

# **EDIBLE BEAN AGRONOMY AND PEST MANAGEMENT RESEARCH RESULTS**

**2021**



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RIDGETOWN CAMPUS**

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# **Agronomy and Pest Management Research Results for Dry Edible Beans**

## **2021**

This report is a compilation of agronomy and pest management research results in dry edible beans at Ridgetown College and the Huron Research Station. It has been produced as 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.

### **Acknowledgments**

Funding for this research was received from:

AAFC – CAP Pulse Cluster

Manitoba Pulse Growers Association

BASF Canada

Dupont Canada

Ontario Bean Growers

Syngenta Crop Protection

Bayer Crop Protection

Hensall Cooperative

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## 2021 Heat Unit and Precipitation Summary for Exeter and Ridgetown.

Ontario Corn Heat Units (OCHU)			
Month	Huron Research (Exeter)		Ridgetown Campus
	2021	Norm (40 yr)	Norm (45 yr)
May	371	365	418
June	759	662	741
July	764	781	758
August	818	752	808
September	581	562	612
October	61	46	450
Total	3354	3168	3787
			3517

### Precipitation (mm)

Month	Huron Research (Exeter)		Ridgetown Campus	
	2021	Norm (40 yr)	2021	Norm (45 yr)
May	34	83	47	81
June	100	81	142	71
July	135	80	126	85
August	63	71	88	87
September	235	107	114	86
October	91	96	102	67
Total	658	518	619	477

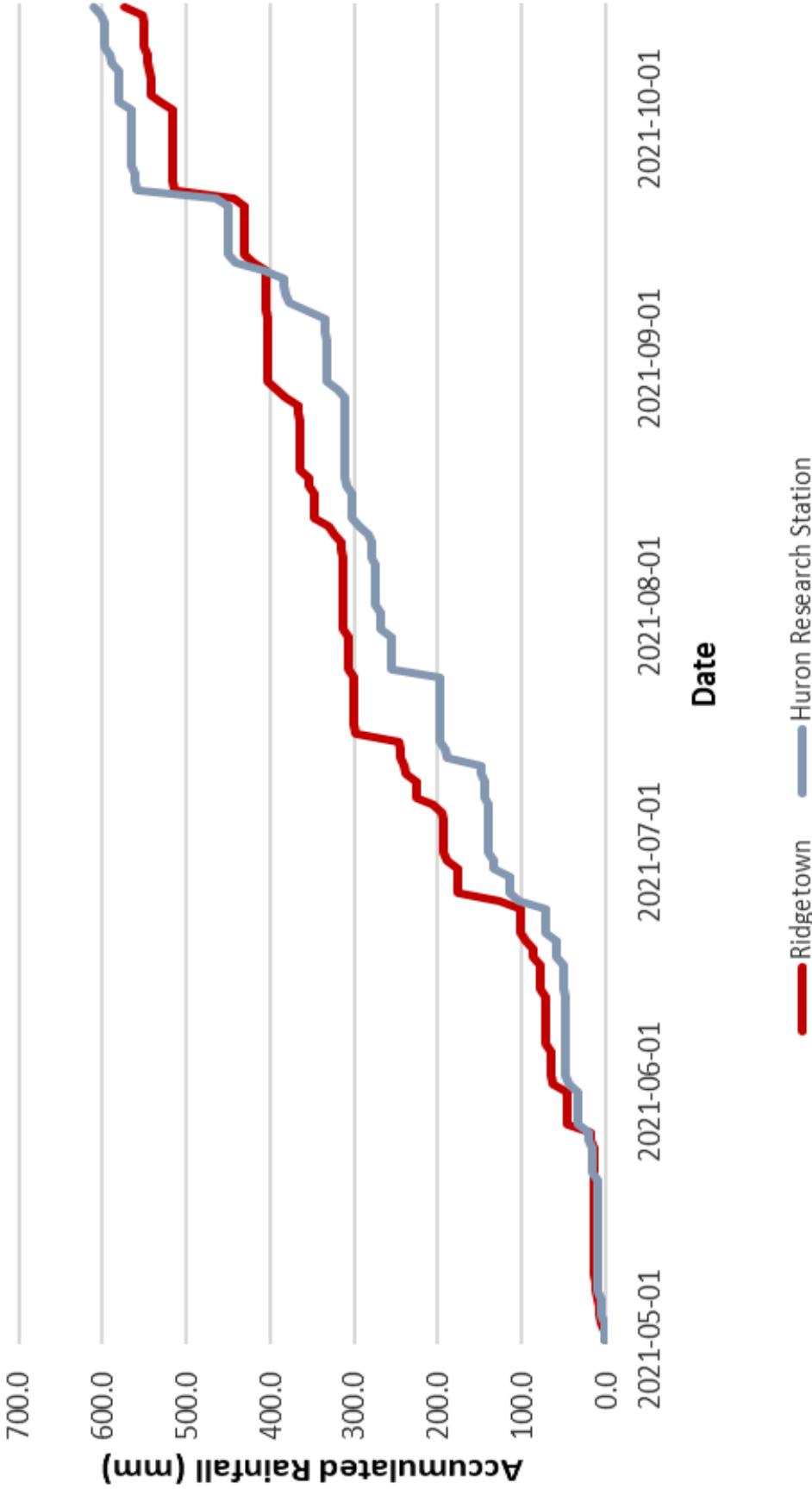
20% or more below average

20% or more above average

### 2021 Weather

Heat unit accumulation was close to normal and seeding across the province was on time. May had average heat and low rainfall. Planting commenced on May 17, progressed at an even pace and was completed on June 10 at Exeter with few rain events. Temperature was moderate throughout the summer. Rainfall was above average in many areas through June and July. Blyth received excess rainfall in late June, which caused some plant stunting between tile runs. Dry bean experiments matured quickly and harvest started before the end of August. Excessive rainfall in September cause some harvest delays, but harvest was completed by October 17.

## Accumulated rainfall at Ridgeway Campus and the Huron Research Station (Exeter) from May 1 to October 31, 2021



## **EXECUTIVE SUMMARY**

### **Variety Registration and Performance Trials (ongoing)**

Seeding began on June 1 at Blyth (P. Heinrich) and ended on June 7 at the Centralia site (C. Hicks). Four studies were seeded in 2021 (see table below). The 2021 Blyth site was a new location, at a farm with heavier soil. The site had excellent emergence, but excess rainfall in late June caused some poor plant growth between tile runs. Damage to plant growth was still evident in July but recovered by the end of August. Several cultivars had poor vigour and growth over all reps. Three trials for the Centralia location were planted at the home farm of C. Hicks near Centralia. Some uneven plant growth was evident that was partly explained by tillage compaction as well as poor seed vigour for several cultivars in the navy and small seed trials.

<u>Summary of Registration/Performance Trials, Huron Research Station, 2021</u>				
Location	Market Class	Average Yield	C.V.	Notes
Blyth	Navy	3641	8.0	Above average yield, somewhat uneven, good rain
Centralia	Navy	3156	10.0	Above average yield, uneven, excess rain
Centralia	Cran/Kidney	3024	11.2	Above average yield, excess rain
Centralia	Small seed	3215	12.4	Above average yield, uneven, excess rain

### **Preliminary Yield Trials (ongoing)**

Our research plan for 2021 was curtailed by the university, in response to the COVID pandemic. This resulted in a temporary halt for the preliminary yield trials.

### **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 2021. Disease pressure was quite high in the first study and very high in the second study. In the first study, Circobin was the best treatment, followed by Propulse and Allegro. Allegro, Propulse, Circobin and Cotegra were the top treatments in the second study. Disease pressure came quite late in the flowering period corresponding with the 2<sup>nd</sup> fungicide timing, so a single application of Allegro and Propulse (trts 3 and 7) had lower yield in both studies. Oxidate and Oro-Solute had disease severity and yield that were similar to the untreated control, which agrees with studies done in 2020.

### **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 moderate but resulted in few meaningful differences for yield. Canopy cover (Greenseeker), seed weight and seed yield were higher in narrow rows versus wide rows for both cultivars. Reduced plant populations increased plant dry weight, reduced canopy cover (Greenseeker) and reduced white mold severity, but there was no impact on seed yield.

### **White Mold in Dry Bean Fungicide Application Time of Day (Year 4 of 4)**

This research was conducted to determine the impact of the time of day application (6:00, 12:00,

18:00 and 0:00) for the fungicide Allegro on white mold development in dry beans. Four studies were conducted in 2021. Disease pressure was moderate to high in the untreated control and ranged from 32-62%. In 3 of 4 studies the untreated control had a lower yield than the fungicide treatments, but there were no differences among the four daily application timing treatments for disease severity or yield. This study was completed in 2021, and it concluded that fungicide diurnal application timing does not impact fungicide performance.

#### **White Mold Foliar Fungicide in Soybean (ongoing)**

This is an ongoing study to develop a long term data set on white mold fungicide efficacy in soybeans. Two trials were planted in 2021. Disease pressure was very low in both studies (<10%). There were minor differences between fungicides for disease severity at harvest, but there were no differences between any fungicide treatment and the untreated control for yield.

#### **Anthracnose Foliar Fungicide in Dry Beans (ongoing)**

This is an ongoing study to develop a long term data set on fungicide efficacy for anthracnose control and calculate the economic returns of fungicide use. A paper was published in 2019, summarizing past work. Two studies were seeded in 2021 about 4 weeks apart, and were inoculated with a spore suspension at first flower. Disease pressure following inoculation was moderately high in both studies, but was relatively slow to develop. The strobilurin fungicides (Quadrис, Headline, Acapela and Delaro) had the lowest disease severity. Allegro had lower disease severity than Propulse and Circobin, and higher yield than Propulse. Miravis Neo had similar disease severity and yield as the best treatments. Oxidate and Oro-Solute reduced disease severity slightly but had similar yield as the untreated control.

#### **Anthracnose Fungicide x Foliar Fertilizer in Dry Beans (Year 3 of 3)**

This study investigated a tank mix of foliar fertilizers + anthracnose fungicides to determine if the fungicide efficacy was affected. The experiment was organized as a factorial design with five fungicide (Control, Headline, Quadrис, Allegro and Propulse) and four foliar fertilizer (Control, Crop Booster, Releaf Mn and Phi 42K) treatments.

Two studies were seeded in 2021 about 4 weeks apart, and were inoculated at first flower. Disease pressure following inoculation was moderately high in both studies, but was slower to develop. The fertilizer Phi42K had less disease than the other fertilizers when it was applied alone or with the fungicide Propulse. All of the fungicide treatments had lower disease and higher yield than the untreated control. The fertilizer treatments had no negative or positive effect on seed yield when they were applied with a fungicide. This study was completed in 2021 and it found that one fertilizer (Phi42K) frequently reduced disease severity when applied alone or with one fungicide (Propulse). Previous research has shown that Propulse is a relatively weak fungicide on anthracnose, compared to the strobilurin fungicides (Quadrис and Headline).

#### **Dry Bean Planting Date x Population (Year 4 of 4)**

**Large Seed** – The cultivar Red Hawk (DRK) was seeded in two row widths (38 and 76 cm), four populations (100%, 80%, 60%, and 40%) and five planting dates (May 20, May 30, June 10, June 20 and June 30) at one site (Exeter), using 175,000 and 200,000 plants/ha for the 100% population in wide and narrow rows, respectively. Plant emergence was low across planting dates (69%) with the later planting dates averaging 11% less than earlier planting dates. Planting dates had little effect on plant height, canopy cover (Greenseeker) or seed weight. Seed quality was slightly poorer for later planting dates. Yield decreased 11, 19 and 31% for the June 10, 20 and 30 planting dates, compared to the mean seed yield from May 20 and June 1. Yield decreased consistently for both row widths as plant stands decreased. A yield decreased 15-30%

for the two lowest plant stands, compared to a 100% plant stand. Slight differences in seed colourimeter scores were measured, but the results were not consistent over planting date. **Small Seed** – Two cultivars (T9905 navy and Zorro black) were seeded at four populations (100%, 80%, 60%, and 40%) and five planting dates (May 20, May 30, June 10, June 20 and June 30) at one site (Exeter), using 300,000 plants/ha for the 100% population. Rexeter had some variation in plant emergence (67-83%) while Zorro had consistent emergence (>95%) for all planting dates. Late planting dates reduced canopy cover (Greenseeker), plant development and plant dry weight. Late planting dates had lower yield for both cultivars, with a yield loss of 20% on June 20 and 27% on June 30, compared to the mean seed yield from May 20 to June 10. Differences in other parameters such as seed quality, seed pick and seed weight were not consistent with planting date. Later planting date impacted colourimeter values slightly by decreasing L values (darker) and increasing ‘a’ values (greener) and ‘b’ values (yellower).

### **Root Rot Seed Treatment (ongoing)**

Our research plan for 2021 was curtailed by the university, in response to the COVID pandemic. This resulted in a temporary halt for the root rot seed treatment trials.

### **Soybean Cultivar Performance (ongoing)**

A summary of the Ontario Soybean and Canola Committee (OSACC) 2800 CHU soybean cultivar performance trials conducted near Exeter ON in 2020 is provided. There are separate studies for Roundup ready cultivars and conventional (food-type) cultivars. The conventional study had moderate variability (CV = 7.6%) and high yields (67.6 bu/ac). The Roundup ready study had less variability (5.6%) and yield was higher (69.5 bu/ac).

### **Recent Scientific Publications**

Two papers were published in the scientific literature in 2021. The abstracts can be found at the end of the report.

## 2021 Dry Bean Navy Registration/Performance, Exeter University of Guelph, Ridgetown Campus

No.	Name	Yield Rank	Yield (kg/ha)	Yield (cwt/ac)	Plant Maturity (days)	Yield per Day (kg/ha)	Plant Harvestability (1-5; 1=good)	Seed Quality (1-5; 1=good)	Seed Weight (g/100)
1	Indi	4	3470	31.0	99.8	34.8	1.5	1.9	18.1
2	AC Apex	29	3072	27.4	106.5	28.8	1.5	2.0	22.4
3	AAC Argosy	22	3133	28.0	105.3	29.8	1.5	2.1	20.8
4	AAC Shock	12	3297	29.4	102.5	32.2	1.8	1.9	21.9
5	Bolt	38	2680	23.9	100.8	26.6	1.3	2.4	22.7
6	OAC Marker	13	3269	29.2	102.3	32.0	2.0	2.0	19.3
7	OAC Charm	8	3384	30.2	97.5	34.7	1.9	2.0	20.1
8	OAC Equinox	7	3393	30.3	106.3	31.9	1.4	2.3	22.0
9	OAC Award	21	3142	28.0	106.3	29.6	2.3	2.0	19.5
10	ACUG 19-3	33	2967	26.5	104.3	28.4	1.6	2.1	20.4
11	ACUG 19-5	6	3408	30.4	107.0	31.9	2.1	2.0	19.7
12	OAC Fusion	19	3181	28.4	97.5	32.6	1.8	1.9	18.5
13	OAC Plasma	9	3365	30.0	105.0	32.0	2.1	2.3	19.1
14	Rogue	17	3219	28.7	106.0	30.4	2.8	2.5	17.5
15	OAC Thunder	34	2946	26.3	97.8	30.1	1.9	1.8	20.0
16	T9905	23	3118	27.8	98.3	31.7	1.8	1.8	21.1
17	Lighthouse	16	3232	28.8	106.5	30.3	1.4	1.9	20.1
18	Rexeter	31	3028	27.0	107.8	28.1	2.0	2.1	19.5
19	Nautica	32	3009	26.9	106.5	28.3	1.6	2.0	18.5
20	Armada	35	2915	26.0	100.3	29.1	1.3	2.1	20.2
21	Blizzard	2	3553	31.7	98.5	36.1	1.4	1.8	19.2
22	HMS Medalist	25	3097	27.6	99.5	31.1	1.6	1.9	19.1
23	Victory	27	3087	27.6	97.3	31.7	1.3	2.0	19.7
24	AAFC 21-1	18	3218	28.7	106.5	30.2	1.9	2.0	20.8
25	AAFC 21-2	20	3177	28.4	105.0	30.3	1.9	2.0	20.2
26	AAFC 21-3	30	3054	27.3	107.3	28.5	1.4	2.0	19.7
27	AAFC 21-4	3	3491	31.2	102.8	34.0	1.3	1.8	20.4
28	AAFC 21-5	26	3095	27.6	104.0	29.8	2.6	2.4	19.2
29	OAC 21-1	37	2755	24.6	96.3	28.6	3.3	2.1	18.7
30	OAC 21-2	39	2639	23.6	97.0	27.2	3.0	2.0	19.2
31	OAC 21-3	1	3586	32.0	107.3	33.4	1.3	2.0	18.7
32	OAC 21-4	14	3250	29.0	105.0	31.0	1.3	1.9	17.9
33	OAC 21-5	15	3242	28.9	108.0	30.0	2.0	2.3	20.0
34	OAC 21-6	36	2831	25.3	107.0	26.5	2.3	2.3	18.9
35	OAC 20-3	11	3354	29.9	97.5	34.4	1.8	2.0	19.5
36	OAC 20-6	28	3085	27.5	104.5	29.5	1.5	2.1	17.6
37	OAC 20-7	5	3445	30.7	104.5	33.0	1.6	1.9	20.1
38	OAC 20-8	24	3104	27.7	106.5	29.1	1.8	2.4	18.0
39	Liberty	10	3362	30.0	101.5	33.1	1.4	1.9	19.6
Mean			3156	28.2	103.1	30.6	1.8	2.0	19.8
LSD (P=.05)			554		2.2		0.6	0.4	1.0
CV			10.0		1.8		23.8	12.2	3.6
Trt Pr>F (0.05)			0.0017		0.0001		0.0001	0.0004	0.0001

### Trial Summary

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: 5 m  
Seeding Rate: 17 seeds/m  
Seed Treatment: Cruiser Maxx Bean + Dynasty  
Planting Date: June 7

Herbicide: Pursuit + Prowl + Frontier PPI (June 6)  
Fertilizer: 0-0-60 @ 100 lbs/ac fall 2020  
15 gallons 28% (ppi June 6)  
Fungicide/Insecticide:  
Allegro + Matador, Releaf Mn (August 3)  
Cercobin + Matador + Crop Booster (August 17)  
Harvest Date: September 18

## 2021 Dry Bean Navy Registration/Performance, Blyth University of Guelph, Ridgetown Campus

No.	Name	Yield Rank	Yield (kg/ha)	Yield (cwt/ac)	Plant Maturity (days)	Yield per Day (kg/ha)	Plant Harvestability (1-5; 1=good)	Seed Quality (1-5; 1=good)	Seed Weight (g/100)
1	Indi	6	3944	35.2	95.8	41.2	1.8	2.0	18.8
2	AC Apex	13	3829	34.2	97.3	39.4	1.8	1.8	22.6
3	AAC Argosy	7	3928	35.1	97.8	40.2	2.0	2.0	22.1
4	AAC Shock	3	4019	35.9	97.0	41.4	2.3	1.6	23.2
5	Bolt	29	3477	31.0	97.0	35.8	1.5	1.9	23.5
6	OAC Marker	5	3950	35.3	95.8	41.2	2.3	2.0	19.5
7	OAC Charm	12	3837	34.2	96.3	39.8	2.0	1.8	21.2
8	OAC Equinox	1	4172	37.2	100.0	41.7	1.5	1.8	23.0
9	OAC Award	32	3372	30.1	99.5	33.9	2.0	2.0	20.3
10	ACUG 19-3	30	3452	30.8	99.0	34.9	2.0	1.6	20.1
11	ACUG 19-5	38	3216	28.7	101.5	31.7	2.3	2.0	18.9
12	OAC Fusion	31	3431	30.6	93.3	36.8	1.8	2.0	17.8
13	OAC Plasma	10	3869	34.5	96.0	40.3	2.3	1.8	20.4
14	Rogue	26	3551	31.7	99.3	35.8	2.3	1.8	18.1
15	OAC Thunder	19	3712	33.1	98.3	37.8	2.0	1.9	21.7
16	T9905	17	3744	33.4	99.3	37.7	2.0	1.8	21.4
17	Lighthouse	14	3809	34.0	102.5	37.2	2.0	1.8	21.3
18	Rexeter	35	3307	29.5	102.0	32.4	2.5	2.1	18.7
19	Nautica	39	3160	28.2	101.3	31.2	1.8	2.0	18.0
20	Armada	22	3669	32.7	95.5	38.4	1.5	2.0	20.7
21	Blizzard	2	4029	36.0	97.0	41.5	1.5	2.0	19.1
22	HMS Medalist	15	3800	33.9	97.5	39.0	1.5	1.6	19.3
23	Victory	4	3964	35.4	96.8	41.0	1.8	2.0	20.0
24	AAFC 21-1	28	3506	31.3	100.0	35.1	1.8	2.0	20.7
25	AAFC 21-2	23	3608	32.2	98.8	36.5	1.5	2.0	20.7
26	AAFC 21-3	16	3751	33.5	98.3	38.2	2.3	2.0	18.8
27	AAFC 21-4	36	3274	29.2	97.5	33.6	1.3	2.0	20.0
28	AAFC 21-5	33	3331	29.7	99.5	33.5	2.5	1.9	18.6
29	OAC 21-1	34	3310	29.5	93.0	35.6	2.8	2.0	19.3
30	OAC 21-2	37	3223	28.8	93.3	34.5	3.0	2.3	18.6
31	OAC 21-3	18	3743	33.4	99.0	37.8	1.0	2.0	19.0
32	OAC 21-4	25	3564	31.8	98.8	36.1	1.8	2.0	18.4
33	OAC 21-5	20	3705	33.1	102.8	36.0	2.0	1.6	21.3
34	OAC 21-6	27	3536	31.6	102.0	34.7	2.0	1.8	20.3
35	OAC 20-3	9	3902	34.8	95.0	41.1	1.3	1.8	19.6
36	OAC 20-6	21	3695	33.0	101.5	36.4	1.8	1.8	16.8
37	OAC 20-7	8	3911	34.9	99.5	39.3	1.8	1.9	20.6
38	OAC 20-8	24	3569	31.9	97.0	36.8	2.0	2.3	18.1
39	Liberty	11	3865	34.5	97.5	39.6	1.5	1.5	19.9
Mean			3641	32.5	98.2	37.1	2.0	1.9	20.2
LSD (P=.05)			412	2.8		0.6	0.3	1.0	
CV			8.0	2.0		23.0	10.9	3.7	
Trt Pr>F (0.05)			0.0001	0.0001		0.0001	0.0001	0.0001	

### Trial Summary

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: 5 m  
Seeding Rate: 17 seeds/m  
Seed Treatment: Cruiser Maxx Bean + Dynasty  
Planting Date: June 1

Herbicide: Rival + Dual II Magnum PPI (May 31)  
Fertilizer: 15.5 - 15.5 - 27 @ 340 lbs/ac  
Desication: Eragon/Merge (September 6 )  
Fungicide/Insecticide:  
Allegro + Matador + Crop Booster (July 23)  
Cercobin + Matador + 42PhiK (August 16 )  
Harvest Date: September 17

## 2021 Dry Bean Small Seed Registration/Performance Exeter

### University of Guelph, Ridgetown Campus

No.	Name	Market Class	Yield Ranking	Yield (kg/ha)	Yield (cwt/ac)	Plant Maturity (DAP)	Yield per Day (kg/ha)	CBB Rating (1-5; 1=good)	Plant Lodging (1-5; 1=good)	Plant Harvestability (1-5; 1=good)	Seed Quality (1-5; 1=good)	Seed Weight (g/100)
1	Black Tails	black	13	3252	29.0	98	33.2	1.8	1.4	1.5	2.0	20.3
2	Blackbeard	black	1	3735	33.3	91	41.0	3.0	2.3	1.5	1.5	21.1
3	La Paz	pinto	9	3335	29.8	90	37.1	3.0	3.0	2.8	1.8	33.0
4	ME24	pinto	23	2774	24.8	95	29.2	3.5	2.6	2.3	2.3	34.7
5	ME78	pinto	24	2709	24.2	89	30.4	3.3	1.1	1.8	2.1	36.1
6	Merlot	small red	22	2913	26.0	93	31.3	3.0	2.0	1.8	2.1	36.2
7	OAC Rosito	small red	25	2655	23.7	94	28.2	1.8	1.3	1.4	2.0	21.9
8	OAC Vortex	black	2	3682	32.9	96	38.4	1.3	2.5	2.1	1.9	19.4
9	P15HR077	pinto	21	2960	26.4	100	29.6	2.0	2.9	2.5	2.1	32.6
10	Spectre	black	14	3230	28.8	100	32.3	2.8	1.0	1.0	2.0	20.8
11	Viper	small red	6	3513	31.3	92	38.2	3.0	2.6	2.0	2.3	28.4
12	Windbreaker	pinto	26	2592	23.1	88	29.5	2.8	3.5	3.5	2.4	37.1
13	Zenith	black	3	3616	32.3	91	39.7	2.0	1.3	1.4	2.0	20.3
14	Zorro	black	10	3296	29.4	94	35.1	1.8	1.1	1.5	2.0	19.6
15	AAFC 21-B1	black	16	3188	28.4	93	34.3	2.5	1.3	1.5	2.3	19.1
16	AAFC 21-B2	black	4	3541	31.6	93	38.1	2.5	1.4	1.4	2.0	18.8
17	AAFC 21-B3	black	20	3031	27.0	93	32.6	2.5	1.0	1.1	2.0	19.5
18	AAFC 21-B4	black	11	3288	29.3	91	36.1	3.0	1.8	1.8	2.0	19.0
19	OAC 20-B4	black	15	3218	28.7	96	33.5	2.0	1.0	1.5	2.1	20.7
20	OAC 20-B5	black	17	3157	28.2	94	33.6	2.8	1.8	1.9	2.3	20.2
21	OAC 20-P2	pinto	7	3493	31.2	89	39.2	3.3	3.3	3.0	1.9	35.4
22	OAC 20-P3	pinto	19	3065	27.3	90	34.1	3.0	2.5	2.3	2.0	36.8
23	OAC 21-B1	black	18	3107	27.7	100	31.1	2.5	1.5	1.6	2.1	21.4
24	OAC 21-B2	black	8	3436	30.7	101	34.0	1.3	1.3	1.8	1.9	21.4
25	OAC 21-B3	black	12	3283	29.3	100	32.8	2.3	2.0	1.8	2.1	21.4
26	OAC 21-B4	black	5	3525	31.5	102	34.6	1.0	2.1	1.6	2.0	23.1
Mean				3215	28.7	94.3	34.1	0.8	0.8	112.1	0.3	2.8
LSD (P=.05)				410	4.1	3.1	0.9	1.0	0.8	0.8	0.3	1.5
CV				9.0	3.1		25.5	37.9	29.5	11.4	4.1	
Treatment Prob(F)				0.0001	0.0001		0.0001	0.0001	0.0001	0.0019	0.0001	

#### Trial Summary

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: 5 m

Seeding Rate: 17 seeds/m

Seed Treatment: Cruiser Maxx Bean + Dynasty

Removed plots 214/12, 215/19 & 321/10 due to poor growth

Herbicide: Pursuit + Prowl + Frontier PPI (June 6)

Fertilizer: 0-0-60 @ 100 lbs/ac fall 2020

15 gallons 28% (ppi June 6)

Fungicide/Insecticide:

Allegro + Matador, Releaf Mn (August 3)

Cercobin + Matador + Crop Booster (August 17)

Planting Date: June 7

Harvest Date: September 18

# 2021 Dry Bean Large Seed Registration/Performance Exeter

## University of Guelph, Ridgetown Campus

No.	Name	Market Class	Yield Rank	Yield (kg/ha)	Yield (cwt/ac)	Plant Maturity (DAP)	Yield per Day (kg/ha)	Seed Weight (g/100)	Seed Quality (1-5; 1=good)
1	Big Red	LRK	18	3138	28.0	85.5	36.7	63.3	1.1
2	Dynasty	DRK	25	2881	25.7	92.0	31.3	61.5	1.5
3	Epic	DRK	29	2751	24.5	88.8	31.0	59.1	1.5
4	Etna	Cran	12	3230	28.8	85.0	38.0	60.1	1.6
5	Gallantry	DRK	24	2949	26.3	90.8	32.5	57.2	1.4
6	Jester	Cran	15	3179	28.4	95.8	33.2	60.0	2.0
7	Meclearly	Cran	33	2616	23.3	81.3	32.2	63.4	2.0
8	OAC Candy cane	Cran	6	3318	29.6	91.0	36.5	60.4	2.0
9	OAC Firestripe	Cran	23	2958	26.4	90.5	32.7	63.3	2.0
10	OAC Inferno	LRK	8	3307	29.5	96.3	34.3	57.4	1.9
11	OAC Jasper	DRK	20	3103	27.7	89.5	34.7	60.7	1.8
12	OAC Jewel	LRK	32	2628	23.4	95.0	27.7	62.5	1.6
13	OAC Navabi	Cran	11	3254	29.0	82.8	39.3	60.1	2.0
14	OAC Racer	Cran	3	3370	30.1	85.3	39.5	65.4	1.6
15	OAC Snowshoe	WK	21	3065	27.3	90.8	33.8	57.5	2.0
16	Pink Panther	LRK	19	3105	27.7	87.3	35.6	64.7	1.5
17	Rampart	DRK	30	2732	24.4	88.0	31.0	61.5	1.9
18	Red Dawn	LRK	28	2759	24.6	80.0	34.5	64.3	1.5
19	Red Hawk	DRK	36	2068	18.5	85.8	24.1	51.7	2.0
20	Red Rider	Cran	7	3316	29.6	92.8	35.7	56.4	1.8
21	Silver Cloud	WK	35	2168	19.3	96.3	22.5	60.3	2.3
22	Vero	Cran	5	3346	29.9	87.3	38.3	59.2	2.0
23	Yeti	WK	16	3178	28.4	94.3	33.7	53.9	1.6
24	ACUG 18-L1	LRK	2	3438	30.7	93.5	36.8	52.4	1.8
25	ACUG 18-W1	WK	34	2592	23.1	95.8	27.1	51.0	2.0
26	ACUG 19-NDC1	ND Cran	10	3262	29.1	88.3	36.9	50.4	1.6
27	OAC 20-C1	Cran	22	3060	27.3	89.5	34.2	55.4	2.1
28	OAC 20-C3	Cran	1	3560	31.8	91.3	39.0	60.6	1.6
29	OAC 20-D1	DRK	13	3213	28.7	85.8	37.4	63.8	1.5
30	OAC 20-D2	DRK	26	2877	25.7	86.0	33.5	62.2	1.6
31	OAC 20-L1	LRK	9	3276	29.2	89.3	36.7	60.0	1.5
32	OAC 21-C1	Cran	4	3368	30.0	92.3	36.5	57.0	2.0
33	OAC 21-C2	Cran	27	2785	24.8	97.8	28.5	48.6	2.6
34	OAC 21-C3	Cran	14	3180	28.4	92.3	34.5	55.0	2.0
35	OAC 21-D1	DRK	17	3176	28.3	95.0	33.4	58.5	1.8
36	OAC 21-L1	LRK	31	2674	23.9	91.8	29.1	61.4	1.8
Mean				3024	27.0	90.0	33.6	58.9	1.8
LSD (P=.05)				554	2.2			2.1	0.3
CV				11.2	1.8			2.6	10.6
Treatment Prob(F)				0.0001	0.0001			0.0001	0.0001

### Trial Summary

Design: RCBD - RCB

Row Width: Narrow = 30 inch (76 cm)

Number of Rows Per Plot: 2

Number of Rows Harvested Per Plot: 2

Plot Length: 6 m

Harvest Length: 4 m

Seeding Rate: 17 seeds/m

Seed Treatment: Cruiser Maxx Bean + Dynasty

Planting Date: June 7

Herbicide: Pursuit + Prowl + Frontier PPI (June 6)

Fertilizer: 0-0-60 @ 100 lbs/ac fall 2020

15 gallons 28% (ppi June 6)

Fungicide/Insecticide:

Allegro + Matador, Releaf Mn (August 3)

Cercobin + Matador + Crop Booster (August 17)

Harvest Date: September 3, 12

## 2021 White Mold Registered Products Dry Bean 1st Planting

### University of Guelph, Huron Research Station

No.	Name	Rate	Unit	Appl Code	Phytotoxicity (%)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
					52 DAP	66 DAP	70 DAP	89 DAP				
1	Untreated Check	--	--	--	0.0 a	0.0 a	26.0 a	55.3 a	30.6 ef	24.0 a	1982 gh	1502 g
2	Allegro 500F	300	g ai/ha	AB	0.0 a	0.0 a	8.4 efg	20.4 gh	33.0 abc	24.5 a	2854 a-d	2157 b-e
3	Allegro 500F	500	g ai/ha	A	0.0 a	0.0 a	14.8 c-f	35.8 def	31.2 def	21.6 a	2449 d-g	1922 d-g
4	Allegro 500F	500	g ai/ha	AB	0.0 a	0.0 a	8.3 efg	18.4 gh	33.3 abc	23.1 a	3078 ab	2374 a-d
5	Allegro + Quadris	300+125	g ai/ha	AB	0.0 a	0.0 a	8.0 efg	20.9 gh	34.1 a	19.4 a	3000 abc	2420 abc
6	Propulse	200	g ai/ha	AB	0.0 a	0.0 a	11.5 d-g	28.6 efg	32.4 bcd	19.3 a	2850 a-d	2299 a-d
7	Propulse	300	g ai/ha	A	0.0 a	0.0 a	14.8 c-f	34.3 def	32.5 a-d	20.7 a	2232 e-h	1776 efg
8	Propulse	300	g ai/ha	AB	0.0 a	0.0 a	8.1 efg	24.8 fgh	33.1 abc	17.7 a	3203 a	2638 a
9	Circobin	1210	g ai/ha	AB	0.0 a	0.0 a	6.4 fg	15.6 h	33.6 ab	20.8 a	3235 a	2563 ab
10	Circobin	1575	g ai/ha	AB	0.0 a	0.0 a	5.0 g	19.5 gh	33.4 abc	22.4 a	3119 ab	2432 abc
11	Acapela	220	g ai/ha	AB	0.0 a	0.0 a	15.6 cde	38.6 cde	31.9 b-e	19.9 a	2501 c-f	2018 c-f
12	Cotegra	400	g ai/ha	AB	0.0 a	0.0 a	15.0 cde	36.9 de	32.5 a-d	19.0 a	2665 b-e	2157 b-e
13	Delaro	186.2	g ai/ha	AB	0.0 a	0.0 a	14.0 c-f	35.6 def	32.1 b-e	21.2 a	2564 c-f	2022 c-f
14	Miravis Neo	375	g ai/ha	AB	0.0 a	0.0 a	17.4 bcd	43.4 bcd	31.8 c-f	19.1 a	2522 c-f	2043 c-f
15	Oxidate	1.25	% v/v	AB	0.0 a	0.0 a	18.5 a-d	48.4 abc	32.2 b-e	23.4 a	2285 e-h	1768 efg
16	Oxidate	2.5	% v/v	AB	0.0 a	0.0 a	20.6 abc	54.3 ab	32.1 b-e	22.6 a	2083 fgh	1620 fg
17	Oro-Solute	0.5	% v/v	AB	0.0 a	0.0 a	26.3 a	58.9 a	30.2 f	23.8 a	1938 h	1484 g
18	Oro-Solute	0.75	% v/v	AB	0.0 a	0.0 a	25.0 ab	57.0 a	31.2 def	19.9 a	1867 h	1495 g
LSD (P=.05)					NA	NA	8.4	11.2	1.7	5.2	509.6	464.4
CV					0.0	0.0	40.7	22.1	3.7	17.3	13.97	16.11
Treatment Prob(F)					1.0000	1.0000	0.0001	0.0001	0.0011	0.2795	0.0001	0.0001

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

#### Trial Summary

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  
 Seed Treatment: CruiserMaxxBeans + Dynasty

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21  
 Treatment Applications: July 26, August 8  
 Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha - Applied May 21, Incorporated June 7  
 Irrigated on August 3, 6, 20, 24, 27  
 Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 3  
 Planting Date: June 11  
 Harvest Date: September 20

#### Conclusions:

- \* the fungicide treatments did not cause phytotoxicity on the crop
- \* white mold severity was moderately high, but most disease pressure arrived later in the flowering period (in conjunction with the 2nd fungicide application).
- \* a second fungicide application (trts 4 and 8) was often superior to a single fungicide application (trts 3 and 7)
- \* Circobin (trt 9,10) had the lowest disease severity followed by Allegro (trt 2,4,5) and Propulse (trt 6,8)
- \* seed weight decreased in fungicide treatments with high disease severity
- \* fungicide treatments had no effect on seed pick
- \* Circobin (trt 9,10) and Propulse (trt 8) had the highest yield followed by Allegro (trt 4,5). The Yield - Pick values were ranked similarly.
- \* Acapela, Miravis Neo, Delaro and Cotegra had higher disease severity and lower yields than the top fungicide treatments, but all were better than the untreated check.
- \* Oxidate and Oro-Solute had disease severity and yield similar to the untreated check

