

Liberty Ultra, Roundup PowerMAX3 and Enlist One Combinations Applied POST for Weed Control in Enlist Soybean

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Introduction

Postemergence herbicide tank-mixtures containing several active ingredients have become widely used to control herbicide-resistant weeds and to achieve broad-spectrum weed control. The purpose of this study was to evaluate postemergence weed control in Enlist Soybean with tank-mixture combinations of Liberty Ultra, Roundup PowerMAX3 and Enlist One.

Materials and Methods

The study was established using a randomized complete block design with four replications. The plot width was four 30-inch rows and length was 25 ft. The crop rotation was soybean following corn. Seedbed preparation included chisel plowing in the fall and field cultivations on May 30 and June 10. Glyphosate, glufosinate and 2,4-D tolerant soybean, Syngenta NKS26-E3, was planted at 154,000 seeds/acre on June 10. Verdict was applied preemergence to the entire trial at 5 fluid oz/acre following planting. Postemergence (POST) treatments were applied on July 6 delivering 15 gal/acre with 110015 AIXR tips at 35 psi. for treatments containing Enlist One. All other POST treatments were delivered with 20 GPA with 11002 TT tips at 35 psi. SPOST1 and SPOST2 treatments were applied with 110015 AIXR and 11002 TT tips at 15 & 20 GPA, respectively. Soybeans at the POST application were at the V4 growth stage. Weed species in the study included velvetleaf,

common waterhemp and ivyleaf morningglory at 2-5, 1-3 & 1-6 inches tall, respectively at POST applications. Plant density ranges included 10-30, 5-20 and 200-250 plants/plot, respectively.

Soybeans at the SPOST1 application were at the V5 growth stage. No velvetleaf plants were present in the plots receiving the SPOST1 application. Common waterhemp and ivyleaf morningglory were 2-6 and 1-2 inches tall with densities of 3-5 at 0-5 plants/plot, respectively, at the SPOST1 application. Soybeans at the SPOST2 application were at the V6 growth stage. Velvetleaf, common waterhemp & ivyleaf morningglory were at 1-2, 2-3 & 1-2 inches tall, respectively at the SPOST2 application. Plant density ranges included 1-3, 3-5 and 0-5 plants/plot, respectively. 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 and 99 percent = complete crop kill or control.

Results and Discussion

Soybean injury caused by herbicide treatment was 10 and 7 percent with POST Enlist One + Select Max + Dual II Magnum and POST Enlist One + Roundup PowerMAX3 + Dual II Magnum, respectively (Table 1). The remaining POST treatments caused no more than 5 percent injury.

Enlist One + Select Max + Dual II Magnum and Liberty Ultra + Select Max + Zidua SC provided 87 and 93 percent velvetleaf control, respectively (Table 1), as observed July 19, 13 days after treatment (DAT). By August 8 (33 DAT), velvetleaf control with Enlist One + Select Max+ Dual II Magnum improved to 95

percent as velvetleaf control with Liberty Ultra + Select Max + Zidua SC decreased to 88 percent (Table 2). All treatments containing Roundup PowerMAX 3, gave at least 96 percent velvetleaf control from July 19 to August 8 (Tables 1 & 2). The SPOST1 and SPOST2 applications contributed to complete (99 percent) velvetleaf control (Table 2).

Common waterhemp control observed on July 19, 13 DAT was 87-95 percent for all POST applications, except for 83 percent control with POST Liberty Ultra + Select Max + Zidua SC (Table 1). POST treatments with Enlist One maintained or slightly increased common waterhemp control by August 8, and POST treatments without Enlist One gave decreased control. The SPOST1 and SPOST2 applications contributed to at least 98 percent common waterhemp control (Table 2).

All POST treatments afforded complete ivyleaf morningglory control as observed on July 19 (Table 1). All treatments, including those with SPOST1 and SPOST2 applications gave 93-96 percent Control on August 8 (Table 2). Any surviving ivyleaf morningglory plants had germinated after postemergence applications.

Future research should evaluate postemergence herbicide tank mixtures to determine whether the addition of Zidua SC, Dual II Magnum, Select Max or other additional products may affect crop safety or cause weed control antagonism for Liberty Ultra, Roundup PowerMAX 3, or Enlist One.

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We thank Farm Superintendent Kent Berns and farm staff for their assistance with all Weed control research at the Curtiss Farm. BASF Corporation provided funding for this study.

Dr. Wesley Everman is the new Extension Weed Specialist continuing the leadership role for the Weed Science Research and Demonstration Program. We look forward to continuing this work with Dr. Everman in 2025 and beyond.

