

Nozzle by Adjuvant Interaction - Glyphosate.

Trial ID: 11-50W-S230

Location: Belleville Res. Center

Investigator: Bryan Young, Professor, Southern Illinois University, bgyoung@siu.edu
 City State Zip Country: Belleville IL 62221 USA
 Trial Status: SETUP Initiation Date: 6-8-11

Objectives: Determine the influence and interaction of nozzle type and adjuvant on the efficacy of glyphosate in soybean.

Crop 1: GLXMA Soybean Variety: AG 4005 Description: RR
 Planting Method: SEEDS Planting Date: 6-8-11
 Rate, Unit: 75 LB/A Depth, Unit: 1.0 IN
 Row Spacing, Unit: 30 IN

Pest 1 Type: W Code: GGGAN grasses, annual
 Pest Description: Mixture of SETFA and PANDI
 Pest 2 Type: W Code: CYPES Cyperus esculentus L. nutsedge, yellow
 Pest 3 Type: W Code: AMBTR Ambrosia trifida L. ragweed, giant
 Pest 4 Type: W Code: AMATA Amaranthus rudis Sauer waterhemp, common
 Pest 5 Type: W Code: IPOSS morningglory, species
 Pest Description: Mixture of IPOHE and IPOLA
 Pest 6 Type: W Code: ABUTH Abutilon theophrasti Medicus velvetleaf

Plot Width, Unit: 10 FT Site Type: FIELD
 Plot Length, Unit: 40 FT Tillage Type: REDUCED-TILL
 Replications: 3 Study Design: Randomized Complete Block

Prior Crops, Year

1. ZEAMD 2010

Field Prep./Maintenance: N 0 LB/A, P205 50 LB/A, K20 150 LB/A

% OM: 1.7 Texture: SILT LOAM
 pH: 6.1 Soil Name: PIERRON
 CEC: 9 Fert. Level: P1: 51 LB/A, K: 285 LB/A

Application Description

A
 Application Date: 7-11-11
 Time of Day: 11:30
 Application Method: Spray
 Application Timing: 6-8"W
 Application Placement: BROFOL
 Applied By: JRK
 Air Temperature, Unit: 95 F
 % Relative Humidity: 55
 Wind Velocity, Unit: 0 MPH
 Dew Presence (Y/N): N
 Soil Temperature, Unit: 83 F
 Soil Moisture: ABONOR
 % Cloud Cover: 0

Crop stage at application: 7-11-11 V3-V4
 Height Min, Max (inch): 5 8

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Pest Stage At Each Application

Application Date: 7-11-11
Weed Code: GGGAN
Stage Majority (leaves): 5
Stage Min, Max: 3 12
Height Majority: 8 IN
Height Min, Max: 3 12
Density, Unit: 0.5 FT2
Weed Code: CYPES
Stage Majority (leaves): 10
Stage Min, Max: 6 12
Height Majority: 8 IN
Height Min, Max: 4 14
Density, Unit: 1 FT2
Weed Code: AMBTR
Stage Majority (leaves): 8
Stage Min, Max: 4 10
Height Majority: 7 IN
Height Min, Max: 4 10
Density, Unit: 2 FT2
Weed Code: AMATA
Stage Majority (leaves): 8
Stage Min, Max: 4 15
Height Majority: 6 IN
Height Min, Max: 2 8
Density, Unit: 0.5 FT2
Weed Code: IPOSS
Stage Majority (leaves): 8
Stage Min, Max: 5 12
Height Majority: 5 IN
Height Min, Max: 3 6
Density, Unit: 0.1 FT2
Weed Code: ABUTH
Stage Majority (leaves): 5
Stage Min, Max: 4 6
Height Majority: 8 IN
Height Min, Max: 5 20
Density, Unit: 0.1 FT2

Application Equipment

Appl. Equipment: CO2 sprayer
Nozzle Type: See
Nozzle Size: comment
Boom Length, Unit: 6.67 FT
Spray Volume, Unit: 10 GPA