## 2021 White Mold Registered Products Dry Bean 2nd Planting

### University of Guelph, Huron Research Station

No.	Name	Rate	Unit	Phytotoxicity (%)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
				52 DAP	65 DAP	64 DAP	90 DAP				
1	Untreated Check	--	--	0 a	0 a	37.9 a	73.5 a	28.4 a	46.3 a	1438 g	778 h
2	Allegro 500F	300	g ai/ha	AB	0 a	0 a	9.9 ef	27.1 efg	30.1 a	35.5 bcd	2220 a-d
3	Allegro 500F	500	g ai/ha	A	0 a	0 a	8.5 f	17.6 g	29.8 a	45.1 a	2132 b-e
4	Allegro 500F	500	g ai/ha	AB	0 a	0 a	8.8 f	21.8 fg	30.8 a	34.3 bcd	2695 a
5	Allegro + Quadris	300+125	g ai/ha	AB	0 a	0 a	10.1 ef	19.0 g	30.5 a	33.9 bcd	2464 ab
6	Propulse	200	g ai/ha	AB	0 a	0 a	11.9 def	28.5 efg	32.0 a	29.3 d	2560 ab
7	Propulse	300	g ai/ha	A	0 a	0 a	8.4 f	19.3 fg	30.5 a	39.0 abc	2121 b-e
8	Propulse	300	g ai/ha	AB	0 a	0 a	9.1 f	24.1 efg	32.2 a	29.5 d	2363 abc
9	Circobin	1210	g ai/ha	AB	0 a	0 a	9.8 ef	19.1 fg	31.2 a	34.4 bcd	2324 abc
10	Circobin	1575	g ai/ha	AB	0 a	0 a	9.9 ef	18.8 g	29.3 a	41.4 ab	2326 abc
11	Acapela	220	g ai/ha	AB	0 a	0 a	21.8 bc	34.5 de	30.4 a	33.4 bcd	1965 c-f
12	Cotegra	400	g ai/ha	AB	0 a	0 a	13.9 c-f	31.6 ef	30.8 a	28.5 d	2433 abc
13	Delaro	186.2	g ai/ha	AB	0 a	0 a	9.8 ef	24.5 efg	28.8 a	38.8 abc	1839 d-g
14	Miravis Neo	375	g ai/ha	AB	0 a	0 a	16.6 b-f	45.4 cd	31.6 a	30.8 cd	2232 a-d
15	Oxidate	1.25	% v/v	AB	0 a	0 a	20.9 bcd	56.4 bc	30.0 a	33.9 bcd	1699 efg
16	Oxidate	2.5	% v/v	AB	0 a	0 a	24.4 b	60.5 b	29.9 a	29.6 d	1555 fg
17	Oro-Solute	0.5	% v/v	AB	0 a	0 a	18.5 b-e	49.9 bc	28.9 a	32.4 bcd	1806 d-g
18	Oro-Solute	0.75	% v/v	AB	0 a	0 a	24.1 b	60.5 b	30.2 a	39.8 abc	1545 fg
LSD (P=.05)				NA	NA	9.0	12.5	NA	9.1	477.6	411.1
CV				0.0	0.0	41.8	25.2	5.1	18.2	16.1	21.2
Treatment Prob(F)				1.0000	1.0000	0.0001	0.0001	0.0523	0.0025	0.0001	0.0001

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

#### Trial Summary

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: Roundup Transorp (June 4), Pursuit + Dual II Magnum PPI (June 8)  
Fertilizer: 20.8 - 13.8 - 20.8 @ 289 lbs/ac (May 21)  
Fungicide/Insecticide: Headline (September 1)  
Desication: Eragon (September 27)  
Irrigated: August 6, 20, 24, 27, September 3  
Planting Date: June 29  
Harvest Date: October 12

#### Conclusions:

- \* the fungicide treatments did not cause phytotoxicity on the crop
- \* white mold severity was high
- \* fungicide treatments with two applications (trt 4,8) were similar to one application treatments (trt 3, 7) for disease severity, but had higher yield.
- \* Allegro (trt 2-5), Propulse (trt 6-8), Circobin (trt 9,10) and Cotegra (trt 12) had the lowest disease severity followed Acapela (trt 11) and Miravis Neo (trt 14)
- \* seed weight was not influenced by fungicide treatments
- \* seed pick was influenced by fungicide treatments but the results were not consistent
- \* Allegro (trt 4) had the highest yield but many others were similar: Circobin (trt 9,10) and Propulse (trt 6,8), Cotegra (trt 12) and Miravis Neo (trt 14)
- \* Acapela, Miravis Neo, Delaro and Cotegra had higher disease severity and lower yields than the top treatments, but all were better than the untreated check.
- \* Oxidate and Oro-Solute had high disease severity and yield similar to the untreated check

**2021 White Mold Cultivar x Row Width x Population Dry Bean**  
**University of Guelph, Huron Research Station**

Factor A Cultivar	Factor B Row Width	Factor C Population	Plant Population (% of desired)			Plant Dry Weight (g)		Plant Height (cm)		Plant Development (BBCH)		Greenseeker (0-100)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield - Pick (kg/ha)
			24 DAP	45 DAP	69 DAP	45 DAP	69 DAP	45 DAP	69 DAP	45 DAP	69 DAP	74 DAP	96 DAP	35.0 a	2934 a	1902 b			
Beryl		100	11.8 a	36.5 a	48 a	87 a	69 a	77 a	79 a	80 b	9.3 a	35.4 a	33.3 b	35.0 a	2934 a	1902 b			
Merlot		92	11.3 a	40.7 a	49 a	89 a	60 a	76 b	75 b	84 a	9.8 a	33.9 a	38.1 a	17.5 a	2843 a	2349 a			
	Narrow	96	12.2 a	41.8 a	48 a	88 a	64 a	76 a	78 a	83 a	11.5 a	41.5 a	35.1 b	27.4 a	2976 a	2158 a			
	Wide	96	10.8 a	35.4 a	49 a	88 a	64 a	76 a	76 a	81 b	7.6 b	27.8 b	36.2 a	25.1 a	2801 b	2093 a			
		100	96	8.2 c	27.2 b	48 a	88 a	64 a	76 a	81 a	82 a	10.4 a	43.1 a	35.4 a	29.0 a	2926 a	2071 a		
		80	96	10.5 b	35.0 b	49 a	89 a	65 a	76 a	80 a	83 a	11.2 a	39.4 a	35.6 a	26.4 a	2896 a	2131 a		
		60	96	13.3 a	41.9 a	49 a	88 a	64 a	76 a	78 a	82 a	9.2 a	30.2 b	35.6 a	25.4 a	2966 a	2203 a		
		40	96	14.2 a	50.3 a	48 a	88 a	64 a	77 a	69 b	82 a	7.4 a	25.9 b	36.2 a	24.2 a	2767 a	2097 a		
Beryl	Narrow	100	11.7 a	41.5 a	48 a	88 a	69 a	77 a	80 a	81 c	11.1 a	43.7 a	33.0 a	37.3 a	3001 a	1873 a			
Beryl	Wide	100	11.9 a	31.6 a	49 a	87 a	69 a	77 a	78 a	79 d	7.4 a	27.2 a	33.5 a	32.7 b	2867 a	1931 a			
Merlot	Narrow	92	12.8 a	42.2 a	48 a	89 a	59 a	76 a	76 a	85 a	11.8 a	39.4 a	37.3 a	17.4 c	2951 a	2443 a			
Merlot	Wide	92	9.8 b	39.2 a	50 a	89 a	60 a	76 a	74 a	83 b	7.8 a	28.4 a	38.9 a	17.6 c	2735 a	2255 a			
Beryl		100	100	8.8 a	25.5 a	48 a	88 a	68 a	77 a	81 a	79 d	9.8 a	45.1 a	33.0 a	41.3 a	2932 a	1710 a		
Beryl		80	100	11.6 a	35.2 a	50 a	91 a	69 a	77 a	82 a	81 c	12.3 a	40.5 a	33.9 a	34.9 b	2971 a	1936 a		
Beryl		60	100	12.7 a	34.1 a	48 a	84 a	69 a	77 a	79 a	80 cd	8.1 a	29.8 a	32.7 a	34.3 b	3028 a	1985 a		
Beryl		40	100	13.9 a	51.4 a	47 a	86 a	69 a	77 a	74 a	81 c	6.9 a	26.3 a	33.5 a	29.6 c	2807 a	1978 a		
Merlot		100	93	7.6 a	28.8 a	48 a	88 a	59 a	76 a	81 a	86 a	10.9 a	41.1 a	37.8 a	16.7 d	2920 a	2433 a		
Merlot		80	92	9.3 a	34.8 a	49 a	86 a	60 a	76 a	78 a	85 ab	10.1 a	38.3 a	37.3 a	17.9 d	2822 a	2326 a		
Merlot		60	93	13.9 a	49.8 a	50 a	92 a	59 a	76 a	76 a	84 b	10.4 a	30.6 a	38.5 a	16.6 d	2904 a	2421 a		
Merlot		40	92	14.4 a	49.3 a	50 a	89 a	60 a	76 a	64 a	83 bc	7.9 a	25.5 a	38.8 a	18.9 d	2727 a	2216 a		
	Narrow	100	96	8.1 a	30.1 a	45 a	90 a	64 a	76 a	81 a	83 a	12.1 a	53.4 a	35.0 a	30.6 a	3020 a	2078 a		
	Narrow	80	95	11.3 a	35.1 a	49 a	88 a	64 a	76 a	82 a	84 a	14.4 a	47.8 a	34.9 a	27.8 a	2877 a	2087 a		
	Narrow	60	97	14.6 a	47.8 a	48 a	89 a	64 a	76 a	79 a	83 a	9.5 a	32.6 a	34.9 a	26.2 a	3153 a	2328 a		
	Narrow	40	97	14.9 a	54.3 a	49 a	86 a	64 a	77 a	70 a	83 a	10.0 a	32.3 a	35.7 a	25.0 a	2855 a	2141 a		
	Wide	100	97	8.2 a	24.2 a	51 a	86 a	63 a	76 a	81 a	81 a	8.7 a	32.8 a	35.8 a	27.4 a	2833 a	2065 a		
	Wide	80	97	9.7 a	34.9 a	50 a	89 a	66 a	76 a	78 a	82 a	8.0 a	31.1 a	36.4 a	25.0 a	2915 a	2176 a		
	Wide	60	96	12.0 a	36.1 a	49 a	87 a	64 a	77 a	77 a	81 a	8.9 a	27.8 a	36.2 a	24.7 a	2779 a	2078 a		
	Wide	40	95	13.4 a	46.3 a	48 a	89 a	64 a	76 a	68 a	81 a	4.8 a	19.5 a	36.6 a	23.5 a	2678 a	2053 a		
Beryl	Narrow	100	100	9.0 a	30.0 a	47 a	86 a	69 a	76 a	83 a	80 a	10.6 a	58.0 a	32.7 a	45.1 a	3157 a	1732 a		
Beryl	Narrow	80	100	11.1 a	35.3 a	49 a	92 a	69 a	76 a	84 a	82 a	16.6 a	52.8 a	33.3 a	37.3 a	2845 a	1785 a		
Beryl	Narrow	60	100	12.9 a	36.7 a	47 a	85 a	69 a	78 a	79 a	80 a	8.0 a	31.0 a	32.2 a	35.1 a	3065 a	1977 a		
Beryl	Narrow	40	100	13.6 a	64.0 a	48 a	87 a	69 a	77 a	75 a	83 a	9.3 a	32.9 a	33.8 a	31.9 a	2939 a	2000 a		
Beryl	Wide	100	100	8.5 a	21.0 a	49 a	89 a	68 a	77 a	80 a	77 a	9.0 a	32.1 a	33.2 a	37.4 a	2708 a	1688 a		
Beryl	Wide	80	100	12.2 a	35.0 a	51 a	90 a	69 a	77 a	80 a	80 a	7.9 a	28.3 a	34.5 a	32.5 a	3096 a	2087 a		
Beryl	Wide	60	100	12.5 a	31.5 a	50 a	84 a	69 a	77 a	80 a	80 a	8.1 a	28.6 a	33.1 a	33.5 a	2990 a	1992 a		
Beryl	Wide	40	100	14.3 a	38.7 a	46 a	86 a	68 a	77 a	72 a	80 a	4.5 a	19.6 a	33.3 a	27.2 a	2676 a	1957 a		
Merlot	Narrow	100	92	7.3 a	30.3 a	44 a	93 a	60 a	77 a	80 a	87 a	13.5 a	48.8 a	37.3 a	16.0 a	2883 a	2424 a		
Merlot	Narrow	80	90	11.5 a	34.9 a	49 a	85 a	59 a	76 a	80 a	86 a	12.1 a	42.8 a	36.5 a	18.3 a	2909 a	2389 a		
Merlot	Narrow	60	94	16.3 a	58.9 a	50 a	93 a	58 a	75 a	79 a	86 a	11.0 a	34.3 a	37.6 a	17.3 a	3241 a	2679 a		
Merlot	Narrow	40	93	16.2 a	44.7 a	50 a	84 a	59 a	77 a	65 a	83 a	10.8 a	31.8 a	37.6 a	18.0 a	2772 a	2282 a		
Merlot	Wide	100	93	7.9 a	27.3 a	52 a	84 a	59 a	76 a	81 a	85 a	8.4 a	33.4 a	38.3 a	17.3 a	2957 a	2441 a		
Merlot	Wide	80	94	7.2 a	34.7 a	49 a	87 a	62 a	75 a	77 a	83 a	8.1 a	33.9 a	38.2 a	17.4 a	2734 a	2264 a		
Merlot	Wide	60	91	11.4 a	40.7 a	49 a	91 a	59 a	76 a	73 a	82 a	9.8 a	27.0 a	39.3 a	15.9 a	2568 a	2164 a		
Merlot	Wide	40	90	12.6 a	53.9 a	50 a	93 a	60 a	76 a	64 a	83 a	5.1 a	19.3 a	39.9 a	19.8 a	2681 a	2149 a		
	Mean			11.5	38.6	49	88	64	76	77	82	9.5	34.7	35.7	26.3	2889	2126		
	Pr>F (A)			0.5366	0.2138	0.4921	0.5404	0.0001	0.0136	0.0098	0.0001	0.6290	0.6085	0.0001	0.0001	0.2819	0.0001		
	Pr>F (B)			0.0591	0.0558	0.1977	0.8849	0.4160	0.7986	0.2009	0.0002	0.0027	0.0001	0.0009	0.0404	0.0424	0.3866		
	Pr>F (AxB)			0.0305	0.2989	0.7523	0.9667	0.1318	0.4266	0.9525	0.9529	0.9189	0.3547	0.0759	0.0257	0.6268	0.1062		
	Pr>F (C)			0.0001	0.0001	0.9232	0.9916	0.7089	0.8934	0.0001	0.7412	0.1598	0.0004	0.3664	0.0198	0.3764	0.6282		
	Pr>F (AxC)			0.3501	0.2295	0.6779	0.3639	0.4525	0.6153	0.2592	0.0081	0.6140	0.9470	0.0571	0.0005	0.9431	0.1536		
	Pr>F (BxC)			0.6184	0.6670	0.3637	0.7499	0.1363	0.8065	0.9262	0.9712	0.3697	0.2836	0.8406	0.9032	0.3984	0.4437		
	Pr>F (AxBxC)			0.3945	0.0875	0.4613	0.5286	0.2801	0.2014	0.6429	0.1911	0.6703	0.6089	0.5206	0.5081	0.0781	0.4658		
	LSD 0.05 (A)			NA	NA	NA	NA	NA	1.0	3.0	NA	NA	NA	0.6	NA	NA	151		
	LSD 0.05 (B)			NA	NA	NA	NA	NA	NA	NA	1.0	2.5	6.0	0.6	NA	NA	169		
	LSD 0.05 (AxB)			2.1	NA	NA	NA	NA	NA	NA	1.0	NA	NA	NA	3.0	NA	NA		
	LSD 0.05 (C)			2.1	9.4	NA	NA	NA	NA	NA	4.0	NA	NA	8.4	NA	NA	NA		
	LSD 0.05 (AxC)			NA	NA	NA	NA	NA	NA	NA	2.0	NA	NA	NA	4.3	NA	NA		
	LSD 0.05 (BxC)			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		

Means followed by same letter do not significantly differ ( $P=0.05$ , LSD)

#### Trial Summary

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)

Harvest Length: 4 m

Varieties: Beryl and Merlot

Seed Treatment: CruiserMaxxBeans + Dynasty

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha - Applied May 21, Incorporated June 7

Irrigated on August 3, 6, 20, 24, 27

Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 18

Planting Date: June 11

Harvest Date: September 28

# 2021 White Mold Time of Day Application Trial A

## University of Guelph, Huron Research Station

No.	Name	Rate	Unit	Appl Code	Phytotoxicity (%)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
					52 DAP	66 DAP	70 DAP	89 DAP				
1	Untreated Check				0.0 a	0.0 a	33.6 a	61.6 a	31.1 b	25.8 a	1938 b	1439 b
2	Allegro - 6:00	500	g ai/ha	AB	0.0 a	0.0 a	13.0 bc	20.9 b	33.0 a	22.8 ab	2792 a	2153 a
3	Allegro - 12:00	500	g ai/ha	AB	0.0 a	0.0 a	9.8 c	26.4 b	32.8 a	19.2 b	2883 a	2328 a
4	Allegro - 18:00	500	g ai/ha	AB	0.0 a	0.0 a	10.8 bc	20.0 b	32.5 a	21.0 b	2711 a	2140 a
5	Allegro - 24:00	500	g ai/ha	AB	0.0 a	0.0 a	14.9 b	24.9 b	32.1 ab	19.2 b	2793 a	2257 a
LSD (P=.05)					NA	NA	4.9	7.7	1.2	4.1	510	412
CV					0.0	0.0	19.3	16.2	2.5	12.2	12.6	13.0
Treatment Prob(F)					1.0000	1.0000	0.0001	0.0001	0.0345	0.0188	0.0095	0.0035

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

### Trial Summary

Design: RCBD with 4 replications

Cultivar: Beryl (Great Northern)

Planting Date: June 11 - 6 rows @ 38 cm and 6 m length

Harvest Date: September 20 - 4 rows and 4 m length

Seeding Rate: 17 seeds/m

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup Transorp May 21, PPI June 7

Insecticide: Matador 83 ml/ha August 2

Fungicide: headline 0.6 l/ha, August 2

Treatment Applications: July 28, August 9

Irrigated on August 3, 6, 20, 24, 27.

Sclerotia Bean Screenings applied November 2020 to trial area

Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 3

### Conclusions:

\* the Allegro treatments reduced white mold severity and seed pick compared to the untreated check

\* the Allegro treatments increased seed weight and seed yield compared to the untreated check

\* the time of day for application did not influence disease severity scores or seed yield

\* there were no differences between treatments for any other parameter measured

# 2021 White Mold Time of Day Application Trial B

## University of Guelph, Huron Research Station

No.	Name	Rate	Unit	Appl Code	Phytotoxicity (%)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
					58 DAP	71 DAP	70 DAP	97 DAP				
1	Untreated Check				0.0 a	0.0 a	9.3 a	31.8 a	39.0 a	10.6 a	3405 a	3045 a
2	Allegro - 6:00	500	g ai/ha	AB	0.0 a	0.0 a	2.6 b	9.3 b	40.9 a	9.2 a	3508 a	3183 a
3	Allegro - 12:00	500	g ai/ha	AB	0.0 a	0.0 a	2.1 b	6.9 b	40.2 a	8.6 ab	3368 a	3076 a
4	Allegro - 18:00	500	g ai/ha	AB	0.0 a	0.0 a	2.3 b	8.1 b	41.1 a	7.1 b	3516 a	3267 a
5	Allegro - 24:00	500	g ai/ha	AB	0.0 a	0.0 a	2.0 b	8.6 b	40.1 a	9.6 a	3625 a	3277 a
LSD (P=.05)					NA	NA	2.9	8.8	1.6	2.1	405	371
CV					0.0	0.0	50.6	44.3	2.6	14.9	7.6	7.6
Treatment Prob(F)					1.0000	1.0000	0.0004	0.0002	0.1122	0.0334	0.6730	0.5565

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

### Trial Summary

Design: RCBD with 4 replications

Cultivar: Merlot (Small Red Mexican)

Planting Date: June 23 - 6 rows @ 38 cm and 6 m length

Harvest Date: October 13 - 4 rows and 4 m length

Seeding Rate: 17 seeds/m

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Roundup Transorp June 4

Pursuit 0.2 l/ha, Dual 1.7 l/ha, PPI June 8

Fungicide: Headline 0.6 l/ha September 1

Treatment Applications: August 13, 26

Irrigated on August 6, 20, 24, 27, September 3.

