

Nozzle by Adjuvant Interaction - Roundup PowerMax.

Trial ID: 10-50E

Location: Belleville Res. Center

Investigator: Bryan Young, Professor, Southern Illinois University, bgyoung@siu.edu
 City State Zip Country: Belleville IL 62221 USA
 Trial Status: FINAL Initiation Date: 06-11-10

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

Crop 1: GLXMA Soybean Variety: AG 4005 Description: RR
 Planting Method: SEEDED Planting Date: 06-11-10
 Rate, Unit: 75 LB/A Depth, Unit: 1.0 IN
 Row Spacing, Unit: 30 IN

Pest 1 Type: W Code: GGGAN grasses, annual
 Pest 2 Type: W Code: AMBTR Ambrosia trifida L. ragweed, giant
 Pest 3 Type: W Code: AMATA Amaranthus rudis Sauer waterhemp, common
 Pest 4 Type: W Code: CYPES Cyperus esculentus L. nutsedge, yellow
 Pest 5 Type: W Code: IPOSS morningglory, species

Plot Width, Unit: 10 FT Site Type: FIELD
 Plot Length, Unit: 45 FT Tillage Type: REDUCED-TILL
 Replications: 3 Study Design: Randomized Complete Block

Prior Crops, Year
 1. ZEAMD 2009

Field Prep./Maintenance: N 0 LB/A, P2O5 0 LB/A, K2O 150 LB/A

% OM: 1.6 Texture: SILT LOAM
 pH: 6.7 Soil Name: PIERRON
 CEC: 10 Fert. Level: P1: 78 LB/A, K: 281 LB/A

Application Description

A
 Application Date: 07-01-10
 Time of Day: 9:45
 Application Method: Spray
 Application Timing: 6-8"W
 Application Placement: BROFOL
 Applied By: JRK
 Air Temperature, Unit: 68 F
 % Relative Humidity: 92
 Wind Velocity, Unit: 6 MPH
 Wind Direction: E
 Dew Presence (Y/N): N
 Soil Moisture: NORMAL
 % Cloud Cover: 0

07-01-10
 Crop stage at application: V3
 Height Min, Max (inch): 8 10

Pest Stage At Each Application

Application Date: 07-01-10
 Weed Code: GGGAN
 Stage Majority (leaves): 4
 Stage Min, Max: 2 6
 Height Majority: 3 IN
 Height Min, Max: 1 4
 Density, Unit: 0.01 FT2
 Weed Code: AMBTR
 Stage Majority (leaves): 10
 Stage Min, Max: 4 14
 Height Majority: 6 IN
 Height Min, Max: 1 8
 Density, Unit: 1 FT2
 Weed Code: AMATA
 Stage Majority (leaves): 14
 Stage Min, Max: 4 18
 Height Majority: 6 IN
 Height Min, Max: 1 8
 Density, Unit: 1 FT2
 Weed Code: CYPES
 Stage Majority (leaves): 5
 Stage Min, Max: 3 8
 Height Majority: 6 IN
 Height Min, Max: 4 8
 Density, Unit: 0.01 FT2
 Weed Code: IPOSS
 Stage Majority (leaves): 10
 Stage Min, Max: 2 16
 Height Majority: 6 IN
 Height Min, Max: 1 8
 Density, Unit: 0.5 FT2

