EDIBLE BEAN AGRONOMY AND PEST MANAGEMENT RESEARCH RESULTS

2023

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Agronomy and Pest Management Research Results for Dry Edible Beans 2023

This report compiles agronomy and pest management research results in dry edible beans at Ridgetown Campus and the Huron Research Station. It is a reference for growers and industry personnel.

A number of the pesticides that are included in this report are not currently registered for use in dry edible beans in Ontario. Always follow label directions when applying pesticides.

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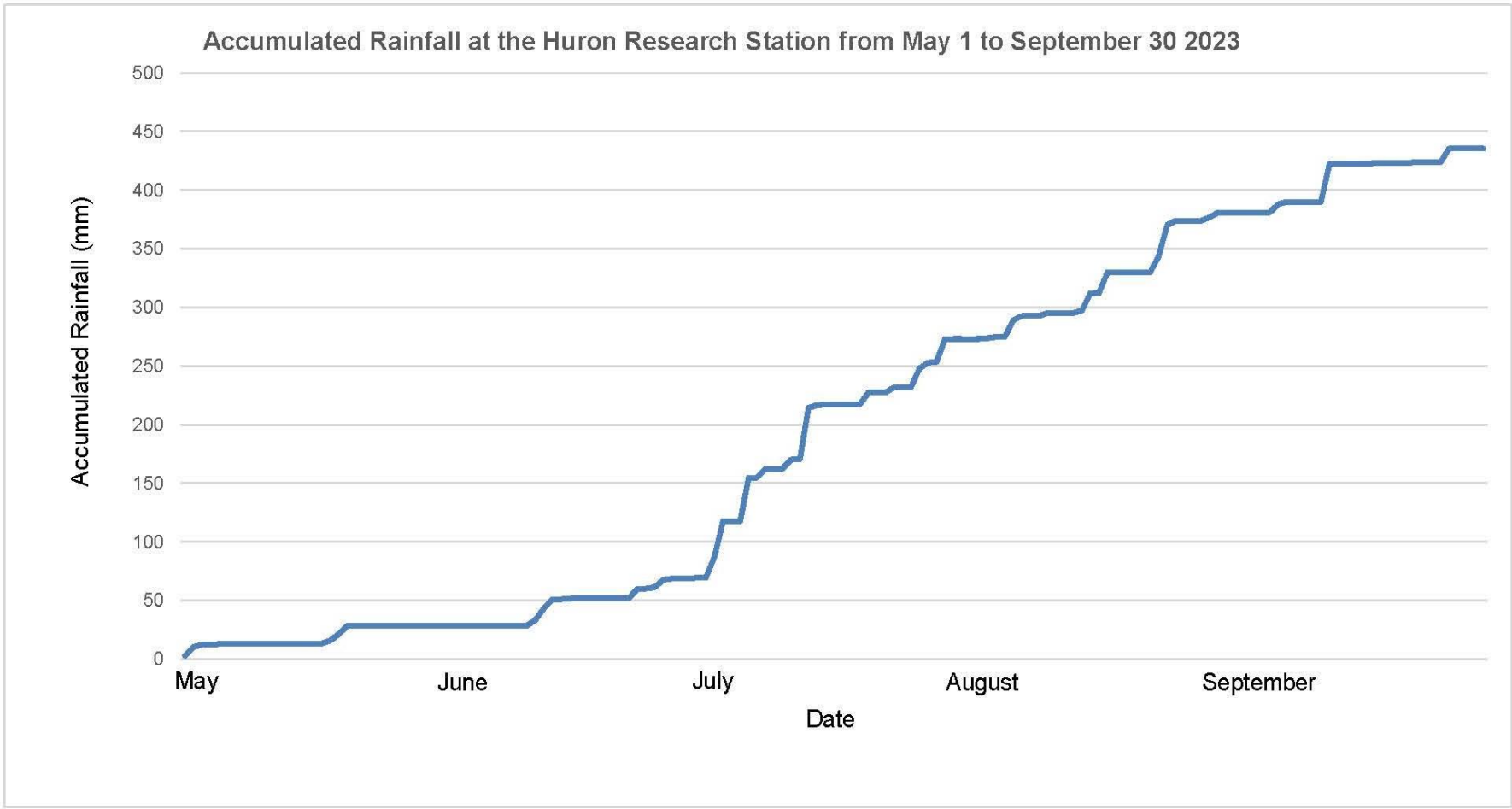
Accumulated Rainfall at the Huron Research Station from May 1 to September 30 2023
Accumulated Rainfall (mm)
500
450
400
350
300
250
200
150
100
50
0
May
June
July
August
September
Date

2023 Heat Unit and Precipitation Summary for Exeter (Huron Research Station).

Ontario Corn Heat Units (OCHU)		
Month	2023	Norm (42 yr)
May	420	365
June	644	662
July	790	781
August	687	752
September	615	562
October	70	46
Total	3226	3168

Precipitation (mm)		
Month	2023	Norm (42 yr)
April	42	83
May	28	81
June	41	80
July	204	71
August	108	107
September	54	96
Total	477	518

20% or more below average

20% or more above average

2023 Weather

Heat unit accumulation was close to normal and seeding across the province was on time. Planting of trials commenced on May 12 and was mostly complete by May 29, which is a new record. Temperatures were moderate throughout the summer, with only four days above 30^{o}C. Haze from northern forest fires resulted in lower than average incoming solar radiation (data not shown). The months of May and June were very dry with few measureable rain events. Rains returned in July, with daily rain totals greater than 15 mm on July 2, 3, 6, 13, 26, and 29, resulting in a monthly total almost 3x of normal. Dry bean experiments matured slowly but early planting and a dry, warm September resulted in most harvest completed on time.

EXECUTIVE SUMMARY

Variety Registration and Performance Trials (ongoing)

Seeding began on May 25 at Exeter (Huron Research Station) and ended at Blyth (C. Heinrich) on May 27. Four studies were seeded in 2023 (see table below). The Blyth had excellent emergence, even growth and high yields. Three trials were planted at the Huron Research Station. Even plant emergence and growth (cover photo) was evident. Early maturing cultivars in the large seeded trial had lower yields, due to dry weather in July.

Summary of Registration/Performance Trials, Huron Research Station, 2023

Location	Market Class	Yield	C.V.	Notes
Blyth	Navy	4321	11.4	High yield, even plant stands
Exeter	Navy	4384	7.8	High yield, even plant stands
Exeter	Cran/Kidney	3156	10.3	Above average yield, early cultivars weak
Exeter	Small seed	4320	8.7	High yield, even plant stands

White Mold Foliar Fungicide in Dry Beans (ongoing)

This is an ongoing study to develop a long term data set for white mold fungicide efficacy and economic returns. Two trials were planted in 2023. Disease pressure was lower in the first study and moderately high in the second study, and it appears that disease pressure entered later in the season. There were no differences between fungicide treatments for disease severity in both trials, but some products had weaker yield. Fungicides with poor yields agree with previous work.

White Mold in Dry Bean Cultivar x Row Width x Population (Year 2 of 3)

This research was conducted to determine the impact of plant population and row width on white mold disease development in dry beans. Two cultivars (Beryl and Merlot) were chosen – both are very susceptible to white mold, but differ in plant architecture. Each cultivar was planted in two row widths (38 and 76 cm) and four populations (100, 80, 60 and 40%) using 200,000 and 175,000 plants/ha for the 100% plant population in narrow and wide rows, respectively. Disease severity was low in both trials, resulting in few meaningful differences between treatments. Narrow row width increased plant growth (plant weight, height) and advanced plant development (BBCH scale), and increased white mold incidence and severity. Low plant populations gave some decrease in plant height, NDVI scores as well as disease incidence and severity. Row width and plant population had no effect on seed yield.

White Mold Foliar Fungicide in Soybean (ongoing)

This is an ongoing study to develop a long term data set on fungicide efficacy in soybeans. Two trials were planted in 2023. Disease pressure was moderate in both studies (~30%). In the first study, the top treatments for disease control and yield were Delaro Complete and Acapela (2 applications only). Stratego Pro, Viatude and Allegro also had higher yield than the untreated control. In the second study, many of the fungicide treatments reduced disease pressure, compared to the control, but there were no differences between fungicide treatments for yield.

Anthracnose Foliar Fungicide in Dry Beans (ongoing)

This is an ongoing study to develop a long term data set on fungicide efficacy and calculate the economic returns of fungicide use. Two studies were seeded in 2023 about 4 weeks apart, and were inoculated with a spore suspension at first flower. Disease pressure following inoculation

was moderate for the first study, and low for the second study. Treatments with a strobilurin were the most effective. Fungicide efficacy began to separate at 4 weeks after treatment, due to repeated rainfall in August. Oxidate and Oro-Solute were very weak, while Propulse, Cotegra and Allegro (low rate) provided some control. This agrees with previous results.

Anthracnose Foliar Fungicide in Dry Beans (ongoing)

This study develops a long term data set on seed treatment efficacy for anthracnose control. Two studies were seeded in 2023 about 4 weeks apart, using infected seed as the inoculum source. Disease pressure following inoculation was moderate for the first study, and low for the second study. Dynasty provided a marked reduction in disease severity and an increase in seed yield, compared to the a similar treatment without Dynasty, while sedaxane provided no benefit.

Adzuki Planting Date/Population

This study is designed to determine the best planting date and plant population for adzuki beans in Ontario, using the cultivar Erimo. The first planting date (May 15) had lower plant counts and vigour, due to two cold nights after planting. The second planting date (May 31) had lower plant height and small seed (<9/64") but higher NDVI (green cover) than the last planting date. The final planting date (June 15) had the highest yield and seed weight, likely due to regular rainfall during flowering/pod fill. Lower plant populations reduced plant vigour, plant height and NDVI, but did not affect yield, seed weight or seed size. Planting date and plant populations did not interact for yield, seed weight or seed size.

Dry Bean Phosphorus Starter Fertilizer

Phosphorus starter fertilizer rate/placement research is needed to develop recommendations for new (adzuki) and existing (kidney) market classes as well as new fertilizer products.
Adzuki - Banding MAP and MESZ dramatically increased plant dry weight, and tended to provide higher N, P and S in plant tissue analysis. The addition of Mn fertilizer in a band resulted in higher plant tissue analysis at 42 days after planting. Banded MAP (both rates), MAP+Mn+Zn and MESZ (high rate) had higher yield than the untreated control.
Kidney – there were few differences between fertilizer treatments. Banded treatments tended to have higher N and P levels in plant tissue analysis. Only MESZ (high rate) had a higher yield than the untreated control.

Adzuki Nitrogen Fertilizer Rate/Placement

Adzuki bean production has grown to become the second largest market class in Ontario. This study will provide nitrogen rate/timing recommendations to growers. Two nitrogen rates (50 and 100 kg ha^{-1}) were applied broadcast or in a band at planting. There were no differences between treatments for emergence and plant vigour, vegetative growth or in-season plant tissue nutrient analysis. Seed yield tended to increase with nitrogen fertilizer, but the differences were not significant. Seed weight increased with nitrogen fertilizer, but there were no differences in small seed (<9/64") in the harvest samples. Treatment differences in seed nitrogen content were minor.

Soybean Cultivar Performance (ongoing)

Ontario Soybean and Canola Committee (OSACC) 2800 CHU soybean cultivar performance trials conducted at the Huron Research Station in 2023 is provided. There are separate studies for Roundup ready cultivars and conventional (food-type) cultivars. The trials had very low variability (CV< 5%) and high yields (~80 bu/ac).

2023 White Mold Registered Products Dry Bean 1st Planting
University of Guelph, Ridgetown Campus

No.	Name	Rate	Rate Unit	Appl Code	Disease Severity (%) 73 DAP	Disease Severity (%) 88 DAP	Seed Weight (g/100)	Seed Quality (1-5)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
1	Untreated Control	--	--	--	21.0	30.3	30.8 bc	2.9	8.0	2867 d	2641 c
2	Allegro 500F	300	g ai/ha	AB	10.1	13.6	31.7 ab	2.5	6.4	3441 abc	3226 ab
3	Allegro 500F	500	g ai/ha	A	10.9	13.4	30.5 bcd	2.6	6.4	3076 bcd	2880 bc
4	Allegro 500F	500	g ai/ha	AB	11.4	11.9	29.1 d	2.5	6.0	3163 bcd	2971 bc
5	Allegro + Quadis	300+125	g ai/ha	AB	13.3	14.1	30.4 bcd	2.6	6.2	3026 bcd	2838 bc
6	Propulse	200	g ai/ha	AB	11.6	10.4	30.4 bcd	2.5	5.6	3115 bcd	2941 bc
7	Propulse	300	g ai/ha	A	9.4	8.0	31.4 abc	2.5	6.0	3529 ab	3318 ab
8	Propulse	300	g ai/ha	AB	8.3	7.3	31.8 ab	2.5	5.4	3734 a	3533 a
9	Acapela	220	g ai/ha	AB	15.0	14.6	30.7 bcd	2.6	5.1	2958 cd	2807 bc
10	Cotegra	400	g ai/ha	AB	11.0	12.3	31.2 bc	2.5	5.8	3269 a-d	3078 abc
11	Miravis Neo	375	g ai/ha	AB	15.6	23.9	29.9 cd	2.6	5.8	2782 d	2624 c
12	Delaro Complete	458.5	g ai/ha	AB	10.8	10.1	33.0 a	2.5	5.8	3431 abc	3234 ab
Treatment Prob(F)					0.2751	0.1101	0.0051	0.0762	0.0952	0.0430	0.0385
LSD P=.05					8.8	14.5	1.7	0.2	1.5	561.9	537.0
CV					49.5	71.0	3.7	6.4	17.7	12.2	12.4

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

Trial Notes:

Design: RCBD
Row Width: Narrow = 15 inch (38 cm)
Number of Rows Per Plot: 6
Number of Rows Harvested Per Plot: 4
Plot Length: 6 m
Harvest Length: 4 m
Seeding Rate: 17 seeds/m
Dry Bean Variety: Beryl (Great Northern)
Seed Treatment: Cruiser Maxx Beans + Dynasty

Herbicide: Pursuit + Dual II Magnum PPI (May 15)
Fertilizer: 20.8 - 13.8 - 20.8 @289 lbs/ac (May 11)
Desication: Eragon (September 19)
Irrigated: August 2, 11.
Application (A) 47 DAP: Aug 3 Temp = 19 C, RH = 90%, Wind 2 kph SW, dew, 0% cloud
Application (B) 58 DAP: Aug 14 Temp = 13 C, RH = 95%, Wind 0 kph SW, dew, 30% cloud
Trt Application: 2 m boom, nozzles spacing 50 cm, 275 kPa pressure, 200 l/ha volume
Planting Date: June 17
Harvest Date: September 29

Conclusions:

* There was no crop phytotoxicity recorded for any the fungicide treatments
* there were no differences between fungicide treatments for disease severity.
* Disease pressure was low and fungicide results were inconsistent (e.g. Allegro at low rate (trt. 2) was better than Allegro at high rate (trt. 4))
* Propulse (trt 7,8) and Delaro Complete (trt 12) had higher yield and net yield (yield-pick) than the untreated control.
* Treatments with significantly higher yield had higher seed weight as well.
* There were no differences between fungicide treatments for seed quality or pick.

