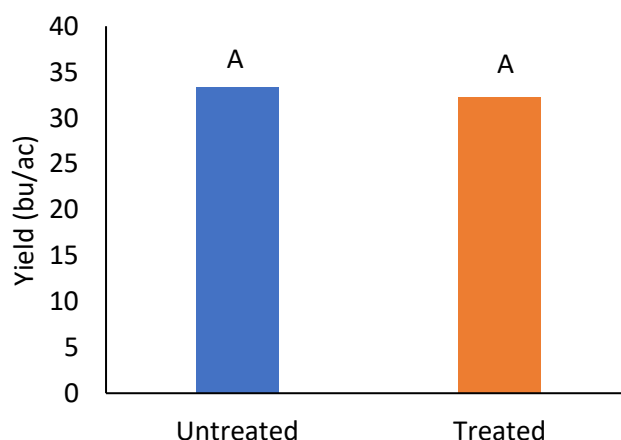
### NDVI Field Image – August 11, 2019



### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	46.9	83.7	65.2	57.6
<b>Rainfall</b>	21.6	81	52.2	90.8

### Yield by Treatment





## Soybean Fungicide Trial

**Trial ID:** 2019-SF06 – R.M. of Morris

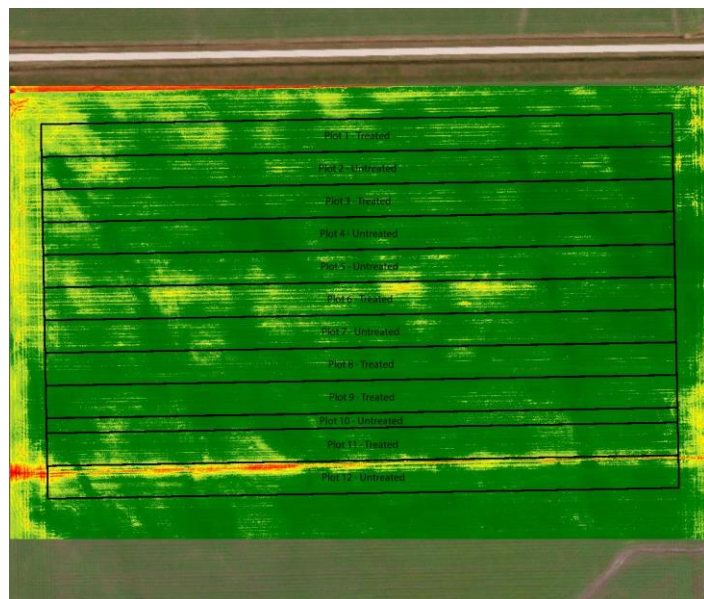
**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no significant yield difference between soybeans with a fungicide application and soybeans without.

### Trial Information

<b>Treatment</b>	Cotegra
<b>Application Timing</b>	R2
<b>Application Date</b>	July 12
<b>Application Rate</b>	280 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Morris, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	43599
<b>Variety</b>	25-10RY
<b>Seeding Rate</b>	180 000 seeds/ac
<b>Row Spacing</b>	15"
<b>Plant Stand @ R3</b>	157 000 plants/ac
<b>Harvest Date</b>	October 30

### NDVI Field Image – August 8, 2019



### Summary of Disease Rating (R3) †

	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	3%	100%	85%	0%	0%
<b>Severity</b>	n/a	n/a	1.7	1.67	0.0	0.0

† Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

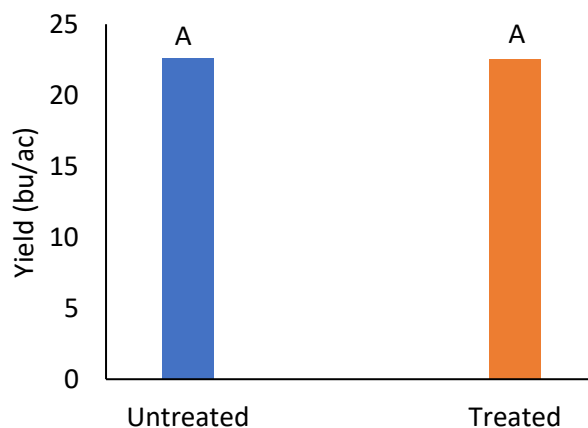
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	51.2	72.8	74.4	67.5
<b>Rainfall</b>	38	109.7	106.2	58.9

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	22.6
<b>Untreated</b>	22.6
<b>Yield Difference</b>	0
<b>P-Value</b>	0.8981
<b>CV</b>	11.8%
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Soybean Fungicide Trial

**Trial ID:** 2019-SF07 – R.M. of Brokenhead

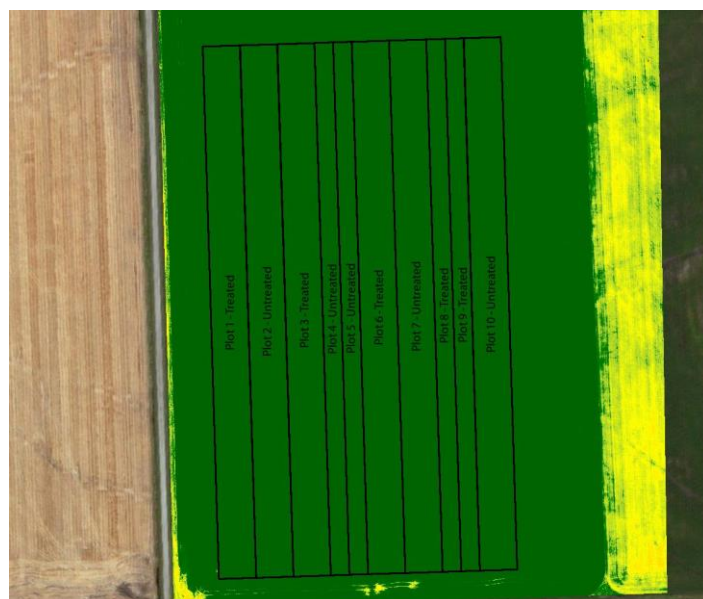
**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no significant yield difference between soybean with a single fungicide application and soybean without.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R2
<b>Application Date</b>	July 15
<b>Application Rate</b>	180 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Brokenhead, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 17
<b>Variety</b>	LS 0036RR
<b>Seeding Rate</b>	349 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	283 000 plants/ac
<b>Harvest Date</b>	October 8

### NDVI Field Image – August 7, 2019



### Summary of Disease Rating (R4) †

	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	0%	88%	58%	0%	0%
<b>Severity</b>	0.0	0.0	1.08	0.58	0.0	0.0

† Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

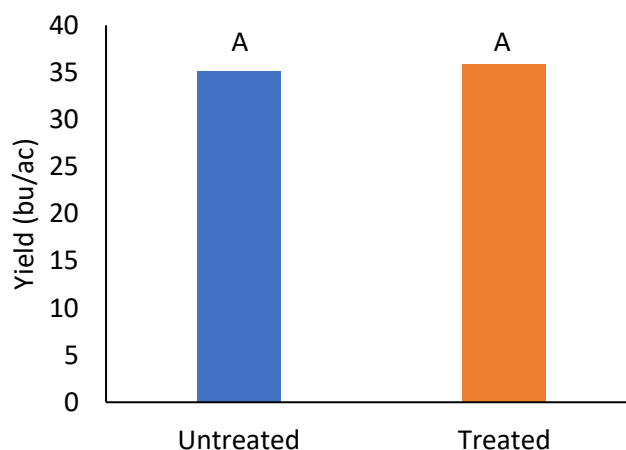
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54	89.9	73.4	72.6
<b>Rainfall</b>	19	45.4	65.7	59.6

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	35.9
<b>Untreated</b>	35.1
<b>Yield Difference</b>	0.8
<b>P-Value</b>	0.1395
<b>CV</b>	4.7
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Soybean Fungicide Trial

**Trial ID:** 2019-SF08 – R.M. of Bifrost-Riverton

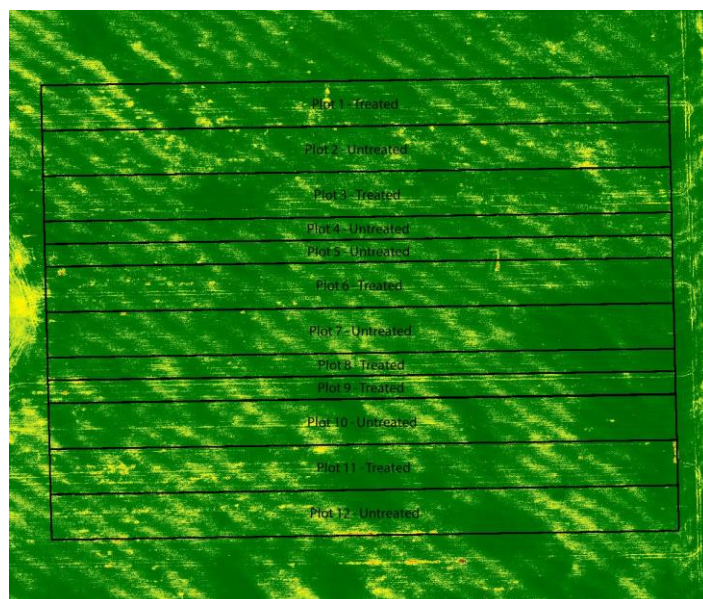
**Objective:** Quantify the agronomic impacts of a single fungicide application in soybean

**Summary:** There was no significant difference between soybean with a single fungicide application and soybean without.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R2
<b>Application Date</b>	July 16
<b>Application Rate</b>	180 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Bifrost-Riverton, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Soybeans
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 21
<b>Variety</b>	P007A90R
<b>Seeding Rate</b>	180 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	132 000 plants/ac
<b>Harvest Date</b>	October 26

### NDVI Field Image – August 9, 2019



### Summary of Disease Rating (R4)

	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	0%	100%	100%	0%	0%
<b>Severity</b>	n/a	n/a	2.17	1.9	0.0	0.0

† Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

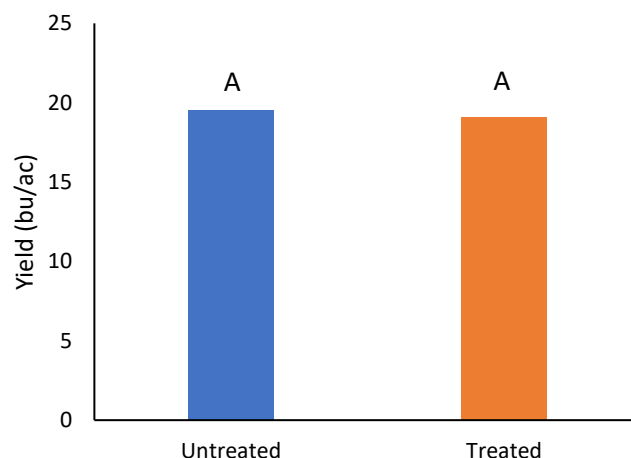
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	47.2	75.6	69	79.7
<b>Rainfall</b>	20.6	31.9	66.9	25.7

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	19.1
<b>Untreated</b>	19.5
<b>Yield Difference</b>	-0.4
<b>P-Value</b>	0.4999
<b>CV</b>	6.2%
<b>Significance</b>	<b>No</b>

### Yield by Treatment





## Soybean Fungicide Trial

**Trial ID:** 2019-SF09 – R.M. of Bifrost-Riverton

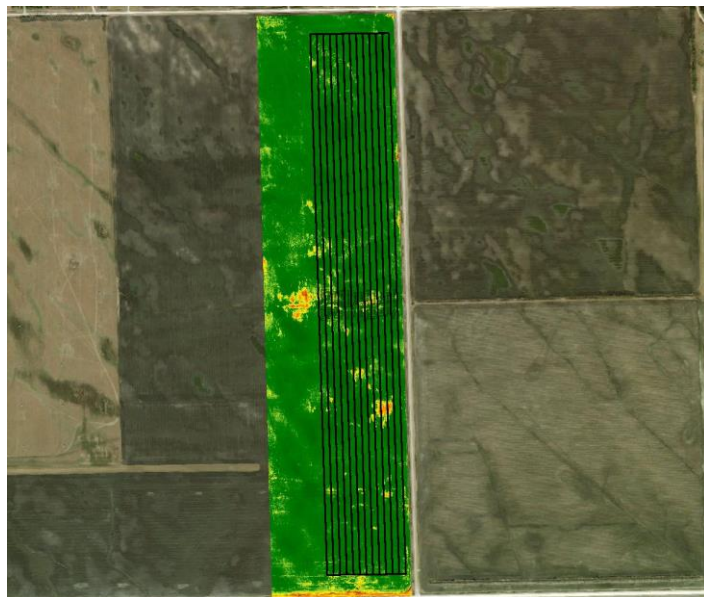
**Objective:** Quantify the agronomic impacts of a single foliar fungicide application in soybean

**Summary:** There was no significant yield difference between soybeans with fungicide and soybeans without fungicide.

### Trial Information

<b>Treatment</b>	Priaxor
<b>Application Timing</b>	R2
<b>Application Date</b>	July 16
<b>Application Rate</b>	180 ml/ac
<b>Application Method</b>	Ground
<b>Rural Municipality</b>	Bifrost-Riverton, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Soybeans
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 18
<b>Variety</b>	S007-Y4
<b>Seeding Rate</b>	205 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ R4</b>	173 000 plants/ac
<b>Harvest Date</b>	October 26

### NDVI Field Image – August 9, 2019



### Summary of Disease Rating (R4) †

	Frogeye		Septoria Brown Spot		White Mold	
	UN	TRT	UN	TRT	UN	TRT
<b>Incidence</b>	0%	3%	100%	85%	0%	0%
<b>Severity</b>	0.0	2	1.70	1.69	0.0	0.0

† Frogeye (presence/absence), Septoria Brown Spot 0 – 5 rating scale, White Mold 0 – 3 rating scale

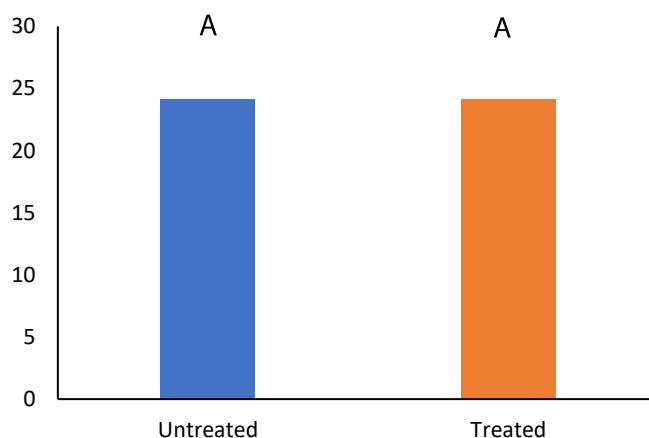
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	47.2	75.6	69	79.7
<b>Rainfall</b>	20.6	31.9	66.9	25.7

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	24.1
<b>Untreated</b>	24.1
<b>Yield Difference</b>	0.0
<b>P-Value</b>	1.0
<b>CV</b>	8%
<b>Significance</b>	No

### Yield by Treatment



## Soybean Inoculant Trial – Double Inoculant vs. Single Inoculant

**Objective:** Quantify the agronomic impacts of double inoculant application in soybean compared to a single inoculant

\*Requires a minimum history of two previous soybean crops

**Summary:** There was no significant yield difference between soybeans with a double inoculant and soybeans with a single inoculant for any 2019 site-year.

Table 6. Summary of 2019 soybean single inoculant trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Nodule Count @ R2		Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
			Double	Single	Double	Single				
					bu/ac		bu/ac	%		
S2IN02	Grassland	May 17	19	19	33.4	33.4	0.0	2.7	0.9735	No
S1IN03	Dauphin	May 23	40	44	19.2	19.6	-0.4	6.3	0.4848	No
S2IN04	Dauphin	May 24	13	14	26.4	27.4	-0.9	6.0	0.1871	No

## Soybean Double Inoculant Trial

**Trial ID:** 2019S2IN02 – R.M. of Grassland

**Objective:** Quantify the agronomic impacts of seed applied inoculant (single inoculation) vs. seed applied plus in-furrow inoculant (double inoculation) in soybean fields. This trial requires a minimum field history of 2 previous soybean crops.

**Summary:** There was no significant yield difference between soybeans with double inoculant and soybeans with single inoculant.

### Trial Information

<b>Treatment</b>	1x Cell-Tech (liquid) on seed 6 lb/ac Cell-Tech (granular) in-furrow
<b>Previous Soybean Crops</b>	2016
<b>Rural Municipality</b>	Grassland, RM of
<b>Soil Texture</b>	Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 17
<b>Variety</b>	Foote R2
<b>Seed Treatment</b>	1x CruiserMaxx Vibrance
<b>Seeding Rate</b>	243 000 seeds/ac
<b>Row Spacing</b>	12"
<b>Plant Stand @ V1</b>	175 000 plants/ac
<b>Harvest Date</b>	October 25

### Nodulation

	Average Number of Nodules @ R2
<b>Double</b>	19
<b>Single</b>	19

### Overall Yield

	Mean (bu/ac)
<b>Double Inoculant</b>	33.4
<b>Single Inoculant</b>	33.4
<b>Yield Difference</b>	0.0
<b>P-Value</b>	0.9735
<b>CV</b>	2.7%
<b>Significance</b>	<b>No</b>

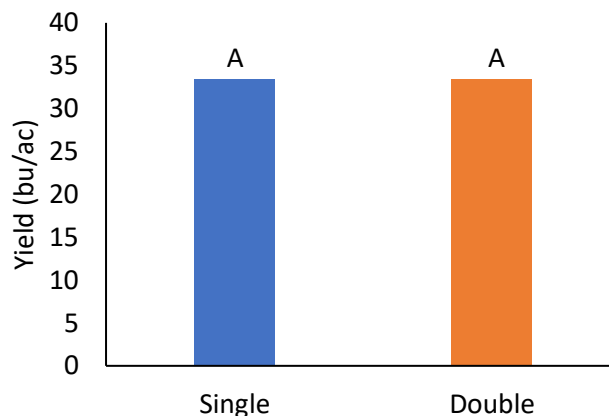
### NDVI Field Image – August 11, 2019



### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	46.9	83.7	65.2	57.6
<b>Rainfall</b>	20	66.7	78.9	93.2

### Yield by Treatment



## Soybean Double Inoculant Trial

**Trial ID:** 2019S2IN03 – R.M. of Dauphin

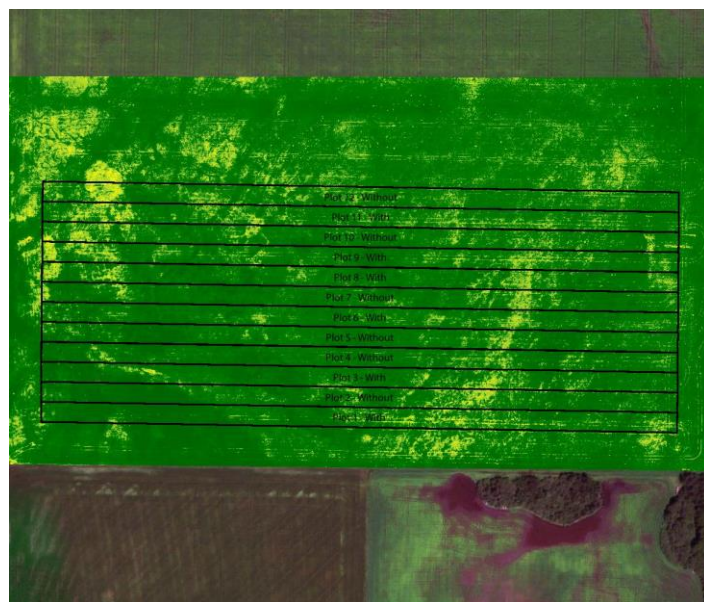
**Objective:** Quantify the agronomic impacts of seed applied inoculant (single inoculation) vs. seed applied plus in-furrow inoculant (double inoculation) in soybean fields. This trial requires a minimum field history of 2 previous soybean crops.

**Summary:** There was no significant yield difference between soybeans with double inoculant and soybeans with single inoculant.

### Trial Information

<b>Treatment</b>	1x Optimize (liquid) on seed 8 lb/ac Cell-Tech (granular) in-furrow
<b>Previous Soybean Crops</b>	2016; 2-year history
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Zero Tillage
<b>Seeding Date</b>	May 23
<b>Variety</b>	DKB0009-89
<b>Seeding Rate</b>	221 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ V1</b>	216 000 plants/ac
<b>Harvest Date</b>	October 25

### NDVI Field Image – August 9, 2019



### Nodulation

	Average Number of Nodules @ R2
<b>Double</b>	40
<b>Single</b>	44

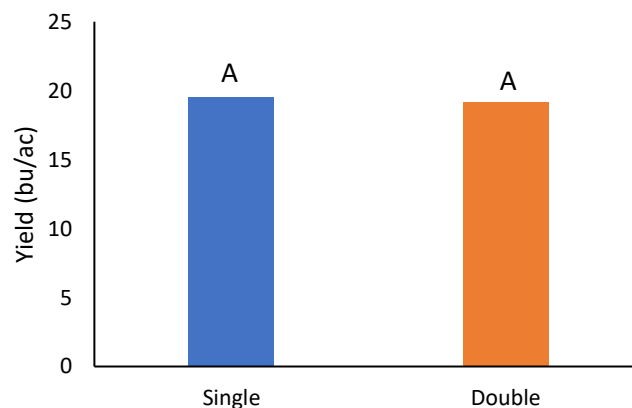
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	11.9	51.9	37.6	60.7

### Overall Yield

	Mean (bu/ac)
<b>Double Inoculant</b>	19.2
<b>Single Inoculant</b>	19.6
<b>Yield Difference</b>	-0.4
<b>P-Value</b>	0.4848
<b>CV</b>	6.3%
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Soybean Double Inoculant Trial

**Trial ID:** 2019S2IN04 – R.M. of Dauphin

**Objective:** Quantify the agronomic impacts of seed applied inoculant (single inoculation) vs. seed applied plus in-furrow inoculant (double inoculation) in soybean fields. This trial requires a minimum field history of 2 previous soybean crops.

**Summary:** There was no significant yield difference between soybeans with double inoculant and soybeans with single inoculant.

### Trial Information

<b>Treatment</b>	1x Optimize (liquid) on seed 5 lbs/ac Cell-Tech (granular) in-furrow
<b>Previous Soybean Crops</b>	2016; 2-year history
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Fine Sandy Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 24
<b>Variety</b>	Foote R2
<b>Seed Treatment</b>	1x CruiserMaxx Vibrance
<b>Seeding Rate</b>	210 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ V1</b>	221 000 plants/ac
<b>Harvest Date</b>	October 25

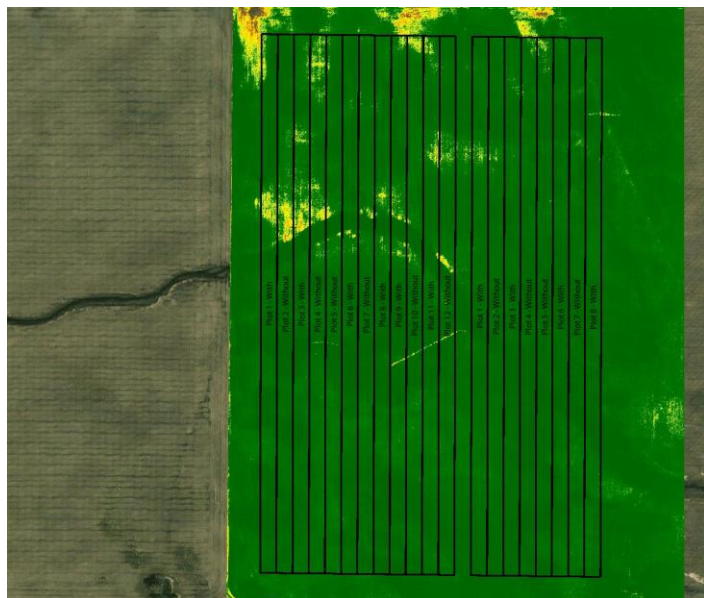
### Nodulation

	Average nodules/plant @ R2
<b>Double</b>	13
<b>Single</b>	14

### Overall Yield

	Mean (bu/ac)
<b>Double Inoculant</b>	26.4
<b>Single Inoculant</b>	27.4
<b>Yield Difference</b>	-0.9
<b>P-Value</b>	0.1871
<b>CV</b>	6.0%
<b>Significance</b>	<b>No</b>

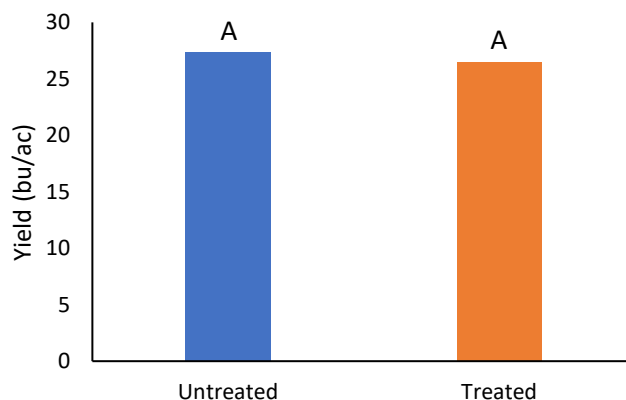
### NDVI Field Image – August 9, 2019



### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	10.9	60.3	65.6	45.9

### Yield by Treatment





## Soybean Inoculant Trial – Single Inoculant vs. No Inoculant

**Objective:** Quantify the agronomic impacts of single inoculant in soybean compared to no inoculant

\*Requires a minimum history of three previous soybean crops

**Summary:** There was no significant yield difference between soybeans with a single inoculant and soybeans without inoculant for either 2019 site-year.

Table 7. Summary of 2019 soybean single inoculant trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Nodule Count @ R2		Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
			Inoculated	None	Inoculated	None				
					bu/ac		bu/ac	%		
S1IN02	Brokenhead	May 17	13	14	35.2	35.9	-0.7	3.8	0.0735	No
S1IN05	Lac du Bonnet	May 27	10	12	26.8	26.7	0.1	5.2	0.9083	No

## Soybean Single Inoculant Trial

**Trial ID: 2019S1IN02 – R.M. of Brokenhead**

**Objective:** Quantify the agronomic impacts of single inoculant vs. no inoculant applied in soybean. This trial requires a minimum history of three previous soybean crops.

**Summary:** There was no significant yield difference between soybeans with a single inoculant and soybeans without a single inoculant.

### Trial Information

<b>Treatment</b>	1x Cell-Tech (liquid, on-seed)
<b>Prev. Soybean Crops</b>	2016; 10 year history
<b>Rural Municipality</b>	Brokenhead, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 17
<b>Variety</b>	LS 0036RR
<b>Seeding Rate</b>	349 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ V2</b>	295 000 plants/ac
<b>Harvest Date</b>	October 8

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54	89.9	73.4	72.6
<b>Rainfall</b>	19	45.4	65.7	59.6

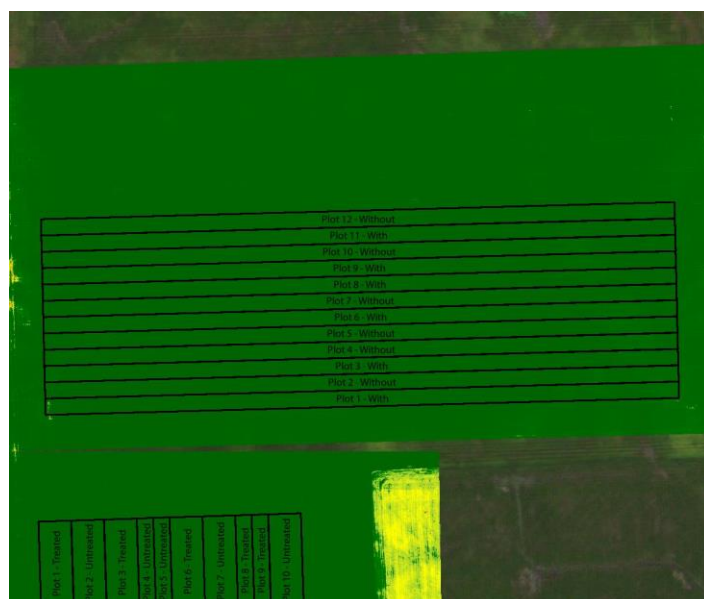
### Nodulation

	Average Number of Nodules @ R2
<b>Inoculated</b>	13
<b>None</b>	14

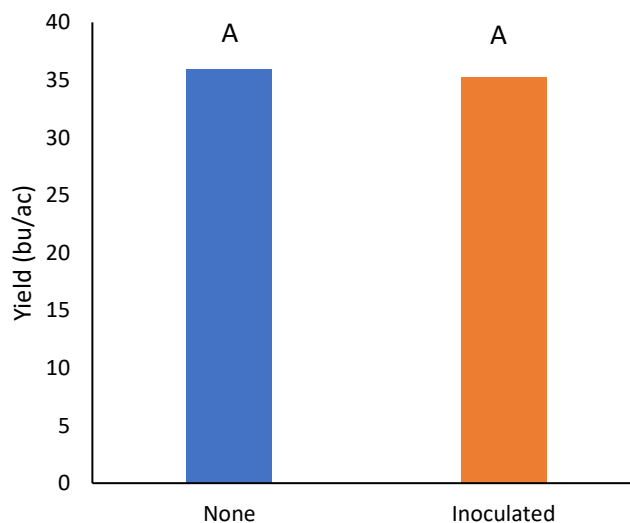
### Overall Yield

	Mean (bu/ac)
<b>Inoculated</b>	35.2
<b>None</b>	35.9
<b>Yield Difference</b>	-0.7
<b>P-Value</b>	0.0735
<b>CV</b>	3.8%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 7, 2019



### Yield by Treatment



## Soybean Single Inoculant Trial

**Trial ID:** 2019S1IN05 – R.M. of Lac du Bonnet

**Objective:** Quantify the agronomic impacts single inoculant vs. no inoculant in soybean. This trial requires a minimum history of three previous soybean crops.

