

Evaluation of Roundup Ready Corn Tolerance to Touchdown and Touchdown 5.

00-20B

OBJECTIVE: Evaluate Roundup Ready corn tolerance to several rates and formulations of glyphosate.

SUMMARY: Touchdown 5 at 3.0 lb ai/A, applied at the V3-4 growth stage, caused 10% height reduction 14 days after treatment (DAT). Touchdown 5 at 2.0 and 3.0 lb ai/A, applied at the V6-7 growth stage, caused 17 and 45% height reduction 14 DAT, respectively. Touchdown 5 also caused 2 to 10% discoloration 14 DAT. Injury was more persistent with Touchdown 5 applied at the V6-7 growth stage, compared with the V3-4 growth stage. Touchdown (the new formulation of Touchdown 5) caused no injury, regardless of rate or growth stage at application. Touchdown 5 at 3.0 lb/A, applied at the V6-7 growth stage, caused 10% height reduction at harvest and reduced yield by 46%. Touchdown did not reduce height at harvest or yield, regardless of rate or growth stage at application. Corn yield ranged from 101 to 211 bu/A.

HERBICIDES

BICEP II MAGNUM 5.5 L
 ROUNDUP ULTRA 3 SL
 ROUNDUP ULTRA DRY 65 WG
 TOUCHDOWN 3 SL
 TOUCHDOWN 5 5 SL

WEEDS

CROP TOLERANCE ONLY

CROP

CORN, FIELD

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PLANT, SOIL AND GENERAL AGRICULTURE DEPARTMENT

SOUTHERN ILLINOIS UNIVERSITY

Evaluation of Roundup Ready Corn Tolerance to Touchdown and Touchdown 5.

Project Code: 00-20B Location: Belleville Research Center

Investigator: Bryan Young, Assistant Professor, Southern Illinois University

Weed Code	Common Name	Scientific Name
1. NA	CROP TOLERANCE ONLY	

Crop 1:	ZEAMX CORN, FIELD	Variety:	DK 626 RR
Planting Method:	SEEDED	Planting Date:	May-1-00
Rate:	28000 S/A	Depth:	1.5 IN
Row Spacing:	30 IN		

Plot Width, Unit:	10 FT	Plot Length, Unit:	24 FT	Reps:	3
Tillage Type:	REDUCED-TILL	Study Design:	RCB		
Previous Crop, Year:	GLXMA, 1999	Fertilizer applied:	N 150 LB/A,	P ₂ O ₅ 0 LB/A,	K ₂ O 150 LB/A

Soil Name:	EBBERT	% OM:	1.8	pH:	6.3	CEC:	15
Texture:	SILT LOAM	P ₁ :	95 LB/A,	K:	354 LB/A		

APPLICATION DESCRIPTION

	A	B	C
Application Date:	May-1-00	May-24-00	Jun-6-00
Time of Day:	10:00	10:30	17:00
Application Method:	SPRAY	SPRAY	SPRAY
Application Timing:	PPI	V3-4	V6-7
Applic. Placement:	BROSOL	BROFOL	BROFOL
Air Temp., Unit:	74 F	80 F	73 F
% Relative Humidity:	60	45	22
Wind Velocity, Unit:	3 MPH	1-2 MPH	1-2 MPH
Soil Moisture:	DRY	MOIST	NORMAL
% Cloud Cover:		10	0

CROP STAGE AT EACH APPLICATION

	A	B	C
Crop 1 Code, Stage:	NA	ZEAMX V3-V4	ZEAMX V6
Height, Unit:	NA	8-10 IN	17-19 IN

WEED STAGE AT EACH APPLICATION

	A	B	C
Weed 1 Code:	NA	NA	NA

APPLICATION EQUIPMENT

	A	B	C
Appl. Equipment:	CO ₂ SPRAY	CO ₂ SPRAY	CO ₂ SPRAY
Operating Pressure:	40 PSI	40 PSI	40 PSI
Nozzle Type:	FLAT FAN	FLAT FAN	FLAT FAN
Nozzle Size:	8002	8002	8002
Boom Length, Unit:	10 FT	10 FT	7.33 FT
Incorporation Equip.:	FC2X+CM		
Incorp. Depth, Unit:	2-4 IN		
Spray Volume, Unit:	20 GPA	20 GPA	20 GPA

NOTES:

Harvested Sep-28-00, (2) 30 inch rows by 21 ft.

