

Soybean Weed Management at Lamberton, MN in 2015.

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The objective of this study was to evaluate soybean herbicide combinations for annual weed control in soybeans. This study was conducted on a Normania loam soil containing 4.2% organic matter, pH 6.2 and soil test P and K levels of 21 and 143 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 corn in 2014 and fall tillage was done using a mulch ripper. On June 1, 2015, Asgrow 'AG 1431' glyphosate-resistant soybeans were planted in 30-inch rows at a seeding rate of 160,000 seeds/acre. Herbicide treatments were applied with a tractor-mounted compressed air sprayer delivering 15 gpa at a pressure of 35 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	June 1	June 24	July 1	July 22
Treatment	PRE	Post I	Post II	Post III
Temperature (F)				
air	72	76	71	81
soil (4 inch)	60	78	80	81
Relative humidity (%)	42	66	57	48
Wind (mph)	SSE 14	S 9	ESE 9	S 9
Sky	p. cloudy	Clear	Cloudy	Clear
Soil moisture	Moist	Moist	Dry	Dry
Soybeans				
leaf no.	-	V2	V3	V12
height (inch)	-	9"	11"	25"
Yellow foxtail				
leaf no.	-	1 to 4	1 to 4	1 to 6
height (inch)	-	.5 to 4	1 to 5	6 to 24
no./ft ²	-	59	130	118
Common lambsquarters				
leaf no.	-	1 to 3	1 to 3	4 to 6
height (inch)	-	.5 to 2	1 to 3	4 to 9
no./ft ²	-	1	< 1	< 1
Tall waterhemp				
leaf no.	-	1 to 3	1 to 3	1 to 7
height (inch)	-	.5 to 2	.5 to 5	1 to 15
no./ft ²	-	2	2	3
Rainfall after application (inch)				
1 week	1.26	0.18	1.32	2.27
2 week	0.52	1.32	0.01	0.00
3 week	3.10	0.01	0.17	0.32

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

Yield, herbicide rates and weed control are listed in Table 1.

Yellow foxtail was the predominate weed species. Authority First, Surveil, Rowel, Fierce + Sencor, Zidua Pro, Sonic and Enlite PRE treatments provided less than 90 % control of yellow foxtail. With the exception of Zidua Pro @ 4 oz and Sonic @ 4.5 oz, pre-emerge herbicides provided greater than 95% early-season control of waterhemp. All pre-emerge herbicides provided excellent initial lambsquarter control. Temporary crop injury was observed with several pre-emerge treatments. The Flexstar GT and Cobra post-emerge treatments showed crop injury. All weed control programs yielded better than the untreated weedy check. The PRE only and the Rowel followed by Warrant + Cobra POST II treatment yielded less than other herbicide programs.

Table. Herbicide performance in soybeans at Lamberton, MN in 2015 (Vollmer, Gunsolus and Potter).