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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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Pest Code										GLXMA	GLXMA	GGGAN	GGGAN	AMBTR	AMBTR
Crop Code										07-15-10	07-29-10	07-15-10	07-29-10	07-15-10	07-29-10
Rating Date										Injury	Injury	Control	Control	Control	Control
Rating Data Type										Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit															
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	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code						
1	XR 11004 at 40 PSI									0 a	0 a	97 a	97 ab	96 a	94 a
1	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
1	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
2	TT 11004 at 40 PSI									0 a	0 a	98 a	97 a	95 ab	92 ab
2	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
2	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
3	AIXR 11003 at 70 PSI									0 a	0 a	96 ab	96 abc	94 a-d	93 ab
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
3	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
4	GA 110-03 at 70 PSI									0 a	0 a	97 a	97 a	90 efg	87 b-e
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
4	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
5	XR 11004 at 40 PSI									0 a	0 a	97 a	97 ab	94 a-e	92 abc
5	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
5	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
6	TT 11004 at 40 PSI									0 a	0 a	98 a	97 a	93 a-e	89 a-d
6	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
6	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
7	AIXR 11003 at 70 PSI									0 a	0 a	97 a	97 ab	93 a-f	91 abc
7	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
7	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
8	GA 110-03 at 70 PSI									0 a	0 a	97 a	97 ab	91 c-f	83 de
8	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
8	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
9	XR 11004 at 40 PSI									0 a	0 a	97 a	97 ab	94 a-d	89 a-d
9	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
9	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
10	TT 11004 at 40 PSI									0 a	0 a	96 a	96 abc	93 a-e	89 a-d
10	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
10	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
11	AIXR 11003 at 70 PSI									0 a	0 a	97 a	97 ab	92 b-f	88 a-d
11	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
11	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
12	GA 110-03 at 70 PSI									0 a	0 a	97 a	97 ab	93 a-e	89 abc
12	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
12	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
13	XR 11004 at 40 PSI									0 a	0 a	97 a	97 ab	95 ab	91 abc
13	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
13	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
14	TT 11004 at 40 PSI									0 a	0 a	97 a	97 ab	95 abc	92 ab
14	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
14	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
15	AIXR 11003 at 70 PSI									0 a	0 a	98 a	97 ab	95 ab	93 a
15	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
15	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
16	GA 110-03 at 70 PSI									0 a	0 a	98 a	98 a	95 ab	94 a
16	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
16	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
17	XR 11004 at 40 PSI									0 a	0 a	97 a	97 a	96 ab	93 a
17	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
17	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
18	TT 11004 at 40 PSI									0 a	0 a	97 a	96 abc	94 a-e	90 abc
18	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
18	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						

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Crop Code										07-15-10	07-29-10	07-15-10	07-29-10	07-15-10	07-29-10
Rating Date										Injury	Injury	Control	Control	Control	Control
Rating Data Type										Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit															
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	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code						
19	AIXR 11003 at 70 PSI									0 a	0 a	97 a	97 ab	93 a-e	91 abc
19	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
19	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
20	GA 110-03 at 70 PSI									0 a	0 a	97 a	97 a	91 def	90 abc
20	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
20	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
21	XR 11004 at 40 PSI									0 a	0 a	96 ab	94 bcd	89 fg	85 cde
21	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
21	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A						
22	TT 11004 at 40 PSI									0 a	0 a	93 cd	94 cd	86 g	81 e
22	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
22	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A						
23	AIXR 11003 at 70 PSI									0 a	0 a	92 d	92 d	87 g	82 e
23	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
23	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A						
24	GA 110-03 at 70 PSI									0 a	0 a	94 bc	95 abc	92 b-f	88 a-d
24	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
24	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A						
LSD (P=.05)										0.0	0.0	2.2	2.7	3.8	6.3
Replicate F										0.000	0.000	2.738	3.834	1.389	2.047
Replicate Prob(F)										1.0000	1.0000	0.0753	0.0288	0.2596	0.1407
Treatment F										0.000	0.000	3.813	2.032	4.020	2.826
Treatment Prob(F)										1.0000	1.0000	0.0001	0.0203	0.0001	0.0013