2023 White Mold Registered Products Dry Bean 2nd Planting
University of Guelph, Ridgetown Campus

No.	Name	Rate	Rate Unit	Appl Code	Disease Severity (%) 74 DAP	Disease Severity (%) 89 DAP	Seed Weight (g/100)	Seed Quality (1-5)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
1	Untreated Control	--	--	--	35.0 a	44.0 a	31.8	3.3	1.2 ab	2290 cde	1993 cd
2	Allegro 500F	300	g ai/ha	AB	24.1 b	25.4 b	30.9	3.3	1.2 a	2675 bcd	2272 bcd
3	Allegro 500F	500	g ai/ha	A	22.6 b	24.3 b	31.0	2.9	1.1 bc	2807 abc	2452 abc
4	Allegro 500F	500	g ai/ha	AB	18.9 b	16.9 b	32.9	2.6	1.1 abc	3269 a	2850 a
5	Allegro + Quadis	300+125	g ai/ha	AB	24.4 b	20.9 b	32.5	2.6	1.1 bc	2961 ab	2633 ab
6	Propulse	200	g ai/ha	AB	20.9 b	21.5 b	31.9	2.8	1.1 bc	2739 abc	2439 abc
7	Propulse	300	g ai/ha	A	24.1 b	25.6 b	31.4	3.0	1.1 abc	2538 b-e	2206 bcd
8	Propulse	300	g ai/ha	AB	27.8 ab	26.8 b	32.1	2.8	1.1 bc	2724 abc	2426 abc
9	Acapela	220	g ai/ha	AB	28.5 ab	29.0 b	32.4	2.9	1.1 c	2077 e	1867 d
10	Cotegra	400	g ai/ha	AB	23.1 b	24.1 b	32.3	2.8	1.1 bc	2596 b-e	2311 bcd
11	Miravis Neo	375	g ai/ha	AB	37.3 a	45.4 a	30.7	3.0	1.1 c	2105 de	1895 d
12	Delaro Complete	458.5	g ai/ha	AB	27.5 ab	27.4 b	32.3	3.0	1.2 ab	2459 b-e	2121 cd
Treatment Prob(F)					0.0379	0.0037	0.3792	0.0782	0.0283	0.0089	0.0076
LSD P=.05					10.5	13.6	1.9	0.4	0.1	581.2	492.9
CV					27.9	34.3	4.1	10.7	5.9	15.5	15.0

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

Trial Notes:

Design: RCBD
Row Width: Narrow = 15 inch (38 cm)
Number of Rows Per Plot: 6
Number of Rows Harvested Per Plot: 4
Plot Length: 6 m
Harvest Length: 4 m
Seeding Rate: 17 seeds/m
Dry Bean Variety: Beryl (Great Northern)
Seed Treatment: Cruiser Maxx Beans + Dynasty

Herbicide: Pursuit + Dual II Magnum PPI (May 15)
Fertilizer: 20.8 - 13.8 - 20.8 @289 lbs/ac (May 11)
Desication: Eragon (October 9)
Irrigated: August 11.
Application (A) 57 DAP: Aug 14 Temp = 16 C, RH = 87%, Wind 0 kph SW, dew, 30% cloud
Application (B) 71 DAP: Aug 28 Temp = 14C, RH = 83%, Wind 0 kph SW, dew, 0% cloud
Trt Application: 2 m boom, nozzles spacing 50 cm, 275 kPa pressure, 200 l/ha volume
Planting Date: June 17
Harvest Date: October 13

Conclusions:

* There was no crop phytotoxicity recorded for any the fungicide treatments
* there was 100% disease incidence for each of the disease severity ratings
* there were few differences between fungicide treatments for disease severity.
* disease pressure was moderate to low for this trial.
* Miravis Neo had similar disease severity as the untreated control
* there were no differences in seed weight or quality between fungicide treatments.
* Two applications of Allegro (trt. 4,5) had the highest yield, followed by two applications of Propulse (trt. 6, 8)
* only Allegro applied twice (trt. 4,5) had a higher net yield (yield-pick) than the untreated control.

2023 White Mold Cultivar x Row Width x Population Dry Bean A - 1st Planting
University of Guelph, Huron Research Station

Factor A	Factor B	Factor C	Plant Dry Weight (g)		Plant Height (cm)		Plant Development (BBCH)		NDVI (0-1)		Disease Severity (%)		Incidence (0-1)		Seed Weight	Seed Pick	Seed Yield	Seed Yield - Pick
Cultivar	Row Width	Population	40 DAP	56 DAP	40 DAP	56 DAP	40 DAP	56 DAP	40 DAP	56 DAP	74 DAP	90 DAP	74 DAP	90 DAP	(g/100)	(%)	(kg/ha)	(kg/ha)
Beryl			7.1	23.8	32.4	48.0 b	26.0	70.0	0.59	0.83	8.6	15.7	0.7	0.8	31.7 b	5.7	3222	3039
Merlot			7.8	23.2	34.3	62.0 a	25.0	70.0	0.62	0.84	6.3	10.3	0.7	0.8	37.3 a	6.1	3533	3320
	Narrow		8.0 a	26.4	33.0	57.0 a	25.0	71.0	0.59	0.83	9.4 a	15.8 a	0.8 a	0.9	34.0 b	6.0	3457	3250
	Wide		6.9 b	20.7	33.7	53.0 b	25.0	69.0	0.62	0.84	5.5 b	10.3 b	0.6 b	0.7	35.0 a	5.7	3298	3109
		100	6.5 b	19.3 b	35.4	57.0	25.0	70.0	0.72 a	0.85 a	11.8 a	22.1 a	0.9 a	0.9 a	34.0	5.5 ab	3097	2925
		80	6.6 b	20.1 b	33.8	55.0	25.0	71.0	0.62 b	0.85 a	7.7 b	13.2 b	0.8 ab	0.8 a	34.7	4.9 b	3529	3357
		60	8.5 a	25.7 a	33.6	54.0	27.0	71.0	0.59 b	0.84 a	5.8 b	9.6 b	0.7 b	0.8 a	34.2	6.4 a	3434	3215
		40	8.2 a	29.1 a	30.6	54.0	25.0	69.0	0.51 c	0.81 b	4.6 b	7.2 b	0.5 c	0.6 b	35.1	6.7 a	3450	3222
Beryl	Narrow		7.2	25.4 a	31.4	51.0	26.0	71.0	0.56 b	0.83	10.3	17.5	0.8	0.9 a	31.4	5.4 b	3314	3135
Merlot	Narrow		8.7	27.3 a	34.6	63.0	25.0	70.0	0.62 a	0.84	8.4	14.0	0.8	0.9 a	36.6	6.6 a	3600	3366
Beryl	Wide		7.0	22.2 b	33.4	46.0	26.0	69.0	0.62 a	0.84	6.8	13.9	0.7	0.8 b	32.0	6.0 ab	3130	2943
Merlot	Wide		6.8	19.1 c	33.9	61.0	25.0	69.0	0.62 a	0.83	4.3	6.6	0.6	0.7 c	37.9	5.5 b	3465	3275
Beryl		100	5.9	20.0	33.3	51.0	26.0	71.0	0.70	0.85	13.2	25.5	0.9	0.9	31.5	5.1	2835	2689
Merlot		100	7.0	18.5	37.5	64.0	25.0	69.0	0.74	0.85	10.3	18.6	0.8	0.9	36.5	5.9	3358	3162
Beryl		80	6.0	21.9	34.3	48.0	25.0	71.0	0.62	0.85	9.5	17.8	0.9	0.9	31.9	4.8	3368	3206
Merlot		80	7.2	18.3	33.3	63.0	24.0	70.0	0.62	0.84	5.8	8.7	0.7	0.7	37.5	4.9	3689	3507
Beryl		60	8.7	26.3	33.4	46.0	28.0	71.0	0.57	0.83	6.4	11.1	0.7	0.8	31.4	6.2	3331	3125
Merlot		60	8.3	25.1	33.8	61.0	25.0	70.0	0.60	0.85	5.2	8.0	0.7	0.9	36.9	6.6	3536	3306
Beryl		40	7.8	27.2	28.6	48.0	25.0	67.0	0.49	0.81	5.1	8.4	0.5	0.6	32.1	6.5	3353	3138
Merlot		40	8.5	30.9	32.5	60.0	25.0	70.0	0.54	0.80	4.1	6.0	0.6	0.7	38.2	6.8	3547	3306
	Narrow	100	6.7	20.5	34.5	59.0	25.0	70.0	0.73	0.85	14.6	24.8	1.0	1.0	32.9	6.0	3076	2891
	Wide	100	6.3	18.0	36.3	56.0	26.0	69.0	0.71	0.85	9.0	19.3	0.8	0.9	35.1	5.1	3117	2959
	Narrow	80	7.4	22.7	33.5	58.0	25.0	71.0	0.62	0.86	10.6	18.0	0.9	0.9	34.5	4.9	3729	3546
	Wide	80	5.8	17.5	34.0	52.0	24.0	70.0	0.61	0.84	4.8	8.4	0.6	0.7	34.9	4.9	3329	3167
	Narrow	60	9.2	28.3	33.4	55.0	27.0	71.0	0.54	0.83	5.8	9.7	0.7	0.8	33.7	6.4	3484	3262
	Wide	60	7.8	23.1	33.8	52.0	26.0	71.0	0.63	0.84	5.8	9.4	0.7	0.8	34.6	6.4	3383	3168
	Narrow	40	8.6	34.0	30.6	56.0	25.0	70.0	0.48	0.80	6.5	10.6	0.7	0.8	34.9	6.7	3539	3302
	Wide	40	7.8	24.1	30.5	53.0	25.0	67.0	0.55	0.81	2.7	3.8	0.4	0.5	35.3	6.7	3362	3142
Beryl	Narrow	100	6.0	21.8	31.4	53.0	25.0	71.0	0.68	0.85	15.0	22.8	1.0	0.9	30.8	5.4	2950	2788
Merlot	Narrow	100	7.3	19.3	37.6	65.0	25.0	70.0	0.78	0.86	14.1	26.9	1.0	1.0	35.1	6.6	3201	2995
Beryl	Wide	100	5.9	18.2	35.2	49.0	27.0	71.0	0.71	0.85	11.4	28.3	0.9	0.9	32.2	4.9	2721	2590
Merlot	Wide	100	6.7	17.8	37.3	63.0	25.0	68.0	0.70	0.85	6.5	10.4	0.7	0.8	37.9	5.3	3514	3328
Beryl	Narrow	80	6.1	22.8	32.6	51.0	25.0	72.0	0.59	0.86	12.4	22.9	1.0	1.0	32.2	4.5	3426	3274
Merlot	Narrow	80	8.6	22.6	34.4	65.0	25.0	70.0	0.66	0.86	8.8	13.1	0.9	0.9	36.9	5.3	4032	3818
Beryl	Wide	80	5.8	21.0	35.9	45.0	25.0	71.0	0.64	0.85	6.6	12.6	0.8	0.9	31.7	5.2	3310	3138
Merlot	Wide	80	5.8	14.0	32.2	60.0	24.0	70.0	0.58	0.83	2.9	4.3	0.5	0.6	38.1	4.5	3347	3196
Beryl	Narrow	60	8.5	25.7	32.4	47.0	28.0	71.0	0.51	0.81	5.6	10.4	0.6	0.8	31.1	6.3	3365	3152
Merlot	Narrow	60	9.9	30.9	34.3	63.0	25.0	71.0	0.58	0.85	6.0	9.0	0.8	0.9	36.3	6.5	3603	3373
Beryl	Wide	60	8.9	26.9	34.4	45.0	28.0	71.0	0.63	0.84	7.1	11.9	0.8	0.9	31.7	6.0	3298	3097
Merlot	Wide	60	6.7	19.3	33.2	59.0	25.0	70.0	0.63	0.85	4.4	7.0	0.6	0.8	37.5	6.7	3469	3238
Merlot	Wide	40	8.3	31.5	29.0	51.0	25.0	70.0	0.48	0.81	8.4	14.0	0.7	0.8	31.7	5.2	3513	3327
Merlot	Wide	40	8.9	36.4	32.2	60.0	25.0	71.0	0.48	0.79	4.6	7.1	0.7	0.8	38.1	8.1	3564	3277
Merlot	Wide	40	7.4	22.9	28.2	45.0	25.0	64.0	0.50	0.81	1.9	2.8	0.3	0.4	32.4	7.8	3193	2949

Merlot	Wide	40	8.2	25.4	32.8	60.0	26.0	70.0	0.60	0.82	3.5	4.9	0.5	0.5	38.2	5.5	3530	3336
Mean			7.5	23.5	33.4	55.0	25.5	70.0	0.61	0.84	7.5	13.0	0.7	0.8	34.5	5.9	3378	3180
Pr>F (A)			0.1324	0.7060	0.1258	0.0030	0.2473	0.6972	0.0946	0.7902	0.2097	0.1195	0.3385	0.6835	0.0001	0.2310	0.0821	0.0901
Pr>F (B)			0.0313	0.0002	0.4329	0.0198	0.9699	0.1811	0.0247	0.8345	0.0113	0.0213	0.0090	0.0002	0.0250	0.2714	0.1476	0.1755
Pr>F (AxB)			0.0777	0.0115	0.1172	0.3936	0.2728	0.7335	0.0270	0.5370	0.8280	0.3300	0.1978	0.0084	0.2793	0.0041	0.8096	0.6036
Pr>F (C)			0.0025	0.0001	0.0627	0.1191	0.1586	0.3597	0.0001	0.0001	0.0011	0.0008	0.0002	0.0004	0.0584	0.0136	0.0640	0.0668
Pr>F (AxC)			0.5562	0.2274	0.3565	0.7422	0.2100	0.2170	0.8964	0.3095	0.8386	0.7472	0.2509	0.1275	0.6967	0.9279	0.7414	0.7587
Pr>F (BxC)			0.7534	0.2392	0.9545	0.7366	0.8280	0.4823	0.2816	0.4062	0.3271	0.6038	0.0908	0.0581	0.1603	0.8300	0.6114	0.5736
Pr>F (AxBxC)			0.4010	0.2120	0.7697	0.6196	0.6995	0.5023	0.3307	0.3749	0.5250	0.1673	0.1431	0.5616	0.5703	0.0984	0.3851	0.3584
LSD 0.05 (A)			NA	NA	NA	5.0	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD 0.05 (B)			NA	1.7	NA	3.0	NA	NA	0.02	NA	2.6	4.4	0.1	0.0	0.8	NA	NA	NA
LSD 0.05 (AxB)			NA	2.4	NA	NA	NA	NA	0.03	NA	NA	NA	NA	0.1	NA	0.66	NA	NA
LSD 0.05 (C)			1.3	3.6	NA	NA	NA	NA	0.07	0.02	3.5	7.1	0.1	0.1	NA	1.16	NA	NA
LSD 0.05 (AxC)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD 0.05 (BxC)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD 0.05 (AxBxC)			NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Means followed by same letter do not significantly differ (P=.05, LSD)

Trial Notes:
Design: Split plot
Row Width: 75 cm (Wide) 38 cm (Narrow)
Rows Per Plot: 4 (Wide) or 6 (Narrow)
Rows Harvested per Plot: 2 (Wide) or 4 (Na
Plot Length: 6 m
Harvest Length: 4 m
Varieties: Beryl and Merlot
Seed Treatment: CruiserMaxxBeans + Dynasty
Herbicide: Pursuit + Dual II Magnum PPI (May 15)
Fertilizer: 20.8 - 13.8 - 20.8 @289 lbs/ac (May 10)
Irrigated: August 2, 11
Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 19
Planting Date: June 19
Harvest Date: October 2

Conclusions:
* the level of white mold infection in this trial is low, compared to past work
* narrow row width increased plant dry weight
* narrow row width increased disease incidence and disease severity, at both rating dates
* plant dry weight increased at 60 and 40% plant population
* NDVI decreased at lower plant population
* disease incidence and disease severity decreased at 80% plant population only
* wide rows had higher seed weight for both cultivars
* seed pick increased at lower plant populations, and between cultivars in narrow rows only
* row width and plant population had no effect on seed yield

