

Preplant and Postemergence Herbicide Programs for Weed Control in No-till Soybean

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Micheal Owen, university professor
Damian Franzenburg, ag specialist
James Lee, ag specialist
Jacob Eeling, research associate
Department of Agronomy

Introduction

The purpose of this study was to evaluate various herbicides applied early pre-plant in no-till 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 15 gallons of water per acre. The crop rotation was soybean following corn. The seedbed was left untilled from the 2013 corn cropping season. Early preplant (EPP) treatments were applied May 16, and soybeans were planted at 188,000 seeds/acre in 30-in. rows May 23.

Postemergence (POST) herbicide treatments were applied June 27 to V3 to V4 soybeans. Weeds were generally < 1 in. and 2–5 in. tall at the EPP and POST application dates, respectively. Weed species in the study included giant foxtail, velvetleaf, common lambsquarters, and Pennsylvania smartweed with an average population density of < 1–2 plants/ft². Visual estimates of soybean injury and percentage weed control were made several times during the growing season. These observations were 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).

Results and Discussion

Summarized in Tables 1 and 2 are the results

of the study. None of the treatments caused soybean injury (data not shown). On June 7, 22 days after application (DAA), EPP 2,4-D + Roundup PowerMax provided 98, 91, and 88 percent giant foxtail, common lambsquarters, and Pennsylvania smartweed control, respectively (Table 1). EPP Enlite + 2,4-D + Abundit Extra gave 98, 99, and 95 percent control, respectively. All other treatments were observed to provide at least 98 percent control of all weeds.

On June 20, 35 DAA, EPP Authority Assist + Roundup PowerMAX afforded 98 percent giant foxtail control and the other treatments gave 92 to 95 percent control (Table 2). Velvetleaf pressure in the experiment was variable, and control by the treatments ranged from 81 to 96 percent with no significant differences between any of the treatments. 2,4-D and Fierce, each tank mixed with Roundup PowerMAX, provided 88 and 86 percent common lambsquarters control, respectively. The remaining treatments gave 92 to 98 percent control. Similarly, 2,4-D and Fierce each provided 88 and 91 percent Pennsylvania smartweed control, respectively. The remaining treatments gave 93 to 99 percent control.

On July 25, with the exception of 96 percent control of giant foxtail by EPP 2,4-D + Roundup PowerMAX + POST Roundup PowerMAX, all treatments afforded at least 98 percent weed control at 28 days following the POST applications (data not shown).

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Table 1. Preplant and postemergence weed control in no-till soybean.

Treatment	Rate	Appln timing	Setfa ^f	Cheal ^f	Polpy ^f
			Jun 7	Jun 7	Jun 7
	product/acre		----- % weed control -----		
Untreated			0	0	0
2,4-D LV4 + Roundup PowerMAX + AMS ^a + (Roundup PowerMAX + AMS + NIS ^b)	16.0 fl oz + 32.0 fl oz + 2.5 lb + (32.0 fl oz + 2.5 lb + 0.25 % v/v ^c)	EPP + (POST)	98	91	88
Fierce + Roundup PowerMAX + AMS + NIS (Roundup PowerMAX + AMS + NIS)	3.0 oz wt + 32.0 fl oz + 2.5 lb + 0.25 % v/v (32.0 fl oz + 2.5 lb + 0.25 % v/v)	EPP + (POST)	99	99	99
Enlite + 2,4-D LV4 + Abudit Extra + AMS + (Abudit Extra + AMS + Assure II)	4.25 oz wt + 1.0 pt + 32.0 fl oz + 2.0 lb + (32.0 fl oz + 2.0 lb + 6.0 fl oz)	EPP + (POST)	98	99	95
Envive + 2,4-D LV4 + Abudit Extra + AMS + (Abudit Extra + AMS + Assure II)	3.5 oz wt + 1.0 pt + 32.0 fl oz + 2.0 lb + (32.0 fl oz + 2.0 lb + 6.0 fl oz)	EPP + (POST)	98	99	99
Optill + Roundup PowerMAX + MSO ^d + AMS + (Roundup PowerMAX + AMS)	2.0 oz wt + 32.0 fl oz + 1.0 % v/v + 8.5 lb/100 gal + (32.0 fl oz + 8.5 lb/100 gal)	EPP + (POST)	99	99	99
Warrant + Roundup PowerMAX + AMS + (Roundup PowerMAX + AMS)	3.0 pt + 32.0 fl oz + 8.5 lb/100 gal + (32.0 fl oz + 8.5 lb/100 gal)	EPP + (POST)	99	99	98
2,4-D LV4 + Sonic + Durango DMA + N-Pak AMS Liquid ^e + (Durango DMA + N-Pak AMS Liquid)	16.0 fl oz + 6.0 oz wt + 1.5 pt + 2.5 % v/v + (1.5 pt + 2.5 % v/v)	EPP + (POST)	99	98	99
Authority Assist + Roundup PowerMAX + AMS + (Roundup PowerMAX + AMS)	12.0 fl oz + 32.0 fl oz + 8.5 lb/100 gal + (32.0 fl oz + 8.5 lb/100 gal)	EPP + (POST)	99	99	99
LSD (P = .05)			2	6	5

