

1-25-08 (07-10C-W150)

Southern Illinois University

Interaction of Soil Residual Herbicides and Preplant Growth Regulator Herbicides

on Soybean Development.

Project Code: 07-10C-W150

Location: Belleville Research Center

Investigator: Bryan Young

Investigator: Bryan Young, Associate Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA

Trial Status: Final **Updated:** 1-23-08

Objective:

Evaluate the interaction of 2,4-D or dicamba with soil residual herbicides on soybean growth and development.

Crop 1: GLXMA soybean **Variety:** Asgrow 4403 RR

Planting Method: Seeded **Planting Date:** 5-22-07

Rate: 75 lb/A **Depth:** 1.0 IN

Row Spacing: 30 IN

Plot Width, Unit: 10 FT **Plot Length, Unit:** 30 FT **Reps:** 4

Tillage Type: No-Till **Study Design:** Randomized complete block

Previous Crop, Year: ZEAMX, 2006

Field Prep./Maintenance: N 0 LB/A, P205 0 LB/A, K20 100 LB/A

Soil Name: Weir **% OM:** 2.3 **pH:** 6.9 **CEC:** 12

Texture: Silt loam **Fert. Level:** P1: 94 LB/A, K: 304 LB/A

APPLICATION DESCRIPTION

A

Application Date: 5-21-07

Time of Day: 12:00

Application Method: Spray

Application Timing: 1DBP

Applic. Placement: BROFOL

Air Temp., Unit: 78 F

% Relative Humidity: 40

Wind Velocity, Unit: 3-5 MPH

Soil Moisture: NORMAL

% Cloud Cover: 0

CROP STAGE AT EACH APPLICATION

A

Crop 1 Code, Stage: GLXMA NA

Height, Unit: NA NA

APPLICATION EQUIPMENT

A

Appl. Equipment: CO2 sprayer

Operating Pressure: 40 PSI

Nozzle Type: Flat fan

Nozzle Size: 8003

Boom Length, Unit: 5 FT

Spray Volume, Unit: 20 GPA

NOTES:

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Trt-Eval Interval

GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
Moisture	Yield	90% Emrg	Plants	Plants
Percent	bu/A	DAP	000/A	000/A
10-20-07	10-20-07		6-18-07	10-12-07
			28 DAP	EOS

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code										
1	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	11.7	b	45	ab	9.0	d	126.7	ab	112.6	ab
2	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	11.9	ab	37	cd	10.5	b	84.9	bcd	58.8	cde
3	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	11.9	ab	46	ab	9.0	d	119.4	abc	115.9	ab
4	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	11.8	ab	45	abc	9.0	d	150.5	a	127.4	a
5	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	11.8	ab	40	bcd	9.0	d	114.7	abc	89.1	bc
6	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	11.9	ab	48	ab	9.3	cd	123.4	ab	114.8	ab
6	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A										
7	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	11.8	ab	45	ab	9.5	c	122.7	ab	91.9	bc
7	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A										
8	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	11.9	ab	42	a-d	9.7	c	94.6	bcd	72.3	cd
8	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A										
9	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	11.9	ab	36	d	11.0	a	52.4	de	42.9	de
9	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A										
10	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	12.2	a	36	d	11.0	a	67.0	cde	46.6	de
10	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A										
11	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	12.2	a	25	e	11.0	a	25.9	e	25.7	e
11	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A										
12	NONTREATED									11.7	b	50	a	8.0	e	160.5	a	132.9	a
LSD (P=.05)										0.43		8.4		0.46		53.87		33.74	
Replicate F										0.305		3.103		1.685		1.625		0.774	
Replicate Prob(F)										0.8215		0.0403		0.1921		0.2030		0.5172	
Treatment F										1.380		5.577		39.086		4.581		9.558	
Treatment Prob(F)										0.2298		0.0001		0.0001		0.0004		0.0001	

