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Two-Pass Herbicide Programs for Weed Control in Corn

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Introduction

The purpose of this study was to evaluate various herbicides applied preemergence and postemergence in corn for crop injury and weed control.

Materials and Methods

The study was established using a randomized complete block design with three replications. Herbicides were applied in 15 gallons of water/acre. The crop rotation was corn following soybean. The pre-plant seedbed was prepared with a field cultivator, and corn was planted at 35,077 seeds/acre in 30-in. rows on May 12. Preemergence (PRE) herbicide treatments were applied May 12. Postemergence (POST) treatments were applied June 17 to V6 corn. Weeds were generally 4–8 in. tall at the POST application dates. Weed species in the study included giant foxtail, velvetleaf, common waterhemp, and common lambsquarters with average population densities of 10, 1, <1 and <1 plants/ft², respectively. Visual estimates of corn 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. None of the PRE treatments caused corn injury (data not shown), and none of the POST treatments caused more than 3

percent injury as observed June 30 and July 15 (data not shown).

On June 1, PRE Corvus + Aatrex 4L provided 70 percent control of giant foxtail, and the remaining PRE treatments gave 91 to 99 percent control (Table 1). Giant foxtail control improved slightly for most treatments by June 13 with more rainfall (Table 2). However, Corvus + Aatrex 4L did not provide more than 78 percent, compared with at least 94 percent control by the other PRE treatments.

PRE SureStart + Aatrex 4L gave 67 percent velvetleaf control on both June 1 and 13 (Tables 1 and 2). Velvetleaf control was similar for prepackage mixtures of acetochlor + atrazine; Harness Xtra 5.6 and Breakfree NXT ATZ gave 75 to 87 percent control for June 1 and June 13. However, the tank mixture of Instigate + Breakfree NXT ATZ provided velvetleaf control of 98 percent. PRE Verdict, Corvus + Aatrex 4L, Resicore + Aatrex 4L, Anthem Maxx + Aatrex 4L, and Acuron Flexi gave 96 to 99 percent velvetleaf control June 1 and June 13.

Significant common waterhemp emergence had not occurred by June 1. However, by June 13 enough common waterhemp had emerged to determine that all PRE treatments gave 99 percent control (Table 2). Control of common lambsquarters by all treatments was 99 percent June 1 and June 13.

All treatments afforded 99 percent control of all weeds following POST applications June 30 and July 15 (data not shown).

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We would like to thank Ken Pecinovsky and farm staff for their assistance with this study. Funding for this study was provided by the crop protection industry.

Table 1. Two-pass weed control in corn on June 1.

Treatment	Rate	Appln timing	% weed control			
			Setfa ^f Jun 1	Abuth Jun 1	Amata Jun 1	Cheal Jun 1
Untreated			0	0	-	0
Harness Xtra 5.6 + (Impact + Aatrex 4L + MSO ^a + N-Pak AMS Liquid ^b)	3.6 pt + (0.75 fl oz + 1.0 pt + 1.0 % v/v + 2.5% v/v ^c)	PRE + (POST)	98	82	-	99
Verdict + (Status+ Roundup PowerMAX+ NIS ^d + AMS ^e)	18 fl oz + (5.0 oz wt + 32.0 fl oz + 0.25% v/v + 8.5 lb/100 gal)	PRE + (POST)	98	96	-	99
Corvus + Aatrex 4L + (Liberty 280 + Diflexx DUO + Aatrex 4L + COC + AMS)	4.0 fl oz + 1.0 pt + (29.0 fl oz + 24.0 fl oz + 1.0 pt + 0.5% v/v + 8.5 lb/100 gal)	PRE + (POST)	70	96	-	99
SureStart II + Aatrex 4L + (SureStart II + Aatrex 4L + Durango DMA + N-Pak AMS Liquid)	2.0 pt + 1.0 qt (1.5 pt + 1.0 qt 1.0 qt + 2.5% v/v)	PRE + (POST)	98	67	-	99
Resicore + Aatrex 4L + (Durango DMA + N-Pak AMS Liquid)	2.75 qt + 1.0 qt + (1.0 qt + 2.5% v/v)	PRE + (POST)	99	99	-	99
Resicore + Aatrex 4L + (Resicore + Aatrex 4L + Durango DMA + N-Pak AMS Liquid)	1.5 qt + 1.0 qt + (1.25 qt + 1.0 qt + 1.0 qt + 2.5% v/v)	PRE + (POST)	99	99	-	99
Instigate+Breakfree NXT Lite+ (Abundit Extra+Aproach+AMS)	6.0 oz wt + 1.5 qt + (32.0 fl oz+4.0 fl oz+2.0 lb)	PRE + (POST)	95	98	-	99
Breakfree NXT ATZ + (Abundit Extra + Realm Q + Aatrex 4L + Aproach + AMS)	2.5 qt + (32.0 fl oz + 4.0 oz wt + 1.5 pt + 4.0 fl oz + 2 lb)	PRE + (POST)	95	75	-	99
Breakfree NXT ATZ + (Abundit Extra + Revulin Q + Aatrex 4L + Aproach + AMS)	2.5 qt + (32.0 fl oz + 3.4 oz wt + 1.5 pt + 4.0 fl oz + 2 lb)	PRE + (POST)	98	83	-	99
Anthem Maxx + Aatrex 4L + (Solstice + Aatrex 4L + Roundup PowerMAX + COC + AMS)	4.5 fl oz + 1.0 qt + (2.5 fl oz + 1.0 pt 32.0 fl oz + 1.0% v/v + 8.5 lb/100 gal)	PRE + (POST)	96	99	-	99
Harness Xtra 5.6 + (Impact + Aatrex 4L + Roundup PowerMAX+ MSO + N-Pak AMS Liquid)	2.5 qt + (0.75 fl oz + 1.0 pt + 32.0 fl oz + 1.0% v/v + 2.5% v/v)	PRE (POST)	94	83	-	99
Acuron Flexi + (Halex GT + Aatrex 4L + AMS + NIS)	1.5 qt + (3.6 pt + 1.0 pt + 8.5 lb/100 gal + 0.25% v/v)	PRE + (POST)	91	98	-	99
LSD (P = .05)			9	14	-	0

