

## Postemergence Application Timing in Glyphosate-Resistant Corn.

Project Code: 05-6A-E110 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: 11-14-05

**Objective:**

To gain a better understanding of the importance of weed control at the proper timing in glyphosate-resistant corn.

Weed Code	Common Name	Scientific Name
1.	SETFA foxtail, giant	Setaria faberi Herrm.
2.	ABUTH velvetleaf	Abutilon theophrasti Medicus
3.	XANST cocklebur, common	Xanthium strumarium L.
4.	AMATA waterhemp, common	Amaranthus rudis Sauer
5.	IPOHE morningglory, ivyleaf	Ipomoea hederacea (L.) Jacq.

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

Plot Width, Unit: 10 FT Plot Length, Unit: 25 FT Reps: 4  
Tillage Type: Reduced-Till Study Design: Randomized complete block  
Previous Crop, Year: GLXMA, 2004

Field Prep./Maintenance: N 150 LB/A, P205 0 LB/A, K20 100 LB/A

Soil Name: Stoy % OM: 1.6 pH: 6.3 CEC: 7  
Texture: Silt loam Fert. Level: P1: 105 LB/A, K: 448 LB/A

**APPLICATION DESCRIPTION**

	A	B	C	D	E	F	G	H
Application Date:	05-06-05	05-24-05	05-31-05	05-31-05	06-06-05	06-10-05	06-15-05	06-13-05
Time of Day:	11:30	8:30	10:15	10:15	9:15	8:45	8:30	9:05
Application Method:	Spray	Spray	Spray	Spray	Spray	Spray	Spray	Spray
Application Timing:	PRE	0-4"W-1	4-8"W	0-4"W-2	8-12"W	12-16"W	16-20"W	0-4"RG
Applic. Placement:	BROSIOI	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL	BROFOL
Air Temp., Unit:	75 F	62 F	72 F	72 F	78 F	74 F	74 F	74 F
% Relative Humidity:	30	70	50	50	70	90	50	96
Wind Velocity, Unit:	5 MPH	7 MPH	3-4 MPH	3-4 MPH	2 MPH	2 MPH	7 MPH	5 MPH
Soil Moisture:	NORMAL	NORMAL	BELNOR	BELNOR	ABONOR	NORMAL	ABONOR	ABONOR

**CROP STAGE AT EACH APPLICATION**

	A	B	C	D	E	F	G	H
Crop 1 Code, Stage:	ZEAMX NA	ZEAMX V3	ZEAMX V4	ZEAMX V4	ZEAMX V5	ZEAMX V5-V6	ZEAMX V6	ZEAMX V7
Height, Unit:	NA NA	5-6 IN	10-12 IN	10-12 IN	11-12 IN	12-15 IN	20-21 IN	21 IN

**WEED STAGE AT EACH APPLICATION**

	A	B	C	D	E	F	G	H
Weed 1 Code:	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA	SETFA
Stage (leaves):	3-5	5-7	3-5	3-5	4-6	6-8	6-8	3-5
Height (inches):	1-4	5-8	2-5	6-9	10-13	14-16	2-5	2-5
Density:	High	Medium	Medium	Medium	High	High	Low	Low
Weed 2 Code:	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH	ABUTH
Stage (leaves):	2-4	4-6	3-5	4-5	5-6	4-6	3-4	3-4
Height (inches):	1-2	4-6	1-4	8-10	10-13	15-20	1-2	1-2
Density:	Medium	Medium	Medium	Medium	Medium	Medium	Low	Low
Weed 3 Code:	XANST	XANST	XANST	XANST	XANST	XANST	XANST	XANST
Stage (leaves):	4-6	4-8	5-8	7-8	8-10	5-7	4-6	4-6
Height (inches):	2-4	6-8	3-5	7-10	11-13	15-17	2-5	2-5
Density:	High	High	Medium	Medium	Medium	Medium	Medium	Medium
Weed 4 Code:	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA	AMATA
Stage (leaves):	4-6	8-12	7-11	7-9	6-10	6-9	4-6	4-6
Height (inches):	1-2	4-7	2-4	7-10	6-10	12-15	2-5	2-5
Density:	Medium	Medium	Medium	Medium	Medium	Low	Low	Low
Weed 5 Code:								IPOHE
Stage (leaves):								1-2
Height (inches):								1-2
Density:								Low

