

GPA and MPH Factorial - 2.

Project Code: 05-WU12-E300 Location: Horticulture Research Center

Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country: Carbondale IL 62901 USA  
 Trial Status: Final Updated: 12-02-05

**Objective:**

Determine the influence of application factors (carrier volume and travel speed) on glyphosate efficacy.

Weed Code	Common Name	Scientific Name
1.	AMATA waterhemp, common	Amaranthus rudis Sauer

Crop 1: GLXMA soybean  
 Planting Method: Seeded  
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 50 FT Reps: 3  
 Tillage Type: Reduced-Till Study Design: Randomized complete block

**APPLICATION DESCRIPTION**

**A**  
 Application Date: 06-17-05  
 Time of Day: 9:00-11:30  
 Application Method: Spray  
 Application Timing: 8-12"W  
 Applic. Placement: BROFOL  
 Air Temp., Unit: 76 F  
 % Relative Humidity: 62  
 Wind Velocity, Unit: 0 MPH  
 Dew Presence (Y/N): N  
 Soil Temp., Unit: 80 F  
 Soil Moisture: NORMAL  
 % Cloud Cover: 75

**CROP STAGE AT EACH APPLICATION**

**A**  
 Crop 1 Code, Stage: GLXMA V4  
 Height, Unit: 5-6 IN

**WEED STAGE AT EACH APPLICATION**

**A**  
 Weed 1 Code: AMATA  
 Stage(leaves): 20-30  
 Height(inches): 8-13  
 Density: High

**APPLICATION EQUIPMENT**

**A**  
 Appl. Equipment: CO2 sprayer  
 Operating Pressure: See note  
 Nozzle Type: See note  
 Nozzle Size: See note  
 Boom Length, Unit: 6.67 FT  
 Spray Volume, Unit: See note

**NOTES:**

Nozzle type and size, and spray volume are listed in treatment list.  
 Spray pressure depends on treatment.

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							AMATA	AMATA	AMATA	AMATA	AMATA
							Control	Control	Control	Control	Dry wt.
							Percent	Percent	% INDPLA	% INDPLA	g/INDPLA
							07-01-05	07-15-05	07-01-05	07-15-05	07-15-05
							14 DA-A	28 DA-A	14 DA-A	28 DA-A	28 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code		
1	5 MPH									88	92
1	5 GPA									95	94
1	XR 11001 NOZZLES										1.13
1	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
2	10 MPH									75	69
2	5 GPA									67	66
2	XR 11002 NOZZLES										1.56
2	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
3	15 MPH									84	85
3	5 GPA									69	71
3	XR 11003 NOZZLES										0.82
3	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
4	20 MPH									73	68
4	5 GPA									35	30
4	XR 11004 NOZZLES										1.23
4	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
5	5 MPH									69	75
5	10 GPA									73	71
5	XR 11002 NOZZLES										1.10
5	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
6	10 MPH									67	74
6	10 GPA									83	79
6	XR 11004 NOZZLES										1.59
6	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
7	15 MPH									69	65
7	10 GPA									58	58
7	XR 11006 NOZZLES										3.15
7	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
8	20 MPH									73	64
8	10 GPA									99	99
8	XR 11008 NOZZLES										1.12
8	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
9	5 MPH									65	47
9	15 GPA									69	68
9	XR 11003 NOZZLES										1.39
9	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
10	10 MPH									73	47
10	15 GPA									72	71
10	XR 11006 NOZZLES										0.48
10	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
11	15 MPH									60	55
11	15 GPA									96	93
11	XR 11008 NOZZLES										0.92
11	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
12	20 MPH									63	54
12	15 GPA									46	41
12	XR 11010 NOZZLES										2.76
12	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
13	5 MPH									74	57
13	20 GPA									99	99
13	XR 11004 NOZZLES										0.48
13	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
14	10 MPH									64	61
14	20 GPA									92	91
14	XR 11008 NOZZLES										0.90
14	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
15	15 MPH									69	67
15	20 GPA									36	36
15	XR 11010 NOZZLES										8.44
15	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		

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Weed Code	AMATA	AMATA	AMATA	AMATA	AMATA
Crop Code	Control	Control	Control	Control	Dry wt.
Rating Data Type	Percent	Percent	% INDPLA	% INDPLA	g/INDPLA
Rating Unit	07-01-05	07-15-05	07-01-05	07-15-05	07-15-05
Rating Date	14 DA-A	28 DA-A	14 DA-A	28 DA-A	28 DA-A
Trt-Eval Interval					

