

MSU Weed Science Research Program

Optimizing Weed Control with Dual Magnum and Outlook in Microrates

Trial ID: SB01-06BB DualOut Study Dir.: Sprague, Bollman, Powell
 Conducted: Saginaw Bean & Beet Investigator: Christy Sprague

Date Planted: 4/11/2006 **Row Spacing:** 30 IN
Variety: Crystal 963 **No. of Reps:** 4
Population: 4 3/8" seed spacing **% OM:** 3.3
Soil Type: Silty Clay **pH:** 7.8
Plot Size: 10 X 30 FT **Design:** RANDOMIZED COMPLETE BLOCK

Tillage: Fall Chisel Plow. Spring Field Cultivate.
Fertilizer: Broadcast application of 125#/acre N on March 15,2006

Crop and Weed Description

Weed	Code	Common Name	Scientific Name
1.	CHEAL	Common lambsquarters	Chenopodium album L.
2.	ABUTH	VELVETLEAF	ABUTILON THEOPHRASTI MEDIK.
3.	AMBEL	RAGWEED, COMMON	AMBROSIA ARTEMISIIFOLIA
4.	ANGR	Annual grass	mainly foxtail, panicum
5.	POLPY	SMARTWEED, PENNSYLVANIA	POLYGONUM PENSYLVANICUM L.
Crop	Code	Common Name	
1.	BETVU	BEET, SUGAR	

Application Description

	A	B	C	D	E
Application Timing:	Pre	Micro 1	Micro 2	Micro 3	Micro 4
Date Treated:	4/11/2006	4/27/2006	5/9/2006	5/22/2006	5/30/2006
Time Treated:	3:00 pm	11:00 am	12:30 pm	12:30 pm	1:00 pm
% Cloud Cover:	100	5	0	10	35
Air Temp., Unit:	71 F	51 F	76 F	53 F	90 F
% Relative Humidity:	28	38	29	27	40
Wind Speed/Unit/Dir:	11 mph S	10 mph NE	8 mph S	9 mph NW	6 mph S
Soil Temp., Unit:	50.9 F	50.9 F	66 F	54 F	81 F
Soil/Leaf Surface M:	5 -	5 5	5 5	5 5	5 5
Soil Moist (1=w 5=d):	2	4	5	3	5
	F				
Application Timing:	Micro 5				
Date Treated:	6/8/2006				
Time Treated:	12:00 pm				
% Cloud Cover:	10				
Air Temp., Unit:	83 F				
% Relative Humidity:	21				
Wind Speed/Unit/Dir:	2 mph NE				
Soil Temp., Unit:	70 F				
Soil/Leaf Surface M:	5 5				
Soil Moist (1=w 5=d):	4				

Crop Stage at Each Application

	A	B	C	D	E
Crop Name:	BETVU	BETVU	BETVU	BETVU	BETVU
Height (In.):	-	1/8"-1/4"	1/2-1"	2-4"	4-6"
Stage (L):	-	coty	2-3 lf	2-4	4-8
	F				
Crop Name:	BETVU				
Height (In.):	7-12"				
Stage (L):	8-12				

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Weed Stage at Each Application

	A	B	C	D	E
Weed 1 Name:	CHEAL	CHEAL	CHEAL	CHEAL	CHEAL
Height (In.):	-	1/8"-1/4"	1/8"-1/2"	1/2"-4"	1/2"-6"
Stage (L):	-	coty-2	coty-4 lf	4-10	4-many
Weed 2 Name:	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
Height (In.):	-	1/8"-1/4"	1/8"-1/4"	1/8"-1/2"	-
Stage (L):	-	coty-2	coty	coty-2	-
Weed 3 Name:	AMBEL	AMBEL	AMBEL	AMBEL	AMBEL
Height (In.):	-	-	-	-	2"
Stage (L):	-	-	-	-	4
Weed 4 Name:	ANGR	ANGR	ANGR	ANGR	ANGR
Height (In.):	-	-	-	-	1/2"-2"
Stage (L):	-	-	-	-	2-4
Weed 5 Name:	POLPY	POLPY	POLPY	POLPY	POLPY
Height (In.):	-	-	-	-	1/2-1 1/2
Stage (L):	-	-	-	-	many
	F				
Weed 1 Name:	CHEAL				
Height (In.):	-				
Stage (L):	-				
Weed 2 Name:	ABUTH				
Height (In.):	-				
Stage (L):	-				
Weed 3 Name:	AMBEL				
Height (In.):	-				
Stage (L):	-				
Weed 4 Name:	ANGR				
Height (In.):	-				
Stage (L):	-				
Weed 5 Name:	POLPY				
Height (In.):	-				
Stage (L):	-				

Weed Density (plants/sq. ft.)

