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2014

Two-Pass Programs for Weed Control in Soybean

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Abstract

The purpose of this study was to evaluate various herbicides and application timings in soybean for crop injury and weed control.

Keywords

Agronomy

Disciplines

Agricultural Science | Agriculture | Agronomy and Crop Sciences | Weed Science

Two-Pass Programs for Weed Control in Soybean

RFR-A13113

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Introduction

The purpose of this study was to evaluate various herbicides and 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/acre. The crop rotation was soybean following corn. The pre-plant seedbed was prepared with a field cultivator. Soybean was planted at 189,000 seeds/acre in 30-in. rows on June 20. Preemergence (PRE) treatments were applied on June 21. Postemergence (EPOST, POST, and LPOST) treatments were applied on July 8, 19, and 29 to soybean at V1, V4, and V6 growth stages, respectively. Weeds were generally 1-2, 1-5, and 1-4 in. tall at the respective application dates. Weed species in the study included velvetleaf and common waterhemp with average populations of <1-2 plants/ft^2. Visual estimates of soybean injury and percentage weed control were made during the growing season. These observations were compared with an untreated control and made on a zero to 100 rating scale (0 percent=no control or injury; 100 percent=complete control or crop kill).

Results and Discussion

Summarized in Tables 1 and 2 are the results of the study. None of the PRE treatments caused more than 3 percent soybean injury when observed on July 16 (Table 1). PRE Envive and Warrant provided 85 and 73 percent velvetleaf control, respectively. All other treatments, with the exception of one Boundary treatment, gave at least 88 percent velvetleaf control with no significant differences between them. The reduced velvetleaf control by the other Boundary treatment (85 percent) may have been caused by variable velvetleaf population densities. Enlite, Warrant, and Envive treatments gave 70 to 80 percent common waterhemp control compared to 85-98 percent control by all other PRE treatments.

Flexstar GT 3.5 (EPOST) provided at least 98 percent velvetleaf and common waterhemp control on July 16, 8 days after application (Table 1). No postemergence treatments caused more than 3 percent injury to soybean when observed August 5 (Table 2). No injury was observed for any treatments by August 19 (data not shown). All treatments afforded at least 97 percent velvetleaf control when observed August 19, 31 days after POST applications (Table 2). PRE Boundary + POST Touchdown Total gave 93 percent common waterhemp control, and PRE Envive + POST Cinch + Abundit Extra or POST Abundit Extra, only, provided 95 percent control. All other treatments afforded at least 98 percent common waterhemp control.

Acknowledgements

Table 1. Two-pass programs for weed control in soybean–early injury and selected weed control.

Treatment	Rate	Appln timing	Injury Jul 16	Abuth[d] Jul 16	Amata[d] Jul 16
	product/acre		- (%) -	(% weed control)	
Untreated	-	-	0	0	0
Enlite +	2.8 oz wt +	PRE +	0	88	80
(Cinch + Abundit Extra + AMS[a])	(1.0 pt + 32.0 fl oz + 2.0 lb)	(POST)			
Envive +	2.5 oz wt +	PRE +	0	91	70
(Abundit Extra + AMS + Assure II)	(32.0 fl oz + 2.0 lb + 5.0 fl oz)	(POST)			
Envive +	2.5 oz wt +	PRE +	0	85	77
(Cinch + Abundit Extra + AMS)	(1.0 pt + 32.0 fl oz + 2.0 lb)	(POST)			
Sonic +	3.0 oz wt +	PRE +	0	99	97
(Durango DMA + N-Pak AMS Liquid[b])	(1.5 pt + 2.5% v/v[c])	(POST)			
Sonic +	4.5 oz wt +	PRE +	0	92	85
(Durango DMA + N-Pak AMS Liquid)	(1.5 pt + 2.5 % v/v)	(POST)			
Sonic +	6.0 oz wt +	PRE +	0	99	96
(Durango DMA + N-Pak AMS Liquid)	(1.5 pt + 2.5% v/v)	(POST)			
Valor SX +	3.0 oz wt +	PRE +	0	99	90
(Roundup PowerMAX + AMS)	(22.0 fl oz + 2.5 lb)	(POST)			
Authority Assist +	9.0 fl oz +	PRE +	0	99	98
(Roundup PowerMAX + AMS)	(22.0 fl oz + 2.5 lb)	(POST)			
Zidua + Verdict +	2.5 oz wt + 5.0 fl oz +	PRE +	0	95	88
(Roundup PowerMAX + AMS)	(22.0 fl oz + 2.5 lb)	(POST)			
Boundary +	1.8 pt +	PRE +	0	98	95
(Flexstar GT 3.5 + AMS)	(3.5 pt + 8.5 lb/100 gal)	(POST)			
Boundary +	1.8 pt +	PRE +	0	85	80
(Touchdown Total + AMS)	(28.0 fl oz + 8.5 lb/100 gal)	(POST)			
Flexstar GT 3.5 + AMS +	3.5 pt + 8.5 lb/100 gal +	EPOST +	0	98	99
(Touchdown Total + AMS)	(28.0 fl oz + 8.5 lb/100 gal)	(LPOST)			
Warrant +	3.0 pt +	PRE +	0	73	77
(Roundup PowerMAX + AMS)	22.0 fl oz + 2.5 lb	(POST)			
LSD (P=0.05)			0	12	16

