

Two-Pass Programs for Weed Control in No-Tillage Soybean

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Introduction

The purpose of this study was to evaluate weed control in no-tillage soybean for various herbicides in programs with preplant plus postemergence applications.

Materials and Methods

The study was established using a randomized complete block design with three replications. The crop rotation was soybean following corn. The pre-plant seedbed was left untilled from the 2018 crop season. Early preplant (EPP) treatments were applied May 15 delivering 15 gallons/acre with 11015TTI tips at 35 psi. Glyphosate and dicamba tolerant soybean, Asgrow AG20X9, was planted at 182,402 seeds/acre in 30-in. rows May 31.

Postemergence (POST) treatments were applied July 2 delivering 15 gallons/acre with 11015TT tips at 35 psi to soybean at V2–V3 growth stages. Weed species in the study included giant foxtail, common waterhemp, and common ragweed that were 1–10, 1–8 and 1–12 in. tall at POST application, respectively. Average populations were 5–15 plants/ft² for giant foxtail and 0–15 plants/plot for common waterhemp and common ragweed. Visual estimates of percentage soybean injury and weed control during the growing season were compared with an untreated control (0 percent = no injury or control; 99 percent = complete crop kill or no control).

Results and Discussion

None of the EPP treatments caused soybean injury when observed 48 days after application July 2 (data not shown). Giant foxtail pressure was variable, and EPP Broadaxe XC, Panther Pro, and Zidua PRO gave 90–93 percent residual control (Table 1). The remaining treatments gave no more than 83 percent giant foxtail control. Common waterhemp pressure also was variable in the trial showing few significant differences between treatments. Residual waterhemp control from the EPP treatments ranged from 62–83 percent with the exception of 96 percent control by Fierce MTZ SC (Table 1). EPP Boundary, Tripzin ZC, and Broadaxe XC gave 78, 80, and 87 percent residual control of common ragweed, respectively. The remaining EPP treatments provided 91–99 percent common ragweed control (Table 1).

POST Everprex, Anthem Maxx, Warrant Ultra, and 10 oz/acre of Cobra caused 10, 13, 13, and 17 percent soybean injury, respectively, when observed July 18, 16 days after the POST application (Table 2). POST Flexstar GT 3.5 + Dual II Magnum, Flexstar GT 3.5 + Outlook, Storm and 12.0 fl oz of Cobra caused 20–22 percent injury to soybean. EPP Tripzin ZC + POST Storm and EPP Fierce MTZ SC + POST Cobra provided 88 and 82 percent giant foxtail control, respectively, July 29, 27 days after the POST application (Table 2). All other treatments gave at least 96 percent giant foxtail control. EPP Fierce MTZ + POST Cobra and EPP Zidua PRO + POST Flexstar GT 3.5 + Outlook gave 95 and 93 percent common waterhemp control, respectively. Common waterhemp control by the remaining treatments was 73–87 percent. All treatments provided complete control of common ragweed.

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Table 1. Preplant weed control estimates in no-tillage soybean.

Treatment	Rate	Appln timing	Setfa ^f Jul 2	Amata Jul 2	Ambel Jul 2
product/acre		----- % weed control -----			
Untreated			0	0	0
Surveil + 2,4-D LV4 + Roundup PowerMAX + AMS ^a + (Everprex + Abundit Edge + AMS)	4.2 oz wt + 1.0 pt + 32.0 fl oz + 1.25 lb + (1.0 pt + 22.0 fl oz + 2.0 lb)	EPP + (POST)	80	83	99
Authority First DF +2,4-D LV4+ Roundup PowerMAX + AMS + (Anthem Maxx + Roundup PowerMAX + AMS)	6.4 oz wt + 1.0 pt + 32.0 fl oz + 1.25 lb + (2.5 fl oz + 32.0 fl oz + 1.25 lb)	EPP + (POST)	68	78	99
Rowel FX + 2,4-D LV4 + Roundup PowerMAX + AMS + (Warrant Ultra + Roundup PowerMAX + AMS)	3.0 oz wt + 1.0 pt + 32.0 fl oz + 1.25 lb + (50.0 fl oz + 32.0 fl oz + 1.25 lb)	EPP + (POST)	75	83	99
Panther Pro +Spitfire + Credit Xtreme + AMS + MSO ^b + (Cobra + Credit Xtreme + COC ^d + AMS)	15 fl oz + 20.0 fl oz + 1.0 qt + 1.25 lb + 1% v/v ^c + (10.0 fl oz + 32.0 fl oz + 1.0 pt + 1.25 lb)	EPP + (POST)	92	62	99
Broadaxe XC + 2,4-D LV4 + Roundup PowerMAX + AMS + (Flexstar GT 3.5 + Dual II Magnum + MSO +AMS)	25.0 fl oz + 1.0 pt 32.0 fl oz + 1.25 lb + (3.5 pt + (1.0 pt + 1.0% v/v+1.25 lb)	EPP + (POST)	90	75	87
Boundary + 2,4-D LV4 + Roundup PowerMAX + AMS + (Flexstar GT 3.5 + Dual II Magnum + MSO + AMS)	2.0 pt + 1.0 pt + 32.0 fl oz + 1.25 lb + (3.5 pt + 1.0 pt + 1.0% v/v + 1.25 lb)	EPP + (POST)	83	63	78
Tripzin ZC + 2,4-D LV4 + Roundup PowerMAX + AMS + (Storm + Roundup PowerMAX + N-Pak AMS Liquid ^e)	44.0 fl oz + 1.0 pt + 32.0 fl oz + 1.25 lb + (24.0 fl oz + 32.0 fl oz + 6.0 pt)	EPP + (POST)	62	73	80
Fierce MTZ SC + 2,4-D LV4 + Roundup PowerMAX + AMS + (Cobra +Roundup PowerMAX + COC + AMS)	1.0 pt + 1.0 pt + 32.0 fl oz + 1.25 lb + (12.0 fl oz + 32.0 fl oz 1.0 pt + 2.5 lb)	EPP + (POST)	75	96	93
Zidua PRO + 2,4-D LV4 + Roundup PowerMAX + AMS + (Flexstar GT 3.5 + Outlook + MSO + AMS)	6.0 fl oz + 1.0 pt + 32.0 fl oz + 1.25 lb + (2.0 qt + 10.0 fl oz + 0.5% v/v + 1.25 lb)	EPP + (POST)	93	82	91
LSD (P = 0.05)			22	22	15

