

# The Ohio State University

## Panther + Metribuzin Ratio Study

Trial ID: 13NU102      Location: Western Branch F-9 E      Trial Year: 2013  
 Protocol ID: 13NU102      Investigator: Dr. Mark M. Loux  
 Project ID: H 2013 102 OH      Study Director: Anthony F. Dobbels  
 Sponsor Contact: Bob Bruss, Nufarm

### Crop Description

**Crop 1:** GLXMA      Glycine max  
**Variety:** Asgrow AG3533  
**Description:** RR2

**BBCH Scale:** BSOY

**Planting Date:** Apr-27-2013  
**Planting Method:** PLANTD planted  
**Planting Equipment:** PP      Plot Planter  
**Emergence Date:** May-17-2013

**Planting Rate, Unit:** 135000      S/A  
**Depth, Unit:** 0.5      IN  
**Row Spacing, Unit:** 15      IN  
**Soil Temperature, Unit:** 54      F  
**Soil Moisture:** SLIWET      slightly wet, moist  
**Seed Bed:** MEDTRA      medium/trashy

### Site and Design

**Treated Plot Width:** 6.67 FT  
**Treated Plot Length:** 30 FT  
**Treated Plot Area:** 200.1 FT2  
**Replications:** 3

**Site Type:** FIELD      field  
**Experimental Unit:** 1      PLOT      plot  
**Tillage Type:** NOTILL      no-till  
**Study Design:** RAOBL Randomized Complete Block (RCB)

No.	Date	Maintenance Product Name	Form Conc	Form Type	Form Rate	Maintenance	
						Rate Unit	Tank Code Mix
1.	Apr-18-2013	Roundup Powermax	4.5	SL	32	OZ/A	Y yes
2.	Apr-18-2013	2,4-D Ester	4	SC	1	PT/A	Y yes
3.	Jun-12-2013	Roundup Powermax	4.5	SL	32	OZ/A	N no

**Comment:** Weather conditions 4-18-13. 63 F, 81% RH, Wind 6 mph south, 10% clouds, soil wet, 58 F.

### Application Description

**Application Date:** Apr-27-2013  
**Appl. Start Time:** 1:00 PM  
**Appl. Stop Time:** 1:30 PM  
**Application Method:** SPRAY  
**Application Timing:** PRE  
**Application Placement:** BROSOI  
**Applied By:** Reeb  
**Air Temperature, Unit:** 65 F  
**% Relative Humidity:** 42  
**Wind Velocity, Unit:** 6.5 MPH  
**Wind Direction:** E  
**Dew Presence (Y/N):** N no  
**Soil Temperature, Unit:** 54 F  
**Soil Moisture:** SLIWET  
**% Cloud Cover:** 50  
**Next Moisture Occurred On:** Apr-28-2013  
**Time to Next Moisture, Unit:** 17 HR

### Crop Stage At Each Application

**Crop 1 Code, BBCH Scale:** GLXMA BSOY

### Application Equipment

**Appl. Equipment:** 6 foot boom  
**Equipment Type:** SPRBAC  
**Operation Pressure, Unit:** 46 PSI  
**Nozzle Type:** AI XR  
**Nozzle Size:** 110015  
**Nozzle Spacing, Unit:** 18 IN  
**Boom Length, Unit:** 6 FT  
**Boom Height, Unit:** 20 IN  
**Ground Speed, Unit:** 3 MPH  
**Carrier:** WATER  
**Spray Volume, Unit:** 15 GPA  
**Mix Size, Unit:** 1 Liters  
**Propellant:** CO2

