Preemergence plus Postemergence Herbicide Programs for Weed Control in Corn

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Introduction

The purpose of this study was to evaluate various herbicides used in preemergence (PRE) plus postemergence (POST) programs for crop injury and weed control in corn.

Materials and Methods

The study was established using a randomized complete block design with three replications. The crop rotation was corn following soybean. The pre-plant seedbed was prepared with a field cultivator, and corn was planted at 35,000 seeds/acre in 30-in. rows May 4. PRE herbicide treatments were applied May 4 delivering 15 gal/acre with 11015TTI tips at 35 psi. POST treatments were applied June 4 to V2 corn delivering 15 gal/acre with 11015TT tips at 35 psi. Weeds were generally < 1 in. tall at the POST application date. Weed species in the study included giant foxtail, velvetleaf, and common waterhemp with average population densities of 0.01, 0.004, and 1 plants/ft^2, respectively. Visual estimates of percent corn 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

Summarized in Tables 1 and 2 are the results of the study. None of the PRE treatments caused corn injury (data not shown). However, POST Resicore + Aatrex 4L + Durango DMA and POST Roundup PowerMAX + Capreno + Aatrex caused 15 and 10 percent injury at seven days after POST, respectively (Table 1). No other POST treatments demonstrated more than 5 percent injury. All PRE treatments provided at least 96 percent control of giant foxtail and common waterhemp, 31 days after application (Table 1). PRE Fulltime NXT, Harness Xtra 5.6, and Anthem Maxx + Aatrex gave 68, 70, and 82 percent velvetleaf control, respectively. All other PRE treatments afforded at least 88 percent velvetleaf control (Table 1).

All herbicide programs provided at least 98 percent control of all weeds June 18, 14 days after POST (data not shown). On July 16, 42 days after POST, PRE Harness Xtra 5.6 + POST ImpactZ + Liberty 280 and PRE Verdict + POST Status + Roundup PowerMAX provided 77 and 82 percent giant foxtail control, respectively, compared with 88-96 percent giant foxtail control by all other programs (Table 2).

All programs afforded at least 96 percent velvetleaf control by July 16, with the exception of significantly lower control from PRE Harness Xtra 5.6 + POST ImpactZ + Liberty 280 at 83 percent (Table 2). PRE Fulltime NXT + POST SureStart II + Durango, PRE Harness Xtra 5.6 + POST ImpactZ + Liberty 280, and PRE Verdict + POST Status + Roundup PowerMAX gave 87, 83, and 78 percent common waterhemp control July 16, respectively (Table 2). Many of the remaining programs gave significantly greater common waterhemp control at 93-99 percent.

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Table 1. Preemergence plus postemergence herbicide programs for weed control in corn (June data).

Treatment	Rate	Appln timing	Setfa[e] Jun 4	Abuth Jun 4	Amata Jun 4	Injury Jun 11
	product/acre		------ % weed control ------			(%)
Untreated			0	0	0	0
SureStart II + (Resicore +Aatrex 4L + Durango DMA)	2.5 pt + (1.5 qt + 1.0 qt + 32.0 fl oz)	PRE + (POST)	98	88	99	15
SureStart II + (Realm Q +Aatrex 4L + Durango DMA)	2.5 pt + (4.0 oz wt + 1.0 qt + 32.0 fl oz)	PRE + (POST)	98	95	99	0
Fulltime NXT + (SureStart II + Durango DMA)	2.0 qt + (2.0 pt + 32.0 fl oz)	PRE + (POST)	98	68	96	5
Harness Xtra 5.6 + (ImpactZ + Liberty 280 + N-Pak AMS Liquid)	3.6 pt + (8.0 fl oz + 22.0 fl oz + 5% v/v[a])	PRE + (POST)	99	70	99	3
Verdict + (Status+Roundup PowerMAX+ NIS[b] + AMS[c])	18.0 fl oz + (5.0 oz wt + 32.0 fl oz + 0.25% v/v + 8.5 lb/100 gal)	PRE + (POST)	98	99	98	5
Anthem Maxx + Aatrex 4L + (Solstice + Aatrex 4L + Roundup PowerMAX + NIS + AMS)	4.5 fl oz + 1.0 qt + (2.5 fl oz + 1.0 pt + 32.0 fl oz + 0.25% v/v + 8.5 lb/100 gal)	PRE + (POST)	99	82	98	3
Acuron + (Halex GT + Aatrex 4L + AMS + NIS)	2.0 qt + (3.6 pt + 1.0 pt. + 8.5 lb/100 gal + 0.25 % v/v)	PRE + (POST)	98	99	98	5
Corvus + Harness + (Roundup PowerMAX + Capreno + Aatrex 4L + COC[d] + AMS)	4.0 fl oz + 1.5 pt + (32.0 fl oz + 3.0 fl oz + 1.0 pt + 1.0 % v/v + 8.5 lb/100 gal)	PRE + (POST)	99	99	99	10
LSD (P= 0.05)			3	17	4	6

[a]v/v = volume of product per volume tank mix.

[b]NIS = preference nonionic surfactant.

[c]AMS = ammonium sulfate fertilizer.

[d]COC = premium crop oil concentrate.

[e]Setfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp.

Table 2. Preemergence plus postemergence herbicide programs for weed control in corn (Jul data).

Treatment	Rate	Appln timing	Setfa[e] Jul 16	Abuth Jul 16	Amata Jul 16
	product/acre		------- % weed control ------		
Untreated			0	0	0
SureStart II + (Resicore +Aatrex 4L + Durango DMA)	2.5 pt + (1.5 qt + 1.0 qt + 32.0 fl oz)	PRE + (POST)	93	99	99
SureStart II + (Realm Q +Aatrex 4L + Durango DMA)	2.5 pt + (4.0 oz wt + 1.0 qt + 32.0 fl oz)	PRE + (POST)	92	99	96
Fulltime NXT + (SureStart II + Durango DMA)	2.0 qt + (2.0 pt + 32.0 fl oz)	PRE + (POST)	96	96	87
Harness Xtra 5.6 + (ImpactZ + Liberty 280 + N-Pak AMS Liquid)	3.6 pt + (8.0 fl oz + 22.0 fl oz + 5% v/v[a])	PRE + (POST)	77	83	83
Verdict + (Status+Roundup PowerMAX+ NIS[b] + AMS[c])	18.0 fl oz + (5.0 oz wt + 32.0 fl oz + 0.25% v/v + 8.5 lb/100 gal)	PRE + (POST)	82	96	78
Anthem Maxx + Aatrex 4L + (Solstice + Aatrex 4L + Roundup PowerMAX + NIS + AMS)	4.5 fl oz + 1.0 qt + (2.5 fl oz + 1.0 pt + 32.0 fl oz + 0.25% v/v + 8.5 lb/100 gal)	PRE + (POST)	88	99	98
Acuron + (Halex GT + Aatrex 4L + AMS + NIS)	2.0 qt + (3.6 pt + 1.0 pt. + 8.5 lb/100 gal + 0.25 % v/v)	PRE + (POST)	91	99	96
Corvus + Harness + (Roundup PowerMAX + Capreno + Aatrex 4L + COC[d] + AMS)	4.0 fl oz + 1.5 pt + (32.0 fl oz + 3.0 fl oz + 1.0 pt + 1.0 % v/v + 8.5 lb/100 gal)	PRE + (POST)	95	99	93
LSD (P = 0.05)			12	7	9

[a]v/v = volume of product per volume tank mix.
[b]NIS = preference nonionic surfactant.
[c]AMS = ammonium sulfate fertilizer.
[d]COC = premium crop oil concentrate.
[e]Setfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp.