

No-Tillage Weed Management Programs with Roundup Ready Xtend and LibertyLink Soybean

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Introduction

The purpose of this study was to evaluate herbicide programs for Roundup Ready Xtend and LibertyLink systems for crop injury and weed control in no-tillage soybean.

Materials and Methods

The study was established using a split-plot design with four replications. Herbicides were applied in 15 gallons of water/acre. The crop rotation was soybean following corn. The pre-plant seedbed was left untilled from the 2016 corn crop. Early preplant (EPP) treatments were applied May 5. Asgrow AG24X7 and LG C2427LL Soybean were planted at 160,000 seeds/acre in 30-in. rows May 16. Postemergence (POST) treatments were applied June 21 to soybean at V3 to V4 growth stages. Weeds were generally 9–15 in. tall at the POST application dates. Weed species in the study included common waterhemp, common horseweed, and common dandelion with average populations of 0–2 plants/ft². 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 99 rating scale (0 percent = no control or injury; 99 percent = complete control or crop kill).

Results and Discussion

Summarized in Tables 1 and 2 are the results of the study. POST Anthem Maxx + Liberty 280 caused 10 percent injury to soybean (Table 1). No other treatments caused injury.

EPP Roundup PowerMAX + 2,4-D plus POST Liberty 280 provided 81 percent common waterhemp control July 28 at soybean canopy (Table 1). All other treatments provided at least 95 percent common waterhemp control and 97 percent horseweed control. All treatments gave complete common dandelion control at soybean canopy.

Weed control at harvest was very similar to that observed at canopy. The soybean canopy improved the apparent weed control by the treatments. However, control was reduced to 75 percent for EPP Roundup PowerMAX + 2,4-D plus POST Liberty 280 (Table 2). The other treatments afforded at least 98 percent common waterhemp control. All treatments gave at least 98 percent horseweed control and complete control of common dandelion at harvest.

Soybean yields were not significantly different between the untreated controls for the two varieties. Soybean yields for the herbicide treatments ranged from 64 to 72 bushels/acre with no significant differences between treatments (Table 2).

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Table 1. No-tillage weed management with Roundup Ready Xtend and LibertyLink soybean.

Treatment	Rate	Appln timing	Injury Jul 10	Amata ^e Jul 28	Erica Jul 28	Tarof Jul 28
	product/acre		- (%) -	(% weed control)		
Roundup Ready Xtend Untreated	160,000 seeds/a -	-	0	0	0	0
Roundup Ready Xtend Xtendimax wVGT ^a + Roundup PowerMAX + Intact ^b + (Xtendimax wVGT + Roundup PowerMAX + Intact)	160,000 seeds/a 22.0 fl oz + 32.0 fl oz + 0.5% v/v ^c + (22.0 fl oz + 32.0 fl oz + 0.5% v/v)	EPP + (POST)	0	95	99	99
Roundup Ready Xtend Rowel + Xtendimax wVGT + Roundup PowerMAX + Intact + (Xtendimax wVGT + Roundup PowerMAX + Intact)	160,000 seeds/a 2.0 oz wt + 22 fl oz + 32.0 fl oz + 0.5% v/v + (22.0 fl oz + 32.0 fl oz + 0.5% v/v)	EPP + (POST)	0	97	97	99
Roundup Ready Xtend Rowel + Xtendimax wVGT + Roundup PowerMAX + Intact + (Warrant + Xtendimax wVGT + Roundup PowerMAX + Intact)	160,000 seeds/a 2.0 oz wt + 22 fl oz + 32.0 fl oz + 0.5% v/v (48.0 fl oz + 22.0 fl oz + 32.0 fl oz + 0.5% v/v)	EPP + (POST)	0	96	99	99
LibertyLink Untreated	160,000 seeds/a -	-	0	0	0	0
LibertyLink Roundup PowerMAX + 2,4-D LV4 + AMS ^d + (Liberty 280 + AMS)	160,000 seeds/a 32.0 fl oz + 16.0 fl oz + 8.5 lb/100 gal + (29.0 fl oz wt + 8.5 lb/100 gal)	EPP + (POST)	0	81	98	99
LibertyLink Authority Maxx + Roundup PowerMAX + 2,4-D + AMS + (Liberty 280 + AMS)	160,000 seeds/a 6.4 oz wt + 32.0 fl oz + 16 fl oz + 8.5 lb/100 gal + (29.0 fl oz wt + 8.5 lb/100 gal)	EPP + (POST)	0	99	99	99
LibertyLink Authority Maxx + Roundup PowerMAX + 2,4-D + AMS + (Anthm Maxx + Liberty 280 + AMS)	160,000 seeds/a 6.4 oz wt + 32.0 fl oz + 16 fl oz + 8.5 lb/100 gal + (3.0 fl oz + 29.0 fl oz wt + 8.5 lb/100 gal)	EPP + (POST)	10	99	98	99
LSD (P = 0.05)			-	4	3	-

^awVGT = with Vapor Grip Technology.^bIntact = drift control and foliar retention agent, Precision Laboratories.^cv/v = volume of product per volume tank mix.^dAMS = ammonium sulfate.^eAmata = common waterhemp, Erica = horseweed, Tarof = common dandelion.

Table 2. No-tillage weed management with Roundup Ready Xtend and LibertyLink soybean.

Treatment	Rate	Appln timing	Amata ^e Sep 29	Erica Sep 29	Tarof Sep 29	Yield Oct 26
	product/acre		(% weed control)			bu/a
Roundup Ready Xtend Untreated	160,000 seeds/a -	-	0	0	0	41
Roundup Ready Xtend Xtendimax wVGT ^a + Roundup PowerMAX + Intact ^b + (Xtendimax wVGT + Roundup PowerMAX + Intact)	160,000 seeds/a 22.0 fl oz + 32.0 fl oz + 0.5% v/v ^c + (22.0 fl oz + 32.0 fl oz + 0.5% v/v)	EPP + (POST)	98	99	99	66
Roundup Ready Xtend Rowel + Xtendimax wVGT + Roundup PowerMAX + Intact + (Xtendimax wVGT + Roundup PowerMAX + Intact)	160,000 seeds/a 2.0 oz wt + 22 fl oz + 32.0 fl oz + 0.5% v/v + (22.0 fl oz + 32.0 fl oz + 0.5% v/v)	EPP + (POST)	99	99	99	72
Roundup Ready Xtend Rowel + Xtendimax wVGT + Roundup PowerMAX + Intact + (Warrant + Xtendimax wVGT + Roundup PowerMAX + Intact)	160,000 seeds/a 2.0 oz wt + 22 fl oz + 32.0 fl oz + 0.5% v/v (48.0 fl oz + 22.0 fl oz + 32.0 fl oz + 0.5% v/v)	EPP + (POST)	99	99	99	71
LibertyLink Untreated	160,000 seeds/a -	-	0	0	0	28
LibertyLink Roundup PowerMAX + 2,4-D LV4 + AMS ^d + (Liberty 280 + AMS)	160,000 seeds/a 32.0 fl oz + 16.0 fl oz + 8.5 lb/100 gal + (29.0 fl oz wt + 8.5 lb/100 gal)	EPP + (POST)	75	99	99	64
LibertyLink Authority Maxx + Roundup PowerMAX + 2,4-D + AMS + (Liberty 280 + AMS)	160,000 seeds/a 6.4 oz wt + 32.0 fl oz + 16 fl oz + 8.5 lb/100 gal + (29.0 fl oz wt + 8.5 lb/100 gal)	EPP + (POST)	99	99	99	70
LibertyLink Authority Maxx + Roundup PowerMAX + 2,4-D + AMS + (Anthm Maxx + Liberty 280 + AMS)	160,000 seeds/a 6.4 oz wt + 32.0 fl oz + 16 fl oz + 8.5 lb/100 gal + (3.0 fl oz + 29.0 fl oz wt + 8.5 lb/100 gal)	EPP + (POST)	99	98	99	66
LSD (P=0.05)			4	1	-	17

^awVGT = with Vapor Grip Technology.^bIntact = drift control & foliar retention agent, Precision Laboratories.^cv/v = volume of product per volume tank mix.^dAMS = ammonium sulfate.^eAmata = common waterhemp, Erica = horseweed, Tarof = common dandelion.