	1	2
Weed Name:	CHEAL	ANGR
Density:	5	<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	AirMix	11003	18"	20"	100"	19	H2O	27
B	Cub	3.8	Airmix	11003	18"	20"	100"	19	H2O	27
C	Cub	3.8	AirMix	11003	20"	20"	100"	19	H2O	27
D	Cub	3.8	AirMIx	11003	20"	20"	100"	19	H2O	27
E	Cub	3.8	AirMix	11003	22"	20"	100"	19	H2O	27
F	Cub	3.8	AirMix	11003	22"	20"	120"	19	water	27

Comments: June 12- 3.5 oz/acre Amistar applied
 July 7- 0.5 oz/acre Topsin applied
 July 19- 9.2 oz/acre Headline applied
 July 31- 13 oz/acre Emmiment applied
 August 15- 9.2 oz/acre Headline applied

Previous Crop: Soybeans. Previous Herbicide: Roundup.

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Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	BETVU injury percent	BETVU injury percent	CHEAL control percent	BETVU injury percent	CHEAL control percent	CHEAL control percent	ANGR control percent	BETVU count 100'/row
						5/22/2006	5/30/2006	5/30/2006	6/5/2006	6/5/2006	6/15/2006	6/15/2006	9/18/2006
						41 DA-A	49 DA-A	49 DA-A	55 DA-A	55 DA-A	65 DA-A	65 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code								
23	Betamix	1.3	8	fl oz/a	micro 1	B	18	11	79	9	82	83	99	159
23	Upbeet	50	0.125	oz/a	micro 1	B								
23	Stinger	3	1	fl oz/a	micro 1	B								
23	MSO		1.5	% v/v	micro 1	B								
23	Dual Magnum	7.64	0.67	pt/a	micro 2	C								
23	Betamix	1.3	8	fl oz/a	micro 2	C								
23	Upbeet	50	0.125	oz/a	micro 2	C								
23	Stinger	3	1	fl oz/a	micro 2	C								
23	MSO		1.5	% v/v	micro 2	C								
23	Dual Magnum	7.64	0.67	pt/a	micro 3	D								
23	Betamix	1.3	8	fl oz/a	micro 3	D								
23	Upbeet	50	0.125	oz/a	micro 3	D								
23	Stinger	3	1	fl oz/a	micro 3	D								
23	MSO		1.5	% v/v	micro 3	D								
23	Betamix	1.3	8	fl oz/a	micro 4	E								
23	Upbeet	50	0.125	oz/a	micro 4	E								
23	Stinger	3	1	fl oz/a	micro 4	E								
23	MSO		1.5	% v/v	micro 4	E								
24	Betamix	1.3	8	fl oz/a	micro 1	B	21	16	85	14	89	85	99	192
24	Upbeet	50	0.125	oz/a	micro 1	B								
24	Stinger	3	1	fl oz/a	micro 1	B								
24	MSO		1.5	% v/v	micro 1	B								
24	Outlook	6	8	fl oz/a	micro 2	C								
24	Betamix	1.3	8	fl oz/a	micro 2	C								
24	Upbeet	50	0.125	oz/a	micro 2	C								
24	Stinger	3	1	fl oz/a	micro 2	C								
24	MSO		1.5	% v/v	micro 2	C								
24	Outlook	6	8	fl oz/a	micro 3	D								
24	Betamix	1.3	8	fl oz/a	micro 3	D								
24	Upbeet	50	0.125	oz/a	micro 3	D								
24	Stinger	3	1	fl oz/a	micro 3	D								
24	MSO		1.5	% v/v	micro 3	D								
24	Betamix	1.3	8	fl oz/a	micro 4	E								
24	Upbeet	50	0.125	oz/a	micro 4	E								
24	Stinger	3	1	fl oz/a	micro 4	E								
24	MSO		1.5	% v/v	micro 4	E								
LSD (P=.05)							13.9	8.9	8.4	11.2	9.9	8.2	3.6	34.6
Standard Deviation							9.9	6.3	6.0	7.9	7.0	5.8	2.5	24.5
CV							46.86	46.73	7.16	50.0	8.39	7.01	2.67	14.31