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										GLXMA	GLXMA	GGGAN	GGGAN	CYPES	CYPES	AMBTR	AMBTR
										7-25-11	8-8-11	7-25-11	8-8-11	7-25-11	8-8-11	7-25-11	8-8-11
										Injury	Injury	Control	Control	Control	Control	Control	Control
										Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
										14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code								
1	TT 11004 at 40 PSI									0 a	0 a	98 abc	98 b	63 def	68 abc	92 a-d	94 a-d
1	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	1 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A								
2	AIXR 11003 at 70 PSI									0 a	0 a	99 a	99 a	63 def	68 abc	89 cde	93 bcd
2	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	2 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A								
3	XR 11004 at 40 PSI									0 a	0 a	99 a	99 a	62 def	68 abc	91 a-d	92 cde
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	3 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A								
4	TTI 11004 at 40 PSI									0 a	0 a	99 a	99 a	62 ef	68 abc	94 ab	96 ab
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	4 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A								
5	TT 11004 at 40 PSI									0 a	0 a	98 abc	98 ab	65 bcd	68 abc	95 a	95 abc
5	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	5 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A								
6	AIXR 11003 at 70 PSI									0 a	0 a	99 a	99 a	62 ef	65 cd	93 abc	94 a-d
6	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	6 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A								
7	XR 11004 at 40 PSI									0 a	0 a	99 a	99 a	62 ef	68 abc	96 a	96 ab
7	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	7 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A								
8	TTI 11004 at 40 PSI									0 a	0 a	99 a	99 a	65 bcd	67 a-d	94 ab	95 abc
8	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	8 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A								
9	TT 11004 at 40 PSI									0 a	0 a	99 a	99 a	67 abc	68 abc	95 a	95 abc
9	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	9 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A								
10	AIXR 11003 at 70 PSI									0 a	0 a	99 a	99 a	67 abc	65 cd	95 a	94 a-d
10	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	10 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A								
11	XR 11004 at 40 PSI									0 a	0 a	99 a	99 a	65 bcd	70 ab	96 a	95 a-d
11	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	11 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A								
12	TTI 11004 at 40 PSI									0 a	0 a	99 ab	98 ab	68 ab	67 a-d	92 a-d	95 abc
12	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	12 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A								
13	TT 11004 at 40 PSI									0 a	0 a	99 a	99 a	65 bcd	68 abc	94 ab	95 abc
13	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	13 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A								
14	AIXR 11003 at 70 PSI									0 a	0 a	98 c	98 b	63 def	65 cd	92 a-d	94 a-d
14	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	14 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A								
15	XR 11004 at 40 PSI									0 a	0 a	99 a	99 a	68 a	71 a	96 a	95 abc
15	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	15 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A								
16	TTI 11004 at 40 PSI									0 a	0 a	99 a	99 a	68 a	70 ab	96 a	97 a
16	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	16 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A								
17	TT 11004 at 40 PSI									0 a	0 a	99 a	99 a	64 cde	65 cd	93 abc	91 de
17	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	17 PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
18	AIXR 11003 at 70 PSI									0 a	0 a	98 bc	98 b	58 g	63 d	90 b-e	93 bcd
18	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
	18 PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								

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Pest Code	GLXMA		GGGAN		CYPES		AMBTR	
Crop Code	GLXMA	GLXMA	GGGAN	GGGAN	CYPES	CYPES	AMBTR	AMBTR
Rating Date	7-25-11	8-8-11	7-25-11	8-8-11	7-25-11	8-8-11	7-25-11	8-8-11
Rating Data Type	Injury	Injury	Control	Control	Control	Control	Control	Control
Rating Unit	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Timing	14 DA-A		28 DA-A		14 DA-A		28 DA-A	
Trt-Eval Interval	14 DA-A		28 DA-A		14 DA-A		28 DA-A	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A
19	XR 11004 at 40 PSI									0 a	0 a	99 a	99 a	61 fg	65 cd	88 de	94 a-d
19	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
19	PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
20	TTI 11004 at 40 PSI									0 a	0 a	98 abc	98 b	65 bcd	66 bcd	86 e	88 e
20	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A								
20	PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A								
LSD (P=.05)										0.0	0.0	0.8	1.1	3.3	4.9	4.4	3.8
Replicate F										0.000	0.000	0.275	0.160	6.202	4.349	8.729	3.945
Replicate Prob(F)										1.0000	1.0000	0.7608	0.8530	0.0047	0.0199	0.0008	0.0278
Treatment F										0.000	0.000	2.043	2.185	5.086	1.417	3.222	2.239
Treatment Prob(F)										1.0000	1.0000	0.0300	0.0199	0.0001	0.1766	0.0010	0.0170

