

MSU Weed Science Research Program

Weed control and crop tolerance in Balance Beans - "Stewardship"

Trial ID: SOY11-14  
 Conducted: Campus T-11

Study Dir.: Sprague and Powell  
 Investigator: Christy Sprague

**Date Planted:** May/19/2014      **Row Spacing:** 30 IN  
**Variety:** see below      **No. of Reps:** 4  
**Population:** 121,000 seeds/A      **% OM:** 3  
**Soil Type:** Loam      **pH:** 7.3  
**Plot Size:** 10 X 30 FT      **Design:** RANDOMIZED COMPLETE BLOCK

**Tillage:** Fall chisel plow, spring soil finish 2X.  
**Fertilizer:** None

**Crop and Weed Description**

Weed	Code	Common Name	Scientific Name
1.	ANGR	mainly foxtail species	SETARIA SP.
2.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
3.	AMAPO	AMARANTH, POWELL	AMARANTHUS POWELLII S.WATS.
4.	AMBEL	RAGWEED, COMMON	AMBROSIA ARTEMISIIFOLIA L.
5.	ABUTH	VELVETLEAF	ABUTILON THEOPHRASTI MEDIK.
Crop	Code	Common Name	
1.	GLXMA	SOYBEAN	

**Application Description**

	A	B
<b>Application Timing:</b>	PRE	POST
<b>Date Treated:</b>	May/19/2014	Jun/27/2014
<b>Time Treated:</b>	9:15 PM	3:45 PM
<b>% Cloud Cover:</b>	50	60
<b>Air Temp., Unit:</b>	61 F	89 F
<b>% Relative Humidity:</b>	44	60
<b>wind Speed/Unit/Dir:</b>	3 mph SE	1 mph S
<b>Soil Temp., Unit:</b>	60 F	78 F
<b>Soil/Leaf Surface M:</b>	4 -	4 5
<b>Soil Moist (1=w 5=d):</b>	4	3

**Crop Stage at Each Application**

	A	B
<b>Crop Name:</b>	GLXMA	GLXMA
<b>Height (In.):</b>	-	10"
<b>Stage (L):</b>	-	V4

**Weed Stage at Each Application**

	A	B
<b>Weed 1 Name:</b>	ANGR	ANGR
<b>Height (In.):</b>	-	5"
<b>Stage (L):</b>	-	4
<b>Weed 2 Name:</b>	CHEAL	CHEAL
<b>Height (In.):</b>	-	4-8"
<b>Stage (L):</b>	-	8-many
<b>Weed 3 Name:</b>	AMAPO	AMAPO
<b>Height (In.):</b>	-	6"
<b>Stage (L):</b>	-	>16
<b>Weed 4 Name:</b>	AMBEL	AMBEL
<b>Height (In.):</b>	-	4-6"
<b>Stage (L):</b>	-	8-many
<b>Weed 5 Name:</b>	ABUTH	ABUTH
<b>Height (In.):</b>	-	4"
<b>Stage (L):</b>	-	5

**Weed Density (plants/sq. ft.)**

	1	2	3	4	5
<b>Date:</b>	Jul/17/2014	Jul/17/2014	Jul/17/2014	Jul/17/2014	Jul/17/2014
<b>Weed Name:</b>	ANGR	CHEAL	AMAPO	AMBEL	ABUTH
<b>Density:</b>	<1	2	<1	1	<1

**Application Equipment**

Appl	Sprayer	Speed	Nozzle	Nozzle	Nozzle	Nozzle	Boom	GPA	Carrier	PSI
	Type	MPH	Type	Size	Height	Spacing	width			
A	Cub	3.8	AIXR	11003	21"	20"	100"	19	Water	30
B	Cub	3.8	AIXR	11003	29"	20"	100"	19	Water	30

