

Waterhemp Control Programs in Soybean.

02-52-ME60

OBJECTIVE: Identify effective programs for consistent control of waterhemp.

SUMMARY: Authority and Canopy XL caused no soybean injury. Soil herbicides followed by postemergence herbicides provided 100% control of common waterhemp. Touchdown controlled 4 to 6 inch common waterhemp 83%, whereas, Touchdown controlled 6 to 8 inch waterhemp 50%. The greatest control with Touchdown was obtained when Touchdown was applied at 8 to 12 inch common waterhemp. Flexstar alone controlled 4 to 6 inch common waterhemp 58%. Flexstar plus Touchdown controlled common waterhemp 82%. Soybean yield ranged from 32 to 52 bu/A. Common waterhemp competition during the entire growing season reduced soybean grain yield by approximately 30 to 38%.

HERBICIDES

AUTHORITY 75 WG
 BOUNDARY 7.8 EC
 CANOPY XL 56.3 WG
 CLASSIC 25 WG
 DUAL II MAGNUM 7.64 EC
 FLEXSTAR 1.88 EC
 FUSION 2.56 EC
 TOUCHDOWN 3 SL

WEEDS

waterhemp, common

CROP

soybean

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Waterhemp Control Programs in Soybean.

Project Code: 02-52-ME60 Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
Trial Status: Final Updated: 10-28-02

Objective:

Identify effective programs for consistent control of waterhemp.

Weed Code Common Name Scientific Name
1. AMATA waterhemp, common Amaranthus rudis SauerCrop 1: GLXMA soybean Variety: Asgrow 4602 RR
Planting Method: Seeded Planting Date: 6-4-02
Rate: 75 lb/A Depth: 1.0 IN
Row Spacing: 30 INPlot Width, Unit: 10 FT Plot Length, Unit: 25 FT Reps: 3
Tillage Type: Reduced-Till Study Design: Randomized complete block
Previous Crop, Year: GLXMA, 2001

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

Soil Name: Weir % OM: 1.9 pH: 7.1 CEC: 12
Texture: Silt loam Fert. Level: P1: 97 LB/A, K: 282 LB/A

APPLICATION DESCRIPTION

	A	B	C	D	E	F
Application Date:	6-4-02	7-5-02	7-5-02	7-10-02	7-15-02	7-15-02
Time of Day:	17:00	10:00	10:00	8:00	13:00	13:00
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	4-6"W-1A	4-6"W-1B	6-8"W	8-10"W	10-12"W
Applic. Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	92 F	96 F	96 F	78 F	88 F	88 F
% Relative Humidity:	52	40	40	94	38	38
Wind Velocity, Unit:	3 MPH	0 MPH	0 MPH	0 MPH	0 MPH	0 MPH
Soil Moisture:	NORMAL	BELNOR	BELNOR	BELNOR	BELNOR	BELNOR
% Cloud Cover:	50			90	40	40
	G	H				
Application Date:	7-15-02	7-22-02				
Time of Day:	13:00	10:00				
Application Method:	Spray	Spray				
Application Timing:	4-6"W-2	2-4"RG				
Applic. Placement:	BROFOL	BROFOL				
Air Temp., Unit:	88 F	88 F				
% Relative Humidity:	38	68				
Wind Velocity, Unit:	0 MPH	0 MPH				
Soil Moisture:	BELNOR	NORMAL				
% Cloud Cover:	40					

CROP STAGE AT EACH APPLICATION

	A	B	C	D	E	F
Crop 1 Code, Stage:	GLXMA NA	GLXMA V3	GLXMA V3	GLXMA V4	GLXMA R1	GLXMA R1
Height, Unit:	NA NA	6 IN	6 IN	8 IN	12 IN	12 IN
	G	H				
Crop 1 Code, Stage:	GLXMA R1	GLXMA R1				
Height, Unit:	12 IN	16 IN				

WEED STAGE AT EACH APPLICATION

	A	B	C	D	E	F
Weed 1 Code:		AMATA	AMATA	AMATA	AMATA	AMATA
Stage(leaves):		4-16	4-16	8-16	8-35	10+
Height(inches):		2-6	2-6	4-8	4-16	4-12
Density:		High	High	High	High	High

	G	H
Weed 1 Code:	AMATA	
Stage(leaves):	10-20	
Height(inches):	4-10	
Density:	Low	

APPLICATION EQUIPMENT

	A	B	C	D	E	F
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	8003	8001	8002	8001	8001	8001
Boom Length, Unit:	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT
Spray Volume, Unit:	20 GPA	10 GPA	20 GPA	10 GPA	10 GPA	10 GPA

	G	H
Appl. Equipment:	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan
Nozzle Size:	8001	8001
Boom Length, Unit:	7.5 FT	7.5 FT
Spray Volume, Unit:	10 GPA	10 GPA

NOTES:

No weeds present at 2-4"RG application.
Harvested Oct-12-02, (2) 30 inch rows by 22 ft.