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Weed Code	BETVU	BETVU	BETVU	BETVU
Crop Code	% sugar	yield	RWST	RWSA
Rating Data Type		ton/acre	# / ton	# / acre
Rating Unit				
Rating Date	9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval	160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code	% sugar	yield	RWST	RWSA
1	Betamix	1.3	8	fl oz/a	micro 1	B	16.2	25.4	237	6017
1	Upbeet	50	0.125	oz/a	micro 1	B				
1	Stinger	3	1	fl oz/a	micro 1	B				
1	MSO		1.5	% v/v	micro 1	B				
1	Betamix	1.3	8	fl oz/a	micro 2	C				
1	Upbeet	50	0.125	oz/a	micro 2	C				
1	Stinger	3	1	fl oz/a	micro 2	C				
1	MSO		1.5	% v/v	micro 2	C				
1	Betamix	1.3	8	fl oz/a	micro 3	D				
1	Upbeet	50	0.125	oz/a	micro 3	D				
1	Stinger	3	1	fl oz/a	micro 3	D				
1	MSO		1.5	% v/v	micro 3	D				
1	Betamix	1.3	8	fl oz/a	micro 4	E				
1	Upbeet	50	0.125	oz/a	micro 4	E				
1	Stinger	3	1	fl oz/a	micro 4	E				
1	MSO		1.5	% v/v	micro 4	E				
2	Dual Magnum	7.64	1.33	pt/a	pre	A	16.8	29.3	248	7267
2	Betamix	1.3	8	fl oz/a	micro	B				
2	Upbeet	50	0.125	oz/a	micro 1	B				
2	Stinger	3	1	fl oz/a	micro 1	B				
2	MSO		1.5	% v/v	micro 1	B				
2	Betamix	1.3	8	fl oz/a	micro 2	C				
2	Upbeet	50	0.125	oz/a	micro 2	C				
2	Stinger	3	1	fl oz/a	micro 2	C				
2	MSO		1.5	% v/v	micro 2	C				
2	Betamix	1.3	8	fl oz/a	micro 3	D				
2	Upbeet	50	0.125	oz/a	micro 3	D				
2	Stinger	3	1	fl oz/a	micro 3	D				
2	MSO		1.5	% v/v	micro 3	D				
2	Betamix	1.3	8	fl oz/a	micro 4	E				
2	Upbeet	50	0.125	oz/a	micro 4	E				
2	Stinger	3	1	fl oz/a	micro 4	E				
2	MSO		1.5	% v/v	micro 4	E				
3	Dual Magnum	7.64	1.33	pt/a	micro 1	B	16.7	29.1	248	7168
3	Betamix	1.3	8	fl oz/a	micro 1	B				
3	Upbeet	50	0.125	oz/a	micro 1	B				
3	Stinger	3	1	fl oz/a	micro 1	B				
3	MSO		1.5	% v/v	micro 1	B				
3	Betamix	1.3	8	fl oz/a	micro 2	C				
3	Upbeet	50	0.125	oz/a	micro 2	C				
3	Stinger	3	1	fl oz/a	micro 2	C				
3	MSO		1.5	% v/v	micro 2	C				
3	Betamix	1.3	8	fl oz/a	micro 3	D				
3	Upbeet	50	0.125	oz/a	micro 3	D				
3	Stinger	3	1	fl oz/a	micro 3	D				
3	MSO		1.5	% v/v	micro 3	D				
3	Betamix	1.3	8	fl oz/a	micro 4	E				
3	Upbeet	50	0.125	oz/a	micro 4	E				
3	Stinger	3	1	fl oz/a	micro 4	E				
3	MSO		1.5	% v/v	micro 4	E				

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Weed Code	BETVU	BETVU	BETVU	BETVU
Crop Code	% sugar	yield	RWST	RWSA
Rating Data Type		ton/acre	# / ton	# / acre
Rating Unit				
Rating Date	9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval	160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code				
4	Betamix	1.3	8	fl oz/a	micro 1	B	16.9	29.9	249	7402
4	Upbeet	50	0.125	oz/a	micro 1	B				
4	Stinger	3	1	fl oz/a	micro 1	B				
4	MSO		1.5	% v/v	micro 1	B				
4	Dual Magnum	7.64	1.33	pt/a	micro 2	C				
4	Betamix	1.3	8	fl oz/a	micro 2	C				
4	Upbeet	50	0.125	oz/a	micro 2	C				
4	Stinger	3	1	fl oz/a	micro 2	C				
4	MSO		1.5	% v/v	micro 2	C				
4	Betamix	1.3	8	fl oz/a	micro 3	D				
4	Upbeet	50	0.125	oz/a	micro 3	D				
4	Stinger	3	1	fl oz/a	micro 3	D				
4	MSO		1.5	% v/v	micro 3	D				
4	Betamix	1.3	8	fl oz/a	micro 4	E				
4	Upbeet	50	0.125	oz/a	micro 4	E				
4	Stinger	3	1	fl oz/a	micro 4	E				
4	MSO		1.5	% v/v	micro 4	E				
5	Betamix	1.3	8	fl oz/a	micro 1	B	15.9	26.4	233	6123
5	Upbeet	50	0.125	oz/a	micro 1	B				
5	Stinger	3	1	fl oz/a	micro 1	B				
5	MSO		1.5	% v/v	micro 1	B				
5	Betamix	1.3	8	fl oz/a	micro 2	C				
5	Upbeet	50	0.125	oz/a	micro 2	C				
5	Stinger	3	1	fl oz/a	micro 2	C				
5	MSO		1.5	% v/v	micro 2	C				
5	Dual Magnum	7.64	1.33	pt/a	micro 3	D				
5	Betamix	1.3	8	fl oz/a	micro 3	D				
5	Upbeet	50	0.125	oz/a	micro 3	D				
5	Stinger	3	1	fl oz/a	micro 3	D				
5	MSO		1.5	% v/v	micro 3	D				
5	Betamix	1.3	8	fl oz/a	micro 4	E				
5	Upbeet	50	0.125	oz/a	micro 4	E				
5	Stinger	3	1	fl oz/a	micro 4	E				
5	MSO		1.5	% v/v	micro 4	E				
6	Betamix	1.3	8	fl oz/a	micro 1	B	16.8	28.7	245	7044
6	Upbeet	50	0.125	oz/a	micro 1	B				
6	Stinger	3	1	fl oz/a	micro 1	B				
6	MSO		1.5	% v/v	micro 1	B				
6	Betamix	1.3	8	fl oz/a	micro 2	C				
6	Upbeet	50	0.125	oz/a	micro 2	C				
6	Stinger	3	1	fl oz/a	micro 2	C				
6	MSO		1.5	% v/v	micro 2	C				
6	Betamix	1.3	8	fl oz/a	micro 3	D				
6	Upbeet	50	0.125	oz/a	micro 3	D				
6	Stinger	3	1	fl oz/a	micro 3	D				
6	MSO		1.5	% v/v	micro 3	D				
6	Dual Magnum	7.64	1.33	pt/a	micro 4	E				
6	Betamix	1.3	8	fl oz/a	micro 4	E				
6	Upbeet	50	0.125	oz/a	micro 4	E				
6	Stinger	3	1	fl oz/a	micro 4	E				
6	MSO		1.5	% v/v	micro 4	E				
7	Untreated Control						ABCDE 17.3	19.1	256	4899