**Comments:** Rows 1&4 were planted with Asgrow 2433 RR2 and rows 2&3 were planted with Balance Bean.

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Weed Code									CHEAL	AMBEL
Crop Code										
Rating Data Type									control	control
Rating Unit									percent	percent
Rating Date									Jun/09/2014	Jun/09/2014
Trt-Eval Interval									21 DA-A	21 DA-A
# Subsamples, Dec.									21 DA-A	21 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code				
1	Balance Bean	4	L	3	fl oz/a	PRE	A	1	19	81	97
1	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
1	Crop oil concentrate		L	1	% v/v	POST	B				
1	AMS		WG	17	lb/100 gal	POST	B				
2	Balance Bean	4	L	2	fl oz/a	PRE	A	0	15	86	99
2	Sencor	75	WG	5.33	oz/a	PRE	A				
2	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
2	Crop oil concentrate		L	1	% v/v	POST	B				
2	AMS		WG	17	lb/100 gal	POST	B				
3	Balance Bean	4	L	3	fl oz/a	PRE	A	0	21	97	99
3	Sencor	75	WG	8	oz/a	PRE	A				
3	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
3	Crop oil concentrate		L	1	% v/v	POST	B				
3	AMS		WG	17	lb/100 gal	POST	B				
4	Untreated							0	0	0	0
5	Balance Bean	4	L	3	fl oz/a	PRE	A	0	16	83	96
5	Zidua	85	WG	1.5	oz/a	PRE	A				
5	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
5	Crop oil concentrate		L	1	% v/v	POST	B				
5	AMS		WG	17	lb/100 gal	POST	B				
6	Balance Bean	4	L	2	fl oz/a	PRE	A	18	24	99	99
6	Valor	51	WG	2	oz/a	PRE	A				
6	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
6	Crop oil concentrate		L	1	% v/v	POST	B				
6	AMS		WG	17	lb/100 gal	POST	B				
7	Fierce	76	WG	3	oz/a	PRE	A	15	15	99	99
7	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
7	Crop oil concentrate		L	1	% v/v	POST	B				
7	AMS		WG	17	lb/100 gal	POST	B				
8	Callisto	4	L	6	fl oz/a	PRE	A	9	23	97	96
8	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
8	Crop oil concentrate		L	1	% v/v	POST	B				
8	AMS		WG	17	lb/100 gal	POST	B				

LSD (P=.05)

9.2

9.5

9.7

3.2

CV

118.9

38.9

8.24

2.52

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

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Weed control and crop tolerance in Balance Beans - "Stewardship"

Trial ID: SOY11-14  
 Conducted: Campus T-11

Study Dir.: Sprague and Powell  
 Investigator: Christy Sprague

Weed Code	ABUTH	GLXMA	ANGR	CHEAL
Crop Code				
Rating Data Type	control	BB injury	control	control
Rating Unit	percent	percent	percent	percent
Rating Date	Jun/09/2014	Jun/26/2014	Jun/26/2014	Jun/26/2014
Trt-Eval Interval	21 DA-A	38 DA-A	38 DA-A	38 DA-A
# Subsamples, Dec.				

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code				
1	Balance Bean	4	L	3	fl oz/a	PRE	A	98	14	86	78
1	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
1	Crop oil concentrate		L	1	% v/v	POST	B				
1	AMS		WG	17	lb/100 gal	POST	B				
2	Balance Bean	4	L	2	fl oz/a	PRE	A	99	3	96	85
2	Sencor	75	WG	5.33	oz/a	PRE	A				
2	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
2	Crop oil concentrate		L	1	% v/v	POST	B				
2	AMS		WG	17	lb/100 gal	POST	B				
3	Balance Bean	4	L	3	fl oz/a	PRE	A	99	14	98	96
3	Sencor	75	WG	8	oz/a	PRE	A				
3	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
3	Crop oil concentrate		L	1	% v/v	POST	B				
3	AMS		WG	17	lb/100 gal	POST	B				
4	Untreated							0	0	0	0
5	Balance Bean	4	L	3	fl oz/a	PRE	A	98	5	98	80
5	Zidua	85	WG	1.5	oz/a	PRE	A				
5	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
5	Crop oil concentrate		L	1	% v/v	POST	B				
5	AMS		WG	17	lb/100 gal	POST	B				
6	Balance Bean	4	L	2	fl oz/a	PRE	A	99	9	97	99
6	Valor	51	WG	2	oz/a	PRE	A				
6	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
6	Crop oil concentrate		L	1	% v/v	POST	B				
6	AMS		WG	17	lb/100 gal	POST	B				
7	Fierce	76	WG	3	oz/a	PRE	A	99	4	91	99
7	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
7	Crop oil concentrate		L	1	% v/v	POST	B				
7	AMS		WG	17	lb/100 gal	POST	B				
8	Callisto	4	L	6	fl oz/a	PRE	A	99	0	43	98
8	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
8	Crop oil concentrate		L	1	% v/v	POST	B				
8	AMS		WG	17	lb/100 gal	POST	B				
LSD (P=.05)								1.5	4.8	9.9	8.1
CV								1.18	54.83	8.91	6.96

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

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Weed Code	AMAPO	AMBEL	ABUTH	GLXMA
Crop Code				
Rating Data Type	control	control	control	BB injury
Rating Unit	percent	percent	percent	percent
Rating Date	Jun/26/2014	Jun/26/2014	Jun/26/2014	Jul/11/2014
Trt-Eval Interval	38 DA-A	38 DA-A	38 DA-A	14 DA-B
# Subsamples, Dec.				

