

MSU Weed Science Research Program

Comparing weed control and crop safety of two formulations of NAI-1333

Trial ID: DB06-13 Study Dir.: Sprague, Powell  
 Conducted: Campus B-10 Investigator: Christy Sprague

**Date Planted:** Jun/20/2013 **Row Spacing:** 30 IN  
**Variety:** 'Zorro' Black Bean **No. of Reps:** 4  
**Population:** 106,000 seeds/A **% OM:** 3.2  
**Soil Type:** Loam **pH:** 7.2  
**Plot Size:** 10 X 35 FT **Design:** RANDOMIZED COMPLETE BLOCK

**Tillage:** Fall chisel plow, spring soil finish x2  
**Fertilizer:** 125 lb 19-19-19 banded with planter

**Crop and Weed Description**

Weed	Code	Common Name	Scientific Name
1.	CHEAL	LAMBSQUARTERS, COMMON	CHENOPODIUM ALBUM L.
2.	AMAPO	AMARANTH, POWELL	AMARANTHUS POWELLII S.WATS.
3.	AMBEL	RAGWEED, COMMON	AMBROSIA ARTEMISIIFOLIA L.
4.	ABUTH	VELVETLEAF	ABUTILON THEOPHRASTI MEDIK.
5.	HIBTR	MALLOW, VENICE	HIBISCUS TRIONUM L.
Crop	Code	Common Name	
1.	PHSVX	BEAN, DRY	

**Application Description**

**Application Timing:** POST  
**Date Treated:** Jul/08/2013  
**Time Treated:** 8:55 AM  
**% Cloud Cover:** 85  
**Air Temp., Unit:** 73 F  
**% Relative Humidity:** 83  
**Wind Speed/Unit/Dir:** 3 mph S  
**Soil Temp., Unit:** 73 F  
**Soil/Leaf Surface M:** 5 5  
**Soil Moist (1=w 5=d):** 4

**Crop Stage at Each Application**

**Crop Name:** A  
 PHSVX  
**Height (In.):** 7"  
**Stage (L):** V2

**Weed Stage at Each Application**

**Weed 1 Name:** A  
 CHEAL  
**Height (In.):** 1.5"  
**Stage (L):** 4  
**Weed 2 Name:** AMAPO  
**Height (In.):** 2"  
**Stage (L):** 4  
**Weed 3 Name:** AMBEL  
**Height (In.):** 2"  
**Stage (L):** 4  
**Weed 4 Name:** ABUTH  
**Height (In.):** 1.5"  
**Stage (L):** 4  
**Weed 5 Name:** HIBTR  
**Height (In.):** 1"  
**Stage (L):** 1

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

	1	2	3	4	5
<b>Date:</b>	Jul/11/2013	Jul/11/2013	Jul/11/2013	Jul/11/2013	Jul/11/2013
<b>Weed Name:</b>	CHEAL	AMAPO	AMBEL	ABUTH	HIBTR
<b>Density:</b>	<1	<1	2	2	1

**Application Equipment**

Appl	Sprayer	Speed	Nozzle	Nozzle	Nozzle	Nozzle	Boom			
	Type	MPH	Type	Size	Height	Spacing	Width	GPA	Carrier	PSI
A	Cub	3.8	AIXR	11003	25"	20"	100"	19	water	28

**Comments:** 7/16/13: A blanket treatment of SelectMax at 9 fl oz/A + COC at 1% v/v was applied for grass control. Applications of NIA-133 delayed maturity of black beans.

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Comparing weed control and crop safety of two formulations of NAI-1333

Trial ID: DB06-13  
 Conducted: Campus B-10

Study Dir.: Sprague, Powell  
 Investigator: Christy Sprague

Weed Code	CHEAL	AMAPO	AMBEL	ABUTH
Crop Code	PHSVX			
Rating Data Type	injury	control	control	control
Rating Unit	percent	percent	percent	percent
Rating Date	Jul/15/2013	Jul/15/2013	Jul/15/2013	Jul/15/2013
Trt-Eval Interval	7 DA-A	7 DA-A	7 DA-A	7 DA-A
# Subsamples, Dec.	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code					
1	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	35	99	99	99	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
2	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	34	99	99	99	98
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
3	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	33	97	99	96	99
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
4	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	49	99	99	98	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
5	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	54	99	99	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
6	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	46	99	99	97	97
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
7	Raptor	1	L	4	fl oz/a	POST	A	2	99	99	99	98
	Basagran	4	L	12	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
8	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	34	99	99	99	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
9	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	34	99	99	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
10	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	35	99	99	97	98
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
11	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	39	99	99	99	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
12	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	36	99	99	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
13	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	40	99	99	96	99
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
14	Untreated							0	0	0	0	0
LSD (P=.05)								5.5	1.8	0.0	3.4	2.2
CV								11.4	1.36	0.0	2.58	1.7