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code					
16	20 MPH									44	35	0	0	6.83
16	20 GPA													
16	XR 11015 NOZZLES													
16	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
17	NONTREATED									0	0	0	0	4.09
18	10 MPH									86	85	83	83	2.85
18	5 GPA													
18	AI 110015 NOZZLES													
18	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
19	15 MPH									68	73	33	33	11.34
19	5 GPA													
19	AI 11002 NOZZLES													
19	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
20	20 MPH									63	59	64	62	4.19
20	5 GPA													
20	AI 110025 NOZZLES													
20	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
21	5 MPH									77	77	74	69	2.90
21	10 GPA													
21	AI 110015 NOZZLES													
21	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
22	10 MPH									74	74	69	69	3.06
22	10 GPA													
22	AI 110025 NOZZLES													
22	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
23	15 MPH									70	65	94	94	0.45
23	10 GPA													
23	AI 11004 NOZZLES													
23	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
24	20 MPH									75	57	69	71	1.45
24	10 GPA													
24	AI 11005 NOZZLES													
24	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
25	5 MPH									64	54	99	99	2.08
25	15 GPA													
25	AI 11002 NOZZLES													
25	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
26	10 MPH									85	73	99	99	1.38
26	15 GPA													
26	AI 11004 NOZZLES													
26	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
27	15 MPH									84	86	53	52	1.49
27	15 GPA													
27	AI 11006 NOZZLES													
27	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
28	20 MPH									85	87	72	71	0.58
28	15 GPA													
28	AI 11008 NOZZLES													
28	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
29	5 MPH									82	73	69	68	0.64
29	20 GPA													
29	AI 110025 NOZZLES													
29	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					
30	10 MPH									75	71	74	71	1.05
30	20 GPA													
30	AI 11005 NOZZLES													
30	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A					

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Weed Code	AMATA	AMATA	AMATA	AMATA	AMATA
Crop Code					
Rating Data Type	Control	Control	Control	Control	Dry wt.
Rating Unit	Percent	Percent	% INDPLA	% INDPLA	g/INDPLA
Rating Date	07-01-05	07-15-05	07-01-05	07-15-05	07-15-05
Trt-Eval Interval	14 DA-A	28 DA-A	14 DA-A	28 DA-A	28 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code
31	15 MPH								
31	20 GPA								
31	AI 11008 NOZZLES								
31	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A
LSD (P=.05)									
Replicate F									
Replicate Prob(F)									
Treatment F									
Treatment Prob(F)									

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Weed Code  
 Crop Code  
 Rating Data Type  
 Rating Unit  
 Rating Date  
 Trt-Eval Interval

Coverage TOPCAN TOPCAN Coverage TOPCAN  
 Drops TOPCAN Drops  
 Percent /sq cm Percent /sq cm  
 06-17-05 06-17-05 06-17-05 06-17-05  
 0 DA-A 0 DA-A 0 DA-A 0 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	Coverage TOPCAN	Drops TOPCAN	Coverage MIDCAN	Drops MIDCAN
1	5 MPH									4	65	3	47
1	5 GPA												
1	XR 11001 NOZZLES												
1	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
2	10 MPH									1	26	2	23
2	5 GPA												
2	XR 11002 NOZZLES												
2	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
3	15 MPH									2	25	2	30
3	5 GPA												
3	XR 11003 NOZZLES												
3	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
4	20 MPH									4	32	5	41
4	5 GPA												
4	XR 11004 NOZZLES												
4	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
5	5 MPH									13	87	11	73
5	10 GPA												
5	XR 11002 NOZZLES												
5	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
6	10 MPH									17	60	17	65
6	10 GPA												
6	XR 11004 NOZZLES												
6	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
7	15 MPH									45	47	13	25
7	10 GPA												
7	XR 11006 NOZZLES												
7	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
8	20 MPH									5	36	2	12
8	10 GPA												
8	XR 11008 NOZZLES												
8	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
9	5 MPH									12	24	5	19
9	15 GPA												
9	XR 11003 NOZZLES												
9	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
10	10 MPH									25	50	7	31
10	15 GPA												
10	XR 11006 NOZZLES												
10	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
11	15 MPH									20	51	6	31
11	15 GPA												
11	XR 11008 NOZZLES												
11	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
12	20 MPH									25	37	17	68
12	15 GPA												
12	XR 11010 NOZZLES												
12	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
13	5 MPH									30	62	25	78
13	20 GPA												
13	XR 11004 NOZZLES												
13	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
14	10 MPH									44	47	24	55
14	20 GPA												
14	XR 11008 NOZZLES												
14	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
15	15 MPH									27	49	17	48
15	20 GPA												
15	XR 11010 NOZZLES												
15	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				