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Weed Code	BETVU	BETVU	BETVU	BETVU
Crop Code	% sugar	yield	RWST	RWSA
Rating Data Type		ton/acre	# / ton	# / acre
Rating Unit				
Rating Date	9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval	160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code	% sugar	yield	RWST	RWSA
8	Dual Magnum	7.64	0.67	pt/a	pre	A	16.6	31.9	244	7759
8	Betamix	1.3	8	fl oz/a	micro 1	B				
8	Upbeet	50	0.125	oz/a	micro 1	B				
8	Stinger	3	1	fl oz/a	micro 1	B				
8	MSO		1.5	% v/v	micro 1	B				
8	Betamix	1.3	8	fl oz/a	micro 2	C				
8	Upbeet	50	0.125	oz/a	micro 2	C				
8	Stinger	3	1	fl oz/a	micro 2	C				
8	MSO		1.5	% v/v	micro 2	C				
8	Dual Magnum	7.64	0.67	pt/a	micro 3	D				
8	Betamix	1.3	8	fl oz/a	micro 3	D				
8	Upbeet	50	0.125	oz/a	micro 3	D				
8	Stinger	3	1	fl oz/a	micro 3	D				
8	MSO		1.5	% v/v	micro 3	D				
8	Betamix	1.3	8	fl oz/a	micro 4	E				
8	Upbeet	50	0.125	oz/a	micro 4	E				
8	Stinger	3	1	fl oz/a	micro 4	E				
8	MSO		1.5	% v/v	micro 4	E				
9	Dual Magnum	7.64	0.67	pt/a	micro 1	B	16.6	23.9	242	5767
9	Betamix	1.3	8	fl oz/a	micro 1	B				
9	Upbeet	50	0.125	oz/a	micro 1	B				
9	Stinger	3	1	fl oz/a	micro 1	B				
9	MSO		1.5	% v/v	micro 1	B				
9	Betamix	1.3	8	fl oz/a	micro 2	C				
9	Upbeet	50	0.125	oz/a	micro 2	C				
9	Stinger	3	1	fl oz/a	micro 2	C				
9	MSO		1.5	% v/v	micro 2	C				
9	Dual Magnum	7.64	0.67	pt/a	micro 3	D				
9	Betamix	1.3	8	fl oz/a	micro 3	D				
9	Upbeet	50	0.125	oz/a	micro 3	D				
9	Stinger	3	1	fl oz/a	micro 3	D				
9	MSO		1.5	% v/v	micro 3	D				
9	Betamix	1.3	8	fl oz/a	micro 4	E				
9	Upbeet	50	0.125	oz/a	micro 4	E				
9	Stinger	3	1	fl oz/a	micro 4	E				
9	MSO		1.5	% v/v	micro 4	E				
10	Betamix	1.3	8	fl oz/a	micro 1	B	16.2	29.0	239	6931
10	Upbeet	50	0.125	oz/a	micro 1	B				
10	Stinger	3	1	fl oz/a	micro 1	B				
10	MSO		1.5	% v/v	micro 1	B				
10	Dual Magnum	7.64	0.67	pt/a	micro 2	C				
10	Betamix	1.3	8	fl oz/a	micro 2	C				
10	Upbeet	50	0.125	oz/a	micro 2	C				
10	Stinger	3	1	fl oz/a	micro 2	C				
10	MSO		1.5	% v/v	micro 2	C				
10	Betamix	1.3	8	fl oz/a	micro 3	D				
10	Upbeet	50	0.125	oz/a	micro 3	D				
10	Stinger	3	1	fl oz/a	micro 3	D				
10	MSO		1.5	% v/v	micro 3	D				
10	Dual Magnum	7.64	0.67	pt/a	micro 4	E				
10	Betamix	1.3	8	fl oz/a	micro 4	E				
10	Upbeet	50	0.125	oz/a	micro 4	E				
10	Stinger	3	1	fl oz/a	micro 4	E				
10	MSO		1.5	% v/v	micro 4	E				

