

**EDIBLE BEAN**

**AGRONOMY**  
**AND**  
**PEST MANAGEMENT**  
**RESEARCH RESULTS**

**2017**

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RIDGETOWN CAMPUS

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# **Agronomy and Pest Management Research Results for Dry Edible Beans 2017**

This report is a compilation of agronomy and pest management research results in dry edible beans at Ridgetown College and the Huron Research Station for 2017. 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.

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**2017 Heat Unit and Precipitation Summary for Exeter and Ridgetown.**

<b>Ontario Corn Heat Units (OCHU)</b>				
Month	Huron Research (Exeter)		Ridgetown Campus	
	2017	Norm	2017	Norm
		(36 yr)		(41 yr)
May	216	359	391	376
June	693	658	690	684
July	796	776	774	795
August	718	747	687	765
September	610	559	616	676
October	409	47	432	217
Total	3084	3167	3590	3414

**Precipitation (mm)**

Month	Huron Research (Exeter)		Ridgetown Campus	
	2017	Norm	2017	Norm
		(36 yr)		(41 yr)
May	173	84	145	81
June	87	81	45	70
July	52	81	36	82
August	63	68	62	86
September	69	106	38	87
October	99	94	71	64
Total	543	514	397	470

20% or more below average

20% or more above average

2017 Weather

Heat unit accumulation was average in 2017. October was particularly kind to growers, with good heat accumulation and a late killing frost on October 28. Field studies matured slowly, and harvest started late. But good heat in September and October meant that harvest was completed by the end of October at the Huron Research Station.

Both sites had above average rainfall in May, and then below average precipitation for most of the summer. Early planting progress was challenging at the Huron Research Station, and many studies did not get planted until mid-June. A severe rain event (>150 mm in 6 days) occurred at the Auburn site in late June, which caused some damage to the studies. Excess rainfall and issues with tile drainage caused repeated damage to the Exeter site in July. Most of the studies at this location were abandoned before harvest.

## EXECUTIVE SUMMARY

### Variety Registration and Performance Trials (ongoing)

Four studies were seeded in 2017 - on schedule at Auburn (June 2) and Exeter (June 10). The Auburn site had some damage from excess rainfall after emergence, which forced the removal of the first replication from yield analysis. Repeated rain and poor drainage at the Exeter location forced the abandonment of most of the studies.

#### Summary of Registration/Performance Trials, Huron Research Station, 2017

Location	Market Class	Average Yield	C.V.	Notes
Auburn	White	3492	8.9	Replication 1 removed for yield
Exeter	White	--	--	Not harvested due to water damage
Exeter	Cran/Kidney	--	--	Not harvested due to water damage
Exeter	Black/Pinto/SR	3850	11.1	Replication 1 removed for yield

### Preliminary Yield Trials (ongoing)

Four studies were seeded in 2017 at Auburn, Exeter and Woodstock. A preliminary site was also seeded at Emo in northern Ontario. The Auburn site had some damage from excess rainfall after emergence, which forced the removal of the first replication from yield analysis.

A number of public and private breeding programs took part in the trials, including ADM, Agr. Canada/U of G, AmeriSeed (Co-op), HDC, Thompsons, MSU, NDSU, Pro-Vita and Seminis. The primary site was at Exeter, and these trials were repeated at Auburn (narrow row) and Woodstock (wide row).

There were 56 entries tested as follows: navy (12 entries), DRK (4 entries), LRK (10 entries), WK (2 entries), Cran (6 entries), Black (12 entries), Otebo (2) Pinto (2), Small Red (4) and food-type soybean (1).

#### Summary of Preliminary Yield Trials, Huron Research Station, 2017

Location	Market Class	Average Yield	C.V.	Notes
Auburn	Navy/Black/Misc	3264	9.5	Replication 1 removed for yield
Exeter	Navy/Black/Misc	--	--	Not harvested due to water damage
Exeter	Cran/Kidney/Misc	--	--	Not harvested due to water damage
Woodstock	Cran/Kidney/Misc	1521	14.9	Lower yield
Total Entries				56 distinct entries at 4 sites

Black – Top yielding lines include ACUG 15-B4 and B14506.

Navy – Top yielding lines include Rexeter, Lighthouse and N12063.

Dynasty and K15601 (DRK), Samurai (Otebo) and Yeti (WK) did well at Woodstock.

### **Adzuki Variety Trial (Year 2 of 2)**

The agronomic performance of four adzuki bean cultivars was compared four control cultivars: two dry beans (Rexeter navy and Zorro black) and two food type soybeans (S03-W4 and S07-M8). Trials were planted in 2016 and 2017 at Exeter, Woodstock and Winchester. The adzuki cultivars were low yielding compared to the control cultivars at all sites. Winchester was the best site, and the adzuki cultivar yield was about 50% of the yield of the dry bean cultivars. The adzuki cultivar Erimo had the moderate yield, while W4 tended to have higher yield and ON4 had the lowest yield of all the adzuki cultivars. W4 had the largest seed of the adzuki cultivars, followed by ON4.

### **Evaluation of Marsh Spot in Dry Beans (Ongoing)**

Background - Marsh spot is a physiological disorder found primarily in cranberry beans (occasionally in kidney beans). Cells in the center of the cotyledons die and turn a gray/black colour (see Fig. 1). The damage is evident once the seed is split along the cotyledonary axis, and opened up to view the interior of the cotyledons. Marsh spot can create serious marketing issues for bean dealers. Marsh spot incidence was above average in 2017.

Registration/Performance Trials - Cranberry cultivars from trials at Exeter, Elora and St. Thomas locations were evaluated for marsh spot and compared to Etna (resistant check) and Messina (susceptible check). All of the lines tested were similar to the resistant check Etna except ACUG 17-C2. ACUG 14-C2 had high marsh spot in 2016, but was similar to Etna in 2017.

Preliminary Yield Trials – Cranberry cultivars from the trial at Woodstock were evaluated. The incidence of marsh spot at Woodstock was below average in 2017. The cultivar Chianti had high marsh spot scores in 2017, but had similar scores to Etna in 2016.

Figure 1: Marsh Spot Severity Ratings



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

This is an ongoing study to develop a long term data set on anthracnose fungicide efficacy and economic returns. A spore suspension was used as an inoculum source on disease free plants, and irrigation was used to promote disease development. Two studies were seeded about 3 weeks apart, and were inoculated at first flower. Disease pressure following inoculation was average in the first study, but the inoculum failed to initiate disease in the second study. In the first study, Quadris and Headline, the two standard treatments, both provided excellent disease control. Allegro was similar to Quadris for disease control, but was weaker than Headline. The yield for Allegro was similar to the top treatments. Quadris Top, Senator, EAC 1407 and Propulse had higher disease than Quadris, but all had high seed yield. Fluopyram, Vertisan, Quash and Fludioxonil had unacceptable disease control, which impacted yield as well. Acapela had high disease pressure for a strobilurin fungicide, but had high yield too.

### **White Mold Foliar Fungicide in Dry Beans (ongoing)**

This is an ongoing study to develop a long term data set on white mold fungicide efficacy and economic returns. One trial were planted in 2017. Disease pressure was very high. Senator and EAC 1407 had the lowest disease pressure and the highest yield. Lance, Allegro, Propulse, Priaxor+Lance, Fludioxonil and Astound had lower disease severity than the untreated control. A single application of Allegro and Propulse had similar disease severity and yield as the untreated control. A21461 and Acapela had relatively high disease pressure and inconsistent yield. Double Nickel LC was similar to the untreated control for all parameters measured.

A second white mold fungicide study was completed in 2017. This study was originally intended to evaluate foliar fungicides for anthracnose control, but was repurposed for white mold after the anthracnose inoculum failed. Disease pressure in this study was moderately high, compared to past work. Allegro, Senator and EAC 1407 had the lowest disease severity. Propulse, Acapela and Scholar had moderate disease severity, but yield was similar to the top treatments. Two applications of Allegro or Propulse had similar disease severity as a single application. Quadris, Headline Vertisan and Quash were similar to the untreated control for disease severity and yield.

### **White Mold Foliar Fungicide in Soybean (Year 2)**

This is an ongoing study to develop a long term data set on white mold fungicide efficacy in soybeans. This study has been conducted for 6 years. Good treatment separation was achieved in 2016 and this was repeated in 2017. Disease pressure in 2017 was very high in both studies. Stratego Pro, Cotogra + Priaxor and Acapela had the lowest disease pressure, but only Stratego Pro consistently increased yield compared to the untreated control. Two applications of Stratego Pro did not improve disease control or yield compared to one application. Priaxor had lower disease pressure and higher yield than the untreated control in 1 of 2 studies, while Allegro was similar to the untreated control in both studies.

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

One study were planted in 2017, and disease pressure was moderately high. Allegro 500F was applied at 6:00 AM, 12:00 PM, 6:00 PM and 12:00 AM to determine if time of day impacted fungicide performance. The application of Allegro reduced disease severity and increased yield, compared to the untreated control, but there were no differences in disease pressure or yield between the Allegro timings.

### **White Mold Cultivar x RowWidth x Population (Year 2)**

One study was planted in 2017. Overall, disease pressure was moderate. Two cultivars (Merlot SRM and Beryl GN) were seeded in 2 row widths (38 and 76 cm) at four populations (100, 80,

60 and 40%, with 100% population target of 200,000 plants/ha in narrow rows and 175,000 plants/ha in wide rows). There was no difference in disease severity between narrow and wide rows. Merlot had higher disease incidence than Beryl, but only in wide rows. Merlot had higher disease severity than Beryl in both row widths. A decrease in disease severity only occurred between a 60 and 40% plant stand. However, differences between treatments had no effect on yield.

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

This is an ongoing study to evaluate Cruiser Maxx Bean (current standard) with and without Dynasty or Sedaxane. This treatment was compared to Rancona Summit and Evergol Energy. All plots received Cruiser to minimize any confounding effects from soil insects.

Fusarium - disease pressure was moderate, with treatment differences evident for emergence and plant vigour for the first 24 days after planting (DAP). The best seed treatments had 100+% higher plant emergence, compared to the inoculated control, which resulted in a dramatic yield increase. There were minor differences between seed treatments for plant emergence at 24 DAP but the seed treatments had similar plant vigour after 14 DAP. There were no seed treatment differences for yield at harvest. The addition of Sedaxane to Cruiser Maxx Bean increased plant emergence, compared to Cruiser Maxx Bean alone, or Rancona Summit and Evergol Energy treatments.

Rhizoctonia – disease pressure was moderate in both studies. The seed treatments give better plant emergence and plant vigour for the first 24 days after planting, compared to the inoculated control. But there were almost no differences between the seed treatments for plant emergence, plant vigour or yield. Only Cruiser Maxx Bean + Dynasty and Evergol Energy had higher yield than the inoculated control at harvest.

### **Common Bacterial Blight (CBB) Foliar Control**

Four trials were planted in 2017, using two bean market classes (navy and kidney) and two disease inoculation methods (infected seed and foliar inoculum). Three experimental compounds (OxiDate, SaniDate and XX) were compared to Parasol. Two compounds (XX and Sanidate) showed promise in previous work done at the University of Nebraska.

Foliar Inoculation - These trials had low leaf disease pressure and moderate pod disease pressure, compared to previous work. Disease pressure was about 2X higher in the kidney versus navy bean study. Unfortunately, there were no differences in leaf or pod disease between the uninoculated and the inoculated control, which suggests there was some disease movement between plots. There was no treatment effect for disease severity, pick or yield.

Infected Seed Inoculation - These trials had low to moderate leaf disease and pod disease pressure. Disease pressure was higher in navy versus the kidney bean study. There were few meaningful treatment differences in the navy bean study. In the kidney bean study, the uninoculated control had slightly less disease incidence and severity than the inoculated control at the last rating date, while Parasol had slightly less disease severity than the inoculated control at the same date. There were no treatment differences for pick or yield.

### **AgTiv/Myconate in Dry Bean (Year 2 of 2)**

AgTiv is a mycorrhizae inoculant product produced by Premier Tech, while Myconate is a chemical stimulant for mycorrhizae produced by Plant Health Care. Both products were evaluated in a small plot agronomic study at the Huron Research Station and in a small plot root rot study at Harrow Research Station.

At the Huron Research Station, AgTiv and Myconate were evaluated at a 1X and 2X rate alone, and together at a 1x rate. All treatments were applied along with 2.5 l/ha of 6-24-6 fertilizer at

planting. There were no treatment differences for plant emergence, vigour, height, stage of development or dry weight. At harvest, there were no treatment differences for plant maturity, lodging, yield, seed weight or % pick.

At AAFC Harrow, AgTiv and Myconate were evaluated at a 1X and 2X rate alone, and together at a 1X rate in the root rot nursery. All treatments except Myconate 1X had lower root rot scores than the untreated control.

### **Potato Leafhopper Seed Treatment Study in Dry Beans (Year 1)**

An experimental seed treatment was compared to Cruiser (thiamethoxam) and an untreated control in three studies at Auburn, Exeter and the Huron Research Station. Potato leafhopper nymph populations were moderately low at Huron and Auburn and very low at Exeter. The experimental seed treatment had little effect on nymph numbers or leaf injury, except at the Huron site, where some measure of control was recorded for the first two weeks. Cruiser reduced nymph numbers and leaf injury for 30 days or more at each site. However, none of the seed treatments impacted plant maturity, seed weight, pick or yield.

## 2017 Navy Bean Registration and Performance Trial - Auburn

No.	Name	Yield Rank	Yield* (kg/ha)	Yield Index	Yield / Maturity	Seed			Seed		Harvestability (1-5, 1=good)
						Weight (g/100)	Days to Maturity	Height (cm)	Quality (1-5, 5=low)	Lodging (1-5, 1=low)	
1	Bolt	18	3209	92	31	24.1	104	48.3	1.9	1.0	1.5
2	Fathom	16	3380	97	31	23.7	109	46.5	1.6	1.4	1.6
3	Lightning	21	3010	86	28	21.8	106	46.5	1.6	1.3	1.5
4	Mist	4	3833	110	35	21.9	109	48.0	1.5	1.5	1.6
5	Rexeter	1	4083	117	36	20.2	112	47.8	1.6	2.1	2.4
6	Apex	5	3811	109	34	24.0	111	58.3	1.1	1.5	1.4
7	Nautica	12	3573	102	33	18.4	109	54.5	1.9	1.3	1.1
8	Thunder	20	3118	89	30	21.9	105	46.3	1.6	1.4	1.5
9	DS105W0	10	3611	103	34	20.0	107	50.3	2.1	2.4	2.4
10	T9905	23	2562	73	24	21.6	107	46.5	1.1	1.4	2.1
11	Shock	12	3573	102	33	24.6	108	50.0	1.1	2.4	2.5
12	Argosy	7	3716	106	34	23.6	110	51.0	1.1	1.9	1.9
13	Lighthouse	9	3619	104	33	21.1	110	46.0	1.6	1.0	1.3
14	Alpena	22	2787	80	27	17.1	104	53.3	2.1	1.4	1.8
15	ACUG16-3	14	3528	101	34	19.5	104	46.5	1.6	1.5	1.6
16	ACUG16-5	3	3889	111	36	21.5	109	49.0	1.5	2.5	2.5
17	ACUG16-6	2	4005	115	37	18.7	109	47.0	1.9	2.5	2.5
18	ACUG17-1	19	3130	90	30	19.3	104	45.8	1.6	1.5	1.4
19	ACUG17-2	6	3818	109	36	25.1	106	42.5	1.3	1.9	1.6
20	ACUG17-3	8	3645	104	35	21.1	105	48.5	1.5	1.3	1.5
21	ACUG17-4	17	3314	95	31	22.8	107	49.3	1.8	1.1	1.3
22	ACUG17-5	11	3584	103	33	22.8	108	48.3	1.4	1.3	1.3
23	ACUG17-6	15	3514	101	32	19.9	110	52.5	1.5	1.4	1.4
Mean			3492	100	32	21.5	107.4	48.8	1.6	1.6	1.7
C.V.			8.9			3.4	1.6	7.2	16.7	23.9	22.7
PR > F			0.0001			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
LSD(0.05)			511			1.0	2.4	4.9	0.4	0.5	0.6

### Trial Summary

Design: RCBD	Fertilizer: 18 gal/ac UAN (54lbs/ac) ppi (June 1)
Row Width: Narrow = 15 inch (38 cm)	Herbicide: Prowl, Pursuit, ppi (June 1)
Number of Rows Per Plot: 6	Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v) (July 5)
Number of Rows Harvested Per Plot: 4	Fungicide: Matador (0.1 L/ha), Quadris (0.5 L/ha), Serenade (4l/ha), Phi K (1l/ha) (July 17)
Plot Length: 6 m	Matador (0.05 L/ha), Quadris (0.5 L/ha), Allegro (1L/ha) (August 1)
Harvest Length: 5 m	Matador (50mL/ha), Quadris (500mL/ha), Allegro (1L/ha) (August 16)
Seeding Rate: 17 seeds/m	Dessication: Eragon (71g/ha), Roundup 2.5l/ha), Merge (1l/ha) (September 13)
Seed Treatment: CruiserMaxxBan + Dynasty	Planting Date: June 2
	Harvest Date: September 25

