

Control of PPO-resistant waterhemp in a soybean/corn rotation.

Project Code: 03-PPO-SBCN Location: Serento, IL

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

City State Zip Country: Belleville IL 62221 USA
 Trial Status: Established Updated: 9-3-03

Objective:

Evaluate the long-term benefits of utilizing multiple herbicide mode of action in a soybean/corn rotation for control of PPO-resistant waterhemp.

Weed Code	Common Name	Scientific Name
1.	AMATA waterhemp, common	Amaranthus rudis Sauer

Crop 1: GLXMA soybean
 Planting Method: Seeded
 Rate: 75 lb/A Depth: 1.0 IN
 Row Spacing: 30 IN

Crop 2: ZEAMX corn, field
 Planting Method: Seeded
 Rate: 28000 S/A Depth: 1.5 IN
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 30 FT Reps: 3
 Study Design: Randomized complete block

Previous Crop, Year: _____, 2002

Field Prep./Maintenance: N ___ LB/A, P205 ___ LB/A, K20 ___ LB/A in 2003;
 N ___ LB/A, P205 ___ LB/A, K20 ___ LB/A in 2004;

APPLICATION DESCRIPTION

	A	B	C	D	E
Application Date:					6-23-03
Time of Day:					15:00
Application Method:	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE-SB	4-6"W-SB-1	4-6"W-SB-2	PRE-CN	6-10"CN
Applic. Placement:	BROSIOI	BROFOL	BROFOL	BROSIOI	BROFOL
Wind Velocity, Unit:	MPH	MPH	MPH	MPH	0 MPH
Soil Moisture:					NORMAL

CROP STAGE AT EACH APPLICATION

	A		B		C		D		E	
Crop 1 Code, Stage:	GLXMA	NA	GLXMA		GLXMA		GLXMA	NA	GLXMA	NA
Height, Unit:	NA	NA	IN		IN		NA	NA	NA	NA
Crop 2 Code, Stage:	ZEAMX	NA	ZEAMX	NA	ZEAMX	NA	ZEAMX	NA	ZEAMX	V5
Height, Unit:	NA	NA	NA	NA	NA	NA	NA	NA	8	IN

APPLICATION EQUIPMENT

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

NOTES:

Corn was not harvested.

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Weed Code									AMATA	AMATA	AMATA	AMATA	AMATA
Crop Code									ZEAMX	ZEAMX	ZEAMX	ZEAMX	
Rating Data Type									Injury	Injury	Injury	Injury	Control
Rating Unit									Percent	Percent	Percent	Percent	Percent
Rating Date									6-23-03	7-7-03	7-21-03	8-11-03	7-21-03
Trt-Eval Interval									0 DA-E	14 DA-E	28 DA-E	49 DA-E	28 DA-E

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	NONTREATED									0	0	0	0	0	74.0
2	FLEXSTAR	1.88	EC	0.294	LB A/A	20	OZ/A	4-6"W-SB-1	B	0	0	0	0	99	98
2	FUSION	2.56	EC	0.2	LB A/A	10	OZ/A	4-6"W-SB-1	B					96	97
2	DESTINY MSO	100	LIQ	1.0	% V/V	1	% V/V	4-6"W-SB-1	B						
2	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	4-6"W-SB-1	B						
2	LUMAX	3.94	L	2.22	LB A/A	2.25	QT/A	PRE-CN	D						
3	FLEXSTAR	1.88	EC	0.294	LB A/A	20	OZ/A	4-6"W-SB-1	B	0	0	0	0	99	98
3	FUSION	2.56	EC	0.2	LB A/A	10	OZ/A	4-6"W-SB-1	B					98	98
3	DESTINY MSO	100	LIQ	1.0	% V/V	1	% V/V	4-6"W-SB-1	B						
3	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	4-6"W-SB-1	B						
3	BICEP II MAGNUM	5.5	L	2.2	LB A/A	3.2	PT/A	PRE-CN	D						
3	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	6-10"CN	E						
3	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	6-10"CN	E						
3	PREMIUM COC	100	LIQ	1.0	% V/V	1	% V/V	6-10"CN	E						
3	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	6-10"CN	E						
4	BOUNDARY	6.5	EC	1.46	LB A/A	1.8	PT/A	PRE-SB	A	0	0	0	0	99	99
4	FLEXSTAR	1.88	EC	0.294	LB A/A	20	OZ/A	4-6"W-SB-2	C					98	98
4	DESTINY MSO	100	LIQ	1.0	% V/V	1	% V/V	4-6"W-SB-2	C						
4	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	4-6"W-SB-2	C						
4	LUMAX	3.94	L	2.22	LB A/A	2.25	QT/A	PRE-CN	D						
5	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	PRE-SB	A	0	0	0	0	99	98
5	FLEXSTAR	1.88	EC	0.294	LB A/A	20	OZ/A	4-6"W-SB-2	C					98	98
5	DESTINY MSO	100	LIQ	1.0	% V/V	1	% V/V	4-6"W-SB-2	C						
5	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	4-6"W-SB-2	C						
5	LUMAX	3.94	L	2.22	LB A/A	2.25	QT/A	PRE-CN	D						
6	BOUNDARY	6.5	EC	1.46	LB A/A	1.8	PT/A	PRE-SB	A	0	0	0	0	99	99
6	FLEXSTAR	1.88	EC	0.294	LB A/A	20	OZ/A	4-6"W-SB-2	C					99	99
6	DESTINY MSO	100	LIQ	1.0	% V/V	1	% V/V	4-6"W-SB-2	C						
6	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	4-6"W-SB-2	C						
6	BICEP II MAGNUM	5.5	L	2.2	LB A/A	3.2	PT/A	PRE-CN	D						
6	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	6-10"CN	E						
6	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	6-10"CN	E						
6	PREMIUM COC	100	LIQ	1.0	% V/V	1	% V/V	6-10"CN	E						
6	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	6-10"CN	E						