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Pest Code Crop Code Rating Date	GLXMA		SETFA		AMBTR		AMBEL		POLPY		CHEAL		
	May-20-2013		May-20-2013		May-20-2013		May-20-2013		May-20-2013		May-20-2013	Jun-6-2013	
Rating Type	PHYCHL		CONTRO		CONTRO		CONTRO		CONTRO		CONTRO		
Rating Unit	%		%		%		%		%		%		
Days After First/Last Applic.	23	23	23	23	23	23	23	23	23	23	23	40	
Trt-Eval Interval	23 DA-A		23 DA-A		23 DA-A		23 DA-A		23 DA-A		23 DA-A		
Plant-Eval Interval	23 DP-1		23 DP-1		23 DP-1		23 DP-1		23 DP-1		23 DP-1		
Days After Emergence	3 DE-1		3 DE-1		3 DE-1		3 DE-1		3 DE-1		3 DE-1		
Trt No.	Treatment Name	Other Rate	Other Rate	Growth Unit	Appl Stage	Code	1	2	3	4	5	6	7
1	UTC						2.7 a	0 d	1 b	0 b	0 c	1 b	1 a
2	Panther	2 oz/a		PRE	A		5.3 a	30 bcd	7 b	30 ab	48 abc	93 a	1 a
3	Panther	3 oz/a		PRE	A		4.0 a	53 ab	47 ab	82 a	80 ab	100 a	0 a
4	metribuzin	10 oz/a		PRE	A		4.0 a	43 abc	33 ab	77 a	100 a	60 a	1 a
5	Panther	2 oz/a		PRE	A		4.0 a	57 ab	43 ab	60 ab	80 ab	93 a	2 a
5	metribuzin	5 oz/a		PRE	A								
6	Panther	2 oz/a		PRE	A		5.7 a	37 bc	30 ab	48 ab	73 ab	100 a	2 a
6	metribuzin	8 oz/a		PRE	A								
7	Panther	2 oz/a		PRE	A		4.3 a	45 abc	27 ab	55 ab	33 bc	100 a	1 a
7	metribuzin	7.5 oz/a		PRE	A								
8	Panther	2 oz/a		PRE	A		2.7 a	47 abc	33 ab	87 a	90 ab	100 a	0 a
8	metribuzin	10 oz/a		PRE	A								
9	Panther	2 oz/a		PRE	A		3.3 a	60 ab	47 ab	77 a	77 ab	100 a	0 a
9	Cloak	3.5 oz/a		PRE	A								
10	VALOR XLT 3.5						6.7 a	58 ab	53 a	73 a	87 ab	100 a	1 a
10	Valor SX	2.05 oz/a		PRE	A								
10	Classic	1.45 oz/a		PRE	A								
11	Authority MTZ	11 oz/a		PRE	A		2.3 a	10 cd	10 ab	17 ab	10 c	33 ab	0 a
12	Boundary	2.1 pt/a		PRE	A		3.3 a	82 a	33 ab	43 ab	80 ab	67 a	1 a
LSD (P=.05)							6.05	27.0	26.3	42.8	39.3	45.1	0.6t
Standard Deviation							3.57	16.0	15.5	25.0	23.2	26.3	0.4t
CV							88.67	36.74	50.98	46.32	36.75	33.28	179.44
Bartlett's X2							4.95	9.742	8.364	10.332	3.072	7.117	0.826
P(Bartlett's X2)							0.934	0.463	0.498	0.412	0.961	0.13	0.997
Skewness							0.1473	-0.2287	-0.1402	-0.3913	-0.7245	-1.6527*	1.197*
Kurtosis							-0.7683	-1.0161	-0.9155	-1.1183	-0.7455	0.9799	-0.3058
Replicate F							0.054	6.088	2.444	3.625	0.202	2.062	0.516
Replicate Prob(F)							0.9471	0.0079	0.1111	0.0464	0.8185	0.1562	0.6040
Treatment F							0.406	5.854	3.518	3.629	5.912	4.654	0.667
Treatment Prob(F)							0.9382	0.0002	0.0064	0.0067	0.0002	0.0020	0.7538

Means followed by same letter do not significantly differ (P=.05, Student-Newman-Keuls)  
t=Mean descriptions are reported in transformed data units, and are not de-transformed.  
Mean comparisons performed only when AOV Treatment P(F) is significant at mean comparison OSL.  
Missing data estimates are included in columns: Yates=3,4,6,9,12,14; Average=10,11

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Pest Code		SETFA	AMBTR	AMBEL	CHEAL	POLPY	SETFA	AMBTR					
Crop Code													
Rating Date		Jun-6-2013	Jun-6-2013	Jun-6-2013	Jun-6-2013	Jun-6-2013	Jun-19-2013	Jun-19-2013					
Rating Type		CONTRO	CONTRO	CONTRO	CONTRO	CONTRO							
Rating Unit		%	%	%	%	%							
Days After First/Last Applic.		40 40	40 40	40 40	40 40	40 40	53 53	53 53					
Trt-Eval Interval		40 DA-A	40 DA-A	40 DA-A	40 DA-A	40 DA-A	53 DA-A	53 DA-A					
Plant-Eval Interval		40 DP-1	40 DP-1	40 DP-1	40 DP-1	40 DP-1	53 DP-1	53 DP-1					
Days After Emergence		20 DE-1	20 DE-1	20 DE-1	20 DE-1	20 DE-1	33 DE-1	33 DE-1					
Trt No.	Treatment Name	Other Rate	Other Rate	Growth Unit	Appl Stage	Code	8	9	10	11	12	13	14
1	UTC						0 b	2 a	0 a	0 a	0 a	0.0 a	1.3 a
2	Panther	2 oz/a		PRE	A		10 ab	7 a	10 a	60 a	28 a	3.7 a	1.8 a
3	Panther	3 oz/a		PRE	A		33 ab	13 a	17 a	73 a	73 a	9.3 a	9.2 a
4	metribuzin	10 oz/a		PRE	A		20 ab	17 a	67 a	0 a	79 a	9.3 a	2.4 a
5	Panther	2 oz/a		PRE	A		10 ab	27 a	43 a	87 a	73 a	9.3 a	9.2 a
5	metribuzin	5 oz/a		PRE	A								
6	Panther	2 oz/a		PRE	A		7 ab	10 a	57 a	75 a	70 a	2.4 a	2.1 a
6	metribuzin	8 oz/a		PRE	A								
7	Panther	2 oz/a		PRE	A		27 ab	17 a	53 a	90 a	27 a	9.3 a	1.8 a
7	metribuzin	7.5 oz/a		PRE	A								
8	Panther	2 oz/a		PRE	A		10 ab	17 a	40 a		66 a	5.1 a	2.7 a
8	metribuzin	10 oz/a		PRE	A								
9	Panther	2 oz/a		PRE	A		33 ab	40 a	57 a	0 a	70 a	18.9 a	9.2 a
9	Cloak	3.5 oz/a		PRE	A								
10	VALOR XLT 3.5						33 ab	27 a	40 a		69 a	18.9 a	9.2 a
10	Valor SX	2.05 oz/a		PRE	A								
10	Classic	1.45 oz/a		PRE	A								
11	Authority MTZ	11 oz/a		PRE	A		0 b	27 a	0 a	0 a	0 a	0.0 a	2.7 a
12	Boundary	2.1 pt/a		PRE	A		53 a	23 a	37 a	30 a	66 a	49.5 a	1.8 a
	LSD (P=.05)						29.0	38.2	42.6	60.0	56.4	30.08t	1.05t
	Standard Deviation						17.1	22.4	25.0	33.0	32.9	17.76t	0.62t
	CV						86.78	118.94	71.48	79.48	63.43	106.52	94.3
	Bartlett's X2						10.7	4.142	11.184	2.715	2.178	1.643	0.306
	P(Bartlett's X2)						0.297	0.941	0.263	0.744	0.988	0.996	1.00
	Skewness						0.5063	0.39	-0.1299	-0.03	-0.0308	0.6036	0.3792
	Kurtosis						-1.0685	-1.5651	-1.4042	-1.8086	-1.4827	-0.851	-1.8629*
	Replicate F						0.266	0.603	0.759	0.048	0.042	0.418	12.619
	Replicate Prob(F)						0.7692	0.5570	0.4812	0.9531	0.9588	0.6633	0.0003
	Treatment F						2.761	0.657	2.532	4.257	2.419	1.398	0.558
	Treatment Prob(F)						0.0205	0.7607	0.0342	0.0168	0.0465	0.2417	0.8409