\* Due to water damage, rep 1 was discarded from the trial

**2017 Black, Pinto and SR Registration and Performance Trial - Exeter**

No.	Name	Market Class	Yield Rank	Yield* (kg/ha)	Yield Index	Yield / Maturity	Seed		CBB (%)	Height (cm)	Seed		Harvestability (1-5, 1=good)	
							Weight (g/100)	Days to Maturity			Quality (1-5, 5=low)	Lodging (1-5, 1=low)		
1	Zorro	Black	HDC	7	3988	104	42.4	22.0	94	2.7	62.3	1.7	1.3	1.7
2	OAC Rosito	Small Red	ACUG	2	4252	110	44.3	22.3	96	1.0	63.7	1.5	2.3	2.5
3	Ruby	Small Red	ADM	9	3891	101	41.4	34.0	94	2.7	54.3	1.2	3.7	3.7
4	Viper	Small Red	ADM	3	4174	108	43.5	30.2	96	1.7	59.3	1.7	1.8	2.3
5	Zenith	Black	HDC	12	3680	96	37.2	21.3	99	0.7	68.7	1.3	1.5	1.7
6	ACUG 16-NDP1	Pinto	ACUG	16	3087	80	32.8	37.0	94	6.7	60.0	1.7	1.7	1.7
7	ACUG 15-B4	Black	ACUG	8	3947	103	42.0	21.6	94	1.7	64.3	1.5	2.2	2.3
8	ACUG 17-B1	Black	ACUG	5	4015	104	42.3	22.4	95	1.0	51.3	1.5	3.3	3.2
9	ACUG 17-B2	Black	ACUG	11	3764	98	40.0	21.6	94	1.0	49.7	1.5	2.2	2.3
10	ACUG 17-B3	Black	ACUG	13	3601	94	37.9	21.5	95	2.0	54.3	1.2	2.3	2.8
11	ACUG 17-B4	Black	ACUG	4	4083	106	42.1	24.2	97	4.7	63.7	1.5	2.0	2.0
12	ACUG 17-B5	Black	ACUG	15	3422	89	35.6	22.0	96	6.7	60.0	1.5	1.2	2.0
13	Merlo	Small Red	Check	10	3829	99	40.3	38.4	95	2.7	54.0	1.3	2.7	3.2
14	LaPaz	Pinto	Check	1	4343	113	45.7	34.7	95	2.0	57.7	1.5	3.0	2.5
15	ACUG 16-B2	Black	ACUG	6	4008	104	42.2	23.5	95	4.0	58.3	1.5	3.2	3.2
16	ACUG 16-B4	Black	ACUG	14	3510	91	36.2	24.2	97	2.7	57.0	1.7	1.8	1.8
Mean					3850	100.0	40.4	26.3	95.4	2.8	58.7	1.5	2.3	2.4
C.V.					11.1			3.1	1.4	95.4	8.9	18.7	21.6	16.6
PR>F					N/A			1.4	2.2	N/A	8.7	N/A	0.8	0.7
LSD (0.05)					0.0864			0.0001	0.0053	0.1152	0.0060	0.4801	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: CruiserMaxxBan + Dynasty

Fertilizer: 0-0-100 lbs applied and ploughed in fall  
 60-40-50 actual with half N as ESN (June 9)  
 Herbicide: Pursuit .2 L/ha, Frontier .75 L/ha, Prowl (1l/ha) ppi (June 9)  
 Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v) (July 6)  
 Fungicide/Insecticide:  
 Matador (100ml/ha), Quadris (500ml/ha), Lance (540ml/ha), Phi K (1l/ha) (July 19)  
 Matador (50mL/ha), Quadris (500mL/ha), Allegro (1L/ha) (August 1)  
 Matador (50mL/ha), Quadris (500mL/ha), Allegro (1L/ha) (August 14)  
 Dessication: Eragon (71g/ha), Roundup (2.5l/ha), Merge (1l/ha) (September 13)  
 Planting Date: June 10  
 Harvest Date: September 22

\* Due to water damage, rep 1 was discarded from the trial

**2017 Narrow Row Dry Bean Preliminary Yield Trial (PYT) - Auburn**

No.	Name	Market Class	Sponsor	Yield Rank	Yield* (kg/ha)	Yield Index	Yield / Maturity	Seed		Height (cm)	Seed	Lodging	Harvestability
								Weight (g/100)	Days to Maturity		Quality (1-5, 5=low)	(1-5, 1=low)	(1-5, 1=good)
1	HMS Medalist	White	AmeriSeed	23	2989	92	30	16.6	101	46.0	1.6	1.0	1.1
2	Rexeter	White	HDC	2	3961	121	36	21.6	111	45.5	1.3	2.4	2.4
3	T9905	White	WG Thompson	17	3241	99	30	22.7	107	42.5	1.4	1.3	1.6
4	Mist (ACUG 10-6)	White	HDC	9	3642	112	33	23.5	109	45.8	1.3	1.1	1.5
5	Lighthouse	White	ACUG	5	3744	115	35	22.4	108	46.0	1.8	1.1	1.5
6	Bolt	White	ACUG	29	2533	78	25	23.3	102	47.8	2.0	1.3	1.4
7	Fathom (12-5)	White	ACUG	26	2773	85	27	22.5	104	43.5	1.6	1.0	1.4
8	AAC Shock (14-1)	White	ACUG	10	3610	111	34	24.5	105	46.8	1.0	1.6	1.5
9	NA14229	White	AmeriSeed	30	2519	77	25	16.7	102	49.3	1.6	1.0	1.4
10	NA12062	White	AmeriSeed	28	2569	79	25	17.0	101	53.3	1.8	1.0	1.3
11	NA12063	White	AmeriSeed	6	3714	114	36	20.9	103	57.3	1.8	1.4	1.5
12	NA13068	White	AmeriSeed	8	3656	112	36	19.8	102	51.0	1.5	1.0	1.3
13	Zorro	Black	MSU	19	3124	96	29	22.2	107	48.3	1.5	1.0	1.5
14	Shania	Black	ADM	11	3568	109	33	20.3	108	51.3	1.6	1.6	1.6
15	Zenith (B10244)	Black	MSU	31	2342	72	23	21.3	104	46.3	1.5	1.1	1.8
16	Black Tails (13489)	Black	Coop Elevator	27	2648	81	26	19.1	101	46.0	1.9	1.0	1.4
17	Black Bear (12576)	Black	Coop Elevator	22	3028	93	28	18.5	107	54.3	2.0	1.0	1.4
18	BL14506	Black	Coop Elevator	3	3834	117	36	21.4	106	58.8	1.3	1.1	1.0
19	BL14497	Black	Coop Elevator	12	3502	107	34	22.7	104	50.8	1.8	1.0	1.1
20	B8006282	Black	ADM	18	3211	98	32	20.4	101	45.0	1.6	1.0	1.3
21	B1048276	Black	ADM	25	2883	88	29	19.5	99	48.0	1.8	1.3	1.6
22	B0040613	Black	ADM	16	3315	102	32	20.6	103	50.5	1.4	1.3	1.4
23	B1048280	Black	ADM	21	3058	94	31	18.8	100	49.5	1.5	1.1	1.5
24	ACUG15-B4	Black	ACUG	1	4150	127	38	22.3	110	50.8	1.3	1.6	1.5
25	S03-W4	Soybean	Syngenta	4	3826	117	33	22.6	115	74.0	1.8	1.0	1.0
26	Viper (09303)	SR	ADM	13	3431	105	33	29.3	105	42.5	1.6	1.6	1.8
27	PROVR11511	SR	ProVita	7	3672	113	35	42.4	105	57.5	1.8	2.0	1.8
28	Cayenne (R12844)	SR	MSU	15	3328	102	33	32.7	100	46.0	2.0	1.5	1.6
29	OAC Rosito	SR	ACUG	14	3334	102	31	22.3	107	45.3	1.9	1.0	1.4
30	Vibrant	Pinto	Ameriseed	20	3100	95	31	32.6	99	47.3	1.9	1.4	1.6
31	La Paz	Pinto	AmeriSeed	24	2889	89	29	32.9	100	51.3	1.9	1.6	1.6
Mean					3264	100	31	23.0	104.4	49.6	1.6	1.3	1.5
C.V.					9.5			4.5	1.6	8.1	17.2	23.8	17.3
PR > F					0.0001			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
LSD(0.05)					508			1.5	2.3	5.7	0.4	0.4	0.4

**Trial Summary**

Design: RCBD	Fertilizer: 18 gal/ac UAN (54lbs/ac) ppi (June 1)
Row Width: Narrow = 15 inch (38 cm)	Herbicide: Prowl, Pursuit, ppi (June 1)
Number of Rows Per Plot: 6	Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v) (July 5)
Number of Rows Harvested Per Plot: 4	Fungicide: Matador (100ml/ha), Quadris (500ml/ha), Serenade (4l/ha), Phi K(1l/ha) (July 17)
Plot Length: 6 m	Matador (50mL/ha), Quadris (500mL/ha), Allegro (1L/ha) (August 1)
Harvest Length: 5 m.	Matador (50mL/ha), Quadris (500mL/ha), Allegro (1L/ha) (August 16)
Seeding Rate: 17 seeds/m	Dessication: Eragon (71g/ha), Roundup 2.5l/ha, Merge (1l/ha) (September 13)
Seed Treatment: CruiserMaxxBean + Dynasty	Planting Date: June 2
* Due to water damage, rep 1 was discarded from the trial	Harvest Date: September 25

## 2017 Wide Row Dry Bean Preliminary Yield Trial (PYT) - Woodstock

No.	Name	Market Class	Sponsor	Yield Rank	Yield (kg/ha)	Yield Index	Yield/Maturity	Maturity (DAP)	Harvestability (1-5, 1=good)	Seed Weight (g/100)
1	Inferno	LRK	SECAN	18	1382	91	14.3	96.5	3.6	65.4
2	Clouseau (SEM07146)	LRK	Seminis	12	1650	108	18.0	91.5	2.5	51.5
3	Pink Panther	LRK	Seminis	13	1636	108	17.8	92.0	2.4	52.2
4	Big Red (09351)	LRK	Trinidad Benham	19	1370	90	15.6	88.0	1.8	50.4
5	9378	LRK	Trinidad Benham	16	1410	93	16.3	86.5	2.8	51.0
6	9357	LRK	Trinidad Benham	27	826	54	9.7	85.3	2.9	48.9
7	9363	LRK	Trinidad Benham	25	1120	74	13.3	84.3	3.1	50.4
8	6269	LRK	Trinidad Benham	17	1390	91	14.9	93.3	2.0	50.3
9	Rosie	LRK	NDSU	20	1350	89	14.3	94.5	3.5	49.3
10	K15601	LRK	MSU	7	1709	112	18.0	94.8	2.3	47.0
11	Dynasty (OAC 07-6D1)	DRK	HDC	5	1773	117	19.1	93.0	3.5	58.0
12	Red Rover	DRK	Seminis	24	1210	80	13.5	89.5	3.4	47.4
13	Talon	DRK	NDSU	21	1312	86	14.2	92.3	2.0	46.8
14	Red Cedar (K11306)	DRK	MSU	23	1249	82	13.3	93.8	8.6	45.8
15	Etna	CRAN	Seminis	9	1695	111	19.2	88.5	1.5	52.3
16	Chianti	CRAN	Seminis	15	1502	99	16.0	94.0	2.6	62.8
17	C13413	CRAN	MSU	22	1287	85	14.2	90.5	2.4	54.3
18	C1017332	CRAN	ADM	11	1650	109	18.2	90.8	2.4	55.7
19	La Paz	Pinto	ProVita	10	1667	110	18.1	92.3	1.3	35.8
20	Hime	Otebo	HDC	8	1701	112	19.1	89.0	3.5	23.1
21	Samurai (G12901)	Otebo	MSU	4	1824	120	18.5	98.5	2.9	27.5
22	T9905	Navy	Treasure Valley	2	1992	131	20.5	97.0	3.4	21.6
23	Viper	SRM	ADM	1	2155	142	22.8	94.5	2.5	28.9
24	Zorro	Black	MSU	3	1865	123	18.8	99.0	1.6	22.7
25	Yeti (ACUG 10-W1)	WK	HDC	6	1729	114	17.6	98.5	2.8	51.7
26	K15901	WK	MSU	14	1522	100	16.6	91.5	2.1	45.7
27	Messina	Cran	check	26	1089	72	12.5	87.0	2.1	45.4
Mean					1521			92.1	2.8	46.0
CV					14.9			2.4	77.6	--
Pr>F					0.0001			0.0001	0.0757	--
LSD (P=.05)					320.3			3.2	3.1	--

### Trial Summary

Design: RCBD

Row Width: Wide = 24 inch (60 cm)

Number of Rows Per Plot: 2

Number of Rows Harvested Per Plot: 2

Plot Length: 6 m

Harvest Length: 6 m

Seeding Rate: 15 seeds/m

Seed Treatment: CruiserMaxxBean + Dynasty

Fertilizer: 200 kg/ha of 5-20-20 ppi (May)

Herbicide: Pursuit 200 ml/ha, Dual II Magnum 1.75 L/ha ppi (May)

Excel Super 0.67 L/ha (July 6)

Fungicide: Allegro (1.0 L/ha), Headline (0.4 L/ha), Matador (40 ml/ha), Lagon (1.0 L/ha) - July 6  
 Allegro (1.0 L/ha), Quadris (0.5 L/ha), Matador (40 ml/ha), Admire (0.2 L/ha) - July 17  
 Allegro (1.0 L/ha), Headline (0.4 L/ha) - August 9

Planting Date: June 2

Harvest Date: September 11

**2017 Dry Bean PYT Narrow Row Study -Emo**  
**University of Guelph, Emo Ontario**

No.	Name	Market Class	Yield (kg/ha)	100 Seed Weight (g)	Days to Maturity	Lodging (1-5;1=low)	Harvestability (1-5;1=good)
1	Pink Panther	LRK	1729	64.7	118	2.8	2.8
2	9363	LRK	1199	64.4	118	2.8	2.8
3	Red Rover	DRK	1190	63.7	118	2.5	2.8
4	Etna	Cran	1359	61.6	118	2.8	2.8
5	C1017332	Cran	980	71.6	124	3.0	3.0
6	Hime	Otebo	1638	31.1	124	3.0	3.0
7	Viper	SRM	2780	28.8	124	2.0	2.0
8	La Paz	Pinto	2114	39.6	124	2.0	2.0
9	HMS Medalist	Navy	2225	22.7	124	2.3	2.3
10	Mist	Navy	1901	23.9	124	2.5	2.5
11	Bolt	Navy	1738	24.4	124	2.8	2.8
12	AAC Shock (ACUG14-1)	Navy	2144	24.3	124	2.3	2.3
13	Zorro	Black	2009	23.3	124	2.5	2.5
14	Zenith	Black	1445	24.1	124	3.0	3.0
15	ACUG15-B4	Black	1935	20.7	124	2.5	2.5
16	S03-W4	IP Soy	236	19.4	124	2.0	4.0
17	Messina	Cran	1095	55.7	118	2.8	2.8
Mean			1630	-	122	2.6	2.7
LSD (P=.05)			916.7	-	8.4	0.7	0.6
CV			39.4	-	4.8	18.6	16.0
Treatment Prob(F)			0.0005	-	0.4727	0.0225	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

**Trial Summary:**

Design: RCBD

Row Width: 11 inches (28 cm)

Number of Rows per Plot: 5

Number of Rows Harvested: 5

Plot Length: 3.6 m

Harvest Length: 3.6 m

Fertilizer: 11-52-0 @ 20 kg/ha

Herbicide: Bonanza + Pursuit @ 1.75 + 0.48 L/ha

Planting Date: June 12

Harvest Date: October 16

**2017 Adzuki Variety Trial**  
**Elora Research Station, University of Guelph**

Trt No.	Treatment Name	Yield (kg/ha)	Seed Weight (g/100)	Plant Maturity (days)	Plant Vigour (1-10; 10=good)	Lodging (1-5; 1=good)	Harvestability (1-5; 1=good)	Seed Quality (1-5; 1=good)
1	Adzuki WOX1	797 b	13.6 e	112.8 c	7.0 c	1.3 a	2.3 a	2.8
2	Erimo	381 b	13.2 e	113.0 c	6.0 de	1.1 a	2.6 a	2.3
3	Adzuki W4	1073 b	24.8 ab	118.3 b	6.5 cd	1.8 a	2.1 a	1.3
4	Adzuki ON4	396 b	19.7 d	115.3 c	5.5 e	1.6 a	2.5 a	2.9
5	Rexeter	2999 a	22.8 c	115.0 c	8.8 b	1.8 a	1.5 b	1.6
6	Zorro	3281 a	23.7 bc	110.3 d	9.3 ab	1.0 a	1.0 b	2.5
7	S03-W4	3206 a	24.4 abc	127.5 a	9.3 ab	1.0 a	1.0 b	2.0
8	S07-M8	3434 a	25.6 a	128.0 a	9.8 a	1.0 a	1.0 b	2.6
Mean		1945.9	21.0	117.5	7.8	1.3	1.8	2.2
LSD (P=.05)		521.4	1.3	2.1	0.7	0.7	0.5	1.0
CV		18.2	4.4	1.2	6.5	35.8	19.5	31.0
Treatment Prob(F)		0.0001	0.0001	0.0001	0.0001	0.0880	0.0001	0.0353