[a]AMS=ammonium sulfate fertilizer from United Suppliers.

[b]N-Pak AMS liquid=ammonium sulfate from Winfield Solutions, LLC.

[c]Volume of product per volume tank mix.

[d]Abuth=velvetleaf, Amata=common waterhemp.

Table 2. Two-pass programs for weed control in soybean–late injury and selected weed control.

Treatment	Rate	Appln timing	Injury Aug 5	Abuth[d] Aug 19	Amata[d] Aug 19
	product/acre	-	- (%) -	(% weed control)	
Untreated	-	-	0	0	0
Enlite +	2.8 oz wt +	PRE +	3	97	99
(Cinch + Abundit Extra +	(1.0 pt + 32.0 fl oz +	(POST)			
AMS[a])	2.0 lb)				
Envive +	2.5 oz wt +	PRE +	0	99	95
(Abundit Extra + AMS +	(32.0 fl oz + 2.0 lb +	(POST)			
Assure II)	5.0 fl oz)				
Envive +	2.5 oz wt +	PRE +	3	98	95
(Cinch + Abundit Extra +	(1.0 pt + 32.0 fl oz +	(POST)			
AMS)	2.0 lb)				
Sonic +	3.0 oz wt +	PRE +	2	98	98
(Durango DMA +	(1.5 pt +	(POST)			
N-Pak AMS Liquid[b])	2.5% v/v[c])				
Sonic +	4.5 oz wt +	PRE +	0	98	98
(Durango DMA +	(1.5 pt +	(POST)			
N-Pak AMS Liquid)	2.5% v/v)				
Sonic +	6.0 oz wt +	PRE +	2	99	99
(Durango DMA +	(1.5 pt +	(POST)			
N-Pak AMS Liquid)	2.5% v/v)				
Valor SX +	3.0 oz wt +	PRE +	0	99	99
(Roundup PowerMAX + AMS)	(22.0 fl oz + 2.5 lb)	(POST)			
Authority Assist +	9.0 fl oz +	PRE +	3	99	99
(Roundup PowerMAX + AMS)	(22.0 fl oz + 2.5 lb)	(POST)			
Zidua + Verdict +	2.5 oz wt + 5.0 fl oz +	PRE +	0	99	98
(Roundup PowerMAX + AMS)	(22.0 fl oz + 2.5 lb)	(POST)			
Boundary +	1.8 pt +	PRE +	2	99	99
(Flexstar GT 3.5 + AMS)	(3.5 pt + 8.5 lb/100 gal)	(POST)			
Boundary +	1.8 pt +	PRE +	2	99	93
(Touchdown Total + AMS)	(28.0 fl oz + 8.5 lb/100 gal)	(POST)			
Flexstar GT 3.5 + AMS +	3.5 pt + 8.5 lb/100 gal +	EPOST +	0	99	99
(Touchdown Total + AMS)	(28.0 fl oz + 8.5 lb/100 gal)	(LPOST)			
Warrant +	3.0 pt +	PRE +	0	98	98
(Roundup PowerMAX + AMS)	22.0 fl oz + 2.5 lb	(POST)			
LSD (P=0.05)			4	2	4

[a]AMS=ammonium sulfate fertilizer from United Suppliers.

[b]N-Pak AMS liquid=ammonium sulfate from Winfield Solutions, LLC.

[c]Volume of product per volume tank mix.

[d]Abuth=velvetleaf, Amata=common waterhemp.