2014

Preemergence and Postemergence Herbicide Combinations in Corn

Michael D. Owen
Iowa State University, mdowen@iastate.edu

Damian D. Franzenburg
Iowa State University, dfranzen@iastate.edu

James M. Lee
Iowa State University, jmlee@iastate.edu

James F. Lux
Iowa State University, jlux@iastate.edu

Jacob S. Eeling
Iowa State University, jseeling@iastate.edu

Preemergence and Postemergence Herbicide Combinations in Corn

Abstract
The purpose of this study was to evaluate various herbicides and application timings in corn for crop injury and weed control.

Keywords
Agronomy

Disciplines
Agricultural Science | Agriculture | Agronomy and Crop Sciences | Weed Science

Preemergence and Postemergence Herbicide Combinations in Corn

RFR-A13112

Micheal Owen, professor
Damian Franzenburg, ag specialist
James Lee, ag specialist
James Lux, ag specialist
Jacob Eeling, research associate
Department of Agronomy

Introduction

The purpose of this study was to evaluate various herbicides and application timings 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 20 gallons of water/acre. The crop rotation was corn following soybean. The pre-plant seedbed was prepared with a field cultivator. Corn was planted at 35,000 seeds/acre in 30-in. rows on May 24. Preemergence (PRE) treatments were applied following planting. Postemergence (EPOST and POST) treatments were applied on June 25 and July 8. Corn growth was V4 and V7 on June 25, and July 8, respectively. Weeds were generally 2-4 and 3-7 in. tall, on June 25 and July 8, respectively. Weed species in the study included giant foxtail, velvetleaf, and common waterhemp with average populations of <1-3 plants/ft^2. Visual estimates of corn injury and percentage weed control were made during the growing season. These observations are compared with an untreated control and made on a zero to 100 rating scale (0 percent=no control or injury; 100 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 more than 3 percent corn injury when observed on June 24 (Table 1). Instigate + Aatrex 4L and Corvus + Aatrex 4L gave 77 and 85 percent giant foxtail control, respectively. All other PRE treatments provided at least 92 percent giant foxtail control. Breakfree ATZ, Prequel + Cinch ATZ, Surestart + Aatrex 4L and Harness Xtra 5.6 gave 88, 82, 90, and 87 percent velvetleaf control, respectively, and the other PRE treatments gave at least 95 percent velvetleaf control. All PRE treatments afforded at least 98 percent common waterhemp control.

Postemergence treatments did not cause more than 3 percent injury when observed on July 16 (Table 2). On August 5, 28 days after the POST applications, PRE Instigate + Aatrex 4L + POST Realm Q + Abundit Extra and PRE Breakfree ATZ + Instigate gave 93 percent giant foxtail control compared with at least 96 percent control by all other treatments. All treatments afforded at least 96 percent velvetleaf control. PRE Prequel + Cinch ATZ + POST Realm Q + Abundit Extra provided 90 percent common waterhemp control, and all remaining treatments gave 93-99 percent common waterhemp control (Table 2).

Acknowledgements

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. Preemergence and postemergence herbicide combinations in corn–early injury and selected weed control.

Treatment	Rate	Appln timing	Injury Jun 24	Setfa[d] Jun 24	Abuth[d] Jun 24	Amata[d] Jun 24
	product/acre		- (%) -	------ (% weed control) -------		
Untreated			0	0	0	0
Breakfree ATZ + (Realm Q + Abundit Extra + AMS[a])	2.67 qt + (4.0 oz wt + 32.0 fl oz + 2.0 lb/a)	PRE + (POST)	3	99	88	99
Prequel + Cinch ATZ + (Realm Q + Abundit Extra + AMS)	1.66 oz wt + 1.5 qt + (4.0 oz wt + 32.0 fl oz + 2.0 lb/a)	PRE + (POST)	0	96	82	98
Instigate + Aatrex 4L + (Realm Q + Abundit Extra + AMS)	6.0 oz wt + 1.0 qt + (4.0 oz wt + 32.0 fl oz + 2.0 lb/a)	PRE + (POST)	0	77	96	98
Breakfree ATZ + Instigate	2.0 qt + 6.0 oz wt	PRE	2	99	99	99
Surestart + Aatrex 4L + (Durango DMA + N-Pak AMS Liquid[b])	2.5 pt + 1.0 qt + (1.5 pt + 2.5% v/v	PRE + (POST)	2	95	90	99
Surestart + (Surestart + Durango DMA + N-Pak AMS Liquid)	2.0 pt + (1.5 pt + 1.5 pt + 2.5% v/v)	PRE + (POST)	0	95	96	99
Lumax EZ + (Halex GT + Aatrex 4L + AMS + NIS[c])	1.5 qt + (3.6 pt + 1.0 pt + 8.5 lb/100 gal + 0.25% v/v)	PRE + (POST)	0	96	98	99
Zemax + (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)	0	98	98	99
Zidua + Sharpen + (Roundup PowerMAX + AMS)	3.0 oz wt + 3.5 fl oz + (22.0 fl oz + 2.0 lb/a)	PRE + (POST)	0	94	96	99
Corvus + Aatrex 4L + (Laudis + Roundup PowerMAX + AMS)	3.3 fl oz + 1.0 qt + (3.0 fl oz + 22.0 fl oz + 2.0 lb/a)	PRE + (POST)	0	85	95	99
Anthem ATZ + Roundup PowerMAX + AMS	40 fl oz + 22.0 fl oz + 2.0 lb/a	EPOST	0	0	0	0
Harness Xtra 5.6 + (Roundup PowerMAX + AMS)	2.3 qt + (22.0 fl oz + 2.0 lb/a)	PRE (POST)	0	92	87	99
LSD (P=.05)			3	11	6	2