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Design: RCBD with 4 replications

Herbicide: Assure II June 16

Planting Date: May 18 4 rows @ 36 cm and 6 meter length

Seeding Rate Soybean: 12.4 seed/m of row

Seeding Rate Adzuki and Dry Bean: 8.4 seed/m of row

Pesticide: July 5 (Allegro, Headline, Lagon, Matador), July 18 (Allegro, Quadris, Matador, Admire)

Dessication: None

Harvest Date: September 27

**Conclusions:**

- \* adzuki cultivars were low yielding, compared to dry bean and food type soybean cultivars
- \* there were no yield differences between the adzuki cultivars
- \* adzuki W4 had later maturity than the other three adzuki cultivars
- \* adzuki cultivars had similar maturity to the dry bean cultivars Rexeter and Zorro
- \* Adzuki W4 had larger seed than adzuki ON4, which in turn was larger than the other adzuki cultivars

## 2017 Adzuki Variety Trial

University of Guelph, Huron Research Station

Trt No.	Treatment Name	Yield (kg/ha)	Seed Weight (g/100)	Maturity (days)	Seed Quality (1-5; 1=good)
1	Adzuki WOX1	827 c	9.8 e	123 a	2.0 ab
2	Erimo	939 c	10.5 e	124 a	1.9 b
3	Adzuki W4	805 c	17.7 c	123 a	2.0 ab
4	Adzuki ON4	660 c	14.5 d	123 a	2.5 a
5	Rexeter	1959 b	21.4 ab	118 b	1.9 b
6	Zorro	2114 b	19.8 bc	120 b	2.0 ab
7	S03-W4	3003 a	21.0 a	122 a	1.5 b
8	S07-M8	3255 a	21.3 a	122 a	1.5 b
Mean		1695	17.0	122	1.9
LSD (P=.05)		543.1	1.78	1.7	0.41
CV		21.07	6.89	0.97	14.45
Treatment Prob(F)		0.0001	0.0001	0.0001	0.0013

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Design: RCBD with 4 replications

Herbicide: Pursuit/Bonanza May 15, Reflex June 19

Planting Date: May 15 6 rows @ 38 cm and 6 meter length

Seeding Rate Soybean: 12.4 seed/m of row

Seeding Rate Adzuki and Dry Bean: 8.4 seed/m of row

Insecticide: Matador July 19

Dessication: Valtera Sep 9

Harvest Date: Zorro/Rexeter Sep 12, Soys/Adzuki Sep 21, 4 rows and 5 meter length

Conclusions:

- \* adzuki cultivars were low yielding, compared to dry bean and food type soybean cultivars
- \* there were no differences between adzuki cultivars for yield or plant maturity
- \* adzuki cultivars had similar maturity to the food type soybean cultivars
- \* Adzuki W4 had larger seed than all other adzuki cultivars
- \* Adzuki ON4 had larger seed than adzuki WOX1 and WX1

**2017 Adzuki Variety Trial**  
**Winchester Research Station, Winchester Ontario**

Trt No.	Treatment Name	Yield (kg/ha)	Seed Weight (g/100)	Maturity (days)	Seed Quality (1-5; 1=good)	Plant Vigour (1-10; 10=good)	Plant Lodging (1-5; 1=good)	Plant Harvestability (1-5; 1=good)
1	Adzuki WOX1	1969.9 d	11.1 b	114.0 d	1.8 a	6.5 b	1.0 b	1.5 ab
2	Erimo	2027.5 d	11.5 b	114.0 d	1.5 a	5.3 c	1.0 b	1.4 b
3	Adzuki W4	2380.6 d	21.8 a	121.0 c	1.8 a	6.8 b	1.0 b	1.3 b
4	Adzuki ON4	1151.6 e	15.7 ab	114.8 d	2.3 a	5.0 c	1.3 b	1.5 ab
5	Rexeter	4077.1 c	25.1 a	120.5 c	1.3 a	7.5 b	2.9 a	2.4 a
6	Zorro	3616.6 c	20.3 ab	118.8 c	0.9 a	7.3 b	1.0 b	1.0 b
7	S03-W4	4853.6 b	23.1 a	125.5 b	1.5 a	9.0 a	1.3 b	1.0 b
8	S07-M8	5576.0 a	25.3 a	129.3 a	1.8 a	9.0 a	1.0 b	1.0 b
Mean		3206.6	19.2	119.7	1.6	7.1	1.3	1.4
LSD (P=.05)		606.6	7.3	2.2	0.8	1.2	0.6	0.7
CV		12.8	25.7	1.3	33.4	11.5	29.6	35.7
Treatment Prob(F)		0.0001	0.0012	0.0001	0.0738	0.0001	0.0001	0.0123

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Design: RCBD with 4 replications

Herbicide: Reflex/Assure II

Planting Date: May 23 4 rows @ 38 cm and 6 meter length

Seeding Rate Soybean: 12.4 seed/m of row

Seeding Rate Adzuki and Dry Bean: 8.4 seed/m of row

Fungicide: Triapro A and B

Harvest Date: September 26 4 rows and 5 meter length

Conclusions:

- \* adzuki cultivars were low yielding, compared to dry bean and food type soybean cultivars
- \* adzuki cultivars ON4 was lower yielding than the other adzuki cultivars
- \* adzuki cultivars generally had the earliest maturity
- \* adzuki cultivars had the lowest plant vigour after emergence
- \* adzuki W4 had much larger seed than the other adzuki cultivars except for ON4
- \* there were small differences between cultivars for lodging and harvestability

### Marsh Spot Analysis - Cranberry Entries to Major Coloured Bean Performance Test 2017

Trt No	Treatment Name	Elora			St. Thomas			Woodstock			Average			2 Year Average		
		Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev
		%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)
1	Red Rider	0.0 b	0.0 e	0.00 b	4.0 bc	1.1 b-e	0.06 cd	3.3 ab	1.0	0.06 b	2.4	0.7	0.04	1.4	0.6	0.02
2	ACUG 14-C2	0.5 b	0.5 cde	0.01 b	3.5 cd	1.3 bcd	0.05 cd	1.8 b	1.0	0.04 b	1.9	0.9	0.03	3.1	1.0	0.06
3	ACUG 15-C2	0.0 b	0.0 e	0.00 b	3.8 cd	1.4 a-d	0.05 cd	1.8 b	1.5	0.04 b	1.9	1.0	0.03	1.1	0.7	0.02
4	McEarly	0.3 b	0.3 de	0.00 b	0.3 d	0.3 e	0.00 d	0.3 b	0.3	0.00 b	0.3	0.3	0.00	0.5	0.4	0.00
5	Ponente	0.3 b	0.3 de	0.00 b	2.8 cd	1.4 a-d	0.04 cd	0.0 b	0.0	0.00 b	1.0	0.6	0.01	1.7	0.7	0.02
6	ACUG 16-C4	1.8 b	1.3 bc	0.03 b	2.8 cd	1.4 a-d	0.04 cd	0.5 b	0.5	0.01 b	1.7	1.1	0.03	1.3	0.8	0.02
7	Vero	1.3 b	1.2 bcd	0.03 b	1.5 cd	0.8 cde	0.02 d	0.5 b	0.8	0.01 b	1.1	0.9	0.02			
8	ACUG 17-C1	0.3 b	0.3 de	0.00 b	1.8 cd	0.6 de	0.02 cd	0.5 b	0.5	0.01 b	0.9	0.5	0.01			
9	ACUG 17-C2	0.0 b	0.0 e	0.00 b	7.5 ab	2.1 ab	0.16 ab	1.5 b	1.3	0.02 b	3.0	1.1	0.06			
10	ACUG 17-C3	0.8 b	1.8 ab	0.02 b	4.3 bc	1.7 abc	0.09 bc	1.5 b	0.6	0.02 b	2.2	1.4	0.04			
11	Etna (Commercial Check)	0.0 b	0.0 e	0.00 b	2.3 cd	1.3 bcd	0.06 cd	1.0 b	1.0	0.02 b	1.1	0.8	0.03	1.3	0.7	0.03
12	Messina (Susceptible Check)	23.8 a	2.4 a	0.58 a	9.3 a	2.4 a	0.22 a	6.0 a	1.9	0.12 a	13.0	2.2	0.31	15.5	2.1	0.35
	Mean	2.4	0.7	0.06	3.6	1.3	0.07	1.5	0.9	0.03	2.5	0.9	0.05	3.2	0.9	0.07
	CV	89.7	106.7	130.5	68.0	54.5	76.1	148.6	111.3	163.4						
	PR>F (0.05)	0.000	0.000	0.000	0.000	0.010	0.000	0.048	0.276	0.038						
	LSD (0.05)	3.1	1.0	0.11	3.6	1.00	0.07	3.3	N/A	0.07						

### Marsh Spot Analysis - Cranberry Entries to Major Coloured Bean Performance Test 2016

Trt No	Treatment Name	Exeter			Elora			St. Thomas			Woodstock			Average		
		Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev
		%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)
1	Red Rider	0.0 c	0.0	0.00 c	0.3 b	0.3 b	0.00 b	1.0 b	1.1 a	0.02 b	0.5 b	0.6 b	0.01 b	0.5	0.50	0.01
2	ACUG 14-C2	1.8 c	1.1	0.03 bc	0.5 b	0.3 b	0.01 b	13.3 a	2.3 a	0.32 a	1.3 b	0.8 b	0.02 b	4.2	1.13	0.10
3	Etna (Commercial Check)	0.8 c	1.1	0.02 c	0.0 b	0.0 b	0.00 b	5.0 b	1.6 a	0.11 b	0.0 b	0.0 b	0.00 b	1.5	0.68	0.03
4	Ponente	4.3 b	1.7	0.06 b	0.3 b	0.3 b	0.00 b	4.5 b	1.6 a	0.08 b	0.0 b	0.0 b	0.00 b	2.3	0.90	0.04
5	McEarly	0.5 c	0.3	0.01 c	0.3 b	0.3 b	0.00 b	1.3 b	0.8 a	0.01 b	0.3 b	0.5 b	0.01 b	0.6	0.48	0.01
6	ACUG 15-C2	0.5 c	0.5	0.01 c	0.0 b	0.0 b	0.00 b	0.8 b	1.4 a	0.02 b	0.0 b	0.0 b	0.00 b	0.3	0.48	0.01
7	ACUG 16-C1	1.5 c	0.9	0.02 c	1.8 a	1.3 a	0.03 a	4.0 b	2.3 a	0.11 b	0.3 b	0.5 b	0.01 b	1.9	1.25	0.04
8	ACUG 16-C2	0.5 c	0.5	0.01 c	0.0 b	0.0 b	0.00 b	0.8 b	1.4 a	0.02 b	0.0 b	0.0 b	0.00 b	0.3	0.48	0.01
9	ACUG 16-C3	0.8 c	1.3	0.02 c	0.3 b	0.3 b	0.00 b	2.5 b	1.6 a	0.04 b	1.0 b	0.5 b	0.02 b	1.2	0.93	0.02
10	ACUG 16-C4	0.0 c	0.0	0.00 c	0.0 b	0.0 b	0.00 b	3.5 b	2.0 a	0.07 b	0.0 b	0.0 b	0.00 b	0.9	0.50	0.02
11	Messina (Susceptible Check)	11.8 a	1.6	0.18 a				14.5 a	2.0 a	0.30 a	27.5 a	2.4 a	0.67 a	17.9	2.00	0.38
	Mean	2.0	0.8	0.03	0.3	0.25	0.00	4.6	1.6	0.10	2.8	0.5	0.07	2.4	1.5	0.2
	CV	77.3	111.6	87.6	161.9	146.0	182.6	64.7	61.5	80.1	97.0	152.5	131.6			
	PR>F (0.05)	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.52	0.00	0.00	0.00	0.00			
	LSD (0.05)	2.3	N/A	0.04	0.8	0.5	0.01	4.3	N/A	0.12	3.9	1.1	0.13			

#### Conclusions:

- \* marsh spot ratings were high in Elora, moderate in St. Thomas and lower in Woodstock in 2017
- \* ACUG 17-C2 had higher than average marsh spot rating at St. Thomas in 2017
- \* marsh spot ratings for Ponente and ACUG 14-C2 were higher than Etna in 2016, but were similar to Etna in 2017

### Marsh Spot Analysis of Cranberry Bean - Preliminary Yield Trials 2017

Trt No	Treatment Name	Woodstock			Average 3 sites over 2 years		
		Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev
		%	(0-5)	(0-5)	%	(0-5)	(0-5)
1	Etna (Commercial Check)	0.3 b	0.50 bc	0.01 c	0.6	0.5	0.01
2	Chianti	1.8 b	1.80 ab	0.05 b	1.3	1.4	0.03
3	C13413	0.8 b	0.30 c	0.01 bc	1.4	0.8	0.02
4	C1017332	0.3 b	0.30 c	0.00 c	0.1	0.1	0.00
5	Messina (Susceptible Check)	7.5 a	1.90 a	0.14 a	14.7	2.0	0.33
	Mean	2.1	0.93	0.04	3.6	1.0	0.08
	CV	61.8	92.7	69.5			
	PR>F (0.05)	0.00	0.04	0.00			
	LSD (0.05)	2.0	1.3	0.04			

### Marsh Spot Analysis of Cranberry Bean - Preliminary Yield Trials 2016

Trt No	Treatment Name	Exeter			Woodstock			Average		
		Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev	Incidence	Severity	Incid X Sev
		%	(0-5)	(0-5)	%	(0-5)	(0-5)	%	(0-5)	(0-5)
1	Bellagio	0.8 bc	1.0 ab	0.01 b	0.8 bc	0.8 cd	0.01 b	0.8	0.9	0.01
2	Etna (Commercial Check)	1.3 bc	0.8 bc	0.02 b	0.3 bc	0.3 cd	0.00 b	0.8	0.6	0.01
3	Chianti	0.3 c	0.3 bc	0.00 b	1.8 bc	2.0 ab	0.04 b	1.1	1.2	0.02
4	C13413	0.8 bc	0.8 bc	0.01 b	2.5 bc	1.3 bc	0.05 b	1.7	1.1	0.03
5	C1018320	0.0 c	0.0 c	0.00 b	0.0 c	0.0 d	0.00 b	0.0	0.0	0.00
6	C1017332	0.0 c	0.0 c	0.00 b	0.0 c	0.0 d	0.00 b	0.0	0.0	0.00
4	Vero	3.5 b	1.1 ab	0.05 b	5.3 b	2.5 a	0.15 b	4.4	1.8	0.10
6	Messina (Susceptible Check)	9.0 a	1.8 a	0.17 a	27.5 a	2.4 ab	0.67 a	18.3	2.1	0.42
	Mean	1.9	0.7	0.03	4.8	1.1	0.11	3.3	0.9	0.07
	CV	105.9	83.5	111.6	74.5	66.0	97.3			
	PR>F (0.05)	0.00	0.00	0.00	0.00	0.00	0.00			
	LSD (0.05)	3.0	0.9	0.05	5.2	1.1	0.16			

#### Conclusions:

- \* marsh spot was below average in Woodstock in 2017
- \* Chianti had above average marsh spot in 2017, and slightly elevated scores at Woodstock in 2016
- \* Vero had above average marsh spot in 2016, but was not tested in 2017