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										GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA		
										Yield	Injury	Injury	Injury	Injury	Injury	Injury	Control	Control	Control	Control	Control	Control		
										bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
										10-7-02														
										14 DA#1	14 DA#2	28 DA#1	28 DA#2	56 DA#1	56 DA#2	14 DA#1	14 DA#2	28 DA#1	28 DA#2	56 DA#1	56 DA#2			
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	Spray Volume														
1	NONTREATED										32	0	0	0	0	0	0	0	0	0	0	0	0	0
2	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	4-6"W-1A	B	10	46	0	0	0	0	0	85	85	83	83	83	83	83	83
2	AMS	100 DRY		2.0	% W/W	2	%W/W	4-6"W-1A	B	10														
3	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	6-8"W	D	10	43	0	0	0	0	0	58	58	50	50	50	50	50	50
3	AMS	100 DRY		2.0	% W/W	2	%W/W	6-8"W	D	10														
4	AUTHORITY	75 WG		0.25	LB A/A	5.33	OZ/A	PRE	A	20	47	0	0	0	0	0	100	100	98	98	95	95	95	95
5	AUTHORITY	75 WG		0.25	LB A/A	5.33	OZ/A	PRE	A	20	46	0	0	0	0	0	100	100	98	100				100
5	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	4-6"W-2	G	10														
5	AMS	100 DRY		2.0	% W/W	2	%W/W	4-6"W-2	G	10														
6	DUAL II MAGNUM	7.64 EC		1.43	LB A/A	1.5	PT/A	PRE	A	20	51	0	0	0	0	0	100	100	100	100				100
6	AUTHORITY	75 WG		0.1875	LB A/A	4	OZ/A	PRE	A	20														
6	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	4-6"W-2	G	10														
6	AMS	100 DRY		2.0	% W/W	2	%W/W	4-6"W-2	G	10														
7	DUAL II MAGNUM	7.64 EC		1.43	LB A/A	1.5	PT/A	PRE	A	20	52	0	0	0	0	0	100	100	100	100				100
7	CANOPY XL	56.3 WG				6	OZ/A	PRE	A	20														
7	->CLASSIC	25 WG		0.0352	LB A/A			PRE	A	20														
7	->AUTHORITY	75 WG		0.1758	LB A/A			PRE	A	20														
7	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	4-6"W-2	G	10														
7	AMS	100 DRY		2.0	% W/W	2	%W/W	4-6"W-2	G	10														
8	BOUNDARY	7.8 EC		1.22	LB A/A	1.25	PT/A	PRE	A	20	47	0	0	0	0	0	100	100	99	100				100
8	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	4-6"W-2	G	10														
8	AMS	100 DRY		2.0	% W/W	2	%W/W	4-6"W-2	G	10														
9	BOUNDARY	7.8 EC		1.46	LB A/A	1.5	PT/A	PRE	A	20	50	0	0	0	0	0	100	100	100	100				100
9	TOUCHDOWN	3 SL		0.75	LB AE/A	32	OZ/A	4-6"W-2	G	10														
9	AMS	100 DRY		2.0	% W/W	2	%W/W	4-6"W-2	G	10														
10	BOUNDARY	7.8 EC		1.22	LB A/A	1.25	PT/A	PRE	A	20	50	0	0	0	0	0	100	100	98	100				100
10	FLEXSTAR	1.88 EC		0.294	LB A/A	1.25	PT/A	4-6"W-2	G	20														
10	FUSION	2.56 EC		0.2078	LB A/A	10.4	OZ/A	4-6"W-2	G	20														
10	PRIME OIL COC	100 LIQ		1.0	% V/V	1	%V/V	4-6"W-2	G	20														
10	28% UAN	100 LIQ		2.0	QT/A	2	QT/A	4-6"W-2	G	20														
11	FLEXSTAR	1.88 EC		0.294	LB A/A	1.25	PT/A	4-6"W-1B	C	20	45	0	0	0	0	0	58	58	58	58	58	58	58	58
11	PRIME OIL COC	100 LIQ		1.0	% V/V	1	%V/V	4-6"W-1B	C	20														
11	28% UAN	100 LIQ		2.0	QT/A	2	QT/A	4-6"W-1B	C	20														

