

## Sequential Herbicide Programs in Roundup Ready Soybean.

00-50E-MN80

**OBJECTIVE:** Evaluate various soil applied herbicides in a Roundup Ready soybean program.

**SUMMARY:** No soybean injury was observed from preemergence (PRE) herbicides at 14 days after treatment. However, 12 to 18% soybean injury was observed at 14 days after the postemergence herbicide application (DAPO) from treatments that included Flexstar, Valor plus Classic followed by Roundup Ultra, Canopy or Canopy XL followed by Roundup Ultra, and Pendimax followed by FirstRate plus Cobra. This injury was sometimes attributable to the PRE herbicide and was not observed earlier at 14 days after treatment.

Treatments that included Command controlled at least 95% of giant foxtail prior to application of postemergence herbicides. At 28 DAPO, giant foxtail control was at least 96% from all treatments except those that included Pendimax. Common waterhemp control was excellent from all PRE herbicide treatments except Canopy. All PRE herbicide treatments provided good control of morningglory species. Similarly, all PRE herbicide treatments controlled at least 90% of common cocklebur and common ragweed except Command at 0.67 pt/A plus Authority at 2.67 oz/A. PRE treatments that included FirstRate, Valor plus Classic, Canopy or Canopy XL controlled at least 94% of giant ragweed prior to post applications. Giant ragweed control was increased from 36 to 94% at 56 DAPO when Flexstar was applied postemergence following a PRE application of Command plus Authority.

Soybean yield ranged from 11 bu/A in nontreated plots to 46 bu/A. Plots in which poor giant ragweed control was observed yielded lower than other herbicide treated plots in this study.

### HERBICIDES

AUTHORITY 75 WG  
CANOPY 75 WG  
CANOPY XL 56.3 WG  
CLASSIC 25 WG  
COBRA 2 EC  
COMMAND 3 ME  
FIRSTRATE 84 WG  
FLEXSTAR 1.88 EC  
PENDIMAX 3.3 EC  
ROUNDUP ULTRA 3 SL  
VALOR 50 WG

### WEEDS

COCKLEBUR, COMMON  
FOXTAIL, GIANT  
MORNINGGLORY, SPECIES  
RAGWEED, COMMON  
RAGWEED, GIANT  
WATERHEMP, COMMON

### CROP

SOYBEAN

Bryan Young

PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

## Sequential Herbicide Programs in Roundup Ready Soybean.

Project Code: 00-50E-MN80 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

Weed Code	Common Name	Scientific Name
1. SETFA	FOXTAIL, GIANT	SETARIA FABERI HERRM.
2. AMATA	WATERHEMP, COMMON	AMARANTHUS RUDIS SAUER
3. AMBEL	RAGWEED, COMMON	AMBROSIA ARTEMISIIFOLIA L.
4. AMBTR	RAGWEED, GIANT	AMBROSIA TRIFIDA L.
5. XANST	COCKLEBUR, COMMON	XANTHIUM STRUMARIUM L. SSP. STRUMARIUM
6. IPOSS	MORNINGGLORY, SPECIES	IPOMOEA SP.

Crop 1:	GLXMA SOYBEAN	Variety:	B-T 369CR
Planting Method:	SEEDDED	Planting Date:	May-11-00
Rate:	75 LB/A	Depth:	1.0 IN
Row Spacing:	30 IN		

Plot Width, Unit:	10 FT	Plot Length, Unit:	27 FT	Reps:	3
Tillage Type:	REDUCED-TILL	Study Design:	RCB		
Previous Crop, Year:	ZEAMX, 1999	Fertilizer applied:	N 0 LB/A,	P <sub>2</sub> O <sub>5</sub> 0 LB/A,	K <sub>2</sub> O 0 LB/A

Soil Name:	WEIR	% OM:	1.9	pH:	6.9	CEC:	12
Texture:	SILT LOAM	P <sub>1</sub> :	87 LB/A,	K:	400 LB/A		

## APPLICATION DESCRIPTION

	A	B	C
Application Date:	May-12-00	Jun-13-00	Jun-9-00
Time of Day:	6:00	19:30	10:30
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PRE	2-3"W	2-3"W-IN
Applic. Placement:	BROSOI	BROFOL	BROFOL
Air Temp., Unit:	80 F	90 F	70 F
% Relative Humidity:	96	44	40
Wind Velocity, Unit:	0 MPH	2-4 MPH	2-4 MPH
Soil Moisture:	DRY	NORMAL	DRY
% Cloud Cover:			0

