

**Weed control and dry bean tolerance with various PPI pendimethalin treatments**

Trial ID: DB02-24 Study Dir.: Sprague, Stiles  
 Conducted: Campus, T-11 Investigator: Christy Sprague

**Planting Date:** Jun-4-2024 **Row Spacing:** 30 IN  
**Variety:** 'Zenith' black bean **No. of Reps:** 4  
**Population:** 109000 S/A **% OM:** 2.1  
**Soil Type:** L loam **pH:** 6.7  
**Plot Size:** 10 X 35 FT **Study Design:** Randomized Complete Block (RCB)

**Tillage/Previous Crops:** Fall chisel plow; Spring soil finish followed by herbicide application and incorporation with a soil finisher.  
**Fertilizer:**

**Crop and Weed Description**

Weed	Code	Common Name	Scientific Name
1	ANGR	annual grasses	(mostly foxtail species)
2	CHEAL	common lambsquarters	Chenopodium album
3	AMAPO	Powell amaranth	Amaranthus powellii
4	AMBEL	common ragweed	Ambrosia artemisiifolia
5	ABUTH	velvetleaf	Abutilon theophrasti
6	POROL	purslane	Portulaca oleracea
Crop	Code	Common Name	
1	PHSVX	dry bean	

**Application Description**

	A	B
<b>Application Timing:</b>	PPI	POST
<b>Date Treated:</b>	Jun-4-2024	Jul-1-2024
<b>Time Treated:</b>	10:30 AM	11:30 AM
<b>% Cloud Cover:</b>	80	5
<b>Air Temp., Unit:</b>	74 F	67 F
<b>% Relative Humidity:</b>	66	51
<b>Wind Speed/Unit/Dir:</b>	2 MPH SSE	2 MPH E
<b>Soil Temp, Unit:</b>	70 F	70 F
<b>Leaf Moist/Dew Presence (Y/N):</b>	N	N
<b>Soil Moist:</b>	5	5

**Crop Stage at Each Application**

	A	B
<b>Crop 1 Name:</b>	PHSVX	PHSVX
<b>Height:</b>		5-5 " (5)
<b>Stage:</b>		V3

**Weed Stage at Each Application**

	A	B
<b>Weed 1 Name:</b>	ANGR	ANGR
<b>Height:</b>		6-10 " (8)
<b>Stage:</b>		10-15L
<b>Weed 2 Name:</b>	CHEAL	CHEAL
<b>Height:</b>		5-5 " (5)
<b>Stage:</b>		15L
<b>Weed 3 Name:</b>	AMAPO	AMAPO
<b>Height:</b>		4 "
<b>Stage:</b>		12L
<b>Weed 4 Name:</b>	AMBEL	AMBEL
<b>Height:</b>		2-3 " (3)
<b>Stage:</b>		4-6L
<b>Weed 5 Name:</b>	ABUTH	ABUTH
<b>Height:</b>		4-4 " (4)
<b>Stage:</b>		4L
<b>Weed 6 Name:</b>	POROL	POROL
<b>Height:</b>		2 "
<b>Stage:</b>		20L

**Weed Density**

	1	2	3	4	5	6
<b>Date:</b>	Jul-1-2024	Jul-1-2024	Jul-1-2024	Jul-1-2024	Jul-1-2024	Jul-1-2024
<b>Weed Name:</b>	ANGR	CHEAL	AMAPO	AMBEL	ABUTH	POROL
<b>Density:</b>	3 FT2	1 FT2	1 FT2	3 FT 2	1 FT2	2 FT2

**Application Equipment**

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Trial ID: DB02-24

Study Dir.: Sprague, Stiles

Conducted: Campus, T-11

Investigator: Christy Sprague

<b>Appl</b>	<b>Sprayer Type</b>	<b>Ground Speed</b>	<b>Nozzle Type</b>	<b>Nozzle Size</b>	<b>Nozzle Height</b>	<b>Nozzle Spacing</b>	<b>Boom Width</b>	<b>Spray Volume</b>	<b>Carrier</b>	<b>Operation Pressure</b>
<b>A</b>	CUB	3.8 MPH	AIXR	11003	20.0 "	20.0 "	100.0 "	19 GAL/AC	WATER	30 PSI
<b>B</b>	CUB	3.8 MPH	AIXR	11003	26.0 "	20.0 "	120.0 "	19 GAL/AC	WATER	30 PSI

**Comments:**

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Trial ID: DB02-24

Protocol ID: DB02-24 Location: Campus, T-11 Trial Year: 2024

Study Director: Sprague, Stiles Sponsor Contact:

Investigator: Christy Sprague

Rating Date				Jun-24-2024	Jun-24-2024	Jun-24-2024	Jun-24-2024	Jun-24-2024	Jun-24-2024	Jul-1-2024	Jul-1-2024	
Rating Type				injury	control	control	control	control	control	injury	control	
Rating Unit				%	%	%	%	%	%	%	%	
Crop Type, Code				C, PHSVX						C, PHSVX		
Pest Code					ANGR	CHEAL	AMBEL	POROL			ANGR	
Trt-Eval Interval				20 DA-A	20 DA-A	20 DA-A	20 DA-A	20 DA-A	20 DA-A	27 DA-A	27 DA-A	
Number of Decimals				0	0	0	0	0	0	0	0	
Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing							
1	Prowl H2O	2 pt/a	A	PPI		0	98	92	56	97	0	97
	Outlook	11 fl oz/a	A	PPI								
	Varisto	21 fl oz/a	B	POST								
	Outlook	10 fl oz/a	B	POST								
	Crop oil concentrate	1 % v/v	B	POST								
	AMS	2.5 lb/a	B	POST								
2	Pendalin H2O	2 pt/a	A	PPI		0	96	88	53	94	0	96
	Outlook	11 fl oz/a	A	PPI								
	Varisto	21 fl oz/a	B	POST								
	Outlook	10 fl oz/a	B	POST								
	Crop oil concentrate	1 % v/v	B	POST								
	AMS	2.5 lb/a	B	POST								
3	Satellite HydroCap	2 pt/a	A	PPI		0	97	96	66	98	0	96
	Outlook	11 fl oz/a	A	PPI								
	Varisto	21 fl oz/a	B	POST								
	Outlook	10 fl oz/a	B	POST								
	Crop oil concentrate	1 % v/v	B	POST								
	AMS	2.5 lb/a	B	POST								
4	Untreated					0	0	0	0	0	0	0
5	Prowl H2O	1.6 pt/a	A	PPI		0	96	95	60	96	0	97
	Outlook	11 fl oz/a	A	PPI								
	Varisto	21 fl oz/a	B	POST								
	Outlook	10 fl oz/a	B	POST								
	Crop oil concentrate	1 % v/v	B	POST								
	AMS	2.5 lb/a	B	POST								
6	Eptam	1.25 qt/a	A	PPI		1	99	99	88	100	1	99
	Outlook	11 fl oz/a	A	PPI								
	Varisto	21 fl oz/a	B	POST								
	Outlook	10 fl oz/a	B	POST								
	Crop oil concentrate	1 % v/v	B	POST								
	AMS	2.5 lb/a	B	POST								
7	Eptam	1.25 qt/a	A	PPI		1	100	100	95	100	0	99
	Prowl H2O	1.6 pt/a	A	PPI								
	Outlook	11 fl oz/a	A	PPI								
	Varisto	21 fl oz/a	B	POST								
	Outlook	10 fl oz/a	B	POST								
	Crop oil concentrate	1 % v/v	B	POST								
	AMS	2.5 lb/a	B	POST								
	LSD P=.05					1.2	4.9	12.8	21.0	6.5	1.4	5.4
	Standard Deviation					0.8	3.3	8.6	14.1	4.4	0.9	3.6
	CV					384.42	3.92	10.61	23.69	5.21	529.15	4.38

Could not calculate LSD (% mean diff) or mean separation letters for columns 15,16,20,22,23,24,26,27,29,30 because error variance is 0. Mean separation letters are 'na' (not applicable) when error variance is 0

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Trial ID: DB02-24

Protocol ID: DB02-24 Location: Campus, T-11 Trial Year: 2024

Study Director: Sprague, Stiles Sponsor Contact:

Investigator: Christy Sprague

Rating Date	Jul-1-2024	Jul-1-2024	Jul-1-2024	Jul-8-2024	Jul-8-2024	Jul-8-2024	Jul-8-2024	Jul-8-2024	Jul-8-2024
Rating Type	control	control	control	injury	control	control	control	control	control
Rating Unit	%	%	%	%	%	%	%	%	%
Crop Type, Code	C, PHSVX								
Pest Code	CHEAL	AMBEL	POROL		ANGR	CHEAL	AMBEL	ABUTH	
Trt-Eval Interval	27 DA-A	27 DA-A	27 DA-A	7 DA-B	7 DA-B	7 DA-B	7 DA-B	7 DA-B	7 DA-B
Number of Decimals	0	0	0	0	0	0	0	0	0

Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing								
1	Prowl H2O	2 pt/a	A	PPI		93	55	96	3	99	98	95	100
	Outlook	11 fl oz/a	A	PPI									
	Varisto	21 fl oz/a	B	POST									
	Outlook	10 fl oz/a	B	POST									
	Crop oil concentrate	1 % v/v	B	POST									
	AMS	2.5 lb/a	B	POST									
2	Pendalin H2O	2 pt/a	A	PPI		87	55	94	3	99	97	96	100
	Outlook	11 fl oz/a	A	PPI									
	Varisto	21 fl oz/a	B	POST									
	Outlook	10 fl oz/a	B	POST									
	Crop oil concentrate	1 % v/v	B	POST									
	AMS	2.5 lb/a	B	POST									
3	Satellite HydroCap	2 pt/a	A	PPI		95	58	99	2	98	100	100	100
	Outlook	11 fl oz/a	A	PPI									
	Varisto	21 fl oz/a	B	POST									
	Outlook	10 fl oz/a	B	POST									
	Crop oil concentrate	1 % v/v	B	POST									
	AMS	2.5 lb/a	B	POST									
4	Untreated					0	0	0	0	0	0	0	0
5	Prowl H2O	1.6 pt/a	A	PPI		96	68	94	3	99	100	98	100
	Outlook	11 fl oz/a	A	PPI									
	Varisto	21 fl oz/a	B	POST									
	Outlook	10 fl oz/a	B	POST									
	Crop oil concentrate	1 % v/v	B	POST									
	AMS	2.5 lb/a	B	POST									
6	Eptam	1.25 qt/a	A	PPI		96	86	100	4	100	100	97	100
	Outlook	11 fl oz/a	A	PPI									
	Varisto	21 fl oz/a	B	POST									
	Outlook	10 fl oz/a	B	POST									
	Crop oil concentrate	1 % v/v	B	POST									
	AMS	2.5 lb/a	B	POST									
7	Eptam	1.25 qt/a	A	PPI		100	94	100	3	100	100	100	100
	Prowl H2O	1.6 pt/a	A	PPI									
	Outlook	11 fl oz/a	A	PPI									
	Varisto	21 fl oz/a	B	POST									
	Outlook	10 fl oz/a	B	POST									
	Crop oil concentrate	1 % v/v	B	POST									
	AMS	2.5 lb/a	B	POST									
	LSD P=.05					11.5	21.7	6.0	3.4	1.8	3.9	6.0	.
	Standard Deviation					7.8	14.6	4.1	2.3	1.2	2.6	4.1	0.0
	CV					9.58	24.61	4.89	99.3	1.39	3.1	4.85	0.0

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Trial ID: DB02-24

Protocol ID: DB02-24 Location: Campus, T-11 Trial Year: 2024

Study Director: Sprague, Stiles Sponsor Contact:

Investigator: Christy Sprague

Rating Date	Jul-8-2024	Jul-18-2024	Jul-18-2024	Jul-18-2024	Jul-18-2024	Jul-18-2024	Jul-18-2024
Rating Type	control	injury	control	control	control	control	control
Rating Unit	%	%	%	%	%	%	%
Crop Type, Code	C, PHSVX						
Pest Code	POROL		ANGR	CHEAL	AMAPO	AMBEL	ABUTH
Trt-Eval Interval	7 DA-B	17 DA-B	17 DA-B	17 DA-B	17 DA-B	17 DA-B	17 DA-B
Number of Decimals	0	0	0	0	0	0	0

Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing	15	16	20	22	23	24	26	27	29	30
1	Prowl H2O	2 pt/a	A	PPI		100	1	98	97	100	97	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
2	Pendalin H2O	2 pt/a	A	PPI		100	0	99	99	100	96	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
3	Satellite HydroCap	2 pt/a	A	PPI		100	1	100	99	100	99	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
4	Untreated					0	0	0	0	0	0	0			
5	Prowl H2O	1.6 pt/a	A	PPI		100	1	100	100	100	100	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
6	Eptam	1.25 qt/a	A	PPI		100	2	100	100	100	100	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
7	Eptam	1.25 qt/a	A	PPI		100	2	100	100	100	100	100			
	Prowl H2O	1.6 pt/a	A	PPI											
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
	LSD P=.05						2.9	2.9	3.3		4.8				
	Standard Deviation					0.0	2.0	1.9	2.2	0.0	3.2	0.0			
	CV					0.0	189.43	2.28	2.58	0.0	3.8	0.0			

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Protocol ID: DB02-24 Location: Campus, T-11 Trial Year: 2024

Study Director: Sprague, Stiles Sponsor Contact:

Investigator: Christy Sprague

Rating Date	Jul-18-2024	Aug-8-2024	Aug-8-2024	Aug-8-2024	Aug-8-2024	Aug-8-2024	Aug-8-2024
Rating Type	control	injury	control	control	control	control	control
Rating Unit	%	%	%	%	%	%	%
Crop Type, Code	C, PHSVX						
Pest Code	POROL		ANGR	CHEAL	AMAPO	AMBEL	ABUTH
Trt-Eval Interval	17 DA-B	38 DA-B	38 DA-B	38 DA-B	38 DA-B	38 DA-B	38 DA-B
Number of Decimals	0	0	0	0	0	0	0

Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Appl Timing	15	16	20	22	23	24	26	27	29	30
1	Prowl H2O	2 pt/a	A	PPI		100	0	99	100	100	95	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
2	Pendalin H2O	2 pt/a	A	PPI		100	0	99	100	100	94	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
3	Satellite HydroCap	2 pt/a	A	PPI		100	0	100	100	100	98	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
4	Untreated					0	0	0	0	0	0	0			
5	Prowl H2O	1.6 pt/a	A	PPI		100	0	100	100	100	99	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
6	Eptam	1.25 qt/a	A	PPI		100	0	100	100	100	93	100			
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
7	Eptam	1.25 qt/a	A	PPI		100	0	100	100	100	98	100			
	Prowl H2O	1.6 pt/a	A	PPI											
	Outlook	11 fl oz/a	A	PPI											
	Varisto	21 fl oz/a	B	POST											
	Outlook	10 fl oz/a	B	POST											
	Crop oil concentrate	1 % v/v	B	POST											
	AMS	2.5 lb/a	B	POST											
	LSD P=.05					.	.	1.7	.	.	9.0	.			
	Standard Deviation					0.0	0.0	1.1	0.0	0.0	6.1	0.0			
	CV					0.0	0.0	1.31	0.0	0.0	7.38	0.0			

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Protocol ID: DB02-24 Location: Campus, T-11 Trial Year: 2024

Study Director: Sprague, Stiles Sponsor Contact:

Investigator: Christy Sprague

Rating Date	Aug-8-2024	Sep-18-2024	Sep-23-2024
Rating Type	control	moisture	yield
Rating Unit	%	%	cwt/A
Crop Type, Code		C, PHSVX	C, PHSVX
Pest Code	POROL		
Trt-Eval Interval	38 DA-B	79 DA-B	@18% M
Number of Decimals	0	1	1

Trt No.	Treatment Name	Rate	Appl Unit	Appl Code	Timing	Aug-8-2024	Sep-18-2024	Sep-23-2024
1	Prowl H2O	2 pt/a	A	PPI		100	14.1	35.4
	Outlook	11 fl oz/a	A	PPI				
	Varisto	21 fl oz/a	B	POST				
	Outlook	10 fl oz/a	B	POST				
	Crop oil concentrate	1 % v/v	B	POST				
	AMS	2.5 lb/a	B	POST				
2	Pendalin H2O	2 pt/a	A	PPI		100	14.1	35.5
	Outlook	11 fl oz/a	A	PPI				
	Varisto	21 fl oz/a	B	POST				
	Outlook	10 fl oz/a	B	POST				
	Crop oil concentrate	1 % v/v	B	POST				
	AMS	2.5 lb/a	B	POST				
3	Satellite HydroCap	2 pt/a	A	PPI		100	14.2	35.7
	Outlook	11 fl oz/a	A	PPI				
	Varisto	21 fl oz/a	B	POST				
	Outlook	10 fl oz/a	B	POST				
	Crop oil concentrate	1 % v/v	B	POST				
	AMS	2.5 lb/a	B	POST				
4	Untreated					0	14.9	24.5
5	Prowl H2O	1.6 pt/a	A	PPI		100	14.0	34.8
	Outlook	11 fl oz/a	A	PPI				
	Varisto	21 fl oz/a	B	POST				
	Outlook	10 fl oz/a	B	POST				
	Crop oil concentrate	1 % v/v	B	POST				
	AMS	2.5 lb/a	B	POST				
6	Eptam	1.25 qt/a	A	PPI		100	14.1	35.9
	Outlook	11 fl oz/a	A	PPI				
	Varisto	21 fl oz/a	B	POST				
	Outlook	10 fl oz/a	B	POST				
	Crop oil concentrate	1 % v/v	B	POST				
	AMS	2.5 lb/a	B	POST				
7	Eptam	1.25 qt/a	A	PPI		100	13.9	33.5
	Prowl H2O	1.6 pt/a	A	PPI				
	Outlook	11 fl oz/a	A	PPI				
	Varisto	21 fl oz/a	B	POST				
	Outlook	10 fl oz/a	B	POST				
	Crop oil concentrate	1 % v/v	B	POST				
	AMS	2.5 lb/a	B	POST				
	LSD P=.05						0.54	4.29
	Standard Deviation					0.0	0.36	2.88
	CV					0.0	2.56	8.58

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