

Herbicide performance in soybeans at Lamberton, MN in 2009.

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The objective of this study was to evaluate soybean herbicide combinations for annual grass and annual broadleaf weed control in glyphosate-resistant soybeans. This study was conducted on a Normania loam soil containing 4.2% organic matter, pH 6.1 and soil test P and K levels of 68 and 376 lb/A, respectively. A randomized complete block design with four replications and a plot size of 10 by 30 ft was used. The site was planted to oats in 2008 and was fall chiseled. On May 18, 2009, Pioneer '91M80' glyphosate-resistant soybeans were planted in 30-inch rows at a seeding rate of 160,000 seeds/A. On July 29, all plots were treated with bifenthrin for soybean aphid and spider mite control. All treatments were applied with a tractor-mounted sprayer delivering 20 gpa at a pressure of 40 psi. The sprayer was equipped with 8002 flat-fan nozzles spaced 15 inches apart on the boom. Application dates, environmental conditions, plant sizes and rainfall data are listed below:

Date	May 18	June 15	June 19	July 13
Treatment	PRE	POST I	POST II	POST III
Temperature (F)				
air	84	55	63	61
soil (4 inch)	72	64	64	78
Relative humidity (%)	22	77	77	72
Wind (mph)	SW 5	SE 7	W 6	E 5
Sky	clear	cloudy	p. cloudy	clear
Soil moisture	dry	dry	moist	dry
Soybean				
leaf no.	-	V2	V2	V9
height (inch)	-	5	6	25
Yellow foxtail				
leaf no.	-	2 to 4	3 to 4	3 to 4
height (inch)	-	3 to 5	5 to 7	5 to 7
no./ft ²	-	48	49	15
Common lambsquarters				
leaf no.	-	4 to 6	4 to 6	-
height (inch)	-	3 to 4	4 to 6	-
no./ft ²	-	4	4	-
Tall waterhemp				
leaf no.	-	2 to 4	3 to 5	3 to 5
height (inch)	-	2 to 4	3 to 5	3 to 5
no./ft ²	-	7	7	2
Rainfall after application (inch)				
1 week	0.34	1.22	0.52	0.02
2 week	0.16	0.46	0.23	0.03
3 week	1.36	0.09	1.46	0.46

(Southwest Research and Outreach Center, University of Minnesota, Lamberton).

Table. Herbicide performance in soybeans at Lamberton, MN in 2009 (Getting, Gunsolus and Hoverstad).