Sclerotia Bean Screenings applied November 2020 to trial area

Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 27

### Conclusions:

\* the Allegro treatments reduced white mold severity and seed pick compared to the untreated check

\* the Allegro treatments did not affect seed weight or seed yield

\* the time of day for application did not influence disease severity scores or seed yield

# 2021 White Mold Time of Day Application Trial C

## University of Guelph, Huron Research Station

No.	Name	Rate	Unit	Appl Code	Phytotoxicity (%)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
					52 DAP	66 DAP	70 DAP	89 DAP				
1	Untreated Check				0.0 a	0.0 a	13.1 a	32.5 a	31.6 b	13.3 a	3539 c	3082 b
2	Allegro - 6:00	500	g ai/ha	AB	0.0 a	0.0 a	4.1 b	10.0 b	34.5 a	12.2 a	4428 ab	3905 a
3	Allegro - 12:00	500	g ai/ha	AB	0.0 a	0.0 a	3.4 b	9.0 b	33.8 a	13.3 a	4621 ab	3997 a
4	Allegro - 18:00	500	g ai/ha	AB	0.0 a	0.0 a	4.5 b	11.9 b	33.9 a	12.9 a	4176 b	3644 ab
5	Allegro - 24:00	500	g ai/ha	AB	0.0 a	0.0 a	5.0 b	9.8 b	34.3 a	12.2 a	4698 a	4131 a
LSD (P=.05)					NA	NA	4.4	9.2	1.9	5.6	515	587
CV					0.0	0.0	47.0	40.8	3.6	28.6	7.8	10.2
Treatment Prob(F)					1.0000	1.0000	0.0022	0.0005	0.0373	0.9814	0.0024	0.0159

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

### Trial Summary

Design: RCBD with 4 replications

Cultivar: Viper (Small Red Mexican)

Planting Date: June 23 - 6 rows @ 38 cm and 6 m length

Harvest Date: September 30 - 4 rows and 4 m length

Seeding Rate: 17 seeds/m

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Roundup Transorp June 4

Pursuit 0.2 l/ha, Dual 1.7 l/ha, PPI June 8

Fungicide: Headline 0.6 l/ha September 1

Treatment Applications: August 13, 26

Irrigated on August 6, 20, 24, 27, September 3.

Sclerotia Bean Screenings applied November 2020 to trial area

Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 27

### Conclusions:

- \* the Allegro treatments reduced white mold severity compared to the untreated check
- \* the Allegro treatments increased seed weight and seed yield compared to the untreated check
- \* the time of day for application did not influence disease severity scores
- \* there were no differences between treatments for any other parameter measured

## 2021 White Mold Time of Day Application Trial D

### University of Guelph, Huron Research Station

No.	Name	Rate	Unit	Appl Code	Phytotoxicity (%)		Disease Severity (%)		Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
					52 DAP	65 DAP	64 DAP	90 DAP				
1	Untreated Check				0.0 a	0.0 a	14.1 a	51.4 a	29.1 a	29.7 a	1675 b	1169 b
2	Allegro - 6:00	500	g ai/ha	AB	0.0 a	0.0 a	8.4 a	14.9 b	30.5 a	30.9 a	2452 a	1744 a
3	Allegro - 12:00	500	g ai/ha	AB	0.0 a	0.0 a	9.8 a	15.4 b	30.7 a	28.6 a	2202 a	1582 a
4	Allegro - 18:00	500	g ai/ha	AB	0.0 a	0.0 a	6.1 a	19.8 b	31.2 a	29.8 a	2415 a	1701 a
5	Allegro - 24:00	500	g ai/ha	AB	0.0 a	0.0 a	8.5 a	20.0 b	30.6 a	27.5 a	2312 a	1675 a
LSD (P=.05)					NA	NA	9.8	10.2	1.6	6.3	467	386
CV					0.0	0.0	67.7	27.2	3.3	13.9	13.4	15.6
Treatment Prob(F)					1.0000	1.0000	0.5093	0.0001	0.1218	0.8141	0.0242	0.0442

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

#### Trial Summary

Design: RCBD with 4 replications

Cultivar: Beryl (Great Northern)

Planting Date: June 29 - 6 rows @ 38 cm and 6 m length

Harvest Date: October 12 - 4 rows and 4 m length

Seeding Rate: 17 seeds/m

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Roundup Transorp June 4

Pursuit 0.2 l/ha, Dual 1.7 l/ha, PPI June 8

Fungicide: Headline 0.6 l/ha September 1

Treatment Applications: August 13, 26

Irrigated on August 6, 20, 24, 27, September 3.

Sclerotia Bean Screenings applied November 2020 to trial area

Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 27

#### Conclusions:

- \* the Allegro treatments reduced white mold severity compared to the untreated check
- \* the Allegro treatments increased seed yield compared to the untreated check
- \* the time of day for application did not influence disease severity scores or seed yield
- \* there were no differences between treatments for any other parameter measured

## 2021 White Mold Registered Products Soybean 1st Planting University of Guelph, Ridgetown Campus

Treatment No.	Name	Rate	Unit	Appl Code	Phytotoxicity			Disease Severity	Seed Weight (g/100)	Seed Quality (1-10)	Yield	
					58 DAP	71 DAP	120 DAP				(kg/ha)	(bu/ac)
1	Untreated Check				0 a	0 a	8.6 a	22.8 a	2.3 a	5201 a	77.3 a	
2	Acapela	0.88	l/ha	A	0 a	0 a	4.8 bc	23.2 a	2.0 b	5467 a	81.3 a	
3	Acapela	0.88	l/ha	AB	0 a	0 a	3.3 bc	23.5 a	1.8 c	5195 a	77.3 a	
4	Allegro	0.44	l/ha	A	0 a	0 a	3.7 bc	23.4 a	2.0 b	5529 a	82.2 a	
5	Allegro	0.44	l/ha	AB	0 a	0 a	3.2 bc	24.2 a	2.0 b	5300 a	78.8 a	
6	Stratego Pro +Agral90	0.57+.125%	l/ha	A	0 a	0 a	4.3 bc	23.5 a	2.0 b	5392 a	80.2 a	
7	Stratego Pro +Agral90	0.57+.125%	l/ha	AB	0 a	0 a	4.6 bc	22.7 a	2.0 b	5032 a	74.8 a	
8	Cotegra	0.7	l/ha	A	0 a	0 a	4.1 bc	22.7 a	2.0 b	5175 a	77.0 a	
9	Cotegra	0.7	l/ha	AB	0 a	0 a	5.0 bc	23.0 a	1.9 bc	5033 a	74.8 a	
10	Priaxor + Cotegra	0.45	l/ha	A	0 a	0 a	2.8 c	23.3 a	2.0 b	5327 a	79.2 a	
11	Cotegra + Priaxor	0.7	l/ha	A	0 a	0 a	5.7 b	24.0 a	1.9 bc	5536 a	82.3 a	
12	Circobin	1210	g ai/ha	AB	0 a	0 a	2.7 c	24.1 a	2.0 b	5244 a	78.0 a	
13	Miravis Neo	375	g ai/ha	AB	0 a	0 a	4.4 bc	22.7 a	2.0 b	5458 a	81.2 a	
Mean					0.0	0.0	4.4	23.3	2.0	5299	78.8	
LSD (P=.05)					0.0	0.0	2.9	NA	0.2	NA	NA	
CV					0.0	0.0	45.8	3.5	6.9	5.2	5.2	
Treatment Prob(F)					1.0000	1.0000	0.0218	0.0950	0.0096	0.1547	0.1546	

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

### Trial Summary

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

Seed Treatment:

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Treatment Applications: July 26, August 8

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha May 21

Irrigated on August 3, 6, 20, 24, 27

Dessication: Eragon (146ml/ha), Merge (1.0 l/ha) September 3

Planting Date: June 11

Harvest Date: September 20

### Conclusions:

\* the fungicide treatments did not cause phytotoxicity on the crop

\* white mold severity was low

\* Circobin (trt 12) and Priaxor+Cotegra (trt 10) had the lowest disease severity but were similar to many other treatments

\* fungicide treatments had better seed quality than the untreated check

\* fungicide treatment did not affect seed weight or yield

## 2021 White Mold Registered Products Soybean 2nd Planting University of Guelph, Ridgetown Campus

No.	Treatment Name	Rate	Unit	Appl Code	Phytotoxicity			Disease Severity	Seed Weight (g/100)	Seed Quality (1-10)	Yield	
					58 DAP	71 DAP	120 DAP				(kg/ha)	(bu/ac)
1	Untreated Check				0 a	0 a	9.0 a	21.5 a	2.5 a	4712 a	70.1 a	
2	Acapela	0.88	l/ha	A	0 a	0 a	3.4 c	21.8 a	2.0 c	4861 a	72.3 a	
3	Acapela	0.88	l/ha	AB	0 a	0 a	5.4 bc	22.1 a	2.1 b	4478 a	66.6 a	
4	Allegro	0.44	l/ha	A	0 a	0 a	4.2 bc	20.7 a	2.0 c	4585 a	68.2 a	
5	Allegro	0.44	l/ha	AB	0 a	0 a	5.8 bc	22.3 a	2.0 c	4914 a	73.1 a	
6	Stratego Pro +Agral90	0.57+.125%	l/ha	A	0 a	0 a	5.0 bc	21.4 a	2.0 c	4760 a	70.8 a	
7	Stratego Pro +Agral90	0.57+.125%	l/ha	AB	0 a	0 a	3.4 c	21.4 a	2.0 c	4679 a	69.6 a	
8	Cotegra	0.7	l/ha	A	0 a	0 a	6.3 b	21.5 a	2.0 c	4763 a	70.8 a	
9	Cotegra	0.7	l/ha	AB	0 a	0 a	5.6 bc	21.7 a	2.0 c	4654 a	69.2 a	
10	Priaxor + Cotegra	0.45	l/ha	A	0 a	0 a	4.8 bc	21.0 a	2.0 c	4610 a	68.6 a	
11	Cotegra + Priaxor	0.7	l/ha	A	0 a	0 a	5.0 bc	21.9 a	2.0 c	4850 a	72.1 a	
12	Circobin	1210	g ai/ha	AB	0 a	0 a	5.0 bc	21.6 a	2.0 c	4617 a	68.6 a	
13	Miravis Neo	375	g ai/ha	AB	0 a	0 a	4.1 bc	21.5 a	2.0 c	4893 a	72.8 a	
Mean					0.0	0.0	5.2	21.6	2.0	4721	70.2	
LSD (P=.05)					0.0	0.0	2.5	1.2	0.1	299	4.4	
CV					0.0	0.0	34.1	3.8	3.4	4.4	4.4	
Treatment Prob(F)					1.0000	1.0000	0.0092	0.4188	0.0001	0.1278	0.1283	

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

### Trial Summary

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: 20 seeds/m

Soybean Variety: S18-C2

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Treatment Applications: August 5, 20

Herbicide: Roundup 3.3 l/ha June 4

Pursuit 0.2 l/ha, Dual 1.7 l/ha PPI - June 8

Irrigated: August 6, 20, 24, 27, September 3

Planting Date: June 16

Harvest Date: October 13

### Conclusions:

\* the fungicide treatments did not cause phytotoxicity on the crop

\* white mold severity was low

\* Acapela (trt 2) and Stratego Pro (trt 7) had the lowest disease severity but were similar all treatments except Cotegra (trt 8)

\* fungicide treatments improved seed quality compared to the untreated check

\* fungicide treatment did not affect seed weight or yield

**2021 Anthracnose Foliar Fungicide Head to Head First Planting**  
**University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate	Unit	Appl Code	Disease Severity				Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)	
					Leaf 78 DAP	Stem 78 DAP	92 DAP	Pod 78 DAP					
1	Inoculated Check	--	--	--	8.4 a	16.3 a	63.6 a	12.8 a	24.9 a	22.0 e	4.6 a-d	2870 f	2742 f
2	Treated Check (Headline)	400	ml/ha	ABCD	0.8 f	1.9 g	4.6 i	0.6 h	5.2 i	23.4 bcd	3.4 de	3457 a-d	3338 abc
3	Quadris	500	ml/ha	AB	2.3 def	2.8 efg	11.8 gh	2.5 e-h	8.4 f-i	23.6 bcd	3.2 e	3473 a-d	3361 abc
4	Allegro	600	ml/ha	AB	3.9 cd	4.9 cd	16.4 fg	4.1 de	12.6 cd	23.6 bcd	5.2 a	3134 def	2970 def
5	Allegro	1000	ml/ha	AB	3.5 d	4.8 cde	13.5 fg	3.8 e	9.6 d-h	23.5 bcd	3.5 de	3384 a-d	3266 a-d
6	Quadris + Allegro	500+600	ml/ha	AB	2.2 def	3.2 d-g	6.9 hi	1.8 fgh	6.0 hi	23.8 abc	3.9 b-e	3549 ab	3412 ab
7	Propulse	500	ml/ha	AB	3.5 d	5.4 c	25.8 e	5.9 cd	12.1 de	23.3 bcd	4.1 b-e	3190 c-f	3060 c-f
8	Propulse	750	ml/ha	AB	3.0 de	5.1 cd	29.8 de	4.1 de	12.4 d	22.9 cde	4.8 ab	3447 a-d	3281 a-d
9	Acapela	880	ml/ha	AB	3.3 de	3.8 c-g	14.8 fg	2.9 efg	8.7 e-i	24.7 a	4.7 abc	3546 ab	3380 abc
10	Priaxor	450	ml/ha	AB	1.6 ef	2.4 fg	5.9 i	1.6 gh	6.4 ghi	23.9 abc	4.2 a-e	3712 a	3555 a
11	Headline	400	ml/ha	AB	2.9 de	3.1 d-g	7.2 hi	1.8 fgh	5.9 i	23.6 bcd	4.0 b-e	3518 abc	3378 abc
12	Circobin	2450	ml/ha	AB	2.7 de	3.6 c-g	16.4 fg	2.2 e-h	10.1 def	24.0 ab	4.0 b-e	3508 abc	3368 abc
13	Circobin	3150	ml/ha	AB	2.6 def	4.1 c-f	18.1 f	3.6 ef	9.7 d-g	22.9 cde	4.6 a-d	3408 a-d	3255 a-d
14	Cotegra	1000	ml/ha	AB	3.1 de	5.3 c	31.0 d	3.9 de	11.3 def	23.0 b-e	4.3 a-d	3313 b-e	3168 b-e
15	Delaro	572	ml/ha	AB	3.9 cd	3.4 c-g	7.2 hi	2.2 e-h	5.4 i	23.8 abc	3.7 cde	3533 abc	3402 ab
16	Miravis Neo	1250	ml/ha	AB	2.2 def	3.2 d-g	14.8 fg	2.3 e-h	7.7 f-i	23.8 a-d	3.6 de	3605 ab	3476 ab
17	Oxidate	2.5	% v/v	AB	5.7 bc	12.7 b	42.9 c	6.7 bc	16.3 bc	23.2 bcd	3.7 cde	3012 ef	2901 ef
18	Oro-Solute	0.75	% v/v	AB	7.1 ab	14.0 b	51.4 b	8.3 b	17.4 b	22.7 de	4.1 a-e	3017 ef	2893 ef
Treatment Prob(F)					1.8	2.1	4.9	2.0	3.7	1.1	1.1	344	328
CV					36.8	26.7	16.2	36.3	24.7	3.3	19.3	7.2	7.2
LSD (P<0.05)					0.0001	0.0001	0.0001	0.0001	0.0001	0.0079	0.0482	0.0002	0.0001

Means followed by same letter do not significantly differ (P<0.05, LSD)

Trial Summary

Design: RCBD with 4 replications

Cultivar: Argosy

Planting Date: June 7 - 6 rows @ 38 cm and 6 meter length

Harvest Date: September 29 - 4 rows and 5 meter length

Seeding Rate: 17 seed/m of row

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha

Insecticide: Matador 83 ml/ha July 26, August 20

Fungicide: Lance 770 g/ha July 26, August 20

Trt Application #1: July 28 at 6:30 AM, Temp = 16.1 C, RH = 91%, Wind = 1 kph E

Trt Application #2: August 11 at 7:00 AM, Temp = 20.5 C, RH = 95%, Wind = 0 kph sW

Inoculation: Spores July 28, 1.5L of solution @  $1.1 \times 10^7$  spores/ml (July 29 - 12mm rain)

Irrigation: August 21, 27

Desiccant: Eragon 146 ml/ha September 18

Conclusions:

\* Disease severity was moderately high, but was slow to develop

\* Quadris (trt 3, 6) Acapela (trt 9) Headline (trt 10, 11) and Delaro (trt 15) had the lowest disease severity and the highest yield

\* Allegro had higher disease severity than the best treatments and lower yield

\* Allegro had lower disease severity and higher yield than Propulse

\* Allegro had lower disease severity but similar yield to Circobin

\* Miravis Neo had disease severity and yield that was similar to the best treatments

\* Oxidate and Oro-Solute had a minor decrease in disease severity but had low yield that was similar to the inoculated control