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

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Rating Unit

Rating Date

Trt-Eval Interval

GLXMA GLXMA GLXMA GLXMA GLXMA GLXMA
V Stage V Stage V Stage V Stage R Stage R Stage6-4-07 6-11-07 6-18-07 7-2-07 7-16-07 8-13-07
14 DAP 21 DAP 28 DAP 42 DAP 56 DAP 84 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0.0	a	1.0	a	3.0	a
2	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	-1.0	b	0.3	b	1.8	d
3	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	0.0	a	1.0	a	3.0	a
4	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	0.0	a	1.0	a	3.0	a
5	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	0.0	a	1.0	a	2.5	b
6	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0.0	a	1.0	a	3.0	a
6	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	0.0	a	1.0	a	3.0	a
7	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0.0	a	1.0	a	3.0	a
7	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	0.0	a	1.0	a	3.0	a
8	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0.0	a	1.0	a	2.3	bc
8	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	0.0	a	1.0	a	4.3	bc
9	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	-1.0	b	0.0	c	1.8	d
9	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	-1.0	b	0.0	c	3.8	d
10	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	-1.0	b	0.0	c	2.0	cd
10	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	-1.0	b	0.0	c	3.8	d
11	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	-1.0	b	0.0	c	2.0	cd
11	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	-1.0	b	0.0	c	3.0	e
12	NONTREATED									0.0	a	1.0	a	3.0	a
LSD (P=.05)										0.00		0.21		0.41	
Replicate F										0.000		0.970		2.551	
Replicate Prob(F)										1.0000		0.4191		0.0730	
Treatment F										0.000		40.463		14.313	
Treatment Prob(F)										1.0000		0.0001		0.0001	

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Trt-Eval Interval

GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
Injury	Injury	Injury	Injury	Injury	Injury
Percent	Percent	Percent	Percent	Percent	Percent
6-4-07	6-11-07	6-18-07	7-2-07	7-16-07	8-13-07
14 DAP	21 DAP	28 DAP	42 DAP	56 DAP	84 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	14	b	14	b	13	c
2	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	92	a	88	a	88	a
3	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	5	cd	6	bcd	5	cd
4	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	5	cd	5	cd	7	cd
5	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	5	cd	8	bcd	35	b
6	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	4	cd	10	bc	6	cd
6	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A						
7	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	4	cd	1	d	4	cd
7	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A						
8	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	8	bc	13	bc	28	b
8	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A						
9	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	91	a	91	a	88	a
9	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A						
10	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	93	a	91	a	90	a
10	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A						
11	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	94	a	91	a	93	a
11	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A						
12	NONTREATED									0	d	0	d	0	d
LSD (P=.05)										7.5		8.7		12.3	
Replicate F										3.696		4.871		2.609	
Replicate Prob(F)										0.0216		0.0067		0.0685	
Treatment F										276.780		188.166		85.926	
Treatment Prob(F)										0.0001		0.0001		0.0001	

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GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
Stunt	Stunt	Stunt	Stunt	Stunt	Stunt
Percent	Percent	Percent	Percent	Percent	Percent
6-4-07	6-11-07	6-18-07	7-2-07	7-16-07	8-13-07
14 DAP	21 DAP	28 DAP	42 DAP	56 DAP	84 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	8 c	8 c	5 c	5 d	1 d	0 d
2	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	70 b	70 b	70 a	65 b	61 b	46 b
3	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	0 c	1 c	0 c	0 d	0 d	0 d
4	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	0 c	1 c	0 c	0 d	0 d	0 d
5	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	3 c	3 c	24 b	25 c	24 c	15 c
6	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	1 c	4 c	0 c	1 d	0 d	0 d
6	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A						
7	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	1 c	1 c	1 c	1 d	0 d	0 d
7	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A						
8	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	7 c	7 c	25 b	30 c	28 c	25 c
8	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A						
9	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	71 b	86 a	71 a	71 ab	69 b	54 b
9	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A						
10	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	76 ab	85 a	74 a	70 b	62 b	49 b
10	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A						
11	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	83 a	89 a	82 a	83 a	83 a	71 a
11	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A						
12	NONTREATED									0 c	0 c	0 c	0 d	0 d	0 d
LSD (P=.05)										7.8	9.4	12.7	11.8	13.3	13.5
Replicate F										2.757	2.446	2.645	1.774	3.385	2.932
Replicate Prob(F)										0.0584	0.0819	0.0659	0.1719	0.0299	0.0484
Treatment F										178.459	145.786	60.978	67.700	49.849	31.944
Treatment Prob(F)										0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Rating Date