2023 White Mold Cultivar x Row Width x Population Dry Bean B - 2nd Planting
University of Guelph, Huron Research Station

Factor A	Factor B	Factor C	Plant Dry Weight (g)		Plant Height (cm)		Plant Development (BBCH)		NDVI (0-1)		Disease Severity (%)		Disease Incidence (0-1)		Seed Weight	Seed Pick	Seed Yield	Seed Yield - Pick
Cultivar	Row Width	Population	40 DAP	56 DAP	40 DAP	56 DAP	40 DAP	56 DAP	40 DAP	56 DAP	74 DAP	90 DAP	74 DAP	90 DAP	(g/100)	(%)	(kg/ha)	(kg/ha)
Beryl			9.3	31.2	40.8 b	46.5	59.2 a	75.1	0.82	0.85	10.6	13.3 a	0.8	0.9	33.3 b	8.9	3316 a	2933
Merlot			8.3	29.4	48.9 a	47.6	56.1 b	74.3	0.81	0.86	9.8	10.8 b	0.9	0.9	37.8 a	10.0	3207 b	2892
	Narrow		9.3 a	35.7	44.6	46.3	57.6	75.3 a	0.82	0.86	12.5 a	13.8 a	0.9 a	0.9 a	35.4	9.6	3292	2982
	Wide		8.3 b	25.0	45.1	47.8	57.6	74.1 b	0.81	0.85	8.0 b	10.3 b	0.8 b	0.9 b	35.7	9.3	3231	2844
		100	8.1	23.6	47.4 ab	49.8 a	58.0	74.4	0.83 a	0.86 a	13.9 a	15.4 a	1.0 a	1.0 a	34.9 b	8.2 b	3274	3009
		80	8.6	25.4	48.0 a	50.4 a	57.4	74.6	0.83 a	0.86 a	11.3 ab	13.8 ab	0.9 a	1.0 a	34.8 b	9.2 ab	3162	2699
		60	8.9	31.8	43.0 bc	46.1 ab	57.8	74.9	0.82 a	0.86 a	9.0 bc	10.9 bc	0.9 a	0.9 a	36.1 a	10.2 a	3439	3093
		40	9.7	40.4	41.0 c	41.9 b	57.3	74.9	0.78 b	0.84 b	6.7 c	8.0 c	0.7 b	0.7 b	36.5 a	10.3 a	3171	2849
Beryl	Narrow		9.5	33.9 a	41.1	47.2	59.5	75.8	0.82	0.86	13.1	14.4	0.9	0.9	33.1	9.7	3305	2989
Merlot	Narrow		9.0	37.4 a	48.1	45.3	55.8	74.9	0.81	0.86	11.9	13.1	0.9	1.0	37.6	9.6	3278	2974
Beryl	Wide		9.1	28.5 b	40.5	45.8	58.9	74.4	0.81	0.85	8.1	12.2	0.8	0.9	33.5	8.2	3326	2876
Merlot	Wide		7.5	21.4 c	49.6	49.8	56.4	73.7	0.81	0.85	7.8	8.4	0.8	0.8	38.0	10.5	3136	2811
Beryl		100	7.9	25.9 de	42.7	45.2 b	59.4	74.5	0.83	0.86	15.8	18.4	1.0	1.0	32.2	8.1	3306	3038
Merlot		100	8.2	21.3 e	52.1	54.4 a	56.6	74.3	0.82	0.87	12.0	12.4	1.0	1.0	37.5	8.2	3242	2981
Beryl		80	9.0	28.2 cd	42.7	49.9 ab	58.6	75.0	0.83	0.85	12.1	15.1	1.0	1.0	33.0	9.1	3114	2475
Merlot		80	8.1	22.7 de	53.2	50.9 ab	56.3	74.2	0.84	0.86	10.5	12.6	0.9	1.0	36.5	9.3	3210	2922
Beryl		60	10.7	34.3 bc	41.2	45.6 b	60.6	75.5	0.83	0.87	9.6	13.6	0.9	1.0	33.8	9.1	3418	3112
Merlot		60	7.1	29.2 cd	44.8	46.5 b	55.0	74.3	0.81	0.85	8.3	8.3	0.9	0.9	38.3	11.3	3460	3075
Beryl		40	9.7	36.4 b	36.6	45.4 b	58.2	75.3	0.77	0.84	4.8	6.2	0.6	0.7	34.1	9.3	3425	3107
Merlot		40	9.7	44.4 a	45.4	38.4 c	56.4	74.5	0.78	0.85	8.5	9.8	0.8	0.8	38.9	11.4	2918	2592
	Narrow	100	9.2	28.6 cd	48.7	51.9	58.3	75.2	0.84	0.87	17.9	18.8	1.0	1.0	34.5	8.1	3349	3081
	Wide	100	6.9	18.7 e	46.2	47.7	57.7	73.5	0.81	0.86	9.9	12.0	0.9	0.9	35.2	8.3	3198	2938
	Narrow	80	9.5	27.3 cd	46.3	50.9	58.3	74.7	0.83	0.86	13.0	14.6	1.0	1.0	34.9	9.9	3231	2923
	Wide	80	7.7	23.6 de	49.7	49.9	56.6	74.5	0.84	0.85	9.6	13.1	0.9	1.0	34.6	8.6	3094	2474
	Narrow	60	9.5	37.6 b	41.2	42.9	57.8	75.7	0.82	0.86	9.8	10.8	0.9	1.0	36.0	9.9	3551	3202
	Wide	60	8.4	25.9 cd	44.8	49.2	57.7	74.1	0.82	0.86	8.2	11.1	0.9	0.9	36.1	10.4	3327	2985
	Narrow	40	9.0	49.2 a	42.3	39.3	56.1	75.6	0.78	0.85	9.3	11.0	0.8	0.8	36.1	10.7	3037	2720
	Wide	40	10.4	31.6 bc	39.7	44.4	58.6	74.2	0.78	0.84	4.1	5.0	0.6	0.6	37.0	10.0	3306	2979
Beryl	Narrow	100	8.3	29.9	44.6	46.4	59.9	75.1	0.85	0.86	21.1	23.0	1.0	1.0	31.8	9.1	3173	2880
Merlot	Narrow	100	10.2	27.3	52.8	57.5	56.8	75.3	0.84	0.88	14.6	14.5	1.0	1.0	37.2	7.0	3526	3283
Beryl	Wide	100	7.6	22.0	40.9	44.1	59.0	73.8	0.82	0.85	10.5	13.8	0.9	0.9	32.7	7.2	3438	3196
Merlot	Wide	100	6.2	15.4	51.5	51.3	56.5	73.3	0.81	0.87	9.4	10.3	0.9	0.9	37.7	9.5	2958	2679
Beryl	Narrow	80	9.8	28.4	43.4	53.3	59.5	75.5	0.82	0.85	13.6	15.3	1.0	1.0	33.0	11.1	3089	2759
Merlot	Narrow	80	9.1	26.2	49.2	48.5	57.2	74.0	0.84	0.87	12.4	14.0	1.0	1.0	36.8	8.6	3373	3088
Beryl	Wide	80	8.2	28.0	42.1	46.4	57.7	74.6	0.84	0.85	10.6	14.9	1.0	1.0	33.0	7.2	3139	2190
Merlot	Wide	80	7.2	19.2	57.2	53.3	55.5	74.3	0.83	0.86	8.6	11.3	0.9	1.0	36.2	9.9	3048	2757
Beryl	Narrow	60	11.2	36.1	39.9	46.2	61.5	76.3	0.83	0.87	11.5	13.3	0.9	1.0	34.2	8.6	3523	3222
Merlot	Narrow	60	7.7	39.1	42.6	39.7	54.2	75.1	0.81	0.86	8.0	8.3	0.9	1.0	37.8	11.2	3579	3182
Beryl	Wide	60	10.3	32.5	42.5	45.0	59.7	74.7	0.83	0.87	7.8	13.9	0.9	1.0	33.5	9.6	3314	3001
Merlot	Wide	60	6.5	19.4	47.1	53.4	55.8	73.5	0.81	0.85	8.6	8.3	0.9	0.9	38.7	11.3	3340	2968
Merlot	Wide	40	8.9	41.3	36.6	43.2	57.1	76.2	0.78	0.85	6.0	6.3	0.7	0.7	33.4	9.9	3437	3097
Merlot	Wide	40	9.0	57.0	47.9	35.4	55.0	75.1	0.77	0.85	12.5	15.8	0.9	0.9	38.7	11.5	2636	2343
Merlot	Wide	40	10.5	31.4	36.7	47.6	59.3	74.4	0.76	0.83	3.6	6.1	0.5	0.7	34.9	8.8	3412	3118
Merlot	Wide	40	10.3	31.7	42.8	41.3	57.9	73.9	0.79	0.84	4.5	3.9	0.7	0.6	39.2	11.2	3199	2840

Mean	8.8	30.3	44.9	47.1	57.7	74.7	0.82	0.86	10.2	12.1	0.9	0.9	35.6	9.5	3262	2913
Pr>F (A)	0.2923	0.5346	0.0118	0.5396	0.0079	0.4459	0.6549	0.2890	0.3685	0.0092	0.3517	0.7487	0.0003	0.0909	0.0224	0.7445
Pr>F (B)	0.0281	0.0001	0.7318	0.4175	0.9978	0.0369	0.3206	0.1123	0.0014	0.0270	0.0202	0.0206	0.2604	0.6341	0.5945	0.3617
Pr>F (AxB)	0.1458	0.0045	0.4455	0.1379	0.4439	0.7879	0.8358	0.6143	0.6222	0.3502	0.5540	0.0869	0.8674	0.0773	0.4812	0.8647
Pr>F (C)	0.4687	0.0001	0.0125	0.0017	0.8636	0.7951	0.0015	0.0078	0.0001	0.0018	0.0001	0.0001	0.0003	0.0078	0.1765	0.1201
Pr>F (AxC)	0.2606	0.0184	0.4862	0.0103	0.1643	0.8680	0.5840	0.1215	0.0678	0.0572	0.2526	0.7351	0.2636	0.2217	0.1357	0.0648
Pr>F (BxC)	0.2939	0.0477	0.3628	0.0742	0.1356	0.6514	0.5954	0.9826	0.1461	0.1907	0.4368	0.3600	0.4723	0.4915	0.2871	0.2363
Pr>F (AxBxC)	0.8576	0.4860	0.5065	0.1448	0.8076	0.8946	0.6297	0.6311	0.1924	0.1785	0.6989	0.2691	0.4709	0.0821	0.0887	0.2093
LSD 0.05 (A)	NA	NA	4.7	NA	1.6	NA	NA	NA	NA	1.3	NA	NA	0.7	NA	79.0	NA
LSD 0.05 (B)	0.8	2.9	NA	NA	NA	1.2	NA	NA	2.0	2.9	0.1	0.1	NA	NA	NA	NA
LSD 0.05 (AxB)	NA	4.1	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD 0.05 (C)	NA	4.8	4.8	4.5	NA	NA	0.03	0.01	2.8	3.8	0.1	0.1	0.9	1.3	NA	NA
LSD 0.05 (AxC)	NA	6.8	NA	6.4	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD 0.05 (BxC)	NA	6.8	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD 0.05 (AxBxC)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

Means followed by same letter do not significantly differ (P=.05, LSD)

Trial Notes:
Design: Split plot
Row Width: 75 cm (Wide) 38 cm (Narrow)
Rows Per Plot: 4 (Wide) or 6 (Narrow)
Rows Harvested per Plot: 2 (Wide) or 4 (Narrow)
Plot Length: 6 m
Harvest Length: 4 m
Varieties: Beryl and Merlot
Seed Treatment: CruiserMaxxBeans + Dynasty
Herbicide: Pursuit + Dual II Magnum PPI (May 15)
Fertilizer: 20.8 - 13.8 - 20.8 @289 lbs/ac (May 10)
Irrigated: August 11
Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) October 5
Planting Date: June 29
Harvest Date: October 16

Conclusions:
* the level of white mold infection in this trial is low, compared to past work
* narrow row width increased plant dry weight and increased plant development (BBCH scale)
* narrow row width increased disease incidence and disease severity, at both rating dates
* plant height decreased at 60 and 40% plant populations
* NDVI decreased marginally at 40% plant population
* disease incidence decreased at 40% plant population, while disease severity decreased at 60 and 40% plant population
* seed weight and seed pick increased at lower plant populations
* row width and plant population had no effect on seed yield

2023 White Mold Registered Products Soybean 1st Planting
University of Guelph, Ridgetown Campus

No.	Treatment Name	Rate	Rate Unit	Appl Code	Phytotoxicity		Disease Severity		Disease Incidence		100 Seed Weight (g)	Seed Quality (1-5,1=best)	Pick (%)	Yield	
					58 DAP	71 DAP	84 DAP	120 DAP	84 DAP	120 DAP				(kg/ha)	(bu/ac)
1	Untreated Check	-	-	-	0	0	25.3 a	32.3 a	0.9 a	0.9 ab	9.7	2.4	2.3	2982 e	44.3 e
2	Acapela	0.88	l/ha	A	0	0	17.1 ab	20.0 b	0.9 a	0.9 ab	10.0	2.1	2.1	3089 de	45.9 de
3	Acapela	0.88	l/ha	AB	0	0	3.9 de	4.3 de	0.4 cd	0.5 cd	10.5	1.8	1.5	3735 ab	55.5 ab
4	Allegro	0.44	l/ha	AB	0	0	7.6 cde	7.6 cde	0.9 a	0.9 ab	10.4	2.1	1.7	3618 a-d	53.8 a-d
5	Stratego Pro+Agral 90	0.57+.125%	l/ha	A	0	0	12.1 bcd	13.6 b-e	0.9 a	0.9 ab	10.3	1.8	1.8	3632 abc	54.0 abc
6	Delaro Complete	0.586	l/ha	A	0	0	10.9 b-e	12.6 b-e	0.9 a	1.0 ab	10.3	1.9	2.0	3718 ab	55.3 ab
7	Delaro Complete	0.586	l/ha	AB	0	0	2.0 e	2.9 e	0.4 cd	0.5 d	10.3	1.9	2.0	3945 a	58.7 a
8	Delaro Complete	0.88	l/ha	A	0	0	7.1 cde	7.9 cde	0.8 ab	0.8 abc	10.2	1.8	1.7	3768 ab	56.0 ab
9	Delaro Complete	0.88	l/ha	AB	0	0	1.9 e	3.1 e	0.3 d	0.6 cd	10.4	1.6	1.3	3457 a-e	51.4 a-e
10	Cotagra	0.7	l/ha	A	0	0	14.4 bc	15.1 bcd	0.9 a	0.9 ab	10.0	2.1	2.1	3380 b-e	50.3 b-e
11	Cotegra	0.7	l/ha	AB	0	0	10.4 b-e	11.8 b-e	0.8 ab	0.9 ab	10.6	2.3	2.4	3308 b-e	49.2 b-e
12	Miravis Neo	1.25	l/ha	A	0	0	15.0 bc	17.0 bc	1.0 a	1.0 a	10.5	2.0	1.6	3426 a-e	50.9 a-e
13	Miravis Neo	1.25	l/ha	AB	0	0	17.5 ab	17.4 bc	0.9 a	1.0 a	10.3	2.3	2.4	3182 cde	47.3 cde
14	Cotagra, Priaxor	0.7,0.45	l/ha	A,B	0	0	7.6 cde	9.6 b-e	0.6 bc	0.7 bcd	10.1	2.0	1.9	3425 a-e	50.9 a-e
15	Priaxor, Cotagra	0.45,0.7	l/ha	A,B	0	0	14.8 bc	16.5 bc	0.9 a	1.0 ab	10.5	2.4	2.9	3075 e	45.7 e
16	Viatude A	0.73	l/ha	A	0	0	11.8 bcd	12.8 b-e	0.9 a	0.9 ab	10.4	2.1	2.3	3644 abc	54.2 abc
LSD P=.05					.	.	9.3	11.9	0.3	0.3	0.8	0.7	1.2	532.3	7.9
CV					0.0	0.0	58.3	65.4	24.0	22.1	5.2	23.8	42.5	10.8	10.8
Treatment Prob(F)					1.0000	1.0000	0.0004	0.0016	0.0001	0.0005	0.6893	0.5237	0.5554	0.0178	0.0178

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

Trial Notes:

Design: RCBD
Row Width: Narrow = 15 inch (38 cm)
Number of Rows Per Plot: 6
Number of Rows Harvested Per Plot: 4
Plot Length: 6 m
Harvest Length: 4 m
Seeding Rate: 21 seeds/m
Seed Treatment: Crusiser Maxx Beans

Soybean Cultivar: Nattosan
Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 10
Treatment Applications: July 18 (R 1.5), August 1 (R 3.0)
Herbicide: Pursuit 0.2 l/ha, Dual 1.5 l/ha PPI May 15
Irrigated on August 2, 11
Planting Date: May 29
Harvest Date: September 29

Conclusions:

* the fungicide treatments did not cause phytotoxicity on the crop
* white mold severity was moderate and developed later in the flowering period of the crop
* Delaro Complete (trts 7 and 9) and Acapela (trt 3) had the lowest disease severity but were similar to many other treatments
* a single application of Acapela (trt 2) and Miravis Neo (trt 13) had similar disease severity and yield as the untreated check.
* there were no differences between treatments for seed weight, seed quality and pick
* Delaro Complete (trt 6, 7 and 8), Acapela (trt 3), Stratego Pro (trt 5), Viatude (trt 16) and Allegro (trt 4) had higher yield than the untreated check

2023 White Mold Registered Products Soybean 2nd Planting
University of Guelph, Ridgetown Campus

No.	Treatment Name	Rate	Rate Unit	Appl Code	Phytotoxicity 49 DAP	Phytotoxicity 63 DAP	Disease Severity 84 DAP	Disease Severity 99 DAP	Disease Incidence 84 DAP	100 Seed Weight (g)	Seed Quality (1-5,1=best)	Pick (%)	Yield (kg/ha)	Yield (bu/ac)
1	Untreated Check	-	-	-	0.0	0.0	31.6 a	34.3 a	1.0	10.2	2.4	3.2 a	3024	45.0
2	Acapela	0.88	l/ha	A	0.0	0.0	9.4 cd	12.0 bcd	0.9	10.4	1.6	1.7 b	3343	49.7
3	Acapela	0.88	l/ha	AB	0.0	0.0	12.5 bcd	11.9 bcd	1.0	10.4	2.0	1.7 b	3090	45.9
4	Allegro	0.44	l/ha	AB	0.0	0.0	12.4 bcd	14.3 bcd	0.9	10.0	1.9	1.8 b	3235	48.1
5	Stratego Pro+Agral 90	0.57+.125%	l/ha	A	0.0	0.0	11.8 bcd	14.6 bcd	0.9	10.3	2.0	1.8 b	3206	47.7
6	Delaro Complete	0.586	l/ha	A	0.0	0.0	10.0 bcd	10.1 cd	0.8	10.3	1.9	1.8 b	3474	51.7
7	Delaro Complete	0.586	l/ha	AB	0.0	0.0	9.6 bcd	7.9 d	0.9	10.2	1.8	1.7 b	3222	47.9
8	Delaro Complete	0.88	l/ha	A	0.0	0.0	8.6 d	9.9 cd	0.9	10.2	1.9	1.6 b	3479	51.7
9	Delaro Complete	0.88	l/ha	AB	0.0	0.0	8.1 d	7.9 d	0.9	11.0	1.8	1.4 b	3268	48.6
10	Cotagra	0.7	l/ha	A	0.0	0.0	10.4 bcd	10.1 cd	0.8	10.4	1.6	1.5 b	3487	51.9
11	Cotegra	0.7	l/ha	AB	0.0	0.0	10.9 bcd	11.0 cd	1.0	10.4	1.9	1.7 b	3171	47.2
12	Miravis Neo	1.25	l/ha	A	0.0	0.0	15.3 bcd	17.4 bc	0.9	10.5	1.9	1.7 b	3120	46.4
13	Miravis Neo	1.25	l/ha	AB	0.0	0.0	14.6 bcd	16.5 bcd	1.0	10.5	2.0	2.1 b	3011	44.8
14	Cotagra, Priaxor	0.7,0.45	l/ha	A,B	0.0	0.0	17.8 b	20.1 b	1.0	10.4	2.0	1.8 b	3008	44.7
15	Priaxor, Cotagra	0.45,0.7	l/ha	A,B	0.0	0.0	17.0 bc	18.6 bc	1.0	10.5	2.0	2.0 b	3079	45.8
16	Viatude A	0.73	l/ha	A	0.0	0.0	10.9 bcd	10.9 cd	0.9	9.8	2.0	1.6 b	3197	47.5
LSD P=.05					.	.	8.3	9.0	0.2	0.7	0.4	0.7	403.4	6.0
CV					0.0	0.0	44.3	44.5	12.8	4.4	15.0	26.3	8.8	8.8
Treatment Prob(F)					1.0000	1.0000	0.0002	0.0001	0.3190	0.2090	0.1194	0.0024	0.2321	0.2321

Means followed by same letter or symbol do not significantly differ (P=.05, LSD).

Trial Notes:
Design: RCBD
Row Width: Narrow = 15 inch (38 cm)
Number of Rows Per Plot: 6
Number of Rows Harvested Per Plot: 4
Plot Length: 6 m
Harvest Length: 4 m
Seeding Rate: 21 seeds/m
Seed Treatment: Cruiser Maxx Beans

Soybean Cultivar: Nattosan
Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 10
Treatment Applications: July 31 (R 1.5), August 14 (R 3.0)
Herbicide: Pursuit 0.2 l/ha, Dual 1.5 l/ha PPI May 15
Irrigated on August 11
Planting Date: June 19
Harvest Date: October 3

Conclusions:
* the fungicide treatments did not cause phytotoxicity on the crop
* white mold severity was moderate and developed later in the flowering period of the crop
* all fungicide treatments had lower disease severity than the untreated check
* there were no differences between treatments for seed weight and seed quality
* all fungicide treatments had lower pick than the untreated check
* there were no differences between treatments for yield

2023 Anthracnose Foliar Fungicide Head-to-Head Study A

Huron Research Station, Exeter Ontario

		Severity (%)								Seed Data			
		Stems			Leaves			Pods		Yield	Pick	Yield -Pick	100 Seed
No.	Treatment	55 DAP	69 DAP	83 DAP	55 DAP	69 DAP	83 DAP	69 DAP	83 DAP	kg/ha	%	kg/ha	g
1	Inoculated Check	4.9 AB	46.0 A	57.3 ABC	3.0 A	9.9 A	12.9 A	8.9 A	20.6 AB	2015 CD	11.3 A	2000 CD	20.3 E
2	Uninoculated Check	1.9 F	7.6 F	6.5 F	0.8 B	1.8 EF	2.3 F	4.7 B	3.1 E	2664 ABCD	2.0 D	2661 ABCD	24.1 AB
3	Quadris	2.1 EF	8.4 F	13.9 F	0.9 B	1.6 EF	4.7 BCDEF	5.0 B	5.7 DE	2698 ABCD	1.5 D	2696 ABCD	23.6 ABC
4	Allegro (Low)	2.8 CDEF	18.8 DE	46.4 BCD	1.2 B	4.0 DEF	9.7 ABCDE	6.0 B	14.7 ABC	2436 ABCD	3.9 CD	2431 ABCD	22.3 BCD
5	Allegro (High)	2.3 DEF	12.3 EF	25.2 EF	0.7 B	2.9 DEF	6.9 ABCDEF	5.6 B	9.3 CDE	2666 ABCD	3.2 CD	2662 ABCD	23.7 ABC
6	Allegro + Quadris (Co-Pack)	2.1 EF	11.3 EF	11.6 F	0.8 B	2.6 DEF	4.8 BCDEF	4.8 B	4.0 E	2951 AB	1.4 D	2949 AB	24.5 A
7	Propulse (Low)	6.0 A	32.0 BC	53.0 ABCD	1.8 AB	7.2 ABC	9.8 ABCD	6.0 B	15.0 ABC	2254 BCD	5.9 BC	2246 BCD	21.0 DE
8	Propulse (High)	4.1 ABCD	28.5 CD	42.8 CDE	1.6 AB	5.6 BCD	7.7 ABCDEF	5.3 B	13.2 BCD	2064 CD	4.3 CD	2058 CD	21.9 CDE
9	Acapela	2.4 DEF	9.3 EF	11.6 F	0.8 B	3.3 DEF	3.3 DEF	4.9 B	4.7 E	2823 ABC	1.7 D	2820 ABC	24.6 A
10	Priaxor + AgSurf	2.5 CDEF	7.8 F	8.2 F	0.5 B	2.9 DEF	3.5 DEF	4.4 B	3.6 E	3142 A	1.2 D	3141 A	24.5 A
11	Cotegra	3.9 BCDE	26.6 CD	38.4 DE	1.2 B	4.9 CDE	7.6 ABCDEF	5.8 B	10.4 CDE	2291 ABCD	4.4 CD	2285 ABCD	21.1 DE
12	Delaro	2.4 DEF	8.8 EF	9.9 F	0.8 B	1.2 F	3.3 DEF	5.5 B	3.5 E	2678 ABCD	1.1 D	2676 ABCD	24.3 A
13	Delaro Complete	2.4 DEF	9.1 EF	8.1 F	0.8 B	3.0 DEF	2.8 EF	4.6 B	2.9 E	3016 AB	1.3 D	3014 AB	24.1 AB
14	Miravis Neo	1.7 F	9.7 EF	12.5 F	0.5 B	2.0 EF	3.8 CDEF	4.5 B	4.5 E	2990 AB	1.4 D	2988 AB	24.6 A
15	Oxidate	4.4 ABC	41.0 AB	61.8 AB	1.7 AB	8.8 AB	11.5 AB	8.0 A	21.2 A	1906 D	10.2 A	1892 D	20.6 DE
16	Oro-Solute	5.2 AB	43.2 A	68.3 A	2.1 AB	8.6 AB	10.5 ABC	8.1 A	21.4 A	1883 D	8.5 AB	1872 D	20.1 E
Treatment Prob (F)		0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0137	0.0001	0.0001	0.0001	0.0001	0.0001
CV		49.9	40.5	28.9	101.3	85.2	61.1	69.6	50.3	13.7	33.4	13.7	3.3
LSD (p=0.05)		1.1	5.7	10.5	0.9	1.8	3.9	2.6	4.4	493	1.9	493	1.1

Trial Notes:

Design: RCBD with 4 replications
Planting Date: June 17
Plot: 4 rows, 15" (38 cm) spacing, 5 m long
Cultivar: Agrosy (Navy)
Harvest Date: Oct. 5
Seeding Rate: 17 seed/m of row
Seed Treatment: Vibrance 500FS, Maxim 480FS, Rancona, Acrus ST
Desiccation: Sept 8 Eragon 146 mL/ha + Merge 1 L/ha, 210 L/ha Volume

Herbicide: May 15th - Pursuit (200 mL/ha) + Dual II Magnum (1.5 L/ha) PPI
Fertilizer: May 10th - 324 kg/ha of 20.8-13.8-20.8
Fungicide: August 29th - Lance (770 g/ha) + Allegro (7.0 L/ha)
Application: July 27 Temp=23C, RH= 79%, Wind 0 kph NW
Aug 10 Temp=22C, RH=67%, Wind 0 kph NNE
Trt Application: 2 m boom, nozzles spacing 50 cm, 275 kPa pressure, 200 l/ha volume
Inoculum Application: June 28
Disease Assessment 1st Rating 55 DAP = 15 DAIA | 2nd Rating 69 DAP = 29 DAIA | 3rd Rating 83 DAP = 43 DAIA
DAIA - Days After Initial Application

Conclusions:

* Disease development was moderate, with clear differences between most fungicide treatments and the inoculated control
* there were no differences in early season plant emergence or vigour across the study.
* many treatments provided similar disease management for 4 weeks after application, but many began to fail at 6 weeks after application, due to high rainfall in August
* the weakest treatments were Oxidate and Oro-Solute, followed by Propulse (both rates), Cotegra and Allegro (low rate).
* Priaxor (trt 10) had the highest yield, followed by Delaro Complete (trt 13), Miravis Neo (trt 14) and Allegro+Quadris (trt 6)

**While the effect displayed significance, the lsmeans table proved no treatment separation.

2023 Anthracnose Foliar Fungicide Head-to-Head Study B

Huron Research Station, Exeter Ontario

		Severity (% of Tissue Infected)							Seed Data			
		Stems			Leaves		Pods		Yield	Pick	Yield - Pick	100 Seed
No	Treatment	61 DAP	76 DAP	89 DAP	61 DAP	76 DAP	76 DAP	89 DAP	kg/ha	g	kg/ha	g
1	Inoculated Check	11.4 A	27.6 A	51.5 A	3.9 A	7.3 AB	5.7 A	12.7 A	2257	5.9 A	2249	19.0 DE
2	Uninoculated Check	7.1 AB	7.6 C	11.0 E	1.6 C	1.8 D	1.2 D	2.6 E	2454	2.4 AB	2451	22.0 AB
3	Quadris	8.4 AB	12.1 C	18.9 CDE	2.8 ABC	3.9 BCD	1.8 CD	4.3 DE	2310	3.0 AB	2306	21.8 AB
4	Allegro (Low)	8.9 AB	14.2 BC	26.4 C	3.4 ABC	5.6 ABC	4.5 ABC	7.6 BCD	2314	5.1 AB	2307	20.8 ABCD
5	Allegro (High)	6.9 AB	11.1 C	15.0 DE	2.7 ABC	4.2 ABCD	3.3 ABCD	5.3 CDE	2658	3.0 AB	2651	22.2 AB
6	Allegro + Quadris (Co-Pack)	9.3 AB	9.4 C	17.2 CDE	2.5 ABC	2.4 CD	2.0 BCD	3.5 DE	2427	2.6 AB	2424	21.4 ABC
7	Propulse (Low)	8.2 AB	14.9 BC	25.3 CD	2.0 ABC	3.4 CD	2.8 BCD	5.4 CDE	2453	2.5 AB	2450	20.6 BCDE
8	Propulse (High)	7.4 AB	14.3 BC	19.0 CDE	3.1 ABC	4.4 ABCD	3.5 ABCD	4.0 DE	2307	2.1 B	2304	21.4 AB
9	Acapela	8.7 AB	9.2 C	19.5 CDE	2.2 ABC	2.1 CD	1.7 D	4.4 DE	2598	3.8 AB	2592	22.6 A
10	Priaxor + AgSurf	7.3 AB	9.3 C	10.4 E	2.4 ABC	2.5 CD	1.1 D	2.5 E	2468	2.1 AB	2465	21.9 AB
11	Cotegra	5.0 B	10.9 C	18.1 CDE	2.5 ABC	2.5 CD	1.3 D	3.2 DE	2241	1.8 B	2239	20.9 ABCD
12	Delaro	8.8 AB	8.9 C	13.4 E	2.4 ABC	3.0 CD	1.8 D	3.5 DE	2671	2.1 B	2668	21.8 AB
13	Delaro Complete	5.1 B	8.2 C	10.5 E	1.8 BC	2.3 CD	1.1 D	2.3 E	2585	2.6 AB	2582	21.7 AB
14	Miravis Neo	6.3 AB	9.3 C	11.9 E	2.4 ABC	1.7 D	1.8 D	2.8 E	2526	2.6 AB	2522	21.9 AB
15	Oxidate	10.0 AB	26.4 A	48.4 AB	3.6 AB	7.8 A	5.8 A	12.2 AB	2232	4.5 AB	2226	19.0 E
16	Oro-Solute	10.5 A	22.8 AB	37.8 B	3.4 ABC	7.2 AB	4.6 AB	9.9 ABC	2130	4.2 AB	2125	19.5 CDE
Treatment Prob (F)		0.0017	0.0001	0.0001	0.0017	0.0001	0.0001	0.0001	0.8131	0.0059	0.8107	0.0001
CV		44.0	48.4	45.8	88.4	96.4	100.7	68.9	16.9	47.1	16.9	3.5
LSD (p=0.05)		2.9	5.0	6.2	1.1	2.0	1.5	2.6	580	2.1	581	1.0

Trial Notes:

Design: RCBD with 4 replications
Planting Date: June 29
Plot: 4 rows, 15" (38 cm) spacing, 5 m long
Cultivar: Agrosy (Navy)
Harvest Date: Oct. 17
Seeding Rate: 17 seed/m of row
Seed Treatment: Vibrance 500FS, Maxim 480FS, Rancona, Acrus ST
Desiccation: Oct. 5 Eragon 146 mL/ha + Merge 1 L/ha, 210 L/ha Volume

Herbicide: May 15 Pursuit (200 mL/ha) + Dual II Magnum (1.5 L/ha) PPI
Fertilizer: May 10 324 kg/ha of 20.8-13.8-20.8
Fungicide: Lance 770 g/ha (August 29th)
Trt Application: Aug 8 Temp=22C, RH=71%, Wind 0 kph
Trt Application: Aug 22 Temp=20C, RH=71%, Wind 0 kph
Trt Application: 2 m boom, nozzles spacing 50 cm, 275 kPa pressure, 200 l/ha volume
Inoculum Application: Aug 9
Disease Assessment 1st Rating 61 DAP=21 DAIA 2nd Rating=76 DAP 36 DAIA 3rd Rating 89 DAP=49 DAIA.
DAIA = Days After Initial Application