## CROP STAGE AT EACH APPLICATION

	A	B	C
Crop 1 Code, Stage:	NA	GLXMA V2-V3	GLXMA V2
Height, Unit:	NA	6-8 IN	5-7 IN

## WEED STAGE AT EACH APPLICATION

	A	B	C
Weed 1 Code:		SETFA	SETFA
Stage(leaves):		4-5	2-3
Height(inches):		2-5	0-1
Density:		MEDIUM	LOW
Weed 2 Code:		AMATA	
Stage(leaves):		3-4	
Height(inches):		1-2	
Density:		LOW	
Weed 3 Code:			AMBEL
Stage(leaves):			2-4
Height(inches):			1-2
Density:			LOW
Weed 4 Code:		AMBTR	AMBTR
Stage(leaves):		COTL-1	4-6
Height(inches):		0-1	2-5
Density:		LOW	LOW
Weed 5 Code:		XANST	XANST
Stage(leaves):		COTL-1	2-4
Height(inches):		0-1	2-4
Density:		LOW	LOW

## APPLICATION EQUIPMENT

	A	B	C
Appl. Equipment:	CO <sub>2</sub> SPRAY	CO <sub>2</sub> SPRAY	CO <sub>2</sub> SPRAY
Operating Pressure:	40 PSI	40 PSI	40 PSI
Nozzle Type:	FLAT FAN	FLAT FAN	FLAT FAN
Nozzle Size:	8003	8002	8002
Boom Length, Unit:	7.33 FT	7.33 FT	7.33 FT
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA

## NOTES:

Harvested Oct-21-00, (5) inch rows by 24 ft.

TABLE. SEQUENTIAL HERBICIDE PROGRAMS IN ROUNDUP READY SOYBEAN. PROJECT CODE:00-50E-MN80

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD BU/A	GLXMA INJURY		CONTROL														
								14 DA	14 DA	SETFA				AMATA				XANST						
								PRE	2-3"W	POST	14	28	EOS	POST	14	28	EOS	POST	14	28	EOS			
%	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%									
1 NONTREATED							11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2 COMMAND	3 ME	0.75	LB A/A	2.0	PT/A	PRE	A	40	0	0	98	97	98	96	99	99	99	98	99	95	92	92		
2 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A																	
2 AUTHORITY	75 WG	0.248	LB A/A	5.3	OZ/A	PRE	A																	
3 PENDIMAX	3.3 EC	1.0	LB A/A	2.42	PT/A	PRE	A	41	0	0	88	88	85	80	99	99	99	99	99	98	96	96		
3 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A																	
3 AUTHORITY	75 WG	0.248	LB A/A	5.3	OZ/A	PRE	A																	
4 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A	44	0	0	85	99	97	96	99	99	99	99	98	96	94	93		
4 AUTHORITY	75 WG	0.248	LB A/A	5.3	OZ/A	PRE	A																	
4 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B																	
4 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B																	
5 FIRSTRATE	84 WG	0.023	LB A/A	0.44	OZ/A	PRE	A	46	0	3	85	99	97	97	99	99	99	99	99	98	94	93		
5 AUTHORITY	75 WG	0.186	LB A/A	4.0	OZ/A	PRE	A																	
5 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B																	
5 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B																	
6 COMMAND	3 ME	0.6	LB A/A	1.6	PT/A	PRE	A	26	0	0	98	97	99	99	98	99	99	99	98	96	98	96		
6 AUTHORITY	75 WG	0.3	LB A/A	6.4	OZ/A	PRE	A																	
7 COMMAND	3 ME	0.6	LB A/A	1.6	PT/A	PRE	A	39	0	15	97	99	99	99	99	99	99	99	99	96	93	93		
7 AUTHORITY	75 WG	0.3	LB A/A	6.4	OZ/A	PRE	A																	
7 FLEXSTAR	1.88 EC	0.294	LB A/A	20.0	OZ/A	2-3"W-IN	C																	
7 DESTINY MSO	100 LIQ	1.0	% V/V	1.0	%V/V	2-3"W-IN	C																	
7 28% UAN	100 LIQ	2.5	% V/V	2.5	%V/V	2-3"W-IN	C																	
8 COMMAND	3 ME	0.75	LB A/A	2.0	PT/A	PRE	A	27	0	0	97	96	99	93	99	99	99	99	95	95	93	91		
8 AUTHORITY	75 WG	0.375	LB A/A	8.0	OZ/A	PRE	A																	
9 COMMAND	3 ME	0.3	LB A/A	0.8	PT/A	PRE	A	34	0	0	95	99	98	98	99	99	99	99	95	98	94	94		
9 AUTHORITY	75 WG	0.15	LB A/A	3.2	OZ/A	PRE	A																	
9 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B																	
9 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B																	

(CONTINUED)

TABLE. SEQUENTIAL HERBICIDE PROGRAMS IN ROUNDUP READY SOYBEAN. PROJECT CODE:00-50E-MN80 (CONTINUED)

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD	GLXMA INJURY		CONTROL												
								14 DA	14 DA	SETFA				AMATA				XANST				
								PRE	2-3"W	POST	14	28	EOS	POST	14	28	EOS	POST	14	28	EOS	
BU/A	%	%	%	%	%	%	%	%	%	%	%	%	%	%	%							
10 COMMAND	3 ME	0.25	LB A/A	0.67	PT/A	PRE	A	34	0	0	88	99	97	96	98	99	99	99	81	96	95	95
10 AUTHORITY	75 WG	0.125	LB A/A	2.67	OZ/A	PRE	A															
10 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B															
10 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B															
11 VALOR	50 WG	0.063	LB A/A	2.0	OZ/A	PRE	A	45	0	18	83	98	99	99	99	99	99	99	99	99	95	95
11 CLASSIC	25 WG	0.031	LB A/A	2.0	OZ/A	PRE	A															
11 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W	B															
12 VALOR	50 WG	0.078	LB A/A	2.5	OZ/A	PRE	A	43	0	12	92	99	98	98	99	99	98	98	99	99	97	97
12 CLASSIC	25 WG	0.025	LB A/A	1.6	OZ/A	PRE	A															
12 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W	B															
13 CANOPY	75 WG	0.1875	LB A/A	4.0	OZ/A	PRE	A	40	0	17	65	99	98	98	87	99	95	95	99	95	93	93
13 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W	B															
14 CANOPY XL	56.3 WG			4.2	OZ/A	PRE	A	42	0	12	78	98	96	96	98	99	98	98	99	96	96	96
14 ->CLASSIC	25 WG	0.0246	LB A/A			PRE	A															
14 ->AUTHORITY	75 WG	0.123	LB A/A			PRE	A															
14 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W	B															
15 VALOR	50 WG	0.047	LB A/A	1.5	OZ/A	PRE	A	41	0	0	80	99	98	98	98	99	99	99	99	97	94	93
15 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A															
15 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W	B															
16 PENDIMAX	3.3 EC	1.05	LB A/A	2.55	PT/A	PRE	A	27	0	15	82	80	74	67	96	99	98	98	99	99	95	95
16 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A															
16 COBRA	2 EC	0.125	LB A/A	8.0	OZ/A	2-3"W	B															
16 PRIME OIL COC	100 LIQ	1.0	% V/V	1.0	%V/V	2-3"W	B															
LSD								9	0	5	12	3	5	6	3	0	3	3	6	4	7	7
P								0.01	1.0	0.01	0.01	0.01	0.01	0.01	0.01	1.0	0.01	0.01	0.01	0.01	0.01	0.01

(CONTINUED)

TABLE. SEQUENTIAL HERBICIDE PROGRAMS IN ROUNDUP READY SOYBEAN. PROJECT CODE:00-50E-MN80 (CONTINUED)

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	CONTROL												
							AMBEL				IPOSS				AMBTR				
							AT POST	DA 14	2-3"W 28	EOS %	AT POST	DA 14	2-3"W 28	EOS %	AT POST	DA 14	2-3"W 28	EOS %	
1 NONTREATED							0	0	0	0	0	0	0	0	0	0	0	0	
2 COMMAND	3 ME	0.75	LB A/A	2.0	PT/A	PRE	A	97	99	99	96	99	97	99	96	98	92	88	84
2 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A												
2 AUTHORITY	75 WG	0.248	LB A/A	5.3	OZ/A	PRE	A												
3 PENDIMAX	3.3 EC	1.0	LB A/A	2.42	PT/A	PRE	A	99	99	98	98	99	98	99	99	99	98	98	98
3 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A												
3 AUTHORITY	75 WG	0.248	LB A/A	5.3	OZ/A	PRE	A												
4 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE	A	99	98	99	99	96	96	99	99	99	98	98	98
4 AUTHORITY	75 WG	0.248	LB A/A	5.3	OZ/A	PRE	A												
4 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B												
4 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B												
5 FIRSTRATE	84 WG	0.023	LB A/A	0.44	OZ/A	PRE	A	99	99	99	99	97	96	99	99	99	99	98	98
5 AUTHORITY	75 WG	0.186	LB A/A	4.0	OZ/A	PRE	A												
5 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B												
5 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B												
6 COMMAND	3 ME	0.6	LB A/A	1.6	PT/A	PRE	A	93	95	93	84	99	98	99	99	56	68	43	36
6 AUTHORITY	75 WG	0.3	LB A/A	6.4	OZ/A	PRE	A												
7 COMMAND	3 ME	0.6	LB A/A	1.6	PT/A	PRE	A	99	99	99	98	98	99	99	99	88	95	96	94
7 AUTHORITY	75 WG	0.3	LB A/A	6.4	OZ/A	PRE	A												
7 FLEXSTAR	1.88 EC	0.294	LB A/A	20.0	OZ/A	2-3"W-IN	C												
7 DESTINY MSO	100 LIQ	1.0	% V/V	1.0	%V/V	2-3"W-IN	C												
7 28% UAN	100 LIQ	2.5	% V/V	2.5	%V/V	2-3"W-IN	C												
8 COMMAND	3 ME	0.75	LB A/A	2.0	PT/A	PRE	A	90	87	86	81	99	96	99	98	75	68	43	36
8 AUTHORITY	75 WG	0.375	LB A/A	8.0	OZ/A	PRE	A												
9 COMMAND	3 ME	0.3	LB A/A	0.8	PT/A	PRE	A	96	96	98	98	97	97	98	96	67	90	93	83
9 AUTHORITY	75 WG	0.15	LB A/A	3.2	OZ/A	PRE	A												
9 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W	B												
9 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W	B												