^aAMS = ammonium sulfate fertilizer from Winfield United.

^bMSO = methylated seed oil from Winfield United.

^cv/v = Volume of product per volume tank mix.

^dCOC = crop oil concentrate from Winfield United.

^eN-Pak AMS liquid = ammonium sulfate from Winfield United.

^fSetfa = giant foxtail, Amata = common waterhemp, Ambel = common ragweed.

Table 2. Preplant and postemergence soybean injury, weed control, and yield in no-tillage soybean.

Treatment	Rate product/acre	Appln timing	Injury Jul 18	Setfa ^f Jul 29	Amata Jul 29	Ambel Jul 29	Yield bu/ac
			----- % weed control -----				
Untreated			0	0	0	0	28
Surveil + 2,4-D LV4 + Roundup PowerMAX + AMS ^a + (Everprex + Abundit Edge + AMS)	4.2 oz wt + 1.0 pt + 32.0 fl oz + 1.25 lb + (1.0 pt + 22.0 fl oz + 2.0 lb)	EPP + (POST)	10	99	73	99	63
Authority First DF +2,4-D LV4+ Roundup PowerMAX + AMS + (Anthem Maxx + Roundup PowerMAX + AMS)	6.4 oz wt + 1.0 pt + 32.0 fl oz + 1.25 lb + (2.5 fl oz + 32.0 fl oz + 1.25 lb)	EPP + (POST)	13	99	76	99	61
Rowel FX + 2,4-D LV4 + Roundup PowerMAX + AMS + (Warrant Ultra + Roundup PowerMAX + AMS)	3.0 oz wt + 1.0 pt + 32.0 fl oz + 1.25 lb + (50.0 fl oz + 32.0 fl oz + 1.25 lb)	EPP + (POST)	13	99	87	99	60
Panther Pro +Spitfire + Credit Xtreme+AMS+MSO ^b + (Cobra + Credit Xtreme + COC ^d + AMS)	15 fl oz + 20.0 fl oz + 1.0 qt + 1.25 lb + 1% v/v ^c + (10.0 fl oz + 32.0 fl oz + 1.0 pt + 1.25 lb)	EPP + (POST)	17	96	77	99	51
Broadaxe XC + 2,4-D LV4 + Roundup PowerMAX + AMS + (Flexstar GT 3.5 + Dual II Magnum+MSO+AMS)	25.0 fl oz + 1.0 pt 32.0 fl oz + 1.25 lb + (3.5 pt + (1.0 pt + 1.0% v/v+1.25 lb)	EPP + (POST)	20	99	83	99	53
Boundary + 2,4-D LV4 + Roundup PowerMAX + AMS + (Flexstar GT 3.5 + Dual II Magnum+MSO+AMS)	2.0 pt + 1.0 pt + 32.0 fl oz + 1.25 lb + (3.5 pt + 1.0 pt + 1.0% v/v + 1.25 lb)	EPP + (POST)	20	99	80	99	59
Tripzin ZC + 2,4-D LV4 + Roundup PowerMAX + AMS + (Storm+Roundup PowerMAX+ N-Pak AMS Liquid ^e)	44.0 fl oz + 1.0 pt + 32.0 fl oz + 1.25 lb + (24.0 fl oz + 32.0 fl oz + 6.0 pt)	EPP + (POST)	22	88	75	99	56
Fierce MTZ SC+2,4-D LV4+ Roundup PowerMAX + AMS + (Cobra +Roundup PowerMAX + COC + AMS)	1.0 pt + 1.0 pt + 32.0 fl oz + 1.25 lb + (12.0 fl oz + 32.0 fl oz 1.0 pt + 2.5 lb)	EPP + (POST)	22	82	95	99	55
Zidua PRO + 2,4-D LV4 + Roundup PowerMAX + AMS + (Flexstar GT 3.5 + Outlook + MSO + AMS)	6.0 fl oz + 1.0 pt + 32.0 fl oz + 1.25 lb + (2.0 qt + 10.0 fl oz + 0.5% v/v + 1.25 lb)	EPP + (POST)	20	99	93	99	60
LSD (P = 0.05)			5	9	21	-	8

^aAMS = ammonium sulfate fertilizer from Winfield United.^bMSO = methylated seed oil from Winfield United.^cv/v = Volume of product per volume tank mix.^dCOC = crop oil concentrate from Winfield United.^eN-Pak AMS liquid = ammonium sulfate from Winfield United.^fSetfa = giant foxtail, Amata = common waterhemp, Ambel = common ragweed.