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Weed Code		Crop Code		Coverage		Drops		Coverage		Drops			
Rating Data Type		TOPCAN		TOPCAN		MIDCAN		MIDCAN		MIDCAN			
Rating Unit		Percent		/sq cm		Percent		/sq cm		/sq cm			
Rating Date		06-17-05		06-17-05		06-17-05		06-17-05		06-17-05			
Trt-Eval Interval		0 DA-A		0 DA-A		0 DA-A		0 DA-A		0 DA-A			
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code				
16	20 MPH									39	56	8	32
16	20 GPA												
16	XR 11015 NOZZLES												
16	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
17	NONTREATED									0	0	0	0
18	10 MPH									10	19	6	18
18	5 GPA												
18	AI 110015 NOZZLES												
18	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
19	15 MPH									4	16	4	15
19	5 GPA												
19	AI 11002 NOZZLES												
19	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
20	20 MPH									6	15	4	18
20	5 GPA												
20	AI 110025 NOZZLES												
20	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
21	5 MPH									23	31	15	22
21	10 GPA												
21	AI 110015 NOZZLES												
21	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
22	10 MPH									21	37	7	32
22	10 GPA												
22	AI 110025 NOZZLES												
22	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
23	15 MPH									26	37	10	27
23	10 GPA												
23	AI 11004 NOZZLES												
23	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
24	20 MPH									10	24	10	22
24	10 GPA												
24	AI 11005 NOZZLES												
24	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
25	5 MPH									20	37	19	35
25	15 GPA												
25	AI 11002 NOZZLES												
25	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
26	10 MPH									23	36	10	22
26	15 GPA												
26	AI 11004 NOZZLES												
26	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
27	15 MPH									27	39	19	35
27	15 GPA												
27	AI 11006 NOZZLES												
27	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
28	20 MPH									25	40	14	48
28	15 GPA												
28	AI 11008 NOZZLES												
28	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
29	5 MPH									36	39	20	34
29	20 GPA												
29	AI 110025 NOZZLES												
29	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				
30	10 MPH									24	30	16	24
30	20 GPA												
30	AI 11005 NOZZLES												
30	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A				

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Weed Code		Crop Code		Coverage		Drops		Coverage		Drops	
Rating Data Type		TOPCAN		TOPCAN		MIDCAN		MIDCAN		MIDCAN	
Rating Unit		Percent		/sq cm		Percent		/sq cm		/sq cm	
Rating Date		06-17-05		06-17-05		06-17-05		06-17-05		06-17-05	
Trt-Eval Interval		0 DA-A		0 DA-A		0 DA-A		0 DA-A		0 DA-A	
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code		
31	15 MPH									25	28
31	20 GPA									19	36
31	AI 11008 NOZZLES										
31	ROUNDUP W-MAX	4.5	SL	0.188	lb ae/a	5.35	fl oz/a	8-12"W	A		
LSD (P=.05)										14.2	21.2
Replicate F										7.545	1.188
Replicate Prob(F)										0.0012	0.3119
Treatment F										6.324	5.245
Treatment Prob(F)										0.0001	0.0001

Trial Comments

1. Protocol: SIU / ISPOB.
2. Ratings: CI and WC 14 and 28 DAT.
3. DA-A = Days after 8-12"W application. 0 DA-A = At 8-12" application.
4. % INDPLA = Percent for individual plants. Dry wt. = Oven dry weight. g/INDPLA = grams per individual plant.  
 Coverage and Drops = Evaluation of the spray pattern as measured by oil-sensitive spray cards.  
 /sq cm = Per square centimeter. TOPCAN and MIDCAN = Top and middle of the crop canopy, respectively.