

Evaluation of Soil Herbicides in Roundup Ready II Corn.

Project Code: 05-19B 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: 11-18-05

Objective:
 Evaluate the effects of soil herbicides and weed height at glyphosate application on weed control and grain yield in Roundup Ready II corn.

Weed Code	Common Name	Scientific Name
1.	SETFA foxtail, giant	Setaria faberi Herrm.
2.	XANST cocklebur, common	Xanthium strumarium L.
3.	ABUTH velvetleaf	Abutilon theophrasti Medicus

Crop 1: ZEAMX corn, field Variety: DKC 60-17 RR
 Planting Method: Seeded Planting Date: 5-10-05
 Rate: 28000 S/A Depth: 1.5 IN
 Row Spacing: 30 IN

Plot Width, Unit: 10 FT Plot Length, Unit: 25 FT Reps: 3
 Tillage Type: Reduced-Till Study Design: Randomized complete block
 Previous Crop, Year: ZEAMX, 2004

Field Prep./Maintenance: N 180 LB/A, P205 50 LB/A, K20 100 LB/A

Soil Name: Ebbert % OM: 2.9 pH: 6.2 CEC: 14
 Texture: Silt loam Fert. Level: P1: 79 LB/A, K: 557 LB/A

APPLICATION DESCRIPTION

	A	B	C	D	E	F	G	H
Application Date:	05-11-05	05-31-05	06-06-05	06-07-05	06-10-05	06-10-05	06-13-05	06-15-05
Time of Day:	9:00	17:30	10:15	9:00	12:10	12:10	13:00	9:00
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	2-4"W	4-6"W-1	4-6"W-2	6-8"W	8-10"W	10-12"W	12-14"W
Applic. Placement:	BROSOI	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	70 F	82 F	82 F	74 F	86 F	76 F	84 F	74 F
% Relative Humidity:	94	30	59	80	60	60	70	50
Wind Velocity, Unit:	0 MPH	2 MPH	3 MPH	0 MPH	0 MPH	0 MPH	5 MPH	8 MPH
Soil Moisture:	BELNOR	BELNOR	BELNOR	BELNOR	BELNOR	BELNOR	BELNOR	ABONOR
	I	J	K	L	M	N	O	P
Application Date:	06-15-05	06-17-05	06-20-05		06-20-05			
Time of Day:	9:00	12:30	16:00		16:00			
Application Method:	Spray	Spray	Spray	Not needed	Spray	Not needed	Not needed	Not needed
Application Timing:	14-16"W	16-18"W	18-20"W	2WA2-4"-IN	2WA4-6"-IN	2WA6-8"-IN	2WA8-10"-IN	2WA10-12"-IN
Applic. Placement:	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	74 F	76 F	84 F		84 F			
% Relative Humidity:	50	50	34		34			
Wind Velocity, Unit:	8 MPH	4 MPH	1-2 MPH		1-2 MPH			
Soil Moisture:	ABONOR	NORMAL	NORMAL		NORMAL			
	Q	R	S	T				
Application Date:								
Time of Day:								
Application Method:	Not needed	Not needed	Not needed	Not needed				
Application Timing:	2WA12-14"-IN	2WA14-16"IN	2WA16-18"IN	2WA18-20"-IN				
Applic. Placement:	BROFOL	BROFOL	BROFOL	BROFOL				
Air Temp., Unit:								
% Relative Humidity:								
Wind Velocity, Unit:								
Soil Moisture:								

CROP STAGE AT EACH APPLICATION

	A	B	C	D	E	F	G	H
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX V3	ZEAMX V5	ZEAMX V5	ZEAMX V6	ZEAMX V6	ZEAMX V7-V8	ZEAMX V7-V8
Height, Unit:	NA NA	4-6 IN	13-14 IN	13-15 IN	18-20 IN	18-20 IN	26 IN	28-30 IN
	I	J	K	L	M	N	O	P
Crop 1 Code, Stage:	ZEAMX V7-V8	ZEAMX V8	ZEAMX V8	ZEAMX NA	ZEAMX V8	ZEAMX NA	ZEAMX NA	ZEAMX NA
Height, Unit:	26-28 IN	30-31 IN	38-40 IN	NA NA	38-40 IN	NA NA	NA NA	NA NA
	Q	R	S	T				
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX NA	ZEAMX NA	ZEAMX NA				
Height, Unit:	NA NA	NA NA	NA NA	NA NA				