**2017 Anthracnose Foliar Fungicide Head to Head  
Huron Research Station, Exeter ON**

Trt No.	Treatment Name	Rate	Unit	Leaf Vein (%)		Stem Infection (%)		Pod Infection (%)				Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
				27	35	27	35	27	35	46	55			
1	Inoculated Check			8.9 b	32.4 a	7.1 a	36.1 b	7.3 b	25.9 a	33.5 a	36.4 a	4.3 abc	2294 g	2197 e
2	Uninoculated Check			0.2 e	0.2 d	0.3 c	0.2 f	0.1 e	0.1 e	0.1 i	0.0 j	2.0 bc	2722 de	2669 d
3	Quadris	0.5	L/ha	0.8 e	2.0 cd	0.3 c	2.2 f	0.3 e	2.5 de	5.0 f-i	5.9 g-j	2.8 bc	2864 b-e	2785 bcd
4	Allegro	0.6	L/ha	1.2 de	3.0 cd	0.9 bc	2.3 f	1.4 e	4.1 de	8.2 efg	11.2 efg	3.4 abc	3021 a-d	2919 a-d
5	Allegro	1	L/ha	0.8 e	1.9 cd	0.7 c	1.0 f	1.1 e	2.1 de	5.4 f-i	7.6 f-i	2.6 bc	3047 a-d	2969 a-d
6	Allegro+Quadris	0.6+0.5	L/ha	0.5 e	0.1 d	0.4 c	0.2 f	0.1 e	0.0 e	0.1 i	0.0 j	1.7 c	3217 a	3165 a
7	Quadris Top+NIS (0.2%)	0.625	L/ha	0.5 e	0.6 d	0.3 c	0.7 f	0.5 e	1.9 de	3.2 ghi	3.6 hij	2.6 bc	2858 b-e	2784 bcd
8	Senator	1.75	kg/ha	3.0 cde	6.4 c	2.0 bc	6.1 f	2.6 de	4.8 de	11.0 ef	13.8 def	3.5 abc	3196 ab	3083 ab
9	Senator	2.25	kg/ha	2.2 de	5.4 cd	1.5 bc	5.9 f	2.1 de	5.7 de	10.1 ef	12.1 efg	3.4 abc	3277 a	3164 a
10	Fluopyram	0.5	L/ha	11.3 a	30.1 a	9.3 a	38.6 ab	11.5 a	25.7 a	34.2 a	36.9 a	3.3 abc	2804 cde	2709 cd
11	Propulse	0.5	L/ha	2.9 cde	7.7 c	2.7 bc	13.7 de	4.6 cd	12.4 bc	17.5 cd	19.1 cd	4.3 abc	2975 a-d	2850 a-d
12	Propulse	0.75	L/ha	1.8 de	2.6 cd	1.9 bc	9.2 ef	4.4 cd	11.3 c	17.1 cd	19.2 cd	4.7 ab	3190 ab	3040 abc
13	Vertisan	1.25	L/ha	12.0 a	33.3 a	9.2 a	43.2 a	10.4 a	29.8 a	37.1 a	38.9 a	4.3 abc	2390 fg	2288 e
14	Acapela	0.88	L/ha	1.7 de	2.6 cd	1.5 bc	4.0 f	2.1 de	3.2 de	7.2 fgh	9.1 fgh	3.3 abc	3088 abc	2987 a-d
15	Priaxor + AgSurf (0.125%)	0.45	L/ha	0.2 e	0.0 d	0.3 c	0.0 f	0.1 e	0.2 e	0.3 i	0.5 j	2.4 bc	2870 b-e	2800 bcd
16	Headline	0.4	L/ha	0.3 e	0.3 d	0.2 c	0.4 f	0.3 e	0.5 e	1.4 hi	1.9 ij	1.9 bc	2765 cde	2711 cd
17	Quash	0.28	kg/ha	3.7 cd	14.9 b	2.5 bc	18.3 d	5.9 bc	16.6 b	26.0 b	28.0 b	5.6 a	2554 ef	2411 e
18	EAC 1407	2.45	L/ha	3.1 cde	7.5 c	2.5 bc	8.7 ef	3.1 de	8.0 cd	14.3 de	16.9 de	3.9 abc	3223 a	3097 ab
19	EAC 1407	3.15	L/ha	1.7 de	3.7 cd	1.2 bc	3.9 f	2.3 de	4.7 de	11.2 ef	13.4 def	3.2 abc	3175 ab	3075 ab
20	Fludioxonil	1.09	L/ha	4.7 c	17.6 b	4.0 b	24.7 c	4.8 cd	16.5 b	21.7 bc	23.9 bc	3.2 abc	2864 b-e	2771 bcd
LSD (P=.05)				1.7	3.6	1.9	5.5	1.8	3.9	4.5	4.5	1.5	203.6	209.6
CV				39.6	29.7	55.3	35.4	39.3	31.2	24.1	21.3	32.7	4.9	5.3
Treatment Prob(F)				0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001

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

Design: RCBD with 4 replications

Planting Date: June 8 6 rows @ 38 cm and 6 meter length

Cultivar: Mist

Harvest Date: September 24 4 rows and 4 meter length

Seeding Rate: 17 seed/m of row

Inoculation Date: July 27 2017

Trt Application #1: July 25 at 6:30 AM, Temperature = 13 C, RH = 95%, Wind = 1 kph E, Dew Present, Soil Dry

Trt Application #2: August 7 at 8:30 AM, Temp = 16 C, RH = 96%, Wind = 1 kph SW, Dew Present, Soil Damp

Fungicide: Lance August 8

Irrigation: July 28, 31 August 8

**Conclusions:**

\* disease pressure was moderate, compared to past work

\* all fungicides were applied twice (1st flower and 13 days later)

\* The two standard controls, Quadris and Headline, were equivalent to the uninoculated control for disease severity

\* Allegro had similar disease control to Quadris, but was weaker than Headline. Allegro yield was among the top treatments.

\* Allegro+Quadris had very low disease levels, and high yield.

\* Quadris Top, Senator, EAC 1407 and Propulse had higher disease levels than Quadris, but had high seed yield

\* Fluopyram, Vertisan, Quash and Fludioxonil provided unacceptable disease control, which impacted yield as well

\* Acapela had relatively high disease severity for a strobilurin fungicide, but yield was very good.

\* sporadic white mold was present in the study, which may have negatively impacted the yield of treatments 3, 13, 15, 16, 17 and 20.

**2017 White Mold Registered Products Dry Bean  
Huron Research Station, Exeter ON**

Trt No.	Treatment Name	Rate (g ai/ha)	Appl Code	Disease Severity (%)				Seed Weight (g/100)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
				14 DAA	23 DAA	35 DAA	45 DAA				
1	Untreated Control			38.1 a	56.9 a	77.1 a	83.5 a	21.4 bc	23.9 a	352 e	286 de
2	Lance	540	AB	12.6 bc	27.4 cde	40.3 def	46.1 de	25.5 ab	11.8 c	1141 ab	1006 ab
3	Allegro	300	AB	15.3 bc	26.4 cde	45.1 c-f	55.3 cde	24.8 abc	14.4 bc	878 a-e	768 a-e
4	Allegro	500	A	9.8 c	25.8 cde	54.6 bcd	65.9 a-d	24.0 abc	16.1 abc	771 a-e	647 a-e
5	Allegro	500	AB	10.0 c	29.9 cde	54.3 bcd	56.3 cde	24.9 abc	16.9 abc	978 a-d	823 a-e
6	Propulse	200	AB	10.5 c	20.4 e	45.5 c-f	48.5 de	25.5 ab	12.0 c	1040 abc	917 abc
7	Propulse	300	A	17.6 bc	36.9 cde	57.6 bc	65.4 a-d	24.3 abc	16.7 abc	600 b-e	510 b-e
8	Propulse	300	AB	12.0 bc	23.4 de	43.8 c-f	54.8 cde	25.8 ab	14.0 c	1008 abc	866 a-d
9	Acapela	220	AB	28.1 abc	40.5 bcd	59.9 bc	71.4 abc	22.7 abc	19.2 abc	520 cde	424 b-e
10	Priaxor+Lance	150+392	AB	14.0 bc	28.5 cde	45.6 c-f	46.0 de	26.0 a	13.2 c	1119 ab	999 ab
11	Fludioxonil	250	AB	15.9 bc	28.4 cde	49.4 b-e	50.8 de	23.2 abc	18.9 abc	814 a-e	687 a-e
12	Astound	610	AB	11.3 c	28.1 cde	47.4 c-f	52.9 cde	24.2 abc	16.0 abc	1009 abc	850 a-e
13	Senator	1575	AB	9.6 c	19.6 e	32.8 f	41.3 e	24.9 abc	15.9 abc	1179 ab	1001 ab
14	A21461+Agral90 (0.25%)	300	AB	17.6 bc	32.9 cde	51.1 b-e	61.6 bcd	25.7 ab	11.6 c	831 a-e	746 a-e
15	A21461+Agral90 (0.25%)	375	AB	31.5 ab	43.1 bc	63.6 b	66.1 a-d	22.5 abc	15.8 abc	478 cde	409 cde
16	EAC 1407	1575	AB	9.8 c	21.3 e	35.6 ef	38.3 e	25.3 ab	13.3 c	1271 a	1144 a
17	Double Nickel LC	2450	AB	35.5 a	58.3 a	79.1 a	79.6 ab	20.8 c	21.0 abc	339 e	275 e
18	Double Nickel LC	4850	AB	31.1 ab	51.9 ab	73.5 a	77.5 ab	20.9 c	23.5 ab	420 de	336 de
LSD (P=.05)				11.9	10.4	9.7	11.8	2.5	5.5	346.2	338.4
CV				45.7	22.0	12.9	14.2	7.4	23.6	29.9	33.9
Treatment Prob(F)				0.0001	0.0001	0.0001	0.0001	0.0002	0.0001	0.0001	0.0001

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

Planted: July 4 6 rows @ 38 cm and 6 meter length.

Harvested: October 19 4 rows @ 38 cm and 4 meter length.

Design: RCBD with 4 replications.

Inoculum: White mold inoculum applied foliarly

Trt Application 1: August 14 8:00 AM, temp=15 C, RH=91%, Wind=0.6 kph SE, dew, soil wet

Trt Application 2: August 25 7:00 AM, temp=18 C, RH=55%, Wind=5 kph S, no dew, soil wet

Herbicide : Pursuit @ 200 ml/ha Dual 2 Magnum @ 1.7 L/ha (June 3)

Irrigation: July 27, 31, August 2, 7, 10, 13, 20, 23, 28 and September 2

**Conclusions:**

\*no phytotoxicity was measured from fungicide application

\* disease severity in the untreated control was very high, compared to past work.

\* Lance, Allegro, Propulse, Priaxor+Lance, Fludioxonil, Astound, Senator and EAC 1407 had similar disease severity and were lower than the untreated control

\* a single application of Allegro and Propulse had similar disease severity as the untreated control, at 45 days after application (DAA)

\* Senator and EAC 1407 had the lowest disease severity and the highest yield

\* A21461 and Acapela had relatively high disease severity and inconsistent yield

\* Double Nickel LC was similar to the untreated control for all parameters measured

**2017 Foliar Fungicide in Dry Beans - White Mold Control**  
**University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate	Unit	Disease Severity (%)		100 Seed Weight (g)	Seed Quality (1-5,1=good)	Yield (kg/ha)
				28 DAA	55 DAA			
1	Untreated Control			29.9 a	56.6 ab	19.1 b	3.8 ab	1989 c
2	Untreated Control			20.3 bc	54.6 ab	19.7 ab	2.4 abc	2053 c
3	Quadris	0.5 L/ha		16.6 bcd	49.5 ab	19.6 ab	2.0 abc	2087 c
4	Allegro 500F	0.6 L/ha		10.8 cde	30.0 efg	20.3 ab	1.8 abc	2670 ab
5	Allegro 500F	1.0 L/ha		8.5 de	20.4 g	20.6 ab	1.4 c	2794 a
6	Allegro+Quadris	0.6+0.5 L/ha		6.5 e	19.6 g	21.0 a	2.3 abc	2860 a
7	Quadris Top	0.625 L/ha		19.3 bc	55.8 ab	19.6 ab	2.0 abc	2115 c
8	Senator	1.75 kg/ha		9.4 de	26.8 efg	20.5 ab	2.8 abc	2867 a
9	Senator	2.25 kg/ha		7.4 de	24.9 fg	19.9 ab	3.0 abc	2810 a
10	Fluopyram	0.5 L/ha		4.3 e	22.4 g	20.5 ab	3.4 abc	2795 a
11	Propulse 400F	0.5 L/ha		12.6 cde	36.1 def	20.2 ab	2.2 abc	2529 ab
12	Propulse 400F	0.75 L/ha		11.8 cde	30.9 efg	20.4 ab	3.1 abc	2568 ab
13	Vertisan 200EC	1.25 L/ha		16.6 bcd	45.8 bcd	19.7 ab	3.7 abc	2138 c
14	Acapela 200EC	0.88 L/ha		12.3 cde	36.8 def	20.4 ab	1.9 abc	2539 ab
15	Priaxor+AgSurf	0.45 L/ha		17.0 bcd	47.5 bc	20.1 ab	3.8 a	2349 bc
16	Headline	0.4 L/ha		24.8 ab	60.3 a	19.8 ab	2.3 abc	2058 c
17	Quash (metconazole)	0.28 kg/ha		19.6 bc	52.9 ab	19.6 ab	1.8 abc	2189 c
18	EAC 1407	2.45 L/ha		8.8 de	28.4 efg	20.5 ab	1.4 bc	2807 a
19	EAC 1407	3.15 L/ha		9.6 de	22.3 g	20.8 ab	2.4 abc	2726 ab
20	Scholar (fludioxonil)	1.09 L/ha		9.4 de	38.6 cde	20.2 ab	1.8 abc	2711 ab
LSD (P=.05)				5.8	8.0	0.9	1.3	262.1
CV				29.7	14.9	3.2	37.2	7.5
Treatment Prob(F)				0.0001	0.0001	0.0092	0.0014	0.0001

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Planted: July 4 6 rows @ 38 cm and 6 meter length.

Harvested: October 20 4 rows @ 38 cm and 4 meter length.

Design: RCBD with 4 replications.

Herbicide : Pursuit @ 200 ml/ha Dual 2 Magnum @ 1.7 L/ha (June 3)

Irrigation: July 31, August 8, 25, 28 and September 2

**Conclusions:**

- \* original experiment was to evaluate fungicides for anthracnose but repurposed to white mold after anthracnose inoculum failed
- \* disease severity in the untreated control was high, compared to past work.
- \* Allegro, Senator and EAC 1407 had the lowest disease severity
- \* Propulse, Acapela and Scholar had moderate disease severity, but similar yield as the best treatments
- \* two applications of Allegro and Propulse had similar disease severity and yield as one application
- \* Quadris, Headline, Vertisan and Quash were similar to the untreated control for disease severity and yield

**2017 White Mold Registered Products Soybean Trial Early Planting  
University of Guelph, Ridgetown Campus**

Trt No.	Treatment Name	Rate (l/ha)	Appl Code	Disease Severity				Seed Weight (g/100)	Seed Yield	
				9 DAA	17 DAA	25 DAA	47 DAA		(kg/ha)	(bu/ac)
1	Untreated Control	--	--	47.9 ab	59.4 ab	80.0 ab	84.1 ab	18.6 a	1710 bc	25.4 bc
2	Acapela	0.88	A	30.5 bc	37.0 c	68.6 bc	76.3 ab	18.4 a	2151 abc	32.0 abc
3	Allegro	0.44	AB	38.0 bc	49.3 bc	79.1 ab	80.8 ab	20.2 a	1739 bc	25.9 bc
4	Stratego Pro + Agral 90 (0.125% v/v)	0.5714	A	28.6 c	36.9 c	67.1 bc	73.5 bc	19.3 a	2284 ab	34.0 ab
5	Stratego Pro + Agral 90 (0.125% v/v)	0.5714	AB	27.1 c	28.9 c	56.9 c	62.9 c	19.5 a	2751 a	40.9 a
6	Priaxor	0.45	A	55.5 a	66.2 a	87.1 a	88.6 a	17.5 a	1417 c	21.1 c
7	Cotegra	0.6	A	40.6 bc	46.9 bc	76.0 ab	76.4 ab	18.3 a	2049 abc	30.5 abc
8	Priaxor + Cotegra	0.45+0.6	A/B	38.5 bc	43.8 bc	75.0 ab	77.5 ab	20.1 a	1878 bc	27.9 bc
9	Cotegra + Priaxor	0.6+0.45	A/B	32.8 bc	37.1 c	68.4 bc	73.8 bc	19.2 a	2428 ab	36.1 ab
LSD (P=.05)				12.1	13.3	11.1	9.4	2.0	493.9	7.3
CV				22.1	20.2	10.4	8.3	7.1	16.6	16.6
Treatment Prob(F)				0.0009	0.0001	0.0005	0.0008	0.1401	0.0003	0.0003

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

Design: RCBD with 4 replications

Cultivar: S18-C2

Planted: June 3 6 rows @ 38 cm and 6 meter length

Harvested: October 2 4 rows @ and 4 meter length

Seeding Rate: 20 seeds/m

Inoculum: White mold inoculum applied foliarly

Trt Application #1: July 26 7:00 AM, temp=10 oC, RH=87%, Wind=3.1 kph SW, dew

Trt Application #2: August 8 10:30 AM, temp=19 oC, RH=79%, Wind=4.6 kph NW, dew

Treatment Application: First application at R1.5, second application 13 days later

Herbicide : Pursuit @ 300 ml/ha Dual II Magnum @ 1.7 L/ha June 3

Herbicide : Roundup @ 1 + 0.75 l/ha June 26

Irrigation: July 27, 31, August 2, 7, 10, 13, 20, 23, 28 and September 2

**Conclusions:**

\* no phytotoxicity was measured from fungicide application

\* disease severity in the untreated check was severe

\* top treatments were Stratego Pro (trt 4,5), Cotegra + Priaxor (trt 9) and Acapela (trt 2)