**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:	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT	7.5 FT
Spray Volume, Unit:	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA	15 GPA

**NOTES:**

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Weed Code		Crop Code		Rating Data Type		Rating Unit		Rating Date		Trt-Eval Interval		ZEAMX	ZEAMX	ZEAMX	SETFA	SETFA	SETFA
												Yield	Injury	Height	Control	Control	Control
												10-11-05	3-5 DAT	06-15-05	05-19-05	06-23-05	06-30-05
														0 DA-G	13 DA-A	56 DAP	Canopy
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code								
1	NONTREATED									0	0	19	0	0	0		
2	HANDWEED									99	0	29	99	98	99		
3	DEGREE XTRA	4 L		1.5 lb ai/a		1.5 qt/a		PRE	A	105	0	29	81	98	98		
3	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-2	D								
4	DEGREE XTRA	4 L		3 lb ai/a		3 qt/a		PRE	A	77	0	29	95	98	99		
4	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-2	D								
5	DEGREE XTRA	4 L		1.5 lb ai/a		1.5 qt/a		0-4"W-1	B	70	0	29		96	95		
5	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B								
6	DEGREE XTRA	4 L		3 lb ai/a		3 qt/a		0-4"W-1	B	79	0	31		96	96		
6	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B								
7	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B	82	0	29		98	99		
7	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"RG	H								
8	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B	67	0	30		94	91		
9	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		4-8"W	C	77	0	25		98	98		
10	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		8-12"W	E	16	0	20		86	68		
11	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		12-16"W	F	22	0	21		97	98		
12	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		16-20"W	G	0	0	19		96	98		
13	ROUNDUP W-MAX	4.5 SL		1.12 lb ae/a		32 fl oz/a		16-20"W	G	3	0	19		97	99		
LSD (P=.05)										23.3	0.0	2.0	9.8	4.8	4.6		
Replicate F										2.166	0.000	4.144	1.000	1.734	0.737		
Replicate Prob(F)										0.1089	1.0000	0.0127	0.4363	0.1774	0.5369		
Treatment F										23.050	0.000	48.359	231.885	250.141	296.232		
Treatment Prob(F)										0.0001	1.0000	0.0001	0.0001	0.0001	0.0001		

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								ABUTH	ABUTH	ABUTH	XANST	XANST	XANST	
								Control	Control	Control	Control	Control	Control	
								Percent	Percent	Percent	Percent	Percent	Percent	
								05-19-05	06-23-05	06-30-05	05-19-05	06-23-05	06-30-05	
								13 DA-A	56 DAP	Canopy	13 DA-A	56 DAP	Canopy	
Trt	Treatment	Form	Form	Rate	Prod	Prod	Grow	Appl						
No.	Name	Conc	Type	Unit	Rate	Unit	Stg	Code						
1	NONTREATED								0	0	0	0	0	0
2	HANDWEED								99	98	99	99	98	99
3	DEGREE XTRA	4 L		1.5 lb ai/a	1.5 qt/a		PRE	A	65	97	96	68	97	97
3	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"W-2	D						
4	DEGREE XTRA	4 L		3 lb ai/a	3 qt/a		PRE	A	91	98	99	65	98	98
4	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"W-2	D						
5	DEGREE XTRA	4 L		1.5 lb ai/a	1.5 qt/a		0-4"W-1	B		97	96		93	93
5	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"W-1	B						
6	DEGREE XTRA	4 L		3 lb ai/a	3 qt/a		0-4"W-1	B		97	98		97	98
6	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"W-1	B						
7	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"W-1	B		98	99		98	99
7	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"RG	H						
8	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		0-4"W-1	B		97	97		91	86
9	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		4-8"W	C		97	97		96	98
10	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		8-12"W	E		25	34		94	98
11	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		12-16"W	F		88	93		98	99
12	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a	22 fl oz/a		16-20"W	G		75	90		91	99
13	ROUNDUP W-MAX	4.5 SL		1.12 lb ae/a	32 fl oz/a		16-20"W	G		83	89		96	99
LSD (P=.05)									15.5	5.1	4.8	16.2	3.5	4.8
Replicate F									0.717	0.148	0.327	1.980	0.693	1.144
Replicate Prob(F)									0.5662	0.9303	0.8057	0.1877	0.5626	0.3446
Treatment F									85.523	310.167	334.129	67.712	462.843	257.275
Treatment Prob(F)									0.0001	0.0001	0.0001	0.0001	0.0001	0.0001