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

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										AMATA	AMATA	CYPES	CYPES	IPOSS	IPOSS
Pest Code										07-15-10	07-29-10	07-15-10	07-29-10	07-15-10	07-29-10
Crop Code										Control	Control	Control	Control	Control	Control
Rating Date										Percent	Percent	Percent	Percent	Percent	Percent
Rating Data Type															
Rating Unit															
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	Rate Unit	Other Rate	Other Rate Unit	Growth Stage	Appl Code						
1	XR 11004 at 40 PSI									96 a	88 ab	77 ab	72 a	80 a	78 a
1	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
1	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
2	TT 11004 at 40 PSI									95 abc	88 a	78 a	72 a	80 a	72 abc
2	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
2	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
3	AIXR 11003 at 70 PSI									95 ab	86 abc	73 a-d	71 ab	74 abc	75 ab
3	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
3	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
4	GA 110-03 at 70 PSI									80 f-i	72 ef	68 b-h	62 b-f	73 a-d	64 b-e
4	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
4	PL 334	100	SL	2.5	% v/v	2.5	% v/v	6-8"W	A						
5	XR 11004 at 40 PSI									90 a-e	82 a-e	75 abc	70 abc	73 a-d	70 a-d
5	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
5	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
6	TT 11004 at 40 PSI									93 a-d	83 a-d	69 b-g	65 a-d	77 ab	65 b-e
6	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
6	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
7	AIXR 11003 at 70 PSI									91 a-e	80 a-e	72 a-f	71 ab	73 a-d	72 abc
7	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
7	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
8	GA 110-03 at 70 PSI									86 d-g	76 c-f	72 a-e	70 abc	74 abc	69 a-e
8	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
8	PL 711	100	SL	0.375	% v/v	0.375	% v/v	6-8"W	A						
9	XR 11004 at 40 PSI									89 a-e	82 a-e	63 f-j	63 a-e	72 a-d	68 a-e
9	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
9	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
10	TT 11004 at 40 PSI									88 a-f	85 abc	72 a-f	68 a-d	71 bcd	67 a-e
10	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
10	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
11	AIXR 11003 at 70 PSI									87 b-g	80 a-e	59 ijk	60 c-f	69 bcd	63 cde
11	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
11	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
12	GA 110-03 at 70 PSI									80 f-i	75 c-f	53 k	53 f	68 bcd	60 de
12	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
12	PX 6259	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
13	XR 11004 at 40 PSI									89 a-e	80 a-e	58 ijk	58 def	65 d	62 cde
13	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
13	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
14	TT 11004 at 40 PSI									87 b-g	78 a-e	62 g-j	62 b-f	70 bcd	62 cde
14	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
14	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
15	AIXR 11003 at 70 PSI									85 d-h	77 b-f	64 e-j	62 b-f	73 a-d	65 b-e
15	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
15	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
16	GA 110-03 at 70 PSI									83 e-i	78 a-e	68 c-h	65 a-d	75 abc	71 a-d
16	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
16	PL 714	100	SL	1	% v/v	1	% v/v	6-8"W	A						
17	XR 11004 at 40 PSI									82 e-i	77 b-f	66 d-i	65 a-d	76 ab	72 abc
17	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
17	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						
18	TT 11004 at 40 PSI									83 e-i	78 a-f	60 h-k	58 def	67 cd	58 e
18	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A						
18	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A						

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Crop Code										07-15-10	07-29-10	07-15-10	07-29-10	07-15-10	07-29-10					
Rating Date										Control	Control	Control	Control	Control	Control					
Rating Data Type										Percent	Percent	Percent	Percent	Percent	Percent					
Rating Unit																				
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 Rate	Other Rate	Other Rate Unit	Growth Stage	Appl Code												
19	AIXR 11003 at 70 PSI								77	hi	75	c-f	66	d-i	65	bcd	67	b-e		
19	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
19	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A											
20	GA 110-03 at 70 PSI								87	c-g	78	a-f	57	jk	58	def	71	bcd	65	b-e
20	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
20	PL 325	100	SL	1.25	% v/v	1.25	% v/v	6-8"W	A											
21	XR 11004 at 40 PSI								83	e-i	75	c-f	63	f-j	62	b-f	77	ab	70	a-d
21	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
21	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A											
22	TT 11004 at 40 PSI								78	ghi	72	ef	52	k	53	ef	71	bcd	65	b-e
22	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
22	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A											
23	AIXR 11003 at 70 PSI								75	i	67	f	57	jk	53	ef	72	a-d	65	b-e
23	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
23	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A											
24	GA 110-03 at 70 PSI								78	ghi	73	def	62	g-j	62	b-f	77	ab	71	a-d
24	ROUNDUP POWERMAX	4.5	SL	0.77	lb ae/a	22	fl oz/a	6-8"W	A											
24	PL 713	100	SL	0.5	% v/v	0.5	% v/v	6-8"W	A											
LSD (P=.05)										8.5	11.4	8.6	10.4	8.5	11.5					
Replicate F										2.511	14.149	9.795	0.789	10.057	7.268					
Replicate Prob(F)										0.0925	0.0001	0.0003	0.4603	0.0002	0.0018					
Treatment F										3.928	1.753	6.081	2.659	1.600	1.454					
Treatment Prob(F)										0.0001	0.0533	0.0001	0.0025	0.0868	0.1386					

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

Trial Comments

1. Protocol: Precision Labs.
2. 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).
6. Not harvested.