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Weed Code	BETVU	BETVU	BETVU	BETVU
Crop Code	% sugar	yield	RWST	RWSA
Rating Data Type		ton/acre	# / ton	# / acre
Rating Unit				
Rating Date	9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval	160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code				
11	Dual Magnum	7.64	0.33	pt/a	micro 1	B	16.8	28.2	247	6953
11	Betamix	1.3	8	fl oz/a	micro 1	B				
11	Upbeet	50	0.125	oz/a	micro 1	B				
11	Stinger	3	1	fl oz/a	micro 1	B				
11	MSO		1.5	% v/v	micro 1	B				
11	Dual Magnum	7.64	0.33	pt/a	micro 2	C				
11	Betamix	1.3	8	fl oz/a	micro 2	C				
11	Upbeet	50	0.125	oz/a	micro 2	C				
11	Stinger	3	1	fl oz/a	micro 2	C				
11	MSO		1.5	% v/v	micro 2	C				
11	Dual Magnum	7.64	0.33	pt/a	micro 3	D				
11	Betamix	1.3	8	fl oz/a	micro 3	D				
11	Upbeet	50	0.125	oz/a	micro 3	D				
11	Stinger	3	1	fl oz/a	micro 3	D				
11	MSO		1.5	% v/v	micro 3	D				
11	Dual Magnum	7.64	0.33	pt/a	micro 4	E				
11	Betamix	1.3	8	fl oz/a	micro 4	E				
11	Upbeet	50	0.125	oz/a	micro 4	E				
11	Stinger	3	1	fl oz/a	micro 4	E				
11	MSO		1.5	% v/v	micro 4	E				
12	Outlook	6	16	fl oz/a	pre	A	17.1	27.3	253	6903
12	Betamix	1.3	8	fl oz/a	micro 1	B				
12	Upbeet	50	0.125	oz/a	micro 1	B				
12	Stinger	3	1	fl oz/a	micro 1	B				
12	MSO		1.5	% v/v	micro 1	B				
12	Betamix	1.3	8	fl oz/a	micro 2	C				
12	Upbeet	50	0.125	oz/a	micro 2	C				
12	Stinger	3	1	fl oz/a	micro 2	C				
12	MSO		1.5	% v/v	micro 2	C				
12	Betamix	1.3	8	fl oz/a	micro 3	D				
12	Upbeet	50	0.125	oz/a	micro 3	D				
12	Stinger	3	1	fl oz/a	micro 3	D				
12	MSO		1.5	% v/v	micro 3	D				
12	Betamix	1.3	8	fl oz/a	micro 4	E				
12	Upbeet	50	0.125	oz/a	micro 4	E				
12	Stinger	3	1	fl oz/a	micro 4	E				
12	MSO		1.5	% v/v	micro 4	E				
13	Outlook	6	16	fl oz/a	micro 1	B	16.4	27.1	242	6521
13	Betamix	1.3	8	fl oz/a	micro 1	B				
13	Upbeet	50	0.125	oz/a	micro 1	B				
13	Stinger	3	1	fl oz/a	micro 1	B				
13	MSO		1.5	% v/v	micro 1	B				
13	Betamix	1.3	8	fl oz/a	micro 2	C				
13	Upbeet	50	0.125	oz/a	micro 2	C				
13	Stinger	3	1	fl oz/a	micro 2	C				
13	MSO		1.5	% v/v	micro 2	C				
13	Betamix	1.3	8	fl oz/a	micro 3	D				
13	Upbeet	50	0.125	oz/a	micro 3	D				
13	Stinger	3	1	fl oz/a	micro 3	D				
13	MSO		1.5	% v/v	micro 3	D				
13	Betamix	1.3	8	fl oz/a	micro 4	E				
13	Upbeet	50	0.125	oz/a	micro 4	E				
13	Stinger	3	1	fl oz/a	micro 4	E				
13	MSO		1.5	% v/v	micro 4	E				