\* Stratego Pro (trt 4), Cotegra + Priaxor (trt 9) and Acapela (trt 2) had less disease severity than the untreated control at 17 DAA, but similar yield

\* two applications of Stratego Pro (trt 5) had no impact on disease severity or seed yield, compared to one application (trt 4)

\* Allegro and Priaxor + Cotegra were the weakest fungicide treatments

**2017 White Mold Registered Products Soybean Trial Late Planting  
University of Guelph, Ridgetown Campus**

Trt No.	Treatment Name	Rate (l/ha)	Appl Code	Disease Severity			Seed Weight (g/100 seed)	Seed Yield	
				21 DAA	30 DAA	51 DAA		(kg/ha)	(bu/ac)
1	Untreated Control	--	--	35.4 a	70.8 a	87.0 a	15.6 b	1480 d	22.0 d
2	Acapela	0.88	A	14.3 b	36.8 b	65.1 bcd	17.9 a	2781 ab	41.3 ab
3	Allegro	0.44	AB	14.1 b	48.9 b	73.4 a-d	18.3 a	1997 cd	29.7 cd
4	Stratego Pro + Agral 90 (0.125% v/v)	0.5714	A	14.8 b	40.9 b	61.3 cd	18.3 a	2644 abc	39.3 abc
5	Stratego Pro + Agral 90 (0.125% v/v)	0.5714	AB	13.0 b	33.1 b	59.5 d	18.3 a	2918 a	43.4 a
6	Priaxor	0.45	A	12.5 b	45.4 b	71.9 bcd	18.1 a	2477 abc	36.8 abc
7	Cotegra	0.6	A	18.3 b	52.6 b	78.1 ab	16.3 ab	1980 cd	29.4 cd
8	Priaxor + Cotegra	0.45+0.6	A/B	20.3 b	47.5 b	75.6 abc	17.7 a	2210 bc	32.9 bc
9	Cotegra + Priaxor	0.6+0.45	A/B	14.0 b	38.3 b	69.4 bcd	18.1 a	2702 ab	40.2 ab
LSD (P=.05)				9.1	14.5	10.4	1.6	470.6	7.0
CV				36.0	21.6	10.0	6.1	13.7	13.7
Treatment Prob(F)				0.0007	0.0009	0.0003	0.0110	0.0001	0.0001

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

**Trial Summary**

Design: RCBD with 4 replications

Cultivar: S18-C2

Planted: June 14 6 rows @38 cm and 6 meter length

Harvested: October 19 4 rows and 4 meter length

Seeding Rate: 20 seeds/m

Inoculum: White mold inoculum applied foliarly

Trt Application #1: August 8 7:00 AM, temp=10 °C, RH=98%, Wind=0.4 kph S, dew, soil dry

Trt Application #2: August 21 8:00, temp=19 °C, RH=89%, Wind=0.9 kph S, dew, soil wet

Trt Application: First application at R1.5, second application 13 days later

Herbicide : Pursuit @ 300 ml/ha Dual II Magnum @ 1.7 L/ha June 3

Herbicide : Reflex+ Assure II @ 1 + 0.75 l/ha July 6

Irrigation: August 2, 7, 10, 13, 20, 23, 28 and September 2

**Conclusions:**

\* no phytotoxicity was measured from fungicide application

\* disease severity in the untreated check was severe

\* top treatments were Stratego Pro (trt 4,5), Acapela (trt 2) Cotegra + Priaxor (trt 9)

\* two applications of Stratego Pro (trt 5) had no impact on disease severity or seed yield, compared to one application (trt 4)

\* Allegro and Cotegra had similar yield as the untreated control

**2017 White Mold Cultivar x Row Width x Population Dry Bean  
University of Guelph, Ridgetown Campus**

	Plant Population (% of Desired)		Plant Vigour (1-10,10=best)	Plant Height (cm)		Plant Development (BBCH)		Greenseeker (0-1)		Dry Weight (g)		Diseases Severity (%)				Disease Incidence (%)			Yield (kg/ha)	Yield-Pick (kg/ha)
	16 DAP	30 DAP		44 DAP	59 DAP	44 DAP	59 DAP	44 DAP	59 DAP	44 DAP	59 DAP	70 DAP	78 DAP	88 DAP	105 DAP	70 DAP	78 DAP	88 DAP		
<b>Factor A (Cultivar)</b>																				
Beryl	102.9 a	101.7 a	7.2 b	34.8 b	43.5 b	61.1 a	73.2 a	60 a	79 a	7.5 b	22.9 a	1.6 a	4.8 b	9.6 b	13.0 b	0.2 a	0.5 b	0.8 a	2864 a	2771 a
Merlot	94.9 b	96.3 b	7.6 a	38.3 a	55.7 a	57.2 b	71.2 b	61 a	85 a	10.0 a	26.3 a	4.2 a	8.7 a	16.9 a	29.7 a	0.5 a	0.8 a	1.0 a	2831 a	2733 a
<b>Factor B (Row Width)</b>																				
Narrow	100.3 a	99.8 a	7.2 a	36.0 a	49.8 a	58.9 a	72.7 a	71 a	86 a	9.0 a	24.4 a	3.9 a	8.0 a	14.3 a	23.6 a	0.5 a	0.7 a	0.9 a	2854 a	2755 a
Wide	97.6 a	98.2 a	7.6 a	37.2 a	49.3 a	59.4 a	71.8 b	50 b	78 a	8.5 a	24.8 a	1.9 a	5.5 a	12.2 a	19.1 a	0.3 a	0.6 a	0.9 a	2840 a	2749 a
<b>Factor C (Population)</b>																				
100% 187500	96.0 b	97.2 a	7.8 a	37.4 a	49.1 a	59.1 a	71.3 a	67 a	83 a	7.6 b	20.2 b	3.8 a	8.1 a	13.9 a	24.8 a	0.5 a	0.7 a	0.9 a	2865 a	2761 a
80% 150000	98.0 b	97.9 a	7.5 a	36.9 a	48.6 a	59.8 a	72.4 a	64 a	85 a	8.0 b	21.3 b	4.2 a	8.6 a	15.2 a	24.9 a	0.5 a	0.7 a	0.9 a	2772 a	2686 a
60% 112500	97.4 b	98.9 a	7.1 a	36.1 a	50.3 a	58.9 a	72.5 a	56 b	83 a	9.3 ab	24.8 b	2.3 a	6.4 a	13.8 a	20.9 a	0.4 b	0.7 a	0.9 a	2873 a	2788 a
40% 75000	104.3 a	102.0 a	7.1 a	35.9 a	50.2 a	58.8 a	72.7 a	55 b	77 b	10.2 a	31.9 a	1.3 a	4.0 a	10.1 a	14.9 b	0.2 c	0.5 b	0.9 a	2878 a	2773 a
<b>Factor A x B (Cultivar x Row Width)</b>																				
Beryl Narrow	104.9 a	102.3 a	6.8 a	35.0 a	43.8 a	61.3 a	73.6 a	74 a	86 a	7.8 a	23.4 a	2.9 a	6.0 a	11.6 a	15.8 a	0.4 a	0.6 a	0.9 b	2949 a	2845 a
Merlot Narrow	95.6 a	97.2 a	7.5 a	37.0 a	55.9 a	56.6 a	71.8 a	69 a	86 a	10.2 a	25.4 a	4.9 a	10.0 a	16.9 a	31.3 a	0.5 a	0.8 a	0.9 b	2759 a	2665 a
Beryl Wide	100.9 a	101.1 a	7.5 a	34.6 a	43.2 a	61.0 a	72.9 a	47 a	72 b	7.2 a	22.4 a	0.3 a	3.6 a	7.5 a	10.2 a	0.1 a	0.5 a	0.7 c	2778 a	2698 a
Merlot Wide	94.2 a	95.4 a	7.6 a	39.7 a	55.5 a	57.8 a	70.7 a	52 a	85 a	9.8 a	27.2 a	3.5 a	7.5 a	16.9 a	28.1 a	0.5 a	0.8 a	1.0 a	2902 a	2800 a
<b>Factor A x C (Cultivar x Population)</b>																				
Beryl 100% 187500	100.2 a	100.7 a	7.6 a	36.2 a	42.0 a	60.6 a	72.6 a	62 a	80 a	6.3 a	18.7 a	2.3 a	5.5 a	10.3 a	14.0 a	0.3 a	0.6 a	0.8 a	2789 a	2685 a
Merlot 100% 187500	91.8 a	93.7 a	7.9 a	38.5 a	56.2 a	57.7 a	70.0 a	72 a	87 a	8.9 a	21.8 a	5.3 a	10.6 a	17.6 a	35.5 a	0.6 a	0.8 a	1.0 a	2941 a	2836 a
Beryl 80% 150000	102.2 a	101.2 a	7.3 a	35.3 a	43.5 a	62.6 a	73.5 a	66 a	83 a	7.3 a	20.1 a	2.3 a	6.3 a	11.2 a	15.4 a	0.3 a	0.6 a	0.8 a	2727 a	2636 a
Merlot 80% 150000	93.7 a	94.5 a	7.8 a	38.6 a	53.7 a	57.0 a	71.3 a	62 a	88 a	8.7 a	22.5 a	6.2 a	11.0 a	19.1 a	34.5 a	0.7 a	0.9 a	0.9 a	2818 a	2736 a
Beryl 60% 112500	104.9 a	102.6 a	6.9 a	33.9 a	44.2 a	60.7 a	73.0 a	56 a	80 a	7.6 a	22.1 a	1.4 a	5.0 a	10.3 a	12.7 a	0.2 a	0.6 a	0.8 a	2982 a	2908 a
Merlot 60% 112500	89.9 a	95.3 a	7.3 a	38.3 a	56.5 a	57.1 a	72.1 a	57 a	86 a	10.9 a	27.6 a	3.2 a	7.8 a	17.2 a	29.1 a	0.5 a	0.7 a	0.9 a	2764 a	2668 a
Beryl 40% 75000	104.4 a	102.3 a	6.9 a	33.8 a	44.1 a	60.7 a	73.9 a	58 a	73 a	8.8 a	30.7 a	0.5 a	2.5 a	6.5 a	10.0 a	0.1 a	0.4 a	0.8 a	2956 a	2857 a
Merlot 40% 75000	104.2 a	101.6 a	7.4 a	38.0 a	56.3 a	57.0 a	71.5 a	52 a	81 a	11.5 a	33.1 a	2.1 a	5.4 a	13.7 a	19.8 a	0.3 a	0.7 a	1.0 a	2799 a	2690 a
<b>Factor B x C (Row Width x Population)</b>																				
Narrow 100% 200000	100.8 a	99.5 a	7.6 a	38.2 a	50.0 a	59.6 a	71.7 a	80 a	87 a	8.5 a	20.2 a	5.0 a	9.4 a	15.3 a	27.2 a	0.6 a	0.8 a	0.9 a	2935 a	2823 a
Wide 100% 175000	91.2 a	95.0 a	7.9 a	36.6 a	48.3 a	58.6 a	71.0 a	54 a	80 a	6.7 a	20.3 a	2.6 a	6.8 a	12.6 a	22.3 a	0.4 a	0.7 a	0.9 a	2795 a	2698 a
Narrow 80% 160000	96.2 a	97.7 a	7.3 a	37.4 a	49.6 a	59.6 a	72.9 a	74 a	88 a	8.5 a	21.5 a	5.6 a	9.9 a	16.4 a	28.4 a	0.6 a	0.8 a	0.9 a	2822 a	2728 a
Wide 80% 140000	99.7 a	98.1 a	7.8 a	36.5 a	47.7 a	60.1 a	71.9 a	53 a	83 a	7.5 a	21.2 a	2.8 a	7.4 a	13.9 a	21.5 a	0.4 a	0.7 a	0.9 a	2723 a	2644 a
Narrow 60% 120000	97.2 a	98.3 a	6.6 a	34.1 a	49.3 a	58.5 a	73.1 a	66 a	85 a	9.6 a	24.4 a	3.0 a	7.6 a	14.8 a	21.9 a	0.4 a	0.7 a	0.9 a	2761 a	2683 a
Wide 60% 105000	97.6 a	99.6 a	7.5 a	38.1 a	51.4 a	59.2 a	72.0 a	47 a	81 a	9.0 a	25.3 a	1.7 a	5.3 a	12.7 a	19.9 a	0.3 a	0.6 a	0.9 a	2985 a	2893 a
Narrow 40% 80000	106.8 a	103.6 a	7.1 a	34.1 a	50.5 a	58.0 a	73.2 a	66 a	85 a	9.5 a	31.5 a	2.0 a	5.1 a	10.5 a	16.9 a	0.3 a	0.6 a	0.9 a	2899 a	2786 a
Wide 40% 70000	101.8 a	100.3 a	7.1 a	37.6 a	50.0 a	59.7 a	72.2 a	44 a	70 a	10.9 a	32.4 a	0.6 a	2.8 a	9.7 a	12.9 a	0.1 a	0.4 a	0.8 a	2856 a	2760 a

Factor A x B x C (Cultivar x Row Width x Pop)																							
Beryl	Narrow	100%	200000	105.4 a	102.9 a	7.5 a	38.8 a	43.4 a	61.4 a	73.3 a	79 a	87 a	7.2 a	21.0 a	4.1 a	8.0 a	14.3 a	19.3 a	0.6 a	0.7 a	0.9 a	2918 a	2794 a
Merlot	Narrow	100%	200000	96.2 a	96.0 a	7.8 a	37.6 a	56.6 a	57.9 a	70.1 a	81 a	87 a	9.8 a	19.5 a	5.9 a	10.8 a	16.4 a	35.1 a	0.6 a	0.8 a	1.0 a	2953 a	2852 a
Beryl	Wide	100%	175000	95.0 a	98.6 a	7.8 a	33.7 a	40.7 a	59.8 a	72.0 a	46 a	72 a	5.3 a	16.4 a	0.5 a	3.0 a	6.3 a	8.8 a	0.1 a	0.5 a	0.8 a	2661 a	2576 a
Merlot	Wide	100%	175000	87.4 a	91.4 a	8.0 a	39.4 a	55.8 a	57.5 a	70.0 a	63 a	87 a	8.0 a	24.1 a	4.7 a	10.5 a	18.9 a	35.9 a	0.7 a	0.8 a	1.0 a	2929 a	2821 a
Beryl	Narrow	80%	160000	102.3 a	102.1 a	6.8 a	36.3 a	44.2 a	61.8 a	73.9 a	80 a	86 a	8.0 a	20.4 a	4.3 a	7.3 a	13.5 a	20.1 a	0.5 a	0.7 a	0.9 a	2831 a	2723 a
Merlot	Narrow	80%	160000	90.1 a	93.2 a	7.8 a	38.6 a	55.0 a	57.5 a	71.9 a	68 a	89 a	8.3 a	22.6 a	7.0 a	12.5 a	19.4 a	36.6 a	0.7 a	0.9 a	0.9 a	2813 a	2733 a
Beryl	Wide	80%	140000	102.1 a	100.3 a	7.8 a	34.4 a	42.9 a	63.5 a	73.1 a	51 a	80 a	8.7 a	19.9 a	0.3 a	5.3 a	8.9 a	10.6 a	0.1 a	0.5 a	0.8 a	2622 a	2548 a
Merlot	Wide	80%	140000	97.3 a	95.8 a	7.8 a	38.5 a	52.5 a	56.6 a	70.8 a	55 a	86 a	6.3 a	22.5 a	5.3 a	9.5 a	18.9 a	32.4 a	0.7 a	0.9 a	1.0 a	2824 a	2739 a
Beryl	Narrow	60%	120000	106.2 a	103.1 a	6.3 a	32.1 a	43.4 a	60.9 a	72.8 a	67 a	85 a	8.7 a	19.9 a	2.5 a	5.6 a	11.5 a	14.9 a	0.4 a	0.7 a	0.9 a	3002 a	2931 a
Merlot	Narrow	60%	120000	88.2 a	93.4 a	7.0 a	36.1 a	55.2 a	56.1 a	73.3 a	65 a	85 a	7.5 a	28.8 a	3.4 a	9.5 a	18.1 a	28.9 a	0.5 a	0.8 a	0.9 a	2520 a	2436 a
Beryl	Wide	60%	105000	103.6 a	102.0 a	7.5 a	35.6 a	45.1 a	60.4 a	73.2 a	44 a	76 a	11.6 a	24.2 a	0.4 a	4.4 a	9.2 a	10.5 a	0.1 a	0.6 a	0.7 a	2963 a	2885 a
Merlot	Wide	60%	105000	91.7 a	97.2 a	7.5 a	40.5 a	57.8 a	58.1 a	70.9 a	50 a	86 a	7.7 a	26.4 a	3.0 a	6.1 a	16.2 a	29.3 a	0.6 a	0.7 a	1.0 a	3008 a	2901 a
Beryl	Narrow	40%	80000	105.7 a	101.0 a	6.8 a	32.7 a	44.2 a	61.1 a	74.4 a	69 a	87 a	10.3 a	32.3 a	0.9 a	3.1 a	7.3 a	9.1 a	0.2 a	0.4 a	0.8 a	3046 a	2931 a
Merlot	Narrow	40%	80000	107.8 a	106.3 a	7.5 a	35.5 a	56.8 a	54.9 a	72.1 a	62 a	82 a	8.1 a	30.6 a	3.1 a	7.1 a	13.8 a	24.6 a	0.4 a	0.7 a	1.0 a	2752 a	2641 a
Beryl	Wide	40%	70000	103.0 a	103.6 a	7.0 a	34.9 a	44.1 a	60.2 a	73.4 a	47 a	59 a	10.8 a	29.2 a	0.1 a	1.9 a	5.8 a	10.9 a	0.0 a	0.3 a	0.7 a	2866 a	2782 a
Merlot	Wide	40%	70000	100.6 a	97.0 a	7.3 a	40.4 a	55.9 a	59.1 a	71.0 a	42 a	81 a	9.6 a	35.6 a	1.1 a	3.8 a	13.6 a	14.9 a	0.2 a	0.6 a	0.9 a	2846 a	2738 a
Pr>F (A)				0.0302	0.0105	0.0414	0.0339	0.0006	0.0038	0.0097	0.8892	0.0003	0.0141	0.0657	0.0507	0.0258	0.0272	0.0209	0.0332	0.0368	0.0374	0.5662	0.5193
Pr>F (B)				0.1887	0.5103	0.4644	0.5685	0.5767	0.6760	0.0113	0.0004	0.0082	0.6759	0.8153	0.0550	0.0770	0.1820	0.1350	0.1305	0.1826	0.2569	0.8806	0.9470
Pr>F (AxB)				0.4881	0.8828	0.6081	0.4758	0.9154	0.4772	0.3938	0.1569	0.0145	0.9506	0.4170	0.4693	0.9582	0.1831	0.6521	0.1140	0.4190	0.0405	0.1385	0.1715
Pr>F (C)				0.0416	0.3183	0.1219	0.6719	0.6426	0.4607	0.1616	0.0012	0.0030	0.0132	0.0001	0.0002	0.0033	0.1335	0.0137	0.0011	0.0025	0.7038	0.5200	0.6487
Pr>F (AxC)				0.1196	0.5657	0.9754	0.8654	0.6704	0.2844	0.5502	0.0787	0.8256	0.7075	0.8902	0.2514	0.7158	0.9955	0.3302	0.5757	0.3865	0.7038	0.0714	0.0745
Pr>F (BxC)				0.1465	0.6509	0.5674	0.1018	0.5594	0.3154	0.9937	0.7497	0.0519	0.2534	0.9897	0.5419	0.9991	0.9708	0.9042	0.6793	0.9569	0.9893	0.1213	0.2326
Pr>F (AxBxC)				0.7461	0.3887	0.8792	0.7162	0.9532	0.0702	0.4893	0.7187	0.0523	0.7672	0.2973	0.4538	0.4742	0.6604	0.3658	0.1625	0.8734	0.2074	0.7559	0.7495
LSD (A)				6.6	3.0	0.4	3.0	2.5	1.5	1.1	NA	1.0	1.5	NA	NA	3.0	5.8	11.9	NA	0.2	0.1	NA	NA
LSD (B)				NA	NA	NA	NA	NA	NA	0.6	7.0	5.0	NA										
LSD (AxB)				NA	NA	NA	NA	NA	NA	NA	NA	7.0	NA	0.1	NA	NA							
LSD (C)				6.0	NA	NA	NA	NA	NA	NA	6.0	4.0	1.7	4.7	NA	NA	NA	6.7	0.1	0.1	NA	NA	NA
LSD (AxC)				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD (BxC)				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LSD (AxBxC)				NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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