Treatment ^a	Rate (oz/A, pt/A, lb/A or %)	Injury Jun 25 (%)	Yellow foxtail				Common lambsquarters				Tall waterhemp				Yield (bu/A) ^c
			Jun 15	Jun 25	Jul 13	Sep 15	Jun 15	Jun 25	Jul 13	Sep 15	Jun 15	Jun 25	Jul 13	Sep 15	
Preemergence/POST I (4-inch weeds)															
Boundary / Flexstar + Fusion + Harmony GT + MSO + 28%N	1.5pt / 16oz + 8oz + 0.125oz + 1.0% + 2.5%	8 b	35 d-f	99 b	94 c-e	93 b-d	55 g	99 b	99 b	99 ab	38 h	99 a	98 ab	98 ab	48.7 a-c
Authority First / Raptor + Select + COC + 28%N	6.4 oz / 4 oz + 6 oz + 1% + 2.5%	10 a	28 gh	96 cc	87 k	76 k	91 ab	99 b	99 b	98 bc	94 a-c	99 a	96 bc	92 d	47.0 a-c
Gangster V + Gangster FR / Raptor + Select + COC + 28%N	2.5 oz + 0.5 oz / 4 oz + 6 oz + 1% + 2.5%	4 c	40 cd	96 c	89 ijk	81 ij	85 bc	99 b	98 c	98 cc	95 ab	99 a	95 c	93 cc	46.3 bc
Preemergence/POST II (6-inch weeds)															
Authority First / Roundup Original Max + AMS	3.2oz / 22 oz + 3qt	0 d	25 hi	99 b	94 c-f	88 e-h	70 de	99 b	99 b	99 ab	91 b-e	99 a	99 ab	99 ab	47.4 a-c
Authority Assist / Roundup Original Max + AMS	5oz / 22oz + 3qt	0 d	30 f-h	99 b	93 d-h	86 f-h	79 cc	99 b	99 b	99 ab	80 f	99 a	99 ab	98 ab	49.8 ab
Intrro / Roundup Weathermax + AMS	2qt / 22oz + 3qt	0 d	53 b	99 b	96 bc	90 c-e	76 cc	99 b	99 b	99 ab	89 b-e	99 a	99 ab	99 ab	47.7 a-c
Gangster V + Gangster FR / Roundup Original Max + AMS	2oz + 0.4oz / 22oz + 3qt	0 d	28 gh	99 b	93 d-g	89 d-f	84 bc	99 b	99 b	99 ab	86 d-f	99 a	99 ab	99 ab	49.2 a-c
Prefix / Touchdown Total + AMS	1qt / 24oz + 3qt	0 d	43 c	99 b	98 ab	94 b	64 e-g	99 b	99 b	99 ab	85 ef	99 a	99 ab	98 ab	47.6 a-c
Boundary / Touchdown Total + AMS	1.5pt / 24oz + 3qt	0 d	33 e-g	99 b	97 b	94 bc	60 fg	99 b	99 b	99 ab	73 g	99 a	99 ab	99 ab	50.0 ab
V-10233 / Roundup Original Max + AMS	3oz / 22oz + 3qt	0 d	43 c	99 b	94 c-e	88 e-h	61 e-g	99 b	99 b	99 ab	89 b-e	99 a	99 ab	98 ab	49.1 a-c
Valor SX + Python / Roundup Original Max + AMS	2oz + 0.5oz / 22oz + 3qt	0 d	25 hi	99 b	93 d-h	85 g-i	65 ef	99 b	99 b	99 ab	91 b-e	99 a	98 ab	96 b-d	48.5 a-c
Valor SX + Intrro / Roundup Original Max + AMS	2oz + 1 pt / 22oz + 3qt	0 d	38 c-e	99 b	95 b-d	89 d-g	89 b	99 b	99 b	99 ab	95 ab	99 a	99 ab	99 ab	46.6 a-c
Sonic / Durango + AMS	4.5oz / 24oz + 3qt	0 d	20 i	99 b	93 d-g	85 hi	60 fg	99 b	99 b	98 bc	88 c-e	99 a	98 ab	97 a-c	49.8 ab
Enlite / Roundup PowerMax + AMS	2.83oz / 22oz + 3qt	0 d	28 gh	99 b	95 cc	86 e-h	84 bc	99 b	99 b	99 ab	92 b-d	99 a	99 ab	99 ab	48.6 a-c
Enlite / Roundup PowerMax + Harmony GT + AMS	2.83oz / 22oz + 0.125oz + 3qt	0 d	28 gh	99 b	91 f-i	87 e-h	88 b	99 b	99 b	99 ab	92b-d	99 a	99 ab	99 ab	47.9 a-c
POST I (4-inch weeds)/POST III (soybean canopy)															
Roundup Weathermax + AMS / Roundup Weathermax + AMS	22oz + 3qt / 22oz + 3qt	0 d	0 j	95 d	81 l	99 a	0 h	99 c	97 d	99 ab	0 i	96 c	81 e	99 ab	49.3 a-c
Durango DMA + FirstRate + AMS / Durango DMA + AMS	24oz + 0.3oz + 3qt / 24oz + 3qt	0 d	0 j	96 c	83 l	99 a	0 h	99 c	99 b	99 ab	0 i	98 b	89 d	99 ab	48.2 a-c
Flexstar GT + AMS / Touchdown Total + AMS	3 pt + 3qt / 24oz + 3qt	0 d	0 j	99 b	88 jk	99 a	0 h	99 b	99 b	99 ab	0 i	99 a	99 ab	99 ab	47.4 a-c
POST II (6-inch weeds)															
Harmony GT + Classic + Roundup Original Max + AMS	0.5oz + 0.33oz + 22oz + 3qt	0 d	0 j	99 b	93 d-h	81 ij	0 h	99 b	99 b	98 bc	0 i	99 a	97 a-c	97 a-c	50.5 a
Roundup Original Max + Resource + NIS + AMS	22oz + 3oz + 0.25% + 3qt	4 d	0 j	99 b	91 g-i	78 jk	0 h	99 b	99 b	96 e	0 i	99 a	86 d	76 f	45.6 c
Roundup Original Max + Cadet + NIS + AMS	22oz + 0.6oz + 0.25% + 3qt	3 de	0 j	99 b	90 h-j	80 jk	0 h	99 b	99 b	97 de	0 i	99 a	88 d	78 f	46.1 bc
Roundup Weathermax + AMS	22oz + 3qt	0 d	0 j	99 b	92 e-i	85 hi	0 h	99 b	99 b	97 de	0 i	99 a	89 d	84 e	49.6 a-c
Checks															
Weedy Check	-	0 d	0 j	0 e	0 m	0 l	0 h	0 d	0 e	0 f	0 i	0 d	0 f	0 g	3.9 d
Weed-free check	-	0 d	100 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a	100 a	46.4 a-c
	LSD (0.10)	2.4	7.4	0.8	2.5	3.9	9.0	0.2	0.7	1.2	6.9	1.1	3.4	4.2	4.15

^a COC = crop oil concentrate; MSO = methylated seed oil; NIS = nonionic surfactant; AMS = liquid spray grade ammonium sulfate; 28%N = an aqueous solution of urea and ammonium nitrate.

^b Yield adjusted to 13% moisture.