Treatment ^a	Rate (oz/A, pt/A, qt/A, lb/A or %)	Pre Injury	Post Injury	Yellow Foxtail		Common Lambsquarters			Tall Waterhemp			Yield ^b (bu/A)	
		Jul 9	Jul 9	Jun 24	Jul 9	Oct 13	Jun 24	Jul 9	Oct 13	Jun 24	Jul 9		Oct 13
-----(% control)-----													
Preemergence													
Authority First	6.4 oz	1 bcd	0 e	86 d-g	20 g	5 de	98 ab	99 a	99 a	99 a	99 a	99 a	51 h
Surveil	2.8 oz	0 d	0 e	85 efg	28 f	13 d	98 b	99 a	99 a	99 a	99 a	99 a	46 i
Preemergence / POST I (2" Weeds)													
Rowel / Roundup Weathermax + Warrant + AMS	3 oz / 32 oz + 2 pt + 3 qt	0 d	0 e	86 d-g	91 cde	91 ab	99 a	99 a	99 a	99 a	99 a	99 a	64 a-d
Authority First / Warrant + Roundup Weathermax + AMS	6 oz / 3 pt + 32 oz + 3 qt	1 b	0 e	88 d-g	86 e	79 c	98 ab	99 a	99 a	99 a	99 a	99 a	61 b-f
Boundary / Dual II Magnum + Flexstar GT 3.5 + NIS + AMS	1.5 pt / 16 oz + 3.5 pt + 0.25% v/v + 3 qt	0 d	1 c	95 abc	98 ab	97 ab	99 ab	99 a	99 a	99 a	99 a	99 a	59 def
Preemergence / POST II (4" Weeds)													
Authority First / Roundup Powermax + AMS	6.4 oz / 32 oz + 3 qt	0 e	0 e	86 d-g	91 cde	91 ab	99 a	99 a	99 a	99 a	99 a	99 a	62 a-f
Authority First / Anthem + Roundup Powermax + AMS	6.4 oz / 6 oz + 32 oz + 3 qt	2 a	0 e	88 d-g	96 abc	97 ab	99 a	99 a	99 a	99 a	99 a	99 a	61 b-f
Authority Assist / Roundup Powermax + AMS	12 oz / 32 oz + 3 qt	1 bc	0 e	93 bcd	96 abc	94 ab	99 a	99 a	99 a	99 a	99 a	98 b	63 a-e
Boundary / Flexstar GT 3.5 + MSO+ AMS	1.5 pt / 3.5 pt + 1% v/v + 3 qt	0 d	2 b	91 b-e	96 abc	95 ab	99 a	99 a	99 a	99 a	99 a	99 a	60 c-f
BroadAxe XC / Flexstar GT 3.5 + MSO + AMS	25 oz / 3.5 pt + 1% v/v + 3 qt	0 cd	2 b	97 ab	98 ab	97 ab	99 ab	99 a	99 a	99 a	99 a	99 a	57 fg
Fierce + FirstRate / Roundup Powermax + AMS	3 oz + 0.3 oz / 32 oz + 3 qt	0 d	0 e	90 c-f	96 abc	96 ab	99 a	99 a	99 a	99 a	99 a	99 a	65 ab
Fierce + Sencor / Roundup Powermax + AMS	3 oz + 4 oz / 32 oz + 3 qt	0 cd	0 e	88 d-g	92 b-e	94 ab	99 a	99 a	99 a	99 a	99 a	99 a	61 b-f
Zidua PRO (Optill+Zidua) / Roundup Powermax + NIS + AMS	2 oz + 2 oz / 32 oz + 0.25% v/v + 3 qt	0 d	0 de	89 c-f	92 b-e	93 ab	99 a	99 a	99 a	99 a	99 a	99 a	60 def
Verdict + Outlook / Roundup Powermax + NIS + AMS	5 oz + 10 oz / 32 oz + 0.25% v/v + 3 qt	0 d	0 e	97 ab	93 a-d	90 b	99 a	99 a	99 a	99 a	99 a	99 a	59 efg
Zidua + Verdict / Roundup Powermax + NIS + AMS	2 oz + 5 oz / 32 oz + 0.25% v/v + 3 qt	1 bcd	0 e	93 bcd	95 a-d	94 ab	99 a	99 a	99 a	99 a	99 a	99 a	59 d-g
Sonic / Durango DMA + AMS	4.5 oz / 32 oz + 3 qt	0 cd	0 e	84 fg	91 cde	91 ab	99 a	99 a	99 a	94 b	99 a	99 a	66 a
Sonic / Durango DMA + AMS	6 oz / 32 oz + 3 qt	1 bc	0 e	89 c-g	94 a-d	92 ab	99 a	99 a	99 a	99 a	99 a	99 a	62 a-f
Surveil / Durango DMA + AMS	2.8 oz / 32 oz + 3 qt	1 b	0 e	93 bcd	92 b-e	92 ab	99 ab	99 a	99 a	99 a	99 a	99 a	64 a-d
Enlite (chlorimuron + thifensulfuron + flumioxazin) / Abundit Extra + AMS	0.33 oz + 0.5 oz + 2 oz / 32 oz + 3 qt	0 cd	0 e	83 g	89 de	93 ab	99 a	99 a	99 a	99 a	99 a	99 a	65 abc
Enlite (chlorimuron + thifensulfuron + flumioxazin) / Abundit Extra + Cinch + AMS	0.33 oz + 0.5 oz + 2 oz / 32 oz + 1 pt + 3 qt	1 bcd	1 d	85 efg	96 abc	97 ab	99 a	99 a	99 a	99 a	99 a	99 a	64 a-d
Rowel / Roundup Weathermax + Warrant + Cobra+ COC + AMS	3 oz / 32 oz + 2 pt + 12.5 oz + 1 pt + 3 qt	0 d	4 a	86 d-g	91 cde	91 ab	99 a	99 a	99 a	99 a	99 a	99 a	51 h
POST I (2" Weeds) / POST III (Late Post)													
Roundup Powermax + Cobra + COC + AMS / Roundup Powermax + AMS	32 oz + 12.5 oz + 1 pt + 3 qt / 32 oz + 3 qt	0 cd	1 d	0 h	91 cde	97 ab	0 c	99 a	99 a	0 c	93 b	99 a	54 gh
Checks													
Weedy check		0 d	0 e	0 h	0 h	0 e	0 c	0 b	0 b	0 c	0 c	0 c	27 j
Weed-free		0 d	0 e	99 a	99 a	99 a	99 a	99 a	99 a	99 a	99 a	99 a	62 a-f
	LSD (0.10)	0.5	0.4	6.4	6.2	8.3	1.0	ns	ns	2.3	1.0	0.5	5.08

^a COC = crop oil concentrate; NIS = nonionic surfactant; AMS = liquid spray grade ammonium sulfate.

^b Yield adjusted to 13% moisture.