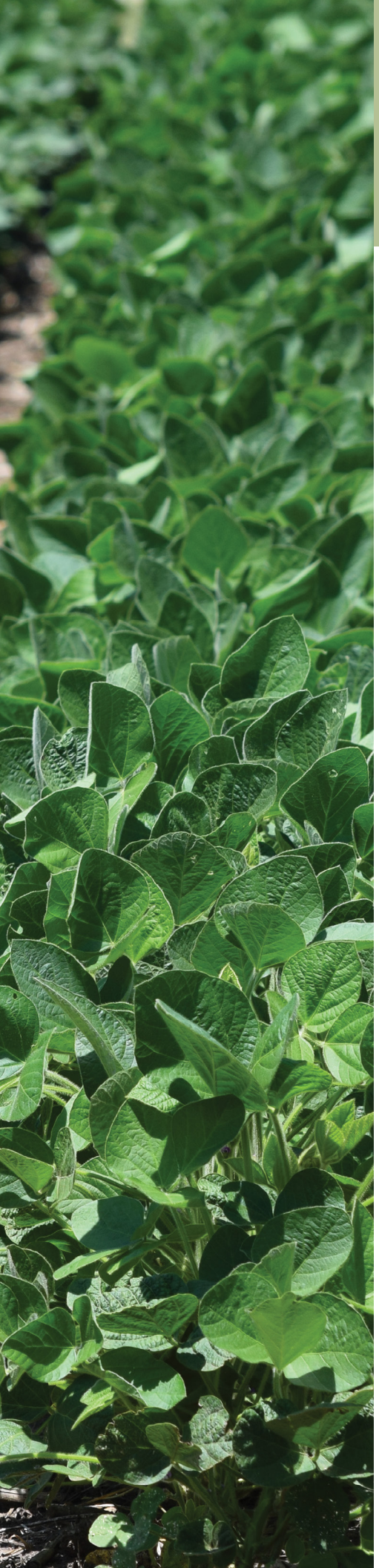

Burndown and Residual Weed Control in No-Tillage Enlist Soybean

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The purpose of this study was to evaluate weed control in no-tillage Enlist 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 soybean. The pre-plant seedbed was left untilled from the 2020 crop season. Early preplant (EPP) treatments were applied May 10 delivering 15 gal./acre with 11015TTI and 11015TT tips at 35 psi. Glyphosate, glufosinate, and 2,4-D tolerant soybean, Syngenta NKS28-E3, was planted at 154,000 seeds/acre in 30-in. rows May 24. Postemergence (POST) treatments were applied June 10, delivering 15 gal./acre with 11015TTI tips at 35 psi. to soybean at the VE growth stage. Weed species in the study included common waterhemp, common ragweed, common lambsquarters and marestail. Common waterhemp and marestail were 0.25 and 3 in. tall, at densities of 0.5 and 1 plant/ft.^{2} at the POST application, respectively. Common ragweed and common lambsquarters generally were not present in the POST treated plots at the time of application. Visual estimates of percentage soybean injury and weed control during the growing season were compared with an untreated control; 0% = no injury or control and 99% = complete crop kill or control.

Summary

None of the EPP treatments caused soybean injury up to the POST application June 10 (data not shown). POST Enlist One + Roundup PowerMAX + Perpetuo + Select Max treatments caused 15% injury June 18, eight days after treatment (DAA).

Common waterhemp had not emerged at the time of the burndown applications. EPP Reviton and Sharpen did not provide residual control (Table 1). However, EPP

Table 1. Burndown and Residual Weed Control in No-Tillage Enlist Soybean, 2021.

Treatment	Rate	Appln timing	Abuth[c] July 10	Amata July 10	Cheal July 10	Ipohe July 10
	product/acre		% weed control			
Untreated			0	0	0	0
Reviton + Destiny HC	2.0 fl oz + 1.0% v/va	EPP	10	91	99	73
Reviton + Roundup PowerMAX + AMSb + Destiny HC	1.0 fl oz + 32.0 fl oz + 8.5 lb/100 gal + 1.0% v/v	EPP	0	96	99	92
Sharpen + Roundup PowerMAX + AMS + Destiny HC	1.5 fl oz + 32.0 fl oz + 8.5 lb/100 gal + 1.0% v/v	EPP	47	97	99	98
Reviton + Roundup PowerMAX + AMS + Destiny HC + Zone Elite	1.0 fl oz + 32.0 fl oz + 8.5 lb/100 gal + 1.0% v/v 25.0 fl oz +	EPP	99	90	99	63
Enlist One + Roundup PowerMAX + Fierce EZ + Induce + (Enlist One + Roundup PowerMAX + Perpetuo + Select Max + AMS + Induce)	1.0 pt + 32.0 fl oz + 6.0 fl oz + 0.25% v/v (1.0 pt + 32.0 fl oz + 6.0 fl oz + 9.0 fl oz + 1.5 lb + 0.25% v/v)	EPP + (POST)	99	99	99	93
Enlist One + Roundup PowerMAX + First Rate + Fierce EZ + Induce +	1.0 pt + 32.0 fl oz + 0.6 oz wt + 6.0 fl oz + 0.25% v/v)	EPP +	99	99	99	92
(Enlist One + Roundup PowerMAX + Perpetuo + Select Max + AMS + Induce)	(1.0 pt + 32.0 fl oz + 6.0 fl oz + 9.0 fl oz + 1.5 lb + 0.25% v/v)	(POST)				
LSD (P=0.05)			19	10		11

