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Weed Management Programs in Soybean

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Weed Management Programs in Soybean

Abstract

The purpose of this study was to evaluate various two- and one-pass herbicide application timings in soybean for crop injury and weed control.

Keywords

RFR A9121, Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences

Weed Management Programs in Soybean

RFR-A9121

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Introduction

The purpose of this study was to evaluate various two- and one-pass herbicide application timings in soybean for crop injury and weed control.

Materials and Methods

The study was established using a randomized complete block design with three replications. Herbicides were applied in 20 gallons of water per acre. The crop rotation was soybean following corn. The pre-plant seedbed was prepared with a tandem disk.

Soybeans were planted at 196,000 seeds/acre in 30-in. rows on May 20. Preplant incorporated (PPI) and preemergence (PRE) treatments were applied on May 20 and 21, respectively. PPI treatments were incorporated one-pass with a tandem disk. Early postemergence (EPOST), postemergence (POST), and sequential postemergence (SPOST) treatments were applied on June 26, July 1, and 16, respectively. Soybean growth was V3, V4, and R1 on June 26, July 1, and 16, respectively. Weeds were generally 0.25 to 8 in. tall, 0.25 to 15 in. tall, and 0.25 to 4 in. tall, on June 26, July 1, and 16, respectively. Weed species in the study included: giant foxtail, velvetleaf, common waterhemp, common ragweed, and common lambsquarters averaging a population of < 1 to 2 plants/ft².

Visual estimates of crop injury and percentage

weed control were made during the growing season. These observations are compared with an untreated control and made on a zero to 100 rating scale (0% = no control or injury; 100% = complete control or crop kill). Soybean yields were measured and adjusted to 13% moisture.

Results and Discussion

Summarized in Tables 1, 2, and 3 are the results of the study. PRE and EPOST treatments resulted in 0–10% soybean injury when observed on July 1; 41 and 5 days after application, respectively (Table 1). PRE treatments generally gave sufficient weed control prior to the application of the POST treatments on July 1. On July 1, EPOST treatments applied on June 26 gave 90–96% weed control.

POST applied Cobra plus Roundup PowerMAX and Synchrony XP plus Roundup PowerMAX caused 33% and 22% soybean injury, respectively, when observed on July 9, 8 days after application (Table 2). On July 16, weed control ranged from 92–99% with the various treatment combinations and application timings.

Weed control continued to be good to excellent late in the growing season and ranged from 93–99% on August 12 (Table 3). Soybean yields ranged from 58 to 65 bushels per acre. Significant differences in soybean yield between treatments were observed, but were not frequent. Nearly all of the treatment yields were significantly higher than the untreated control.

Acknowledgements

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Table 1. Weed management programs in soybeans.

Treatment ^a	Rate ^b	Appln timing	Injury Jul 1	Setfa ^c Jul 1	Abuth ^c Jul 1	Amata ^c Jul 1	Ambel ^c Jul 1	Cheal ^c Jul 1
	Product/acre		-(%)	----- (%) -----				
Untreated	-	-	0	0	0	0	0	0
Prowl H20 + (Roundup PowerMAX + AMS)	2.6 pt + (22.0 fl oz + 2.0%)	PPI + (POST)	0	82	45	70	50	50
Enlite + (Roundup PowerMAX + AMS)	2.8 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	0	87	85	93	88	93
Enlite + (Synchrony XP + Roundup PowerMAX + AMS)	2.8 oz wt + (0.375 oz wt + 22.0 fl oz + 2.0%)	PRE + (POST)	2	80	90	88	85	85
Authority First DF + (Roundup PowerMAX + AMS)	3.2 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	2	75	87	67	82	80
Authority Assist + (Roundup PowerMAX + AMS)	5.0 fl oz + (22.0 fl oz + 2.0%)	PRE + (POST)	0	93	98	96	83	96
Valor SX + (Roundup PowerMAX + AMS)	2.0 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	0	77	68	73	65	68
Valor XLT + (Roundup PowerMAX + AMS)	3.0 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	0	87	98	96	93	98
Cobra + Roundup PowerMAX + AMS	10.0 fl oz + 22.0 fl oz + 2.0%	POST	0	0	0	0	0	0
Sonic + (Durango DMA + AMS)	3.0 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	0	83	83	75	95	95
Sonic + (Durango DMA + AMS)	3.0 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	2	83	98	88	96	93
Gangster + (Durango DMA + AMS)	1.8 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	0	83	88	88	93	93
Durango DMA + FirstRate + AMS + (Durango DMA + AMS)	24.0 fl oz + 0.3 oz wt + 2.0% + (24.0 fl oz + 2.0%)	EPOST + (SPOST)	10	95	92	95	92	95
Prefix + (Touchdown Total + AMS)	2.0 pt + (24.0 fl oz + 2.0%)	PRE + (POST)	0	90	73	96	72	82
Touchdown Total + AMS	24.0 fl oz + 2.0%	EPOST	5	95	96	96	92	96
Touchdown Total + AMS + (Touchdown Total + AMS)	24.0 fl oz + 2.0% + (24.0 fl oz + 2.0%)	EPOST + (SPOST)	5	95	96	96	90	96
LSD (P = 0.05)			2	11	14	12	18	15

^aAMS = ammonium sulfate fertilizer from Agrilience, LCC.

^b% = % weight/volume.

^cSetfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp, Ambel = common ragweed,
Cheal = common lambsquarters.

Table 2. Weed management programs in soybeans.