TABLE. EVALUATION OF ROUNDUP READY CORN TOLERANCE TO TOUCHDOWN AND TOUCHDOWN 5. PROJECT CODE:00-20B

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD	ZEAMX, DAYS AFTER TREATMENT						ZEAMX HEIGHT EOS INCH
								HEIGHT REDUCTION			DISCOLORATION			
								14	28	56	14	28	56	
1 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	170	0	0	0	0	0	0	114
1 ROUNDUP ULTRA	3 SL	0.0 LB	AE/A	0.0 PT/A	V3-4	B								
2 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	182	0	0	0	0	0	0	114
2 TOUCHDOWN 5	5 SL	0.0 LB	A/A	0.0 PT/A	V3-4	B								
3 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	189	0	0	0	0	0	0	114
3 TOUCHDOWN	3 SL	0.0 LB	AE/A	0.0 PT/A	V3-4	B								
4 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	196	0	0	0	0	0	0	114
4 ROUNDUP ULTRA DRY	65 WG	0.0 LB	AE/A	0.0 LB/A	V3-4	B								
5 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	177	0	0	0	0	0	0	114
5 ROUNDUP ULTRA	3 SL	0.75 LB	AE/A	2.0 PT/A	V3-4	B								
6 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	167	0	0	0	0	0	0	114
6 TOUCHDOWN 5	5 SL	1.0 LB	A/A	1.6 PT/A	V3-4	B								
7 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	197	0	0	0	0	0	0	114
7 TOUCHDOWN	3 SL	0.75 LB	AE/A	2.0 PT/A	V3-4	B								
8 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	193	0	0	0	0	0	0	114
8 ROUNDUP ULTRA DRY	65 WG	0.75 LB	AE/A	1.15 LB/A	V3-4	B								
9 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	189	0	0	0	0	0	0	114
9 ROUNDUP ULTRA	3 SL	1.5 LB	AE/A	4.0 PT/A	V3-4	B								
10 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	180	0	0	0	1	0	0	114
10 TOUCHDOWN 5	5 SL	2.0 LB	A/A	3.2 PT/A	V3-4	B								
11 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	194	0	0	0	0	0	0	114
11 TOUCHDOWN	3 SL	1.5 LB	AE/A	4.0 PT/A	V3-4	B								
12 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	191	0	0	0	0	0	0	114
12 ROUNDUP ULTRA DRY	65 WG	1.5 LB	AE/A	2.3 LB/A	V3-4	B								
13 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	196	3	0	0	0	0	0	114
13 ROUNDUP ULTRA	3 SL	2.25 LB	AE/A	6.0 PT/A	V3-4	B								
14 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	195	10	3	0	2	2	0	114
14 TOUCHDOWN 5	5 SL	3.0 LB	A/A	4.8 PT/A	V3-4	B								
15 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	194	0	0	0	0	0	0	114
15 TOUCHDOWN	3 SL	2.25 LB	AE/A	6.0 PT/A	V3-4	B								
16 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	201	0	0	0	0	0	0	114
16 ROUNDUP ULTRA DRY	65 WG	2.25 LB	AE/A	3.46 LB/A	V3-4	B								
17 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	189	0	0	0	0	0	0	114
17 ROUNDUP ULTRA	3 SL	0.0 LB	AE/A	0.0 PT/A	V6-7	C								
18 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	198	0	0	0	0	0	0	114
18 TOUCHDOWN 5	5 SL	0.0 LB	A/A	0.0 PT/A	V6-7	C								
19 BICEP II MAGNUM	5.5 L	3.3 LB	A/A	2.4 QT/A	PPI	A	176	0	0	0	0	0	0	114
19 TOUCHDOWN	3 SL	0.0 LB	AE/A	0.0 PT/A	V6-7	C								