(CONTINUED)

TABLE. SEQUENTIAL HERBICIDE PROGRAMS IN ROUNDUP READY SOYBEAN. PROJECT CODE:00-50E-MN80 (CONTINUED)

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	CONTROL											
							AMBEL				IPOSS				AMBTR			
							AT POST	DA 14	2-3"W 28	EOS %	AT POST	DA 14	2-3"W 28	EOS %	AT POST	DA 14	2-3"W 28	EOS %
10 COMMAND	3 ME	0.25	LB A/A	0.67	PT/A	PRE A	87	95	99	96	95	97	95	95	33	80	88	82
10 AUTHORITY	75 WG	0.125	LB A/A	2.67	OZ/A	PRE A												
10 ROUNDUP ULTRA	3 SL	0.5625	LB AE/A	1.5	PT/A	2-3"W B												
10 AMS	100 DRY	2.0	% W/W	17.0	LB/100 GAL	2-3"W B												
11 VALOR	50 WG	0.063	LB A/A	2.0	OZ/A	PRE A	99	99	99	99	98	97	98	96	94	94	94	94
11 CLASSIC	25 WG	0.031	LB A/A	2.0	OZ/A	PRE A												
11 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W B												
12 VALOR	50 WG	0.078	LB A/A	2.5	OZ/A	PRE A	99	99	99	99	99	96	98	98	99	97	96	96
12 CLASSIC	25 WG	0.025	LB A/A	1.6	OZ/A	PRE A												
12 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W B												
13 CANOPY	75 WG	0.1875	LB A/A	4.0	OZ/A	PRE A	99	99	99	99	95	96	96	96	99	96	92	89
13 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W B												
14 CANOPY XL	56.3 WG			4.2	OZ/A	PRE A	99	99	99	99	96	96	98	98	95	95	91	91
14 ->CLASSIC	25 WG	0.0246	LB A/A			PRE A												
14 ->AUTHORITY	75 WG	0.123	LB A/A			PRE A												
14 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W B												
15 VALOR	50 WG	0.047	LB A/A	1.5	OZ/A	PRE A	99	99	99	99	96	96	98	98	99	99	95	95
15 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE A												
15 ROUNDUP ULTRA	3 SL	0.75	LB AE/A	2.0	PT/A	2-3"W B												
16 PENDIMAX	3.3 EC	1.05	LB A/A	2.55	PT/A	PRE A	99	99	99	99	93	96	98	98	99	96	94	94
16 FIRSTRATE	84 WG	0.031	LB A/A	0.59	OZ/A	PRE A												
16 COBRA	2 EC	0.125	LB A/A	8.0	OZ/A	2-3"W B												
16 PRIME OIL COC	100 LIQ	1.0	% V/V	1.0	%V/V	2-3"W B												
LSD							4	5	6	8	3	3	3	4	25	15	28	31
P							0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

1. PROTOCOL: FMC TRTS 1-10; VALENT TRTS 11-15 (MDO2.03).
2. AT POST = PRIOR TO 2-3"W APPLICATION, EOS = END OF SEASON.
3. AT 14 DAP, SOYBEANS WERE AT UNIFOLIATE.
4. RATING DATES:  
14 DA PRE, AT POST, 14 DA 2-3"W, 28 DA 2-3"W, AND EOS ON MAY-26-00, JUN-13-00, JUN-27-00, JUL-11-00, AND AUG-16-00, RESPECTIVELY.