#### Trial Summary:

Planted: 6 rows @ 38 cm by 6 metres or 3 row @ 75cm by 6 metres (June 12)

Design: Split-plot with 4 replications.

Inoculum: White mold inoculum applied foliarly

Irrigation: July 27, 31 August 2,10,13, 20, 23 September 2

Harvested: 4 rows @ 38 cm by 4 metres or 2 rows @ 75 cm by 4 metres (Sep 26).

Herbicide : Pursuit @ 200 ml/ha Dual 2 Magnum @ 1.7 L/ha (June 13)

Valtera 0.14 L/ha (Sept 9)

Insecticide/Fungicide: Matador @ 83 ml/ha (July 19)

#### Conclusions:

\* plant populations were close to target values, and slightly higher for Beryl versus Merlot (on a percentage basis)

\* minor differences were measured for plant vigour (for cultivar), plant height (for cultivar) , plant development (for cultivar and row width) and greenseeker (for cultivar x row width)

\* plant dry weight increased as plant population decreased

\* Merlot had greater disease incidence and severity than Beryl

\* Both cultivars had similar disease in narrow rows but Merlot had greater disease incidence and severity than Beryl in wide rows

\* Disease severity was lower at 40% plant population for both cultivars

\* few differences in seed weight and seed pick were measured

\* there were no differences in seed yield, despite moderate differences in disease severity

## 2017 White Mold Time of Day Fungicide Application in Dry Beans Huron Research Station, Exeter ON

Trt No.	Treatment Name	Time of Day	Rate (l/ha)	Appl Code	Disease Severity (%)			Seed Weight (g/100)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
					25 DAA	33 DAA	42 DAA				
1	Untreated Control	--			16.0 a	29.8 a	46.0 a	30.1 b	7.0 a	2254 b	2097 b
2	Allegro	6:00	1.0	AE	4.3 b	10.1 b	21.5 b	32.9 a	3.9 b	2989 a	2875 a
3	Allegro	12:00	1.0	BF	6.1 b	11.9 b	23.0 b	31.9 a	3.9 b	3000 a	2884 a
4	Allegro	18:00	1.0	CG	7.1 b	13.5 b	23.4 b	31.8 a	4.1 b	2987 a	2866 a
5	Allegro	24:00	1.0	DH	6.8 b	12.3 b	24.6 b	31.9 a	3.2 b	2822 a	2733 a
LSD (P=.05)					5.3	8.3	10.3	1.2	2.3	314.5	328.8
CV					42.9	34.9	24.0	2.4	33.2	7.3	7.9
Treatment Prob(F)					0.0039	0.0014	0.0010	0.0053	0.0261	0.0009	0.0008

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Design: RCBD with 4 replications.

Planted: June 12 2017 6 rows @ 38 cm and 6 meter length.

Harvested: September 22 2017 4 rows @ 38 cm and 4 meter length.

Inoculum: White mold inoculum applied foliarly

Treatments Application 1: July 26 at 6:00 AM, temperature=14 C, RH=93%, Wind=2 kph SE, heavy dew present

Treatments Application 2: July 26 at 12:00 PM, temperature=21 C, RH=71%, Wind=7 kph SW, dew not present

Treatments Application 3: July 26 at 6:00 PM, temperature=24 C, RH=64%, Wind=6 kph NW, dew not present

Treatments Application 4: July 26 at 12:00 AM, temperature=19 C, RH=93%, Wind=1 kph SW, slight dew present

Treatments Application 5: August 8 at 6:00 AM, temperature=9 C, RH=98%, Wind=0.3 kph S, heavy dew present

Treatments Application 6: August 8 at 12:00 PM, temperature=23 C, RH=60%, Wind=9 kph NW, dew not present

Treatments Application 7: August 8 at 6:00 PM, temperature=25 C, RH=51%, Wind=9 kph NW, dew not present

Treatments Application 8: August 8 at 12:00 AM, temperature=17 C, RH=83%, Wind=1.4 kph SW, light dew present

Herbicide : Pursuit @ 170 ml/ha (May 14) Dual 2 Magnum @ 1.7 L/ha (May 14)

Irrigation: July 28th, August 16th, 23rd, 28th, September 1st, 7th, 14th.

### Conclusions:

\*no phytotoxicity was measured from fungicide application

\* disease severity in the untreated control was moderate, compared to past work.

\* Allegro reduced disease severity, increased seed weight, reduced pick andn increased seed yield

\* the timing of fungicide application did not influence the performance of Allegro

## 2017 Fusarium Root Rot Seed Treatment Head-to-Head Dry Bean 1st Planting (7.5 g/m of row)

University of Guelph, Huron Research Station

Trt Treatment No. Name	Rate (g ai/100 kg)	% Emergence						Vigour 1-10 (1=worse)					Yield (kg/ha)		
		7	8	9	11	14	17	24	8	9	11	14		17	24
		days after planting						days after planting							
1 Noninoculated Control + Cruiser	50	19.4 a	30.2 a	56.0 a	84.0 a	91.3 a	92.3 a	92.7 a	5.8 a	6.5 a	7.8 a	9.7 a	9.8 a	10.0 a	2151 a
2 Inoculated Control + Cruiser	50	5.2 b	8.2 b	17.5 c	44.3 c	63.7 c	69.2 c	71.2 c	2.3 b	3.0 b	5.1 a	7.1 b	8.3 b	9.2 b	1714 a
3 Cruiser MaxxBean	56.25	10.0 b	15.4 b	31.0 bc	65.4 ab	84.2 ab	88.3 a	89.2 a	4.2 ab	4.7 ab	6.0 a	8.7 ab	9.8 a	10.0 a	2163 a
4 Cruiser MaxxBean + Dynasty	56.25+1	8.1 b	17.1 b	36.7 abc	72.3 ab	87.7 ab	89.8 a	91.0 a	3.3 ab	4.2 ab	5.8 a	8.5 ab	9.5 a	10.0 a	2204 a
5 Cruiser MaxxBean + Sedaxane	56.25+2.5	2.9 b	8.5 b	26.3 bc	67.7 ab	86.3 ab	90.0 a	91.3 a	2.5 b	3.5 b	5.5 a	8.5 ab	9.3 a	10.0 a	2186 a
6 Cruiser MaxxBean + Sedaxane	56.25+5.0	4.7 b	12.6 b	30.8 bc	68.5 ab	85.7 ab	88.8 a	88.7 a	2.9 b	3.4 b	5.2 a	8.4 ab	9.2 a	10.0 a	2336 a
7 Rancona Summit + Cruiser	4.06+50	6.7 b	15.8 b	40.0 abc	69.4 ab	82.1 ab	86.9 a	87.5 a	4.0 ab	4.7 ab	6.2 a	8.7 ab	9.5 a	9.8 a	2174 a
8 Rancona Summit+Cruiser+Sedaxane	4.06+50+2.5	8.3 b	13.8 b	30.4 bc	65.8 ab	82.9 ab	87.7 a	88.1 a	3.8 ab	4.3 ab	5.8 a	8.8 ab	9.7 a	10.0 a	2183 a
9 Rancona Summit+Cruiser+Sedaxane	4.06+50+5.0	10.8 b	20.0 ab	47.3 ab	77.3 ab	86.9 ab	90.2 a	90.4 a	4.7 ab	5.0 ab	6.3 a	9.2 a	9.8 a	10.0 a	2337 a
10 Evergol Energy+Cruiser	11.5+50	3.5 b	8.8 b	30.2 bc	63.3 b	75.8 b	77.9 b	80.4 b	3.2 b	4.0 ab	6.2 a	8.7 ab	9.7 a	10.0 a	2092 a
LSD (P=.05)		7.8	10.5	15.3	11.9	8.5	6.7	6.1	1.7	1.7	NA	1.2	0.8	0.3	NA
CV		83.7	59.7	37.9	15.0	8.8	6.6	6.1	40.5	34.3	21.9	11.5	7.4	2.8	14.4
Treatment Prob(F)		0.0057	0.0041	0.0006	0.0001	0.0001	0.0001	0.0001	0.0058	0.0144	0.0523	0.0170	0.0199	0.0001	0.0833

Planted: June 12 2 rows @ 76 cm and 2 meter length.

Harvested: September 26 2 rows @ 76 cm and 2 meter length.

Design: RCBD with 4 replications.

Inoculum: Fusarium solani applied in the seed furrow at planting, at a rate of 7.5 grams per meter of row

Herbicide : Pursuit+Dual Magnum II+Roundup 0.2+1.7+2.5L/ha (May 30) Ignite+Eragon+Merge 2L+36g+1L/ha (September 15)

Insecticide: Matador @ 83 ml/ha (July 19)

Irrigation: 0.5 inches (July 31), 0.4 inches (Aug 8), 0.6 inches (Aug 25, 28)

### Conclusions:

- \* differences in emergence and vigour between the two control trts were measured for 24 days after planting, suggesting that the inoculum gave some disease pressure
- \* most of the seed treatments except Evergol Energy had emergence that was similar to the noninoculated control.
- \* Evergol Energy emergence was lower than the noninoculated control, but higher than the inoculated control.
- \* there were no differences between treatments for yield.

## 2017 Fusarium Root Rot Seed Treatment Head-to-Head Dry Bean 2nd Planting (15 g/m of row)

University of Guelph, Huron Research Station

Trt No.	Treatment Name	Rate (g ai/100 kg)	% Emergence						Vigour 1-10 (1=worse)					Yield (kg/ha)	
			7	8	9	11	14	17	24	9	11	14	17		24
			days after planting						days after planting						
1	Noninoculated Control + Cruiser	50	35.2 a	49.4 a	80.0 a	92.1 a	93.3 a	94.0 a	93.3 a	7.2 a	8.3 a	10.0 a	10.0 a	10.0 a	2219 a
2	Inoculated Control + Cruiser	50	2.5 b	4.2 b	10.8 b	21.0 c	32.3 d	36.0 f	37.9 f	3.3 b	5.0 b	7.5 c	9.2 b	9.7 b	1290 b
3	Cruiser MaxxBean	56.25	4.8 b	8.1 b	17.7 b	42.3 b	61.3 bc	67.9 cd	71.9 cd	4.2 b	5.7 b	8.3 bc	9.5 ab	10.0 a	1717 a
4	Cruiser MaxxBean + Dynasty	56.25+1	5.2 b	11.9 b	23.1 b	53.8 b	72.7 b	80.4 b	84.6 b	3.7 b	5.5 b	8.3 bc	9.7 ab	10.0 a	2018 a
5	Cruiser MaxxBean + Sedaxane	56.25+2.5	3.5 b	7.9 b	19.2 b	51.7 b	67.1 bc	77.7 bc	81.9 b	3.5 b	5.5 b	8.3 bc	9.8 ab	10.0 a	2204 a
6	Cruiser MaxxBean + Sedaxane	56.25+5.0	2.9 b	9.0 b	20.2 b	50.4 b	67.9 bc	75.0 bc	78.3 bc	3.7 b	5.5 b	8.2 bc	9.7 ab	10.0 a	1908 a
7	Rancona Summit + Cruiser	4.06+50	3.3 b	9.2 b	22.9 b	47.5 b	60.8 bc	63.1 de	65.2 de	3.8 b	5.5 b	8.3 bc	10.0 a	10.0 a	1794 a
8	Rancona Summit+Cruiser+Sedaxane	4.06+50+2.5	4.4 b	8.3 b	23.8 b	48.5 b	64.0 bc	62.9 de	62.1 de	4.0 b	5.7 b	8.2 bc	9.8 ab	10.0 a	1861 a
9	Rancona Summit+Cruiser+Sedaxane	4.06+50+5.0	2.7 b	7.3 b	23.5 b	46.7 b	66.5 bc	70.0 bcd	69.4 cd	4.0 b	5.8 b	8.5 bc	9.8 ab	10.0 a	1866 a
10	Evergol Energy+Cruiser	11.5+50	2.1 b	8.5 b	20.0 b	39.6 b	52.1 c	55.0 e	57.9 e	4.0 b	5.7 b	8.8 b	9.8 ab	10.0 a	1813 a
LSD (P=.05)			6.9	8.8	9.4	9.7	10.5	7.9	8.0	1.1	1.2	0.8	0.5	0.2	368.3
CV			88.3	60.6	30.9	16.9	14.1	9.9	9.8	23.7	17.2	8.2	3.9	1.6	16.9
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0175	0.0206	0.0006

Planted: June 12 2 rows @ 76 cm and 2 meter length.

Harvested: September 26 2 rows @ 76 cm and 2 meter length.

Design: RCBD with 4 replications.

Innoculum: Fusarium solani applied in the seed furrow at planting, at a rate of 15 grams per meter of row

Herbicide : Pursuit+Dual Magnum II+Roundup 0.2+1.7+2.5L/ha (May 30) Ignite+Eragon+Merge 2L+36g+1L/ha (September 15)

Insecticide: Matador @ 83 ml/ha (July 19)

Irrigation: 0.5 inches (July 31), 0.4 inches (Aug 8), 0.6 inches (Aug 25, 28)

### Conclusions:

\* differences in emergence and vigour between the two control trts were measured for 24 days after planting, suggesting that the inoculum gave some disease pressure

\* all treatments had lower emergence than the noninoculated control, but higher than the inoculated control.

\* at 17 and 24 days after planting, Cruiser MaxxBean (trt 3), Rancona Summit (trts. 7, 8, 9) and Evergol Energy (trt. 10) had lower emergence than the other seed treatments.