Treatment ^a	Rate ^b	Appln timing	Injury Jul 9	Setfa ^c Jul 16	Abuth ^c Jul 16	Amata ^c Jul 16	Ambel ^c Jul 16	Cheal ^c Jul 16
	Product/acre		-(%)	----- (%) -----				
Untreated	-	-	0	0	0	0	0	0
Prowl H20 + (Roundup PowerMAX + AMS)	2.6 pt + (22.0 fl oz + 2.0%)	PPI + (POST)	5	99	98	99	95	98
Enlite + (Roundup PowerMAX + AMS)	2.8 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	5	99	99	99	98	98
Enlite + (Synchrony XP + Roundup PowerMAX + AMS)	2.8 oz wt + (0.375 oz wt + 22.0 fl oz + 2.0%)	PRE + (POST)	22	99	99	98	99	99
Authority First DF + (Roundup PowerMAX + AMS)	3.2 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	3	99	99	98	99	99
Authority Assist + (Roundup PowerMAX + AMS)	5.0 fl oz + (22.0 fl oz + 2.0%)	PRE + (POST)	7	99	99	99	99	99
Valor SX + (Roundup PowerMAX + AMS)	2.0 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	5	99	99	99	95	99
Valor XLT + (Roundup PowerMAX + AMS)	3.0 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	5	99	99	99	99	99
Cobra + Roundup PowerMAX + AMS	10.0 fl oz + 22.0 fl oz + 2.0%	POST	33	99	99	96	92	98
Sonic + (Durango DMA + AMS)	3.0 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	3	99	99	98	99	99
Sonic + (Durango DMA + AMS)	3.0 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	3	99	99	99	99	99
Gangster + (Durango DMA + AMS)	1.8 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	5	99	99	98	98	98
Durango DMA + FirstRate + AMS + (Durango DMA + AMS)	24.0 fl oz + 0.3 oz wt + 2.0% + (24.0 fl oz + 2.0%)	EPOST + (SPOST)	7	96	96	99	99	99
Prefix + (Touchdown Total + AMS)	2.0 pt + (24.0 fl oz + 2.0%)	PRE + (POST)	5	99	99	99	95	99
Touchdown Total + AMS	24.0 fl oz + 2.0%	EPOST	3	96	95	96	99	99
Touchdown Total + AMS + (Touchdown Total + AMS)	24.0 fl oz + 2.0% + (24.0 fl oz + 2.0%)	EPOST + (SPOST)	3	95	95	96	99	99
LSD (P = 0.05)			4	2	2	4	3	2

^aAMS = ammonium sulfate fertilizer from Agrilience, LCC.

^b% = % weight/volume.

^cSetfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp, Ambel = common ragweed,
Cheal = common lambsquarters.

Table 3. Weed management programs in soybeans.

Treatment ^a	Rate ^b	Appln timing	Setfa ^c Aug 12	Abuth ^c Aug 12	Amata ^c Aug 12	Ambel ^c Aug 12	Cheal ^c Aug 12	Yield Nov 6
	Product/acre		----- (%) -----					bu/acre
Untreated	-	-	0	0	0	0	0	54
Prowl H20 + (Roundup PowerMAX + AMS)	2.6 pt + (22.0 fl oz + 2.0%)	PPI + (POST)	99	99	99	98	96	61
Enlite + (Roundup PowerMAX + AMS)	2.8 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	99	99	99	99	99	58
Enlite + (Synchrony XP + Roundup PowerMAX + AMS)	2.8 oz wt + (0.375 oz wt + 22.0 fl oz + 2.0%)	PRE + (POST)	99	99	98	99	99	63
Authority First DF + (Roundup PowerMAX + AMS)	3.2 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	98	99	98	99	99	62
Authority Assist + (Roundup PowerMAX + AMS)	5.0 fl oz + (22.0 fl oz + 2.0%)	PRE + (POST)	99	98	99	99	99	62
Valor SX + (Roundup PowerMAX + AMS)	2.0 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	98	99	99	98	99	63
Valor XLT + (Roundup PowerMAX + AMS)	3.0 oz wt + (22.0 fl oz + 2.0%)	PRE + (POST)	99	99	99	99	99	62
Cobra + Roundup PowerMAX + AMS	10.0 fl oz + 22.0 fl oz + 2.0%	POST	98	98	94	96	96	60
Sonic + (Durango DMA + AMS)	3.0 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	99	99	98	99	99	62
Sonic + (Durango DMA + AMS)	3.0 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	98	99	99	99	99	63
Gangster + (Durango DMA + AMS)	1.8 oz wt + (24.0 fl oz + 2.0%)	PRE + (POST)	99	99	98	98	99	59
Durango DMA + FirstRate + AMS + (Durango DMA + AMS)	24.0 fl oz + 0.3 oz wt + 2.0% + (24.0 fl oz + 2.0%)	EPOST + (SPOST)	99	99	99	99	99	64
Prefix + (Touchdown Total + AMS)	2.0 pt + (24.0 fl oz + 2.0%)	PRE + (POST)	99	99	99	98	99	63
Touchdown Total + AMS	24.0 fl oz + 2.0%	EPOST	95	93	96	99	99	65
Touchdown Total + AMS + (Touchdown Total + AMS)	24.0 fl oz + 2.0% + (24.0 fl oz + 2.0%)	EPOST + (SPOST)	98	99	99	99	99	61
LSD (P = 0.05)			2	2	4	2	2	5

^aAMS = ammonium sulfate fertilizer from Agrilience, LCC.^b% = % weight/volume.^cSetfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp, Ambel = common ragweed, Cheal = common lambsquarters.