^aAMS = ammonium sulfate fertilizer from United Suppliers.

^bNIS = Preference nonionic surfactant from Winfield Solutions.

^cVolume of product per volume tank mix.

^dMSO = methylated seed oil from United Suppliers.

^eN-Pak AMS liquid = ammonium sulfate from Winfield Solutions, LLC.

^fSetfa = giant foxtail, Cheal = common lambsquarters, Polpy = Pennsylvania smartweed.

Table 2. Preplant and postemergence weed control in no-till soybean.

Treatment	Rate	Appln timing	Setfa ^f	Abuth ^f	Cheal ^f	Polpy ^f
			Jun 20	Jun 20	Jun 20	Jun 20
Untreated	product/acre		0	0	0	0
2,4-D LV4 + Roundup PowerMAX + AMS ^a + (Roundup PowerMAX + AMS + NIS ^b)	16.0 fl oz + 32.0 fl oz + 2.5 lb + (32.0 fl oz + 2.5 lb + 0.25 % v/v ^c)	EPP + (POST)	92	93	88	88
Fierce + Roundup PowerMAX + AMS + NIS (Roundup PowerMAX + AMS + NIS)	3.0 oz wt + 32.0 fl oz + 2.5 lb + 0.25 % v/v (32.0 fl oz + 2.5 lb + 0.25 % v/v)	EPP + (POST)	95	88	86	91
Enlite + 2,4-D LV4 + Abudit Extra + AMS + (Abudit Extra + AMS + Assure II)	4.25 oz wt + 1.0 pt + 32.0 fl oz + 2.0 lb + (32.0 fl oz + 2.0 lb + 6.0 fl oz)	EPP + (POST)	95	81	98	93
Envive + 2,4-D LV4 + Abudit Extra + AMS + (Abudit Extra + AMS + Assure II)	3.5 oz wt + 1.0 pt + 32.0 fl oz + 2.0 lb + (32.0 fl oz + 2.0 lb + 6.0 fl oz)	EPP + (POST)	95	88	96	96
Optill + Roundup PowerMAX + MSO ^d + AMS + (Roundup PowerMAX + AMS)	2.0 oz wt + 32.0 fl oz + 1.0 % v/v + 8.5 lb/100 gal + (32.0 fl oz + 8.5 lb/100 gal)	EPP + (POST)	95	89	98	99
Warrant + Roundup PowerMAX + AMS + (Roundup PowerMAX + AMS)	3.0 pt + 32.0 fl oz + 8.5 lb/100 gal + (32.0 fl oz + 8.5 lb/100 gal)	EPP + (POST)	93	83	92	96
2,4-D LV4 + Sonic + Durango DMA + N-Pak AMS Liquid ^e + (Durango DMA + N-Pak AMS Liquid)	16.0 fl oz + 6.0 oz wt + 1.5 pt + 2.5 % v/v + (1.5 pt + 2.5 % v/v)	EPP + (POST)	95	92	98	96
Authority Assist + Roundup PowerMAX + AMS + (Roundup PowerMAX + AMS)	12.0 fl oz + 32.0 fl oz + 8.5 lb/100 gal + (32.0 fl oz + 8.5 lb/100 gal)	EPP + (POST)	98	96	98	98
LSD (P = .05)			3	19	11	7

^aAMS = ammonium sulfate fertilizer from United Suppliers.^bNIS = Preference nonionic surfactant from Winfield Solutions.^cVolume of product per volume tank mix.^dMSO = methylated seed oil from United Suppliers.^eN-Pak AMS liquid = ammonium sulfate from Winfield Solutions, LLC.^fSetfa = giant foxtail, Abuth = velvetleaf, Cheal = common lambsquarters, Polpy = Pennsylvania smartweed.