**Summary:** There was no significant yield difference between soybeans with a single inoculant and soybeans without inoculant.

### Trial Information

<b>Treatment</b>	6 lbs/ac Cell-Tech (granular, in-furrow)
<b>Prev. Soybean Crops</b>	2017; 6x (every other yr)
<b>Rural Municipality</b>	Lac du Bonnet, RM of
<b>Soil Texture</b>	V. Fine Sandy Loam/Peat
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 27
<b>Variety</b>	OAC Prudence
<b>Seeding Rate</b>	313 000 seeds/ac
<b>Row Spacing</b>	9"
<b>Plant Stand @ V1</b>	189 000 plants/ac
<b>Harvest Date</b>	November 11

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54	89.9	73.4	72.6
<b>Rainfall</b>	19	45.4	65.7	59.6

### Nodulation

	Average Number of Nodules @ R2
<b>Inoculated</b>	10
<b>None</b>	12

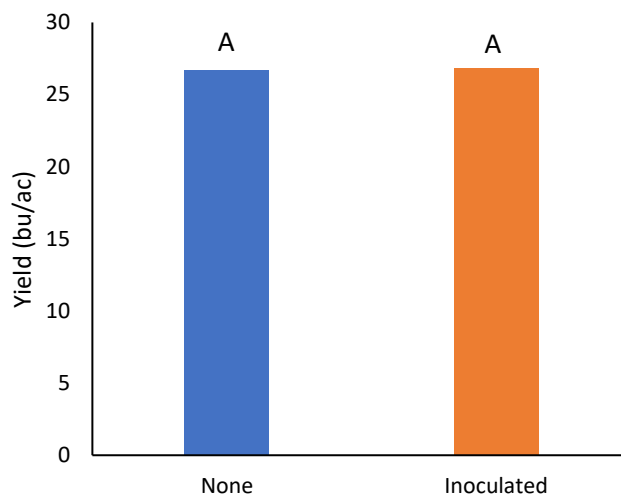
### Overall Yield

	Mean (bu/ac)
<b>Inoculated</b>	26.8
<b>None</b>	26.7
<b>Yield Difference</b>	0.1
<b>P-Value</b>	0.9083
<b>CV</b>	5.2%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 7, 2019



### Yield by Treatment





## Soybean Seeding Rate Trial

**Objective:** Quantify the agronomic impacts of soybeans seeded at 190 000 seeds/ac, 160 000 seeds/ac and 130 000 seeds/ac

**Summary:** One site-year had a significant yield increase for the 190 000 seeds/ac treatment compared to the 160 000 seeds/ac and 130 000 seeds/ac treatments. However, plant stands were low at this location. There were no other 2019 site-years with significant yield responses between seeding rates.

Table 8. Summary of 2019 soybean seeding rate trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Row Spacing	Plant Stand @ Midseason			Yield			CV	P-Value	Statistically Significant @ 95%
				190K	160K	130K	190K	160K	130K			
			inch	'000/ac			bu/ac			%		
SP01	Brokenhead	May 20	10"	114	95	86	17.4	16.0	15.4	7.9	0.0683	No
SP02	Dauphin	May 18	10"	204	149	133	42.7	43.1	42.0	3.6	0.2073	No
SP03	Morris	May 21	9"	147	128	103	34.1	33.6	33.9	2.4	0.7076	No
SP04	Grey	May 10	20"	117	99	92	32.6	33.4	32.9	3.3	0.6522	No
SP05	De Salaberry	May 13	22"	96	109	97	29.9	30.1	29.2	4.8	0.6317	No
SP06	De Salaberry	May 14	15"	169	147	118	39.2	39.2	38.6	3.2	0.6578	No
SP07	Westlake-Gladstone	May 14	15"	114	93	108	23.4	22.0	19.8	11.0	0.0089	Yes
SP09	Hanover		30"	150	131	112	49.4	49.3	48.0	2.0	0.1436	No
SP10	Springfield		15"	128	112	97	31.6	30.4	30.4	12.1	0.3886	No

## Soybean Seeding Rate Trial

**Trial ID:** 2019SP01 – R.M. of Brokenhead

**Objective:** Quantify the agronomic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Brokenhead, RM of
<b>Soil Texture</b>	Clay Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	60ft John Deere 1890 Disc Drill
<b>Seeding Date</b>	May 20
<b>Variety</b>	24-10RY
<b>Row Spacing</b>	10"
<b>Harvest Date</b>	November 13

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54	89.9	73.4	72.6
<b>Rainfall</b>	19	45.4	65.7	59.6

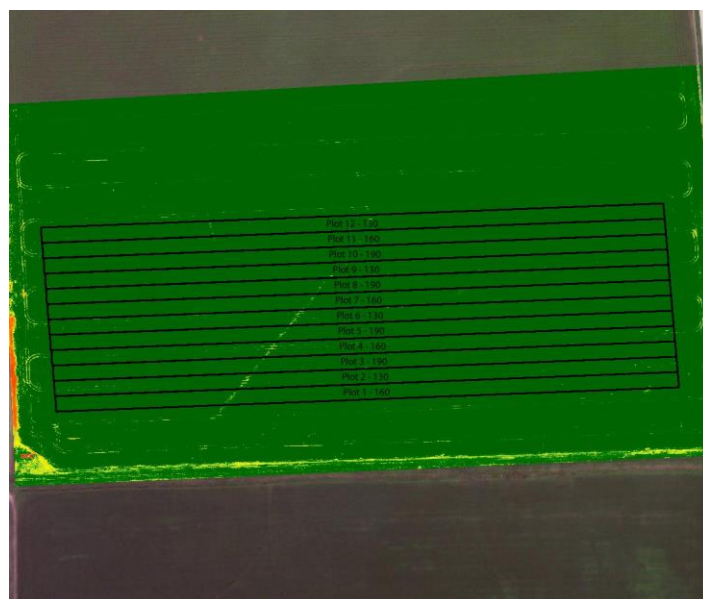
### Plant Stand (plants/ac)

	V1	R8
<b>130K</b>	106 000	86 000
<b>160K</b>	93 000	95 000
<b>190K</b>	119 000	114 000

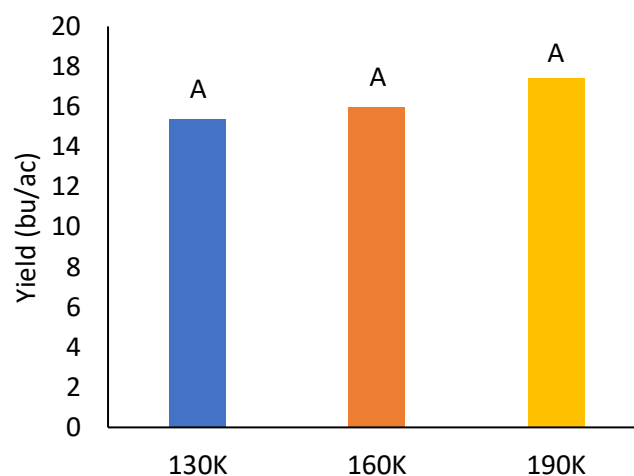
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	15.4
<b>160K</b>	16.0
<b>190K</b>	17.4
<b>P-Value</b>	0.0683
<b>CV</b>	7.9%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 7, 2019



### Yield by Treatment





## Soybean Seeding Rate Trial

**Trial ID:** 2019SP02 – R.M. of Dauphin

**Objective:** Quantify the agronomic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Equipment</b>	54ft Bourgault 5710 Hoe Drill
<b>Seeding Date</b>	May 18
<b>Variety</b>	DKB0009-89
<b>Row Spacing</b>	10"
<b>Harvest Date</b>	October 7

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	10.9	60.3	65.6	45.9

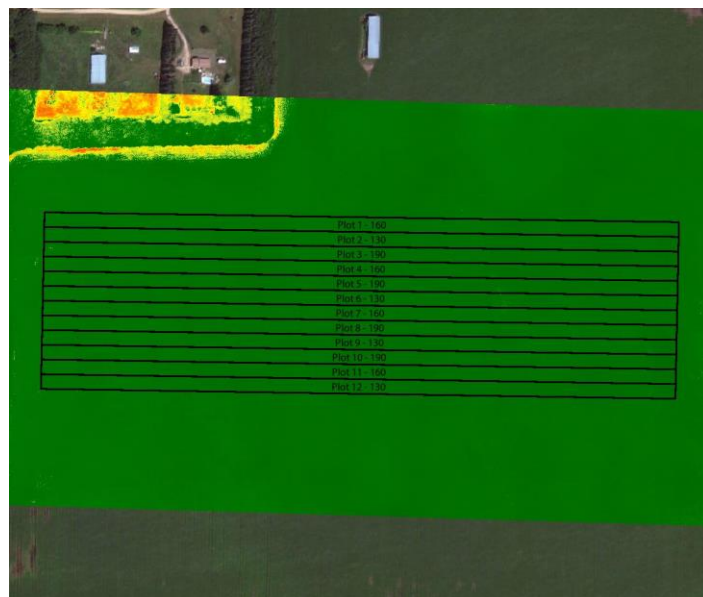
### Plant Stand (plants/ac)

	V2	R6
<b>130K</b>	141 000	133 000
<b>160K</b>	154 000	149 000
<b>190K</b>	207 000	204 000

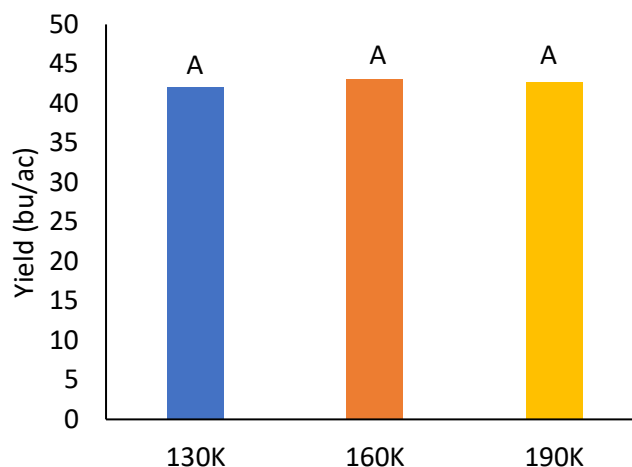
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	42.0
<b>160K</b>	43.1
<b>190K</b>	42.7
<b>P-Value</b>	0.2073
<b>CV</b>	3.6%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 6, 2019



### Yield by Treatment



## Soybean Seeding Rate Trial

**Trial ID:** 2019SP03 – R.M. of Morris

**Objective:** Quantify the agronomic and economic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Morris, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	57.5ft Flexicoil 5000 Hoe Drill
<b>Seeding Date</b>	May 21
<b>Variety</b>	LS Eclipse
<b>Row Spacing</b>	9"
<b>Harvest Date</b>	November 6

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.6	86.4	71.9	65.4
<b>Rainfall</b>	31.5	40.2	110.4	54.2

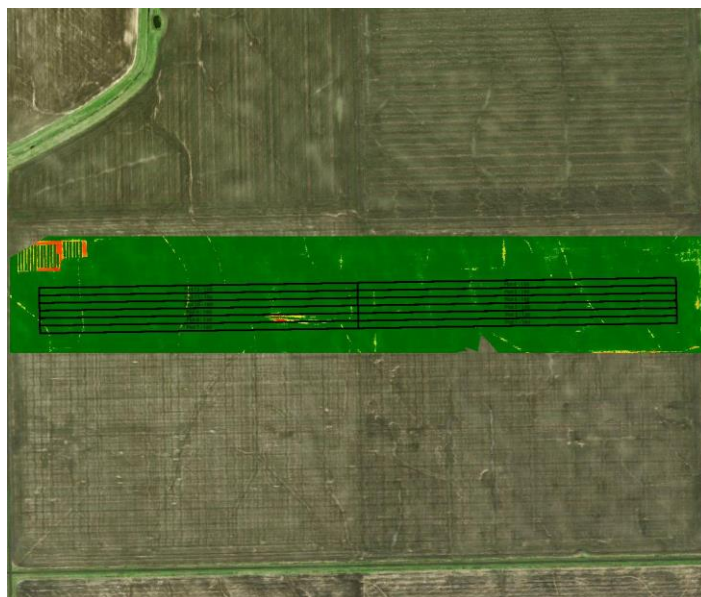
### Plant Stand (plants/ac)

	V2	R6
<b>130K</b>	104 000	103 000
<b>160K</b>	124 000	128 000
<b>190K</b>	161 000	147 000

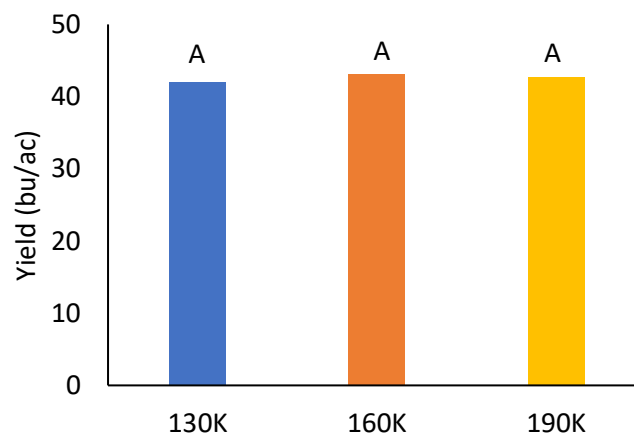
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	33.9
<b>160K</b>	33.6
<b>190K</b>	34.1
<b>P-Value</b>	0.7076
<b>CV</b>	2.4%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 8, 2019



### Yield by Treatment



## Soybean Seeding Rate Trial

**Trial ID:** 2019SP04 – R.M. of Grey

**Objective:** Quantify the agronomic and economic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Grey, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	40ft Case IH 1240 Planter
<b>Seeding Date</b>	May 10
<b>Variety</b>	S006-W5
<b>Row Spacing</b>	20"
<b>Harvest Date</b>	September 18

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.8	80.6	65.7	71
<b>Rainfall</b>	34.1	54.3	77.7	33.5

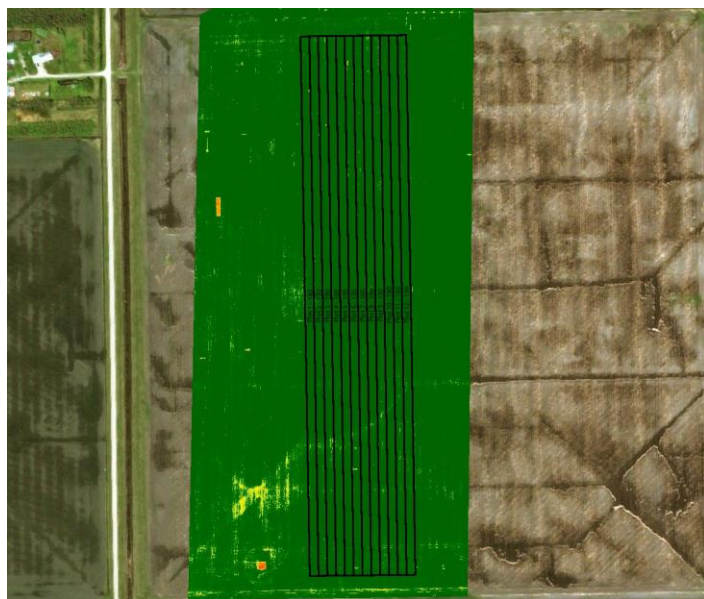
### Plant Stand (plants/ac)

	V1	R6
<b>130K</b>	103 000	92 000
<b>160K</b>	113 000	99 000
<b>190K</b>	130 000	117 000

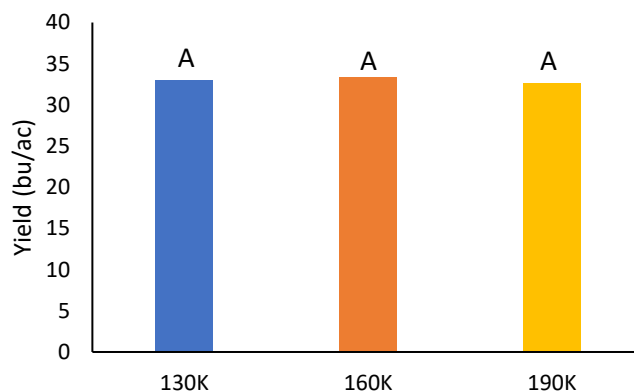
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	32.9
<b>160K</b>	33.4
<b>190K</b>	32.6
<b>P-Value</b>	0.6522
<b>CV</b>	3.3%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 8, 2019



### Yield by Treatment





## Soybean Seeding Rate Trial

**Trial ID:** 2019SP05 – R.M. of De Salaberry

**Objective:** Quantify the agronomic and economic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	De Salaberry, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	22ft John Deere 7300 MEZ Planter
<b>Seeding Date</b>	May 13
<b>Variety</b>	PS 0027 RR
<b>Row Spacing</b>	22"
<b>Harvest Date</b>	September 19

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	52.6	94.7	69.5	51.7
<b>Rainfall</b>	43.1	34.7	144.3	64.8

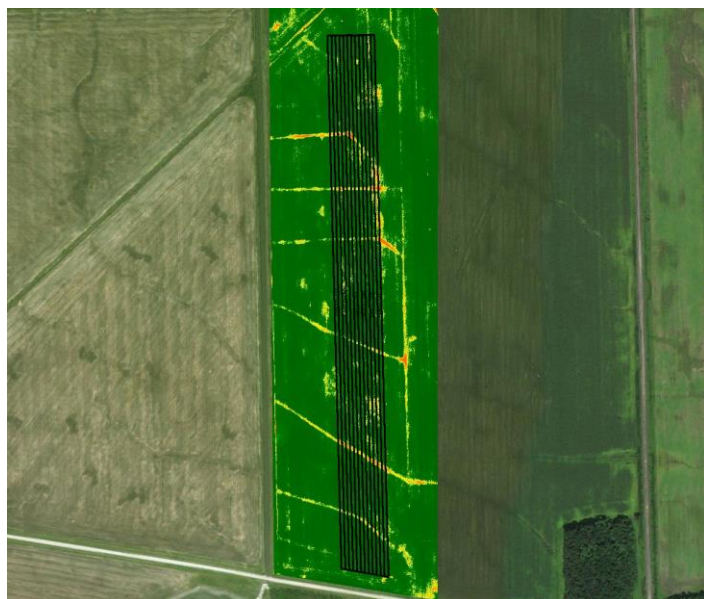
### Plant Stand (plants/ac)

	V1	R6
<b>130K</b>	114 000	97 000
<b>160K</b>	136 000	109 000
<b>190K</b>	138 000	96 000

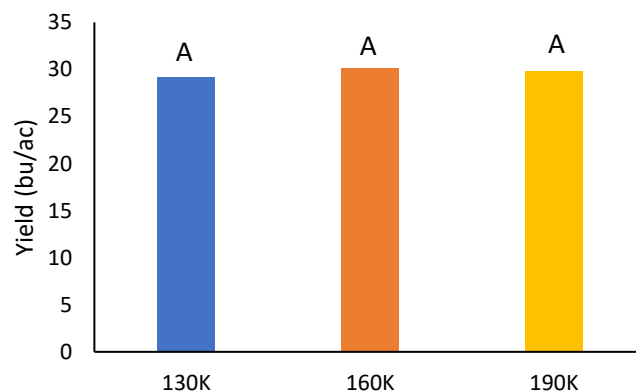
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	29.2
<b>160K</b>	30.1
<b>190K</b>	29.9
<b>P-Value</b>	0.6317
<b>CV</b>	4.8%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 8, 2019



### Yield by Treatment





## Soybean Seeding Rate Trial

**Trial ID:** 2019SP06 – R.M. of De Salaberry

**Objective:** Quantify the agronomic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	De Salaberry, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Minimal Tillage
<b>Seeding Equipment</b>	40ft Case IH 1240 Planter
<b>Seeding Date</b>	May 14
<b>Variety</b>	Astro R2
<b>Row Spacing</b>	15"
<b>Harvest Date</b>	October 30

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.6	86.4	71.9	65.4
<b>Rainfall</b>	31.5	40.2	110.4	54.2

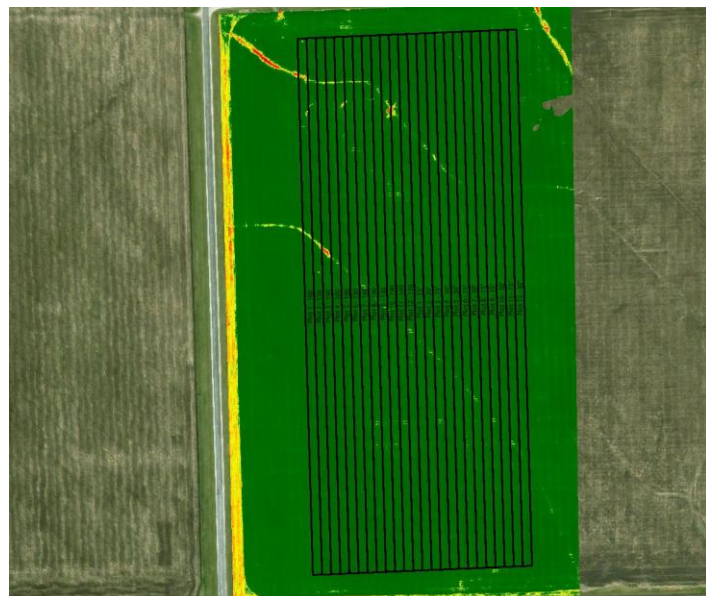
### Plant Stand (plants/ac)

	V2	R6
<b>130K</b>	117 000	118 000
<b>160K</b>	146 000	147 000
<b>190K</b>	170 000	169 000

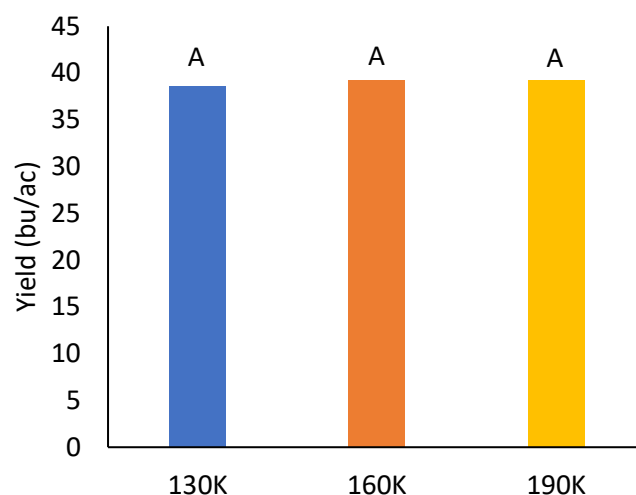
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	38.6
<b>160K</b>	39.2
<b>190K</b>	39.2
<b>P-Value</b>	0.6578
<b>CV</b>	3.2%
<b>Significance</b>	<b>No</b>

NDVI Field Image – August 8, 2019



### Yield by Treatment



## Soybean Seeding Rate Trial

**Trial ID:** 2019SP07 – R.M. of Westlake-Gladstone

**Objective:** Quantify the agronomic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** The 190 000 seeds/ac seeding rate significantly increased soybean yield over the 130 000 seeds/ac rate, however, plant stands were very low at this site-year.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Westlake-Gladstone, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Winter Wheat
<b>Tillage</b>	Conventional
<b>Seeding Equip.</b>	60ft John Deere 1890 Disc Drill
<b>Seeding Date</b>	May 14
<b>Variety</b>	24-10RY
<b>Row Spacing</b>	15"
<b>Harvest Date</b>	November 2

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	49.8	79.4	71.1	69.3
<b>Rainfall</b>	22.6	38.5	70.3	36.6

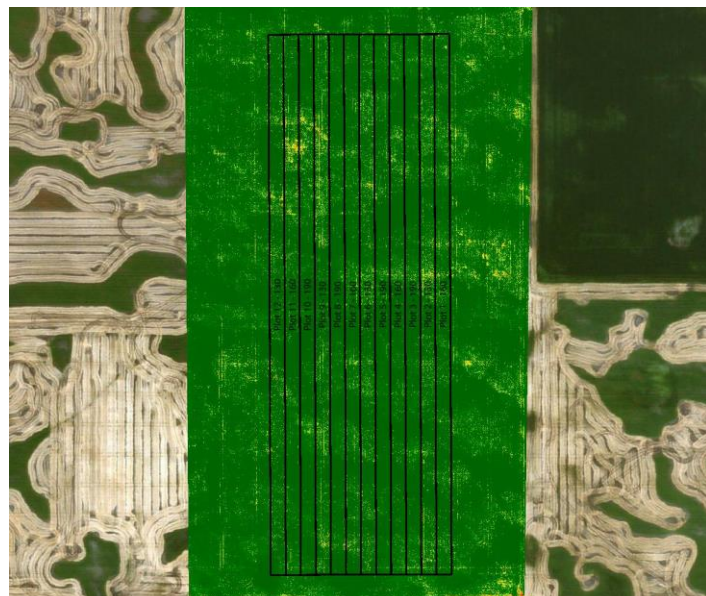
### Plant Stand (plants/ac)

	V1	R6
<b>130K</b>	92 000	108 000
<b>160K</b>	115 000	93 000
<b>190K</b>	117 000	114 000

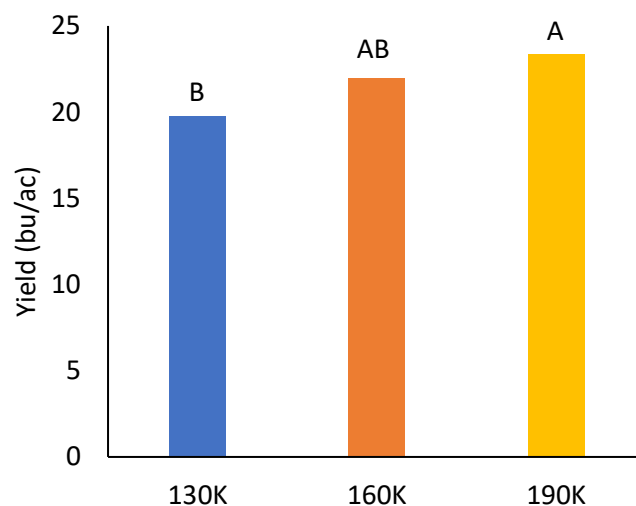
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	19.8
<b>160K</b>	22.0
<b>190K</b>	23.4
<b>P-Value</b>	0.0089
<b>CV</b>	11%
<b>Significance</b>	<b>Yes</b>

NDVI Field Image – August 10, 2019



### Yield by Treatment



## Soybean Seeding Rate Trial

**Trial ID:** 2019SP09 – R.M. of Hanover

**Objective:** Quantify the agronomic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Hanover, RM of
<b>Soil Texture</b>	Very Fine Sandy Loam
<b>Previous Crop</b>	Corn
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	40ft John Deere 1775NT Planter
<b>Seeding Date</b>	43600
<b>Variety</b>	P007A90R / P00A49X
<b>Row Spacing</b>	30"
<b>Harvest Date</b>	October 8

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	57.8	89.5	80.6	71.8
<b>Rainfall</b>	33.8	49	162.5	58

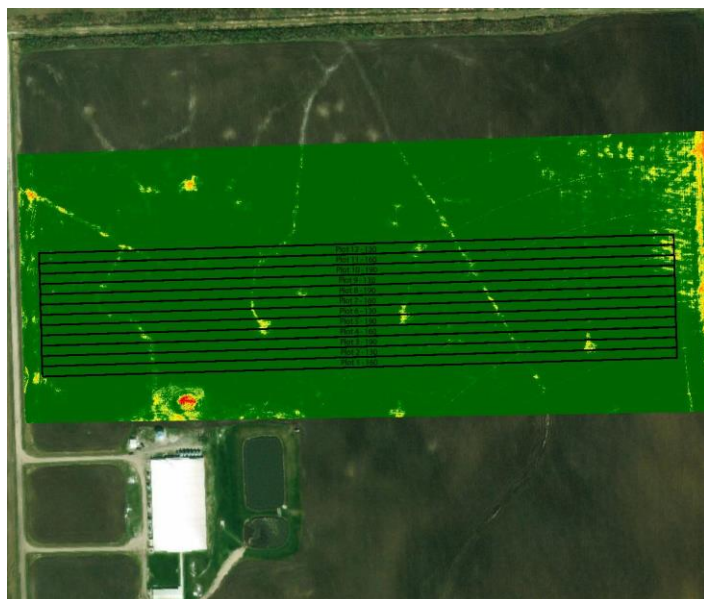
### Plant Stand (plants/ac)

	V2	R6
<b>130K</b>	120 000	112 000
<b>160K</b>	147 000	131 000
<b>190K</b>	164 000	150 000

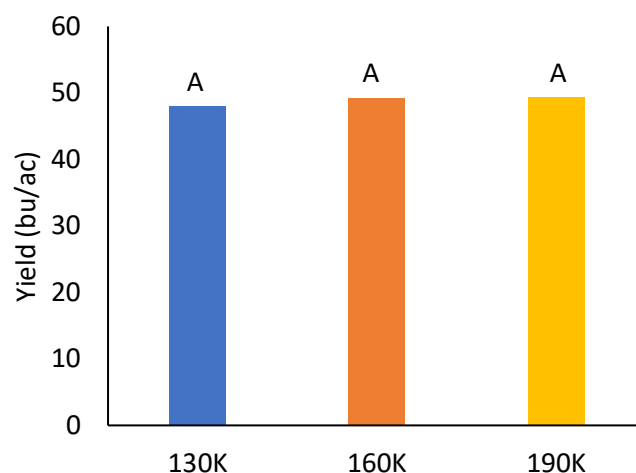
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	48.0
<b>160K</b>	49.3
<b>190K</b>	49.4
<b>P-Value</b>	0.1436
<b>CV</b>	2%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 7, 2019



### Yield by Treatment



## Soybean Seeding Rate Trial

**Trial ID:** 2019SP10 – R.M. of Springfield

**Objective:** Quantify the agronomic impacts of a seeding rate of 190,000 seeds/ac, 160,000 seeds/ac and 130,000 seeds/ac.