MSU Weed Science Research Program

Optimizing Weed Control with Dual Magnum and Outlook in Microrates

Trial ID: SB01-06BB DualOut Study Dir.: Sprague, Bollman, Powell

Conducted: Saginaw Bean & Beet Investigator: Christy Sprague

Weed Code	BETVU	BETVU	BETVU	BETVU
Crop Code	% sugar	yield	RWST	RWSA
Rating Data Type		ton/acre	# / ton	# / acre
Rating Unit				
Rating Date	9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval	160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code				
14	Betamix	1.3	8	fl oz/a	micro 1	B	16.7	26.4	247	6481
14	Upbeet	50	0.125	oz/a	micro 1	B				
14	Stinger	3	1	fl oz/a	micro 1	B				
14	MSO		1.5	% v/v	micro 1	B				
14	Outlook	6	16	fl oz/a	micro 2	C				
14	Betamix	1.3	8	fl oz/a	micro 2	C				
14	Upbeet	50	0.125	oz/a	micro 2	C				
14	Stinger	3	1	fl oz/a	micro 2	C				
14	MSO		1.5	% v/v	micro 2	C				
14	Betamix	1.3	8	fl oz/a	micro 3	D				
14	Upbeet	50	0.125	oz/a	micro 3	D				
14	Stinger	3	1	fl oz/a	micro 3	D				
14	MSO		1.5	% v/v	micro 3	D				
14	Betamix	1.3	8	fl oz/a	micro 4	E				
14	Upbeet	50	0.125	oz/a	micro 4	E				
14	Stinger	3	1	fl oz/a	micro 4	E				
14	MSO		1.5	% v/v	micro 4	E				
15	Betamix	1.3	8	fl oz/a	micro 1	B	16.9	28.1	252	7066
15	Upbeet	50	0.125	oz/a	micro 1	B				
15	Stinger	3	1	fl oz/a	micro 1	B				
15	MSO		1.5	% v/v	micro 1	B				
15	Betamix	1.3	8	fl oz/a	micro 2	C				
15	Upbeet	50	0.125	oz/a	micro 2	C				
15	Stinger	3	1	fl oz/a	micro 2	C				
15	MSO		1.5	% v/v	micro 2	C				
15	Outlook	6	16	fl oz/a	micro 3	D				
15	Betamix	1.3	8	fl oz/a	micro 3	D				
15	Upbeet	50	0.125	oz/a	micro 3	D				
15	Stinger	3	1	fl oz/a	micro 3	D				
15	MSO		1.5	% v/v	micro 3	D				
15	Betamix	1.3	8	fl oz/a	micro 4	E				
15	Upbeet	50	0.125	oz/a	micro 4	E				
15	Stinger	3	1	fl oz/a	micro 4	E				
15	MSO		1.5	% v/v	micro 4	E				
16	Betamix	1.3	8	fl oz/a	micro 1	B	16.6	28.5	247	7026
16	Upbeet	50	0.125	oz/a	micro 1	B				
16	Stinger	3	1	fl oz/a	micro 1	B				
16	MSO		1.5	% v/v	micro 1	B				
16	Betamix	1.3	8	fl oz/a	micro 2	C				
16	Upbeet	50	0.125	oz/a	micro 2	C				
16	Stinger	3	1	fl oz/a	micro 2	C				
16	MSO		1.5	% v/v	micro 2	C				
16	Betamix	1.3	8	fl oz/a	micro 3	D				
16	Upbeet	50	0.125	oz/a	micro 3	D				
16	Stinger	3	1	fl oz/a	micro 3	D				
16	MSO		1.5	% v/v	micro 3	D				
16	Outlook	6	16	fl oz/a	micro 4	E				
16	Betamix	1.3	8	fl oz/a	micro 4	E				
16	Upbeet	50	0.125	oz/a	micro 4	E				
16	Stinger	3	1	fl oz/a	micro 4	E				
16	MSO		1.5	% v/v	micro 4	E				