\* all of the treatments had lower vigour than the noninoculated control for the first 14 days after planting

\*only the inoculated control had a reduction in yield

**2017 Rhizoctonia Root Rot Seed Treatment Head-to-Head Dry Bean 1st Planting (5 g/m of row)**  
**University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate (g ai/100 kg)	% Emergence						Vigour 1-10 (1=worse)						Yield (kg/ha)	
			7	8	9	11	14	17	24	8	9	11	14	17		24
			days after planting						days after planting							
1	Noninoculated Control + Cruiser	50	59.0 a	67.1 a	84.8 a	92.3 a	93.1 a	93.1 a	93.3 a	7.2 a	7.7 a	8.7 a	10.0 a	10.0 a	10.0 a	2325 a
2	Inoculated Control + Cruiser	50	13.8 cd	24.8 c	42.1 d	62.5 c	73.1 b	74.4 b	75.2 b	3.5 cd	5.2 bc	6.3 cd	8.5 c	9.8 a	10.0 a	1748 a
3	Cruiser MaxxBean	56.25	19.0 bcd	33.3 bc	54.0 bcd	73.5 bc	82.5 a	85.2 a	86.7 a	3.5 cd	5.5 bc	6.8 bcd	9.0 bc	9.8 a	10.0 a	1920 a
4	Cruiser MaxxBean + Dynasty	56.25+1	10.4 d	26.3 c	48.3 cd	77.9 ab	86.9 a	87.9 a	89.0 a	3.3 d	4.7 c	6.2 d	9.0 bc	10.0 a	10.0 a	1918 a
5	Cruiser MaxxBean + Sedaxane	56.25+2.5	23.1 bcd	38.1 bc	63.1 bc	82.9 ab	90.8 a	91.0 a	91.7 a	4.3 bcd	5.8 bc	7.2 bcd	9.3 ab	10.0 a	10.0 a	2090 a
6	Cruiser MaxxBean + Sedaxane	56.25+5.0	25.6 bcd	39.4 bc	60.6 bc	74.4 bc	86.0 a	87.3 a	88.5 a	4.5 bcd	6.0 bc	7.2 bcd	9.3 ab	10.0 a	10.0 a	2050 a
7	Rancona Summit + Cruiser	4.06+50	29.2 bc	46.7 bc	63.1 bc	80.0 ab	83.5 a	82.9 a	83.8 a	4.5 bcd	6.0 bc	7.3 a-d	9.5 ab	10.0 a	10.0 a	2118 a
8	Rancona Summit+Cruiser+Sedaxane	4.06+50+2.5	30.4 bc	46.9 bc	66.5 bc	86.7 ab	87.5 a	87.9 a	87.5 a	4.5 bcd	6.0 bc	7.3 a-d	9.5 ab	10.0 a	10.0 a	2233 a
9	Rancona Summit+Cruiser+Sedaxane	4.06+50+5.0	35.4 b	50.6 b	69.2 b	84.0 ab	89.8 a	90.4 a	90.6 a	5.0 bc	6.7 ab	7.8 ab	9.8 ab	10.0 a	10.0 a	2134 a
10	Evergol Energy+Cruiser	11.5+50	22.1 bcd	45.2 bc	64.4 bc	78.8 ab	87.1 a	87.7 a	88.5 a	5.2 b	6.7 ab	7.7 abc	9.8 ab	10.0 a	10.0 a	2042 a
LSD (P=.05)			12.0	14.6	12.6	10.0	8.0	7.5	7.4	1.0	1.1	1.0	0.6	NA	NA	NA
CV			38.4	30.0	17.6	10.8	8.0	7.4	7.2	19.6	15.3	11.2	5.4	1.7	0.0	16.15
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0009	0.0009	0.0011	0.0001	0.0001	0.0002	0.0001	0.4540	1.0000	0.1802

Planted: June 12 2 rows @ 76 cm and 2 meter length.

Harvested: September 26 2 rows @ 76 cm and 2 meter length.

Design: RCBD with 4 replications.

Innoculum: Rhizoctonia solani applied in the seed furrow at planting, at a rate of 5 grams per meter of row

Herbicide : Pursuit+Dual Magnum II+Roundup 0.2+1.7+2.5L/ha (May 30) Ignite+Eragon+Merge 2L+36g+1L/ha (September 15)

Insecticide: Matador @ 83 ml/ha (July 19)

Irrigation: 0.5 inches (July 31), 0.4 inches (Aug 8), 0.6 inches (Aug 25, 28)

**Conclusions:**

\* differences in emergence and vigour between the two control trts were measured for 24 and 14 days after planting, respectively, suggesting that the innoculum gave some disease pressure

\* all treatments had lower emergence than the noninoculated control for the first 9 days after planting, but were higher than the inoculated control from 14-24 days after planting.

\* Cruiser Maxx Bean (trt. 3) and Cruiser Maxx Bean + Dynasty (trt. 4) had somewhat weaker emergence and vigour than the other seed treatments.

\*there were no differences between treatments for yield

**2017 Rhizoctonia Root Rot Seed Treatment Head-to-Head Dry Bean 2nd Planting (10 g/m of row)**  
**University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate (g ai/100 kg)	% Emergence						Vigour 1-10 (1=worse)						Yield (kg/ha)	
			7	8	9	11	14	17	24	8	9	11	14	17		24
			days after planting						days after planting							
1	Noninoculated Control + Cruiser	50	35.8 a	49.6 a	77.3 a	91.3 a	94.0 a	95.2 a	94.8 a	5.5 a	6.7 a	8.2 a	9.8 a	10.0 a	10.0 a	2201 a
2	Innoculated Control + Cruiser	50	1.5 b	4.8 b	11.0 c	28.8 c	49.6 c	54.8 c	59.0 c	1.3 b	2.3 c	4.5 c	6.8 c	8.3 b	9.2 b	1423 b
3	Cruiser MaxxBean	56.25	5.2 b	12.1 b	23.3 b	52.1 b	73.8 b	74.2 b	77.3 b	2.2 b	3.2 bc	5.0 bc	8.0 b	9.7 a	10.0 a	1806 ab
4	Cruiser MaxxBean + Dynasty	56.25+1	4.4 b	13.3 b	29.8 b	59.0 b	81.0 b	83.8 b	84.6 b	2.3 b	3.5 bc	5.8 bc	8.7 ab	10.0 a	10.0 a	2119 a
5	Cruiser MaxxBean + Sedaxane	56.25+2.5	5.8 b	11.0 b	27.3 b	56.5 b	79.8 b	82.9 b	84.6 b	2.3 b	3.8 bc	5.7 bc	8.5 b	9.8 a	10.0 a	2041 ab
6	Cruiser MaxxBean + Sedaxane	56.25+5.0	7.5 b	15.0 b	28.3 b	54.4 b	75.6 b	78.3 b	80.8 b	2.7 b	4.2 b	6.5 b	8.7 ab	9.8 a	10.0 a	1912 ab
7	Rancona Summit + Cruiser	4.06+50	5.8 b	15.6 b	31.3 b	60.2 b	74.6 b	78.3 b	79.0 b	2.5 b	3.8 bc	6.0 bc	8.7 ab	9.8 a	10.0 a	2051 ab
8	Rancona Summit+Cruiser+Sedaxane	4.06+50+2.5	7.9 b	17.5 b	35.8 b	65.0 b	77.9 b	80.4 b	81.3 b	3.0 b	4.7 b	5.7 bc	8.8 ab	9.8 a	10.0 a	2062 ab
9	Rancona Summit+Cruiser+Sedaxane	4.06+50+5.0	5.2 b	15.2 b	28.5 b	57.3 b	78.8 b	81.7 b	82.9 b	2.2 b	3.3 bc	5.2 bc	8.0 b	9.7 a	10.0 a	1796 ab
10	Evergol Energy+Cruiser	11.5+50	3.8 b	10.8 b	30.2 b	61.9 b	75.6 b	81.7 b	82.5 b	2.2 b	3.7 bc	5.5 bc	8.5 b	10.0 a	10.0 a	2117 a
LSD (P=.05)			9.1	11.0	10.4	11.0	7.4	6.8	6.8	1.0	1.1	1.0	0.9	0.5	0.2	421.6
CV			94.0	57.0	27.5	16.0	8.3	7.3	7.3	33.9	25.0	14.9	8.8	4.5	1.3	18.5
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0246

Planted: June 12 2 rows @ 76 cm and 2 meter length.

Harvested: September 26 2 rows @ 76 cm and 2 meter length.

Design: RCBD with 4 replications.

Innoculum: Rhizoctonia solani applied in the seed furrow at planting, at a rate of 10 grams per meter of row

Herbicide : Pursuit+Dual Magnum II+Roundup 0.2+1.7+2.5L/ha (May 30) Ignite+Eragon+Merge 2L+36g+1L/ha (September 15)

Insecticide: Matador @ 83 ml/ha (July 19)

Irrigation: 0.5 inches (July 31), 0.4 inches (Aug 8), 0.6 inches (Aug 25, 28)

**Conclusions:**

- \* differences in emergence and vigour between the two control trts were measured for 24 days after planting, suggesting that the innoculum gave some disease pressure
- \* all treatments had lower emergence than the noninoculated control for 24 days after planting, but were higher than the inoculated control from 9-24 days after planting.
- \* treatments with Sedaxane had higher vigour at 9 days after planting, but the results were inconsistent
- \* Cruiser Maxx Bean + Dynasty (trt. 4) and Evergol Energy (trt. 10) had the highest yield

**2017 Common Bacterial Blight Control in Dry Beans (Kidney) Foliar Inoculum  
Huron Research Station, Exeter ON**

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Leaf Severity (%)				Pod Severity (%)			100 Seed Weight (g/100 seed)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
					7 DAA	13 DAA	19 DAA	26 DAA	26DAA	33 DAA	47 DAA				
1	Uninoculated Control*				0.9 c	4.3 a	3.2 a	7.3 a	3.5 a	6.2 a	11.3 a	52.1 a	6.6 a	1589 a	1482 a
2	Inoculated Control				2.0 ab	4.2 a	3.3 a	5.5 a	3.6 a	6.4 a	11.2 a	53.5 a	5.2 a	1781 a	1692 a
3	Oxidate	1 % v/v		ABCD	1.6 ab	4.3 a	3.4 a	5.2 a	3.2 a	6.4 a	11.3 a	52.5 a	4.7 a	1683 a	1603 a
4	Copper (Parasol)	1500 g ai/ha		ABCD	2.2 a	4.3 a	3.6 a	6.6 a	3.2 a	5.3 a	8.9 a	52.3 a	7.1 a	1720 a	1598 a
5	SaniDate	0.333 % v/v		ABCD	1.4 b	4.1 a	3.0 a	5.1 a	3.1 a	6.1 a	10.6 a	50.8 a	7.9 a	1669 a	1545 a
6	XX	0.333 % v/v		ABCD	1.7 ab	4.2 a	3.3 a	5.2 a	3.5 a	6.7 a	10.8 a	52.6 a	6.1 a	1612 a	1516 a
LSD (P=.05)					0.4	0.9	0.7	1.4	0.8	1.5	3.1	3.0	3.1	240.1	252.4
CV					17.4	14.5	14.9	16.5	16.0	16.1	19.2	3.8	32.9	9.5	10.7
Treatment Prob(F)					0.0003	0.9918	0.7081	0.0246	0.6948	0.4532	0.5452	0.5484	0.3061	0.5794	0.5675

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

\* Uninoculated control was treated with Parasol (1500 g ai/ha) every two weeks

Notes:

Planted: June 8 2017

Harvested: September 12 2017

Cultivar: Red Rover Kidney

Inoculation: Infected seed

Treatment Application: July 21, August 3, 9, 15

Fertilizer: 60-100-60 + 3 Zn lb applied (30 lb N as ESL)

Herbicide: Pursuit .2 L/ha, Dual II Magnum 1.7 L/ha

Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v)

Desiccant: Valtera 140 g/ha

Insecticide: Matador (83 ml/ha)

Conclusions:

\* disease development was moderate, compared to past experiments

\* all of the treatments had higher leaf disease than the uninoculated control at 7 days after application (DAA) of the inoculum

\* there were no differences between the treatments and the uninoculated control for all other leaf and pod disease rating dates

\* there were no treatment differences for pick or yield

**2017 Common Bacterial Blight Control in Dry Beans (Navy) Foliar Inoculum  
Huron Research Station, Exeter ON**

Trt No.	Treatment Name	Rate	Appl Unit	Leaf Severity (%)			Pod Severity (%)		100 Seed Weight (g/100 seed)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
				14 DAA	20 DAA	27 DAA	27 DAA	48 DAA				
1	Uninoculated Control*			3.4 a	4.1 a	4.7 a	3.9 a	21.4 a	20.5 a	8.7 a	1939 a	1778 a
2	Inoculated Control			3.0 a	3.3 a	5.8 a	3.3 a	21.6 a	20.7 a	8.4 a	2067 a	1912 a
3	Oxidate	1 % v/v	ABCD	2.9 a	3.0 a	5.5 a	2.6 a	21.6 a	20.2 a	9.2 a	1997 a	1827 a
4	Copper (Parasol)	1500 g ai/ha	ABCD	3.7 a	3.5 a	6.2 a	3.7 a	20.3 a	21.1 a	9.9 a	1997 a	1808 a
5	SaniDate	0.333 % v/v	ABCD	3.0 a	3.3 a	5.9 a	3.6 a	21.4 a	21.8 a	5.1 a	2498 a	2377 a
6	XX	0.333 % v/v	ABCD	3.8 a	4.0 a	6.5 a	3.4 a	22.8 a	21.0 a	6.8 a	1888 a	1761 a
LSD (P=.05)				1.0	1.3	1.4	0.8	2.7	1.7	4.0	564.0	574.3
CV				19.8	24.8	16.1	15.9	8.4	5.5	33.3	18.1	20.0
Treatment Prob(F)				0.2977	0.5167	0.1627	0.0656	0.5833	0.4953	0.1820	0.2827	0.2435

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

\* Uninoculated control was treated with Parasol (1500 g ai/ha) every two weeks

Notes:

Planted: June 8 2017

Harvested: September 21 2017

Cultivar: T9905 Navy

Inoculation: foliar inoculum applied July 26 and August 3

Treatment Application: July 25, August 3, 9, 15

Fertilizer: 60-100-60 + 3 Zn lb applied (30 lb N as ESL)

Herbicide: Pursuit .2 L/ha, Dual II Magnum 1.7 L/ha

Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v)

Desiccant: Valtera 140 g/ha

Insecticide: Matador (83 ml/ha)

Conclusions:

\* disease development was poor, compared to past experiments

\* there were no treatment differences for leaf or pod disease severity

\* there were no treatment differences for yield

**2017 Common Bacterial Blight Control in Dry Beans (Kidney) Infected Seed Inoculum  
Huron Research Station, Exeter ON**

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Leaf Severity (%)				Pod Severity (%)			100 Seed Weight (g/100 seed)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
					55 DAP	61 DAP	67 DAP	74 DAP	74 DAP	81 DAP	95 DAP				
1	Uninoculated Control*				1.8 b	4.5 c	6.0 c	21.4 b	3.4 b	6.0 b	8.8 b	55.2 b	9.3 a	1950 a	1771 a
2	Inoculated Control				3.3 a	8.4 b	12.6 b	34.5 a	4.4 ab	8.5 ab	13.7 a	60.1 a	9.7 a	1951 a	1764 a
3	Oxidate	1 % v/v		ABCD	4.4 a	11.3 a	14.7 a	39.0 a	5.0 a	9.7 ab	12.5 a	59.9 a	10.2 a	1913 a	1721 a
4	Copper (Parasol)	1500 g ai/ha		ABCD	3.8 a	8.3 b	12.3 b	36.4 a	4.2 ab	6.4 b	9.2 b	58.8 a	11.0 a	1873 a	1664 a
5	SaniDate	0.333 % v/v		ABCD	3.0 a	8.0 b	11.7 b	34.4 a	4.2 ab	7.5 ab	14.0 a	60.8 a	8.9 a	1922 a	1748 a
6	XX	0.333 % v/v		ABCD	4.1 a	8.7 b	13.2 b	37.8 a	5.4 a	11.1 a	13.4 a	61.0 a	9.8 a	1838 a	1659 a
LSD (P=.05)					1.1	1.8	1.5	6.8	1.0	2.9	1.6	3.2	4.6	289.4	308.6
CV					21.1	14.7	8.6	13.4	14.5	23.4	9.1	3.6	31.4	10.1	11.9
Treatment Prob(F)					0.0013	0.0001	0.0001	0.0008	0.0086	0.0139	0.0001	0.0142	0.9470	0.9497	0.9433

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

\* Uninoculated control was treated with Parasol (1500 g ai/ha) every two weeks

Notes:

Planted: June 8 2017

Harvested: September 21 2017

Cultivar: Red Rover Kidney

Inoculation: Infected seed

Treatment Application: July 21, August 3, 9, 15

Fertilizer: 60-100-60 + 3 Zn lb applied (30 lb N as ESL)