[a]v/v = volume of product per volume tank mix.
[b]AMS = ammonium sulfate.
[c]Amata = common waterhemp, Ambel = common ragweed, Cheal = common lambsquarters
Erica = marestail

Reviton + Zone Elite, Fierce EZ and FirstRate + Fierce EZ gave complete control of common waterhemp through June 2, 23 days after application (DAA). Zone Elite continued to provide common waterhemp control (91%) as late as June 21, 42 DAA (Table 2). Fierce EZ and FirstRate + Fierce EZ continued to provide complete control.

All EPP treatments gave similarly good burndown and residual control of common ragweed at 23 DAA, (at least 90%, Table 1). However, control began to break for EPP Reviton and Reviton + Zone Elite treatments (60–65%) by 42 DAA on June 21 (Table 2). Sharpen continued to provide good common ragweed control with 88% at 42 DAA, which was statistically similar to Fierce EZ and FirstRate + Fierce EZ EPP treatments that included POST Roundup PowerMAX + Perpetuo + Select Max.

All treatments provided excellent season-long common lambsquarters control with at least 96% as late as 42 DAA.

Reviton provided only 73% burndown control of marestail at 23 DAA (Table1). However, tank-mixing with Roundup PowerMAX provided 92% control. Adding Zone Elite for a three-way tank-mixture reduced marestail control, though with only 63% (Table 1). EPP Sharpen + Roundup PowerMAX, Enlist One + Roundup PowerMAX + Fierce EZ and Enlist One + Roundup PowerMAX + FirstRate + Fierce EZ gave 98%, 93% and 92% control, respectively. The two-pass treatments maintained that level of control through June 21, while marestail control with the one-pass treatments generally decreased, with the exception of EPP Sharpen + Roundup PowerMAX (Table 2).

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	product/acre		% weed control			
Untreated			0	0	0	0
Reviton + Destiny HC	2.0 fl oz + 1.0% v/va	EPP	23	60	98	63
Reviton + Roundup PowerMAX + AMSb + Destiny HC	1.0 fl oz + 32.0 fl oz + 8.5 lb/100 gal + 1.0% v/v	EPP	0	65	96	87
Sharpen + Roundup PowerMAX + AMS + Destiny HC	1.5 fl oz + 32.0 fl oz + 8.5 lb/100 gal + 1.0% v/v	EPP	27	88	99	98
Reviton + Roundup PowerMAX + AMS + Destiny HC + Zone Elite	1.0 fl oz + 32.0 fl oz + 8.5 lb/100 gal + 1.0% v/v 25.0 fl oz +	EPP	91	65	99	50
Enlist One + Roundup PowerMAX + Fierce EZ + Induce + (Enlist One + Roundup PowerMAX + Perpetuo + Select Max + AMS + Induce)	1.0 pt + 32.0 fl oz + 6.0 fl oz + 0.25% v/v (1.0 pt + 32.0 fl oz + 6.0 fl oz + 9.0 fl oz + 1.5 lb + 0.25% v/v)	EPP + (POST)	99	99	99	93
Enlist One + Roundup PowerMAX + First Rate + Fierce EZ + Induce + (Enlist One + Roundup PowerMAX + Perpetuo + Select Max + AMS + Induce)	1.0 pt + 32.0 fl oz + 0.6 oz wt + 6.0 fl oz + 0.25% v/v) (1.0 pt + 32.0 fl oz + 6.0 fl oz + 9.0 fl oz + 1.5 lb + 0.25% v/v)	EPP + (POST)	99	99	99	98
LSD (P=0.05)			24	11	3	12

[a]v/v = volume of product per volume tank mix.
[b]AMS = ammonium sulfate.
[c]Amata = common waterhemp, Ambel = common ragweed, Cheal = common lambsquarters
Erica = marestail