Additional research results from numerous sites from 2024 and previous years can be downloaded free of charge at the following address:

<https://store.extension.iastate.edu/Topic/Crops/Weeds-and-Weed-Control?S=0&A=0&F=0>

Table 1. Liberty Ultra, Roundup PowerMAX3 and Enlist One Combinations Applied POST for Weed Control in Enlist Soybean

Treatment	Rate product/acre	Appln timing	Injury 13- Jul (%)	^d Abuth 19-Jul ----(% weed control)----	Amata 19-Jul	Ipohe 19- Jul
Untreated	-	-	0	0	0	0
Liberty Ultra + Select Max + Zidua SC + AMS ^a	24.0 fl oz + 12.0 fl oz + 2.5 fl oz + 1.5 lb	POST	0	93	83	99
Liberty Ultra + Roundup PowerMAX 3 + Zidua SC + AMS +	24.0 fl oz + 30.0 fl oz + 2.5 fl oz + 1.5 lb	POST	3	98	90	99
Enlist One + Select Max + Dual II Magnum + COC ^b + AMS	32.0 fl oz + 12.0 fl oz + 16.0 fl oz + 1.0% v/v + 1.5 lb	POST	10	87	90	99
Enlist One + Roundup PowerMAX 3 + Dual II Magnum + COC + AMS	32.0 fl oz + 30.0 fl oz + 16.0 fl oz + 1.0% v/v + 1.5 lb	POST	5	99	88	99
Enlist One + Liberty Ultra + Roundup PowerMAX 3 + Zidua SC + AMS +	32.0 fl oz + 24.0 fl oz + 30.0 fl oz + 2.5 fl oz + 1.5 lb	POST	5	96	95	99
Liberty Ultra + Roundup PowerMAX 3 + Zidua SC + AMS + Enlist One + Roundup PowerMAX 3 + COC + AMS	24.0 fl oz + 30.0 fl oz + 2.5 fl oz + 1.5 lb 32.0 fl oz + 30.0 fl oz + 1.0% v/v + 1.5 lb	POST + SPOST1	5	99	92	99
Enlist One + Roundup PowerMAX 3 + Dual II Magnum + COC + AMS + Liberty Ultra + Roundup PowerMAX 3 + AMS +	32.0 fl oz + 30.0 fl oz + 16.0 fl oz + 1.0% v/v + 1.5 lb 24.0 fl oz + 30.0 fl oz + 1.5 lb	POST + SPOST2	7	98	87	99
LSD (P=0.05)			3	5	9	.

^a AMS = ammonium sulfate fertilizer from Winfield United.

^b COC = crop oil concentrate from Winfield United.

^c SPOST = sequential POST (following POST)

^d Abuth = velvetleaf, amata = common waterhemp, Ipohe = ivyleaf morningglory

Table 2. Liberty Ultra, Roundup PowerMAX3 and Enlist One Combinations Applied POST for Weed Control in Enlist Soybean

Treatment	Rate product/acre	Appln timing	^d Abuth 8-Aug -----(% weed control)-----	Amata 8-Aug	Ipohe 8-Aug
Untreated	-	-	0	0	0
Liberty Ultra + Select Max + Zidua SC + AMS ^a	24.0 fl oz + 12.0 fl oz + 2.5 fl oz + 1.5 lb	POST	88	77	93
Liberty Ultra + Roundup PowerMAX 3 + Zidua SC + AMS +	24.0 fl oz + 30.0 fl oz + 2.5 fl oz + 1.5 lb	POST	96	87	93
Enlist One + Select Max + Dual II Magnum + COC ^b + AMS	32.0 fl oz + 12.0 fl oz + 16.0 fl oz + 1.0% v/v + 1.5 lb	POST	95	92	96
Enlist One + Roundup PowerMAX 3 + Dual II Magnum + COC + AMS	32.0 fl oz + 30.0 fl oz + 16.0 fl oz + 1.0% v/v + 1.5 lb	POST	99	90	93
Enlist One + Liberty Ultra + Roundup PowerMAX 3 + Zidua SC + AMS +	32.0 fl oz + 24.0 fl oz + 30.0 fl oz + 2.5 fl oz + 1.5 lb	POST	98	95	95
Liberty Ultra + Roundup PowerMAX 3 + Zidua SC + AMS + Enlist One + Roundup PowerMAX 3 + COC + AMS	24.0 fl oz + 30.0 fl oz + 2.5 fl oz + 1.5 lb 32.0 fl oz + 30.0 fl oz + 1.0% v/v + 1.5 lb	POST + °SPOST1	99	98	95
Enlist One + Roundup PowerMAX 3 + Dual II Magnum + COC + AMS + Liberty Ultra + Roundup PowerMAX 3 + AMS +	32.0 fl oz + 30.0 fl oz + 16.0 fl oz + 1.0% v/v + 1.5 lb 24.0 fl oz + 30.0 fl oz + 1.5 lb	POST + SPOST2	99	99	96
LSD (P=0.05)			5	9	3

^a AMS = ammonium sulfate fertilizer from Winfield United.

^b COC = crop oil concentrate from Winfield United.

^c SPOST = sequential POST (following POST)

^d Abuth = velvetleaf, amata = common waterhemp, Ipohe = ivyleaf morningglory