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

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Weed Code	HIBTR	CHEAL	AMAPO	AMBEL
Crop Code				
Rating Data Type	control	injury	control	control
Rating Unit	percent	percent	percent	percent
Rating Date	Jul/15/2013	Jul/22/2013	Jul/22/2013	Jul/22/2013
Trt-Eval Interval	7 DA-A	14 DA-A	14 DA-A	14 DA-A
# Subsamples, Dec.	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	HIBTR	PHSVX	CHEAL	AMAPO	AMBEL
1	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	99	23	99	96	96
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
2	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	99	21	97	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
3	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	99	20	94	99	93
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
4	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	99	34	99	98	98
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
5	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	99	41	99	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
6	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	99	31	99	98	95
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
7	Raptor	1	L	4	fl oz/a	POST	A	97	1	96	99	97
	Basagran	4	L	12	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
8	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	99	21	99	99	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
9	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	99	16	99	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
10	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	99	20	99	97	95
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
11	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	99	26	99	99	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
12	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	99	23	98	99	98
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
13	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	99	24	99	99	98
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
14	Untreated							0	0	0	0	0
LSD (P=.05)								1.7	7.3	1.6	2.6	3.6
CV								1.31	23.68	1.23	2.02	2.79

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

MSU Weed Science Research Program

Weed Code	ABUTH	HIBTR	PHSVX	CHEAL	AMAPO
Crop Code					
Rating Data Type	control	control	injury	control	control
Rating Unit	percent	percent	percent	percent	percent
Rating Date	Jul/22/2013	Jul/22/2013	Aug/05/2013	Aug/05/2013	Aug/05/2013
Trt-Eval Interval	14 DA-A	14 DA-A	28 DA-A	28 DA-A	28 DA-A
# Subsamples, Dec.	0	0	0	0	0

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	ABUTH	HIBTR	PHSVX	CHEAL	AMAPO
1	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	98	99	0	97	98
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
2	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	98	99	0	97	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
3	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	98	99	0	93	99
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
4	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	99	98	3	98	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
5	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	98	99	3	99	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
6	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	95	98	3	97	99
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
7	Raptor	1	L	4	fl oz/a	POST	A	99	98	0	95	99
	Basagran	4	L	12	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
8	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	99	99	1	97	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
9	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	98	99	0	98	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
10	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	97	98	1	98	99
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
11	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	99	99	1	98	99
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
12	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	98	99	1	96	99
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
13	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	98	98	1	99	99
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
14	Untreated							0	0	0	0	0
LSD (P=.05)								3.0	1.6	2.3	4.2	0.6
CV								2.34	1.21	162.68	3.28	0.45

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

MSU Weed Science Research Program

Weed Code	AMBEL	ABUTH	HIBTR	PHSVX	PHSVX
Crop Code					
Rating Data Type	control	control	control	moisture	yield
Rating Unit	percent	percent	percent	percent	cwt/acre
Rating Date	Aug/05/2013	Aug/05/2013	Aug/05/2013	Nov/13/2013	Nov/13/2013
Trt-Eval Interval	28 DA-A	28 DA-A	28 DA-A	128 DA-A	at 18% M
# Subsamples, Dec.	0	0	0		1

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Grow Stg	Appl Code	AMBEL	ABUTH	HIBTR	PHSVX moisture	PHSVX yield
1	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	98	98	98	21.075	16.9
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
2	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	98	98	98	19.633	18.0
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
3	NAI-1333 2.5% EC	0.2	EC	1	fl oz/a	POST	A	97	98	98	21.385	15.4
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
4	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	99	98	99	21.803	16.1
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
5	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	99	98	99	21.148	16.8
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
6	NAI-1333 2.5% EC	0.2	EC	2	fl oz/a	POST	A	98	98	98	20.940	14.6
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
7	Raptor	1	L	4	fl oz/a	POST	A	98	99	99	20.778	17.4
	Basagran	4	L	12	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
8	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	98	99	98	21.053	19.5
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
9	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	99	98	98	21.095	19.8
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
10	NAI-1333 SC		SC	1.25	fl oz/a	POST	A	98	99	96	20.898	17.0
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
11	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	99	99	98	21.343	16.2
	Basagran	4	L	32	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
12	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	99	99	98	21.118	13.8
	Basagran	4	L	24	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
13	NAI-1333 SC		SC	2.5	fl oz/a	POST	A	98	99	98	21.165	17.6
	Basagran	4	L	16	fl oz/a	POST	A					
	Surfactant		L	0.25	% v/v	POST	A					
14	Untreated							0	0	0	21.453	15.7
LSD (P=.05)								1.0	0.8	1.8	1.1882	4.59
CV								0.75	0.62	1.37	3.95	19.15

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