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Weed Code	Crop Code	Rating Data Type	Rating Unit	Rating Date	Trt-Eval Interval	AMATA	AMATA	AMATA	IPOHE	IPOHE	IPOHE				
						Control Percent	Control Percent	Control Percent	Control Percent	Control Percent	Control Percent				
						05-19-05	06-23-05	06-30-05	05-19-05	06-23-05	06-30-05				
						13 DA-A	56 DAP	Canopy	13 DA-A	56 DAP	Canopy				
Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code						
1	NONTREATED									0	0	0			
2	HANDWEED									99	99	99			
3	DEGREE XTRA	4 L		1.5 lb ai/a		1.5 qt/a		PRE	A	99	99	99			
3	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-2	D	89	98	99			
4	DEGREE XTRA	4 L		3 lb ai/a		3 qt/a		PRE	A	99	99	99			
4	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-2	D	95	97	98			
5	DEGREE XTRA	4 L		1.5 lb ai/a		1.5 qt/a		0-4"W-1	B		99	99			
5	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B		98	99			
6	DEGREE XTRA	4 L		3 lb ai/a		3 qt/a		0-4"W-1	B		99	99			
6	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B		98	99			
7	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B		99	99			
7	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"RG	H		95	98			
8	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		0-4"W-1	B		91	97			
9	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		4-8"W	C		97	98			
10	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		8-12"W	E		34	63			
11	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		12-16"W	F		94	96			
12	ROUNDUP W-MAX	4.5 SL		0.77 lb ae/a		22 fl oz/a		16-20"W	G		89	99			
13	ROUNDUP W-MAX	4.5 SL		1.12 lb ae/a		32 fl oz/a		16-20"W	G		97	99			
LSD (P=.05)										0.0	6.7	4.5	6.1	13.4	1.1
Replicate F										0.000	1.822	1.279	0.605	0.382	1.508
Replicate Prob(F)										1.0000	0.1606	0.2963	0.6284	0.7665	0.2291
Treatment F										0.000	172.838	320.671	605.972	39.624	4749.184
Treatment Prob(F)										1.0000	0.0001	0.0001	0.0001	0.0001	0.0001

## Trial Comments

1. Protocol: Monsanto (same as 04-21S-MW60).
2. Ratings: CI 3-5 DAT; WC prior to POST, at canopy closure and 56 DAP.
3. Corn heights (all plots) at application "G".
4. Yield.
5. Not possible to rate crop injury at 3-5 days after PRE application as crop was not yet emerged.  
 DA-A = Days after PRE application. Ratings at 13 DA-A were prior to any postemergence applications.  
 DAP = Days after planting. Canopy = At canopy closure.
6. 3-5 DAT = Ratings taken at 3-5 days after various postemergence applications as follows:  
 Ratings at 3-5 days after 0-4"W-1"W application were on 5-28-05 and 4 DAT.  
 Ratings at 3-5 days after 4-8"W application were on 6-3-05 and 3 DAT.  
 Ratings at 3-5 days after 0-4"W-2 application were on 6-3-05 and 3 DAT.  
 Ratings at 3-5 days after 8-12"W application were on 6-10-05 and 4 DAT.  
 Ratings at 3-5 days after 12-16"W application were on 6-14-05 and 4 DAT.  
 Ratings at 3-5 days after 0-4"RG application were on 6-16-05 and 3 DAT.  
 Ratings at 3-5 days after 16-20"W application were on 6-20-05 and 5 DAT.
7. Harvested 10-11-05, (2) 30 inch rows by 22 ft.