[a]AMS=ammonium sulfate fertilizer from United Suppliers.

[b]N-Pak AMS liquid=ammonium sulfate from Winfield Solutions, LLC.

[c]NIS=Preference nonionic surfactant from Winfield Solutions.

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

Table 2. Preemergence and postemergence herbicide combinations in corn–late injury and selected weed control.

Treatment	Rate	Appln timing	Injury Jul 16	Setfa[d] Aug 5	Abuth[d] Aug 5	Amata[d] Aug 5
	product/acre		- (%) -	------ (% weed control) -------		
Untreated			0	0	0	0
Breakfree ATZ + (Realm Q + Abundit Extra + AMS[a])	2.67 qt + (4.0 oz wt + 32.0 fl oz + 2.0 lb/a)	PRE + (POST)	2	99	99	99
Prequel + Cinch ATZ + (Realm Q + Abundit Extra + AMS)	1.66 oz wt + 1.5 qt + (4.0 oz wt + 32.0 fl oz + 2.0 lb/a)	PRE + (POST)	3	99	99	90
Instigate + Aatrex 4L + (Realm Q + Abundit Extra + AMS)	6.0 oz wt + 1.0 qt + (4.0 oz wt + 32.0 fl oz + 2.0 lb/a)	PRE + (POST)	3	93	99	99
Breakfree ATZ + Instigate	2.0 qt + 6.0 oz wt	PRE	2	93	96	99
Surestart + Aatrex 4L + (Durango DMA + N-Pak AMS Liquid[b])	2.5 pt + 1.0 qt + (1.5 pt + 2.5% v/v	PRE + (POST)	3	99	98	96
Surestart + (Surestart + Durango DMA + N-Pak AMS Liquid)	2.0 pt + (1.5 pt + 1.5 pt + 2.5% v/v)	PRE + (POST)	2	99	99	96
Lumax EZ + (Halex GT + Aatrex 4L + AMS + NIS[c])	1.5 qt + (3.6 pt + 1.0 pt + 8.5 lb/100 gal + 0.25% v/v)	PRE + (POST)	3	99	99	99
Zemax + (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)	0	99	99	99
Zidua + Sharpen + (Roundup PowerMAX + AMS)	3.0 oz wt + 3.5 fl oz + (22.0 fl oz + 2.0 lb/a)	PRE + (POST)	0	96	99	99
Corvus + Aatrex 4L + (Laudis + Roundup PowerMAX + AMS)	3.3 fl oz + 1.0 qt + (3.0 fl oz + 22.0 fl oz + 2.0 lb/a)	PRE + (POST)	0	98	99	93
Anthem ATZ + Roundup PowerMAX + AMS	40 fl oz + 22.0 fl oz + 2.0 lb/a	EPOST	0	99	98	93
Harness Xtra 5.6 + (Roundup PowerMAX + AMS)	2.3 qt + (22.0 fl oz + 2.0 lb/a)	PRE (POST)	0	98	99	95
LSD (P=.05)			3	5	2	9

[a]AMS=ammonium sulfate fertilizer from United Suppliers.

[b]N-Pak AMS liquid=ammonium sulfate from Winfield Solutions, LLC.

[c]NIS=Preference nonionic surfactant from Winfield Solutions.

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