**Summary:** There was no significant soybean yield difference between seeding rates of 130 000 seeds/ac, 160 000 seeds/ac and 190 000 seeds/ac.

### Trial Information

<b>Treatment</b>	130k vs 160k vs 190k
<b>Rural Municipality</b>	Springfield, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Soybeans
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	58.5ft John Deere DB60 Planter
<b>Seeding Date</b>	43608
<b>Variety</b>	McLeod R2
<b>Row Spacing</b>	15"
<b>Harvest Date</b>	November 2

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.4	90.7	81.1	73.7
<b>Rainfall</b>	20.4	24	61.4	43.5

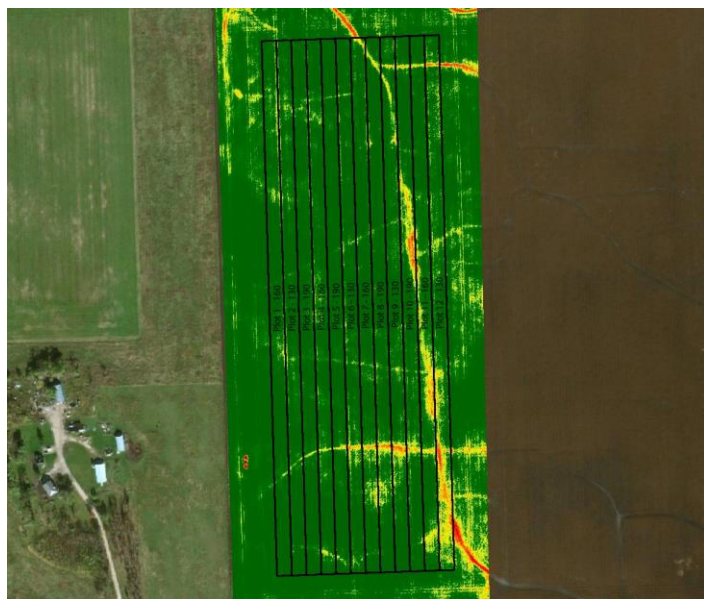
### Plant Stand (plants/ac)

	V2	R6
<b>130K</b>	105 000	97 000
<b>160K</b>	126 000	112 000
<b>190K</b>	138 000	128 000

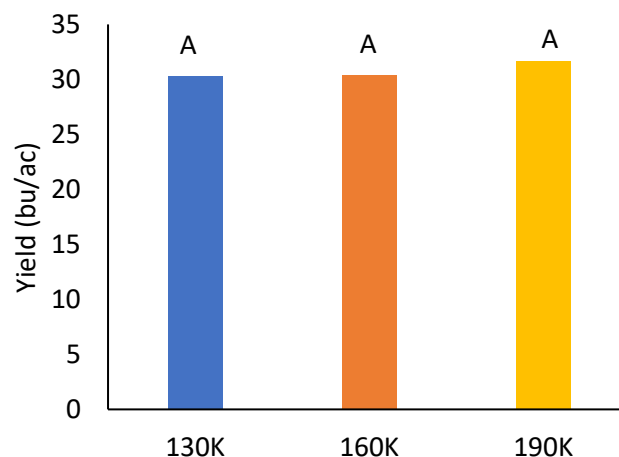
### Overall Yield

	Mean (bu/ac)
<b>130K</b>	30.4
<b>160K</b>	30.4
<b>190K</b>	31.6
<b>P-Value</b>	0.3886
<b>CV</b>	12.1%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 7, 2019



### Yield by Treatment





# Soybean Row Spacing Trial

**Objective:** Quantify the agronomic impacts of narrow (7.5” or 10”) vs. medium (15” or 20”) or medium (15”) vs. wide (30”) row spacing on soybean.

**Summary:** One site-year had a significant yield increase for soybean on 15” spacing compared to 7.5” spacing. Another site-year had a significant yield increase for soybean on 15” spacing compared to 30” spacing. All other 2019 site-years did not have significant yield differences between row spacings.

Table 9 a. Summary of 2019 soybean 7.5” vs. 15” row spacing trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Seeding Rate	Plant Stand @ Midseason		Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
				7.5"	15"	7.5"	15"				
			000 seeds/ac	'000/ac		bu/ac		bu/ac	%		
SRS04	Louise	May 15	185	148	145	47.9	48.9	-1.0	1.8	0.0206	Yes
SRS08	Roland	May 15	209	146	262	30.9	29.2	1.6	12.6	0.4437	No

Table 9 b. Summary of 2019 soybean 10” vs. 20” row spacing trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Seeding Rate	Plant Stand @ Midseason		Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
				10"	20"	10"	20"				
			000 seeds/ac	'000/ac		bu/ac		bu/ac	%		
SRS03	Bifrost-Riverton	May 21	180	132	131	22.6	22.3	0.3	4.0	0.7103	No

Table 9 c. Summary of 2019 soybean 15” vs. 30” row spacing trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Seeding Rate	Plant Stand @ Midseason		Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
				15"	30"	15"	30"				
			000 seeds/ac	'000/ac		bu/ac		bu/ac	%		
SRS02	St. Andrews	May 17	150	92	87	23.0	23.0	0.0	3.1	0.8339	No
SRS05	Morris	May 14	180	140	134	22.6	23.0	-0.4	7.5	0.6473	No
SRS06	De Salaberry	May 14	165	147	148	39.9	38.0	1.9	3.9	0.0200	Yes
SRS09	Tache	May 15	176	128	114	34.3	34.0.3	0.3	6.4	0.8601	No



## Soybean Row Spacing Trial

**Trial ID:** 2019SRS02 – R.M. of St. Andrews

**Objective:** Quantify the agronomic impacts of medium vs. wide row spacing in soybean

**Summary:** There was no significant soybean yield difference between 15" and 30" row spacing.

### Trial Information

<b>Treatment</b>	15" vs 30"
<b>Rural Municipality</b>	St. Andrews, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	40ft John Deere 1770NT Planter
<b>Seeding Date</b>	May 17
<b>Variety</b>	P007A90R
<b>Seeding Rate</b>	150 000 seeds/ac
<b>Harvest Date</b>	October 31

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.4	90.7	81.1	73.7
<b>Rainfall</b>	20.4	24	61.4	43.5

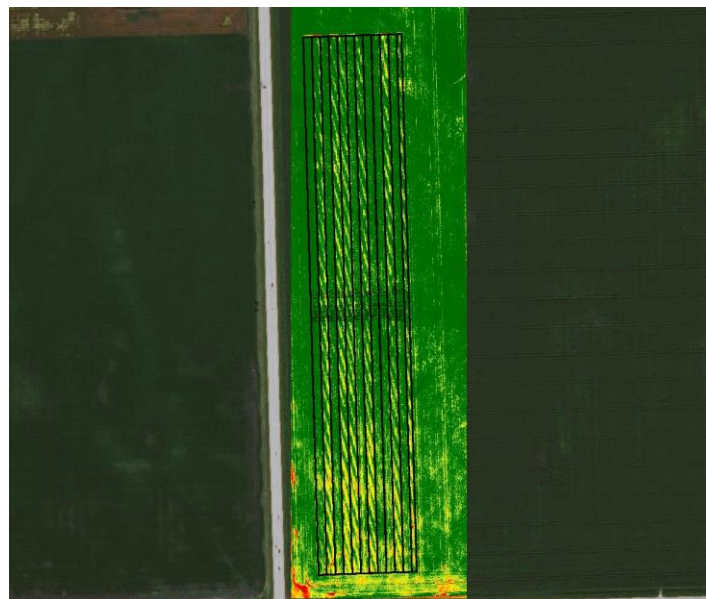
### Plant Stand (plants/ac)

	V2	R6
<b>15"</b>	95 000	92 000
<b>30"</b>	96 000	87 000

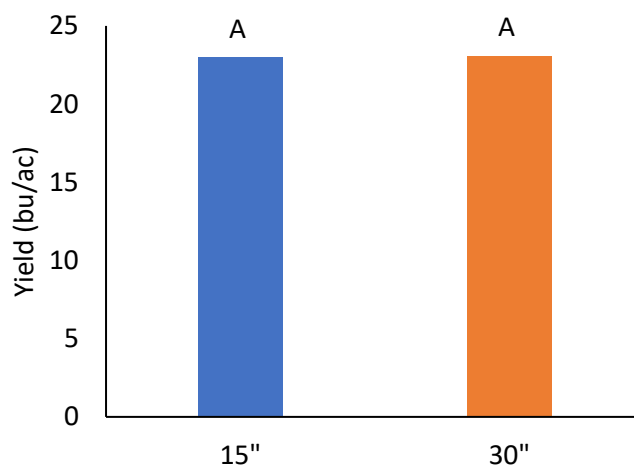
### Overall Yield

	Mean (bu/ac)
<b>15"</b>	23.0
<b>30"</b>	23.0
<b>Yield Difference</b>	0
<b>P-Value</b>	0.8339
<b>CV</b>	3.1%
<b>Significance</b>	<b>No</b>

NDVI Field Image – August 6, 2019



### Yield by Treatment



## Soybean Row Spacing Trial

**Trial ID:** 2019SRS03 – R.M. of Bifrost-Riverton

**Objective:** Quantify the agronomic impacts of narrow vs. medium row spacing in soybean

**Summary:** There was no significant soybean seed yield difference between 10" and 20" row spacing.

### Trial Information

<b>Treatment</b>	10" vs 20"
<b>Rural Municipality</b>	Bifrost-Riverton, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Soybeans
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	60ft John Deere DB60 Planter
<b>Seeding Date</b>	May 21
<b>Variety</b>	P007A90R
<b>Seeding Rate</b>	180 000 seeds/ac
<b>Harvest Date</b>	October 26

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	47.2	75.6	69	79.7
<b>Rainfall</b>	20.6	31.9	66.9	25.7

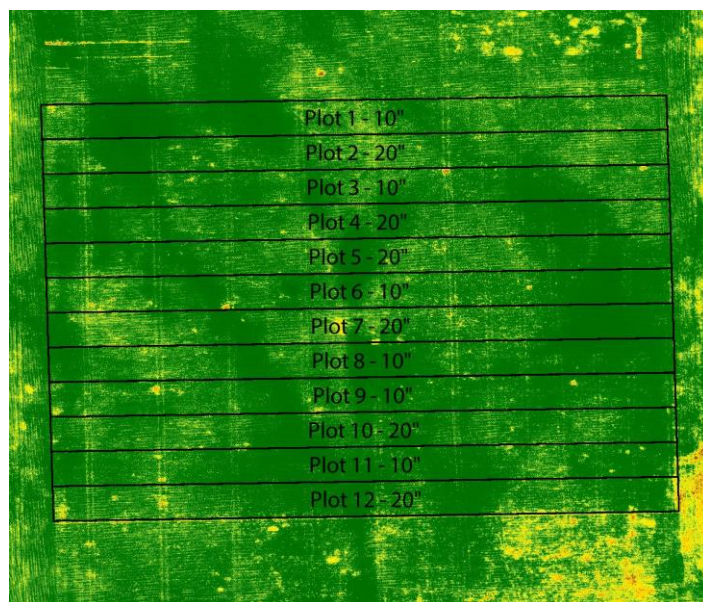
### Plant Stand (plants/ac)

	V1	R6
<b>10"</b>	148 000	132 000
<b>20"</b>	149 000	131 000

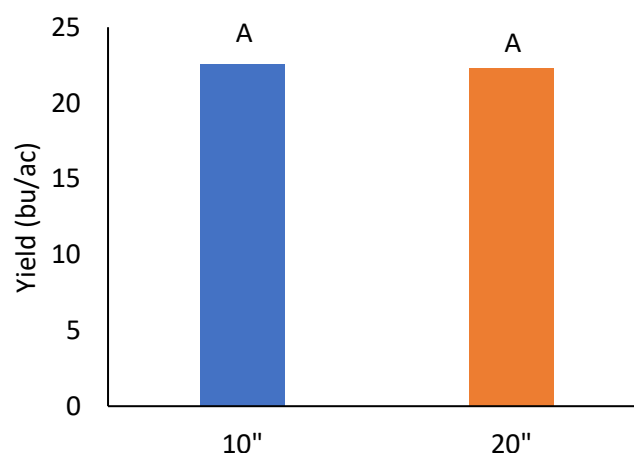
### Overall Yield

	Mean (bu/ac)
<b>10"</b>	22.6
<b>20"</b>	22.3
<b>Yield Difference</b>	0.3
<b>P-Value</b>	0.7103
<b>CV</b>	4.0%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 9, 2019



### Yield by Treatment



## Soybean Row Spacing Trial

**Trial ID:** 2019SRS04 – R.M. of Louise

**Objective:** Quantify the agronomic impacts of narrow vs. medium row spacing in soybean

**Summary:** Yield was significantly greater for soybeans grown on 15" spacing compared to 7.5" spacing.

### Trial Information

<b>Treatment</b>	7.5" vs 15"
<b>Rural Municipality</b>	Louise, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Equip.</b>	42ft John Deere 1890 Disc Drill
<b>Seeding Date</b>	May 11
<b>Variety</b>	P001A48X
<b>Seeding Rate</b>	185 000 seeds/ac
<b>Harvest Date</b>	October 8

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	61.1	89.8	68.3	72.3
<b>Rainfall</b>	21.6	75.7	119.1	53.2

### Plant Stand (plants/ac)

	V1	R8
<b>7.5"</b>	143 000	148 000
<b>15"</b>	147 000	145 000

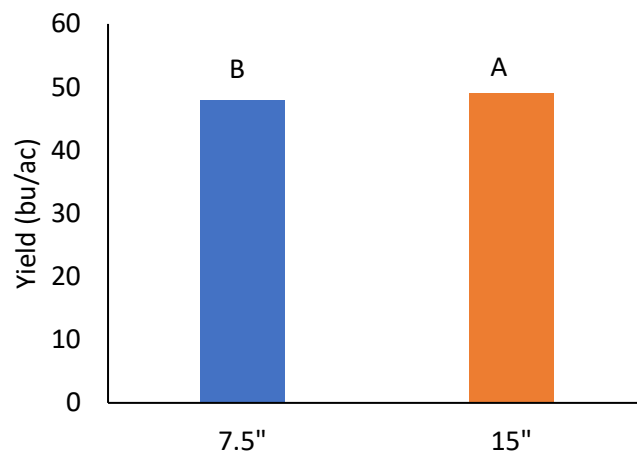
### Overall Yield

	Mean (bu/ac)
<b>7.5"</b>	47.9
<b>15"</b>	48.9
<b>Yield Difference</b>	-0.97
<b>P-Value</b>	0.0206
<b>CV</b>	1.8%
<b>Significance</b>	<b>Yes</b>

NDVI Field Image – August 9, 2019



### Yield by Treatment





# Soybean Row Spacing Trial

**Trial ID:** 2019SRS05 – R.M. of Morris

**Objective:** Quantify the agronomic impacts of medium vs. wide row spacing in soybean

**Summary:** There was no significant soybean seed yield difference between 15" and 30" row spacing.

## Trial Information

<b>Treatment</b>	15" vs 30"
<b>Rural Municipality</b>	Morris, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Seeding Equip.</b>	60ft John Deere 1890 Disc Drill
<b>Seeding Date</b>	May 14
<b>Variety</b>	S008-N2
<b>Seeding Rate</b>	180 000 seeds/ac
<b>Harvest Date</b>	October 30

## Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.6	86.4	71.9	65.4
<b>Rainfall</b>	32.1	50.6	74.8	49.6

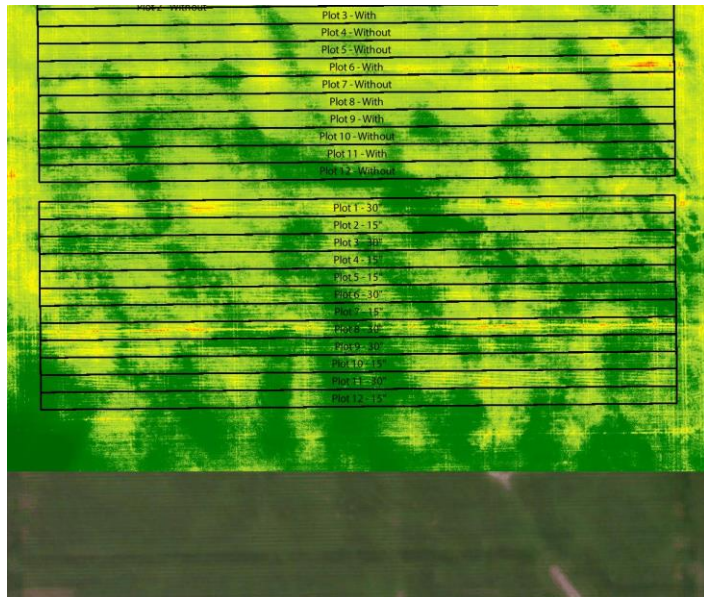
## Plant Stand (plants/ac)

	V1	R6
<b>15"</b>	142 000	140 000
<b>30"</b>	132 000	134 000

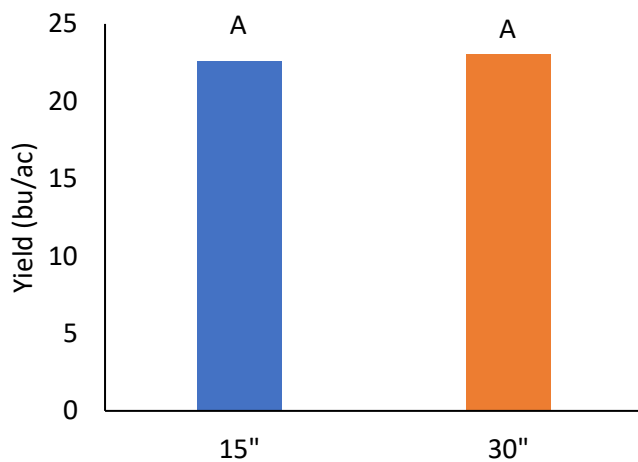
## Overall Yield

	Mean (bu/ac)
<b>15"</b>	22.6
<b>30"</b>	23.0
<b>Yield Difference</b>	-0.4
<b>P-Value</b>	0.6473
<b>CV</b>	7.5%
<b>Significance</b>	<b>No</b>

## NDVI Field Image – August 8, 2019



## Yield by Treatment





## Soybean Row Spacing Trial

**Trial ID:** 2019SRS06 – R.M. of De Salaberry

**Objective:** Quantify the agronomic impacts of medium vs. wide row spacing in soybean

**Summary:** Yield was significantly greater for soybeans at 15" row spacing compared to soybeans at 30" row spacing.

### Trial Information

<b>Treatment</b>	15" vs 30"
<b>Rural Municipality</b>	De Salaberry, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Minimal Tillage
<b>Seeding Equipment</b>	40ft Case IH 1240 Planter
<b>Seeding Date</b>	May 14
<b>Variety</b>	Astro R2
<b>Seeding Rate</b>	165 000 seeds/ac
<b>Harvest Date</b>	October 26

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.6	86.4	71.9	65.4
<b>Rainfall</b>	31.5	40.2	110.4	54.2

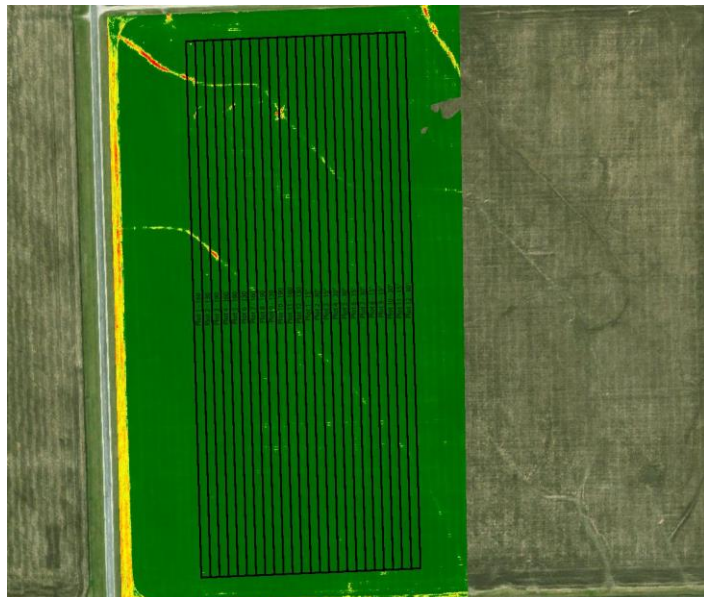
### Plant Stand (plants/ac)

	V2	R6
<b>15"</b>	154 000	147 000
<b>30"</b>	150 000	148 000

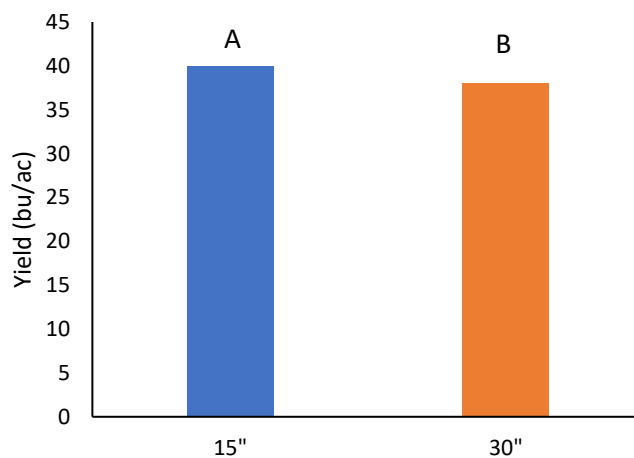
### Overall Yield

	Mean (bu/ac)
<b>15"</b>	39.9
<b>30"</b>	38.0
<b>Yield difference</b>	1.9
<b>P-Value</b>	0.02
<b>CV</b>	3.9%
<b>Significance</b>	<b>Yes</b>

NDVI Field Image – August 8, 2019



### Yield by Treatment





## Soybean Row Spacing Trial

**Trial ID:** 2019SRS08 – R.M. of Roland

**Objective:** Quantify the agronomic impacts of narrow vs. medium row spacing in soybean

**Summary:** There was no significant soybean seed yield difference between 7.5" and 15" row spacing.

### Trial Information

<b>Treatment</b>	7.5" vs 15"
<b>Rural Municipality</b>	Roland, RM of
<b>Soil Texture</b>	Very Fine Sandy Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Equip.</b>	60ft John Deere 1890 Disc Drill
<b>Seeding Date</b>	May 15
<b>Variety</b>	S0009-M2
<b>Seeding Rate</b>	209 000 seeds/ac
<b>Harvest Date</b>	September 16

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.8	80.6	65.7	71
<b>Rainfall</b>	40	41	61.4	63.7

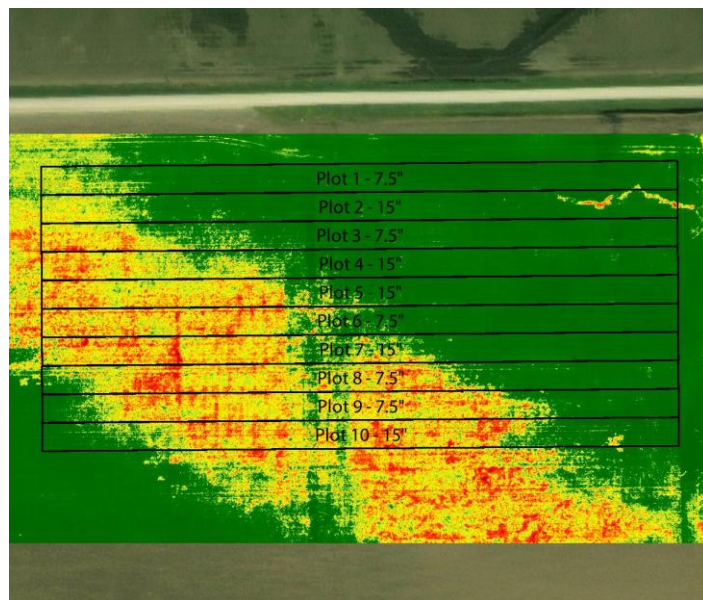
### Plant Stand (plants/ac)

	V1	R6
<b>7.5"</b>	148 000	146 000
<b>15"</b>	277 000	262 000

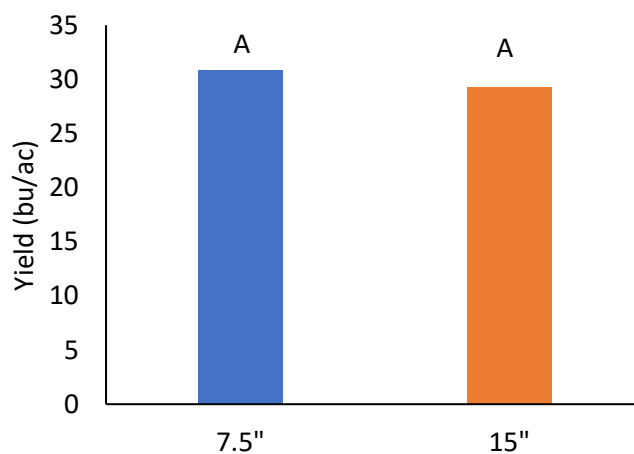
### Overall Yield

	Mean (bu/ac)
<b>7.5"</b>	30.9
<b>15"</b>	29.2
<b>Yield Difference</b>	1.6
<b>P-Value</b>	0.4437
<b>CV</b>	12.6%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 8, 2019



### Yield by Treatment



## Soybean Row Spacing Trial

**Trial ID:** 2019SRS09 – R.M. of Tache

**Objective:** Quantify the agronomic impacts of medium vs. wide row spacing in soybean

**Summary:** There was no significant soybean seed yield difference between 15" and 30" row spacing.

### Trial Information

<b>Treatment</b>	15" vs 30"
<b>Rural Municipality</b>	Tache, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Corn
<b>Tillage</b>	Conventional
<b>Seeding Equipment</b>	40ft John Deere 7200 Planter
<b>Seeding Date</b>	May 15
<b>Variety</b>	TH 88007R2X
<b>Seeding Rate</b>	176 000 seeds/ac
<b>Harvest Date</b>	October 29

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	58.1	91.3	80.1	66.1
<b>Rainfall</b>	39.1	41.1	149.9	57.4

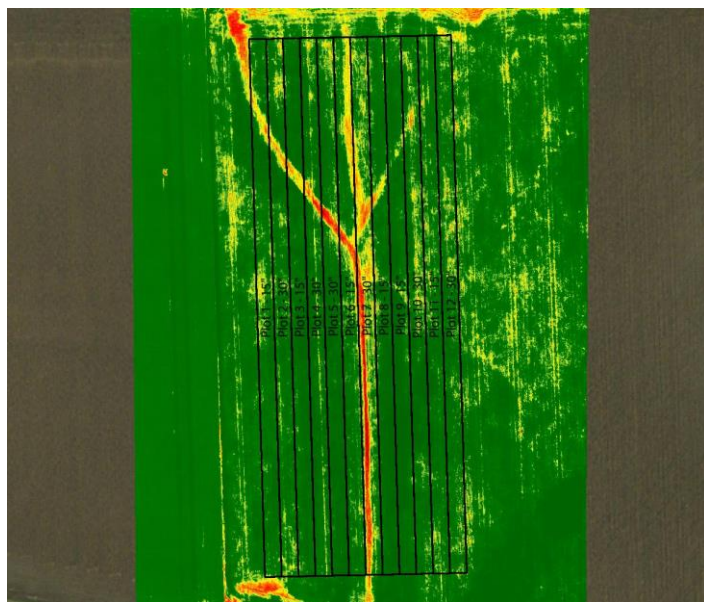
### Plant Stand (plants/ac)

	V1	R6
<b>15"</b>	130 000	128 000
<b>30"</b>	122 000	114 000

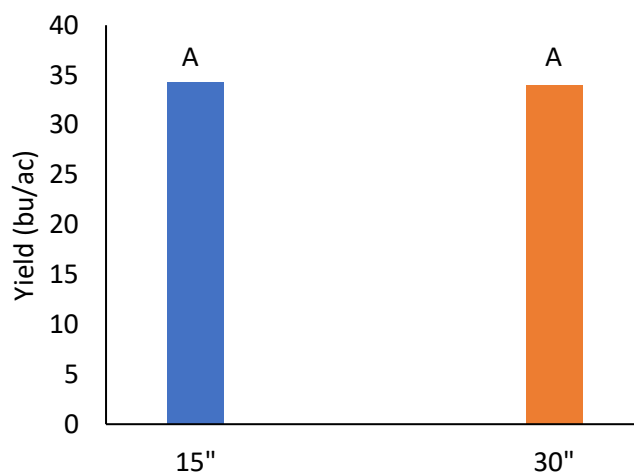
### Overall Yield

	Mean (bu/ac)
<b>15"</b>	34.3
<b>30"</b>	34
<b>Yield Difference</b>	0.3
<b>P-Value</b>	0.8601
<b>CV</b>	6.4%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 9, 2019



### Yield by Treatment



# Soybean Seed Treatment Trial

**Objective:** Quantify the agronomic impacts of a seed treatment in soybean, compared to soybean without seed treatment

**Summary:** There was no significant yield difference between treated and untreated soybeans at any 2019 site-year.

Table 10. Summary of 2019 soybean seed treatment yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Seeding Rate	Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
				Treated	Untreated				
			'000/ac	bu/ac		bu/ac	%		
SST03	Morris	May 7	81	19.5	17.6	1.9	13.0	0.1983	No
SST04	Morris	May 14	203	23.5	22.3	1.2	15.0	0.3177	No
SST05	De Salaberry	May 14	143	38.5	38.5	0.0	2.0	1	No
SST06	Westlake-Gladstone	May 14	196	26.3	26.9	-0.5	3.1	0.3792	No
SST07	Dauphin	May 24	210	28.3	28.2	0.1	4.6	0.7778	No

## Soybean Seed Treatment Trial

Trial ID: 2019SST02 – R.M. of Dauphin

**Objective:** Quantify the agronomic impacts of seed treatments in soybean

**Summary:** There was no significant difference in soybean seedling root rot severity or seed yield for any seed treatment compared to untreated soybeans.