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Crop Code					ZEAMX	ZEAMX	ZEAMX	ZEAMX	
Rating Data Type					Injury	Injury	Injury	Injury	Control
Rating Unit					Percent	Percent	Percent	Percent	Percent
Rating Date					6-23-03	7-7-03	7-21-03	8-11-03	6-23-03
Trt-Eval Interval					0 DA-E	14 DA-E	28 DA-E	49 DA-E	28 DA-E

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code									
7	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	PRE-SB	A	0	0	0	0	99	98	98	98	7.3
7	FLEXSTAR	1.88	EC	0.294	LB A/A	20	OZ/A	4-6"W-SB-2	C									
7	DESTINY MSO	100	LIQ	1.0	% V/V	1	% V/V	4-6"W-SB-2	C									
7	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	4-6"W-SB-2	C									
7	BICEP II MAGNUM	5.5	L	2.2	LB A/A	3.2	PT/A	PRE-CN	D									
7	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	6-10"CN	E									
7	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	6-10"CN	E									
7	PREMIUM COC	100	LIQ	1.0	% V/V	1	% V/V	6-10"CN	E									
7	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	6-10"CN	E									
8	BOUNDARY	6.5	EC	1.46	LB A/A	1.8	PT/A	PRE-SB	A	0	0	0	0	99	98	97	97	8.0
8	TOUCHDOWN TOTAL	4.17	SC	0.75	LB AE/A	23	OZ/A	4-6"W-SB-2	C									
8	AMS	100	DRY	2.5	LB A/A	2.5	LB/A	4-6"W-SB-2	C									
8	LUMAX	3.94	L	2.22	LB A/A	2.25	QT/A	PRE-CN	D									
9	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	PRE-SB	A	0	0	0	0	99	98	97	98	7.3
9	TOUCHDOWN TOTAL	4.17	SC	0.75	LB AE/A	23	OZ/A	4-6"W-SB-2	C									
9	AMS	100	DRY	2.5	LB A/A	2.5	LB/A	4-6"W-SB-2	C									
9	LUMAX	3.94	L	2.22	LB A/A	2.25	QT/A	PRE-CN	D									
10	BOUNDARY	6.5	EC	1.46	LB A/A	1.8	PT/A	PRE-SB	A	0	0	0	0	99	97	96	96	12.7
10	TOUCHDOWN TOTAL	4.17	SC	0.75	LB AE/A	23	OZ/A	4-6"W-SB-2	C									
10	AMS	100	DRY	2.5	LB A/A	2.5	LB/A	4-6"W-SB-2	C									
10	BICEP II MAGNUM	5.5	L	2.2	LB A/A	3.2	PT/A	PRE-CN	D									
10	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	6-10"CN	E									
10	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	6-10"CN	E									
10	PREMIUM COC	100	LIQ	1.0	% V/V	1	% V/V	6-10"CN	E									
10	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	6-10"CN	E									
11	DUAL II MAGNUM	7.64	EC	1.27	LB A/A	1.33	PT/A	PRE-SB	A	0	0	0	0	99	99	98	98	2.0
11	TOUCHDOWN TOTAL	4.17	SC	0.75	LB AE/A	23	OZ/A	4-6"W-SB-2	C									
11	AMS	100	DRY	2.5	LB A/A	2.5	LB/A	4-6"W-SB-2	C									
11	BICEP II MAGNUM	5.5	L	2.2	LB A/A	3.2	PT/A	PRE-CN	D									
11	CALLISTO	4	SC	0.094	LB A/A	3	FL OZ/A	6-10"CN	E									
11	AATREX	90	WG	0.25	LB A/A	4.44	OZ/A	6-10"CN	E									
11	PREMIUM COC	100	LIQ	1.0	% V/V	1	% V/V	6-10"CN	E									
11	28% UAN	100	LIQ	2.0	% V/V	2	% V/V	6-10"CN	E									
LSD (P=.05)										0.0	0.0	0.0	0.0	0.0	1.1	1.8	1.8	12.81
Replicate F										0.000	0.000	0.000	0.000	0.000	0.621	0.801	1.218	1.224
Replicate Prob(F)										1.0000	1.0000	1.0000	1.0000	1.0000	0.5476	0.4628	0.3168	0.3152
Treatment F										0.000	0.000	0.000	0.000	0.000	5987.614	2215.488	2441.989	22.770
Treatment Prob(F)										1.0000	1.0000	1.0000	1.0000	1.0000	0.0001	0.0001	0.0001	0.0001

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Trial Comments

1. Protocol: Syngenta.
2. Ratings: CI and WC prior to POST, 14, 28 and 49 DA POST.
3. Weed counts per square meter 28 DA last treatment.
4. DA-E = days after 6-10"CN application. 1.0 m² = 1.0 square meter.
5. Soybean herbicides to be applied in 2004.
6. No weeds present at 6-10"CN application.
7. Study incomplete, additional herbicide applications and ratings in 2004.