**2021 Anthracnose Foliar Fungicide Head to Head Second Planting**  
**University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate	Appl Unit	Leaf Code	Disease Severity				Seed Weight (g/100)	Seed Pick (%)	Seed Yield (kg/ha)	Seed Yield-Pick (kg/ha)
					68 DAP	68 DAP	95 DAP	68 DAP				
1	Inoculated Check	--	--	--	9.9 a	14.8 a	72.9 a	7.1 a	35.3 a	19.3 f	13.3 a	3003 g
2	Treated Check (Headline)	400	ml/ha	ABCD	2.4 e-h	3.6 d	10.0 i	2.5 ghi	1.9 h	22.8 bc	5.1 efg	4091 ab
3	Quadris	500	ml/ha	AB	1.8 h	2.7 d	13.7 ghi	2.5 ghi	3.4 gh	23.3 ab	4.2 fg	3890 a-d
4	Allegro	600	ml/ha	AB	3.1 d-g	4.3 d	26.4 ef	4.3 cd	8.7 ef	23.4 ab	7.1 d	3949 abc
5	Allegro	1000	ml/ha	AB	2.8 e-h	3.6 d	17.1 ghi	3.0 fgh	4.8 fgh	23.5 ab	5.4 d-g	3869 a-d
6	Quadris + Allegro	500+600	ml/ha	AB	2.5 e-h	3.2 d	11.6 hi	2.2 hi	2.7 gh	24.1 a	4.5 efg	4126 a
7	Propulse	500	ml/ha	AB	3.4 def	6.2 c	37.3 d	4.8 c	13.2 d	21.7 d	9.7 bc	3498 ef
8	Propulse	750	ml/ha	AB	3.4 de	6.6 c	32.3 de	3.7 def	11.3 de	22.1 cd	9.3 c	3730 cde
9	Acapela	880	ml/ha	AB	2.1 gh	2.8 d	13.3 hi	2.1 i	3.5 gh	24.1 a	4.6 efg	3693 cde
10	Priaxor	450	ml/ha	AB	2.5 e-h	3.4 d	11.9 hi	2.4 ghi	3.0 gh	23.6 ab	4.4 fg	3914 abc
11	Headline	400	ml/ha	AB	2.3 fgh	3.7 d	12.6 hi	3.2 efg	3.3 gh	23.6 ab	4.3 fg	3989 abc
12	Circobin	2450	ml/ha	AB	2.3 fgh	3.0 d	18.3 gh	2.5 ghi	6.2 fgh	23.4 ab	6.1 def	3777 b-e
13	Circobin	3150	ml/ha	AB	2.2 gh	3.3 d	20.7 fg	2.3 ghi	6.8 fg	23.6 ab	6.4 de	3797 a-e
14	Cotegra	1000	ml/ha	AB	4.2 cd	7.7 bc	50.9 c	4.0 cde	19.9 c	21.6 d	10.4 bc	3564 de
15	Delaro	572	ml/ha	AB	2.2 gh	2.7 d	12.8 hi	1.9 i	2.9 gh	23.5 ab	4.1 g	4017 abc
16	Miravis Neo	1250	ml/ha	AB	2.4 e-h	2.8 d	13.2 hi	2.6 ghi	3.5 gh	23.5 ab	4.9 efg	3978 abc
17	Oxidate	2.5	% v/v	AB	5.9 b	9.0 b	68.9 ab	5.8 b	33.3 a	20.7 e	11.4 ab	3167 fg
18	Oro-Solute	0.75	% v/v	AB	5.2 bc	9.1 b	64.3 b	6.1 b	27.3 b	20.5 e	10.7 bc	3189 fg
Treatment Prob(F)					1.1	1.7	7.3	0.9	4.4	0.9	1.9	337
CV					23.2	23.3	18.2	17.9	29.1	2.7	19.7	6.4
LSD (P<0.05)					0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

Means followed by same letter do not significantly differ (P<0.05, LSD)

Trial Summary

Design: RCBD with 4 replications

Cultivar: Argosy

Planting Date: June 7 - 6 rows @ 38 cm and 6 meter length

Harvest Date: September 29 - 4 rows and 5 meter length

Seeding Rate: 17 seed/m of row

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha - May 21

Reflex 1 l/ha, Agral90 0.1% v/v

Insecticide: Matador 83 ml/ha August 20

Fungicide: Lance 770 g/ha August 20

Trt Application #1: August 9 at 6:30 AM, Temp = 21.8 C, RH = 93%, Wind = 4 kph SW

Trt Application #2: August 23 at 7:00 AM, Temp = 18.3 C, RH = 97%, Wind = 0 kph sW

Inoculation: Spores Aug 9, 1.5L of solution @  $2.4 \times 10^7$  spores/ml (Aug 10 - 5 mm rain)

Irrigation: August 21, 27, September 2

Desiccant: Eragon 146 ml/ha September 28

Conclusions:

\* Disease severity was high, but was relatively slow to establish

\* Quadris (trt 3, 6) Acapela (trt 9) Headline (trt 10, 11) and Delaro (trt 15) had the lowest disease severity and the highest yield

\* Allegro had higher disease severity than the best treatments, but had similar yield

\* Allegro had lower disease severity and higher yield than Propulse

\* Allegro had lower disease severity but similar yield to Circobin

\* Miravis Neo had disease severity and yield that was similar to the best treatments

\* Oxidate and Oro-Solute had disease severity and yield similar to the inoculated control

## 2021 Anthracnose Foliar Fungicide x Fertilizer First Planting

University of Guelph, Huron Research Station

Factor A Fungicide	Factor B Fertilizer	Rate (L/ha)	Leaf			Seed		Pick (%)	Yield (kg/ha)	Yield - Pick (kg/ha)	
			Severity (%) 79 DAP	Stem Severity (%) 79 DAP	92 DAP	Pod Severity (%) 79 DAP	92 DAP				
Control		--	10.2 a	17.3 a	53.1 a	13.5 a	20.9 a	22.2 b	4.1 a	3150 b	3021 b
Headline		0.4	3.1 a	3.1 a	5.0 a	2.7 a	4.5 a	23.6 a	3.6 b	3662 a	3530 a
Quadris		0.5	3.5 a	4.1 a	8.9 a	3.4 a	5.4 a	23.6 a	3.5 b	3624 a	3497 a
Allegro		1.0	4.6 a	4.7 a	9.6 a	6.2 a	6.8 a	23.7 a	3.6 b	3666 a	3534 a
Propulse		0.8	4.0 a	5.1 a	19.3 a	5.0 a	7.4 a	23.6 a	3.6 b	3587 a	3458 a
	Control	--	5.4 a	7.6 a	20.9 a	6.5 a	9.9 a	23.4 a	4.0 a	3542 a	3401 a
	Crop Booster	5.0	5.5 a	7.4 a	20.8 a	6.6 a	9.1 a	23.5 a	3.5 b	3592 a	3466 a
	Releaf Mn	5.0	4.8 a	6.2 a	20.1 a	6.0 a	9.4 a	23.8 a	3.7 ab	3540 a	3410 a
	42PhiK	5.0	4.5 a	6.1 a	14.9 a	5.6 a	7.6 a	22.7 b	3.6 b	3477 a	3353 a
Control	Control	--	13.1 a	21.5 a	59.0 a	16.4 a	25.0 a	22.0 a	4.9 a	3048 a	2899 a
Control	Crop Booster	5.0	12.0 a	19.6 a	59.4 a	14.0 b	21.8 a	22.1 a	3.9 a	3202 a	3076 a
Control	Releaf Mn	5.0	8.5 b	14.6 b	53.3 a	12.8 b	20.9 b	23.2 a	3.7 a	3130 a	3013 a
Control	42PhiK	5.0	7.1 b	13.4 b	40.6 b	10.9 c	16.1 c	21.6 a	3.9 a	3219 a	3094 a
Headline	Control	0.4	2.7 d	3.3 d	5.5 e	2.6 e	4.3 e	23.8 a	3.9 a	3758 a	3611 a
Headline	Crop Booster	0.4 + 5.0	3.1 d	3.0 d	4.8 e	2.7 e	4.2 e	23.9 a	3.2 a	3678 a	3560 a
Headline	Releaf Mn	0.4 + 5.0	2.9 d	2.8 d	4.9 e	3.0 e	4.9 e	24.1 a	3.6 a	3759 a	3624 a
Headline	42PhiK	0.4 + 5.0	3.7 c	3.2 d	4.8 e	2.5 f	4.5 e	22.7 a	3.7 a	3452 a	3324 a
Quadris	Control	0.5	3.2 d	4.2 c	8.8 d	3.6 e	5.4 e	23.7 a	3.7 a	3765 a	3627 a
Quadris	Crop Booster	0.5 + 5.0	3.8 c	4.3 c	10.0 d	3.5 e	5.5 e	23.9 a	3.5 a	3567 a	3443 a
Quadris	Releaf Mn	0.5 + 5.0	3.8 c	4.0 c	9.3 d	3.2 e	5.7 e	23.9 a	3.6 a	3632 a	3503 a
Quadris	42PhiK	0.5 + 5.0	3.2 c	3.8 c	7.5 d	3.4 e	4.9 e	23.0 a	3.4 a	3534 a	3414 a
Allegro	Control	1.0	4.1 c	4.2 c	9.8 d	5.4 d	7.2 d	24.0 a	3.8 a	3629 a	3490 a
Allegro	Crop Booster	1.0 + 5.0	5.0 c	5.0 c	9.6 d	6.8 d	6.9 d	23.7 a	3.2 a	3733 a	3612 a
Allegro	Releaf Mn	1.0 + 5.0	4.7 c	4.6 c	9.7 d	6.1 d	6.6 d	24.2 a	3.9 a	3605 a	3466 a
Allegro	42PhiK	1.0 + 5.0	4.7 c	4.8 c	9.3 d	6.6 d	6.6 d	22.8 a	3.5 a	3696 a	3567 a
Propulse	Control	0.8	4.0 c	5.1 c	21.6 c	4.5 e	7.8 d	23.5 a	3.7 a	3511 a	3380 a
Propulse	Crop Booster	0.8 + 5.0	3.8 c	5.0 c	20.1 c	5.9 d	7.2 d	23.7 a	3.7 a	3778 a	3638 a
Propulse	Releaf Mn	0.8 + 5.0	4.0 c	5.2 c	23.3 c	5.1 d	8.9 d	23.8 a	3.5 a	3573 a	3447 a
Propulse	42PhiK	0.8 + 5.0	4.0 c	5.2 c	12.3 d	4.7 e	5.9 e	23.3 a	3.4 a	3485 a	3367 a
Pr>F (A)		0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0257	0.0001	0.0001	0.0001
Pr>F (B)		0.0203	0.0005	0.0002	0.1884	0.0077	0.0001	0.0341	0.3719	0.3660	
Pr>F (AB)		0.0001	0.0001	0.0036	0.0216	0.0183	0.5173	0.6502	0.3383	0.3405	
LSD 0.05 (A)		NA	NA	NA	NA	NA	0.4	0.4	144	141	
LSD 0.05 (B)		NA	NA	NA	NA	NA	0.4	0.4	NA	NA	
LSD 0.05 (AB)		1.7	1.9	6.5	2.1	3.0	NA	NA	NA	NA	

Means followed by same letter do not significantly differ (P<0.05, LSD)

### Trial Summary

Design: RCBD with 4 replications

Cultivar: Argosy

Planting Date: June 7 - 6 rows @ 38 cm and 6 meter length

Harvest Date: September 29 - 4 rows and 5 meter length

Seeding Rate: 17 seed/m of row

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha - May 21

Insecticide: Matador 83 ml/ha July 26, August 20

Fungicide: Lance 770 g/ha July 26, August 20

Trt Application #1: July 28 at 8:30 AM, Temp = 18.6.1 C, RH = 86%, Wind = 2 kph E

Trt Application #2: August 11 at 6:30 AM, Temp = 21.1 C, RH = 94%, Wind = 1 kph sW

Inoculation: Spores -July 28, 1.5L of solution @  $1.1 \times 10^7$  spores/ml

Irrigation: August 21, 27

Desiccant: Eragon 146 ml/ha September 18

### Conclusions:

\* Disease severity was moderately high, but was relatively slow to establish

\* Releaf Mn and 42PhiK applied alone without a fungicide had lower disease severity than the other foliar fertilizers,

\* 42PhiK had lower disease severity in some ratings when combined with Headline or Propulse

\* 42PhiK had lower seed weight than the other fertilizer treatments.

\* Crop Booster and 42PhiK had lower pick than the untreated control

\* all fungicide treatments had higher seed weight, lower pick and higher seed yield than the untreated control

\* the fertilizer treatments had no negative or positive effect on seed yield when they were combined with a fungicide

## 2021 Anthracnose Foliar Fungicide x Fertilizer Second Planting

University of Guelph, Huron Research Station

Factor A Fungicide	Factor B Fertilizer	Rate (L/ha)	Disease Severity (%)				Seed Weight (g/100)	Pick (%)	Yield (kg/ha)	Yield - Pick (kg/ha)
			Leaf Severity 86 DAP	Stem 86 DAP	113 DAP	Pod 86 DAP				
Control		--	7.2 a	10.3 a	65.1 a	6.7 a	28.5 a	20.7 b	10.0 a	3139 b
Headline		0.4	1.9 a	2.4 c	14.7 a	1.7 a	3.7 a	23.5 a	4.8 a	3930 a
Quadris		0.5	2.2 a	2.3 c	17.5 a	1.7 a	4.8 a	23.4 a	5.1 a	3776 a
Allegro		1.0	2.2 a	2.6 c	16.6 a	2.7 a	4.5 a	23.5 a	5.0 a	3893 a
Propulse		0.8	2.7 a	4.9 b	24.3 a	2.5 a	7.4 a	23.1 a	6.9 a	3820 a
	Control	--	3.4 a	4.9 a	29.1 a	3.3 a	11.1 a	23.1 a	6.9 a	3732 a
	Crop Booster	5.0	3.5 a	4.7 a	29.0 a	2.9 a	10.4 a	22.9 b	6.9 a	3715 a
	Releaf Mn	5.0	3.0 a	4.3 a	28.4 a	3.0 a	10.2 a	23.4 a	6.2 a	3740 a
	42PhiK	5.0	3.1 a	4.0 a	24.1 a	3.0 a	7.4 a	22.0 c	5.4 a	3659 a
Control	Control	--	8.3 a	11.6 a	69.6 a	8.0 a	32.6 a	20.3 a	11.8 a	3049 a
Control	Crop Booster	5.0	8.6 a	11.8 a	67.4 a	6.2 b	30.6 a	20.5 a	12.5 a	3081 a
Control	Releaf Mn	5.0	6.2 b	9.1 a	69.4 a	6.8 b	30.9 a	21.4 a	10.3 b	3172 a
Control	42PhiK	5.0	5.6 b	8.6 a	54.1 b	6.0 b	19.9 b	20.3 a	5.3 d	3255 a
Headline	Control	0.4	2.0 a	2.5 a	13.8 d	1.5 d	3.6 d	24.1 a	4.7 d	4089 a
Headline	Crop Booster	0.4 + 5.0	1.4 d	2.0 a	16.4 d	1.2 d	3.8 d	23.4 a	4.8 d	3973 a
Headline	Releaf Mn	0.4 + 5.0	1.9 d	2.8 a	14.3 d	2.0 d	3.6 d	23.8 a	4.8 d	3909 a
Headline	42PhiK	0.4 + 5.0	2.2 c	2.3 a	14.5 d	2.0 d	3.7 d	22.7 a	5.1 d	3748 a
Quadris	Control	0.5	2.0 c	2.3 a	16.8 d	1.7 d	5.0 d	23.2 a	5.2 d	3647 a
Quadris	Crop Booster	0.5 + 5.0	2.3 c	2.1 a	17.5 d	1.7 d	4.9 d	24.3 a	5.2 d	3902 a
Quadris	Releaf Mn	0.5 + 5.0	2.1 c	2.5 a	17.0 d	1.6 d	4.3 d	23.7 a	4.8 d	3836 a
Quadris	42PhiK	0.5 + 5.0	2.3 c	2.3 a	18.6 d	1.8 d	5.2 d	22.3 a	5.2 d	3719 a
Allegro	Control	1.0	2.2 c	2.7 a	16.8 d	2.6 c	4.5 d	24.1 a	4.7 d	4009 a
Allegro	Crop Booster	1.0 + 5.0	2.2 c	2.7 a	16.9 d	3.2 c	4.8 d	23.4 a	4.9 d	3836 a
Allegro	Releaf Mn	1.0 + 5.0	1.9 d	2.5 a	17.8 d	2.7 c	5.1 d	24.1 a	4.7 d	3822 a
Allegro	42PhiK	1.0 + 5.0	2.6 c	2.6 a	15.2 d	2.3 c	3.8 d	22.6 a	5.6 d	3904 a
Propulse	Control	0.8	2.4 c	5.6 a	28.6 c	2.9 c	10.0 c	23.6 a	8.2 c	3868 a
Propulse	Crop Booster	0.8 + 5.0	2.9 c	5.0 a	26.9 c	2.1 d	8.1 c	23.0 a	7.2 c	3782 a
Propulse	Releaf Mn	0.8 + 5.0	2.8 c	4.7 a	23.8 c	2.1 d	6.9 c	23.8 a	6.4 d	3960 a
Propulse	42PhiK	0.8 + 5.0	2.6 c	4.4 a	18.1 d	2.8 c	4.5 d	22.1 a	6.0 d	3669 a
Pr>F (A)		0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Pr>F (B)		0.0814	0.1305	0.0001	0.2447	0.0001	0.0001	0.0005	0.7390	0.8901
Pr>F (AB)		0.0001	0.1628	0.0005	0.0358	0.0002	0.0833	0.0001	0.5309	0.1710
LSD 0.05 (A)		NA	0.9	NA	NA	NA	0.5	NA	177	169
LSD 0.05 (B)		NA	NA	NA	NA	NA	0.4	NA	NA	NA
LSD 0.05 (AB)		1.0	NA	5.3	1.0	3.6	NA	1.7	NA	NA

Means followed by same letter do not significantly differ (P<0.05, LSD)

### Trial Summary

Design: RCBD with 4 replications

Cultivar: Argosy

Planting Date: June 7 - 6 rows @ 38 cm and 6 meter length

Harvest Date: September 29 - 4 rows and 5 meter length

Seeding Rate: 17 seed/m of row

Fertilizer: 20.8-13.8-20.8 @ 289 lbs/ac May 21

Herbicide: Pursuit 0.2 l/ha, Dual 1.7 l/ha Roundup 2.5 l/ha - May 21

Reflex 1 l/ha, Agral90 0.1% v/v

Insecticide: Matador 83 ml/ha August 20

Fungicide: Lance 770 g/ha August 20

Trt Application #1: August 9 at 8:00 AM, Temp = 23.3 C, RH = 90%, Wind = 5 kph SW

Trt Application #2: August 23 at 9:00 AM, Temp = 22.7 C, RH = 89%, Wind = 2 kph sW

Inoculation: Spores - Aug 9, 1.5L of solution @  $2.4 \times 10^7$  spores/ml

Irrigation: August 21, 27, September 2

Desiccant: Eragon 146 ml/ha September 28

### Conclusions:

\* Disease severity was moderately high, but was relatively slow to establish

\* 42PhiK often had lower disease severity than the other fertilizers when applied alone or in combination with Propulse

\* 42PhiK had the lowest seed weight, followed by Crop Booster, which was lower than the Control and Releaf Mn.