MSU Weed Science Research Program

Optimizing Weed Control with Dual Magnum and Outlook in Microrates

Trial ID: SB01-06BB DualOut Study Dir.: Sprague, Bollman, Powell

Conducted: Saginaw Bean & Beet Investigator: Christy Sprague

Weed Code									
Crop Code						BETVU	BETVU	BETVU	BETVU
Rating Data Type						% sugar	yield	RWST	RWSA
Rating Unit							ton/acre	# / ton	# / acre
Rating Date						9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval						160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code	% sugar	yield	RWST	RWSA
17	Outlook	6	8	fl oz/a	pre	A	16.2	27.7	237	6566
17	Betamix	1.3	8	fl oz/a	micro 1	B				
17	Upbeet	50	0.125	oz/a	micro 1	B				
17	Stinger	3	1	fl oz/a	micro 1	B				
17	MSO		1.5	% v/v	micro 1	B				
17	Betamix	1.3	8	fl oz/a	micro 2	C				
17	Upbeet	50	0.125	oz/a	micro 2	C				
17	Stinger	3	1	fl oz/a	micro 2	C				
17	MSO		1.5	% v/v	micro 2	C				
17	Outlook	6	8	fl oz/a	micro 3	D				
17	Betamix	1.3	8	fl oz/a	micro 3	D				
17	Upbeet	50	0.125	oz/a	micro 3	D				
17	Stinger	3	1	fl oz/a	micro 3	D				
17	MSO		1.5	% v/v	micro 3	D				
17	Betamix	1.3	8	fl oz/a	micro 4	E				
17	Upbeet	50	0.125	oz/a	micro 4	E				
17	Stinger	3	1	fl oz/a	micro 4	E				
17	MSO		1.5	% v/v	micro 4	E				
18	Outlook	6	8	fl oz/a	micro 1	B	16.9	28.8	251	7220
18	Betamix	1.3	8	fl oz/a	micro 1	B				
18	Upbeet	50	0.125	oz/a	micro 1	B				
18	Stinger	3	1	fl oz/a	micro 1	B				
18	MSO		1.5	% v/v	micro 1	B				
18	Betamix	1.3	8	fl oz/a	micro 2	C				
18	Upbeet	50	0.125	oz/a	micro 2	C				
18	Stinger	3	1	fl oz/a	micro 2	C				
18	MSO		1.5	% v/v	micro 2	C				
18	Outlook	6	8	fl oz/a	micro 3	D				
18	Betamix	1.3	8	fl oz/a	micro 3	D				
18	Upbeet	50	0.125	oz/a	micro 3	D				
18	Stinger	3	1	fl oz/a	micro 3	D				
18	MSO		1.5	% v/v	micro 3	D				
18	Betamix	1.3	8	fl oz/a	micro 4	E				
18	Upbeet	50	0.125	oz/a	micro 4	E				
18	Stinger	3	1	fl oz/a	micro 4	E				
18	MSO		1.5	% v/v	micro 4	E				
19	Betamix	1.3	8	fl oz/a	micro 1	B	17.1	29.0	250	7248
19	Upbeet	50	0.125	oz/a	micro 1	B				
19	Stinger	3	1	fl oz/a	micro 1	B				
19	MSO		1.5	% v/v	micro 1	B				
19	Outlook	6	8	fl oz/a	micro 2	C				
19	Betamix	1.3	8	fl oz/a	micro 2	C				
19	Upbeet	50	0.125	oz/a	micro 2	C				
19	Stinger	3	1	fl oz/a	micro 2	C				
19	MSO		1.5	% v/v	micro 2	C				
19	Betamix	1.3	8	fl oz/a	micro 3	D				
19	Upbeet	50	0.125	oz/a	micro 3	D				
19	Stinger	3	1	fl oz/a	micro 3	D				
19	MSO		1.5	% v/v	micro 3	D				
19	Outlook	6	8	fl oz/a	micro 4	E				
19	Betamix	1.3	8	fl oz/a	micro 4	E				
19	Upbeet	50	0.125	oz/a	micro 4	E				
19	Stinger	3	1	fl oz/a	micro 4	E				
19	MSO		1.5	% v/v	micro 4	E				

MSU Weed Science Research Program

Optimizing Weed Control with Dual Magnum and Outlook in Microrates

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Conducted: Saginaw Bean & Beet Investigator: Christy Sprague

Weed Code	BETVU	BETVU	BETVU	BETVU
Crop Code	% sugar	yield	RWST	RWSA
Rating Data Type		ton/acre	# / ton	# / acre
Rating Unit				
Rating Date	9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval	160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code				
20	Outlook	6	4	fl oz/a	micro 1	B	17.1	28.0	255	7119
20	Betamix	1.3	8	fl oz/a	micro 1	B				
20	Upbeet	50	0.125	oz/a	micro 1	B				
20	Stinger	3	1	fl oz/a	micro 1	B				
20	MSO		1.5	% v/v	micro 1	B				
20	Outlook	6	4	fl oz/a	micro 2	C				
20	Betamix	1.3	8	fl oz/a	micro 2	C				
20	Upbeet	50	0.125	oz/a	micro 2	C				
20	Stinger	3	1	fl oz/a	micro 2	C				
20	MSO		1.5	% v/v	micro 2	C				
20	Outlook	6	4	fl oz/a	micro 3	D				
20	Betamix	1.3	8	fl oz/a	micro 3	D				
20	Upbeet	50	0.125	oz/a	micro 3	D				
20	Stinger	3	1	fl oz/a	micro 3	D				
20	MSO		1.5	% v/v	micro 3	D				
20	Outlook	6	4	fl oz/a	micro 4	E				
20	Betamix	1.3	8	fl oz/a	micro 4	E				
20	Upbeet	50	0.125	oz/a	micro 4	E				
20	Stinger	3	1	fl oz/a	micro 4	E				
20	MSO		1.5	% v/v	micro 4	E				
21	Betamix	1.3	8	fl oz/a	micro 1	B	15.9	27.0	233	6296
21	Upbeet	50	0.125	oz/a	micro 1	B				
21	Stinger	3	1	fl oz/a	micro 1	B				
21	MSO		1.5	% v/v	micro 1	B				
21	Betamix	1.3	8	fl oz/a	micro 2	C				
21	Upbeet	50	0.125	oz/a	micro 2	C				
21	Stinger	3	1	fl oz/a	micro 2	C				
21	MSO		1.5	% v/v	micro 2	C				
21	Betamix	1.3	8	fl oz/a	micro 3	D				
21	Upbeet	50	0.125	oz/a	micro 3	D				
21	Stinger	3	1	fl oz/a	micro 3	D				
21	MSO		1.5	% v/v	micro 3	D				
21	Dual Magnum	7.64	1.33	pt/a	micro 4	E				
21	Select	2	8	fl oz/a	micro 4	E				
21	Betamix	1.3	8	fl oz/a	micro 4	E				
21	Upbeet	50	0.125	oz/a	micro 4	E				
21	Stinger	3	1	fl oz/a	micro 4	E				
21	MSO		1.5	% v/v	micro 4	E				
22	Betamix	1.3	8	fl oz/a	micro 1	B	17.0	30.8	250	7722
22	Upbeet	50	0.125	oz/a	micro 1	B				
22	Stinger	3	1	fl oz/a	micro 1	B				
22	MSO		1.5	% v/v	micro 1	B				
22	Betamix	1.3	8	fl oz/a	micro 2	C				
22	Upbeet	50	0.125	oz/a	micro 2	C				
22	Stinger	3	1	fl oz/a	micro 2	C				
22	MSO		1.5	% v/v	micro 2	C				
22	Betamix	1.3	8	fl oz/a	micro 3	D				
22	Upbeet	50	0.125	oz/a	micro 3	D				
22	Stinger	3	1	fl oz/a	micro 3	D				
22	MSO		1.5	% v/v	micro 3	D				
22	Outlook	6	16	fl oz/a	micro 4	E				
22	Select	2	8	fl oz/a	micro 4	E				
22	Betamix	1.3	8	fl oz/a	micro 4	E				
22	Upbeet	50	0.125	oz/a	micro 4	E				
22	Stinger	3	1	fl oz/a	micro 4	E				
22	MSO		1.5	% v/v	micro 4	E				