Trt-Eval Interval

GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
Chloro	Chloro	Chloro	Chloro	Chloro	Chloro
Percent	Percent	Percent	Percent	Percent	Percent
6-4-07	6-11-07	6-18-07	7-2-07	7-16-07	8-13-07
14 DAP	21 DAP	28 DAP	42 DAP	56 DAP	84 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	1	c	1	c	0	a
2	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	48	b	34	b	0	a
3	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	0	c	0	c	0	a
4	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	0	c	0	c	0	a
5	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	0	c	0	c	0	a
6	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0	c	0	c	0	a
6	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	0	c	0	c	0	a
7	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0	c	0	c	0	a
7	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	0	c	0	c	0	a
8	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	0	c	0	c	0	a
8	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	0	c	0	c	0	a
9	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	50	ab	48	a	0	a
9	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	0	a	0	a	0	a
10	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	50	ab	40	ab	0	a
10	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	0	a	0	a	0	a
11	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	53	a	45	a	0	a
11	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	0	a	0	a	0	a
12	NONTREATED									0	c	0	c	0	a
LSD (P=.05)										3.3		7.7		0.0	0.0
Replicate F										0.100		2.953		0.000	0.000
Replicate Prob(F)										0.9596		0.0473		1.0000	1.0000
Treatment F										462.074		59.866		0.000	0.000
Treatment Prob(F)										0.0001		0.0001		1.0000	1.0000

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Trt-Eval Interval

GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA
Malform	Malform	Malform	Malform	Malform	Malform
Percent	Percent	Percent	Percent	Percent	Percent
6-4-07	6-11-07	6-18-07	7-2-07	7-16-07	8-13-07
14 DAP	21 DAP	28 DAP	42 DAP	56 DAP	84 DAP

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	5	b	5	c	9	c
2	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	55	a	55	b	45	a
3	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	5	b	4	c	5	cd
4	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	5	b	4	c	7	cd
5	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	3	b	4	c	20	b
6	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	3	b	4	c	6	cd
6	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	3	b	4	c	6	cd
7	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	3	b	0	c	3	cd
7	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	3	b	0	c	3	cd
8	2,4-D LV4	3.8	EC	0.5	lb ae/a	1.05	pt/a	1DBP	A	2	b	2	c	5	cd
8	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	2	b	2	c	5	cd
9	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	55	a	58	ab	45	a
9	PROWL H2O	3.8	CS	1.19	lb ai/a	2.5	pt/a	1DBP	A	55	a	58	ab	45	a
10	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	55	a	65	a	50	a
10	VALOR	51	WG	0.0638	lb ai/a	2	oz/a	1DBP	A	55	a	65	a	50	a
11	CLARITY	4	EC	0.25	lb ae/a	0.5	pt/a	1DBP	A	55	a	58	ab	48	a
11	CANOPY	75	WG	0.28	lb ai/a	6	oz/a	1DBP	A	55	a	58	ab	48	a
12	NONTREATED									0	b	0	c	0	d
LSD (P=.05)										5.7		8.2		7.7	
Replicate F										1.868		5.226		1.911	
Replicate Prob(F)										0.1548		0.0047		0.1476	
Treatment F										167.065		95.103		57.918	
Treatment Prob(F)										0.0001		0.0001		0.0001	

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

Trial Comments

1. Protocol: ISA.
2. Ratings: Date to 90% emergence; plant growth stage at 14, 21, and 28 DAP; soybean stunt, chlorosis, malformation and overall injury at 14, 21, and 28 DAP; soybean population at 28 DAP(stake counted area); injury evaluations to continue if injury persists beyond 28 DAP; grain yield and final soybean population at maturity (in the staked area).
3. Yield.
4. Blanket application of Roundup W-Max (22 fl oz/A) at 14 days before planned planting date.
5. Maintain the study weedfree with POST applications of Roundup W-Max or handweeding.
6. 90% Emrg = 90% emergence. DAP = Days after planting. V Stage = Soybean vegetative stage, -1 = VE, 0 = VC, 1-5 = V1-V5. R Stage = Soybean reproductive stage, 1-3 = R1-R3. Stunt = Soybean stunting. Chloro = Chlorosis. Malform = Malformation. Injury = Overall injury. 000/A = Thousands per acre. EOS = End of Season.
7. Harvested 10-20-07, (2) 30 inch rows by 27 ft.