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Pest Code					AMBEL	POLPY
Crop Code						
Rating Date					Jun-19-2013	Jun-19-2013
Rating Type						
Rating Unit						
Days After First/Last Applic.					53 53	53 53
Trt-Eval Interval					53 DA-A	53 DA-A
Plant-Eval Interval					53 DP-1	53 DP-1
Days After Emergence					33 DE-1	33 DE-1
Trt No.	Treatment Name	Other Rate	Other Rate	Growth Unit	Appl Stage	Code
	1 UTC					0.0 b 0.0 b
	2 Panther	2 oz/a		PRE	A	35.0 ab 43.3 ab
	3 Panther	3 oz/a		PRE	A	50.0 ab 83.3 a
	4 metribuzin	10 oz/a		PRE	A	93.3 a 90.0 a
	5 Panther	2 oz/a		PRE	A	88.3 a 81.7 a
	5 metribuzin	5 oz/a		PRE	A	
	6 Panther	2 oz/a		PRE	A	90.0 a 83.3 a
	6 metribuzin	8 oz/a		PRE	A	
	7 Panther	2 oz/a		PRE	A	43.3 ab 50.0 ab
	7 metribuzin	7.5 oz/a		PRE	A	
	8 Panther	2 oz/a		PRE	A	83.3 a 80.0 a
	8 metribuzin	10 oz/a		PRE	A	
	9 Panther	2 oz/a		PRE	A	80.0 a 86.7 a
	9 Cloak	3.5 oz/a		PRE	A	
	10 VALOR XLT 3.5					73.3 a 86.7 a
	10 Valor SX	2.05 oz/a		PRE	A	
	10 Classic	1.45 oz/a		PRE	A	
	11 Authority MTZ	11 oz/a		PRE	A	23.3 ab 23.3 ab
	12 Boundary	2.1 pt/a		PRE	A	56.7 ab 43.3 ab
	LSD (P=.05)					42.96 41.56
	Standard Deviation					25.37 24.54
	CV					42.48 39.18
	Bartlett's X2					6.139 8.82
	P(Bartlett's X2)					0.803 0.549
	Skewness					-0.5207 -0.599
	Kurtosis					-1.1442 -0.9421
	Replicate F					1.717 0.942
	Replicate Prob(F)					0.2028 0.4050
	Treatment F					4.193 4.437
	Treatment Prob(F)					0.0021 0.0014

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### Pest Code

SETFA, *Setaria faberi*, = US  
AMBTR, *Ambrosia trifida*, = US  
AMBEL, *Ambrosia artemisiifolia*, = US  
POLPY, *Persicaria pensylvanica*, = US  
CHEAL, *Chenopodium album*, = US

### Crop Code

GLXMA, BSOY, *Glycine max*, = US

### Rating Type

PHYCHL = phytotoxicity - chlorosis  
CONTRO = control / burndown or knockdown

### Rating Unit

% = percent

### Plant-Eval Interval

23 DP-1 = 1 GLXMA Apr-27-2013  
40 DP-1 = 1 GLXMA Apr-27-2013  
53 DP-1 = 1 GLXMA Apr-27-2013