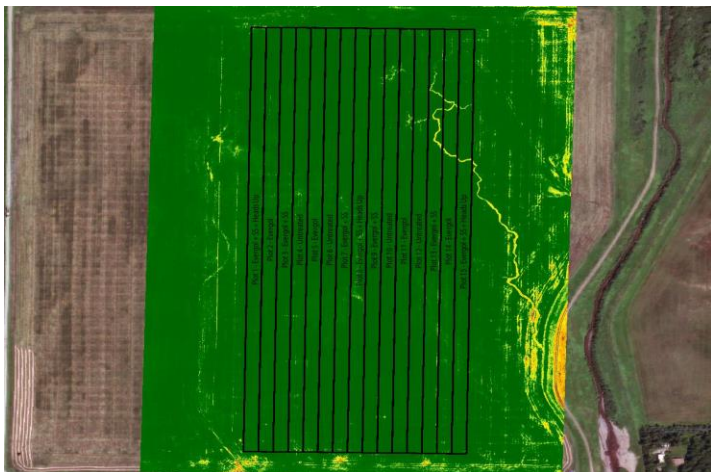
### Trial Information

<b>Treatment</b>	Evergol, 1x Evergol Energy + Stress Shield, 1x Evergol Energy + Stress Shield + Headsup
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Loamy Clay Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Zero Tillage
<b>Seeding Date</b>	May 15
<b>Variety</b>	Nocoma R2
<b>Seeding Rate</b>	203 000 seeds/ac
<b>Row Spacing</b>	12"
<b>Plant Stand @ VC</b>	137 000 plants/ac
<b>Harvest Date</b>	October 7

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	10.9	60.3	65.6	45.9

### NDVI Field Image – August 9, 2019



### Overall Yield

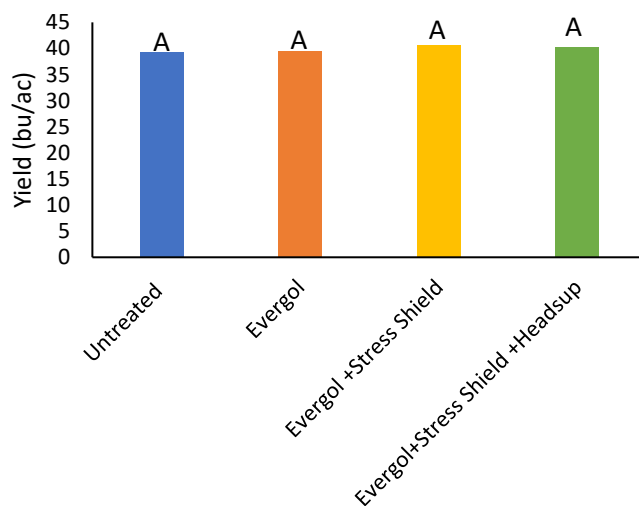
	Mean (bu/ac)
<b>Evergol</b>	39.4
<b>Evergol + Stress Shield</b>	40.7
<b>Evergol + Stress Shield +Headsup</b>	40.2
<b>Untreated</b>	39.3
<b>P-Value</b>	0.1099
<b>CV</b>	2.6%
<b>Significance</b>	<b>No</b>

### Seedling Root Rot Severity<sup>†</sup>

	Severity	Letter Group
<b>Untreated</b>	42%	A
<b>Evergol</b>	27%	A
<b>Evergol + Stress Shield</b>	40%	A
<b>Evergol + Stress Shield + Headsup</b>	39%	A

<sup>†</sup> Severity determined in the lab from seedling plant samples; severity was rated on a scale of 0-6 and converted to a %

### Yield by Treatment





## Soybean Seed Treatment Trial

**Trial ID:** 2019SST03 – R.M. of Morris

**Objective:** Quantify the agronomic impacts of seed treatment in soybean

**Summary:** There was no significant difference in soybean seedling root rot severity or seed yield between treated and untreated soybeans.

### Trial Information†

<b>Treatment</b>	1x Evergol Energy
<b>Rural Municipality</b>	Morris, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 7
<b>Variety</b>	DKB005-52
<b>Seeding Rate</b>	153 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ VC</b>	81 000 plants/ac
<b>Harvest Date</b>	October 31

† Poor and uneven emergence at this site-year

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	52.6	94.7	69.5	51.7
<b>Rainfall</b>	43.1	34.7	144.3	64.8

### Seedling Root Rot Severity†

	Severity	Letter Group
<b>Treated</b>	50%	A
<b>Untreated</b>	51%	A

† Severity determined in the lab from seedling plant samples; severity was rated on a scale of 0-6 and converted to a %

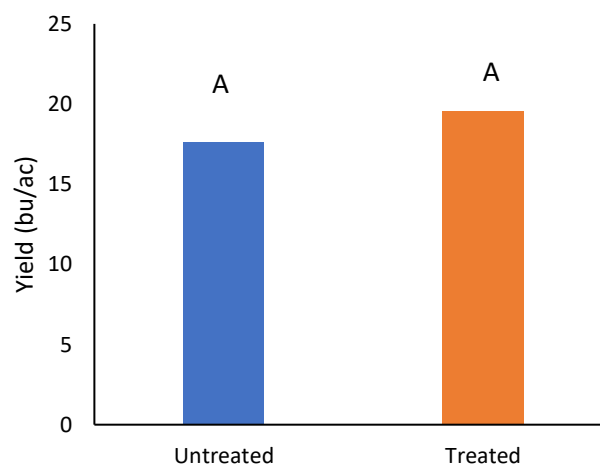
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	19.54
<b>Untreated</b>	17.64
<b>Yield Difference</b>	1.9
<b>P-Value</b>	0.1983
<b>CV</b>	13%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 8, 2019



### Yield by Treatment







# on-farm network

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**Summary:** There was no significant difference in seedling root rot severity or seed yield between treated and untreated soybeans.

## Soybean Seed Treatment Trial

**Trial ID:** 2019SST04 – R.M. of Morris

**Objective:** Quantify the agronomic impacts of seed treatment in soybeans

### Trial Information

<b>Treatment</b>	1x CruiserMaxx Vibrance
<b>Rural Municipality</b>	Morris, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Seeding Date</b>	May 14
<b>Variety</b>	S008-N2
<b>Seeding Rate</b>	180 000 seeds/ac
<b>Row Spacing</b>	15"
<b>Plant Stand @ V1</b>	203 000 plants/ac
<b>Harvest Date</b>	October 30

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	53.6	86.4	71.9	65.4
<b>Rainfall</b>	32.1	50.6	74.8	49.6

### Seedling Root Rot Severity†

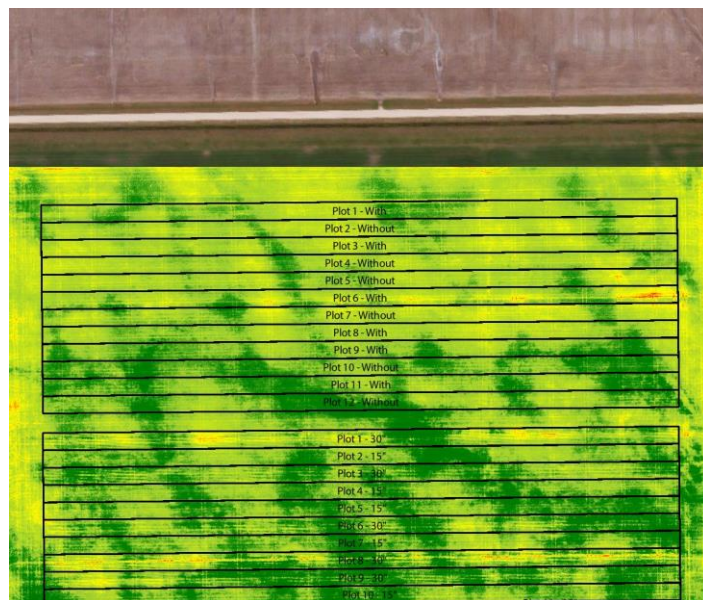
	Severity	Letter Group
<b>Treated</b>	37%	A
<b>Untreated</b>	49%	A

† Severity determined in the lab from seedling plant samples; severity was rated on a scale of 0-6 and converted to a %

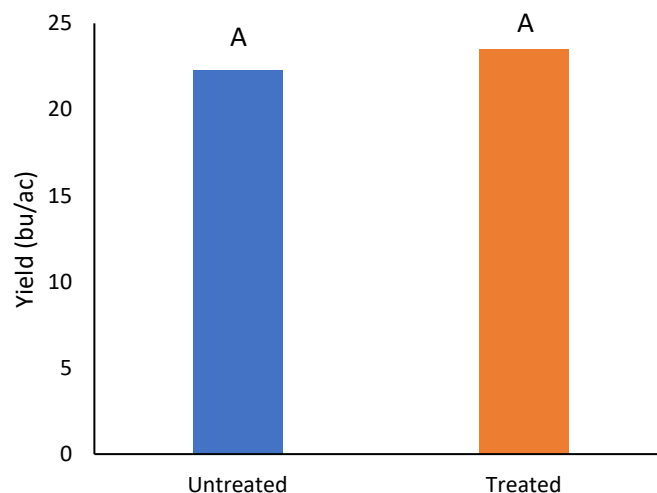
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	23.5
<b>Untreated</b>	22.3
<b>Yield Difference</b>	1.2
<b>P-Value</b>	0.3177
<b>CV</b>	15%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 8, 2019



### Yield by Treatment





## on-farm network

PARTICIPATORY • PRECISE • PROACTIVE

**Summary:** There was no significant difference in seedling root rot severity or seed yield between treated and untreated soybeans.

## Soybean Seed Treatment Trial

**Trial ID:** 2019SST05 – R.M. of De Salaberry

**Objective:** Quantify the agronomic impacts of seed treatment in soybeans

### Trial Information

<b>Treatment</b>	1x Evergol Energy
<b>Rural Municipality</b>	De Salaberry, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Seeding Date</b>	May 14
<b>Variety</b>	PS 0027 RR
<b>Row Spacing</b>	22"
<b>Plant Stand @ VC</b>	143 000 plants/ac
<b>Harvest Date</b>	September 17

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	58.1	91.3	80.1	66.1
<b>Rainfall</b>	44.2	39.9	173.2	61.1

### Seedling Root Rot Severity†

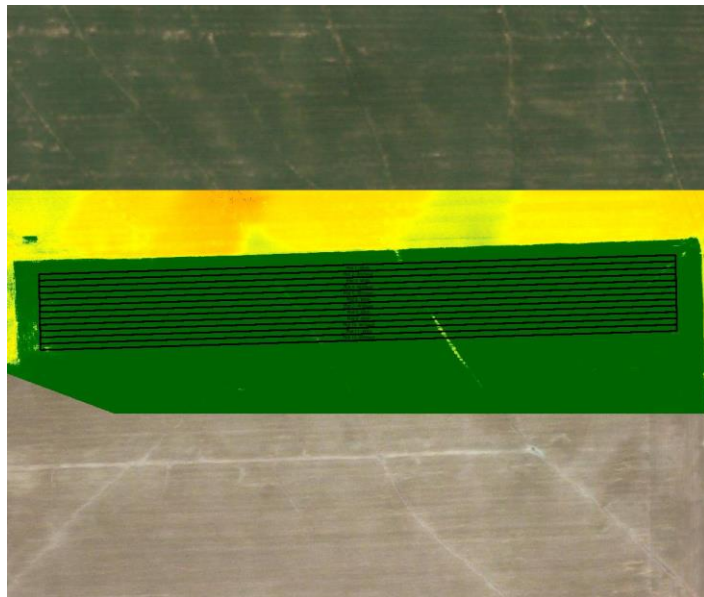
	Severity	Letter Group
<b>Treated</b>	41%	A
<b>Untreated</b>	47%	A

† Severity determined in the lab from seedling plant samples; severity was rated on a scale of 0-6 and converted to a %

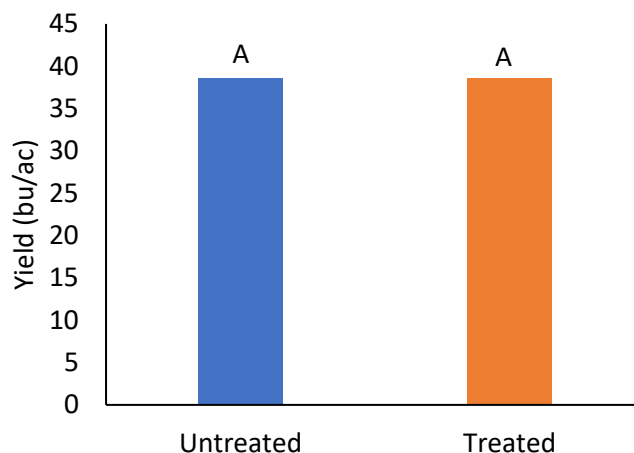
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	38.5
<b>Untreated</b>	38.5
<b>Yield Difference</b>	0
<b>P-Value</b>	1
<b>CV</b>	2.0%
<b>Significance</b>	<b>No</b>

NDVI Field Image – August 8, 2019



### Yield by Treatment



## Soybean Seed Treatment Trial

**Trial ID:** 2019SST06 – R.M. of Westlake-Gladstone

**Objective:** Quantify the agronomic impacts of seed treatment in soybeans

**Summary:** Seedling root rot was significantly more severe in untreated soybeans compared to treated soybeans. There was no significant difference in seed yield between treated and untreated soybeans.

### Trial Information

<b>Treatment</b>	1x CruiserMaxx Vibrance
<b>Rural Municipality</b>	Westlake-Gladstone, RM of
<b>Soil Texture</b>	Very Fine Sandy Loam
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 14
<b>Variety</b>	NSC Watson RR2Y
<b>Seeding Rate</b>	204 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ VC</b>	196 000 plants/ac
<b>Harvest Date</b>	September 17

### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	49.7	76.9	61.7	64.3
<b>Rainfall</b>	14.5	47.8	115.2	88.6

### Seedling Root Rot Severity†

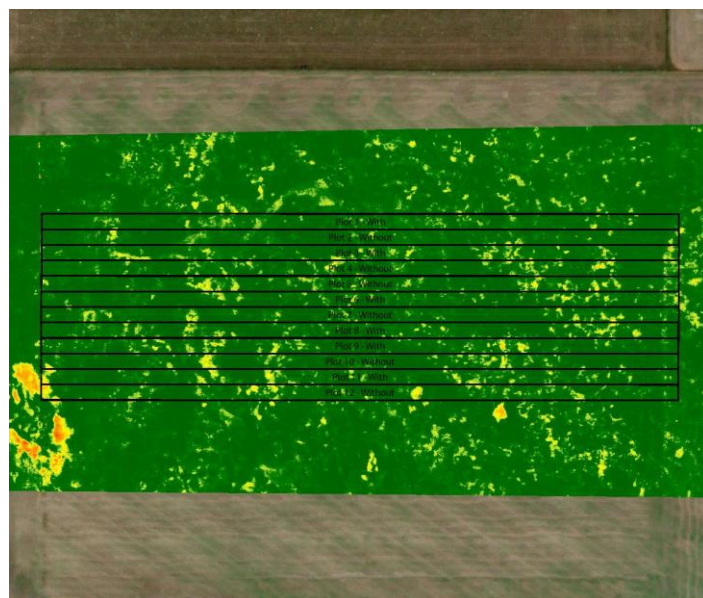
	Severity	Letter Group
<b>Treated</b>	30%	B
<b>Untreated</b>	54%	A

† Severity determined in the lab from seedling plant samples; severity was rated on a scale of 0-6 and converted to a %

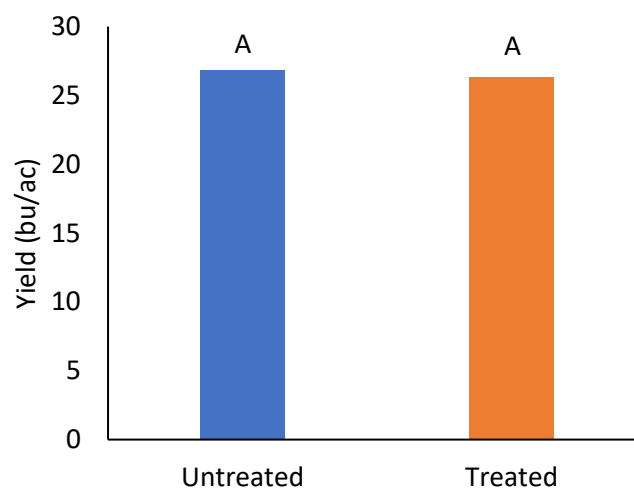
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	26.3
<b>Untreated</b>	26.9
<b>Yield Difference</b>	-0.5
<b>P-Value</b>	0.3792
<b>CV</b>	3.1%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 9, 2019



### Yield by Treatment



## Soybean Seed Treatment Trial

Trial ID: 2019SST07 – R.M. of Dauphin

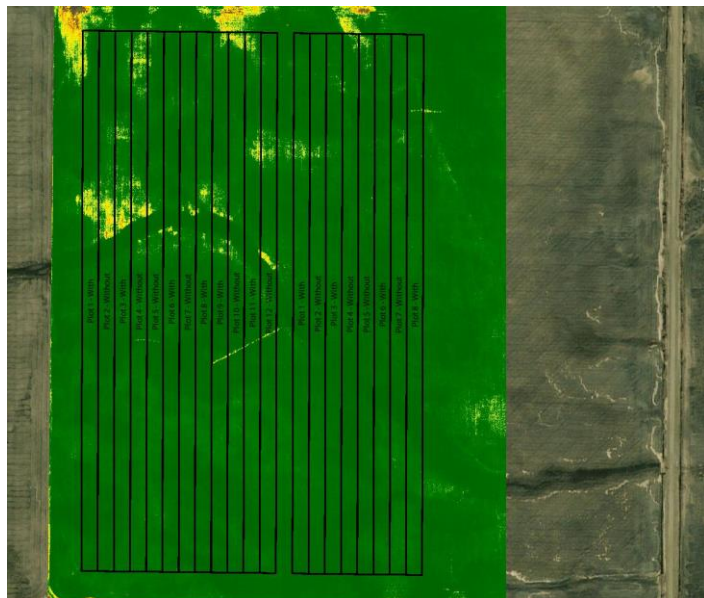
**Objective:** Quantify the agronomic impacts of seed treatment in soybeans

**Summary:** Seedling root rot was significantly more severe in untreated soybeans compared to treated soybeans. There was no significant seed yield difference between treated and untreated soybeans.

### Trial Information

<b>Treatment</b>	Evergol Energy + Stress Shield
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Silty Loam
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 24
<b>Variety</b>	Footo R2
<b>Seeding Rate</b>	210 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Plant Stand @ VC</b>	184 000 plants/ac
<b>Harvest Date</b>	October 25

### NDVI Field Image – August 9, 2019



### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	10.9	60.3	65.6	45.9

### Seedling Root Rot Severity†

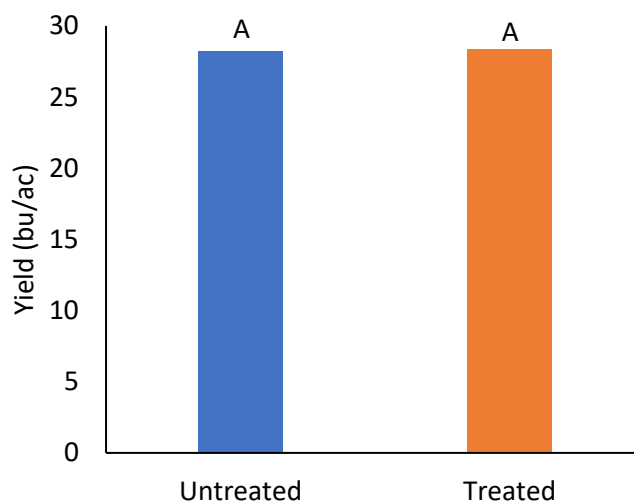
	Severity	Letter Group
<b>Treated</b>	37%	B
<b>Untreated</b>	64%	A

† Severity determined in the lab from seedling plant samples; severity was rated on a scale of 0-6 and converted to a %

### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	28.3
<b>Untreated</b>	28.2
<b>Yield Difference</b>	0.1
<b>P-Value</b>	0.7778
<b>CV</b>	4.6%
<b>Significance</b>	No

### Yield by Treatment



## Soybean Late Rolling Trial

**Objective:** Quantify the agronomic impacts of soybean rolling at a later stage than recommended

**Summary:** There was no significant yield difference between soybeans rolled at V3 and unrolled soybeans at this site-year.

Table 11. Summary of 2019 soybean late rolling trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Seeding Rate '000/ac	Stage @ Rolling	Yield		Yield Difference bu/ac	CV %	P-Value	Statistically Significant @ 95%
					Rolled bu/ac	Unrolled bu/ac				
SR06	Brokenhead	May 21	180	V3	34.9	33.8	1.1	6.9	0.5621	No



## Soybean Rolling Trial

**Trial ID:** 2019-SR06 – R.M. of Brokenhead

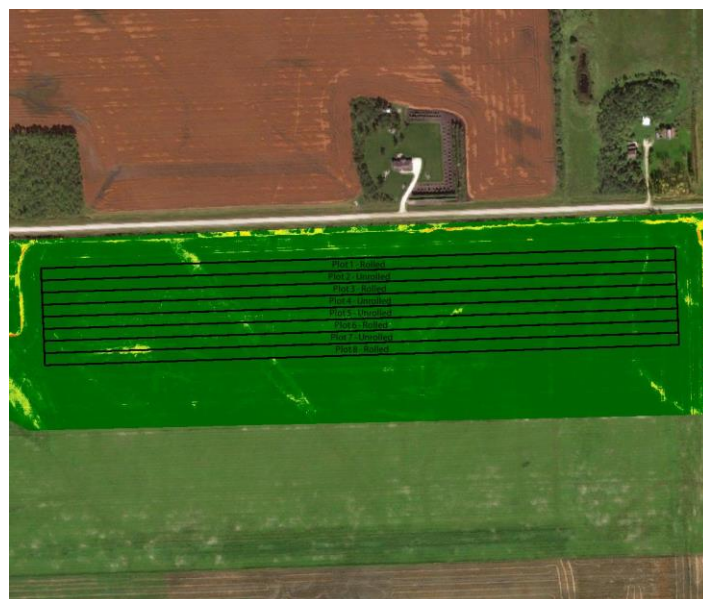
**Objective:** Quantify the agronomic impacts of rolling soybeans at a later stage than conventionally recommended.

**Summary:** There was no significant yield difference between soybeans rolled at V3 and unrolled soybeans.

### Trial Information

<b>Treatment</b>	Late Rolling
<b>Rural Municipality</b>	Brokenhead, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Meadow Fescue
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 21
<b>Rolling Date</b>	July 2
<b>Rolling Growth Stage</b>	V3
<b>Plant Stand (V3)</b>	108 000 plants/ac
<b>Variety</b>	NSC Culross RR2X
<b>Seeding Rate</b>	180 000 seeds/ac
<b>Row Spacing</b>	15"
<b>Harvest Date</b>	October 30

### NDVI Field Image – August 7, 2019



### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54	89.9	73.4	72.6
<b>Rainfall</b>	19	45.4	65.7	59.6

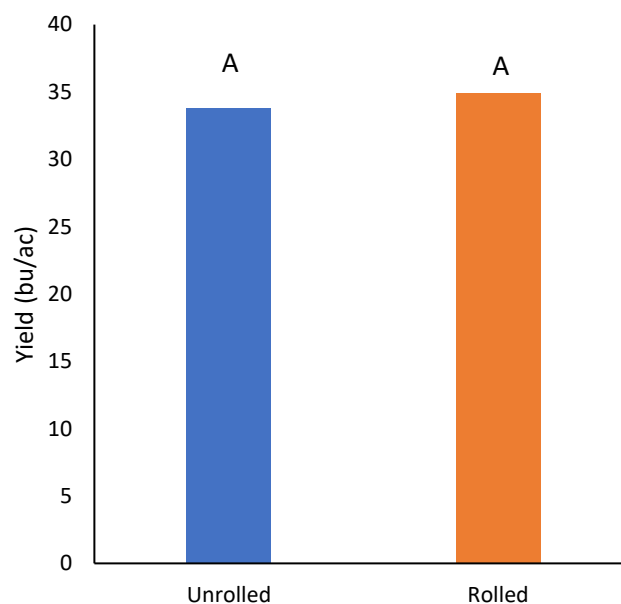
### Breakage at V4

Breakage was assessed in 20 ft of row length at one location in each strip, at V4. Average breakage measured in the rolled strips was 11 000 plants/ac.

### Overall Yield

	Mean (bu/ac)
<b>Rolled</b>	34.9
<b>Unrolled</b>	33.8
<b>Yield Difference</b>	1.1
<b>P-Value</b>	0.5621
<b>CV</b>	6.9%
<b>Significance</b>	<b>No</b>

### Yield by Treatment



## Soybean Biological Trial

**Objective:** Quantify the agronomic impacts of biological products in soybeans

**Summary:** There was no significant yield difference between soybeans treated with a biological product and soybeans without a biological product.