Conclusions:

* Disease development was low, with only a few differences measured between the fungicide treatments and the inoculate
* there were no differences in early season plant emergence or vigour across the study.
* many fungicide treatments provided similar disease control, with only two weak treatments being identified
* Oxidate and Oro-Solute were similar to the inoculated control for disease development and seed weight
* there were no treatment differences for yield or pick

2023 Anthracnose Seed Treatment Head-to-Head Study A
Huron Research Station, Exeter Ontario

		Emergence (%)		Vigour (1-5)		Severity (% Infected Tissue)							Seed Data			
						Stems			Leaves		Pods		Yield	Pick	Yield -Pick	Seed Wt
No	Treatment	11 DAP	20 DAP	11 DAP	20 DAP	55 DAP	69 DAP	83 DAP	55 DAP	69 DAP	69 DAP	83 DAP	kg/ha		kg/ha	(g/100)
1	Non-inoculated Control + Cruiser	61.9 AB	60.1	5.0	5.0	6.0 D	9.7 E	9.3 C	1.1 E	1.6 C	9.7 E	2.1 E	3008 A	1.5 F	3006 A	23.9 A
2	Inoculated + Cruiser	56.5 AB	59.4	5.0	5.0	19.3 A	35.8 AB	57.8 A	4.2 A	8.9 A	35.8 AB	27.8 A	2064 C	16.2 A	2042 C	18.4 D
3	Cruiser MaxxBean	59.8 AB	60.1	5.0	5.0	18.8 AB	32.6 ABC	57.5 A	4.0 AB	5.9 AB	32.6 ABC	25.0 AB	2335 BC	12.7 AB	2318 BC	18.7 D
4	CMB + Dynasty	60.8 AB	60.3	5.0	5.0	12.0 ABCD	24.6 CD	49.6 AB	2.9 ABCD	5.3 ABC	24.6 CD	21.6 ABCD	2514 ABC	8.1 CDE	2503 BC	20.6 BCD
5	CMB + Dynasty + Rancona Summit	58.9 AB	60.1	5.0	5.0	9.2 BCD	26.5 BCD	48.3 AB	1.9 CDE	3.8 BC	26.5 BCD	16.4 BCD	2478 BC	7.8 DE	2467 BC	19.9 BCD
6	CMB + Sedaxane	61.4 AB	60.5	5.0	5.0	15.6 ABCD	37.9 A	55.3 A	4.0 A	6.5 AB	37.9 A	23.8 ABC	2178 C	12.1 ABCD	2162 C	18.9 CD
7	CMB + Sed + RS	61.9 AB	59.9	5.0	5.0	13.1 ABCD	31.3 ABC	49.1 AB	2.3 BCDE	6.8 AB	31.3 ABC	23.1 ABCD	2377 BC	8.4 BCDE	2366 BC	20.0 BCD
8	CMB + Dynasty + Sed	52.6 B	59.9	5.0	5.0	11.6 ABCD	25.4 BCD	44.4 AB	3.2 ABCD	4.4 BC	25.4 BCD	15.6 CD	2731 AB	7.9 DE	2721 AB	21.4 B
9	CMB + Dynasty + RS +Sed	61.1 AB	60.1	5.0	5.0	8.0 CD	20.2 DE	37.6 B	1.5 DE	5.0 ABC	20.2 DE	14.8 D	2695 AB	6.5 E	2686 AB	21.3 BC
10	Evergol Energy + Cruiser	62.5 AB	60.3	5.0	5.0	15.8 ABC	32.3 ABC	56.8 A	3.1 ABCD	5.4 ABC	32.3 ABC	18.4 BCD	2423 BC	10.4 BCDE	2409 BC	20.2 BCD
11	Insure Pulse + Cruiser	63.8 A	59.9	5.0	5.0	19.6 A	33.9 ABC	54.6 A	4.0 AB	6.3 AB	33.9 ABC	22.5 ABCD	2145 C	15.5 A	2125 C	19.4 BCD
12	RS + Cruiser	56.3 AB	60.5	5.0	5.0	18.1 AB	35.3 AB	58.1 A	3.4 ABC	5.2 ABC	35.3 AB	21.5 ABCD	2261 BC	12.7 ABC	2244 BC	18.8 D
Treatment Prob (F)		0.0333	0.6398	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0007	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
CV		7.1	1.1	0.0	0.0	38.3	28.2	23.2	74.7	86.8	28.2	36.8	8.2	18.6	8.3	5.0
LSD (p=0.05)		6.1	0.9	0.0	0.0	5.6	6.2	9.6	1.0	2.5	6.2	5.2	289	2.7	289	1.4

Trial Notes:

Design: RCBD with 4 replications
Planting Date: June 17
Plot: 4 rows, 15" (38 cm) spacing, 5 m long
Cultivar: Agrosy (Navy)
Harvest Date: Oct. 5
Harvest Area: 4 rows, 5 m strip
Seeding Rate: 17 seed/m of row
Seed Treatment: Vibrance 500FS, Maxim 480FS, Rancona, Acrus ST

Herbicide: May 15th - Pursuit (200 mL/ha) + Dual II Magnum (1.5 L/ha) PPI
Fertilizer: May 10th - 324 kg/ha of 20.8-13.8-20.8
Fungicide: August 29th - Lance (770 g/ha) + Allegro (7.0 L/ha)
Trt Application: Applied prior to planting, mixed in bags
Inoculum Application: Applied as infected seed, seed packages contained at least 13% infected seed.
Desiccation: September 8th - Eragon 146 mL/ha + Merge 1 L/ha, 210 L/ha Water Rate

Conclusions:

* a lack of rainfall in June and July reduced early season disease development in this study, which in turn reduced treatment results
* the seed treatments had little impact early season plant emergence or vigour
* each seed treatment had higher disease incidence and severity, compared to the non-inoculated control, but there were few differences in performance between the seed treatments
* seed treatments containing Dynasty tended to have lower disease incidence, severity and pick as well as higher yield and seed weight, but differences were not significant
* Disease pressure was sufficient to reduced the yields between the non-inoculated and the inoculated controls by 31%
* All treatments containing Dynasty, with the exception of treatment 5 (CMB + Dyn + RS), were able to achieve yields statistically the same as the non-inoculated control.
* When evaulating yield minus pick, only treatments containing Dynasty and Sedexane were able achieve statistically the same yield (minus pick) as the non-inoculated control.
* Anthracnose infection reduced seed weight. Dynasty and Sedexane increase seed weight compared to the inoculated control.

2023 Anthracnose Seed Treatment Head-to-Head Study B
Huron Research Station, Exeter Ontario

						Severity (%)							Seed Data			
		Emergence (%)		Vigour (1-5)		Stems			Leaves		Pods		Yield	Pick	Yield -Pick	Seed Wt
No	Treatment	8 DAP	13 DAP	8 DAP	13 DAP	53 DAP	68 DAP	83 DAP	53 DAP	68 DAP	68 DAP	83 DAP	kg/ha	%	kg/ha	(g/100)
1	Non-inoculated Control + Cruiser	56.9	58.3	5.0	5.0	2.8 B	3.3 C	5.7 B	0.7 B	1.0 C	1.2 C	1.7 B	2321 AB	1.2 C	2320 AB	22.0 A
2	Inoculated + Cruiser	56.6	58.0	5.0	5.0	10.1 A	30.8 AB	52.9 A	3.6 A	6.7 AB	6.0 AB	13.9 A	1784 B	6.8 A	1775 B	19.2 B
3	Cruiser MaxxBean	56.8	58.2	5.0	5.0	9.7 AB	31.6 AB	53.6 A	3.8 A	7.3 AB	5.8 AB	15.7 A	2103 AB	4.7 ABC	2097 AB	19.0 B
4	CMB + Dynasty	56.4	58.1	5.0	5.0	8.1 AB	20.7 AB	44.9 A	1.9 AB	4.3 ABC	3.8 ABC	11.7 AB	2493 A	4.2 ABC	2487 A	20.1 AB
5	CMB + Dynasty + Rancona Summit	56.7	58.2	5.0	5.0	5.7 AB	17.6 ABC	34.5 A	1.8 AB	3.6 ABC	3.1 BC	10.4 AB	2402 AB	2.7 BC	2398 AB	20.8 AB
6	CMB + Sedaxane	57.0	58.5	5.0	5.0	10.1 A	29.4 AB	51.5 A	2.1 AB	5.9 ABC	4.1 ABC	13.6 A	1944 AB	5.3 AB	1937 AB	19.3 B
7	CMB + Sed + RS	56.9	58.4	5.0	5.0	6.5 AB	21.4 AB	39.2 A	2.0 AB	4.1 ABC	5.1 AB	12.0 AB	2295 AB	4.6 ABC	2289 AB	20.2 AB
8	CMB + Dynasty + Sed	56.8	58.2	5.0	5.0	5.1 AB	14.9 BC	34.3 A	1.6 AB	3.0 BC	2.5 BC	8.5 AB	2243 AB	2.8 BC	2240 AB	20.2 AB
9	CMB + Dynasty + RS +Sed	56.6	58.1	5.0	5.0	7.5 AB	19.2 ABC	38.6 A	2.7 AB	3.8 ABC	2.7 BC	8.0 AB	2371 AB	3.1 ABC	2367 AB	20.1 AB
10	Evergol Energy + Cruiser	57.1	58.6	5.0	5.0	6.4 AB	24.3 AB	41.0 A	1.8 AB	4.8 ABC	3.9 ABC	11.8 AB	2208 AB	4.6 ABC	2201 AB	19.8 AB
11	Insure Pulse + Cruiser	56.4	58.1	5.0	5.0	10.1 A	27.9 AB	47.5 A	3.2 AB	8.5 A	7.2 A	15.4 A	2029 AB	5.8 AB	2021 AB	19.7 AB
12	RS + Cruiser	56.8	58.4	5.0	5.0	8.9 AB	32.8 A	54.9 A	2.8 AB	6.9 AB	5.5 AB	16.4 A	2406 AB	6.1 AB	2398 AB	19.3 B
Treatment Prob (F)		0.4177	0.4412	1.0000	1.0000	0.0112	0.0001	0.0001	0.0132	0.0016	0.0001	0.0024	0.0363	0.0006	0.0342	0.0073
CV		0.7	0.6	0.0	0.0	48.5	43.7	34.7	88.6	83.4	96.9	57.7	12.8	36.6	12.9	4.7
LSD (p=0.05)		0.6	0.5	0.0	0.0	4.1	10.0	13.4	1.6	3.2	2.4	6.3	409	2.3	409	1.4

Trial Notes:
Design: RCBD with 4 replications
Planting Date: June 29
Plot: 4 rows, 15" (38 cm) spacing, 5 m long
Cultivar: Agrosy (Navy)
Harvest Date: Oct 17
Harvest Area: 4 rows, 5 m strip
Seeding Rate: 17 seed/m of row
Seed Treatment: Vibrance 500FS, Maxim 480FS, Rancona, Acrus ST

Herbicide: May 15th Pursuit (200 mL/ha) + Dual II Magnum (1.5 L/ha) PPI
Fertilizer: May 10th - 324 kg/ha of 20.8-13.8-20.8
Fungicide: August 29th - Lance (770 g/ha) + Allegro (7.0 L/ha)
Trt Application: Applied prior to planting, mixed in bags
Inoculum Application: Applied as infected seed, seed packages contained at least 13% infected seed.
Desiccation: Oct 5 Eragon 146 mL/ha + Merge 1 L/ha, 210 L/ha Water Rate

Conclusions:
* a lack of rainfall in June and July reduced early season disease development in this study, which in turn reduced treatment results
* the seed treatments did not impact early season plant emergence or vigour
* each seed treatment had higher disease incidence and severity compared to the non-inoculated control, but there were few consistent differences in seed treatment p
* seed treatments containing Dynasty tended to have lower disease incidence, severity and pick as well as higher yield and seed weight, but differences were not signifi
*the non-inoluculated and inoculated control were different for all disease ratings, but not for yield. This indicates that disease pressure was too low to impact crop productivity.

2023 Adzuki Planting Date/Seeding Rate Study
Huron Research Station, Exeter Ontario

		Early Season Stand Assessments						Vegetative Growth Data					
		Emergence (%)			Vigour (1-10 Scale)			Height (cm)			Maturity (BBCH)		
		10 DAP	20 DAP	30 DAP	10 DAP	20 DAP	30 DAP	35 DAP	49 DAP	56 DAP	35 DAP	49 DAP	63 DAP
No.	A - Planting Date												
1	May 15th	.	69.8 B	70.6 B		5.0 B	5.0 B	10.4 C	21.4 C	38.7 C	13.9 B	18.6 C	50.9
2	May 31st	72.4 B	91.3 A	92.2 A		5.3 A	5.3 A	20.0 B	32.7 B	45.3 B	15.3 A	39.9 B	77.2
3	June 15th	85.6 A	94.7 A	93.9 A		5.0 B	4.9 B	21.9 A	35.7 A	50.4 A	15.8 A	59.5 A	77.7
Treatment Prob (F)		0.0004	0.0001	0.0001		0.0010	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
LSD (p=0.05)		6.6	4.1	4.1		1.0	0.1	1.3	1.6	3.0	0.4	3.8	1.3
	B - Seeding Rate												
1	150,000	77.8	86.5	87.0	4.8 A	5.0	4.9 B	15.9 B	27.6 B	41.3 B	15.3	42.6	69.8
2	225,000	82.4	84.7	85.3	5.3 A	5.1	5.0 AB	17.6 AB	29.6 AB	45.2 AB	15.1	39.7	67.3
3	300,000	79.6	85.0	85.2	5.3 A	5.2	5.2 A	17.7 AB	30.9 A	44.8 AB	14.9	38.1	69.1
4	375,000	76.2	84.9	84.8	5.3 A	5.1	5.2 A	18.4 A	31.7 A	48.0 A	14.7	37.0	68.2
Treatment Prob (F)		0.5604	0.8637	0.7723	0.1191	0.1494	0.002	0.0219	0.0004	0.0048	0.0523	0.0729	0.0163
LSD (p=0.05)		9.3	4.7	4.7		1.6	0.2	1.6	1.8	3.5	0.4	4.4	1.5
	A x B												
1	May 15th 150,000	.	70.2	72.1		5.0	5.0	9.7	18.7	35.4	14.0	19.9	54.3 B
2	May 15th 225,000	.	69.8	70.6		5.0	5.0	10.5	20.8	37.7	13.8	18.7	46.2 C
3	May 15th 300,000	.	69.2	70.7		5.0	5.0	10.7	23.5	37.0	13.9	18.3	52.8 B
4	May 15th 375,000	.	70.1	69.1		5.0	5.1	10.6	22.7	44.8	13.8	17.6	50.3 BC
5	May 31st 150,000	69.5	93.1	94.1		5.1	5.0	17.5	29.6	40.6	15.5	45.2	76.8 A
6	May 31st 225,000	78.4	89.0	89.6		5.2	5.3	20.9	32.8	47.5	15.5	40.1	77.6 A
7	May 31st 300,000	73.6	91.7	92.1		5.5	5.6	20.8	34.3	47.0	15.4	36.3	77.3 A
8	May 31st 375,000	68.1	91.6	93.1		5.4	5.5	20.6	34.3	46.1	14.9	38.1	77.1 A
9	June 15th 150,000	86.2	96.2	94.9		5.0	4.8	20.5	34.4	47.8	16.3	62.8	78.3 A
10	June 15th 225,000	86.4	95.3	95.9		5.0	4.9	21.5	35.3	50.3	16.0	60.3	78.2 A
11	June 15th 300,000	85.6	94.2	92.8		5.0	4.9	21.6	35.0	50.6	15.6	59.7	77.1 A
12	June 15th 375,000	84.4	93.0	92.1		5.0	5.0	23.8	38.1	53.0	15.2	55.3	77.3 A
Treatment Prob (F)		0.7442	0.9785	0.9093		0.1109	0.0586	0.5188	0.4434	0.4081	0.6813	0.7868	0.0005
CV		11.2	4.8	4.9	6.1	2.7	3.6	13.8	9.2	9.5	3.6	13.5	2.7
LSD (p=0.05)		13.1	8.2	8.1	0.5	1.1	0.3	2.7	3.2	6.0	0.8	7.6	2.7