WEED STAGE AT EACH APPLICATION

	A	B	C	D	E	F	G	H
Weed 1 Code:		SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA
Stage (leaves):		3-5	4-6	4-6	5-7	5-7	7-9	8-10
Height (inches):		1-3	4-5	4-6	7-10	7-10	10-13	14-18
Density:		Medium	Medium	Medium	Medium	Medium	Medium	Medium
Weed 2 Code:		XANST	XANST	XANST	XANST	XANST		
Stage (leaves):		3-5	4-6	4-7	5-8	5-8		
Height (inches):		2-4	4-7	3-6	4-7	4-7		
Density:		Low	Medium	Medium	Medium	Medium		

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Weed 3 Code:		ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
Stage (leaves):		3-5	5-6	5-6	6-9	6-9	6-8	8-10
Height (inches):		1-3	7-8	5-8	5-10	5-10	12-18	24-26
Density:		Low	Low	Medium	Medium	Medium	Medium	High

	I	J	K	L	M	N	O	P
Weed 1 Code:	SETFA	SETFA	SETFA		SETFA			
Stage (leaves):	8-10	8-10	7-10		7-9			
Height (inches):	16-20	23-25	29-32		12-14			
Density:	High	High	Medium		Low			

Weed 2 Code:
Stage (leaves):
Height (inches):
Density:

Weed 3 Code:	ABUTH	ABUTH	ABUTH	ABUTH
Stage (leaves):	8-10	8-10	7-12	8-10
Height (inches):	24-26	25-27	26-32	12-14
Density:	High	High	Medium	Medium

	Q	R	S	T
Weed 1 Code:				
Stage (leaves):				
Height (inches):				
Density:				

Weed 2 Code:
Stage (leaves):
Height (inches):
Density:

Weed 3 Code:
Stage (leaves):
Height (inches):
Density:

APPLICATION EQUIPMENT

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

	I	J	K	L	M	N	O	P
Appl. Equipment:	CO2 sprayer	CO2 sprayer	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	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	8002	8002	8002	8002	8002	8002	8002	8002
Boom Length, Unit:	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT	10 FT
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA	20 GPA

	Q	R	S	T
Appl. Equipment:	CO2 sprayer	CO2 sprayer	CO2 sprayer	CO2 sprayer
Operating Pressure:	40 PSI	40 PSI	40 PSI	40 PSI
Nozzle Type:	Flat fan	Flat fan	Flat fan	Flat fan
Nozzle Size:	8002	8002	8002	8002
Boom Length, Unit:	10 FT	10 FT	10 FT	10 FT
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA	20 GPA

NOTES:

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Weed Code																	
Crop Code																	
Rating Data Type																	
Rating Unit																	
Rating Date																	
Trt-Eval Interval																	