(CONTINUED)

TABLE. EVALUATION OF ROUNDUP READY CORN TOLERANCE TO TOUCHDOWN AND TOUCHDOWN 5. PROJECT CODE:00-20B
(CONTINUED)

TREATMENT	FORM.	RATE	UNIT	PROD RATE	APPL TIME	APPL CODE	YIELD BU/A	ZEAMX, DAYS AFTER TREATMENT						ZEAMX HEIGHT EOS INCH
								HEIGHT REDUCTION			DISCOLORATION			
								14 %	28 %	56 %	14 %	28 %	56 %	
20 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	193	0	0	0	0	0	0	114	
20 ROUNDUP ULTRA DRY	65 WG	0.0 LB AE/A	0.0 LB/A	V6-7	C									
21 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	211	0	0	0	0	0	0	114	
21 ROUNDUP ULTRA	3 SL	0.75 LB AE/A	2.0 PT/A	V6-7	C									
22 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	202	3	2	0	2	0	0	114	
22 TOUCHDOWN 5	5 SL	1.0 LB A/A	1.6 PT/A	V6-7	C									
23 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	192	0	0	0	0	0	0	114	
23 TOUCHDOWN	3 SL	0.75 LB AE/A	2.0 PT/A	V6-7	C									
24 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	192	0	0	0	0	0	0	114	
24 ROUNDUP ULTRA DRY	65 WG	0.75 LB AE/A	1.15 LB/A	V6-7	C									
25 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	190	0	0	0	0	0	0	114	
25 ROUNDUP ULTRA	3 SL	1.5 LB AE/A	4.0 PT/A	V6-7	C									
26 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	166	17	17	10	5	4	3	114	
26 TOUCHDOWN 5	5 SL	2.0 LB A/A	3.2 PT/A	V6-7	C									
27 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	176	0	0	0	0	0	0	114	
27 TOUCHDOWN	3 SL	1.5 LB AE/A	4.0 PT/A	V6-7	C									
28 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	190	0	0	0	0	0	0	114	
28 ROUNDUP ULTRA DRY	65 WG	1.5 LB AE/A	2.3 LB/A	V6-7	C									
29 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	188	0	0	0	0	0	0	114	
29 ROUNDUP ULTRA	3 SL	2.25 LB AE/A	6.0 PT/A	V6-7	C									
30 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	101	45	35	25	10	10	10	102	
30 TOUCHDOWN 5	5 SL	3.0 LB A/A	4.8 PT/A	V6-7	C									
31 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	182	2	0	0	0	0	0	114	
31 TOUCHDOWN	3 SL	2.25 LB AE/A	6.0 PT/A	V6-7	C									
32 BICEP II MAGNUM	5.5 L	3.3 LB A/A	2.4 QT/A	PPI	A	178	5	3	0	0	0	0	114	
32 ROUNDUP ULTRA DRY	65 WG	2.25 LB AE/A	3.46 LB/A	V6-7	C									
33 NO HERBICIDE						189	0	0	0	0	0	0	114	
33 HANDWEED														
LSD						23	4	3	1	0.3	0.5	0.5	0	
P						0.01	0.01	0.01	0.01	0.01	0.01	0.01	1.0	

1. PROTOCOL: SIU - RFK.

2. RATING DATES:

14 DAYS AFTER V3-4 AND V6-7 ON JUN-7-00 AND JUN-20-00, RESPECTIVELY.

28 DAYS AFTER V3-4 AND V6-7 ON JUN-20-00 AND JUL-4-00, RESPECTIVELY.

56 DAYS AFTER V3-4 AND V6-7 ON JUL-19-00 AND AUG-1-00, RESPECTIVELY.