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

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								AMATA	AMATA	IPOSS	IPOSS	ABUTH	ABUTH								
								7-25-11	8-8-11	7-25-11	8-8-11	7-25-11	8-8-11								
								Control	Control	Control	Control	Control	Control								
								Percent	Percent	Percent	Percent	Percent	Percent								
								14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A								
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code												
1	TT 11004 at 40 PSI									90	cde	92	a-d	65	bcd	68	bcd	83	abc	78	abc
1	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	1 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A												
2	AIXR 11003 at 70 PSI									97	abc	94	abc	63	b-e	66	b-e	80	b-e	65	d-g
2	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	2 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A												
3	XR 11004 at 40 PSI									96	a-d	97	ab	68	abc	68	bcd	81	a-d	72	a-f
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	3 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A												
4	TTI 11004 at 40 PSI									87	e	85	cd	60	def	62	e	77	def	60	g
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	4 PX 331	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A												
5	TT 11004 at 40 PSI									92	a-e	92	abc	68	ab	67	b-e	86	a	80	ab
5	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	5 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A												
6	AIXR 11003 at 70 PSI									97	abc	95	ab	65	bcd	70	abc	84	ab	73	a-f
6	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	6 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A												
7	XR 11004 at 40 PSI									97	abc	96	ab	66	a-d	67	b-e	82	a-d	74	a-e
7	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	7 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A												
8	TTI 11004 at 40 PSI									91	b-e	82	d	72	a	75	a	80	b-e	60	g
8	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	8 PX 336	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A												
9	TT 11004 at 40 PSI									96	a-d	94	abc	62	cde	63	de	83	ab	82	a
9	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	9 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A												
10	AIXR 11003 at 70 PSI									95	a-d	92	abc	69	ab	72	ab	80	b-e	60	g
10	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	10 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A												
11	XR 11004 at 40 PSI									93	a-e	93	abc	59	ef	63	de	77	c-f	62	fg
11	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	11 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A												
12	TTI 11004 at 40 PSI									92	a-e	87	bcd	62	cde	66	b-e	73	f	60	g
12	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	12 PX 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A												
13	TT 11004 at 40 PSI									97	ab	97	a	63	b-e	65	cde	78	b-f	75	a-d
13	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	13 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A												
14	AIXR 11003 at 70 PSI									95	a-d	95	ab	62	cde	65	cde	81	a-d	65	d-g
14	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	14 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A												
15	XR 11004 at 40 PSI									97	ab	91	a-d	65	bcd	69	a-d	84	ab	64	efg
15	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	15 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A												
16	TTI 11004 at 40 PSI									98	a	92	abc	68	ab	70	abc	82	a-d	75	a-d
16	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	16 AMS	100	SG	1	% w/w	1	% w/w	6-8"W	A												
17	TT 11004 at 40 PSI									90	cde	90	a-d	59	ef	63	de	82	a-d	70	b-g
17	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	17 PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A												
18	AIXR 11003 at 70 PSI									93	a-e	92	abc	65	bcd	65	cde	80	b-e	68	c-g
18	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A												
	18 PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A												

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Crop Code						
Rating Date	7-25-11	8-8-11	7-25-11	8-8-11	7-25-11	8-8-11
Rating Data Type	Control	Control	Control	Control	Control	Control
Rating Unit	Percent	Percent	Percent	Percent	Percent	Percent
Rating Timing						
Trt-Eval Interval	14 DA-A	28 DA-A	14 DA-A	28 DA-A	14 DA-A	28 DA-A

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Other Rate	Other Unit	Growth Stage	Appl Code											
19	XR 11004 at 40 PSI									89	de	89	a-d	55	f					
19	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
19	PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A											
20	TTI 11004 at 40 PSI									75	f	65	e	62	cde					
20	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
20	PX 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A											
LSD (P=.05)										7.0		9.3		6.1		6.2		5.9		10.3
Replicate F										5.436		10.639		2.237		10.526		1.225		2.170
Replicate Prob(F)										0.0085		0.0002		0.1210		0.0002		0.3085		0.1344
Treatment F										4.625		4.671		3.628		2.484		2.432		4.071
Treatment Prob(F)										0.0001		0.0001		0.0004		0.0087		0.0151		0.0005

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

Trial Comments

1. Protocol: Precision Labs.
2. Ratings: CI/WC at 14 and 28 DAT.
3. Nozzle size and type and spray pressure are per treatment, see treatment list. All applications made at 12 MPH.
4. Mixing instructions: see attached bulk mixing instructions, requires 2.5 gallon containers.
5. GGGAN = Annual grasses including SETFA (giant foxtail) and PANDI (fall panicum).
 IPOSS = Morningglory species including IPOHE (ivyleaf morningglory) and IPOLA (pitted morningglory).