Weed Code										AMATA													
Crop Code										GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	GLXMA	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA	
Rating Data Type										Yield	Injury	Injury	Injury	Injury	Injury	Injury	Control	Control	Control	Control	Control	Control	
Rating Unit										bu/A	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent	
Rating Date										10-7-02													
Trt-Eval Interval										14 DA#1	14 DA#2	28 DA#1	28 DA#2	56 DA#1	56 DA#2	14 DA#1	14 DA#2	28 DA#1	28 DA#2	56 DA#1	56 DA#2		
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	Spray Volume	Yield	Injury	Injury	Injury	Injury	Injury	Control	Control	Control	Control	Control	Control	
12	FLEXSTAR	1.88	EC	0.176	LB A/A	0.75	PT/A	4-6"W-1A	B	10	45	0	0	0	0	0	85	85	82	82	82	82	
12	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	4-6"W-1A	B	10													
13	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	4-6"W-1A	B	10	48	0	0	0	0	0	90	90	99	99	99	99	
13	AMS	100	DRY	2.0	% W/W	2	%W/W	4-6"W-1A	B	10													
13	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	2-4"RG	H	10													
13	AMS	100	DRY	2.0	% W/W	2	%W/W	2-4"RG	H	10													
14	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	8-10"W	E	10	45	0	0	0	0	0	83	83	93	93	98	98	
14	AMS	100	DRY	2.0	% W/W	2	%W/W	8-10"W	E	10													
15	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	10-12"W	F	10	46	0	0	0	0	0	82	82	88	88	98	98	
15	AMS	100	DRY	2.0	% W/W	2	%W/W	10-12"W	F	10													
16	TOUCHDOWN	3	SL	1.13	LB AE/A	48	OZ/A	10-12"W	F	10	41	0	0	0	0	0	90	90	94	94	95	95	
16	AMS	100	DRY	2.0	% W/W	2	%W/W	10-12"W	F	10													
LSD (P=.05)											6.4	0.0	0.0	0.0	0.0	0.0	0.0	9.1	9.1	7.8	7.5	8.3	6.6
Replicate F											11.318	0.000	0.000	0.000	0.000	0.000	0.000	0.493	0.493	0.984	1.119	2.475	2.337
Replicate Prob(F)											0.0002	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.6157	0.6157	0.3857	0.3398	0.1123	0.1139
Treatment F											4.427	0.000	0.000	0.000	0.000	0.000	0.000	69.201	69.201	100.229	107.778	129.597	145.853
Treatment Prob(F)											0.0003	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Location: Belleville Research Center

Trial Comments

1. Protocol: Syngenta.
2. Spray volume for postemergence applications is either 10 or 20 GPA, see treatment list.
3. 4-6"W-1A and 4-6"W-1B are 4 to 6 inch weeds for POST only treatments and 10 and 20 GPA, respectively.
4. 4-6"W-2 is 4 to 6 inch weeds for PRE/POST treatments.
5. 2-4"RG is 2 to 4 inch regrowth following a POST application.
6. DA-#1 = days after the PRE application for PRE only or PRE/POST treatments or days after POST application for POST only or days after first POST for POST/POST treatments.
7. DA-#2 = days after POST for PRE/POST treatments or days after POST application for POST only treatments or days after second POST for POST/POST treatments.
8. Rating dates:
Ratings at 14 days after PRE, 4-6"W-1A, 4-6"W-1B, 6-8"W, 8-10"W, 10-12"W, and 4-6"W-2 applications were on 6-18-02, 7-19-02, 7-19-02, 7-24-02, 7-29-02, 7-29-02, and 7-29-02, respectively.
Ratings at 28 days after PRE, 4-6"W-1A, 4-6"W-1B, 6-8"W, 8-10"W, 10-12"W, and 4-6"W-2 applications were on 7-2-02, 8-2-02, 8-2-02, 8-7-02, 8-12-02, 8-12-02, and 8-12-02, respectively.
Ratings at 56 days after PRE, 4-6"W-1A, 4-6"W-1B, 6-8"W, 8-10"W, 10-12"W, and 4-6"W-2 applications were on 7-30-02, 8-30-02, 8-30-02, 9-4-02, 9-9-02, 9-9-02, and 9-9-02, respectively.