Table 12. Summary of 2019 soybean biological trial yield results, by site-year

Trial ID	Rural Municipality	Seeding Date	Product	Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%
				Treated	Untreated				
				bu/ac		bu/ac	%		
SB01	Brokenhead	May 13	Crop Aid Soil	11.0	12.7	-1.7	11.9	0.1518	No
SB02	Dauphin	May 13	Active Flower®	34.9	35.3	-0.4	4.2	0.5772	No

## Soybean Biological Trial

**Trial ID:** 2019SB01 – R.M. of Brokenhead

**Objective:** Quantify the agronomic impacts of a biological treatment in soybean

**Summary:** There was no significant yield difference between soybean treated with Crop Aid Soil and soybean without.

### Trial Information†

<b>Treatment</b>	Crop Aid Soil
<b>Rural Municipality</b>	Brokenhead, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Wheat
<b>Tillage</b>	Conventional
<b>Seeding Date</b>	May 13
<b>Variety</b>	Prudence
<b>Seeding Rate</b>	2 bu/ac
<b>Row Spacing</b>	9"
<b>Harvest Date</b>	November 13

† Crop Aid Soil is a liquid solution intended to promote beneficial microorganisms and act as a fertilizer catalyst, limiting fertilizer tie-up

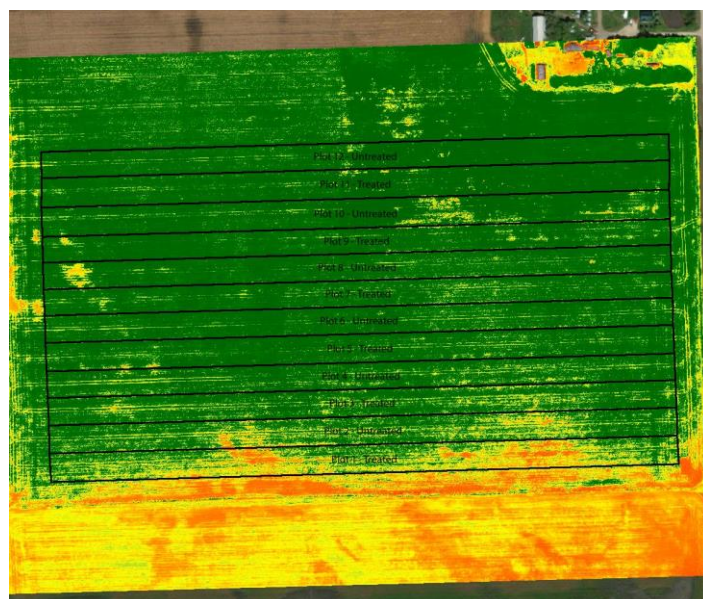
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54	89.9	73.4	72.6
<b>Rainfall</b>	19	45.4	65.7	59.6

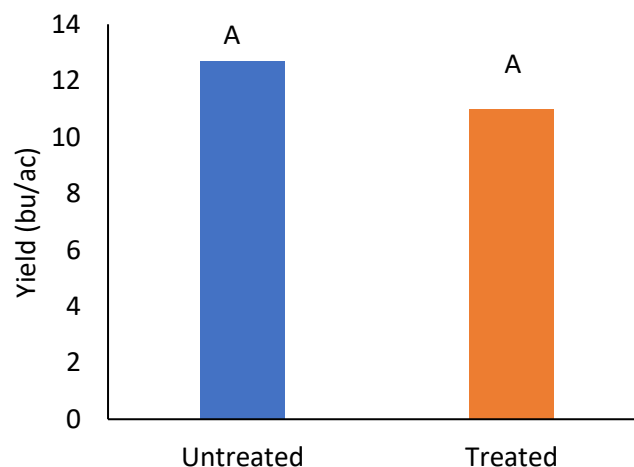
### Overall Yield

	Mean (bu/ac)
<b>Treated</b>	11.0
<b>Untreated</b>	12.7
<b>Yield Difference</b>	-1.7
<b>P-Value</b>	0.1518
<b>CV</b>	11.9%
<b>Significance</b>	<b>No</b>

### NDVI Field Image – August 7, 2019



### Yield by Treatment



## Soybean Biologicals Trial

Trial ID: 2019SB02 – R.M. of Dauphin

**Objective:** Quantify the agronomic impacts of a biological product in soybean

**Summary:** There was no significant yield difference between soybean treated with the biological and soybean without the biological

### Trial Information†

<b>Treatment</b>	Active Flower®
<b>Rural Municipality</b>	Dauphin, RM of
<b>Soil Texture</b>	Clay
<b>Previous Crop</b>	Canola
<b>Tillage</b>	Minimal Tillage
<b>Seeding Date</b>	May 13
<b>Variety</b>	DKB005-52
<b>Seeding Rate</b>	185 000 seeds/ac
<b>Row Spacing</b>	10"
<b>Harvest Date</b>	October 8

† Active Flower® is intended to enhance flowering and increase seed/pod production

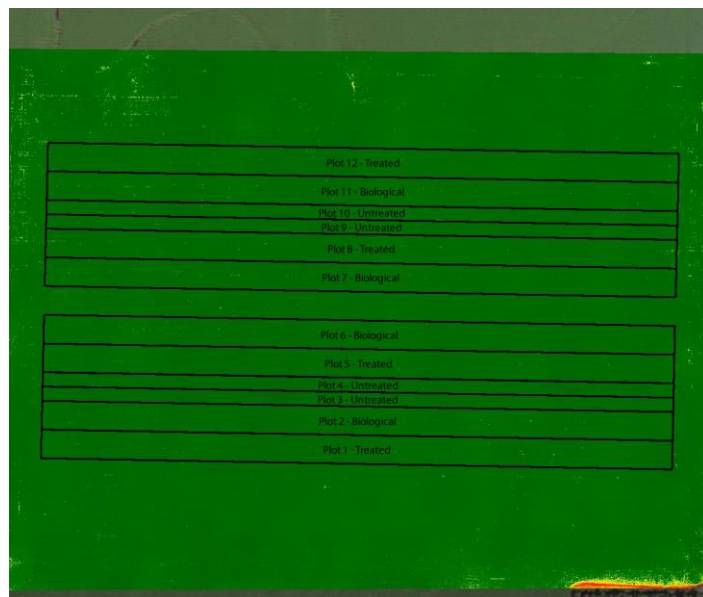
### Precipitation (mm)

	May	June	July	August
<b>Normal</b>	54.3	86.7	73.2	63.3
<b>Rainfall</b>	10.9	60.3	65.6	45.9

### Overall Yield

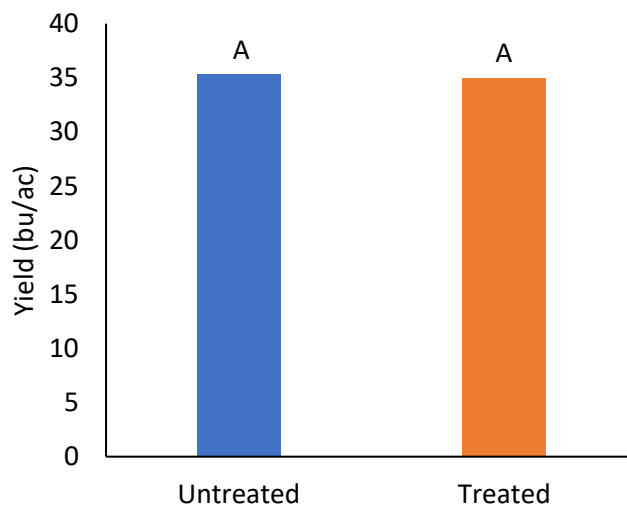
	Mean (bu/ac)
<b>Treated</b>	34.9
<b>Untreated</b>	35.3
<b>Yield Difference</b>	-0.4
<b>P-Value</b>	0.5772
<b>CV</b>	4.2%
<b>Significance</b>	<b>No</b>

### Field Image†



† Only the biological and untreated strips were compared for this report – see 2019SF02 for fungicide results

### Yield by Treatment



# Wheat Fusarium Fungicide Timing Trial

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer’s normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

**Summary:** One site-year had a significant yield increase with fusarium fungicide application; both the recommended and late timing increased wheat yield above the control, but the two timings did not significantly differ from one another. Yield did not differ significantly for the other 2019 site-years.

Table 13 a. Summary of 2019 wheat fusarium fungicide trial quality, by site-year

TrialID	Treatment	Protein	Don	Falling Number	TWT (lb/bu)
2019-WFHB01	Recommended	14.8	0.5	351	67
	Late	15.0	<0.3	344	67
	Untreated	14.8	<0.3	320	67
2019-WFHB02	Recommended	15.5	<0.3	325	66
	Late	15.2	<0.3	285	65
	Untreated	15.3	<0.3	345	64
2019-WFHB03	Recommended	14.5	<0.3	287	63
	Late	14.7	<0.3	294	63
	Untreated	14.6	<0.3	286	63
2019-WFHB04	Recommended	12.4	<0.3	295	63
	Late	12.4	<0.3	269	63
	Untreated	12.5	<0.3	284	63
2019-WFHB05	Recommended	12.2	<0.3	338	65
	Late	12.2	<0.3	336	65
	Untreated	12.2	<0.3	337	65
2019-WFHB06	Recommended	13.7	<0.3	317	64
	Late	13.6	<0.3	309	64
	Untreated	13.8	<0.3	291	63
2019-WFHB07	Recommended	13.0	0.3	225	61
	Late	12.9	0.3	239	60
	Untreated	11.8	0.4	233	59

Table 13 b. Summary of 2019 wheat fusarium fungicide trial yield, by site-year

Trial ID	Rural Municipality	Variety	Yield			CV	P-Value	Statistically Significant @ 95%
			Late	Rec'd	Untreated			
			bu/ac			%		
WFHB01	Westlake-Gladstone	AAC Brandon	57.9	59.5	56.5	5.1	0.1461	No
WFHB03	MacDonald	AAC Brandon	54.0	53.9	49.7	7.3	0.0025	Yes
WFHB04	St. Clements	SY Rowyn	72.9	74.4	71.5	4.0	0.0886	No
WFHB05	Dauphin	AAC Viewfield	76.9	81.3	75.6	6.2	0.0874	No
WFHB06	Wallace-Woodworth	AAC Brandon	80.3	79.6	78.0	2.2	0.1138	No



## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB01 — R.M. of Westlake-Gladstone

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

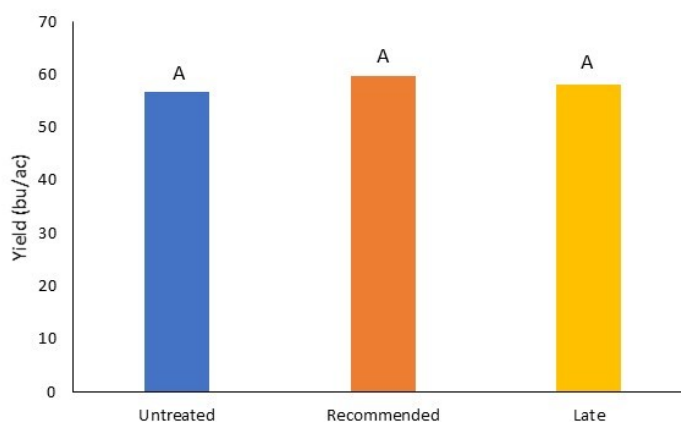
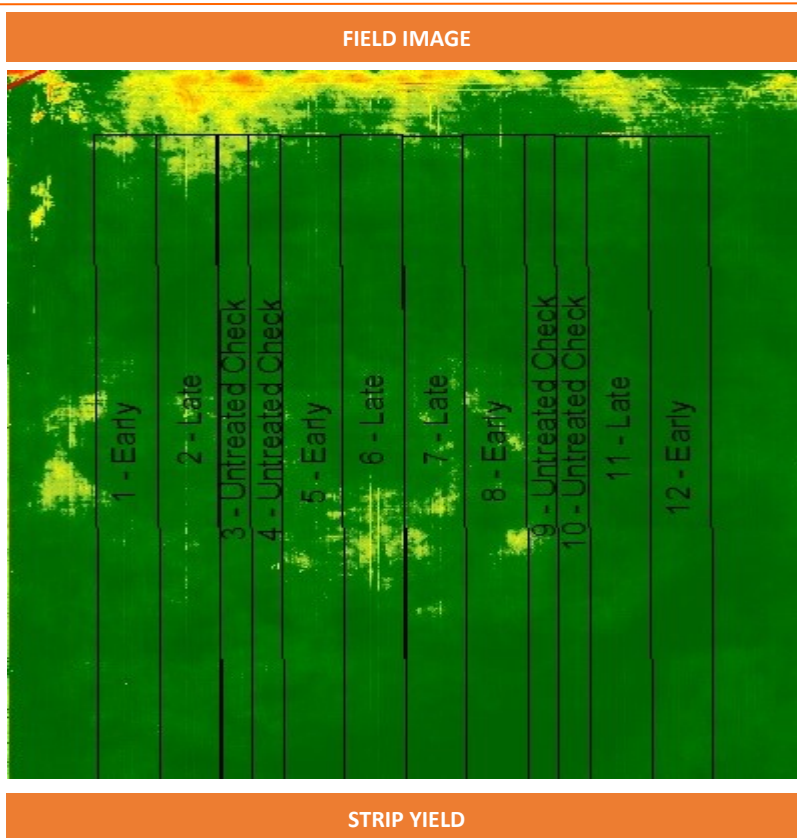
TRIAL INFORMATION	
Location	Gladstone
Previous Crop	Navy Bean
Soil Texture	Loam
Tillage	Conventional
Planting Date	May 04, 2019
Variety	AAC Brandon
Row Spacing	10"
Seeding Rate	138 lbs/ac
Fungicide Product	Caramba
Rec'd App Date	July 02, 2019
Rec'd App Timing	Early Flower
3-5 Days Later	July 07, 2019
Harvest Date	August 19, 2019

PRECIPITATION <sup>†</sup>					
	May	June	July	Aug	Total
Rainfall	13	40	55	64	174
Normal	45	74	78	69	267

<sup>†</sup>Growing season precipitation (mm)

WHEAT QUALITY				
	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	14.8	0.5	66.8	351
Late Timing	15.0	0	66.5	344
Untreated	14.8	0	66.5	320

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	59.5
Late Timing	57.9
Untreated	56.5
P-Value	0.1461
CV	5.1%
Significance	No



**Summary:** There was no significant yield difference between the recommended timing, late timing, and untreated check for fusarium head blight fungicide timing applications. Wheat quality was consistent for all the treatments, receiving a #1 grade for CWRS. Rainfall was below normal for the entire growing season.

## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB02 — R.M. of St. Francois Xavier

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

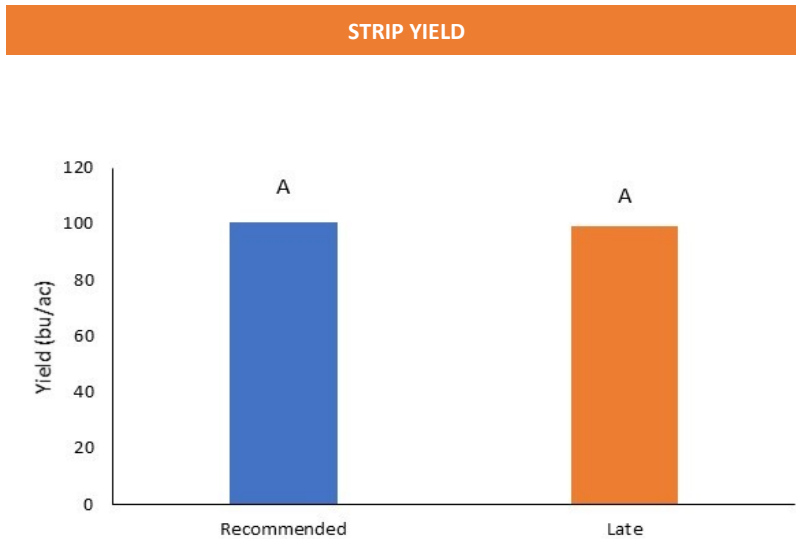
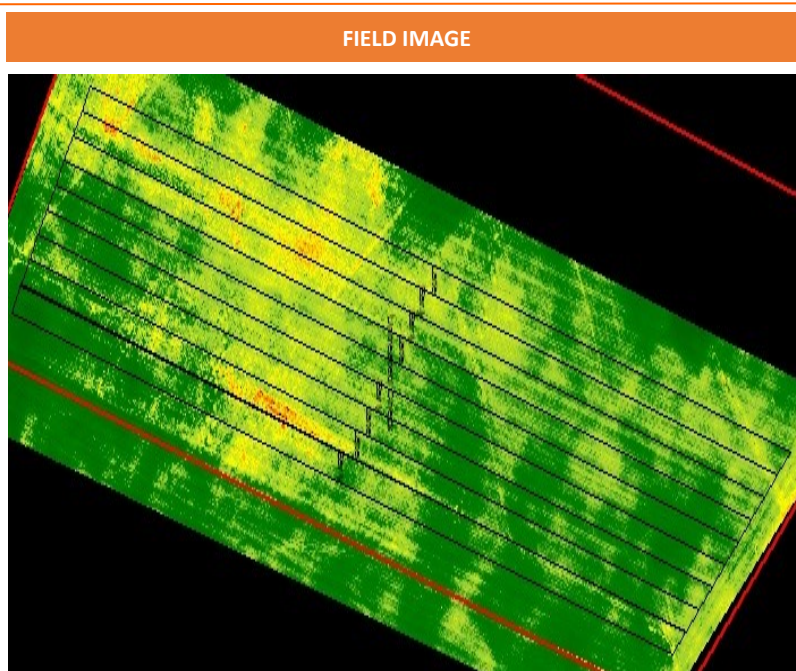
TRIAL INFORMATION	
Location	Marquette
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Zero Tillage
Planting Date	April 29, 2019
Variety	Faller
Row Spacing	10"
Seeding Rate	120 lbs/ac
Fungicide Product	Prosaro XTR
Rec'd App Date	July 03, 2019
Rec'd App Timing	Flowering
3-5 Days Later	July 06, 2019
Harvest Date	August 23, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	19	65	64	1	151
Normal	68	85	71	17	243

†Growing season precipitation (mm)

WHEAT QUALITY				
	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	15.5	0	65.8	325
Late Timing	15.2	0	65.3	285
Untreated	15.3	0	64.0	345

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	100.5
Late Timing	98.9
P-Value	0.6582
CV	4.5%
Significance	No
Reference Check Strip	104.0 bu/ac



**Summary:** There was no significant yield difference between the recommended timing and late timing for fusarium head blight fungicide timing applications. Wheat quality was consistent for all the treatments, receiving a #1 grade for CNHR. Rainfall was below normal for the entire growing season.

## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB03 — R.M. of MacDonald

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

TRIAL INFORMATION	
Location	Starbuck
Previous Crop	Canola
Soil Texture	Clay
Tillage	Conventional
Planting Date	May 07, 2019
Variety	AAC Brandon
Row Spacing	9"
Seeding Rate	110 lbs/ac
Fungicide Product	Prosaro 250 EC
Rec'd App Date	July 03, 2019
Rec'd App Timing	Early Flower
3-5 Days Later	July 08, 2019
Harvest Date	September 06, 2019

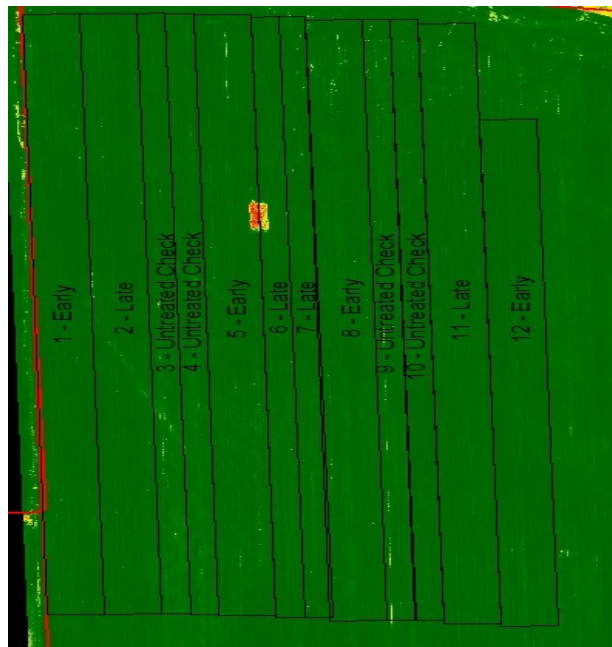
PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	24	40	71	63	199
Normal	50	85	71	74	281

†Growing season precipitation (mm)

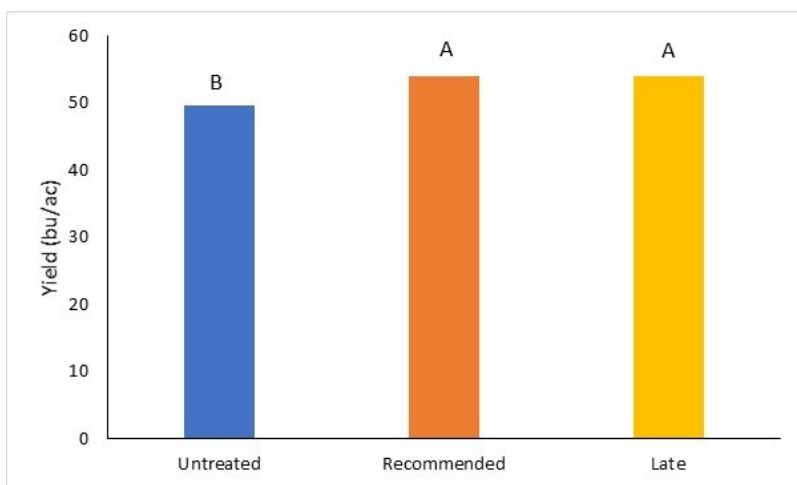
WHEAT QUALITY				
	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	14.5	0	63.0	287
Late Timing	14.7	0	62.8	294
Untreated	14.6	0	62.5	286

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	53.9
Late Timing	54.0
Untreated	49.7
P-Value	0.0025
CV	7.3%
Significance	Yes

### FIELD IMAGE



### STRIP YIELD



**Summary:** Yield of the untreated check was significantly lower than the recommended and late timing for fusarium head blight fungicide applications. Wheat quality was a #2 grade for CWRS because of sprout damage. Rainfall was normal for July, but below normal for the remainder of the growing season.

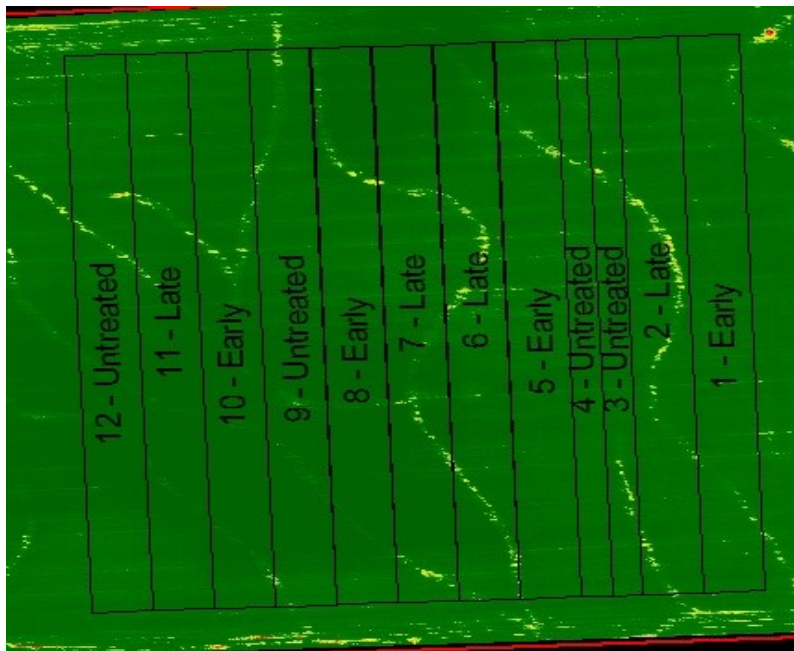
## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB04 — R.M. of St. Clements

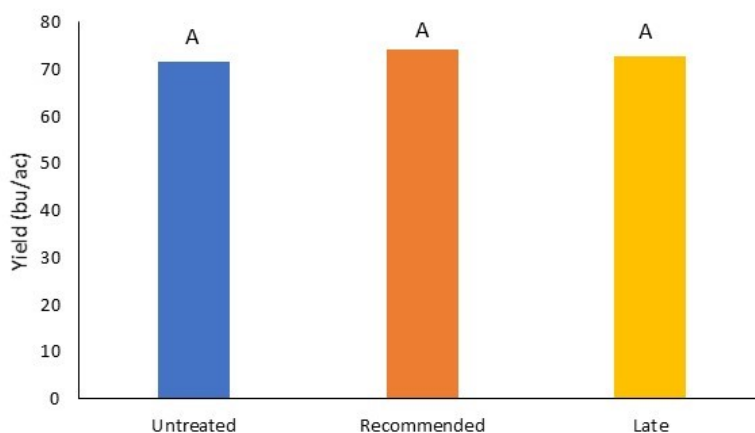
**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

TRIAL INFORMATION	
Location	Beausejour
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Conventional
Planting Date	May 09, 2019
Variety	SY Rowyn
Row Spacing	10"
Seeding Rate	110 lbs/ac
Fungicide Product	Folicur 250EW
Rec'd App Date	July 05, 2019
Rec'd App Timing	Z65
3-5 Days Later	July 08, 2019
Harvest Date	September 17, 2019

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was no significant yield difference between the recommended timing, late timing, and untreated check for fusarium head blight fungicide timing applications. Wheat quality was a #2 grade for CPSR because of sprout damage. Rainfall was below normal until August when rainfall was 146% of normal.

### PRECIPITATION†

	May	June	July	Aug	Total
Rainfall	17	45	66	111	239
Normal	58	88	87	76	309

†Growing season precipitation (mm)

### WHEAT QUALITY

	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	12.4	0	63	295
Late Timing	12.4	0	63	269
Untreated	12.5	0	63	284

### OVERALL YIELD

	Mean (bu/ac)
Rec'd Timing	74.4
Late Timing	72.9
Untreated	71.5
P-Value	0.0886
CV	4.0%
Significance	No



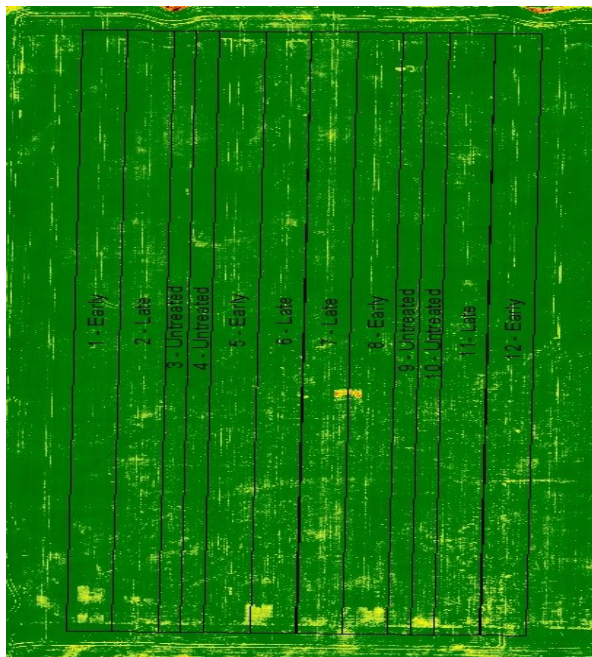
## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB05 — R.M. of Dauphin

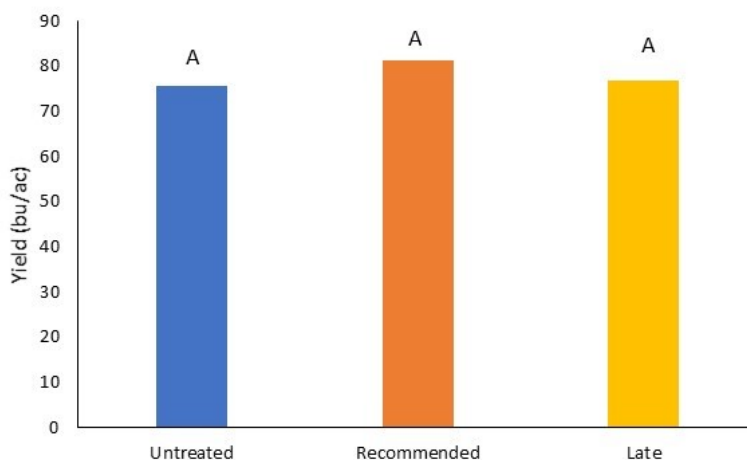
**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

TRIAL INFORMATION	
Location	Keld
Previous Crop	Canola
Soil Texture	Clay
Tillage	Zero Tillage
Planting Date	May 11, 2019
Variety	AAC Viewfield
Row Spacing	10"
Seeding Rate	120 lbs/ac
Fungicide Product	Prosaro XTR
Rec'd App Date	July 07, 2019
Rec'd App Timing	Z65
3-5 Days Later	July 10, 2019
Harvest Date	September 08, 2019

### FIELD IMAGE



### STRIP YIELD



PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	4	60	65	45	176
Normal	36	77	70	62	247

†Growing season precipitation (mm)

WHEAT QUALITY				
	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	12.2	0	65	338
Late Timing	12.2	0	65	336
Untreated	12.2	0	65	337

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	81.3
Late Timing	76.9
Untreated	75.6
P-Value	0.0874
CV	6.2%
Significance	No

**Summary:** There was no significant yield difference between the recommended timing, late timing, and untreated check for fusarium head blight fungicide timing applications. Wheat quality was #1 grade for CWRS with one sample down graded to #2 for sawfly midge damage. Rainfall was below normal for the entire growing season.



## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB06 — R.M. of Wallace-Woodworth

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

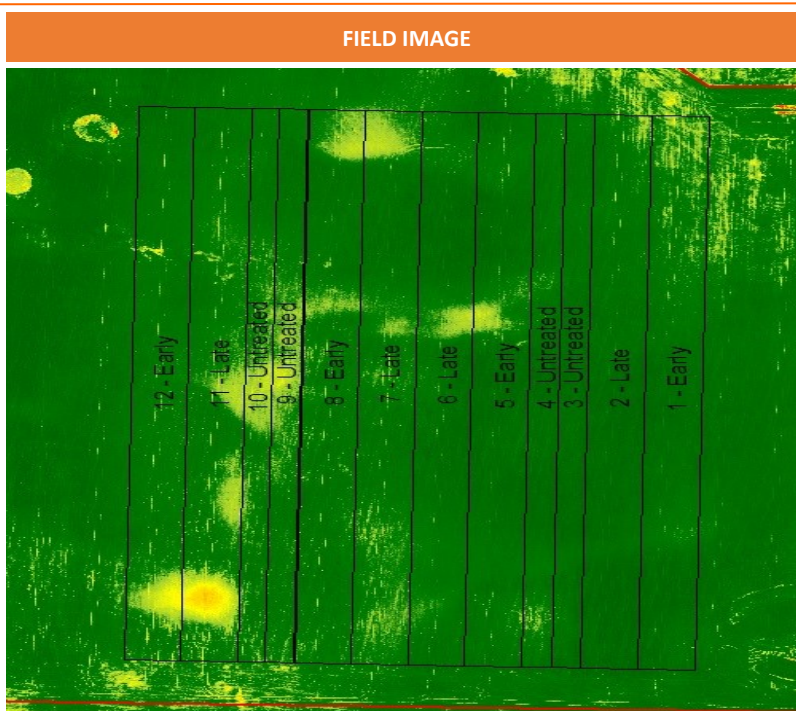
TRIAL INFORMATION	
Location	Virden
Previous Crop	Soybeans
Soil Texture	Loam
Tillage	Zero Tillage
Planting Date	May 03, 2019
Variety	AAC Brandon
Row Spacing	12"
Seeding Rate	126 lbs/ac
Fungicide Product	Caramba
Rec'd App Date	July 08, 2019
Rec'd App Timing	Early Flower
3-5 Days Later	July 11, 2019
Harvest Date	September 07, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	26	66	40	68	201
Normal	45	68	62	64	242

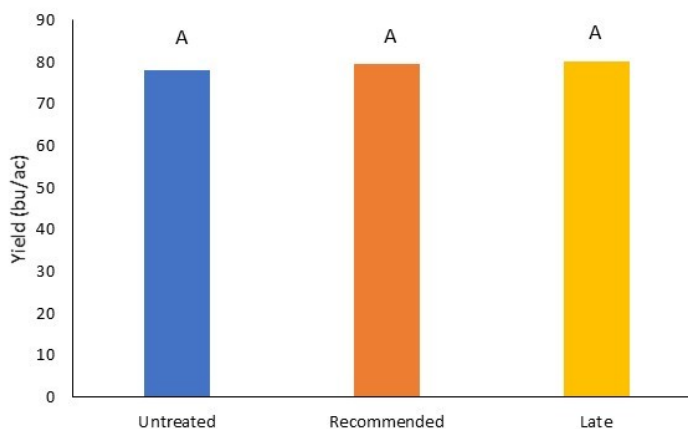
†Growing season precipitation (mm)

WHEAT QUALITY				
	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	13.7	0	63.5	317
Late Timing	13.6	0.03	63.8	309
Untreated	13.8	0.03	63.3	291

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	79.6
Late Timing	80.3
Untreated	78.0
P-Value	0.1138
CV	2.2%
Significance	No



STRIP YIELD



**Summary:** There was no significant yield difference between the recommended timing, late timing, and untreated check for fusarium head blight fungicide timing applications. Wheat quality was #2 grade for CWRS with some variability in quality from sprout damage and severe sprout damage. Rainfall was below normal for May and July and near normal in June and August.

## Wheat Fusarium Head Blight Fungicide Timing

Trial ID: 2019-WFHB07 — R.M. of Pembina

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

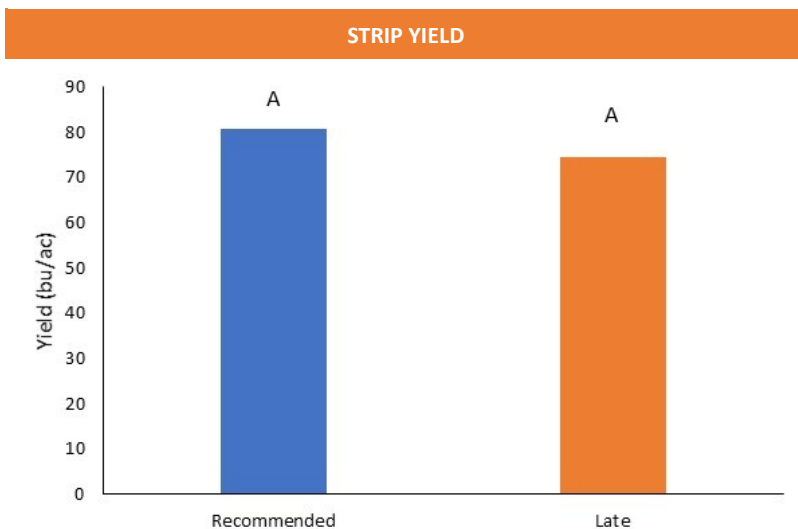
TRIAL INFORMATION	
Location	Manitou
Previous Crop	Canola
Soil Texture	Clay Loam
Tillage	Conventional
Planting Date	May 08, 2019
Variety	AAC Brandon
Row Spacing	8"
Seeding Rate	130 lbs/ac
Fungicide Product	Caramba
Rec'd App Date	July 11, 2019
Rec'd App Timing	Z60
3-5 Days Later	July 15, 2019
Harvest Date	September 09, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	25	78	52	95	250
Normal	68	98	82	73	321

†Growing season precipitation (mm)

WHEAT QUALITY				
	Protein	DON	TWT (lb/bu)	Falling Number
Rec'd Timing	13.0	0.3	60.5	225
Late Timing	12.9	0.3	60.3	239
Untreated	11.8	0.4	59.0	233

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	80.7
Late Timing	74.7
P-Value	0.1478
CV	7.0%
Significance	No
Reference Check Strip	70.1 bu/ac



**Summary:** There was no significant yield difference between the recommended timing and late timing for fusarium head blight fungicide timing applications. Wheat quality was #2 grade for CWRS with reduction in quality from FDK and DON. Rainfall was below normal for May, June and July and above normal in August.

## Barley Fusarium Fungicide Timing Trial

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer’s normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

**Summary:** There was no significant barley yield difference between the late and recommended fusarium fungicide timing at this site-year.

Table 14. Summary of 2019 barley fusarium fungicide trial yield, by site-year

Trial ID	Rural Municipality	Variety	Yield			CV	P-Value	Statistically Significant @ 95%
			Reference Check	Late	Rec'd			
			bu/ac	bu/ac				
BFHB01	St. Francois Xavier	Canmore	103.8	100.9	105.1	3	0.0653	No

## Barley Fusarium Head Blight Fungicide Timing

Trial ID: 2019-BFHB01 — R.M. of St. Francois Xavier

**Objective:** The purpose of this project is to quantify the impact of fusarium head blight on the quality of harvested grain by comparing the farmer's normal fungicide application at recommended rate and timing to a fungicide application 3 to 5 days later

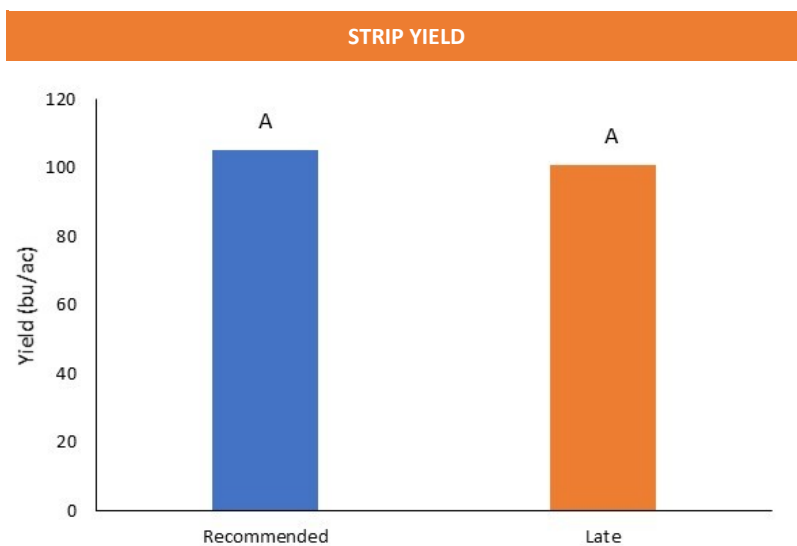
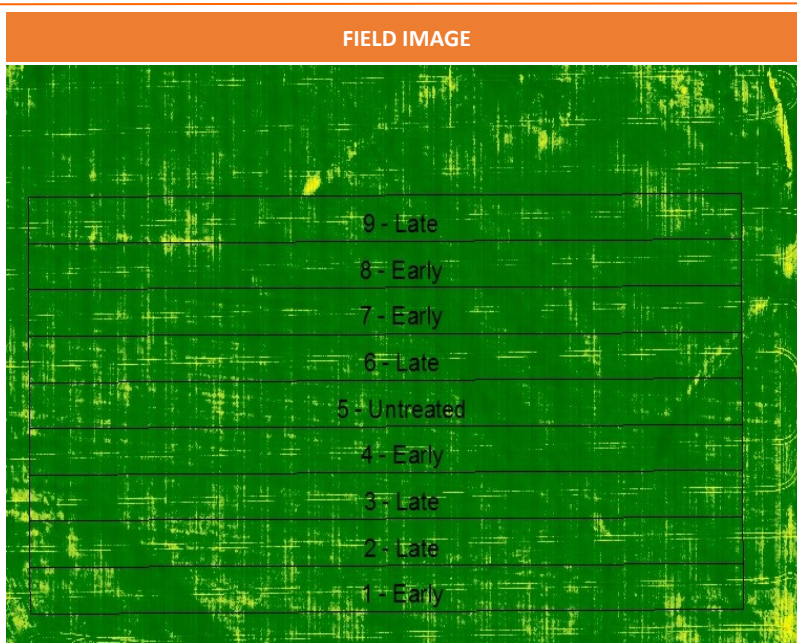
TRIAL INFORMATION	
Location	Marquette
Previous Crop	Canola
Soil Texture	Clay
Tillage	Conventional
Planting Date	April 26, 2019
Variety	Canmore
Row Spacing	10"
Seeding Rate	145 lbs/ac
Fungicide Product	Prosaro XTR
Rec'd App Date	July 07, 2019
Rec'd App Timing	Z57
3-5 Days Later	July 11, 2019
Harvest Date	August 08, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	19	65.0	64	1	151
Normal	68	85	71	17	243

†Growing season precipitation (mm)

BARLEY QUALITY			
	Protein	DON	TWT (lb/bu)
Rec'd Timing	13.2	0	53.8
3-5 Days Later	13.3	0	53.5
Untreated	13.4	0	53.0

OVERALL YIELD	
	Mean (bu/ac)
Rec'd Timing	105.1
3-5 Days Later	100.9
P-Value	0.0653
CV	3.0%
Significance	No
Reference Check Strip	103.8 bu/ac



**Summary:** There was no significant yield difference between the recommended timing and late timing for fusarium head blight fungicide timing applications. Barley quality was consistent for all the treatments, receiving a #1 grade for CW. Rainfall was below normal for the entire growing season.

# Wheat Plant Growth Regulator Trial

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

**Summary:** Three site-years had significant yield increases with the PGR application. The rest of the site-years did not have a significant difference in yield between treated and untreated wheat.

Table 15. Summary of 2019 wheat plant growth regulator trials, by site-year

Trial ID	Rural Municipality	Variety	Yield		Yield Difference	CV	P-Value	Statistically Significant @ 95%	Protein		Height		Height Difference
			Treated	Untreated					Treated	Untreated	Treated	Untreated	
			bu/ac		bu/ac	%				cm		cm	
2019-WPGR01	St. Clements	AAC Brandon	95.6	92.9	2.7	5.8	0.5127	No	13.5	13.8	31	34	-3
2019-WPGR02	Roland	AAC Brandon	72.7	70.0	2.7	2.5	0.0253	Yes	15.2	15.5	36	27	9
2019-WPGR03	Roland	AAC Brandon	52.3	48.4	3.9	7.3	0.2768	No	11.0	11.0	27	29	-2
2019-WPGR04	Hanover	AAC Brandon	66.5	65.3	1.2	3.1	0.2420	No	14.6	14.7	27	30	-3
2019-WPGR05	St. Pierre	AAC Brandon	59.6	59.3	0.3	3.9	0.8271	No	14.8	14.8	29	32	-3
2019-WPGR06	Morris	AAC Cameron VB	47.6	46.2	1.4	2.8	0.3342	No	15.0	14.9	31	31	0
2019-WPGR07	St. Andrews	AAC Brandon	57.3	59.2	-1.9	3.7	0.0548	No	13.7	13.4	27	29	-2
2019-WPGR08	Oakland-Wawanesa	AC Cardale	58.1	54.6	3.5	4.0	0.0012	Yes	15.5	15.7	33	36	-3
2019-WPGR09	Woodlands	Faller	81.1	78.0	3.1	5.4	0.2331	No	12.4	11.8	31	33	-2
2019-WPGR10	Woodlands		77.9	73.3	4.6	4.1	0.0490	Yes	14.4	14.5	29	32	-3
2019-WPGR11	Macdonald	AAC Brandon	53.4	53.0	0.4	3.5	0.8025	No	15.1	15.1	27	28	-1
2019-WPGR12	Tache	SY Rowyn	55.6	54.6	1.0	1.9	0.3332	No	13.3	13.4	24	26	-2
2019-WPGR13	Lorne	AC Cardale	72.5	69.8	2.7	7.3	0.2768	No	16.7	16.8	32	34	-2



## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR01 — R.M. of St. Clements

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

### TRIAL INFORMATION

Treatment	Manipulator™ 620 vs. Untreated
Location	Dencross
Previous Crop	Canola
Soil Texture	Clay
Tillage	Conventional
Planting Date	April 30, 2019
Variety	AAC Brandon
Row Spacing	10"
Seeding Rate	150 lbs/ac
Residual N	69 lbs N/ac
Fertilizer (N-P-K-S)	78N 25P 25S
Application Date	June 04, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	August 12, 2019

### PRECIPITATION†

	May	June	July	Aug	Total
Rainfall	19	43	68	10	140
Normal	58	88	87	26	259

†Growing season precipitation (mm)

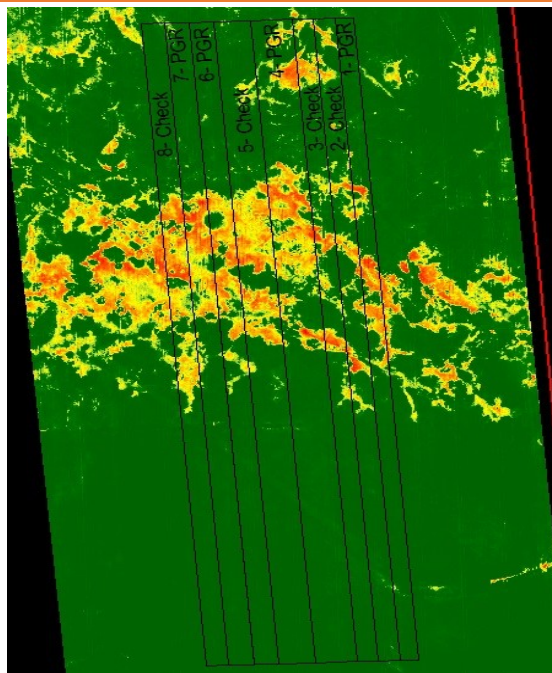
### WHEAT RESPONSE

	Plant Height (inches)	Lodging		Protein
		Incidence (%)	Severity (1-10)	
Manipulator™ 620	31	0	1	13.5
Untreated	34	0	1	13.8

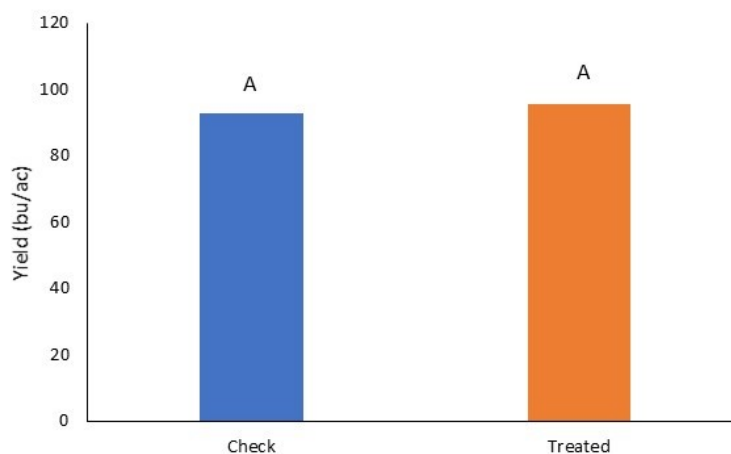
### OVERALL YIELD

	Mean (bu/ac)
Manipulator™ 620	95.6
Untreated	92.9
Yield Difference	2.7
P-Value	0.5127
CV	5.8%
Significance	No

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 4" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal for the entire growing season.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR02 — R.M. of Roland

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

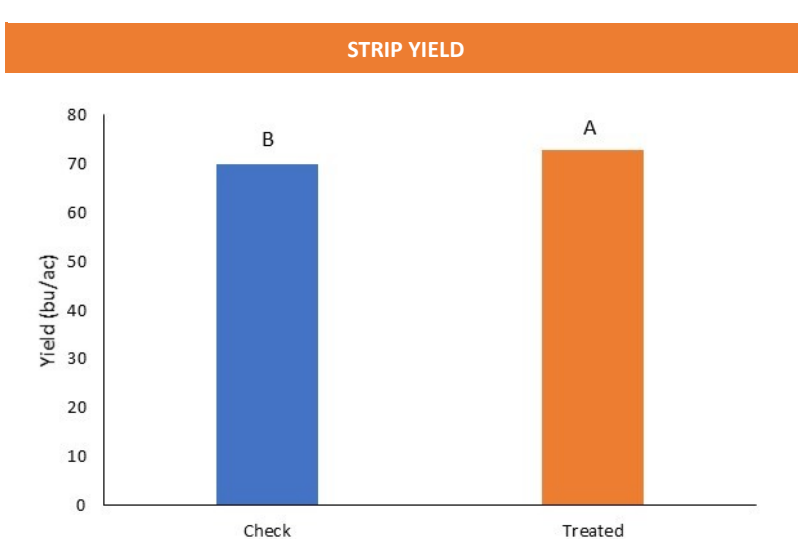
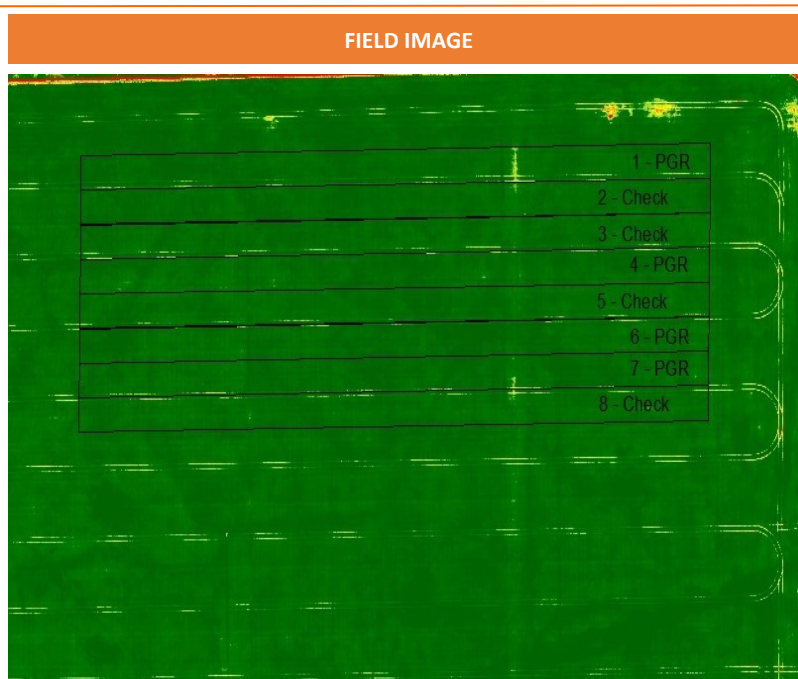
TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Rosebank
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Zero Tillage
Planting Date	April 22, 2019
Variety	AAC Brandon
Row Spacing	7.5"
Seeding Rate	168 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	47N 28P 11K 6S
Application Date	June 05, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	August 10, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	45	37	57	0	141
Normal	75	78	76	21	252

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging		Protein
		Incidence	Severity	
Manipulator™ 620	36	0	1	15.2
Untreated	27	0	1	15.5

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	72.7
Untreated	70.0
Yield Difference	2.8
P-Value	0.0253
CV	2.5%
Significance	Yes



**Summary:** There was a significant yield difference of 2.8 bu/ac between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 1" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal for the entire growing season.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR03 — R.M. of Roland

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Roland
Previous Crop	Corn
Soil Texture	Clay
Tillage	Conventional
Planting Date	April 27, 2019
Variety	AAC Brandon
Row Spacing	9"
Seeding Rate	124 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	100N 50P 10S
Application Date	June 06, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	August 10, 2019

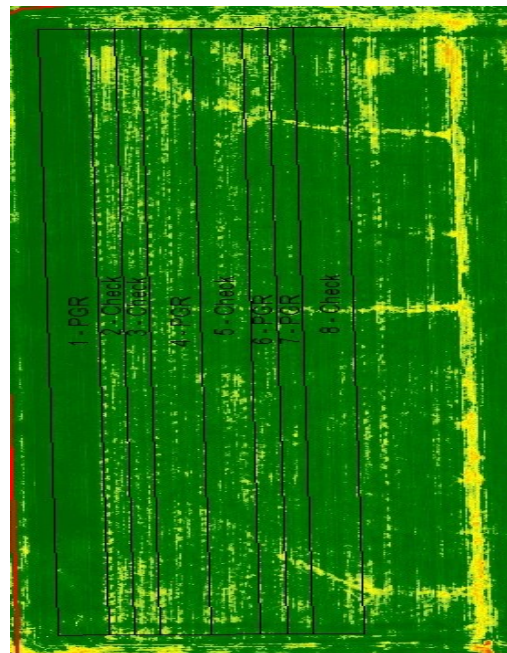
PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	45	37	57	0	141
Normal	66	78	76	21	243

†Growing season precipitation (mm)

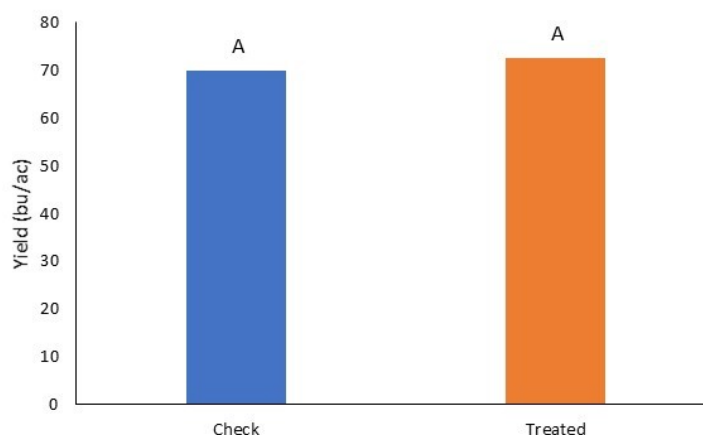
WHEAT RESPONSE				
	Plant Height (inches)	Lodging Incidence (%)	Lodging Severity (1-10)	Protein
Manipulator™ 620	27	0	1	11.0
Untreated	29	0	1	11.0

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	52.3
Untreated	48.4
Yield Difference	2.6
P-Value	0.2768
CV	7.3%
Significance	No

## FIELD IMAGE



## STRIP YIELD



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 2" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal for the entire growing season.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR04 — R.M. of Hanover

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

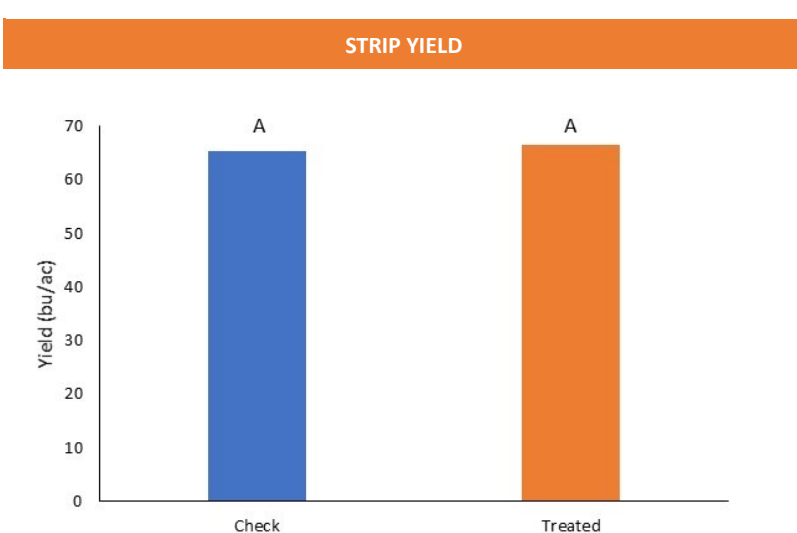
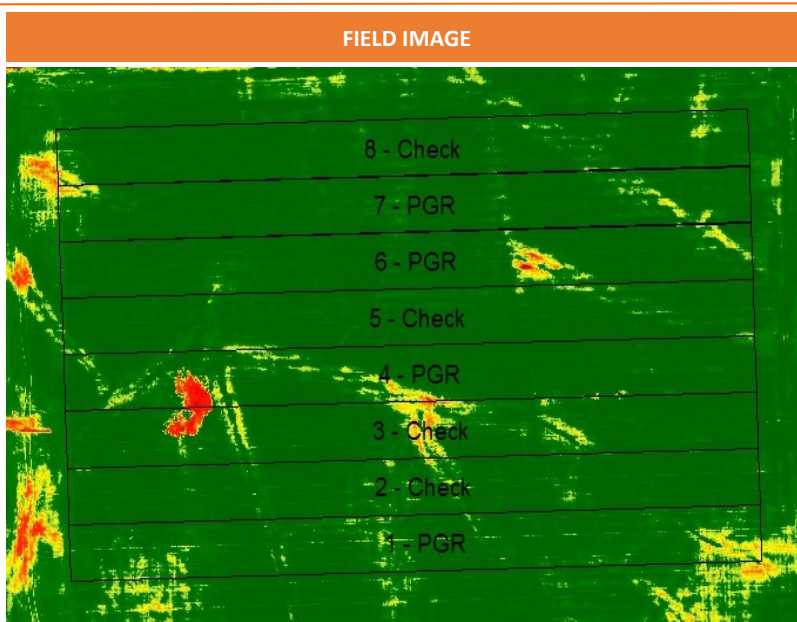
TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Tourond
Previous Crop	Canola
Soil Texture	Clay
Tillage	Conventional
Planting Date	May 02, 2019
Variety	AAC Brandon
Row Spacing	7.5"
Seeding Rate	156 lbs/ac
Residual N	125 lbs N/ac
Fertilizer (N-P-K-S)	
Application Date	June 07, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	August 15, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	42	34	144	7	228
Normal	64	88	72	28	253

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging Incidence (%)	Lodging Severity (1-10)	Protein
Manipulator™ 620	27	0	1	14.6
Untreated	30	0	1	14.7

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	66.5
Untreated	65.3
Yield Difference	1.3
P-Value	0.2420
CV	3.1%
Significance	No



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 3" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal through May, June and August; July was 200% above normal.



## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR05 — R.M. of St. Pierre

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

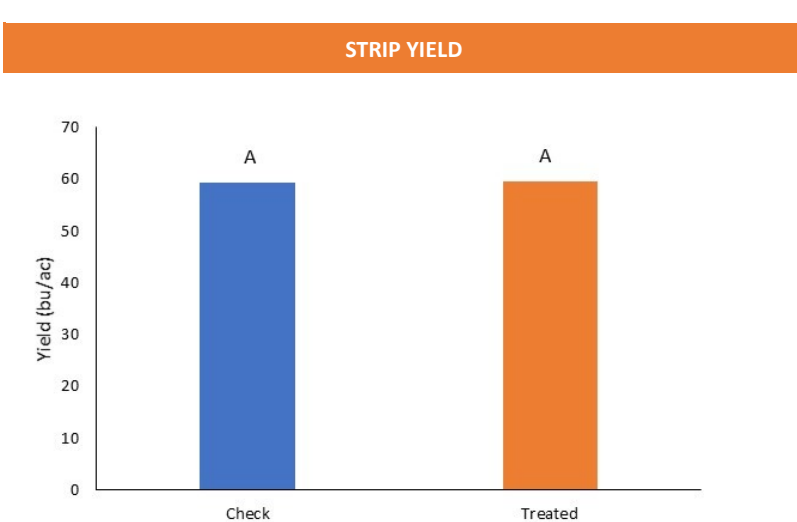
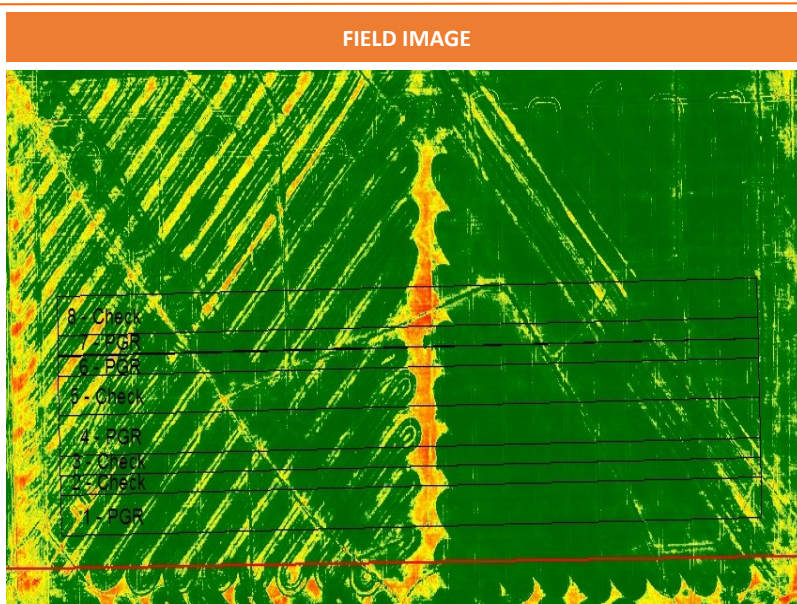
TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	St. Pierre
Previous Crop	Canola
Soil Texture	Clay
Tillage	Conventional
Planting Date	April 28, 2019
Variety	AAC Brandon
Row Spacing	10"
Seeding Rate	126 lbs/ac
Residual N	25 lbs N/ac
Fertilizer (N-P-K-S)	135N 20P
Application Date	June 10, 2019
Application Timing	3L
Application Rate	0.7 L/ac
Harvest Date	August 18, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	44	34	144	7	230
Normal	68	88	72	36	265

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging Incidence (%)	Lodging Severity (1-10)	Protein
Manipulator™ 620	29	0	1	14.8
Untreated	32	0	1	14.8

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	59.6
Untreated	59.3
Yield Difference	0.3
P-Value	0.8271
CV	3.9%
Significance	No



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 2" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal through May, June and August; July was 200% above normal.



## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR06 — R.M. of Morris

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

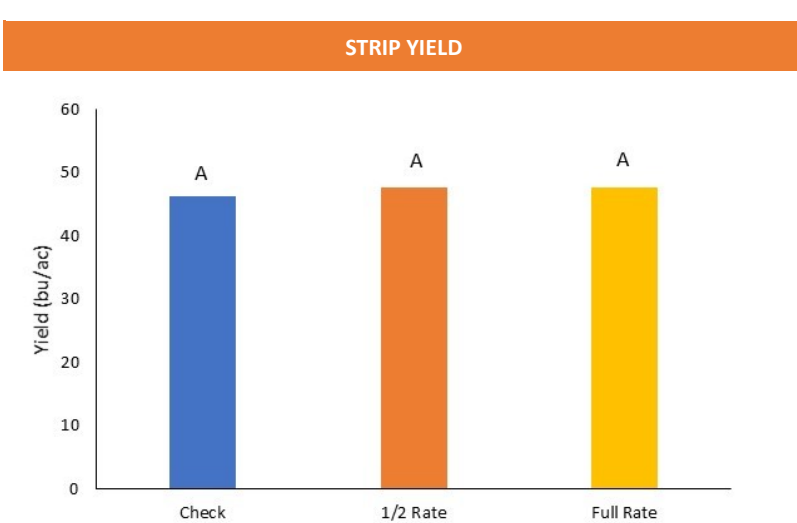
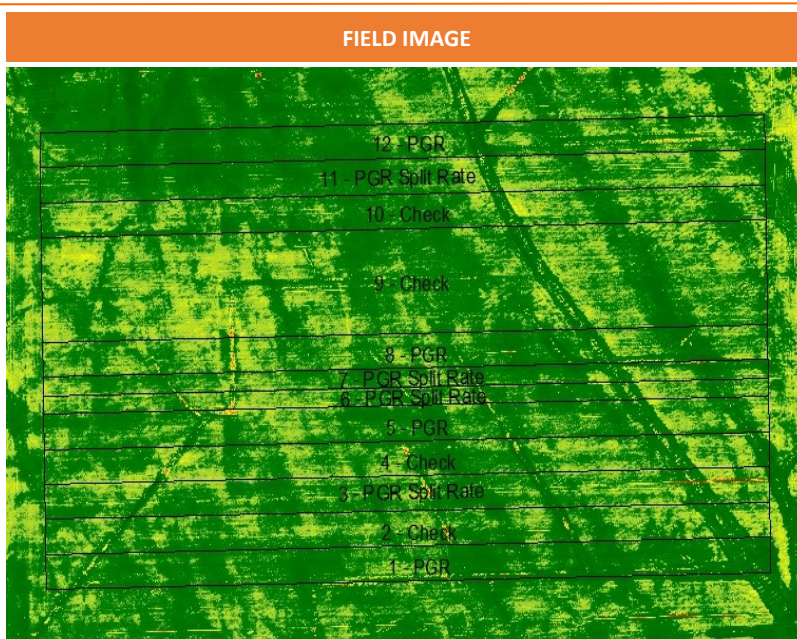
TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Morris
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Zero Tillage
Planting Date	May 09, 2019
Variety	AAC Cameron VB
Row Spacing	9"
Seeding Rate	
Residual N	27 lbs N/ac
Fertilizer (N-P-K-S)	146N 50P 10K
Application Date	June 12, 2019
Application Timing	5L
Application Rate	0.7 L/ac vs. 350 mL/ac
Harvest Date	August 16, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	26	40	110	12	189
Normal	46	78	76	38	239

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging		Protein
		Incidence	Severity	
Manipulator™ 620	31	0	1	15.0
Untreated	31	0	1	14.9

OVERALL YIELD	
	Mean (bu/ac)
Full Rate	47.6
Half Rate	47.5
Untreated	46.2
P-Value	0.3342
CV	2.8%
Significance	No



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was no significant reduction in plant height with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal through May, June and August; July was 145% above normal.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR07 — R.M. of St. Andrews

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	St. Andrews
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Conventional
Planting Date	May 02, 2019
Variety	AAC Brandon
Row Spacing	10"
Seeding Rate	110 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	105N 28P 10S
Application Date	June 12, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	August 21, 2019

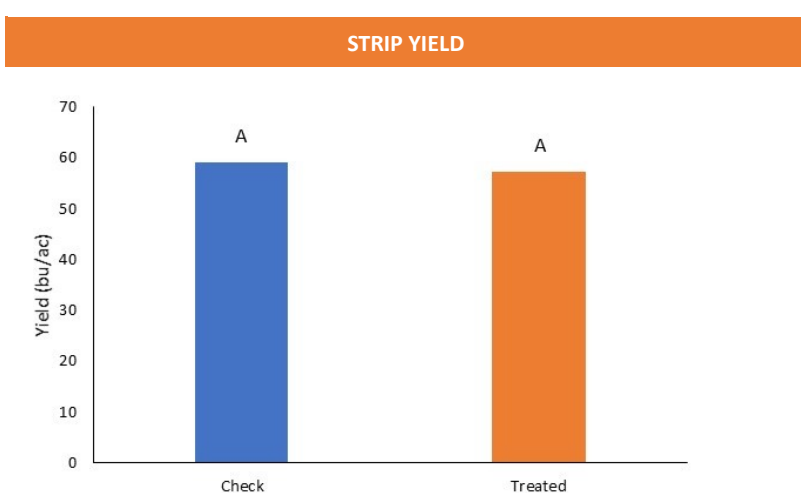


PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	20	24	61	7	113
Normal	59	85	71	52	268

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging		Protein
		Incidence	Severity	
Manipulator™ 620	27	0	1	13.7
Untreated	29	0	1	13.4

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	57.3
Untreated	59.2
Yield Difference	-1.9
P-Value	0.0548
CV	3.7%
Significance	No



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 2" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal through May, June and August; July was near normal.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR08 — R.M. of Oakland-Wawanesa

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

### TRIAL INFORMATION

Treatment	Manipulator™ 620 vs. Untreated
Location	Wawanesa
Previous Crop	Soybeans
Soil Texture	Loam
Tillage	Zero Tillage
Planting Date	May 03, 2019
Variety	AC Cardale
Row Spacing	10"
Seeding Rate	90 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	120N 30P
Application Date	June 14, 2019
Application Timing	Z32
Application Rate	0.7 L/ac
Harvest Date	September 06, 2019

### PRECIPITATION†

	May	June	July	Aug	Total
Rainfall	38	109	106	58	312
Normal	59	81	73	66	279

†Growing season precipitation (mm)

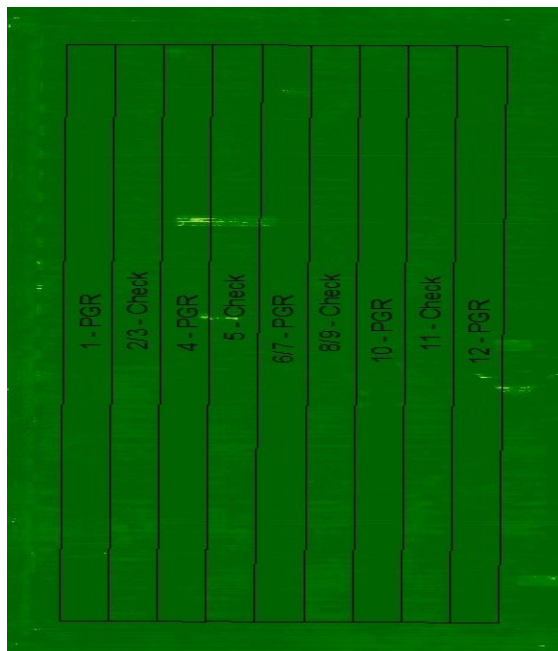
### WHEAT RESPONSE

	Plant Height (inches)	Lodging		Protein
		Incidence (%)	Severity (1-10)	
Manipulator™ 620	33	10	2	15.5
Untreated	36	40	5	15.7

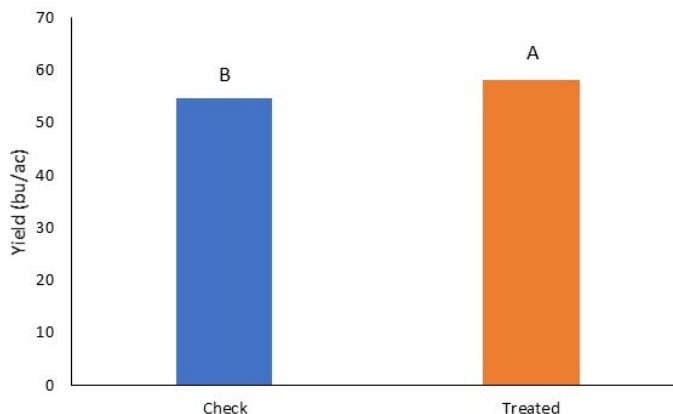
### OVERALL YIELD

	Mean (bu/ac)
Manipulator™ 620	58.1
Untreated	54.6
Yield Difference	3.5
P-Value	0.0012
CV	4.0%
Significance	Yes

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was a significant yield increase of 3.5 bu/ac with Manipulator™ 620 plant growth regulator application compared to the untreated check. There was a significant reduction in plant height of 3" with plant growth regulator application. There was a significant reduction in lodging observed within the trial. Rainfall was near or above normal for most of the growing season.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR09 — R.M. of Woodlands

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

### TRIAL INFORMATION

<b>Treatment</b>	Manipulator™ 620 vs. Untreated
<b>Location</b>	Marquette
<b>Previous Crop</b>	Soybeans
<b>Soil Texture</b>	Clay
<b>Tillage</b>	Conventional
<b>Planting Date</b>	May 01, 2019
<b>Variety</b>	Faller
<b>Row Spacing</b>	10"
<b>Seeding Rate</b>	120 lbs/ac
<b>Residual N</b>	---
<b>Fertilizer (N-P-K-S)</b>	100N 30P
<b>Application Date</b>	June 14, 2019
<b>Application Timing</b>	6L
<b>Application Rate</b>	0.7 L/ac
<b>Harvest Date</b>	September 07, 2019

### PRECIPITATION†

	May	June	July	Aug	Total
<b>Rainfall</b>	18	66	64	32	<b>182</b>
<b>Normal</b>	58	85	71	74	<b>291</b>

†Growing season precipitation (mm)

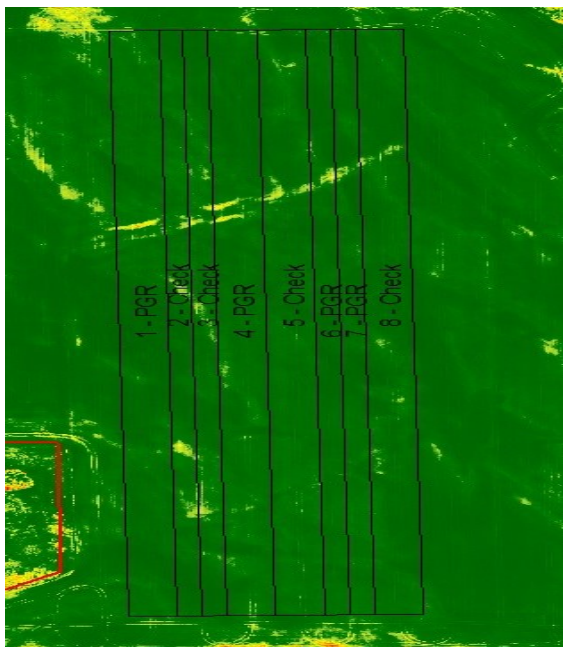
### WHEAT RESPONSE

	Plant Height (inches)	Lodging		Protein
		Incidence (%)	Severity (1-10)	
<b>Manipulator™ 620</b>	31	1	2	12.4
<b>Untreated</b>	33	7	2	11.8

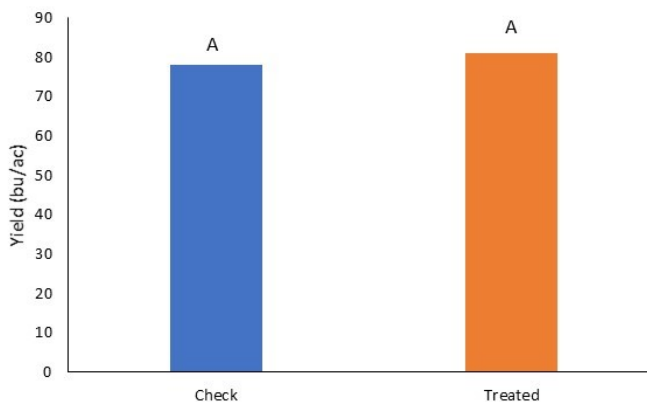
### OVERALL YIELD

	Mean (bu/ac)
<b>Manipulator™ 620</b>	81.1
<b>Untreated</b>	78.0
<b>Yield Difference</b>	3.1
<b>P-Value</b>	0.2331
<b>CV</b>	5.4%
<b>Significance</b>	No

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 2" with plant growth regulator application. There was a significant reduction lodging observed within the trial. Rainfall was near normal in July and below normal for the remainder of the growing season.



## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR10 — R.M. of Woodlands

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Warren
Previous Crop	
Soil Texture	Clay
Tillage	
Planting Date	May 03, 2019
Variety	
Row Spacing	10"
Seeding Rate	
Residual N	---
Fertilizer (N-P-K-S)	
Application Date	June 14, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	August 19, 2019

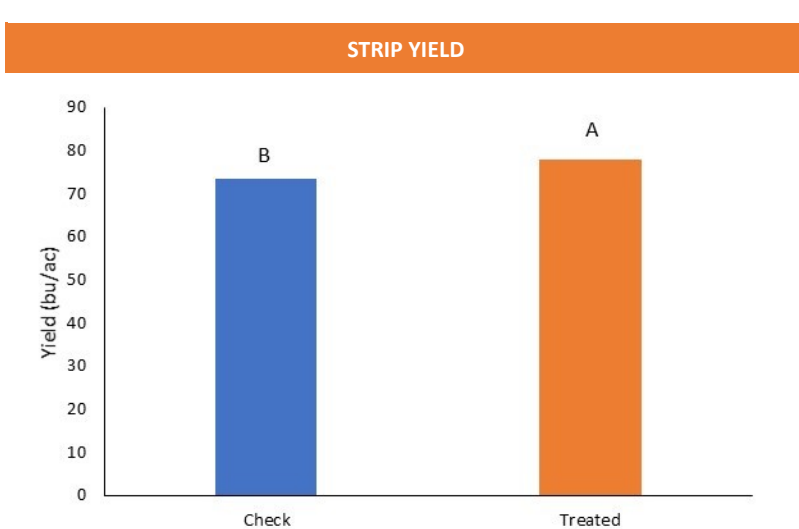


PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	18	66	64	4	153
Normal	58	85	71	49	264

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging Incidence (%)	Lodging Severity (1-10)	Protein
Manipulator™ 620	29	0	1	14.4
Untreated	32	0	1	14.5

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	77.9
Untreated	73.3
Yield Difference	4.6
P-Value	0.049
CV	4.1%
Significance	Yes



**Summary:** There was a significant yield increase of 4.6 bu/ac with the Manipulator™ 620 plant growth regulator application compared to the untreated check. There was a significant reduction in plant height of 3" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was near normal in July and below normal for the remainder of the growing season.



## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR11 — R.M. of MacDonald

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

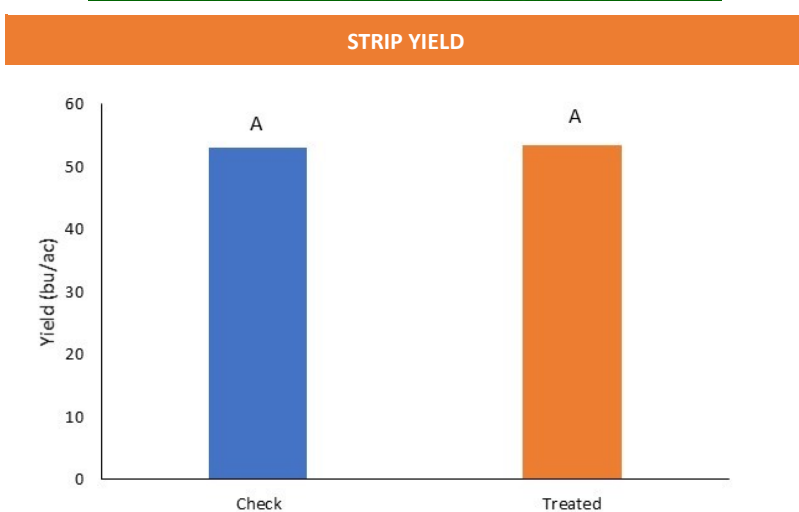
TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Starbuck
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Conventional
Planting Date	May 07, 2019
Variety	AAC Brandon
Row Spacing	7.5"
Seeding Rate	110 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	101N 31P
Application Date	June 14, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	September 06, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	24	40	71	63	199
Normal	50	85	71	74	281

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging		Protein
		Incidence	Severity	
Manipulator™ 620	27	0	1	15.1
Untreated	28	0	1	15.1

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	53.4
Untreated	53.0
Yield Difference	0.4
P-Value	0.8025
CV	3.5%
Significance	No



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 1" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal in May and June and normal through the remainder of the growing season.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR12 — R.M. of Tache

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

### TRIAL INFORMATION

Treatment	Manipulator™ 620 vs. Untreated
Location	Ste. Anne
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Conventional
Planting Date	May 14, 2019
Variety	SY Rowyn
Row Spacing	10"
Seeding Rate	156 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	110N 35P 10K
Application Date	June 18, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	September 17, 2019

### PRECIPITATION†

	May	June	July	Aug	Total
Rainfall	17	32	123	66	240
Normal	44	88	72	69	274

†Growing season precipitation (mm)

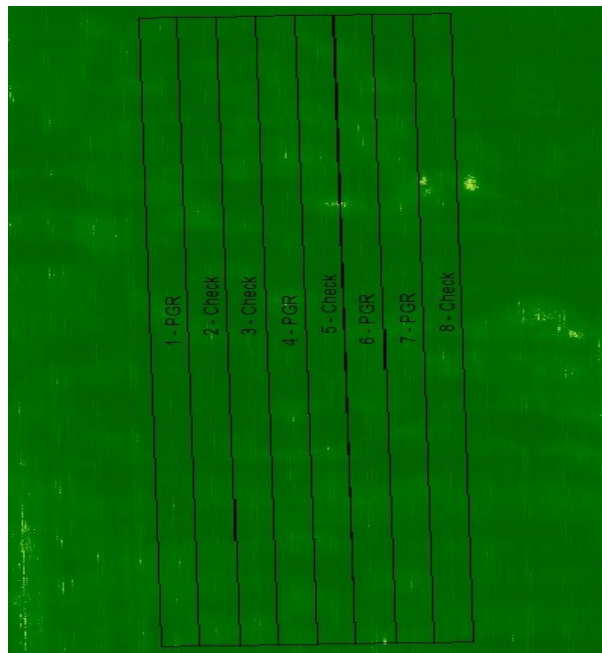
### WHEAT RESPONSE

	Plant Height (inches)	Lodging		Protein
		Incidence	Severity	
Manipulator™ 620	24	0	1	13.3
Untreated	26	0	1	13.4

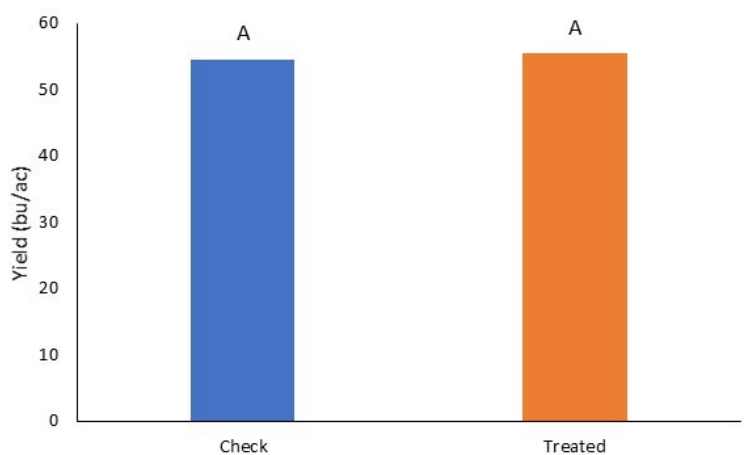
### OVERALL YIELD

	Mean (bu/ac)
Manipulator™ 620	55.6
Untreated	54.6
Yield Difference	1.0
P-Value	0.3332
CV	1.9%
Significance	No

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 3" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal in May and June; July was 171% above normal and August was near normal.

## Wheat Plant Growth Regulator

Trial ID: 2019-WPGR13 — R.M. of Lorne

**Objective:** The purpose of this project is to quantify the impact of the plant growth regulator Manipulator™ 620 (chlormequat chloride) on plant height, lodging, yield and quality of spring wheat

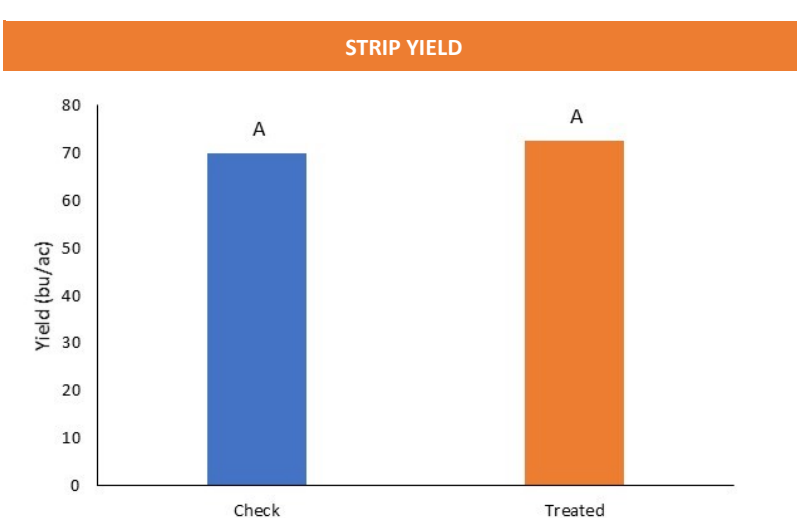
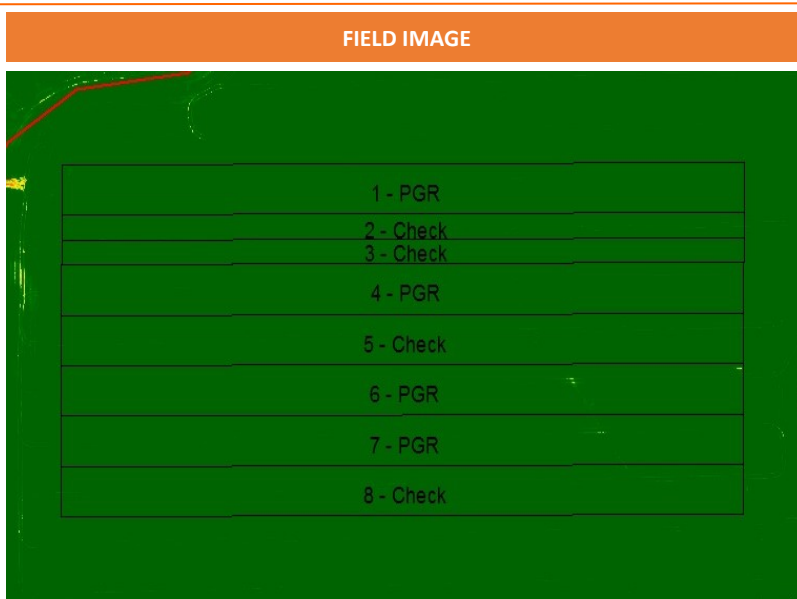
TRIAL INFORMATION	
Treatment	Manipulator™ 620 vs. Untreated
Location	Altamont
Previous Crop	Canola
Soil Texture	Loam
Tillage	Conventional
Planting Date	May 08, 2019
Variety	AC Cardale
Row Spacing	10"
Seeding Rate	132 lbs/ac
Residual N	---
Fertilizer (N-P-K-S)	120N 35P 13S
Application Date	June 19, 2019
Application Timing	5L
Application Rate	0.7 L/ac
Harvest Date	September 08, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	28	56	91	49	225
Normal	66	91	73	64	294

†Growing season precipitation (mm)

WHEAT RESPONSE				
	Plant Height (inches)	Lodging		Protein
		Incidence	Severity	
Manipulator™ 620	32	0	1	16.7
Untreated	34	0	1	16.8

OVERALL YIELD	
	Mean (bu/ac)
Manipulator™ 620	72.5
Untreated	69.8
Yield Difference	2.6
P-Value	0.2768
CV	7.3%
Significance	No



**Summary:** There was no significant yield difference between the Manipulator™ 620 plant growth regulator application and the untreated check. There was a significant reduction in plant height of 2" with plant growth regulator application. There was no lodging observed within the trial. Rainfall was below normal in May, June and August; July was 125% above normal.