^aMSO = Succeed Ultra methylated seed oil.^bN-Pak AMS liquid = ammonium sulfate.^cv/v = volume of product per volume tank mix.^dNIS = preference nonionic surfactant.^eAMS = ammonium sulfate fertilizer.^fSetfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp, Cheal = common lambsquarter.

Table 2. Two-pass weed control in corn on June 13.

Treatment	Rate	Appln timing	% weed control			
			Setfa ^f Jun 13	Abuth Jun 13	Amata Jun 13	Cheal Jun 13
Untreated			0	0	0	0
Harness Xtra 5.6 + (Impact + Aatrex 4L + MSO ^a + N-Pak AMS Liquid ^b)	3.6 pt + (0.75 fl oz + 1.0 pt + 1.0 % v/v + 2.5% v/v ^c)	PRE (POST)	96	75	99	99
Verdict + (Status+ Roundup PowerMAX + NIS ^d + AMS ^e)	18 fl oz + (5.0 oz wt + 32.0 fl oz + 0.25% v/v + 8.5 lb/100 gal)	PRE + (POST)	96	96	99	99
Corvus + Aatrex 4L + (Liberty 280 + Diflexx DUO + Aatrex 4L + COC + AMS)	4.0 fl oz + 1.0 pt + (29.0 fl oz + 24.0 fl oz + 1.0 pt + 0.5% v/v + 8.5 lb/100 gal)	PRE + (POST)	78	98	99	99
SureStart II + Aatrex 4L + (SureStart II + Aatrex 4L + Durango DMA + N-Pak AMS Liquid)	2.0 pt + 1.0 qt (1.5 pt + 1.0 qt 1.0 qt + 2.5% v/v)	PRE + (POST)	96	67	99	99
Resicore + Aatrex 4L + (Durango DMA + N-Pak AMS Liquid)	2.75 qt + 1.0 qt + (1.0 qt + 2.5% v/v)	PRE + (POST)	99	99	99	99
Resicore + Aatrex 4L + (Resicore + Aatrex 4L + Durango DMA + N-Pak AMS Liquid)	1.5 qt + 1.0 qt + (1.25 qt + 1.0 qt + 1.0 qt + 2.5% v/v)	PRE + (POST)	99	99	99	99
Instigate + Breakfree NXT Lite+ (Abundit Extra+Approach+AMS)	6.0 oz wt + 1.5 qt + (32.0 fl oz+4.0 fl oz+2.0 lb)	PRE + (POST)	95	98	99	99
Breakfree NXT ATZ + (Abundit Extra + Realm Q + Aatrex 4L + Approach + AMS)	2.5 qt + (32.0 fl oz + 4.0 oz wt + 1.5 pt + 4.0 fl oz + 2 lb)	PRE + (POST)	97	80	99	99
Breakfree NXT ATZ + (Abundit Extra + Revulin Q + Aatrex 4L + Approach + AMS)	2.5 qt + (32.0 fl oz + 3.4 oz wt + 1.5 pt + 4.0 fl oz + 2 lb)	PRE + (POST)	99	83	99	99
Anthem Maxx + Aatrex 4L + (Solstice + Aatrex 4L + Roundup PowerMAX + COC + AMS)	4.5 fl oz + 1.0 qt + (2.5 fl oz + 1.0 pt 32.0 fl oz + 1.0% v/v + 8.5 lb/100 gal)	PRE + (POST)	96	99	99	99
Harness Xtra 5.6 + (Impact + Aatrex 4L + Roundup PowerMAX+ MSO + N-Pak AMS Liquid)	2.5 qt + (0.75 fl oz + 1.0 pt + 32.0 fl oz + 1.0% v/v + 2.5% v/v)	PRE (POST)	96	87	99	99
Acuron Flexi + (Halex GT + Aatrex 4L + AMS + NIS)	1.5 qt + (3.6 pt + 1.0 pt + 8.5 lb/100 gal + 0.25% v/v)	PRE + (POST)	94	99	99	99
LSD (P = .05)			10	16	0	0

^aMSO = Succeed Ultra methylated seed oil.^bN-Pak AMS liquid = ammonium sulfate.^cv/v = volume of product per volume tank mix.^dNIS = Preference nonionic surfactant.^eAMS = ammonium sulfate fertilizer.^fSetfa = giant foxtail, Abuth = velvetleaf, Amata = common waterhemp, Cheal = common lambsquarter.