Herbicide: Pursuit .2 L/ha, Dual II Magnum 1.7 L/ha

Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v)

Desiccant: Valtera 140 g/ha

Insecticide: Matador (83 ml/ha)

Conclusions:

\* disease development was moderate, compared to past experiments

\* all of the treatments had higher leaf disease than the uninoculated control

\* oxidate had slightly higher leaf disease severity than the other treatments for ratings at 61 and 67 days after planting (DAP)

\* Parasol had slightly lower pod disease severity than the other treatments at 95 DAP

\* there were no treatment differences for pick or yield

**2017 Common Bacterial Blight Control in Dry Beans (Navy) Infected Seed Inoculum**  
**Huron Research Station, Exeter ON**

Trt No.	Treatment Name	Rate	Rate Unit	Appl Code	Leaf Severity (%)			Pod Severity (%)			100 Seed Weight (g/100 seed)	Pick (%)	Yield (kg/ha)	Yield-Pick (kg/ha)
					61 DAP	67 DAP	74 DAP	74 DAP	81 DAP	95 DAP				
1	Uninoculated Control*				4.2 a	4.6 a	6.1 a	2.7 a	2.2 b	22.9 a	20.6 b	9.2 a	1672 a	1529 a
2	Inoculated Control				4.8 a	6.8 a	6.8 a	3.3 a	3.6 ab	19.1 ab	22.2 a	5.3 b	2319 a	2197 a
3	Oxidate	1 % v/v		ABCD	5.5 a	8.0 a	7.7 a	3.3 a	4.8 ab	20.6 ab	20.9 ab	4.4 b	1844 a	1769 a
4	Copper (Parasol)	1500 g ai/ha		ABCD	5.4 a	7.8 a	8.0 a	3.7 a	5.0 ab	14.7 b	21.0 ab	4.6 b	1756 a	1682 a
5	SaniDate	0.333 % v/v		ABCD	5.4 a	7.0 a	7.2 a	3.9 a	4.6 ab	18.0 ab	21.8 ab	4.7 b	2185 a	2083 a
6	XX	0.333 % v/v		ABCD	6.5 a	8.2 a	7.4 a	3.3 a	5.7 a	18.7 ab	21.2 ab	5.2 b	1632 a	1548 a
LSD (P=.05)					3.2	5.4	3.4	1.3	1.9	4.2	0.9	2.5	689.8	665.3
CV					40.2	50.7	31.4	26.1	30.0	14.5	2.9	29.2	24.1	24.5
Treatment Prob(F)					0.7603	0.7373	0.8715	0.4663	0.0244	0.0183	0.0257	0.0068	0.2360	0.2208

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

\* Uninoculated control was treated with Parasol (1500 g ai/ha) every two weeks

Notes:

Planted: June 8 2017

Harvested: September 21 2017

Cultivar: T9905 Navy

Inoculation: Infected seed

Treatment Application: July 25, August 3, 9, 15

Fertilizer: 60-100-60 + 3 Zn lb applied (30 lb N as ESL)

Herbicide: Pursuit .2 L/ha, Dual II Magnum 1.7 L/ha

Reflex (1l/ha), Assure II (0.5 l/ha), Turbocharge (0.25% v/v)

Desiccant: Valtera 140 g/ha

Insecticide: Matador (83 ml/ha)

Conclusions:

\* disease development was poor, compared to past experiments

\* there were no treatment differences for leaf disease severity

\*treatment differences for pod severity at 81 and 95 days after planting (DAP) were inconsistent

\* the uninoculated control had unexpectantly high pick, compared to the other treatments

\* there were no treatment differences for yield

**2017 Potato Leafhopper Seed Treatment in Dry Bean Auburn  
University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate (g ai/100 kg)	Potato Leafhopper Nymph (#/10 Leaves)							Leaf Injury (%)										Plant Maturity (days)	Yield (kg/ha)	Yield-Pick (kg/ha)
			7 DAE	13 DAE	20 DAE	23 DAE	27 DAE	30 DAE	34 DAE	13 DAE	20 DAE	23 DAE	27 DAE	30 DAE	34 DAE	37 DAE	41 DAE	47 DAE	55 DAE			
1	Untreated Control + ApronMaxx	5.95	4.5 a	10.3 a	11.0 a	20.3 a	16.0 a	16.5 a	7.0 a	3.0 a	5.5 a	6.0 a	6.3 a	6.3 a	6.3 a	6.8 a	7.0 a	7.0 a	7.3 a	260.0 a	2257 a	2070 a
2	EXP + Apron Maxx	5.95	4.0 a	10.0 a	14.0 a	23.8 a	21.5 a	21.5 a	6.5 a	3.3 a	5.5 a	6.3 a	6.3 a	6.8 a	6.8 a	7.0 a	7.3 a	7.3 a	7.3 a	259.8 a	2235 a	2077 a
3	Cruiser MaxxBan	56.25	0.0 b	0.8 b	4.3 b	6.8 b	12.0 a	15.5 a	8.8 a	1.3 b	3.3 b	3.5 b	4.5 b	5.0 b	5.0 b	5.3 b	6.3 b	6.3 b	6.3 a	260.0 a	2217 a	2061 a
LSD (P=.05)			3.1	6.6	5.9	8.1	8.0	13.2	7.6	0.5	1.4	1.2	0.5	0.6	0.6	0.6	0.5	0.5	0.8	1.0	620.4	599.8
CV			63.4	54.4	35.2	27.7	28.1	42.8	59.3	11.6	16.8	13.1	5.1	6.2	6.2	5.9	4.2	4.2	6.8	0.2	16.0	16.8
Treatment Prob(F)			0.0230	0.0197	0.0178	0.0048	0.0710	0.5282	0.7593	0.0001	0.0108	0.0023	0.0002	0.0015	0.0015	0.0011	0.0066	0.0066	0.0370	0.7703	0.9879	0.9979

**2017 Potato Leafhopper Seed Treatment in Dry Bean Exeter**

Trt No.	Treatment Name	Rate (g ai/100 kg)	Potato Leafhopper Nymph (#/10 Leaves)							Plant Injury (%)							Yield (kg/ha)	Yield-Pick (kg/ha)	
			7 DAE	13 DAE	20 DAE	23 DAE	27 DAE	30 DAE	34 DAE	36 DAE	13 DAE	20 DAE	23 DAE	27 DAE	30 DAE	34 DAE			36 DAE
1	Untreated Control + ApronMaxx	5.95	2.0 a	0.5 a	7.5 a	1.5 ab	1.8 a	10.3 a	8.5 a	3.5 a	2.3 a	2.8 a	2.8 a	2.8 a	2.8 a	3 a	3 a	1685 a	1540 a
2	EXP + ApronMaxx	5.95	0.0 a	2.0 a	3.5 b	3.0 a	3.8 a	8.0 ab	8.8 a	3.8 a	2.3 a	2.8 a	2.8 a	2.8 a	3 a	3.3 a	3.5 a	1720 a	1586 a
3	Cruiser MaxxBan	56.25	0.5 a	0.0 a	0.0 c	0.3 b	2.3 a	4.0 b	9.5 a	4.8 a	1 b	1 b	1 b	1 b	1 b	2.3 a	3 a	1596 a	1401 a
LSD (P=.05)			2.2	2.9	2.3	1.8	2.9	4.6	7.7	4.7	0.76	0.76	0.76	0.76	1.12	1.38	2.16	1367.4	1224.4
CV			154.9	200.0	36.4	64.0	64.5	35.6	49.7	67.6	24.05	20.35	20.35	20.35	28.69	28.21	39.39	36.2	35.8
Treatment Prob(F)			0.1537	0.2848	0.0006	0.0242	0.2848	0.0403	0.9468	0.7942	0.0105	0.002	0.002	0.002	0.009	0.2608	0.813	0.9672	0.9110

**2017 Potato Leafhopper Seed Treatment in Dry Bean Huron**

Trt No.	Treatment Name	Rate (g ai/100 kg)	Potato Leafhopper Nymphs (#/10 Leaves)										Plant Injury (%)								Yield (kg/ha)	Yield-Pick (kg/ha)
			7 DAE	13 DAE	16 DAE	20 DAE	23 DAE	27 DAE	30 DAE	34 DAE	37 DAE	13 DAE	16 DAE	20 DAE	23 DAE	27 DAE	30 DAE	34 DAE	37 DAE	44 DAE		
1	Untreated Control + ApronMaxx	5.95	6.0 a	13.0 a	11.5 a	8.8 a	11.5 a	7.0 a	13.5 a	11.0 ab	15.3 a	3.8 a	3.5 a	3.8 a	3.8 a	3.8 a	4.0 a	5.3 a	5.8 a	6.8 a	1211 a	982 a
2	EXP + Apron Maxx	5.95	1.3 b	4.8 b	7.3 a	6.5 a	7.5 b	7.0 a	8.8 b	16.8 a	15.3 a	2.5 b	2.3 b	3.0 a	3.0 a	3.3 a	3.8 a	4.8 a	5.0 a	7.0 a	1274 a	1038 a
3	Cruiser MaxxBan	56.25	0.0 b	0.0 c	0.0 b	0.0 b	0.0 c	0.5 a	1.8 c	3.0 b	6.0 b	1.0 c	1.0 c	1.0 b	1.0 b	1.0 b	1.0 b	1.3 b	1.8 b	5.8 b	1374 a	1125 a
LSD (P=.05)			3.5	4.2	4.5	6.5	3.4	5.2	4.5	10.4	3.7	0.9	0.9	1.1	1.1	0.9	1.0	1.3	1.0	0.8	365.9	290.0
CV			83.6	40.9	41.7	73.4	31.1	62.1	32.5	58.3	17.7	20.7	22.2	25.0	25.0	18.8	19.0	19.9	13.3	6.8	16.4	16.0
Treatment Prob(F)			0.0128	0.0008	0.0023	0.0379	0.0005	0.0340	0.0020	0.0466	0.0013	0.0007	0.0012	0.0024	0.0024	0.0005	0.0004	0.0005	0.0001	0.0156	0.5758	0.5169

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

**Conclusions:**

- \* EXP seed treatment had a limited effect on potato leafhopper nymph numbers and leaf injury, particularly at the Huron Research Station site.
- \* Cruiser (thiamethoxam) reduced potato leafhopper nymph numbers and leaf injury (hopperburn) for 30 days or more at each site.
- \* potato leafhopper nymph numbers were moderately low at Auburn and Huron, and very low at Exeter
- \* the seed treatments had no effect on plant maturity, seed weight, pick or yield

**2017 Mycorrhizal Trial in Dry Bean**  
**University of Guelph, Huron Research Station**

Trt No.	Treatment Name	Rate	Rate Unit	Plant Emergence (%)	Plant Height (cm)		Plant Stage (BBCH)		Greenseeker (0-1)		Plant Dry Weight (g)		Root Rot (1-5; 1=good)	100 Seed Weight (g)	Yield (kg/ha)
					41 DAP	55 DAP	41 DAP	55 DAP	41 DAP	55 DAP	41 DAP	55 DAP			
1	Untreated Control			75.0 a	37.0 a	43.7 a	60.3 a	72.6 a	0.70 a	0.84 a	5.4 a	11.4 a	4.20 a	48.9 a	1401 a
2	6-24-6	2.5 l/ha		76.3 a	36.6 a	43.5 a	61.4 a	72.2 a	0.74 a	0.86 a	4.6 a	9.2 a		48.9 a	1348 a
3	AgTiv + 6-24-6	250 g/100 kg		72.5 a	35.5 a	46.0 a	58.0 a	72.8 a	0.75 a	0.86 a	5.8 a	11.4 a	3.90 b	48.4 a	1452 a
4	AgTiv + 6-24-6	500 g/100 kg		72.5 a	36.8 a	44.0 a	59.0 a	72.0 a	0.76 a	0.85 a	4.7 a	9.9 a	3.68 b	48.8 a	1522 a
5	Myconate + 6-24-6	50 g/100 kg		73.8 a	36.3 a	44.9 a	59.0 a	71.9 a	0.71 a	0.86 a	4.8 a	9.6 a	3.92 ab	50.6 a	1463 a
6	Myconate + 6-24-6	100 g/100 kg		73.8 a	36.5 a	43.6 a	60.3 a	72.5 a	0.75 a	0.85 a	4.5 a	11.9 a	3.88 b	47.4 a	1317 a
7	AgTiv + Myconate + 6-24-6	250 + 50 g/100 kg		72.5 a	39.1 a	43.2 a	59.7 a	71.9 a	0.72 a	0.85 a	5.5 a	10.3 a	3.90 b	48.0 a	1381 a
LSD (P=.05)				2.7	5.4	3.6	3.6	1.3	0.07	0.03	1.3	4.1		5.6	327.4
CV				2.4	9.9	5.5	4.0	1.2	6.3	2.6	18.0	26.3		7.8	15.6
Treatment Prob(F)				0.0524	0.8772	0.6937	0.5410	0.6196	0.4173	0.8734	0.3470	0.7483		0.9429	0.8578

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)

Root rot data collected from a separate study conducted by Dr. O. Wally at AAFC Harrow

Notes:

Planted: June 9 2017

Harvested: September 22 2017

Cultivar: Red Rover Kidney

Conclusions:

\* there were no differences between treatments for plant height, plant developmental stage (BBCH), ground cover (greenseeker) or plant dry weight at 41 or 55 days after planting

\* AgTiv (1X and 2X), Myconate (2X) and AgTiv+Myconate all had lower root rot than the untreated control

\* AgTiv or Myconate applied at a 1X or 2X rate did not increase seed weight or yield

# Sulfentrazone plus a Low Rate of Halosulfuron for Weed Control in White Bean (*Phaseolus vulgaris* L.)

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## Abstract

Halosulfuron was recently registered as the second soil-applied herbicide for broadleaf weed control in Ontario dry beans, but does not provide an alternative mode of action. Sulfentrazone is used to control broadleaf weeds in soybean and other pulse crops, and its registration for Ontario dry beans would provide a different mode of action for broadleaf weed control. Five field studies were conducted over two years (2014, 2015) to determine if the spectrum of broadleaf weed control is improved by adding a half-rate of halosulfuron to sulfentrazone PRE, and to determine the tolerance of white bean to sulfentrazone (140 or 210 g ai ha<sup>-1</sup>), s-metolachlor (1050 g ai ha<sup>-1</sup>), and halosulfuron (17.5 g ai ha<sup>-1</sup>) applied alone and in combination. Crop injury was assessed at 2 and 4 weeks after crop emergence. Weed control was assessed at 4 and 8 weeks after herbicide application (WAA), and weed density and biomass were determined at 8 WAA. Seed moisture and yield were determined at harvest. Halosulfuron added to sulfentrazone improved the control of *Ambrosia artemisiifolia* and *Sinapis arvensis*. Sulfentrazone + s-metolachlor + halosulfuron caused up to 23% crop injury. Therefore, this study concludes that sulfentrazone + s-metolachlor + halosulfuron provides broad spectrum weed control, but is too injurious to white bean for registration in Ontario.

## Keywords

Biomass, Density, Injury, Height, Navy Bean, *Phaseolus vulgaris* L.

## 1. Introduction

Dry edible beans (*Phaseolus vulgaris* L.) are a staple food that fit well in a typical

# Tolerance of Four Dry Bean Market Classes to Pre-Emergence Applications of Sulfentrazone

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## Abstract

Ontario dry bean growers are currently limited to ALS inhibitor herbicides for soil-applied broadleaf weed control; therefore another mode of action is needed. Sulfentrazone is a PPO inhibitor herbicide that has activity on some annual grass and broadleaf weed species. Four field trials were conducted over two years (2014, 2015) to determine the tolerance of four commonly grown dry bean market classes (adzuki, kidney, small red Mexican and white bean) to PRE applications of sulfentrazone at 140, 210, 280 and 420 g·ai·ha<sup>-1</sup>. Crop injury, plant height, plant density, shoot biomass, seed moisture content and yield were examined. Sulfentrazone (420 g·ai·ha<sup>-1</sup>) caused up to 74%, 22%, 30%, and 57% injury in adzuki, kidney, small red Mexican and white bean, respectively. Plant density, height and yield were not reduced for kidney or small red Mexican bean. Sulfentrazone (420 g·ai·ha<sup>-1</sup>) reduced white bean plant density, height and yield by 28%, 29% and 29%, respectively; and reduced adzuki bean plant density, height and yield by 51%, 34% and 57%, respectively. Overall, kidney and small red Mexican bean were the most tolerant to sulfentrazone, followed by white bean, and then adzuki. This study determined sulfentrazone applied PRE is safe for Ontario kidney bean and small red Mexican bean crops.

## Keywords

Adzuki Bean, Kidney Bean, Small Red Mexican Bean, White Bean, Injury, Density, Height, Seed Moisture Content, Yield

## 1. Introduction

Dry beans (*Phaseolus vulgaris* L.) are an important crop for southwestern Ontario. In 2014, over 50,000 ha of white and coloured dry beans were seeded in Ontario, produc-