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code				
1	Balance Bean	4	L	3	fl oz/a	PRE	A	94	99	99	13
1	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
1	Crop oil concentrate		L	1	% v/v	POST	B				
1	AMS		WG	17	lb/100 gal	POST	B				
2	Balance Bean	4	L	2	fl oz/a	PRE	A	94	99	99	10
2	Sencor	75	WG	5.33	oz/a	PRE	A				
2	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
2	Crop oil concentrate		L	1	% v/v	POST	B				
2	AMS		WG	17	lb/100 gal	POST	B				
3	Balance Bean	4	L	3	fl oz/a	PRE	A	94	99	99	15
3	Sencor	75	WG	8	oz/a	PRE	A				
3	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
3	Crop oil concentrate		L	1	% v/v	POST	B				
3	AMS		WG	17	lb/100 gal	POST	B				
4	Untreated							0	0	0	0
5	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99	14
5	Zidua	85	WG	1.5	oz/a	PRE	A				
5	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
5	Crop oil concentrate		L	1	% v/v	POST	B				
5	AMS		WG	17	lb/100 gal	POST	B				
6	Balance Bean	4	L	2	fl oz/a	PRE	A	99	99	99	14
6	Valor	51	WG	2	oz/a	PRE	A				
6	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
6	Crop oil concentrate		L	1	% v/v	POST	B				
6	AMS		WG	17	lb/100 gal	POST	B				
7	Fierce	76	WG	3	oz/a	PRE	A	99	99	99	6
7	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
7	Crop oil concentrate		L	1	% v/v	POST	B				
7	AMS		WG	17	lb/100 gal	POST	B				
8	Callisto	4	L	6	fl oz/a	PRE	A	99	97	99	9
8	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
8	Crop oil concentrate		L	1	% v/v	POST	B				
8	AMS		WG	17	lb/100 gal	POST	B				

LSD (P=.05)	8.4	2.4	0.0	4.0
CV	6.75	1.86	0.0	27.28

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

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Weed Code	ANGR	CHEAL	AMAPO	AMBEL
Crop Code				
Rating Data Type	control	control	control	control
Rating Unit	percent	percent	percent	percent
Rating Date	Jul/11/2014	Jul/11/2014	Jul/11/2014	Jul/11/2014
Trt-Eval Interval	14 DA-B	14 DA-B	14 DA-B	14 DA-B
# Subsamples, Dec.				

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code				
1	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99	99
1	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
1	Crop oil concentrate		L	1	% v/v	POST	B				
1	AMS		WG	17	lb/100 gal	POST	B				
2	Balance Bean	4	L	2	fl oz/a	PRE	A	99	99	99	99
2	Sencor	75	WG	5.33	oz/a	PRE	A				
2	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
2	Crop oil concentrate		L	1	% v/v	POST	B				
2	AMS		WG	17	lb/100 gal	POST	B				
3	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99	99
3	Sencor	75	WG	8	oz/a	PRE	A				
3	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
3	Crop oil concentrate		L	1	% v/v	POST	B				
3	AMS		WG	17	lb/100 gal	POST	B				
4	Untreated							0	0	0	0
5	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99	99
5	Zidua	85	WG	1.5	oz/a	PRE	A				
5	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
5	Crop oil concentrate		L	1	% v/v	POST	B				
5	AMS		WG	17	lb/100 gal	POST	B				
6	Balance Bean	4	L	2	fl oz/a	PRE	A	99	99	99	99
6	Valor	51	WG	2	oz/a	PRE	A				
6	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
6	Crop oil concentrate		L	1	% v/v	POST	B				
6	AMS		WG	17	lb/100 gal	POST	B				
7	Fierce	76	WG	3	oz/a	PRE	A	99	99	99	99
7	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
7	Crop oil concentrate		L	1	% v/v	POST	B				
7	AMS		WG	17	lb/100 gal	POST	B				
8	Callisto	4	L	6	fl oz/a	PRE	A	99	99	99	99
8	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
8	Crop oil concentrate		L	1	% v/v	POST	B				
8	AMS		WG	17	lb/100 gal	POST	B				
LSD (P=.05)								0.0	0.0	0.0	0.0
CV								0.0	0.0	0.0	0.0

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

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Weed Code	ABUTH	GLXMA	ANGR	CHEAL
Crop Code		BB injury		
Rating Data Type	control	percent	control	control
Rating Unit	percent	percent	percent	percent
Rating Date	Jul/11/2014	Jul/25/2014	Jul/25/2014	Jul/25/2014
Trt-Eval Interval	14 DA-B	28 DA-B	28 DA-B	28 DA-B
# Subsamples, Dec.				