\* all fungicide treatments had higher seed yield than the untreated control

\* Headline and Allegro had higher yield - pick than the Control, Quadris and Propulse

\* the fertilizer treatments had no negative or positive effect on seed yield when they were applied with a fungicide

**2021 Planting Date Small Seed, Huron Research Station**  
**University of Guelph, Ridgetown Campus**

Planting Date Factor A	Cultivar Factor B	Population Factor C	Plant Emergence		Green seeker <sup>1</sup>	Plant Height <sup>1</sup>	BBCH Stage <sup>1</sup>	Plant Dry Weight <sup>1</sup>	Seed Weight (g/100)	Seed Quality (1-5)	Seed Yield (kg/ha)	Seed Colourimeter		
			(#/ha)	(%)	(0-1)	(cm)	(0-100)	(g)	(g/100)	L	a	b		
May 20		190677 a	90.1 a	41.4 a	81.6 c	83.7 a	45.6 a	22.9 a	1.8 a	4528 a	40.9 a	1.04 a	4.37 a	
May 30		174219 a	82.8 a	50.8 a	87.4 b	81.1 a	51.2 a	22.1 a	1.8 a	3824 a	40.0 a	1.12 a	4.23 a	
June 10		184219 a	89.1 a	71.3 a	92.5 a	79.1 a	38.6 a	21.3 a	1.9 a	4080 a	40.0 a	1.06 a	4.29 a	
June 20		186198 a	88.5 a	84.4 a	91.6 a	76.1 a	36.7 a	21.6 a	2.1 a	3334 a	39.5 a	1.35 a	4.57 a	
June 30		177865 a	85.5 a	84.4 a	82.0 c	72.2 a	21.7 a	22.9 a	2.0 a	3035 a	38.7 a	1.48 a	4.66 a	
	Rexeter	160313 a	76.1 a	73.1 a	88.6 a	78.1 a	44.7 a	21.8 a	1.9 a	3518 a	62.0 a	1.87 a	9.65 a	
	Zorro	204958 a	98.3 a	59.9 a	85.4 b	78.8 a	32.8 a	22.5 a	1.9 a	4002 a	17.7 a	0.55 a	-0.81 a	
		300000	256417 a	85.5 a	65.4 a	87.5 a	78.8 a	30.0 a	22.0 b	1.9 a	3932 a	39.7 a	1.20 a	4.34 a
		240000	207333 a	86.4 a	64.4 a	85.2 a	78.7 a	33.2 a	22.1 b	1.9 a	3839 a	40.0 a	1.21 a	4.42 a
		180000	163708 a	90.9 a	66.5 a	89.7 a	78.0 a	43.0 a	22.2 b	1.9 a	3743 b	40.1 a	1.23 a	4.46 a
		120000	103083 a	85.9 a	69.6 a	85.6 a	78.3 a	48.9 a	22.5 a	2.0 a	3527 c	39.5 a	1.20 a	4.46 a
May 20	Rexeter	173542 c	81.7 b	55.1 d	80.7 a	83.3 a	56.4 a	22.3 c	1.6 d	4329 b	64.2 a	1.59 d	9.58 b	
May 30	Rexeter	142813 d	67.2 d	63.7 c	88.7 a	80.0 b	61.5 a	21.4 e	1.8 c	3417 d	62.5 b	1.72 c	9.29 c	
June 10	Rexeter	174271 c	83.5 b	78.9 b	95.8 a	78.7 c	43.2 b	20.9 f	1.8 c	3882 c	62.5 b	1.61 d	9.42 b	
June 20	Rexeter	159583 d	76.0 c	84.0 a	92.2 a	76.1 d	37.1 b	21.9 d	2.2 a	3188 e	61.3 c	2.08 b	9.92 a	
June 30	Rexeter	151354 d	72.0 cd	83.5 a	85.8 a	72.6 e	25.4 c	22.6 b	2.2 a	2778 f	59.4 d	2.37 a	10.05 a	
May 20	Zorro	207813 a	98.4 a	27.8 f	82.5 a	84.2 a	34.8 b	23.5 a	1.9 b	4727 a	17.7 a	0.49 f	-0.83 d	
May 30	Zorro	205625 a	98.3 a	37.9 e	86.1 a	82.3 b	40.8 b	22.9 b	1.7 c	4231 b	17.6 a	0.51 f	-0.83 d	
June 10	Zorro	194167 b	94.7 ab	63.8 c	89.2 a	79.5 c	34.0 bc	21.8 d	2.0 b	4279 b	17.4 a	0.52 f	-0.85 d	
June 20	Zorro	212813 a	101.0 a	84.9 a	91.1 a	76.1 d	36.4 b	21.3 e	2.0 b	3481 d	17.8 a	0.62 e	-0.79 d	
June 30	Zorro	204375 a	98.9 a	85.3 a	78.2 a	71.9 e	18.1 c	23.2 a	1.8 c	3292 e	18.0 a	0.60 e	-0.73 d	
May 20		300000	279792 a	93.3 a	40.9 f	81.4 a	84.3 a	30.4 d	22.8 a	1.7 a	4719 a	40.6 b	1.05 a	4.34 a
May 30		300000	254375 b	84.8 a	47.8 e	88.9 a	81.2 a	44.0 c	22.0 a	1.7 a	4026 a	40.2 b	1.11 a	4.24 a
June 10		300000	232292 b	77.4 a	69.3 c	94.7 a	79.1 a	28.9 d	21.2 a	1.9 a	4334 a	39.6 c	1.04 a	4.26 a
June 20		300000	273333 a	91.1 a	83.9 a	95.1 a	77.3 a	28.1 d	21.1 a	2.2 a	3456 a	39.9 bc	1.34 a	4.50 a
June 30		300000	242292 b	80.8 a	85.3 a	77.5 a	72.2 a	18.5 e	22.8 a	1.9 a	3125 a	38.4 d	1.46 a	4.37 a
May 20		240000	217083 c	90.5 a	38.1 g	80.7 a	83.5 a	34.7 cd	22.8 a	1.7 a	4737 a	41.4 a	1.05 a	4.34 a
May 30		240000	191667 d	79.9 a	48.6 e	80.5 a	82.0 a	39.2 c	22.1 a	1.7 a	3905 a	39.8 c	1.11 a	4.13 a
June 10		240000	223542 c	93.1 a	66.5 c	88.5 a	79.3 a	34.1 c	20.9 a	1.8 a	4031 a	40.2 b	1.09 a	4.33 a
June 20		240000	2000000 cd	83.3 a	84.8 a	93.2 a	76.3 a	35.4 c	21.6 a	2.1 a	3350 a	39.4 c	1.37 a	4.63 a
June 30		240000	204375 c	85.2 a	84.0 a	83.2 a	72.4 a	22.4 de	23.0 a	2.0 a	3171 a	39.4 c	1.44 a	4.70 a
May 20		180000	161875 e	89.9 a	42.9 f	85.1 a	83.8 a	60.3 ab	22.9 a	1.8 a	4514 a	41.6 a	1.04 a	4.54 a
May 30		180000	153542 e	85.3 a	48.8 e	92.2 a	80.4 a	49.7 b	22.3 a	1.8 a	3799 a	40.1 b	1.16 a	4.27 a
June 10		180000	174375 e	96.9 a	73.0 b	97.0 a	79.0 a	45.9 bc	21.2 a	1.8 a	4029 a	40.1 b	1.07 a	4.31 a
June 20		180000	167917 e	93.3 a	83.9 a	90.6 a	75.2 a	40.2 c	21.5 a	2.0 a	3462 a	40.0 b	1.36 a	4.48 a
June 30		180000	160833 e	89.4 a	84.1 a	83.8 a	71.9 a	18.9 e	22.9 a	2.0 a	2908 a	38.5 d	1.54 a	4.72 a
May 20		120000	103958 f	86.6 a	43.9 f	79.1 a	83.4 a	57.2 b	23.1 a	1.9 a	4140 a	40.2 b	1.03 a	4.28 a
May 30		120000	97292 f	81.1 a	58.0 d	88.1 a	80.9 a	71.8 a	22.2 a	1.8 a	3564 a	40.1 b	1.09 a	4.28 a
June 10		120000	106667 f	88.9 a	76.6 b	89.8 a	79.1 a	45.4 bc	21.9 a	1.9 a	3926 a	39.9 bc	1.06 a	4.26 a
June 20		120000	103542 f	86.3 a	85.3 a	87.6 a	75.7 a	43.1 c	22.2 a	2.1 a	3069 a	38.8 d	1.35 a	4.65 a
June 30		120000	103958 f	86.6 a	84.1 a	83.5 a	72.4 a	27.1 d	23.0 a	2.1 a	2935 a	38.8 d	1.49 a	4.85 a
	Rexeter	300000	229083 a	76.4 a	71.9 a	87.8 a	78.8 a	33.7 a	21.6 a	1.9 a	3748 a	61.9 b	1.85 a	9.50 a
	Rexeter	240000	181833 a	75.8 a	71.8 a	87.1 a	78.1 a	37.0 a	21.6 a	1.8 a	3580 a	62.2 d	1.88 a	9.63 a
	Rexeter	180000	143167 a	79.5 a	72.8 a	91.4 a	77.8 a	52.7 a	21.9 a	1.9 a	3507 a	62.5 a	1.90 a	9.75 a
	Rexeter	120000	87167 a	72.6 a	75.8 a	88.3 a	77.9 a	55.5 a	22.2 a	2.0 a	3239 a	61.3 d	1.85 a	9.73 a
	Zorro	300000	283750 a	94.6 a	58.9 a	87.3 a	78.9 a	26.3 a	22.3 a	1.9 a	4116 a	17.6 a	0.55 a	-0.82 a
	Zorro	240000	232833 a	97.0 a	57.0 a	83.3 a	79.3 a	29.3 a	22.6 a	1.9 a	4098 a	17.9 d	0.54 a	-0.78 a
	Zorro	180000	184250 a	102.4 a	60.3 a	88.1 a	78.3 a	33.4 a	22.5 a	1.9 a	3979 a	17.7 c	0.56 a	-0.82 a
	Zorro	120000	119000 a	99.2 a	63.4 a	82.9 a	78.7 a	42.4 a	22.8 a	1.9 a	3814 a	17.7 d	0.55 a	-0.80 a
May 20	Rexeter	300000	259583 a	86.5 a	54.5 a	75.3 a	84.5 a	32.0 a	22.3 a	1.5 a	4448 a	63.7 a	1.63 a	9.51 a
May 30	Rexeter	300000	215417 a	71.8 a	59.0 a	90.8 a	80.3 a	55.5 a	21.1 a	1.6 a	3793 a	62.7 a	1.70 a	9.34 a
June 10	Rexeter	300000	227500 a	75.8 a	95.2 a	78.8 a	35.7 a	20.9 a	1.9 a	4160 a	61.9 a	1.57 a	9.34 a	
June 20	Rexeter	300000	232917 a	77.6 a	82.3 a	95.8 a	77.7 a	24.7 a	21.1 a	2.4 a	3415 a	62.0 a	2.05 a	9.75 a
June 30	Rexeter	300000	210000 a	70.0 a	85.0 a	81.9 a	72.6 a	20.5 a	22.8 a	2.1 a	2925 a	59.1 a	2.31 a	9.57 a
May 20	Zorro	300000	300000 a	100.0 a	27.3 a	87.6 a	84.1 a	28.8 a	23.4 a	1.9 a	4990 a	17.5 a	0.48 a	-0.84 a

May 30	Zorro	300000	293333 a	97.8 a	36.5 a	87.0 a	82.2 a	32.5 a	22.8 a	1.8 a	4259 a	17.6 a	0.52 a	-0.86 a
June 10	Zorro	300000	237083 a	79.0 a	59.8 a	94.2 a	79.4 a	22.1 a	21.6 a	2.0 a	4509 a	17.3 a	0.51 a	-0.83 a
June 20	Zorro	300000	313750 a	104.6 a	85.5 a	94.5 a	76.9 a	31.5 a	21.0 a	2.0 a	3498 a	17.8 a	0.63 a	-0.75 a
June 30	Zorro	300000	274583 a	91.5 a	85.5 a	73.2 a	71.9 a	16.6 a	22.8 a	1.8 a	3326 a	17.6 a	0.62 a	-0.83 a
May 20	Rexeter	240000	194167 a	80.9 a	50.5 a	80.3 a	82.7 a	36.1 a	22.0 a	1.6 a	4567 a	64.9 a	1.61 a	9.50 a
May 30	Rexeter	240000	154167 a	64.2 a	62.0 a	80.3 a	80.7 a	45.9 a	21.2 a	1.8 a	3523 a	62.1 a	1.71 a	9.08 a
June 10	Rexeter	240000	207500 a	86.5 a	78.0 a	90.6 a	78.8 a	39.4 a	20.6 a	1.6 a	3869 a	63.0 a	1.66 a	9.49 a
June 20	Rexeter	240000	170000 a	70.8 a	84.5 a	95.9 a	76.0 a	35.2 a	21.4 a	2.1 a	3065 a	61.1 a	2.13 a	10.09 a
June 30	Rexeter	240000	183333 a	76.4 a	84.0 a	88.5 a	72.5 a	28.6 a	22.8 a	2.0 a	2876 a	59.9 a	2.32 a	9.97 a
May 20	Zorro	240000	240000 a	100.0 a	25.8 a	81.1 a	84.2 a	33.3 a	23.6 a	1.8 a	4908 a	17.8 a	0.50 a	-0.82 a
May 30	Zorro	240000	229167 a	95.5 a	35.3 a	80.8 a	83.4 a	32.6 a	22.9 a	1.6 a	4288 a	17.5 a	0.52 a	-0.83 a
June 10	Zorro	240000	239583 a	99.8 a	55.0 a	86.5 a	79.9 a	28.7 a	21.2 a	2.0 a	4194 a	17.5 a	0.53 a	-0.84 a
June 20	Zorro	240000	230000 a	95.8 a	85.0 a	90.6 a	76.5 a	35.7 a	21.8 a	2.0 a	3636 a	17.7 a	0.60 a	-0.83 a
June 30	Zorro	240000	225417 a	93.9 a	84.0 a	77.8 a	72.4 a	16.1 a	23.3 a	2.0 a	3466 a	18.9 a	0.56 a	-0.58 a
May 20	Rexeter	180000	147083 a	81.7 a	58.0 a	84.8 a	83.4 a	82.4 a	22.3 a	1.6 a	4301 a	65.4 a	1.60 a	9.92 a
May 30	Rexeter	180000	127083 a	70.6 a	61.5 a	93.1 a	79.9 a	59.4 a	21.8 a	1.9 a	3339 a	62.6 a	1.79 a	9.36 a
June 10	Rexeter	180000	168750 a	93.8 a	77.3 a	104.4 a	78.6 a	53.5 a	20.6 a	1.6 a	3808 a	62.7 a	1.62 a	9.44 a
June 20	Rexeter	180000	146667 a	81.5 a	85.0 a	90.0 a	74.9 a	47.3 a	22.0 a	2.0 a	3414 a	62.3 a	2.06 a	9.76 a
June 30	Rexeter	180000	126250 a	70.1 a	82.0 a	84.6 a	72.1 a	20.8 a	22.7 a	2.3 a	2672 a	59.4 a	2.46 a	10.27 a
May 20	Zorro	180000	176667 a	98.1 a	27.8 a	85.4 a	84.1 a	38.2 a	23.6 a	1.9 a	4728 a	17.8 a	0.49 a	-0.85 a
May 30	Zorro	180000	180000 a	100.0 a	36.0 a	91.3 a	81.0 a	39.9 a	22.9 a	1.8 a	4260 a	17.6 a	0.52 a	-0.83 a
June 10	Zorro	180000	180000 a	100.0 a	68.8 a	89.7 a	79.4 a	38.3 a	21.8 a	2.0 a	4251 a	17.5 a	0.52 a	-0.83 a
June 20	Zorro	180000	189167 a	105.1 a	82.8 a	91.2 a	75.4 a	33.2 a	21.0 a	2.0 a	3511 a	17.8 a	0.65 a	-0.79 a
June 30	Zorro	180000	195417 a	108.6 a	86.3 a	83.0 a	71.7 a	17.1 a	23.2 a	1.8 a	3144 a	17.6 a	0.63 a	-0.83 a
May 20	Rexeter	120000	93333 a	77.8 a	57.5 a	82.4 a	82.5 a	75.2 a	22.6 a	1.8 a	4000 a	62.7 a	1.54 a	9.38 a
May 30	Rexeter	120000	74583 a	62.2 a	72.3 a	90.8 a	79.2 a	85.4 a	21.6 a	1.9 a	3012 a	62.7 a	1.68 a	9.37 a
June 10	Rexeter	120000	93333 a	77.8 a	81.8 a	93.0 a	78.7 a	44.0 a	21.3 a	1.9 a	3690 a	62.3 a	1.59 a	9.41 a
June 20	Rexeter	120000	88750 a	74.0 a	84.3 a	87.0 a	75.8 a	41.2 a	23.0 a	2.3 a	2857 a	59.7 a	2.08 a	10.09 a
June 30	Rexeter	120000	85833 a	71.5 a	83.0 a	88.2 a	73.2 a	31.6 a	22.4 a	2.3 a	2638 a	59.4 a	2.39 a	10.39 a
May 20	Zorro	120000	114583 a	95.5 a	30.3 a	75.8 a	84.4 a	39.2 a	23.6 a	2.0 a	4280 a	17.6 a	0.52 a	-0.83 a
May 30	Zorro	120000	120000 a	100.0 a	43.8 a	85.4 a	82.6 a	58.2 a	22.8 a	1.8 a	4117 a	17.6 a	0.50 a	-0.82 a
June 10	Zorro	120000	120000 a	100.0 a	71.5 a	86.6 a	79.5 a	46.9 a	22.6 a	1.9 a	4162 a	17.5 a	0.53 a	-0.89 a
June 20	Zorro	120000	118333 a	98.6 a	86.3 a	88.2 a	75.6 a	45.0 a	21.4 a	2.0 a	3281 a	17.8 a	0.61 a	-0.79 a
June 30	Zorro	120000	122083 a	101.7 a	85.3 a	78.8 a	71.6 a	22.6 a	23.6 a	1.9 a	3231 a	18.2 a	0.60 a	-0.69 a
Mean		182635	87.2	66.5	87.0	78.5	38.8	22.2	1.9	3760	39.8	1.21	4.42	
Pr>F (A)		0.0745	0.0270	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	
Pr>F (B)		0.0001	0.0001	0.0001	0.0448	0.0041	0.0001	0.0001	0.5986	0.0001	0.0001	0.0001	0.0001	
Pr>F (AxB)		0.0064	0.0008	0.0001	0.3134	0.0008	0.0062	0.0001	0.0001	0.0006	0.0001	0.0001	0.0001	
Pr>F (C)		0.0001	0.0597	0.0001	0.1713	0.0594	0.0001	0.0234	0.2356	0.0001	0.0183	0.2541	0.0825	
Pr>F (AxC)		0.0319	0.0740	0.0031	0.5592	0.5832	0.0169	0.7216	0.7848	0.1189	0.0292	0.6901	0.0564	
Pr>F (BxC)		0.1774	0.3223	0.5567	0.7522	0.4040	0.1475	0.7085	0.5101	0.2934	0.0216	0.4897	0.0781	
Pr>F (AxBxC)		0.8551	0.7995	0.0792	0.8892	0.9331	0.1309	0.4683	0.3374	0.4638	0.2897	0.7369	0.0825	
Factor A LSD (0.05)		NA	NA	NA	5.0	NA	NA	NA	NA	NA	NA	NA	NA	
Factor B LSD (0.05)		NA	NA	NA	3.2	NA	NA	NA	NA	NA	NA	NA	NA	
Factor AxB LSD (0.05)		17630	7.1	3.0	NA	1.0	9.2	0.5	0.2	173	0.6	0.06	0.17	
Factor C LSD (0.05)		NA	NA	NA	NA	NA	NA	0.3	NA	110	NA	NA	NA	
Factor AxC LSD (0.05)		24933	NA	4.3	NA	NA	13.0	NA	NA	NA	0.9	NA	NA	
Factor BxC LSD (0.05)		NA	NA	NA	NA	NA	NA	NA	NA	NA	0.5	NA	NA	
Factor AxBxC LSD (0.05)		NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	

