

Evaluation of Roundup Ready Soybean Tolerance to Formulations of Glyphosate.

02-20A-ME150

OBJECTIVE: Determine crop safety of various glyphosate formulations on Roundup Ready soybeans.

SUMMARY: Roundup Ready soybeans showed excellent tolerance to all glyphosate formulations applied at the 1X use rate except Touchdown 5. As in previous studies, some chlorotic and necrotic spots were visible on Roundup Ready soybean after treatment with Touchdown 5. This injury was most visible when Touchdown 5 was applied to soybeans in the V4 stage of soybean growth. Touchdown 5 is an "old" formulation and is no longer sold for use in Roundup Ready crops. This formulation was included solely to provide a benchmark of injury observed with past formulations. Roundup Ready soybeans were also very tolerant to 3X rates of all glyphosate formulations applied at V4. However, soybean injury (chlorosis of leaves that emerged after herbicide application) was visible 14 DAT (days after treatment) from R1 applications of the 3X rate of Roundup UltraMax (10%), MON78270 (7%), Clearout 41 Plus (7%), and Touchdown 5 (3%). In each case the soybeans quickly outgrew the injury and little to no soybean injury was visible by 28 DAT.

Soybean yield was 53 bu/A in the nontreated (weed free) plots. No reduction in soybean yield was observed from V4 glyphosate applications or R1 applications of glyphosate formulations at the 1X use rate. Soybean yield was reduced by 5 bu/A in plots treated at the R1 stage with the 3X rate of MON 78270, Clearout 41 Plus, or Touchdown 5. No other reductions in soybean yield were observed.

HERBICIDES

CLEAROUT 41 PLUS 3 L
 MON 78270 4.5 SL
 ROUNDUP ULTRA MAX 3.7 SL
 SIU 2002-H1 4.17 SL
 TOUCHDOWN 3 SL
 TOUCHDOWN 5 5 SL

WEEDS

crop tolerance only

CROP

soybean

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SOUTHERN ILLINOIS UNIVERSITY

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Project Code: 02-20A-ME150 Location: Belleville Research Center

Weed Code			
Crop Code	GLXMA	GLXMA	GLXMA
Rating Data Type	Yield	Injury	Injury
Rating Unit	bu/A	Percent	Percent
Rating Date	10-2-02		
Trt-Eval Interval		14 DAT	28 DAT

Trt No.	Treatment Name	Form Conc	Form Type	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code	Yield	Injury	Injury
1	NONTREATED								53	0	0
2	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	26	OZ/A	V4	A	53	0	0
3	MON 78270	4.5	SL	0.75 LB AE/A	21.3	OZ/A	V4	A	54	0	0
4	CLEAROUT 41 PLUS	3	L	0.75 LB AE/A	32	OZ/A	V4	A	53	0	0
5	TOUCHDOWN	3	SL	0.75 LB AE/A	32	OZ/A	V4	A	54	0	0
6	SIU 2002-H1	4.17	SL	0.75 LB AE/A	23	OZ/A	V4	A	51	0	0
7	TOUCHDOWN 5	5	SL	1.0 LB A/A	25.6	OZ/A	V4	A	54	9	0
8	ROUNDUP ULTRA MAX	3.7	SL	2.25 LB AE/A	78	OZ/A	V4	A	54	0	0
9	MON 78270	4.5	SL	2.25 LB AE/A	64	OZ/A	V4	A	52	0	0
10	CLEAROUT 41 PLUS	3	L	2.25 LB AE/A	96	OZ/A	V4	A	50	1	0
11	TOUCHDOWN	3	SL	2.25 LB AE/A	96	OZ/A	V4	A	50	1	0
12	SIU 2002-H1	4.17	SL	2.25 LB AE/A	69	OZ/A	V4	A	52	4	0
13	TOUCHDOWN 5	5	SL	3.0 LB A/A	77	OZ/A	V4	A	53	15	0
14	ROUNDUP ULTRA MAX	3.7	SL	0.75 LB AE/A	26	OZ/A	R1	B	53	0	0
15	MON 78270	4.5	SL	0.75 LB AE/A	21.3	OZ/A	R1	B	50	0	0
16	CLEAROUT 41 PLUS	3	L	0.75 LB AE/A	32	OZ/A	R1	B	53	0	0
17	TOUCHDOWN	3	SL	0.75 LB AE/A	32	OZ/A	R1	B	51	0	0
18	SIU 2002-H1	4.17	SL	0.75 LB AE/A	23	OZ/A	R1	B	54	0	0
19	TOUCHDOWN 5	5	SL	1.0 LB A/A	25.6	OZ/A	R1	B	52	1	0
20	ROUNDUP ULTRA MAX	3.7	SL	2.25 LB AE/A	78	OZ/A	R1	B	53	10	0
21	MON 78270	4.5	SL	2.25 LB AE/A	64	OZ/A	R1	B	48	7	0
22	CLEAROUT 41 PLUS	3	L	2.25 LB AE/A	96	OZ/A	R1	B	48	7	0

Weed Code											
Crop Code									GLXMA	GLXMA	GLXMA
Rating Data Type									Yield	Injury	Injury
Rating Unit									bu/A	Percent	Percent
Rating Date									10-2-02		
Trt-Eval Interval										14 DAT	28 DAT

Trt No.	Treatment Name	Form Conc	Form Type	Rate	Rate Unit	Prod Rate	Prod Unit	Grow Stg	Appl Code			
23	TOUCHDOWN	3	SL	2.25	LB AE/A	96	OZ/A	R1	B	50	2	0
24	SIU 2002-H1	4.17	SL	2.25	LB AE/A	69	OZ/A	R1	B	49	2	0
25	TOUCHDOWN 5	5	SL	3.0	LB A/A	77	OZ/A	R1	B	48	3	0
26	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	26	OZ/A	V4	A	52	0	2
26	ROUNDUP ULTRA MAX	3.7	SL	0.75	LB AE/A	26	OZ/A	R1	B			
27	MON 78270	4.5	SL	0.75	LB AE/A	21.3	OZ/A	V4	A	50	0	0
27	MON 78270	4.5	SL	0.75	LB AE/A	21.3	OZ/A	R1	B			
28	CLEAROUT 41 PLUS	3	L	0.75	LB AE/A	32	OZ/A	V4	A	52	0	0
28	CLEAROUT 41 PLUS	3	L	0.75	LB AE/A	32	OZ/A	R1	B			
29	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	V4	A	52	3	0
29	TOUCHDOWN	3	SL	0.75	LB AE/A	32	OZ/A	R1	B			
30	SIU 2002-H1	4.17	SL	0.75	LB AE/A	23	OZ/A	V4	A	55	0	0
30	SIU 2002-H1	4.17	SL	0.75	LB AE/A	23	OZ/A	R1	B			
LSD (P=.05)										5.0	2.2	0.9
Replicate F										2.352	2.553	1.000
Replicate Prob(F)										0.1042	0.0866	0.3741
Treatment F										1.313	22.440	1.000
Treatment Prob(F)										0.1873	0.0001	0.4857

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Trial Comments

1. Protocol: SIU (BGY).
2. Blanket PRE application of Dual II Magnum at 1.27 lbai/A applied 10 ft wide to all plots including the nontreated on 5-30-02.
3. DAT = days after V4 or R1 application.
4. Rating dates:
 - 14 and 28 days after the V4 application was on 7-12-02 and 7-26-02, respectively.
 - 14 and 28 days after the R1 application was on 7-21-02 and 8-12-02, respectively.