		NDVI			DW/PLT (g/plt)			Count (plt/m row)			Seed Data (at 18%)			
											Yield	100 Seed	<9/64"	Moisture
		35 DAP	49 DAP	63 DAP	35 DAP	49 DAP	63 DAP	35 DAP	49 DAP	63 DAP	kg/ha	g	g	%
No.	A - Planting Date													
1	May 15th	0.27 C	0.69 B	0.78	0.4	1.8 C	7.5 B	23.4 B	20.0	16.3	2382 B	11.4 C	28.6 A	13.0
2	May 31st	0.56 A	0.71 AB	0.78	0.9	6.9 A	7.2 B	31.7 A	23.8	18.8	2470 B	12.1 B	18.5 B	13.1
3	June 15th	0.49 B	0.74 A	0.86	1.3	3.8 B	10.3 A	22.9 B	21.1	18.2	3016 A	12.6 A	34.0 A	12.9
Treatment Prob (F)		0.0001	0.0010	0.0001	0.0001	0.0001	0.0001	0.0037	0.3571	0.1418	0.0001	0.0001	0.0001	0.4185
LSD (p=0.05)		0.03	0.02	0.01	0.1	0.7	1.1	5.5	5.3	2.7	193	0.3	6.5	0.3
	B - Seeding Rate													
1	150,000	0.37 C	0.65 C	0.78	1.0	5.0 A	10.2 A	15.8 C	12.9 C	10.9 C	2474	12.1	21.9	13.0
2	225,000	0.43 B	0.71 B	0.81	0.9	4.4 AB	9.0 AB	22.1 BC	17.8 BC	15.6 B	2609	11.9	26.1	13.2
3	300,000	0.47 A	0.74 AB	0.83	0.8	3.9 BC	7.7 BC	29.4 AB	23.9 AB	18.1 B	2737	12.2	31.4	12.9

4	375,000	0.48 A	0.75 A	0.82	0.7	3.2 C	6.3 C	36.8 A	31.9 A	26.4 A	2669	12.0	28.7	13.1
Treatment Prob (F)		0.0001	0.0001	0.0001	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	0.1210	0.6177	0.0815	0.3396
LSD (p=0.05)		0.03	0.03	0.02	0.1	0.8	1.2	6.3	6.1	3.1	223	0.4	7.5	0.3
A x B														
1 May 15th	150,000	0.23	0.61	0.75 E	0.4 E	2.2	9.6	16.8	12.8	10.3	2232	11.5	23.0	13.1
2 May 15th	225,000	0.27	0.70	0.78 DE	0.4 E	2.2	7.6	19.5	15.8	15.0	2351	11.3	28.7	13.2
3 May 15th	300,000	0.28	0.72	0.80 D	0.4 E	1.8	6.7	27.3	21.5	15.5	2450	11.6	30.9	12.8
4 May 15th	375,000	0.30	0.75	0.81 CD	0.4 E	1.3	6.1	30.3	30.2	24.3	2493	11.4	31.7	13.1
5 May 31st	150,000	0.47	0.63	0.75 E	0.9 CD	8.0	8.0	18.8	12.8	12.0	2247	12.1	11.6	13.0
6 May 31st	225,000	0.57	0.72	0.79 DE	1.0 CD	7.4	8.6	25.3	20.0	15.5	2458	12.0	21.9	13.1
7 May 31st	300,000	0.60	0.74	0.81 BCD	0.8 D	6.7	6.7	37.8	29.3	20.8	2698	12.1	22.8	13.1
8 May 31st	375,000	0.60	0.75	0.78 DE	0.8 D	5.4	5.4	45.0	33.0	27.0	2476	12.3	17.8	13.3
9 June 15th	150,000	0.42	0.71	0.86 AB	1.7 A	4.9	13.1	11.8	13.3	10.5	2944	12.7	31.0	13.0
10 June 15th	225,000	0.44	0.72	0.85 ABC	1.3 B	3.7	10.9	21.5	17.5	16.3	3017	12.5	27.7	13.2
11 June 15th	300,000	0.54	0.76	0.86 A	1.2 BC	3.3	9.7	23.3	21.0	18.0	3062	12.8	40.4	12.7
12 June 15th	375,000	0.54	0.76	0.86 AB	1.1 BCD	3.1	7.6	35.0	32.5	28.0	3039	12.3	36.7	12.9
Treatment Prob (F)		0.1339	0.1186	0.0200	0.0001	0.4477	0.3438	0.5453	0.9149	0.8281	0.9041	0.8110	0.7193	0.8874
CV		9.7	5.2	2.8	13.5	22.4	17.6	29.4	33.3	20.9	10.2	3.8	33.2	3.0
LSD (p=0.05)		0.06	0.04	0.03	0.2	1.3	2.1	11.0	10.6	5.3	386	0.7	12.9	0.6

Trial Notes:

Design: RCBD with 4 replications
Planting Dates: May 15th, May 31st, and June 17th
Plot: 4 rows, 30" (76 cm) spacing, 10 m long
Cultivar: Erimo (Adzuki)
Harvested: 2 rows. Sept. 29th (1st and 2nd plantings) and Oct. 3rd (3rd planting
Harvest Area: 2 rows, 8 m strip
Seeding Rate: Dependent on Treatment
Seed Treatment: Vibrance 500FS + Apron Maxx Bean

Harvest Length: 8 m
Plot Length: 10 m
Herbicide (PRE): Roundup WeatherMax (2.5 L/ha) + Pursuit (198 mL/ha) - May 13th
Herbicide (POST): 1st and 2nd Planting (PRE to Third planting) - June 6th - Reflex (1L/ha) + Agral 90 (0.1% V/V)
Fertilizer: None
Fungicide: None
Desiccation: Sept. 21st (1st planting), Sept. 21st (2nd planting), Sept. 25th (3rd planting)
For all desiccation timings - Eragon (146 mL/ha) + Merge(1 L/ha)

Conclusions:

* May 15 planting date had lower emergence, plant counts and vigour, as well as plant height, NDVI and plant dry weight than the other planting dates due to colder temperatures
* May 31 planting date had some decrease in plant height and development, but higher NDVI than the June 15 planting date
* May 31 planting date had the lowest small seed (<9/64") values
* June 15 planting date had the higher yield and seed weight than other planting dates, due to higher rainfall at pod fill
* as seeding rate decreased, there was a decrease in plant vigour, plant height and NDVI score, while plant dry weight increased.
* seeding rate did not impact yield, seed weight or seed size
* There was no interaction between seeding rate and planting date on yield, seed weight, or seed size

2023 Starter Fertilizer Trial - Adzuki
Huron Research Station, Exeter Ontario

				Early Season Stand Assessments					Vegetative Growth Assessments							
				Emergence (%)			Vigour (1-5)		NDVI				Dry Weight (g/plant)			
No.	Treatment	Application	P Rate kg/ha	7 DAP	14 DAP	21 DAP	14 DAP	21 DAP	21 DAP	28 DAP	42 DAP	56 DAP	21 DAP	28 DAP	42 DAP	56 DAP
1	Untreated Control	--	0	29.2 ABC	70.6 AB	73.2	4.9	5.0	0.16 B	0.21 B	0.46 D	0.60 B	0.1	0.3	1.2 B	4.4 B
2	MAP	Broadcast	30	39.2 A	73.9 A	74.5	5.1	5.0	0.18 AB	0.25 AB	0.49 CD	0.63 AB	0.1	0.3	1.5 AB	5.2 AB
3	MAP	Broadcast	60	40.1 A	73.5 AB	75.9	5.1	5.0	0.17 AB	0.25 AB	0.55 ABC	0.67 AB	0.1	0.3	1.4 AB	5.7 AB
4	MAP	Banded	30	34.9 ABC	71.1 AB	71.9	5.3	5.0	0.19 A	0.27 AB	0.61 AB	0.69 A	0.2	0.4	2.3 A	8.1 AB
5	MAP	Banded	60	24.4 ABC	68.8 AB	72.9	5.1	5.0	0.17 AB	0.26 AB	0.63 A	0.69 A	0.1	0.4	2.1 AB	8.6 A
6	MAP+$MnSO_4$	Banded	30+5	35.4 AB	72.8 AB	72.3	5.0	5.0	0.19 A	0.28 A	0.60 AB	0.66 AB	0.1	0.4	2.1 AB	7.2 AB
7	MAP+$ZnSO_4$	Banded	30+5	27.5 ABC	67.9 AB	72.0	4.9	5.0	0.18 AB	0.26 AB	0.57 ABC	0.63 AB	0.1	0.3	1.6 AB	6.5 AB
8	MAP+$MnSO_4$+$ZnSO_4$	Banded	30+5+5	24.9 ABC	67.5 B	70.8	5.1	5.0	0.18 AB	0.29 A	0.61 AB	0.65 AB	0.1	0.4	2.2 AB	7.0 AB
9	MESZ	Banded	30	18.9 C	70.6 AB	70.2	4.9	5.0	0.17 AB	0.24 AB	0.53 BCD	0.62 AB	0.1	0.3	1.7 AB	6.7 AB
10	MESZ	Banded	60	20.1 BC	68.9 AB	71.0	5.0	5.0	0.17 AB	0.26 AB	0.60 AB	0.70 A	0.1	0.3	1.8 AB	8.1 A
Treatment Prob (F)				0.0003	0.0116	0.1404	0.2548	1.0000	0.0332	0.0087	0.0001	0.0034	0.3162	0.0479	0.0119	0.0121
CV				32.9	4.0	4.3	4.5	0.0	7.0	13.9	4.9	9.0	11.9	13.5	24.9	22.7
LSD (p=0.05)				9.6	3.8	3.9	0.3	0.0	0.0	0.0	0.1	0.1	0.0	0.1	0.6	2.3

				Tissue Samples													
				N (%)		P (%)		Mn (ppm)		Cu (ppm)		Fe (ppm)		B (ppm)		S (%)	
No.	Treatment	Application	P Rate kg/ha	42 DAP	59 DAP	42 DAP	59 DAP	42 DAP	59 DAP	42 DAP	59 DAP	42 DAP	59 DAP	42 DAP	59 DAP	42 DAP	59 DAP
1	Untreated Control	--	0	3.7 D	3.6 AB	0.44 C	0.41 B	79.9 C	64.6 ABC	9.8 AB	8.9	726.4 A	402 AB	28.7 A	26.2	0.24 C	0.24 B
2	MAP	Broadcast	30	3.7 D	3.7 AB	0.43 C	0.44 AB	80.3 C	65.0 ABC	9.8 ABC	9.0	655.3 AB	408 A	28.8 A	26.1	0.24 BC	0.26 AB
3	MAP	Broadcast	60	3.9 CD	3.7 AB	0.47 BC	0.46 AB	79.4 C	62.3 ABC	9.9 A	8.9	680.5 AB	327 ABC	27.9 AB	25.6	0.24 BC	0.26 AB
4	MAP	Banded	30	4.2 BCD	3.6 AB	0.54 ABC	0.46 AB	75.7 C	59.9 BC	9.5 ABCD	10.2	506.5 B	237 C	27.2 AB	25.3	0.25 ABC	0.24 B
5	MAP	Banded	60	4.4 AB	3.7 AB	0.62 A	0.50 A	82.7 BC	58.5 C	9.0 ABCD	9.6	621.5 AB	248 BC	25.7 AB	24.6	0.26 ABC	0.25 B
6	MAP+$MnSO_4$	Banded	30+5	4.3 ABC	3.6 AB	0.58 AB	0.45 AB	96.1 B	68.3 ABC	8.7 ABCD	9.5	693.3 AB	302 ABC	26.1 AB	26.2	0.27 A	0.26 AB
7	MAP+$ZnSO_4$	Banded	30+5	4.0 BCD	3.4 B	0.51 ABC	0.43 B	79.4 C	67.0 ABC	8.2 CD	9.5	617.6 AB	343 ABC	27.3 AB	27.3	0.25 ABC	0.25 B
8	MAP+$MnSO_4$+$ZnSO_4$	Banded	30+5+5	4.4 AB	3.4 AB	0.56 ABC	0.43 B	115.5 A	71.9 A	8.1 D	9.2	534.9 AB	278 ABC	26.7 AB	27.1	0.27 AB	0.26 AB
9	MESZ	Banded	30	4.1 BCD	3.7 AB	0.48 BC	0.46 AB	79.7 C	64.0 ABC	8.9 ABCD	9.2	699.5 AB	351 ABC	27.5 AB	24.9	0.26 ABC	0.27 AB
10	MESZ	Banded	60	4.8 A	3.8 A	0.61 AB	0.47 AB	80.9 C	69.7 AB	8.3 BCD	8.6	629.3 AB	317 ABC	24.0 B	26.5	0.27 A	0.28 A
Treatment Prob (F)				0.0001	0.0195	0.0002	0.0108	0.0001	0.0034	0.0007	0.5048	0.0091	0.0073	0.0151	0.1823	0.0006	0.0010
CV				4.9	4.7	10.9	6.1	6.8	6.7	6.9	8.0	12.5	22.0	6.3	5.6	4.3	15.0
LSD (p=0.05)				0.3	0.2	0.1	0.0	8.4	6.3	0.9	1.1	115.1	N/A*	2.5	2.1	0.0	0.0

				Seed Data			Seed Composition Data					
No.	Treatment	Application	P Rate kg/ha	Yield kg/ha	Seed Wt g/100	Seed<9/64" (g)	N %	P %	K %	Fe PPM	B PPM	S %
1	Untreated Control	--	0	1904 B	13.9	8.4	2.87	0.40	1.36	50.5 B	13.3	0.161
2	MAP	Broadcast	30	2145 AB	13.4	6.1	2.89	0.41	1.38	66.2 AB	13.7	0.158
3	MAP	Broadcast	60	2312 AB	13.7	8.8	2.89	0.41	1.35	60.0 AB	12.3	0.160
4	MAP	Banded	30	2680 A	13.9	9.8	2.91	0.41	1.35	73.6 AB	13.1	0.161
5	MAP	Banded	60	2549 A	13.9	10.4	2.90	0.42	1.36	113.3 A	12.7	0.163
6	MAP+$MnSO_4$	Banded	30+5	2476 AB	13.9	8.4	2.88	0.41	1.34	60.7 AB	12.9	0.168
7	MAP+$ZnSO_4$	Banded	30+5	2305 AB	13.8	9.9	2.91	0.40	1.33	60.3 AB	13.9	0.161
8	MAP+$MnSO_4$+$ZnSO_4$	Banded	30+5+5	2535 A	13.7	10.5	2.90	0.40	1.34	75.0 AB	13.9	0.161
9	MESZ	Banded	30	2184 AB	13.9	9.3	2.88	0.41	1.33	57.9 AB	12.9	0.167
10	MESZ	Banded	60	2646 A	14.1	9.8	2.90	0.41	1.34	55.7 B	12.9	0.164
Treatment Prob (F)				0.0014	0.4325	0.5475	0.9833	0.1495	0.4734	0.0477	0.2875	0.1264
CV				10.0	2.5	30.3	1.9	2.6	2.2	35.2	7.1	2.9
LSD (p=0.05)				344.1	0.5	4.0	0.1	0.0	0.0	34.4	1.4	0.0

Trial Notes:

Design: RCBD with 4 replications
Planting Date: May 30th 2023 4 rows @ 76 cm and 10 meter length
Soil P Test: 9 ppm
Plot: 4 rows, 30" (76 cm) spacing, 10 m long
Cultivar: Adzuki (Erimo)
Harvest Date: Sept. 15th, 2023

Seeding Rate: 21 seed/m of row
Seed Treatment: Vibrance 500FS, Maxim 480FS, Rancona, Acrus ST
Herbicide: May 15th - Pursuit (200 mL/ha) PPI
Trt Application: Broadcast treatments applied by hand and incorporated May 29th. Banded treatments applied with planter May 30th.
Desiccation: September 8th - Eragon 146 mL/ha + Merge 1 L/ha, 210 L/ha Water Rate