MSU Weed Science Research Program

Optimizing Weed Control with Dual Magnum and Outlook in Microrates

Trial ID: SB01-06BB DualOut Study Dir.: Sprague, Bollman, Powell
 Conducted: Saginaw Bean & Beet Investigator: Christy Sprague

Weed Code									
Crop Code						BETVU	BETVU	BETVU	BETVU
Rating Data Type						% sugar	yield	RWST	RWSA
Rating Unit							ton/acre	# / ton	# / acre
Rating Date						9/18/2006	9/18/2006	9/18/2006	9/18/2006
Trt-Eval Interval						160 DA-A	160 DA-A	160 DA-A	160 DA-A

Trt No.	Treatment Name	Form Conc	Rate	Unit	Grow Stg	Appl Code				
23	Betamix	1.3	8	fl oz/a	micro 1	B	17.5	28.3	259	7358
23	Upbeet	50	0.125	oz/a	micro 1	B				
23	Stinger	3	1	fl oz/a	micro 1	B				
23	MSO		1.5	% v/v	micro 1	B				
23	Dual Magnum	7.64	0.67	pt/a	micro 2	C				
23	Betamix	1.3	8	fl oz/a	micro 2	C				
23	Upbeet	50	0.125	oz/a	micro 2	C				
23	Stinger	3	1	fl oz/a	micro 2	C				
23	MSO		1.5	% v/v	micro 2	C				
23	Dual Magnum	7.64	0.67	pt/a	micro 3	D				
23	Betamix	1.3	8	fl oz/a	micro 3	D				
23	Upbeet	50	0.125	oz/a	micro 3	D				
23	Stinger	3	1	fl oz/a	micro 3	D				
23	MSO		1.5	% v/v	micro 3	D				
23	Betamix	1.3	8	fl oz/a	micro 4	E				
23	Upbeet	50	0.125	oz/a	micro 4	E				
23	Stinger	3	1	fl oz/a	micro 4	E				
23	MSO		1.5	% v/v	micro 4	E				
24	Betamix	1.3	8	fl oz/a	micro 1	B	17.8	30.8	265	8155
24	Upbeet	50	0.125	oz/a	micro 1	B				
24	Stinger	3	1	fl oz/a	micro 1	B				
24	MSO		1.5	% v/v	micro 1	B				
24	Outlook	6	8	fl oz/a	micro 2	C				
24	Betamix	1.3	8	fl oz/a	micro 2	C				
24	Upbeet	50	0.125	oz/a	micro 2	C				
24	Stinger	3	1	fl oz/a	micro 2	C				
24	MSO		1.5	% v/v	micro 2	C				
24	Outlook	6	8	fl oz/a	micro 3	D				
24	Betamix	1.3	8	fl oz/a	micro 3	D				
24	Upbeet	50	0.125	oz/a	micro 3	D				
24	Stinger	3	1	fl oz/a	micro 3	D				
24	MSO		1.5	% v/v	micro 3	D				
24	Betamix	1.3	8	fl oz/a	micro 4	E				
24	Upbeet	50	0.125	oz/a	micro 4	E				
24	Stinger	3	1	fl oz/a	micro 4	E				
24	MSO		1.5	% v/v	micro 4	E				
LSD (P=.05)							1.07	3.74	18.9	1006.4
Standard Deviation							0.76	2.64	13.4	711.6
CV							4.52	9.49	5.41	10.35