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of both a lesser rate nitrogen and a split nitrogen application to corn in alternating randomized strips across the field.

**Summary:** One site-year had a significant yield decrease with a split application of N compared to the base N rate. There were no other significant yield differences for the 2019 site-years.

Table 16. Summary of 2019 corn nitrogen rate and timing trial yield results, by site-year

TRIAL ID	Date Seeded	N Rate Applied (actual lbs/acre)	Base N Application Date	Base N Type (Spring)	N Application Date (SD)	N Type (SD)	Sidedress Stage	Total Rainfall (Seeding - Maturity) (in)	Split App Yield (bu/ac)	Base N Yield (bu/ac)	Yield Difference (bu/ac)	CV (%)	P-Value	Statistically Significant @ 95%
2019-CRN01	11-May-19	140 vs 100 vs. 100 + 40	1-May-19	Urea (Banded with A/S)	27-Jun-19	UAN (B)	V5	16.3	128.2	129.9	-1.6	7.0	0.0199	Yes
2019-CRN02	4-May-19	140 vs. 100 vs. 100 + 40	27-Apr-19	Urea (Banded with A/S)	4-Jul-19	UAN (Y-Drop)	V6	18.9	139.6	140.1	-0.5	4.7	0.8362	No
2019-CRN03	4-May-19	135 vs. 95 vs. 95 + 40 SD	30-Apr-19	UAN (Banded with A/S)	25-Jun-19	UAN (Y-Drop)	V4	13.2	122.0	126.0	-3.9	4.8	0.1376	No
2019-CRN04		147 vs. 107 vs 107 + 40	30-Apr-19	UAN (B)	28-Jun-19	UAN (Y-Drop)	V5	13.2	117.3	132.2	-14.9	11.1	0.0850	No
2019-CRN05	4-May-19	150 vs. 110 vs. 110 + 40 SD	23-Apr-19	Urea (B+I)	19-Jun-19	UAN (B)	V4	12.0	89.9	81.5	8.4	6.9	0.1097	No

## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN01 — R.M. of Dufferin

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of both a lesser rate nitrogen and a split nitrogen application to corn in alternating randomized strips across the field.

TRIAL INFORMATION	
Location	Carman
Previous Crop	Soybeans
Soil Texture	Clay Loam
Tillage	Zero Tillage
Planting Date	May 11, 2019
Variety	A4646
Row Spacing	22"
Seeding Rate	34,000 seeds/ac
Plant Stand @ V3	32,000 plants/ac
N Rate & Application	140 vs. 100 vs. 100 + 40 @ SD
Spring	Urea & MAP (Banded)
Sidedress	UAN (Broadcast @ V5)
Harvest Date	October 25, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	35	37	57	61	192
Normal	42	78	76	67	264

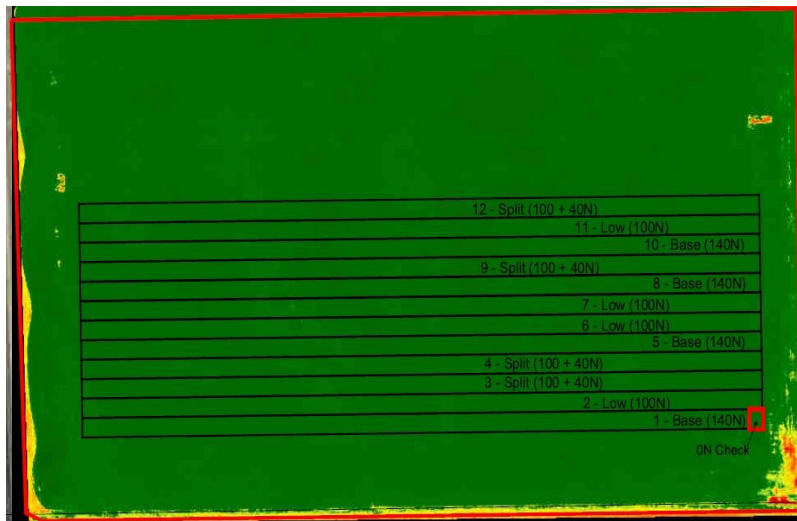
†Growing season precipitation (mm)

SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
27	4	150	2.1

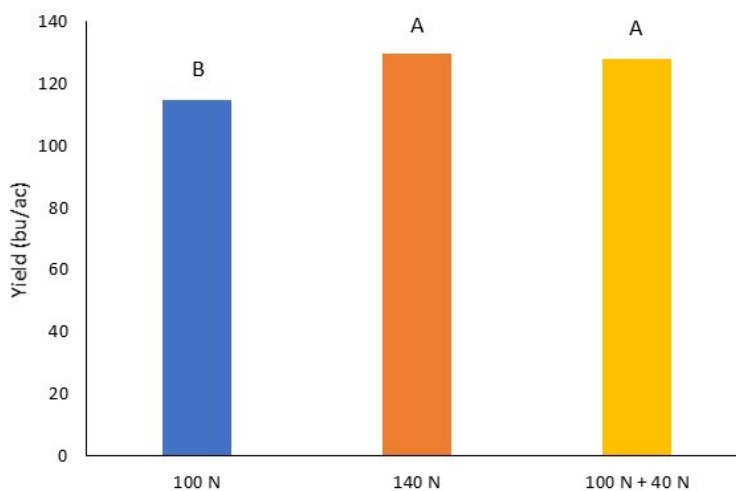
†Nutrient values prior to spring N application

OVERALL YIELD	
	Mean (bu/ac)
140N	129.9
100N	115.0
100N + 40N	128.2
P-Value	0.0199
CV	7.0%
Significance	Yes

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was a significant yield difference between the split application (100N+40N) and the low rate (100N).



## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN02 — R.M. of Rhineland

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of both a lesser rate nitrogen and a split nitrogen application to corn in alternating randomized strips across the field.

TRIAL INFORMATION	
Location	Altona
Previous Crop	Soybeans
Soil Texture	Clay Loam
Tillage	Conventional Tillage
Planting Date	May 04, 2019
Variety	TH6982 VT2P
Row Spacing	30"
Seeding Rate	35,000 seeds/ac
Plant Stand @ V3	32,000 plants/ac
N Rate & Application	140 vs. 100 vs. 100 + 40 @ SD
Spring	Urea, MAP & Potash (Broadcast)
Sidedress	UAN (Y-drop @ V6-V7)
Harvest Date	November 01, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	41	44	59	38	184
Normal	71	102	75	68	316

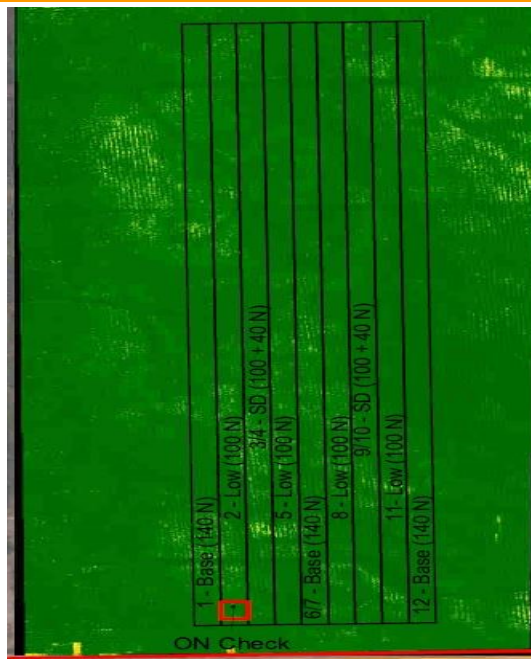
†Growing season precipitation (mm)

SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
50	25	402	5.6

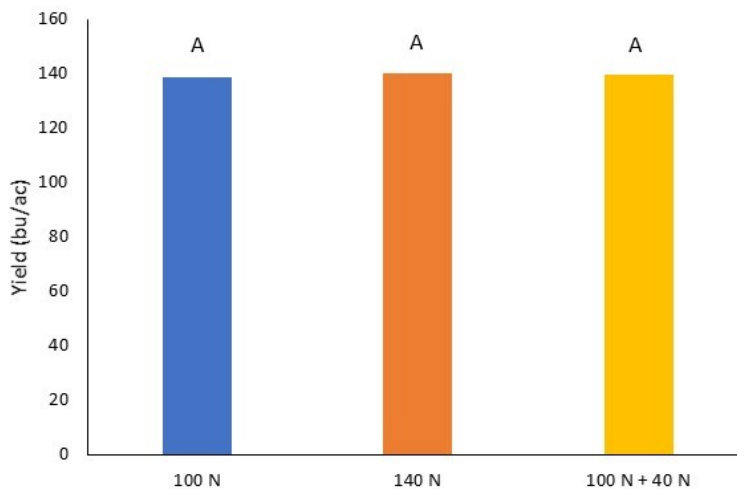
†Nutrient values prior to spring N application

OVERALL YIELD	
	Mean (bu/ac)
140N	140.1
100N	138.8
100N + 40N	139.6
P-Value	0.8362
CV	4.7%
Significance	No

### FIELD IMAGE



### STRIP YIELD



**Summary:** There were no statistical differences between the three treatments.

## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN03 — R.M. of North Norfolk

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of both a lesser rate nitrogen and a split nitrogen application to corn in alternating randomized strips across the field.

TRIAL INFORMATION	
Location	MacGregor
Previous Crop	Corn
Soil Texture	Clay Loam
Tillage	Conventional Tillage
Planting Date	May 04, 2019
Variety	P7527AM
Row Spacing	30"
Seeding Rate	34,000 seeds/ac
Plant Stand @ V3	31,000 plants/ac
<b>N Rate &amp; Application</b>	135 vs. 95 vs. 95 + 40 @ SD
<b>Spring</b>	UAN, MAP, Potash & AS (Strip Till)
<b>Sidedress</b>	UAN (Y-drop @ V4)
Harvest Date	November 13, 2019

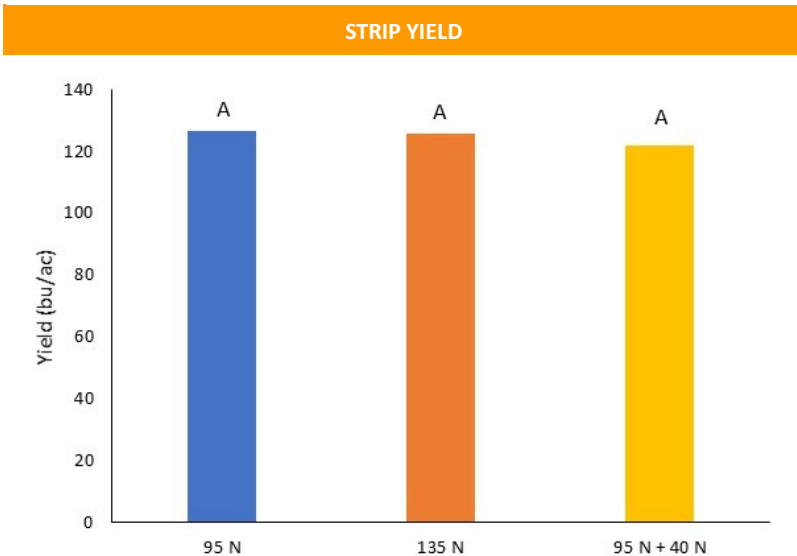
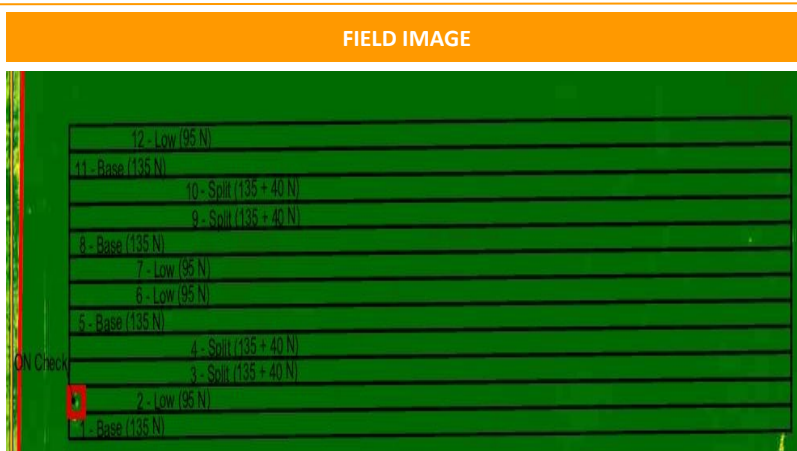
PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	27	34	68	36	167
Normal	54	79	72	79	284

†Growing season precipitation (mm)

SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
71	7	127	4.0

†Nutrient values prior to spring N application

OVERALL YIELD	
	Mean (bu/ac)
135N	126.0
95N	126.8
95N + 40N	122.0
P-Value	0.1376
CV	4.8%
Significance	No



**Summary:** There were no statistical differences between the three treatments.

## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN04 — R.M. of North Norfolk

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of both a lesser rate nitrogen and a split nitrogen application to corn in alternating randomized strips across the field.

TRIAL INFORMATION	
Location	Bagot
Previous Crop	Wheat HRS
Soil Texture	Fine Loam
Tillage	Conventional Tillage
Planting Date	May 02, 2019
Variety	P7527AM
Row Spacing	30"
Seeding Rate	34,000 seeds/ac
Plant Stand @ V3	31,000 plants/ac
N Rate & Application	147 vs. 107 vs. 107 + 40 @ SD
	Spring UAN & AS (Broadcast)
	Sidedress UAN (Y-drop @ V5)
Harvest Date	November 05, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	27	34	68	36	167
Normal	54	79	72	79	284

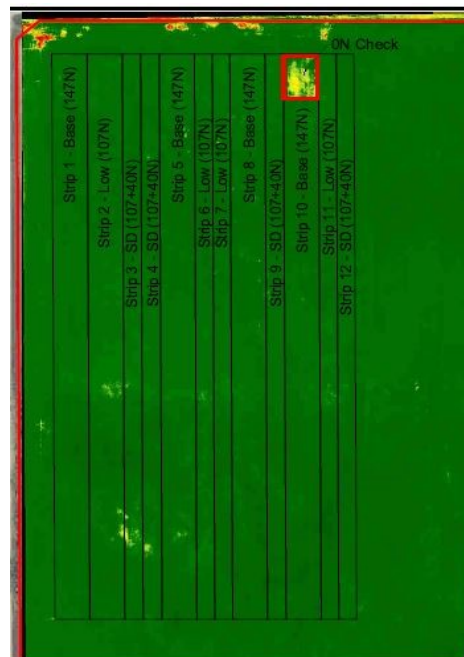
†Growing season precipitation (mm)

SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
82	38	237	2.9

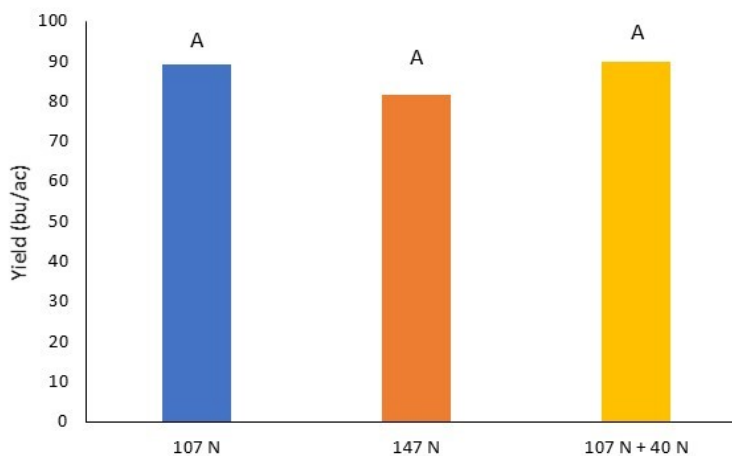
†Nutrient values prior to spring N application

OVERALL YIELD	
	Mean (bu/ac)
147N	132.2
107N	116.2
107N + 40N	117.3
P-Value	0.085
CV	11.1%
Significance	No

### FIELD IMAGE



### STRIP YIELD



**Summary:** There were no statistical differences between the three treatments.



## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN05 — R.M. of Wallace-Woodworth

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of both a lesser rate nitrogen and a split nitrogen application to corn in alternating randomized strips across the field.

TRIAL INFORMATION	
Location	Virden
Previous Crop	Soybeans
Soil Texture	Fine Loam
Tillage	Conventional Tillage
Planting Date	May 04, 2019
Variety	
Row Spacing	30"
Seeding Rate	34,000 seeds/ac
Plant Stand @ V3	31,000 plants/ac
N Rate & Application	150 vs. 110 vs. 110 + 40 @ SD
	Spring (Broadcast)
	Sidedress UAN (Broadcast @ V4)
Harvest Date	November 15, 2019

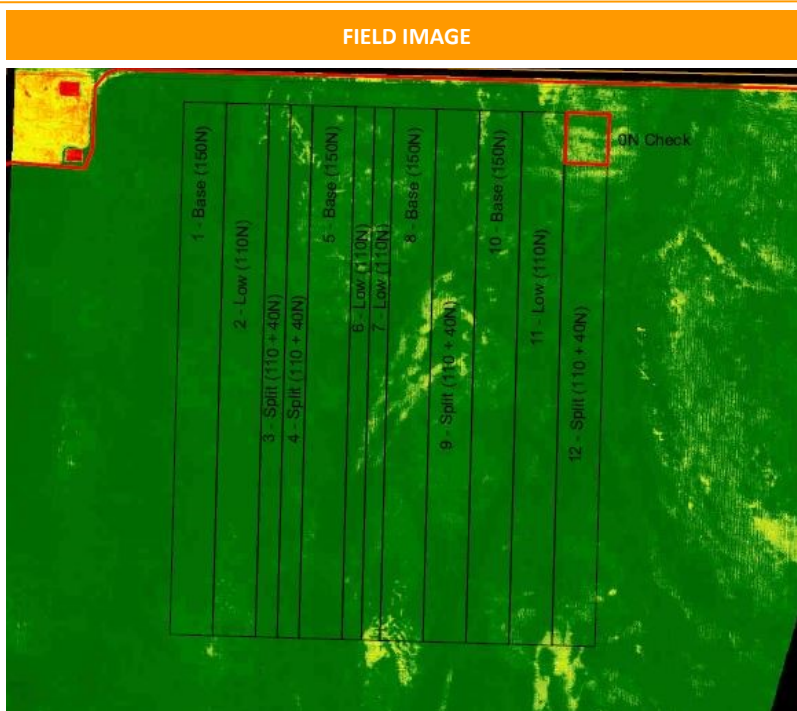
PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	26	66	40	68	201
Normal	48	68	65	64	245

†Growing season precipitation (mm)

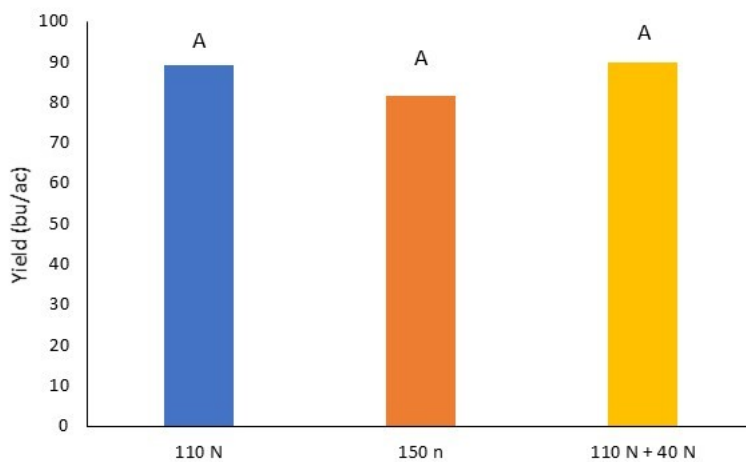
SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
45	16	228	5.4

†Nutrient values prior to spring N application

OVERALL YIELD	
	Mean (bu/ac)
150N	81.5
110N	89.1
110N + 40N	89.9
P-Value	0.1097
CV	6.9%
Significance	No



### STRIP YIELD



**Summary:** There were no statistical differences between the three treatments.



MCGA would like to thank Tone Ag Consulting Ltd. for the research support for this trial.



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# Corn Nitrogen Rate and Timing (Manure) Trial

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of additional nitrogen application to corn on fall-applied manured ground in alternating randomized strips across the field.

**Summary:** One site-year had significantly greater yield for corn that received additional N, compared to the corn with just the base rate. The other 2019 site-year did not have a significant yield difference between N treatments.

Table 17. Summary of 2019 corn nitrogen rate and timing (manure) trial yield results, by site-year

TRIAL ID	Date Seeded	N Rate Applied (actual lbs/acre)	Base N Type (Fall Applied)	Base N Application Date	N Type (SD)	Crop Stage	Total Rainfall (Seeding - Maturity) (in)	Base N Yield (bu/ac)	Additional N Yield (bu/ac)	CV (%)	P-Value	Statistically Significant @ 95%
2019-CRN06	7-May-19	184N vs 224N vs 264N	Swine (injected)	15-May-19	UAN (Streamed)	Pre-emergence	18.9	153.5	148.9 150.6	3.2	0.1381	No
2019-CRN08	7-May-19	218N vs 268N	Poultry (Injected)	29-Jun-19	UAN (Broadcast)	V5	18.9	150.1	154.5	1.8	0.0010	Yes



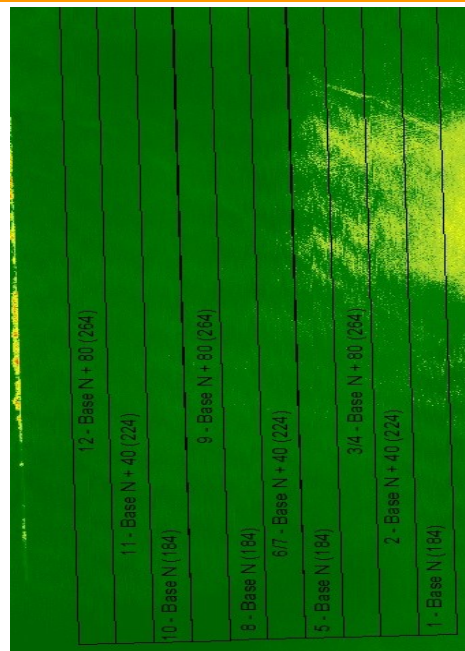
## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN06 — R.M. of De Salaberry

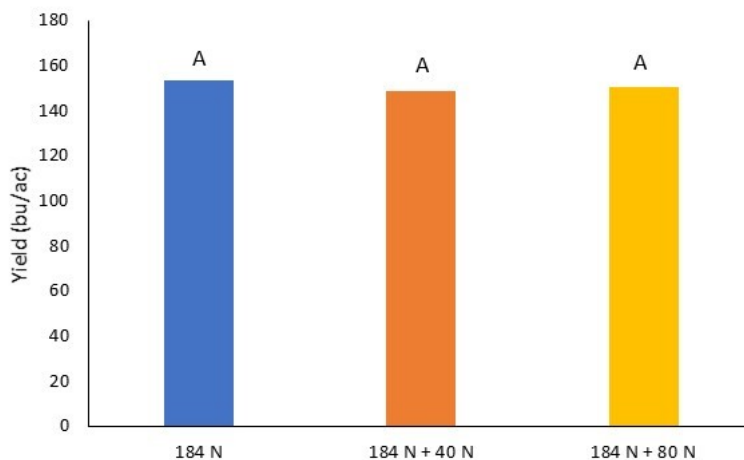
**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of additional nitrogen application to corn on fall-applied manured ground in alternating randomized strips across the field.

TRIAL INFORMATION			
Location	Aubigny		
Previous Crop	Soybeans		
Soil Texture	Clay		
Tillage	Conventional Tillage		
Planting Date	May 07, 2019		
Variety	P7527AM		
Row Spacing	22"		
Seeding Rate	34,000 seeds/ac		
Plant Stand @ V3	31,500 plants/ac		
N Rate & Application	184N vs 224N vs 264N		
	Fall Liquid Swine — Injected		
	Sidedress UAN (Broadcast Pre-emergence)		
Harvest Date	November 12, 2019		
PRECIPITATION†			
	May June July Aug Total		
Rainfall	36 34 144 64 280		
Normal	56 88 72 69 286		
†Growing season precipitation (mm)			
SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
200	65	542	6.1
†Nutrient values prior to spring N application			
OVERALL YIELD			
	Mean (bu/ac)		
184N	153.5		
184N + 40N	148.9		
184N + 80N	150.6		
P-Value	0.1381		
CV	3.2%		
Significance	No		

### FIELD IMAGE



### STRIP YIELD



**Summary:** There were no statistical differences between the three treatments.

## Corn Nitrogen Rate and Timing Trial

Trial ID: 2019-CRN08 — R.M. of Hanover

**Objective:** The purpose of this project is to quantify the agronomic and economic impacts of additional nitrogen application to corn on fall-applied manured ground in alternating randomized strips across the field.

TRIAL INFORMATION	
Location	New Bothwell
Previous Crop	Soybeans
Soil Texture	Clay
Tillage	Conventional Tillage
Planting Date	May 07, 2019
Variety	Conventional
Row Spacing	22"
Seeding Rate	34,000 seeds/ac
Plant Stand @ V3	31,000 plants/ac
N Rate & Application	218N vs 268N
	Fall Liquid Poultry — Injected
	Sidedress UAN (Broadcast @ V6)
Harvest Date	October 26, 2019

PRECIPITATION†					
	May	June	July	Aug	Total
Rainfall	36	34	144	64	280
Normal	56	88	72	69	286

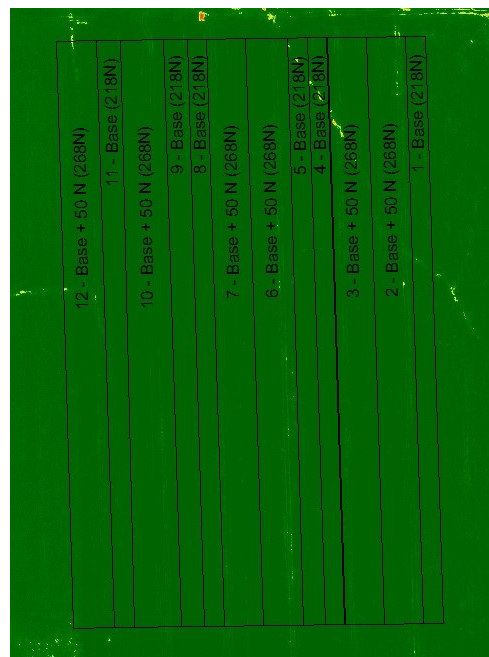
†Growing season precipitation (mm)

SOIL PROPERTIES†			
N 0-24"	P (ppm)	K (ppm)	% O.M.
218			

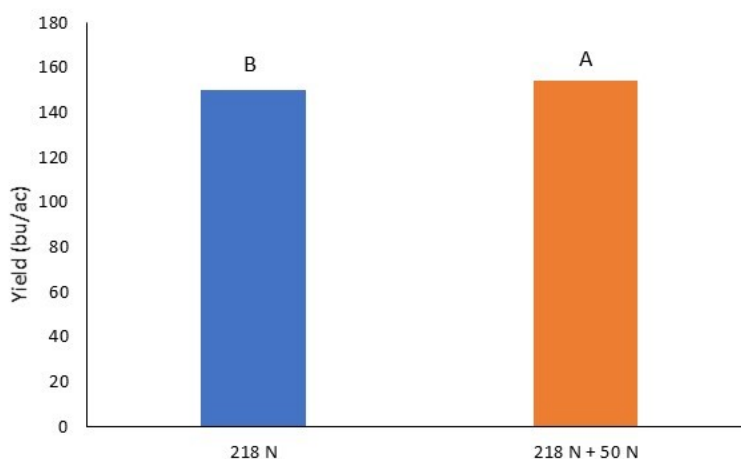
†Nutrient values prior to spring N application

OVERALL YIELD	
	Mean (bu/ac)
218N	150.1
218N + 50N	154.5
P-Value	0.001
CV	1.8%
Significance	Yes

### FIELD IMAGE



### STRIP YIELD



**Summary:** There was a significant yield difference between 50 pound application of nitrogen compared to the base nitrogen from the fall manure application in favour of the 50N treatment.