Conclusions

* Slight emergence differences were due to a deeper planting depth, to compensate for dry soil conditions
* fertilizer treatments had a slight effect on plant height and development and plant counts compared to the untreated control, but differences were often NS
* High rate of banded MAP and MESZ doubled plant dry weight, compared to the untreated control
* banded fertilizer treatments tended to have higher plant N, P and S content at 42 DAP, but lower Cu and B content. Treatment differences were mostly NS
* data for tissue samples (K, Mg, Ca, Zn) and seed samples (Mg, Ca, Zn, Mn, Cu) not presented.
* banded Mn fertilizer (trt 6 and 8) increased plant Mn content at 42 DAP
* banded MAP (both rates), MAP+Mn+Zn and MESZ (high rate) had higher yield than the untreated control
* there were no differences in seed nutrient composition, for any of the nutrients analyzed

2023 Starter Fertilizer Trial - Dark Red Kidney Bean
Huron Research Station, Exeter Ontario

				Early Season Stand Assessments													
				Percent Seed Emerged			Vigour (1-10 Scale)		Height (cm)		NDVI				DW/PLT (g/plt)	
No.	Treatment	Application	P Rate kg/ha	7 DAP	14 DAP	21 DAP	14 DAP	21 DAP	42 DAP	56 DAP	21 DAP	28 DAP	42 DAP	56 DAP	21 DAP	42 DAP
1	Untreated Control	--	0	26.2	39.4	41.3	4.9 AB	4.9	26.3 ABC	36.7	15.6 AB	27.6	47.3 AB	51.1 AB	0.5	3.0 C
2	MAP	Broadcast	30	20.1	30.6	31.8	4.6 B	4.6	23.6 C	37.8	14.5 B	23.9	40.4 B	43.4 B	0.4	3.9 ABC
3	MAP	Broadcast	60	14.9	42.1	45.8	5.0 AB	5.0	24.8 BC	34.6	16.5 AB	31.0	57.9 A	61.3 A	0.3	3.4 BC
4	MAP	Banded	30	24.9	39.8	41.0	5.0 AB	4.6	28.7 ABC	37.4	16.8 AB	31.6	50.5 AB	56.3 AB	0.4	3.9 ABC
5	MAP	Banded	60	21.0	33.6	37.1	5.0 AB	4.9	28.3 ABC	37.2	17.0 AB	30.6	52.5 AB	59.5 AB	0.4	4.5 ABC
6	MAP+$MnSO_4$	Banded	30+5	16.7	30.5	33.1	4.8 AB	4.8	30.6 ABC	42.7	15.9 AB	34.1	50.8 AB	53.4 AB	0.4	4.8 ABC
7	MAP+$ZnSO_4$	Banded	30+5	14.2	34.9	38.1	4.9 AB	4.8	26.7 ABC	40.5	16.0 AB	30.6	49.1 AB	56.6 AB	0.4	4.9 ABC
8	MAP+$MnSO_4$+$ZnSO_4$	Banded	30+5+5	14.3	47.1	48.3	5.1 AB	5.1	32.0 A	38.6	19.8 A	35.4	61.5 A	64.3 A	0.5	5.1 AB
9	MESZ	Banded	30	24.6	47.3	49.3	5.3 A	5.1	31.7 AB	39.6	17.8 AB	31.6	62.3 A	64.5 A	0.5	5.3 A
10	MESZ	Banded	60	22.3	45.0	48.2	5.0 AB	5.1	25.8 ABC	38.3	18.3 AB	36.1	61.4 A	67.5 A	0.5	4.8 ABC
Treatment Prob (F)				0.0333	0.0494	0.0650	0.0456	0.0433	0.0022	0.4968	0.0252	0.0552	0.0005	0.0021	0.1658	0.0029
CV				49.7	33.9	33.5	4.8	5.3	11.9	9.2	16.6	18.2	19.7	14.3	18.7	18.0
LSD (p=0.05)				8.5	12.4	12.8	0.3	0.4	4.2	6.6	0.0	0.1	0.1	0.1	0.1	1.1

				Tissue Nutrient Composition											
				N (%)		P (%)		Mg (%)		Zn		Mn		B	
No.	Treatment	Application	P Rate kg/ha	July 10th	July 17th	July 10th	July 17th	July 10th	July 17th	July 10th	July 17th	July 10th	July 17th	July 10th	July 17th
1	Untreated Control	--	0	4.69 CD	4.43	0.64 CD	0.58	0.28 A	0.29	48.9 ABCD	51.3 ABC	31.1 AB	19.1	28.6 A	35.1 A
2	MAP	Broadcast	30	4.62 D	4.76	0.62 D	0.59	0.27 AB	0.26	47.8 CD	47.2 BC	32.1 AB	17.0	27.3 AB	29.6 AB
3	MAP	Broadcast	60	4.82 BCD	4.74	0.65 BCD	0.63	0.28 AB	0.26	49.1 ABCD	54.4 ABC	32.3 AB	21.0	27.9 A	30.9 AB
4	MAP	Banded	30	5.16 ABC	4.73	0.70 ABC	0.65	0.26 AB	0.27	44.5 D	61.7 AB	29.4 B	23.1	23.1 C	29.3 AB
5	MAP	Banded	60	5.15 ABC	4.76	0.72 AB	0.66	0.27 AB	0.24	46.1 CD	39.5 C	31.5 AB	22.0	23.9 C	25.7 B
6	MAP+$MnSO_4$	Banded	30+5	5.22 AB	4.76	0.70 ABC	0.66	0.27 AB	0.26	48.8 BCD	55.3 ABC	39.4 AB	27.7	25.6 ABC	29.1 AB
7	MAP+$ZnSO_4$	Banded	30+5	5.05 ABCD	4.64	0.71 ABC	0.69	0.27 AB	0.28	51.2 ABCD	64.7 A	34.3 AB	25.0	24.6 BC	30.2 AB
8	MAP+$MnSO_4$+$ZnSO_4$	Banded	30+5+5	5.10 ABCD	4.71	0.72 AB	0.64	0.27 AB	0.25	52.5 ABC	50.4 ABC	43.9 A	25.3	24.3 BC	28.0 AB
9	MESZ	Banded	30	5.40 A	4.59	0.73 A	0.59	0.26 AB	0.25	55.5 AB	52.5 ABC	32.3 AB	25.0	23.9 C	27.6 AB
10	MESZ	Banded	60	5.25 AB	4.93	0.74 A	0.70	0.26 B	0.25	56.1 A	61.0 AB	36.3 AB	27.9	22.5 C	26.2 B
Treatment Prob (F)				0.0001	0.6731	0.0001	0.0359	0.0274	0.3313	0.0001	0.0011	0.0340	0.0832	0.0001	0.0232
CV				4.1	6.5	4.7	8.3	3.4	11.7	5.8	12.9	16.4	21.0	5.0	11.2
LSD (p=0.05)				0.3	0.4	0.0	0.1	0.0	0.0	4.3	10.2	8.2	7.3	1.8	4.7

				Harvest Parameters				rient Composition				
No.	Treatment	Application	P Rate kg/ha	Yield kg/ha	Moisture %	Seed Wt g/100	Quality (1-5)	N %	P %	K %	Mn ppm	S %
1	Untreated Control	--	0	1541 BC	11.2	51.7	3.1 A	3.61	0.44 A	1.16 AB	9.52	0.20
2	MAP	Broadcast	30	1333 C	11.3	54.6	2.5 AB	3.51	0.43 AB	1.18 A	10.11	0.19
3	MAP	Broadcast	60	1969 ABC	11.1	57.0	2.5 AB	3.37	0.41 AB	1.13 AB	9.02	0.18
4	MAP	Banded	30	1948 ABC	12.0	58.9	2.1 B	3.25	0.40 AB	1.12 AB	8.45	0.18
5	MAP	Banded	60	1998 ABC	11.8	54.2	2.6 AB	3.68	0.43 AB	1.15 AB	9.31	0.19
6	MAP+$MnSO_4$	Banded	30+5	1958 ABC	11.4	59.3	2.3 B	3.29	0.39 B	1.15 AB	8.66	0.19
7	MAP+$ZnSO_4$	Banded	30+5	1835 ABC	11.8	56.4	2.6 AB	3.57	0.44 AB	1.17 AB	9.27	0.19
8	MAP+$MnSO_4$+$ZnSO_4$	Banded	30+5+5	2080 AB	11.4	55.9	2.6 AB	3.51	0.42 AB	1.12 AB	9.02	0.19
9	MESZ	Banded	30	2330 A	11.5	58.5	2.4 AB	3.45	0.41 AB	1.13 AB	9.08	0.20
10	MESZ	Banded	60	2194 AB	11.6	58.1	2.1 B	3.47	0.41 AB	1.10 B	9.60	0.20
Treatment Prob (F)				0.0025	0.2853	0.1154	0.0102	0.1404	0.0072	0.0254	0.1807	0.1905
CV				15.3	4.5	6.4	13.5	6.0	4.6	2.6	8.3	6.2
LSD (p=0.05)				426.8	0.8	5.2	0.5	0.3	0.0	0.0	1.1	0.02

Trial Notes:
Design: RCBD with 4 replications
Planting Date: May 30th 2023 4 rows @ 76 cm and 10 meter length
Soil P Test: 9 ppm
Plot: 4 rows, 30" (76 cm) spacing, 10 m long
Cultivar: Kidney (Dynasty)
Harvest Date: Sept. 20th, 2023

Seeding Rate: 17 seed/m of row
Seed Treatment: Vibrance 500FS, Maxim 480FS, Rancona, Acrus ST
Herbicide: May 15th - Pursuit (200 mL/ha) PPI
Trt Application: Broadcast treatments applied and incorporated May 29th. Banded treatments applied at planting May 30th.
Desiccation: September 8th - Eragon 146 mL/ha + Merge 1 L/ha, 210 L/ha Water Rate

Conclusions
* Trt 2 (MAP low broadcast) had lower height, NDVI and yield from a lower plant stand due to shallow planting depth
* there were few starter fertilizer benefits to the growth and yield of dark red kidney beans
* Tissue and seed nutrient composition analysis were not affected by the fertilizer treatments.
* Trt 9 (75 MESZ) had the best stand and growth parameters, where significant differences occurred.
* banded trts (4-10) had higher tissue N and P but lower tissue B levels. There were few treatment differences for the other nutrients analyzed
* Trt 9 (75 MESZ) had higher yield than trt 1 (Control)

2023 Adzuki Nitrogen Fertilizer Rate/Timing Study
Huron Research Station, Exeter Ontario

		Early Stand Assessment					Vegetative Growth Assessments														
		Emergence %			Vigour 1-10 Scale		Height cm			Maturity BBCH			NDVI (0-1)			DW/PLT g/plant			Count plant / m row		
No	Trt Name	7 DAP	14 DAP	21 DAP	14 DAP	21 DAP	28 DAP	42 DAP	56 DAP	28 DAP	42 DAP	56 DAP	28 DAP	42 DAP	56 DAP	28 DAP	42 DAP	56 DAP	28 DAP	42 DAP	56 DAP
1	Untreated Control	0.0	90.8	134.9	5.0	5.0	5.3	11.2	19.4	12.9	14.7	21.3	0.2	0.3	0.6	0.1	0.3	2.1	21.5	21.4	21.5
2	50 kg/ha broadcast	0.0	100.9	137.4	5.0	5.0	5.3	10.7	19.7	12.9	14.9	22.5	0.2	0.3	0.6	0.1	0.5	2.2	18.8	20.1	20.8
3	100 kg/ha broadcast	0.0	111.6	149.5	4.9	5.5	5.8	11.5	21.6	12.8	14.8	22.3	0.2	0.3	0.7	0.1	0.4	2.3	22.5	20.8	21.3
4	50 kg/ha banded	0.0	102.3	149.9	4.4	5.0	6.5	11.0	21.2	12.9	14.7	20.8	0.2	0.3	0.6	0.1	0.4	2.0	20.8	20.9	24.3
5	100 kg/ha banded	0.0	104.1	140.6	5.3	5.3	5.5	11.6	22.9	12.9	14.8	22.4	0.2	0.3	0.7	0.1	0.5	2.5	22.3	26.0	21.8
6	25/25 kg/ha broad/band	0.0	96.2	144.4	4.5	5.1	6.3	9.9	19.8	12.9	14.7	22.3	0.2	0.3	0.6	0.1	0.4	2.3	20.8	23.2	19.3
7	50/50 kg/ha braod/band	0.0	103.3	140.5	4.6	5.0	6.2	10.8	19.9	12.9	14.8	22.5	0.2	0.3	0.6	0.1	0.5	2.0	21.5	22.2	22.0
Treatment Prob (F)		1.0000	0.8211	0.7552	0.6214	0.4552	0.3578	0.4793	0.4442	0.8332	0.8636	0.7079	0.4384	0.3652	0.0737	0.1280	0.3268	0.3517	0.6511	0.4953	0.5508
CV		0.0	7.4	7.6	15.1	7.5	23.5	12.0	8.0	1.0	1.7	7.6	6.5	7.2	4.3	10.7	20.1	16.2	14.1	20.7	15.2
LSD (p=0.05)		0.0	28.2	22.8	1.1	0.3	1.3	1.7	3.8	0.2	0.4	2.6	0.0	0.0	0.1	0.0	0.1	0.5	4.4	0.3	4.9

		Tissue Samples																					
		6th Trifoliate Tissue Sample											Full Bloom Tissue Sample										
		N	P	K	Mg	Ca	Zn	Mn	Cu	Fe	B	S	N	P	K	Mg	Ca	Zn	Mn	Cu	Fe	B	S
Trt	Trt Name	%	%	%	%	%	PPM	PPM	PPM	PPM	PPM	%	%	%	%	%	%	PPM	PPM	PPM	PPM	PPM	%
1	Untreated Control	4.75	0.66 AB	2.13	0.27	0.71	44.1	73.0 B	10.0	1036	24.1	0.30	3.15	0.38 C	1.51 AB	0.31	1.19	30.7	85.5	8.92	671	30.3	0.20
2	50 kg/ha broadcast	5.09	0.62 AB	1.96	0.26	0.80	43.1	80.8 AB	8.9	1430	24.7	0.30	3.15	0.40 BC	1.46 B	0.29	1.10	31.0	78.9	8.92	649	27.4	0.21
3	100 kg/ha broadcast	4.84	0.65 AB	2.06	0.27	0.78	44.3	77.7 AB	11.3	1198	25.1	0.30	3.37	0.44 AB	1.67 AB	0.29	1.09	30.2	75.3	7.98	459	27.4	0.22
4	50 kg/ha banded	4.54	0.61 B	2.03	0.31	0.90	44.2	93.2 A	10.0	1799	27.3	0.30	3.38	0.42 ABC	1.62 AB	0.31	1.15	31.0	81.3	9.27	637	27.1	0.20
5	100 kg/ha banded	5.14	0.68 A	2.19	0.26	0.75	43.9	70.1 B	10.4	1088	23.7	0.30	3.50	0.46 A	1.75 A	0.30	1.11	35.1	77.8	9.15	463	27.6	0.21
6	25/25 kg/ha broad/band	4.89	0.64 AB	1.97	0.29	0.86	43.0	89.5 AB	10.1	1743	26.6	0.29	3.44	0.44 AB	1.57 AB	0.30	1.10	32.7	74.9	9.09	586	26.3	0.21
7	50/50 kg/ha braod/band	4.63	0.66 AB	2.10	0.28	0.75	46.3	79.2 AB	11.1	1219	25.3	0.30	3.51	0.42 ABC	1.56 AB	0.30	1.12	30.1	78.0	8.35	623	27.3	0.21
Treatment Prob (F)		0.1107	0.0279	0.0930	0.0593	0.0905	0.8398	0.0133	0.1465	0.0300	0.1704	0.9349	0.1420	0.0037	0.0303	0.5639	0.7740	0.3647	0.2099	0.4789	0.2227	0.5185	0.7618
CV		6.4	4.4	5.7	7.7	11.4	7.4	10.7	11.8	25.9	7.7	5.9	6.7	6.1	7.1	7.0	8.4	10.6	7.3	10.9	24.3	9.5	6.5
LSD (p=0.05)		0.46	0.04	0.17	0.03	0.13	4.9	12.8	1.8	522	2.9	0.03	0.33	0.04	0.17	0.03	0.14	5.0	8.6	1.42	210.7	3.9	0.02

		Seed Data (19% H2O)				
		Yield	100 Seed	<9/64"	Moisture	N
Trt	Trt Name	kg/ha	g	g @ 18%	%	%
1	Untreated Control	1900	12.2 B	55.4	12.3	2.9 B
2	50 kg/ha broadcast	2288	12.8 AB	37.0	12.5	3.0 AB
3	100 kg/ha broadcast	2496	12.6 AB	56.3	12.5	3.0 AB
4	50 kg/ha banded	2257	12.9 AB	31.3	12.4	3.0 AB
5	100 kg/ha banded	2758	13.2 A	60.0	12.2	3.0 AB
6	25/25 kg/ha broad/band	2478	13.0 AB	55.3	12.1	3.0 AB
7	50/50 kg/ha braod/band	2561	13.5 A	34.1	12.1	3.2 A
Treatment Prob (F)		0.2323	0.0088	0.2060	0.7913	0.0464
CV		18.7	3.1	41.4	3.6	2.8
LSD (p=0.05)		664	0.6	28.9	0.7	0.1

Trial Notes:

Design: RCBD with 4 replications
Planting Date: May 18th, 2023
Row Width: 4 rows at 30 inch (76 cm)
Number of Rows Harvested: 2 rows
Seeding Rate: 21 seeds/m row
Treatment Application:
Broadcasted treatments at planting
Banded treatments - July 12th - rain incorporated

Plot Length: 10 m
Harvest Length: 8 m
Herbicide (PRE): May 15th, 2023 - Pursuit (198 mL/ha)
Herbicide (POST): June 23rd, 2023 - Reflex (1 L/ha) + Agral 90 (0.1% V/V)
Fertilizer: No fertility other than treatments
Fungicide: None Applied
Desiccation: Sept 8th Eragon (146 mL/ha) + Merge (1 L/ha)
Harvest Date: September 15th, 2023

Notes: Planting error resulting in a higher than targetted planting rate. Middle two rows designated for harvest and the 8 meters in the left-most row were thinned to 20 plants per meter. Thinned on June 14th and 15th.