<sup>1</sup> - Data collected 08-26-21

#### Trial Summary

Design: Split Plot  
Row Width: 38 cm  
Rows Per Plot: 6  
Rows Harvested per Plot: 4  
Harvest Length: 5 m  
Varieties: Rexeter (Navy), Zorro (Black Bean)

Planting Dates: May 18, 31, June 8, 17, 29  
Fertilizer: 20.8 - 13.8 - 20.8 @ 289 lbs/ac - May 12  
Herbicide: Pursuit, Dual II Magnum, Roundup Transorp - applied May 14, incorporated May 17  
Fungicide: Allegro - July 21  
Deciscation: May 18&31 (Sept 3), June 8&17 (Sept 18), June 29 (Sept 27)  
Harvest Dates: Sept 7, 19, 20, 29, Oct 13

**Planting Date Large Seed Huron Research Station 2021**  
**University of Guelph, Ridgetown Campus**

Date	Row Width	Population	Plant Emergence		Plant	BBCH	Green	Plant Dry	Seed	Seed	Colourimeter						
			Factor A	Factor B	Factor C	(#/ha)	(%)	(cm)	Plant Stage	Seeker	Weight (g)	Weight (g/100)	Quality (1-5, 1=good)	(kg/ha)	L	a	b
May 20		98906 a	75.2 a	40.5 b	80.7 a	36.0 b	50.6 a	63.8 a	2.1 b	2390 a	21.61 d	16.68 e	3.97 d				
May 30		97917 a	75.7 a	46.6 a	78.3 b	66.0 a	47.9 a	61.7 a	1.8 d	2546 a	22.10 b	17.98 c	4.23 c				
June 10		86094 a	66.5 b	45.5 a	76.5 c	72.0 a	37.0 b	56.2 a	1.9 d	2192 a	22.11 b	18.76 a	4.40 b				
June 20		80260 a	61.1 c	45.1 a	73.3 d	67.0 a	24.2 c	51.1 a	1.8 d	1996 a	21.84 c	17.37 d	4.24 c				
June 30		89063 a	67.5 b	41.0 b	68.8 e	75.0 a	10.2 d	50.5 a	2.3 a	1717 a	22.72 a	18.40 b	4.79 a				
	Narrow	200000	134000 a	67.0 a	43.7 a	75.5 a	66.0 a	29.0 b	56.2 a	1.9 b	2632 a	21.93 b	17.46 b	4.25 b			
	Narrow	160000	108500 a	67.8 a	43.6 a	75.3 a	64.0 a	34.9 ab	56.3 a	1.8 c	2486 a	21.76 b	17.45 b	4.21 b			
	Narrow	120000	82750 a	69.0 a	46.6 a	75.7 a	59.0 b	37.8 a	57.1 a	2.0 b	2271 a	22.16 a	18.08 a	4.44 a			
	Narrow	80000	55000 a	68.8 a	40.4 a	75.4 a	48.0 a	41.7 a	56.9 a	2.2 a	1758 a	22.04 a	17.89 ab	4.27 b			
	Wide	175000	119167 a	68.1 a	44.9 a	75.6 a	69.0 a	29.1 b	56.1 a	1.8 c	2367 a	22.23 a	17.87 ab	4.39 a			
	Wide	140000	99417 a	71.0 a	45.0 a	75.9 a	78.0 a	30.4 b	55.8 a	1.9 b	2169 a	22.12 a	17.88 ab	4.33 a			
	Wide	105000	76250 a	72.6 a	42.8 a	75.6 a	64.0 a	31.7 b	56.6 a	1.9 b	2007 a	22.14 a	17.81 a	4.32 a			
	Wide	70000	48500 a	69.3 a	43.0 a	75.2 a	56.0 b	37.2 a	58.4 a	2.2 a	1656 a	22.23 a	18.25 a	4.41 a			
May 20	Narrow	200000	148750 a	74.4 a	33.5 a	81.0 a	43.0 a	38.8 a	63.2 a	2.1 a	3217 a	21.44 a	16.33 a	3.88 a			
May 30	Narrow	200000	148750 a	74.4 a	50.1 a	78.6 a	72.0 a	39.7 a	61.9 a	1.6 a	3202 a	21.99 a	17.58 a	4.19 a			
June 10	Narrow	200000	120833 a	60.4 a	44.0 a	75.3 a	78.0 a	34.5 a	56.3 a	1.9 a	2435 c	21.90 a	18.34 a	4.35 a			
June 20	Narrow	200000	116667 a	58.3 a	47.9 a	73.7 a	71.0 a	23.5 a	51.3 a	1.8 a	2319 c	21.68 a	16.59 a	4.07 a			
June 30	Narrow	200000	135000 a	67.5 a	42.9 a	68.8 a	68.0 a	8.6 a	48.4 a	2.3 a	1987 d	22.66 a	18.48 a	4.74 a			
May 20	Narrow	160000	119583 a	74.7 a	40.8 a	80.9 a	36.0 a	65.0 a	65.9 a	2.0 a	2776 b	21.49 a	16.30 a	3.97 a			
May 30	Narrow	160000	112917 a	70.6 a	47.6 a	78.8 a	72.0 a	45.0 a	62.1 a	1.8 a	2910 ab	21.83 a	17.80 a	4.15 a			
June 10	Narrow	160000	104167 a	65.1 a	45.9 a	76.1 a	78.0 a	34.8 a	56.2 a	1.5 a	2636 b	21.77 a	18.50 a	4.27 a			
June 20	Narrow	160000	94167 a	58.9 a	44.9 a	71.9 a	65.0 a	21.5 a	49.4 a	1.6 a	2171 d	21.44 a	16.66 a	4.05 a			
June 30	Narrow	160000	111667 a	69.8 a	38.8 a	68.7 a	70.0 a	8.5 a	48.1 a	2.1 a	1937 de	22.27 a	17.99 a	4.60 a			
May 20	Narrow	120000	84583 a	70.5 a	58.4 a	80.7 a	32.0 a	59.8 a	65.2 a	2.0 a	2433 c	21.76 a	16.95 a	4.13 a			
May 30	Narrow	120000	93750 a	78.1 a	48.2 a	78.1 a	66.0 a	55.7 a	62.4 a	1.8 a	2743 b	22.34 a	18.94 a	4.49 a			
June 10	Narrow	120000	82500 a	68.8 a	44.9 a	77.1 a	73.0 a	36.6 a	55.5 a	2.0 a	2344 c	21.95 a	18.41 a	4.40 a			
June 20	Narrow	120000	73750 a	61.5 a	43.4 a	73.8 a	69.0 a	26.3 a	49.9 a	1.6 a	2090 d	22.09 a	17.84 a	4.40 a			
June 30	Narrow	120000	79167 a	66.0 a	38.4 a	69.0 a	56.0 a	10.6 a	52.4 a	2.4 a	1744 e	22.65 a	18.27 a	4.79 a			
May 20	Narrow	80000	55833 a	69.8 a	36.2 a	80.6 a	28.0 a	56.7 a	64.8 a	2.4 a	1904 e	21.42 a	16.83 a	3.82 a			
May 30	Narrow	80000	56250 a	70.3 a	44.4 a	76.7 a	52.0 a	60.5 a	61.1 a	2.0 a	1776 e	21.77 a	18.01 a	4.11 a			
June 10	Narrow	80000	55000 a	68.8 a	45.0 a	78.2 a	55.0 a	54.1 a	56.3 a	2.1 a	1894 e	22.11 a	18.70 a	4.28 a			
June 20	Narrow	80000	49167 a	61.5 a	40.8 a	73.3 a	51.0 a	25.2 a	50.3 a	1.9 a	1725 e	22.09 a	17.86 a	4.35 a			
June 30	Narrow	80000	58750 a	73.4 a	35.7 a	68.4 a	53.0 a	11.9 a	52.1 a	2.5 a	1491 f	22.80 a	18.06 a	4.80 a			
May 20	Wide	175000	133333 a	76.2 a	37.6 a	80.2 a	43.0 a	36.6 a	62.1 a	2.0 a	2540 c	21.82 a	16.68 a	4.04 a			
May 30	Wide	175000	122083 a	69.8 a	45.8 a	79.0 a	73.0 a	44.8 a	60.7 a	1.6 a	2769 b	22.36 a	17.64 a	4.25 a			
June 10	Wide	175000	109583 a	62.6 a	48.4 a	75.9 a	78.0 a	31.9 a	55.3 a	1.8 a	2469 c	22.34 a	18.83 a	4.54 a			
June 20	Wide	175000	112083 a	64.0 a	47.7 a	74.1 a	75.0 a	22.9 a	52.4 a	1.6 a	2157 d	21.97 a	17.24 a	4.24 a			
June 30	Wide	175000	118750 a	67.9 a	44.9 a	69.0 a	78.0 a	9.1 a	49.8 a	2.0 a	1898 e	22.66 a	18.96 a	4.90 a			
May 20	Wide	140000	118750 a	84.8 a	41.5 a	80.9 a	34.0 a	42.2 a	62.4 a	2.0 a	2308 c	21.50 a	16.38 a	3.92 a			

May 30	Wide	140000	100000 a	71.4 a	46.4 a	79.0 a	61.0 a	43.9 a	60.5 a	1.9 a	2557 c	22.21 a	17.83 a	4.21 a
June 10	Wide	140000	97917 a	69.9 a	45.6 a	76.5 a	77.0 a	31.9 a	55.9 a	1.6 a	2253 cd	22.26 a	19.25 a	4.49 a
June 20	Wide	140000	86667 a	61.9 a	47.2 a	74.0 a	77.0 a	22.7 a	50.4 a	1.8 a	2016 d	21.93 a	17.39 a	4.25 a
June 30	Wide	140000	93750 a	67.0 a	44.1 a	69.0 a	144.0 a	11.3 a	49.8 a	2.3 a	1710 e	22.71 a	18.55 a	4.79 a
May 20	Wide	105000	73750 a	70.2 a	35.6 a	80.6 a	38.0 a	40.2 a	64.5 a	2.0 a	1956 de	21.75 a	16.89 a	3.92 a
May 30	Wide	105000	90000 a	85.7 a	44.9 a	78.7 a	65.0 a	48.2 a	61.8 a	1.6 a	2438 c	22.19 a	17.84 a	4.25 a
June 10	Wide	105000	70000 a	66.7 a	46.5 a	76.8 a	72.0 a	33.5 a	55.5 a	2.0 a	1918 e	22.04 a	18.71 a	4.35 a
June 20	Wide	105000	71667 a	68.3 a	47.5 a	73.4 a	74.0 a	25.6 a	51.3 a	1.8 a	2081 d	21.87 a	17.74 a	4.41 a
June 30	Wide	105000	75833 a	72.2 a	39.9 a	68.6 a	71.0 a	11.0 a	50.0 a	2.1 a	1641 d	22.85 a	17.87 a	4.69 a
May 20	Wide	70000	56667 a	81.0 a	40.5 a	80.8 a	35.0 a	65.6 a	62.4 a	2.1 a	1986 d	21.68 a	17.05 a	4.10 a
May 30	Wide	70000	59583 a	85.1 a	45.3 a	77.8 a	66.0 a	45.4 a	62.8 a	1.9 a	1974 d	22.10 a	18.16 a	4.19 a
June 10	Wide	70000	48750 a	69.6 a	44.1 a	76.2 a	63.0 a	38.7 a	58.8 a	2.0 a	1585 f	22.54 a	19.34 a	4.53 a
June 20	Wide	70000	37917 a	54.2 a	41.9 a	72.3 a	58.0 a	25.6 a	54.0 a	2.3 a	1407 f	21.64 a	17.67 a	4.20 a
June 30	Wide	70000	39583 a	56.5 a	43.1 a	69.0 a	57.0 a	10.6 a	53.8 a	2.5 a	1329 f	23.16 a	19.05 a	5.05 a
	Mean	90448	69.2	43.8	75.5	63.2	34.0	56.7	2.0	2168	22.1	17.8	4.3	
	Pr>F (A)	0.0001	0.0001	0.0095	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
	Pr>F (B)	0.0001	0.4940	0.4759	0.7943	0.0132	0.0050	0.0040	0.0001	0.0001	0.0276	0.0030	0.0065	
	Pr>F (AxB)	0.1575	0.0542	0.5506	0.4433	0.4151	0.3995	0.0012	0.5270	0.0039	0.9559	0.4011	0.6984	
	Factor A LSD (0.05)	5406	4.2	4.2	0.7	12.0	5.9	NA	0.1	NA	0.23	0.34	0.11	
	Factor B LSD (0.05)	6838	NA	NA	NA	16.0	7.4	NA	0.2	NA	0.29	0.42	0.14	
	Factor AxB LSD (0.05)	NA	NA	NA	NA	NA	NA	2.5	NA	324	NA	NA	NA	

#### Trial Summary

Design: Split Plot

Planting Dates: May 18, 31, June 8, 17, 29

Row Width: 75 cm (Wide) 38 cm (Narrow)

Fertilizer: 20.8 - 13.8 -20.8 @ 289 lbs/ac - May 12

Rows Per Plot: 4 (Wide) or 6 (Narrow)

Herbicide: Pursuit, Dual II Magnum, RoundupTransorp - applied May 14, incorporated May 17

Rows Harvested per Plot: 2 (Wide) or 4 (Narrow)

Fungicide: Allegro - July 21

Harvest Length: 4 m

Deciscation: May 18&31 (August 25), June 8 (Sept 3) June 17 (Sept 10), June 29 (Sept 18)

Varieties: Red Hawk

Harvest Dates: May 18&31 (Sept 2), September 7, 19 & 29

**2021 Dry Bean Strip Till Cover Crop Fertilizer**  
**University of Guelph, Ridgetown Campus**

No.	Treatment	Timing (days)	Fertilizer 2x2 Band	Plant Height (cm)		Plant Development (BBCH Scale; 0-100)			Vigour (1-10; 1=good)		Greenseeker (0-1)		Plant Dry Weight			Aboveground Dry Weight		Seed Weight (g/100)	Seed Yield (kg/ha)
				49 DAP	64 DAP	35 DAP	49 DAP	64 DAP	35 DAP	49 DAP	35 DAP	49 DAP	64 DAP	49 DAP	83 DAP	49 DAP	83 DAP		
1	Weed Free Control	-	No	34.3 bcd	58.3 a-e	14.5 abc	62.3 abc	71.0 a-d	6.5 a-d	6.6 cd	0.29 cd	0.64 de	0.58 abc	5.5 cde	21.5 ab	0.0 e	0.0 f	23.5 bcd	1363 cd
2	Weed Free Control	-	Yes	43.9 abc	61.8 a-d	15.3 a	64.3 a	71.5 abc	7.3 ab	7.3 abc	0.33 a-d	0.75 abc	0.68 ab	9.1 ab	26.5 a	0.0 e	0.0 f	23.7 bcd	2109 abc
3	Weedy Control	-	No	29.9 d	40.0 e	13.2 d	58.0 bcd	68.0 e	5.9 cd	4.8 f	0.41 ab	0.53 f	0.44 c	1.7 g	7.7 c	7.6 de	7.0 e	25.3 a	861 d
4	Weedy Control	-	Yes	32.8 cd	52.9 cde	13.2 d	54.0 d	70.4 bcd	5.6 d	5.6 ef	0.43 a	0.58 ef	0.53 bc	1.9 fg	12.9 bc	9.7 d	8.9 de	24.6 ab	1268 cd
5	Glyphosate	-14	No	42.1 abc	64.9 a-d	14.9 a	66.5 a	72.5 ab	7.3 ab	7.3 abc	0.35 a-d	0.67 b-e	0.60 abc	6.4 b-e	24.0 ab	10.4 d	8.6 de	23.9 bcd	1956 abc
6	Glyphosate	-14	Yes	42.8 abc	64.1 a-d	15.1 a	65.6 a	72.3 abc	7.1 ab	6.9 bcd	0.34 a-d	0.73 a-d	0.64 ab	9.8 a	31.0 a	11.1 d	10.1 de	23.5 bcd	1824 abc
7	Glyphosate	-7	No	44.8 ab	66.6 a-d	14.9 a	65.0 a	72.4 ab	7.1 ab	7.1 abc	0.38 abc	0.72 a-d	0.70 a	8.5 abc	27.4 a	15.1 cd	13.2 de	23.8 bcd	2341 ab
8	Glyphosate	-7	Yes	44.6 ab	78.2 a	14.9 a	64.3 a	72.7 a	7.4 a	7.9 a	0.40 ab	0.76 ab	0.71 a	8.0 a-d	26.3 a	14.7 cd	14.7 d	23.2 cd	1881 abc
9	Glyphosate	0	No	36.2 a-d	57.0 b-e	14.7 ab	61.9 abc	71.6 abc	6.8 abc	6.5 cde	0.31 bcd	0.69 a-d	0.61 ab	5.7 cde	22.1 ab	22.1 bc	22.2 c	24.0 bc	1538 bcd
10	Glyphosate	0	Yes	46.4 a	72.2 abc	14.5 abc	63.1 ab	72.3 abc	7.4 a	7.8 ab	0.40 ab	0.78 a	0.72 a	7.8 a-d	30.6 a	27.6 b	23.0 c	22.9 cd	2602 a
11	Glyphosate	5	No	29.7 d	49.8 de	13.8 cd	56.8 cd	69.3 de	5.6 d	6.0 de	0.25 d	0.66 cde	0.59 abc	4.2 efg	20.9 ab	53.1 a	46.3 b	22.7 d	1631 bcd
12	Glyphosate	5	Yes	39.2 a-d	73.9 ab	14.0 bcd	56.5 cd	70.3 cd	6.3 bcd	7.1 abc	0.29 cd	0.69 a-d	0.70 a	5.2 def	29.8 a	58.4 a	54.1 a	22.7 d	2387 ab
LSD (P=.05)				11.8	20.1	0.8	5.9	2.1	1.0	1.0	0.11	0.93	0.17	3.3	11.8	8.3	6.8	1.2	1813.0
CV				21.0	22.6	4.0	6.6	2.0	10.7	9.8	22.0	9.4	18.6	36.9	35.1	30.2	27.2	3.6	32.5
Treatment Prob(F)				0.039	0.0241	0.0001	0.0008	0.0008	0.0019	0.0001	0.0346	0.0001	0.0448	0.0001	0.0072	0.0001	0.0001	0.0053	0.0072

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

**Trial Summary**

Design: RCBD  
Fertilizer: 20-28-28 @ 180 kg/ha applied in 2x2 band at planting.  
Row Width: 30 inch (76 cm)  
Nutrients Supplied (kg/ha): 36 N; 50 P; 50 K  
Number of Rows Per Plot: 4  
Soil Test: OM 3.7%, Phosphorus 11 ppm, Potassium 133 ppm  
Number of Rows Harvested Per Plot: 2  
Glyphosate: 3.3 l/ha applied -14,-7,0,+5 days from planting  
Plot Length: 12 m  
Oat Cover Crop: Planted March 23  
Harvest Length: 8 m  
Herbicide: Pursuit/Dual Pre - June 3 (all but weedy checks)  
Seeding Rate: 20 seeds/m  
Desication: Eragon, September 28  
Variety: Argosy (Navy)  
Planting Date: June 1  
Harvest Date: October 1