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	ZEAMX Injury Percent	ZEAMX Injury Percent	SETFA Control Percent	SETFA Control Percent	XANST Control Percent	XANST Control Percent	ABUTH Control Percent	ABUTH Control Percent
										14 DAT	28 DAT	14 DAT	28 DAT	14 DAT	28 DAT	14 DAT	28 DAT
1	NONTREATED									0	0	0	0	0	0	0	0
2	DEGREE XTRA	4	L	3.2	lb ai/a	3.2	qt/a	PRE	A	0	0	99	98	81	63	93	85
2	AATREX	90	WG	1	lb ai/a	1.11	lb/a	PRE	A								
3	DEGREE XTRA	4	L	1.6	lb ai/a	1.6	qt/a	PRE	A	0	0	99	99	80	99	72	99
3	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-2	D								
4	BICEP II MAGNUM	5.5	L	2.9	lb ai/a	2.1	qt/a	PRE	A	0	0	99	98	92	91	94	85
4	AATREX	90	WG	0.4	lb ai/a	0.444	lb/a	PRE	A								
5	BICEP II MAGNUM	5.5	L	1.45	lb ai/a	1.05	qt/a	PRE	A	0	0	99	99	77	99	68	99
5	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-2	D								
6	KEYSTONE	5.25	L	3.7	lb ai/a	2.82	qt/a	PRE	A	0	0	99	99	80	63	94	63
6	AATREX	90	WG	0.4	lb ai/a	0.444	lb/a	PRE	A								
7	KEYSTONE	5.25	L	1.85	lb ai/a	1.41	qt/a	PRE	A	0	0	99	99	90	99	85	99
7	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-2	D								
8	GUARDSMAN MAX	5	L	2.5	lb ai/a	2	qt/a	PRE	A	0	0	99	98	91	64	87	47
8	AATREX	90	WG	0.4	lb ai/a	0.444	lb/a	PRE	A								
9	GUARDSMAN MAX	5	L	1.25	lb ai/a	1	qt/a	PRE	A	0	0	99	99	93	99	77	99
9	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-2	D								
10	USA 2005	4	SC	0.625	lb ai/a	20	fl oz/a	PRE	A	0	0	99	95	99	97	98	97
10	AATREX	90	WG	2.0	lb ai/a	2.22	lb/a	PRE	A								
11	USA 2005	4	SC	0.313	lb ai/a	10	fl oz/a	PRE	A	0	0	91	99	88	99	90	99
11	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-2	D								
12	LEXAR	3.7	L	2.78	lb ai/a	3	qt/a	PRE	A	0	0	96	91	80	63	96	96
12	AATREX	90	WG	0.7	lb ai/a	0.78	lb/a	PRE	A								
13	LEXAR	3.7	L	1.39	lb ai/a	1.5	qt/a	PRE	A	0	0	91	99	91	99	96	99
13	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-2	D								
14	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-1	C	0	0	97	97	100	100	78	78
15	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2-4"W	B	0	0	100	100	100	100	100	100
15	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA2-4"-IN	L								
16	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	4-6"W-1	C	0	0	97	100	100	100	80	100
16	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA4-6"-IN	M								
17	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	6-8"W	E	0	0	100	100	100	100	100	100
17	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA6-8"-IN	N								
18	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	8-10"W	F	0	0	100	100	100	100	100	100
18	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA8-10"-IN	O								
19	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	10-12"W	G	0	0	100	100	100	100	68	68
19	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA10-12"-IN	P								
20	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	12-14"W	H	0	0	100	100	100	100	92	93
20	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA12-14"-IN	Q								
21	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	14-16"W	I	0	0	100	100	100	100	99	100
21	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA14-16"-IN	R								
22	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	16-18"W	J	0	0	100	100	100	100	99	96
22	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA16-18"-IN	S								
23	ROUNDUP W-MAX	4.5	SL	1.12	lb ae/a	32	fl oz/a	18-20"W	K	0	0	100	100	100	100	93	99
23	ROUNDUP W-MAX	4.5	SL	0.75	lb ae/a	21.3	fl oz/a	2WA18-20"-IN	T								
24	NO HERBICIDE									0	0	100	100	100	100	100	100
24	HANDWEED																
LSD (P=.05)										0.0	0.0	6.4	5.5	19.9	36.6	12.6	25.0

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Weed Code	ZEAMX		SETFA	SETFA	XANST	XANST	ABUTH	ABUTH
Crop Code	Injury	Injury	Control	Control	Control	Control	Control	Control
Rating Data Type	Percent	Percent	Percent	Percent	Percent	Percent	Percent	Percent
Rating Unit	14 DAT		28 DAT	14 DAT	28 DAT	14 DAT	28 DAT	14 DAT
Rating Date	28 DAT		14 DAT	28 DAT	14 DAT	28 DAT	14 DAT	28 DAT
Trt-Eval Interval	14 DAT		28 DAT	14 DAT	28 DAT	14 DAT	28 DAT	14 DAT

Trt No.	Treatment Name	Form Conc	Form Type	Rate Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code
Replicate F				0.000		0.000		2.963	0.579
Replicate Prob(F)				1.0000		1.0000		0.0616	0.5642
Treatment F				0.000		0.000		82.623	110.739
Treatment Prob(F)				1.0000		1.0000		0.0001	0.0001

Trial Comments

1. Protocol: SIU/RFK.
2. Ratings: WC 14, 28, and 56 DAT.
3. Yield.
4. Application timings: 2WA = 2 weeks after; IN = if needed.
5. Not possible to rate at 56 DAT due to severe wind damage to plots.
6. Ratings dates:
 - 14 and 28 days after PRE on 5-25-05 and 6-8-05, respectively.
 - 14 and 28 days after 2-4"W on 6-14-05 and 6-28-05, respectively.
 - 14 and 28 days after 4-6"W-1 on 6-20-05 and 7-4-05, respectively.
 - 14 and 28 days after 6-8"W on 6-24-05 and 7-8-05, respectively.
 - 14 and 28 days after 8-10"W on 6-24-05 and 7-8-05, respectively.
 - 14 and 28 days after 10-12"W on 6-27-05 and 7-11-05, respectively.
 - 14 and 28 days after 12-14"W on 6-29-05 and 7-13-05, respectively.
 - 14 and 28 days after 14-16"W on 6-29-05 and 7-13-05, respectively.
 - 14 and 28 days after 16-18"W on 7-1-05 and 7-15-05, respectively.
 - 14 and 28 days after 18-20"W on 7-4-05 and 7-18-05, respectively.
7. Not harvested due to wind damage.