Conclusions:

* no treatment differences were measured in season vegetative growth and development including plant population and vigour, plant height and maturity and NDVI
* no treatment differences were measured for in season nitrogen tissue analysis
* treatment differences were measured for in season P, K and Mn tissue analysis, but there was no clear pattern in the results
* no treatment differences were measured for in season Mg, Ca, Zn, B, Fe and S tissue analysis
* no treatment differences were measured for seed yield but all nitrogen treatments had higher values
* late nitrogen timing tended to increase 100 seed weight
* late nitrogen timing tended to increase seed nitrogen content

2023 Soybean Variety Performance Conventional Cultivars
University of Guelph, Huron Research Station

No.	Name	Yield kg/ha	Yield bu/ac	Rank	Seed Wt (g/100)	Seed Quality (1-5)	Days to Maturity	Lodging Score	Plant Height (cm)
1	Acora	4985	74.1	44	20.0	1.8	130	1.2	104
2	HDC Blake	5003	74.4	43	26.0	1.5	137	1.8	103
3	Marula	4242	63.1	65	22.2	1.8	127	1.0	97
4	Skyline	4863	72.3	55	18.8	1.5	132	1.2	95
5	S14-H3	5349	79.5	23	21.5	1.5	132	1.0	96
6	S10-R2	4918	73.1	51	19.6	1.5	127	1.8	103
7	OAC 13-50C-ZL	4539	67.5	62	23.4	2.0	132	2.3	94
8	OAC Malory	5067	75.3	38	19.6	1.5	133	2.2	93
9	Ezra	4936	73.4	50	20.9	1.8	129	1.2	89
10	P11A10	5395	80.2	19	21.7	2.0	134	2.0	107
11	OAC Aberdeen	5783	86.0	2	23.1	1.5	136	1.0	95
12	Atena	4984	74.1	45	23.4	1.5	130	1.0	93
13	Matilda	5370	79.9	22	19.8	1.5	130	1.3	94
14	Finch	4599	68.4	61	19.4	1.5	128	1.0	95
15	Odessa	4943	73.5	48	24.3	1.7	129	1.0	92
16	Barton	5116	76.1	29	19.1	2.0	132	1.7	100
17	Kagawa	4523	67.3	63	23.2	2.0	127	1.3	98
18	OAC Union	5085	75.6	32	21.3	2.0	133	1.2	83
19	S12-J7	5103	75.9	31	23.0	1.5	129	1.0	84
20	OAC 18-63C-SCN	5024	74.7	40	18.9	1.8	140	2.3	121
21	OAC 19-61C-SCN	5551	82.5	7	21.2	1.7	137	1.5	99
22	OAC 19-62C-SCN	5408	80.4	18	19.3	2.0	137	1.5	111
23	Rowan	5537	82.3	10	21.2	2.0	139	1.0	108
24	Baltazar	5084	75.6	33	21.9	1.5	135	1.2	97
25	Forto	5079	75.5	35	24.7	1.5	137	1.3	111
26	Taku	5276	78.5	25	19.9	2.0	136	1.7	108
27	Mya	5106	75.9	30	22.4	1.8	134	1.5	107
28	Zeta	5679	84.4	5	19.3	2.0	138	1.3	93
29	P15A20	5543	82.4	8	22.0	1.8	136	1.2	105
30	SVX22T1S44	5714	85.0	4	19.1	2.0	134	2.0	103
31	DL21-3011	5464	81.3	14	20.9	1.5	140	1.3	91
32	Inwood	4751	70.6	58	23.5	2.0	132	1.8	94
33	SC 5120	5450	81.0	15	21.0	2.0	138	1.3	102
34	NS Apolo	5020	74.6	42	20.1	1.7	137	1.5	97
35	NS Rubin	5206	77.4	27	19.6	1.8	140	1.8	105

36	NS Ventis	5077	75.5	37	18.1	2.0	135	1.7	94
37	NA1800	5489	81.6	12	22.5	1.8	139	2.2	97
38	P13A03	5538	82.3	9	20.2	1.5	138	1.0	94
39	SVX23T1S62	5022	74.7	41	22.3	1.7	134	1.5	97
40	SVX23T1S59	5411	80.5	17	20.7	2.0	138	1.8	103
41	Alinova	6052	90.0	1	21.0	2.0	136	1.5	99
42	Wilma	5248	78.0	26	21.5	1.5	131	1.5	101
43	SC 0621	4873	72.5	54	23.5	1.5	134	1.5	99
44	SVX24T0S72	4938	73.4	49	20.4	1.5	135	1.3	98
45	SVX24T1S73	5079	75.5	36	23.3	1.8	139	2.3	107
46	SVX24T1S75	5492	81.7	11	17.7	2.0	132	1.0	96
47	SVX24T1S77	5189	77.2	28	20.7	1.8	137	1.5	95
48	SVX24T1S76	5080	75.5	34	21.5	2.0	136	1.2	106
49	SVX24T1S78	5567	82.8	6	20.1	1.7	138	1.5	94
50	PR150786Z-09	5373	79.9	21	20.9	1.8	130	1.5	102
51	PR150660Z-15	5290	78.7	24	21.4	2.0	133	1.3	102
52	CER14-009,009	4282	63.7	64	20.8	1.7	134	1.8	109
53	OAC 22-38C-SCN	4948	73.6	47	20.6	1.7	130	1.5	109
54	OAC 22-33C-SCN	5389	80.1	20	19.2	1.5	133	1.3	89
55	SC 5422	4830	71.8	56	18.2	2.0	131	1.2	97
56	SC 5822	5473	81.4	13	20.9	1.7	135	1.0	94
57	SC6522	4724	70.2	60	19.5	1.5	133	1.2	94
58	SC 6022	4889	72.7	53	21.0	1.5	135	1.3	108
59	SC 6322	4749	70.6	59	19.1	1.7	135	1.3	99
60	SeCan 22-17C-SCN	4971	73.9	46	19.1	1.8	132	1.5	101
61	SeCan 22-31C-SCN	5750	85.5	3	21.3	1.5	138	1.8	109
62	SeCan 22-34C-SCN	4823	71.7	57	19.7	2.0	132	1.7	97
63	SeCan 22-42C-SCN	4913	73.1	52	24.8	1.5	138	2.7	103
64	EE2001121	5049	75.1	39	22.5	1.8	132	1.2	103
65	EE2001788	5425	80.7	16	24.5	1.5	135	1.3	93
Mean		5148	76.6		21.1	1.7	134	1.5	99
C.V.		4.5	4.5		4.1	9.7	1.0	28.3	6.8
PR > F		0.00	0.00		0.00	0.00	0.00	0.00	0.00
SD(0.05)		375	5.6		1.4	0.3	2.1	0.7	10.8

Trial Notes:

Planting Date: May 11

Harvest Date: October 3

Yields adjusted to 13% moisture.

Herbicide: Pursuit, Dual II Magnum PPI - May 11

Seed Quality: 1 = good, 5 = poor

Lodging: 1 = good, 5 = poor

Analyzed - RCBD

Fertilizer 20.8 - 13.8 - 20.8 @ 289 lbs/ac - May 10

2023 Soybean Variety Performance Roundup Ready Cultivars
University of Guelph, Huron Research Station

No.	Name	Yield kg/ha	Yield bu/ac	Rank	Seed Wt (g/100)	Seed Quality (1-5)	Days to Maturity	Lodging Score	Plant Height (cm)
1	Miko R2	5286	78.6	62	19.2	1.8	128	2.2	97
2	Maris R2X	5771	85.8	32	17.5	1.8	129	1.2	98
3	Cyclone R2X	5829	86.7	25	19.7	1.7	134	1.2	94
4	Rondo R2X	5798	86.2	30	19.9	1.8	131	1.3	97
5	DKB11-51	5648	84.0	40	17.7	1.7	133	1.3	96
6	DKB14-65	6256	93.0	4	19.9	2.0	136	1.5	101
7	PS 1520 XRN	5509	81.9	52	18.1	1.8	131	1.0	91
8	Enyo E3	5452	81.1	54	18.8	2.3	129	1.0	86
9	S12-M5X	5800	86.2	28	20.8	2.0	130	1.2	86
10	S16-K2X	5613	83.5	43	21.0	2.0	132	1.2	87
11	Savard E3	6148	91.4	8	20.1	2.0	138	1.0	87
12	SI 1120E3N	6138	91.3	9	21.1	1.7	133	1.0	86
13	SI 1820XTN	5803	86.3	27	18.6	1.8	137	1.3	97
14	PS 1421 EN	5672	84.3	38	18.8	1.8	136	1.5	100
15	PS 1721 EN	5873	87.3	24	19.5	1.7	137	1.2	101
16	Cougar E3	6028	89.6	15	19.0	1.8	138	2.3	83
17	Panther XF	5951	88.5	19	18.8	2.0	140	2.0	99
18	Ocelot E3	6159	91.6	7	22.0	2.0	142	1.8	106
19	Elico E3	5626	83.7	42	19.3	1.5	128	1.0	83
20	Pico R2X	5352	79.6	58	17.0	1.8	127	1.3	89
21	P12T94E	5536	82.3	48	20.9	1.7	132	1.2	92
22	S10-W8XF	5559	82.7	47	18.2	1.5	130	1.2	91
23	S14-W6E3	5673	84.4	37	19.1	1.7	133	1.2	85
24	S14-C7XF	5950	88.5	20	18.3	2.0	134	1.5	100
25	Keith XF	6188	92.0	6	20.3	1.8	135	1.2	99
26	Compass E3	6413	95.4	1	19.0	1.8	135	1.2	87
27	PS 1022 EN	6110	90.8	10	20.2	2.0	131	2.0	92
28	DKB14-97	5627	83.7	41	18.6	1.5	134	1.7	102
29	DKB16-64XF	5569	82.8	45	18.3	2.0	133	1.7	103
30	Avalanche XF	6044	89.9	14	21.8	1.8	134	1.0	98
31	Summit E3	5950	88.5	21	17.9	2.3	132	1.0	86
32	P17A87E	6063	90.2	12	20.0	2.5	135	1.0	95
33	P18A73E	6203	92.2	5	20.4	2.0	138	1.0	90
34	B119KE	6001	89.2	16	19.0	1.8	133	1.0	83
35	B158DE	5978	88.9	17	17.2	2.0	135	1.2	87
36	B182ME	5788	86.1	31	19.3	2.0	137	1.0	94
37	CP1622X	6048	89.9	13	19.4	1.8	138	2.2	100
38	SI 1222E3N	5813	86.4	26	22.8	1.5	134	1.5	86

39	SI 1422XTN	5703	84.8	35	20.0	1.7	135	1.3	100
40	Rask E3	5592	83.2	44	21.7	1.5	135	1.0	99
41	Dyno R2X	5309	78.9	61	20.3	2.0	132	1.3	95
42	PR229004Z	5953	88.5	18	20.9	2.0	134	1.5	102
43	S09-H7E3	5125	76.2	67	18.5	1.8	130	1.5	80
44	S09-B5XF	5335	79.3	59	20.5	2.3	128	1.5	85
45	S13-Y4XF	5688	84.6	36	20.3	1.7	131	1.2	93
46	S18-F1E3S	5936	88.3	23	19.9	2.2	137	1.5	82
47	SV193892-41-01	5001	74.4	68	19.5	2.0	135	1.3	90
48	SV193898-43-01	5199	77.3	66	17.5	1.8	137	1.3	96
49	SV193898-07-01	5394	80.2	55	17.3	1.5	136	1.5	107
50	SV194490-44-01	5285	78.6	63	17.9	2.0	139	1.7	97
51	SV193898-16-01	5508	81.9	53	20.2	1.5	140	1.2	101
52	EXP1123XFN	5568	82.8	46	18.1	2.0	133	1.3	97
53	PR171800Z-02	5202	77.3	65	18.2	2.0	131	1.2	103
54	PR171803Z-19	4902	72.9	69	20.7	2.0	136	2.0	100
55	PR23E2850	5527	82.2	51	19.8	1.7	133	1.0	84
56	PR23XF2925	3623	53.9	70	22.5	2.5	118	1.5	96
57	EE2121746	5800	86.2	29	19.9	1.8	132	1.3	85
58	EW2148503	5706	84.8	34	20.2	1.8	130	1.7	96
59	C4M22486 E3	5253	78.1	64	15.8	2.2	130	1.3	87
60	C4M22487 E3	5721	85.1	33	18.4	2.0	135	1.0	87
61	B103EE	5529	82.2	50	20.8	1.7	129	1.0	89
62	P14A12E	5364	79.8	57	19.0	2.0	133	1.3	92
63	B163EE	5318	79.1	60	17.9	2.0	133	1.0	90
64	B173EE	6259	93.1	3	22.4	1.7	137	1.7	93
65	P19A37E	6087	90.5	11	18.9	2.0	137	1.2	90
66	SVX1823E3N	6302	93.7	2	20.8	2.2	140	1.7	90
67	SVX1323XFN	5665	84.2	39	19.5	2.0	136	1.5	100
68	10EG20	5948	88.4	22	20.0	2.0	130	1.2	89
69	12EB32	5530	82.2	49	20.9	1.8	133	1.3	94
70	SC23-2850R2X	5379	80.0	56	19.7	2.0	130	1.5	98
Mean		5685	84.5		19.5	1.9	133	1.4	93
C.V.		4.2	4.2		3.7	10.9	0.6	20.4	5.8
PR > F		0.00	0.00		0.00	0.00	0.00	0.00	0.00
LSD(0.05)		389	5.8		1.2	0.3	1.2	0.4	8.8

Trial Notes:

Planting Date: May 11
Harvest Date: October 2
Yields adjusted to 13% moisture.
Herbicide: Pursuit, Dual II Magnum PPI - May 11
Roundup WeatherMaxx - July 6

Seed Quality: 1 = good, 5 = poor
Lodging: 1 = good, 5 = poor
Analyzed - RCBD
Fertilizer 20.8 - 13.8 - 20.8 @ 289 lbs/ac - May 10
Harvest Size - 1.5 X5 m