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code				
1	Balance Bean	4	L	3	fl oz/a	PRE	A	99	9	99	99
1	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
1	Crop oil concentrate		L	1	% v/v	POST	B				
1	AMS		WG	17	lb/100 gal	POST	B				
2	Balance Bean	4	L	2	fl oz/a	PRE	A	99	3	99	99
2	Sencor	75	WG	5.33	oz/a	PRE	A				
2	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
2	Crop oil concentrate		L	1	% v/v	POST	B				
2	AMS		WG	17	lb/100 gal	POST	B				
3	Balance Bean	4	L	3	fl oz/a	PRE	A	99	13	99	99
3	Sencor	75	WG	8	oz/a	PRE	A				
3	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
3	Crop oil concentrate		L	1	% v/v	POST	B				
3	AMS		WG	17	lb/100 gal	POST	B				
4	Untreated							0	0	0	0
5	Balance Bean	4	L	3	fl oz/a	PRE	A	99	5	99	99
5	Zidua	85	WG	1.5	oz/a	PRE	A				
5	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
5	Crop oil concentrate		L	1	% v/v	POST	B				
5	AMS		WG	17	lb/100 gal	POST	B				
6	Balance Bean	4	L	2	fl oz/a	PRE	A	99	8	99	99
6	Valor	51	WG	2	oz/a	PRE	A				
6	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
6	Crop oil concentrate		L	1	% v/v	POST	B				
6	AMS		WG	17	lb/100 gal	POST	B				
7	Fierce	76	WG	3	oz/a	PRE	A	99	1	99	99
7	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
7	Crop oil concentrate		L	1	% v/v	POST	B				
7	AMS		WG	17	lb/100 gal	POST	B				
8	Callisto	4	L	6	fl oz/a	PRE	A	99	1	99	99
8	Flexstar GT	2.82	L	3.5	pt/a	POST	B				
8	Crop oil concentrate		L	1	% v/v	POST	B				
8	AMS		WG	17	lb/100 gal	POST	B				
LSD (P=.05)								0.0	4.1	0.0	0.0
CV								0.0	56.23	0.0	0.0

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

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Weed Code	AMAPO	AMBEL	ABUTH
Crop Code			
Rating Data Type	control	control	control
Rating Unit	percent	percent	percent
Rating Date	Jul/25/2014	Jul/25/2014	Jul/25/2014
Trt-Eval Interval	28 DA-B	28 DA-B	28 DA-B
# Subsamples, Dec.			

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code			
1	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99
1	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
1	Crop oil concentrate		L	1	% v/v	POST	B			
1	AMS		WG	17	lb/100 gal	POST	B			
2	Balance Bean	4	L	2	fl oz/a	PRE	A	99	99	99
2	Sencor	75	WG	5.33	oz/a	PRE	A			
2	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
2	Crop oil concentrate		L	1	% v/v	POST	B			
2	AMS		WG	17	lb/100 gal	POST	B			
3	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99
3	Sencor	75	WG	8	oz/a	PRE	A			
3	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
3	Crop oil concentrate		L	1	% v/v	POST	B			
3	AMS		WG	17	lb/100 gal	POST	B			
4	Untreated							0	0	0
5	Balance Bean	4	L	3	fl oz/a	PRE	A	99	99	99
5	Zidua	85	WG	1.5	oz/a	PRE	A			
5	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
5	Crop oil concentrate		L	1	% v/v	POST	B			
5	AMS		WG	17	lb/100 gal	POST	B			
6	Balance Bean	4	L	2	fl oz/a	PRE	A	99	99	99
6	Valor	51	WG	2	oz/a	PRE	A			
6	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
6	Crop oil concentrate		L	1	% v/v	POST	B			
6	AMS		WG	17	lb/100 gal	POST	B			
7	Fierce	76	WG	3	oz/a	PRE	A	99	99	99
7	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
7	Crop oil concentrate		L	1	% v/v	POST	B			
7	AMS		WG	17	lb/100 gal	POST	B			
8	Callisto	4	L	6	fl oz/a	PRE	A	99	99	99
8	Flexstar GT	2.82	L	3.5	pt/a	POST	B			
8	Crop oil concentrate		L	1	% v/v	POST	B			
8	AMS		WG	17	lb/100 gal	POST	B			
LSD (P=.05)								0.0	0.0	0.0
CV								0.0	0.0	0.0

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