**Conclusions:**

- \* soil test values (averaged over four replications of the experiment) suggest a moderate response to phosphorus fertilizer and a low response to potash fertilizer
- \* the weedy control had less plant height, plant development, plant vigour, plant dry weight and seed yield than the weed free control
- \* banded fertilizer gave a minor increase in plant height, plant development and seed yield in the weed free and weedy controls
- \* glyphosate applied early (-14 and -7 days from planting) had the highest plant height, plant development, plant dry weight, plant vigour and seed yield
- \* banded fertilizer had little effect on treatments where glyphosate was applied early at -14 and -7 days from planting
- \* banded fertilizer had increased plant height, plant vigour, and seed yield where glyphosate was applied late at -14 and -7 days from planting

## 2021 Soybean Variety Performance 2800 CHU Conventional - Exeter University of Guelph, Ridgetown Campus

No.	Name	Yield kg/ha	Yield bu/ac	Yield Rank	Seed Weight (g/100)	Seed Quality (1-5)	Days to Maturity	Lodging Score	Plant Height (cm)
1	DH530	4547	67.6	42	20.8	2.0	116.0	1.5	95.0
2	OAC Adare	4568	67.9	40	22.7	2.0	120.7	1.3	96.7
3	Acora	4268	63.5	59	23.0	1.7	112.7	1.7	100.0
4	HDC Blake	4281	63.7	57	28.6	1.8	121.3	1.5	113.3
5	Candor	4538	67.5	45	29.5	1.5	124.3	1.3	95.7
6	Eider	4235	63.0	63	23.2	1.7	115.3	1.3	106.7
7	Havane	4488	66.7	48	23.1	1.8	105.7	1.3	91.7
8	Ajico	4570	68.0	38	23.6	1.7	106.0	1.2	88.0
9	Marula	4094	60.9	73	25.4	2.2	110.0	1.2	96.7
10	OAC Adare	4497	66.9	47	22.1	2.2	118.0	1.2	93.3
11	Emperor	4808	71.5	25	27.6	2.5	116.0	1.2	95.0
12	Genesis	4478	66.6	49	22.8	1.7	112.7	1.7	88.3
13	Skyline	4265	63.4	60	22.0	1.7	115.7	1.3	90.0
14	S14-H3	4548	67.6	41	22.9	1.5	113.3	1.0	85.7
15	Osaka	4278	63.6	58	20.7	1.8	109.7	1.5	86.0
16	OAC Paris	4713	70.1	31	25.8	1.8	120.0	1.2	101.7
17	S10-R2	4803	71.4	26	22.5	1.7	103.7	1.5	94.0
18	Zana	4639	69.0	35	22.4	1.5	117.3	1.0	96.7
19	OAC Malory	4209	62.6	65	20.7	2.0	115.3	1.8	95.7
20	OAC Adare	4545	67.6	43	22.3	2.2	118.7	1.3	94.3
21	OAC Elevation	3455	51.4	81	24.2	2.2	114.0	1.3	89.3
22	Ezra	4752	70.7	30	20.9	2.0	107.7	1.8	93.3
23	P11A10	4890	72.7	17	22.9	1.8	112.0	1.7	101.7
24	Azalea	4841	72.0	21	21.4	1.8	115.0	2.7	89.0
25	SeCan 17-75C-SCN	4680	69.6	32	21.8	2.3	113.3	1.2	91.7
26	OAC Aberdeen	4662	69.3	33	21.6	1.7	116.0	1.0	82.7
27	Laurentian	4767	70.9	28	10.9	2.0	123.3	2.3	106.7
28	Atena	4793	71.3	27	25.1	1.5	115.7	1.0	91.7
29	SVX20T0S14	4389	65.3	52	21.0	1.5	107.3	1.2	95.0
30	SVX20T1S16	4756	70.7	29	26.9	1.8	112.0	1.2	92.7
31	SVX20T1S19	4886	72.7	18	20.5	2.0	117.7	2.0	93.3
32	Kagawa	3613	53.7	80	25.7	1.7	113.3	1.0	86.7
33	Asana	4407	65.5	51	25.0	2.0	104.7	2.2	87.3
34	SC 6218N	5028	74.8	9	21.8	1.7	113.7	1.3	89.0
35	S12-J7	4970	73.9	12	24.3	1.7	112.0	1.2	88.3
36	OAC 18-63C-SCN	5022	74.7	10	19.9	1.8	118.0	1.3	116.7
37	PR131331Z-20-03	4606	68.5	36	24.9	1.7	116.7	1.8	96.0
38	SeCan 19-52C-SCN	4900	72.9	16	23.5	2.3	114.0	2.3	96.7
39	SC2219N?	4814	71.6	24	21.2	1.7	111.7	2.2	95.0
40	OAC 19-43C	4114	61.2	68	22.7	2.5	113.3	1.8	99.0
41	OAC 19-88C	3918	58.3	78	21.9	1.7	112.3	1.8	96.7
42	OAC 19-49C	4379	65.1	54	25.9	2.5	112.3	1.7	100.0
43	OAC 19-57C	4094	60.9	74	23.1	2.0	113.3	1.2	95.0
44	OAC 19-91C	5214	77.5	2	22.8	2.0	118.3	1.5	105.0
45	OAC 19-61C-SCN	5006	74.4	11	21.5	2.0	120.0	1.2	110.0
46	OAC 19-62C-SCN	4942	73.5	15	19.1	2.5	118.7	1.8	106.7
47	CLS11-005,1312	3794	56.4	79	21.3	2.0	114.3	1.0	88.3
48	Bercika	4387	65.2	53	24.6	2.2	118.0	1.5	94.0
49	Baltazar	4085	60.7	75	21.8	2.0	117.3	1.3	98.3
50	CER11-77.B.54	4409	65.6	50	25.5	2.2	118.0	1.5	111.7
51	Taku	4835	71.9	22	20.0	1.8	117.3	1.8	110.0
52	AAC Talbot	4241	63.1	62	26.9	2.3	123.0	1.3	105.0

53	C4M21446 Conv	4511	67.1	46	20.2	2.3	116.0	1.8	90.7
54	PR130803Z-24	4587	68.2	37	25.1	1.5	110.7	1.3	91.7
55	PR130307Z-17	5081	75.6	7	24.2	1.5	114.3	1.8	97.7
56	PR130424Z-21	5115	76.1	5	21.0	1.7	119.7	1.3	90.0
57	P15A20	5349	79.5	1	21.6	1.5	118.7	1.0	97.3
58	SVX22T1S44	5136	76.4	4	20.6	1.5	121.0	1.2	101.7
59	SVX22T1S45	4961	73.8	14	21.4	2.0	121.7	1.3	111.7
60	SVX21T2S26	5033	74.8	8	20.7	1.8	119.0	1.0	99.7
61	OAC 20-34C	3937	58.5	77	22.5	2.3	113.7	2.5	96.7
62	OAC 20-40C	4101	61.0	70	23.5	2.0	122.3	2.7	108.3
63	OAC 20-44C	4367	64.9	55	20.6	2.2	124.0	2.5	120.0
64	OAC 20-46C	4293	63.8	56	21.5	2.2	115.3	2.2	95.0
65	OAC 20-68C	4832	71.9	23	22.7	2.0	116.7	1.2	92.0
66	OAC 19-66C	4539	67.5	44	21.8	2.0	126.0	3.0	106.7
67	OAC 19-90C	4139	61.5	66	22.3	1.8	118.0	1.7	111.7
68	DL21-3011	4100	61.0	71	18.7	2.0	125.0	1.0	91.7
69	CLS13-014,005	4265	63.4	61	20.5	1.5	110.3	2.0	103.3
70	CLS13-014,003	4123	61.3	67	22.5	1.8	115.7	1.7	101.7
71	CLS13-014,004	4100	61.0	72	22.6	2.0	114.3	1.8	105.0
72	CLS13-036,026	4234	63.0	64	25.5	1.8	111.7	1.5	91.7
73	CR170354	4962	73.8	13	23.2	2.0	116.7	2.2	91.7
74	G-10	4112	61.1	69	19.8	2.0	105.3	1.3	88.3
75	SeCan 20-47C-SCN	4854	72.2	20	23.5	1.7	117.7	1.2	99.3
76	SeCan 20-55C-SCN	5108	76.0	6	19.5	2.5	127.3	3.3	100.0
77	SC 5020	4661	69.3	34	22.8	1.8	105.0	1.0	76.7
78	SC 5120	5154	76.6	3	23.4	2.2	121.0	1.8	99.0
79	VG2011C	4881	72.6	19	20.7	2.3	118.0	1.3	91.7
80	OAC Adare	4037	60.0	76	22.3	2.2	118.7	1.0	91.7
81	AAC Talbot	4569	67.9	39	20.3	2.0	114.0	1.5	96.0
Mean		4545	67.6		22.6	1.9	115.6	1.6	96.9
C.V.		7.6	7.6		4.6	12.4	1.7	26.7	6.7
PR > F		0.0001	0.0001		0.0001	0.0001	0.0001	0.0001	0.0001
LSD(0.05)		561	8.3		1.7	0.4	3.1	0.7	10.5

Planting Date: May 17

Seed Quality: 1 = good, 5 = poor

Harvest Date: Sept 30

Lodging: 1 = good, 5 = poor

Yields adjusted to 13% moisture.

Analyzed - RCBD

Herbicide: Pursuit, Dual II Magnum and Roundup Transorp PPI May 16

Harvest Size - 1.5 X5 m

**2021 Soybean Variety Performance 2800 CHU Roundup Ready - Exeter**  
**University of Guelph, Ridgetown Campus**

No.	Name	Yield kg/ha	Yield bu/ac	Yield Rank	Seed Weight (g/100)	Seed Quality (1-5)	Days to Maturity	Lodging Score	Plant Height (cm)
1	PRO 3025R2C	4434	65.9	47	18.9	2.0	124	1.2	102
2	Miko R2	4322	64.3	50	20.1	2.2	107	1.3	91
3	CF2858Xt	4170	62.0	57	18.9	2.0	112	1.2	93
4	P15A63X	4989	74.2	8	22.8	1.8	117	1.0	82
5	P19A14X	4862	72.3	22	16.1	2.2	122	1.2	89
6	PS 1338 XRN	4298	63.9	52	17.5	2.0	116	1.0	91
7	P18A98X	4777	71.0	25	19.2	2.2	120	1.0	97
8	DKB15-54	4609	68.5	35	21.2	1.8	118	1.2	94
9	Maris R2X	4324	64.3	49	16.2	2.3	112	1.3	82
10	CF19X9	5018	74.6	6	18.6	1.5	122	1.3	92
11	PS 1119 XRN	4440	66.0	46	19.1	2.3	113	1.3	92
12	Dionne R2X	4581	68.1	38	16.9	2.3	116	1.3	100
13	S14-U9X	4811	71.5	23	19.3	1.7	113	1.0	88
14	P16T71E	4718	70.2	29	22.1	2.2	117	1.3	85
15	B161ME3	4591	68.3	37	17.4	2.2	121	1.0	81
16	B191FE	5089	75.7	3	17.6	2.0	124	1.2	89
17	B102ZE.	4278	63.6	53	18.0	1.8	111	1.0	87
18	Cyclone R2X	4535	67.4	42	19.1	1.5	117	1.2	92
19	PRO 13X836N	4504	67.0	44	18.4	2.2	114	1.0	79
20	PRO 15X926N	5032	74.8	5	19.0	1.5	118	1.8	107
21	Rondo R2X	4709	70.0	30	19.4	2.0	112	1.0	95
22	DKB11-51	4213	62.6	55	16.1	2.3	115	1.5	92
23	DKB19-80	4927	73.3	15	17.7	2.0	121	1.3	97
24	DKB14-65	4679	69.6	33	18.1	2.5	116	1.0	93
25	B152RX	4865	72.3	21	19.2	2.0	116	1.0	88
26	PS 1520 XRN	4879	72.6	19	17.8	1.5	114	1.0	88
27	Enyo E3	4898	72.8	18	19.5	2.0	113	1.0	87
28	Neo R2X	4780	71.1	24	20.1	2.0	111	1.7	90
29	P16A84X	4956	73.7	12	17.4	1.8	123	1.0	92
30	Beliveau R2X	4986	74.1	9	19.7	2.0	119	1.0	87
31	S12-M5X	4737	70.4	28	19.5	2.2	110	1.0	75
32	S16-K2X	4984	74.1	10	21.2	1.5	116	1.0	87
33	Savard E3	5053	75.1	4	19.2	2.0	121	1.0	93
34	SI 1120E3N	4935	73.4	14	21.5	2.2	114	1.0	79
35	SI 1520E3N	4555	67.7	40	17.2	2.2	117	1.0	88
36	SI 1820XTN	4980	74.1	11	19.0	2.2	118	1.7	98
37	EXP1421EN	4954	73.7	13	17.8	2.2	117	1.2	95
38	EXP1721EN	4754	70.7	27	18.9	1.8	122	1.0	92
39	EXP11-21	4347	64.6	48	20.8	2.3	115	1.2	92
40	EXP17-21XF	4572	68.0	39	18.5	2.0	114	1.2	95
41	Kites E3	4164	61.9	58	17.4	2.2	111	1.0	87
42	C4M21437 XT	4925	73.2	16	20.5	1.8	109	1.0	84
43	Harrier E3	4705	70.0	31	18.6	2.0	114	1.2	87
44	C4M21439 E3	4868	72.4	20	18.3	2.0	122	1.2	82
45	C4M21440 XF	4703	69.9	32	17.0	2.0	124	1.5	102
46	PR159002Z	4623	68.7	34	17.6	2.2	111	1.5	78
47	P12T94E	4534	67.4	43	22.2	2.0	113	1.0	82
48	P17A51X	5013	74.5	7	22.0	1.8	119	1.0	93
49	P13A89X	5316	79.0	1	18.6	1.8	115	1.2	97

50	CP1121E	4134	61.5	59	17.5	2.0	117	1.0	87
51	CL1941276	4481	66.6	45	18.3	2.3	110	1.2	82
52	CL1920396	4902	72.9	17	19.0	1.8	112	1.0	84
53	CL1941547	4775	71.0	26	17.9	2.2	113	1.0	98
54	SVX0921XTN	4543	67.6	41	18.0	2.2	111	1.2	88
55	SV185292-09	4176	62.1	56	22.0	1.5	112	1.7	97
56	SV185117-13	4014	59.7	60	17.7	1.8	113	2.2	98
57	SC21-2900XF	4598	68.4	36	18.3	2.0	116	1.2	93
58	Landmark E3	4271	63.5	54	21.2	2.5	111	1.0	85
59	Compass E3	4299	63.9	51	18.2	2.3	116	1.2	80
60	Beliveau R2X	5091	75.7	2	19.8	2.2	121	1.2	89
Mean		4671	69.5		18.9	2.0	116	1.2	90
C.V.		5.6	5.6		4.9	10.8	1.5	16.3	4.6
PR > F		0.00	0.00		0.00	0.00	0.00	0.00	0.00
LSD(0.05)		426	6.3		1.5	0.4	2.9	0.3	6.7

Planting Date: May 17

Seed Quality: 1 = good, 5 = poor

Harvest Date: Sept 30

Lodging: 1 = good, 5 = poor

Yields adjusted to 13% moisture.

Analyzed - RCBD

Herbicide: Pursuit, Dual II Magnum and Roundup Transorp May16 Harvest Size - 1.5 X5 m

# Seed treatment and N rate do not impact dry bean (*Phaseolus vulgaris* L.) plant growth or grain yield in Ontario

Stephen J. Boersma and Chris L. Gillard

**Abstract:** Application of nitrogen fertilizer and commercial seed treatments are two strategies dry bean growers in Ontario utilize to manage root rot and maximize yields. However, data solidifying these practices is absent or outdated. Experiments were conducted at the Huron Research Station, near Exeter, Ontario, from 2008 to 2010, to measure plant growth and yield responses for navy, kidney, and cranberry dry bean market classes (cv. T9905, Pink Panther, and Etna, respectively) to seed treatment (NST, no seed treatment; CMBD, Cruiser Maxx Bean + Dynasty) and N fertilizer rates of 0, 35, 70, 105, 140, and 175 kg N·ha<sup>-1</sup>. Plant measurements taken included plant emergence, vigour, height and maturity, plant and seed mass, and grain moisture and yield. Over three years, plant growth and yield responses to seed treatment and nitrogen fertilizer were very scarce. Plant emergence and vigour either improved or were not affected by seed treatment or N rate, while increasing N rates increased plant height of only Pink Panther in 2008. Plant mass was unaffected by either factor while seed treatment decreased days to maturity and grain moisture of T9905 in 2008. Nitrogen fertilizer improved the grain yield of Etna, with the highest yields occurring with 70 kg N·ha<sup>-1</sup> or more, while other cultivar site-years did not respond. Overall, these results demonstrate dry beans rarely respond to N fertilizer or seed treatment at the Huron Research Station. Additional testing over multiple years and locations would assist in predicting these responses.

**Key words:** dry bean, seed treatment, nitrogen rate, root rot.

**Résumé :** Appliquer un engrais azoté ou recourir à un traitement commercial pour les semences sont deux stratégies auxquelles recourent les producteurs de haricot ontariens pour lutter contre le pourridié fusarien et optimiser leur rendement. Malheureusement, soit les données qui permettraient d'étayer ces pratiques n'existent pas, soit elles sont désuètes. De 2008 à 2010, les auteurs ont procédé à des expériences à la station de recherche Huron, près d'Exeter, en Ontario, en vue d'établir comment la croissance et le rendement du petit haricot blanc, du haricot commun et du haricot canneberge de classe marchande (cultivars T9905, Pink Panther et Etna, respectivement) réagissaient au traitement des semences (aucun traitement ou Cruiser Maxx Bean + Dynasty) et à l'application de 0, 35, 70, 105, 140 ou 175 kg de N par hectare. Les paramètres évalués incluaient les suivants : levée, vigueur de la plantule, hauteur, précocité, masse du plant et de la graine, teneur en eau de la graine et rendement. La croissance et le rendement du plant ont très peu réagi au traitement des semences et à l'application d'engrais azoté durant les trois années de l'étude. Le traitement des semences ou le taux d'application soit ont amélioré la levée et la vigueur de la plantule, soit n'ont eu aucun effet. Augmenter la quantité d'engrais appliquée n'a accru la taille du plant que chez Pink Panther, en 2008. La masse du plant n'a été affectée d'aucune manière, bien que le traitement des semences ait réduit le nombre de jours précédant la maturité et la teneur en eau du grain de T9905, en 2008. L'engrais azoté a rehaussé le rendement grainier d'Etna, la valeur la plus élevée ayant été atteinte au taux de 70 kg de N par hectare ou davantage, mais n'a suscité aucune réaction chez les autres cultivars, aux années-sites. Dans l'ensemble, ces résultats laissent croire que le haricot réagit rarement aux engrains azotés et au traitement des semences à la station de recherche Huron. Il faudrait entreprendre des essais pendant plusieurs années, à différents endroits, afin de mieux prévoir les réactions de cette culture. [Traduit par la Rédaction]

**Mots-clés :** haricot, traitement des semences, taux d'application des engrais azotés, pourridié.

Received 5 May 2020. Accepted 24 November 2020.

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