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R. Currie
Kansas State University, rscurie@ksu.edu

P. Geier
Kansas State University, pgeier@ksu.edu

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Weed Control in Irrigated Corn with Combinations of Corvus, Balance Flexx, Capreno, Laudis, Harness, Atrazine, Glyphosate, Dual, and Diflexx

Abstract

Most preemergence treatments followed by postemergence treatments provided better Palmer amaranth control than preemergence treatments alone or early postemergence treatments alone (Table 2). The better treatments provided good control of Palmer amaranth, kochia, Russian thistle, crabgrass, green foxtail, and shattercane. All treatments elevated yield over the untreated control.

Keywords

weed science, weed control, irrigated corn, shattercane, green foxtail, crabgrass, kochia, Palmer amaranth, Russian thistle, preemergence herbicide, postemergence herbicide, Corvus, Balance Flexx, isoxaflutole+a safener, Capreno, tembotrione+thiencarbazone-ethyl, Laudis, tembotrione, Harness, acetochlor, atrazine, glyphosate, Dual, Difless, dicamba, broadleaf control, tank mix, broad-spectrum weed control

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Weed Control in Irrigated Corn with Combinations of Corvus, Balance Flexx, Capreno, Laudis, Harness, Atrazine, Glyphosate, Dual, and Diflexx

R. Currie and P. Geier

Summary

Most preemergence treatments followed by postemergence treatments provided better Palmer amaranth control than preemergence treatments alone or early postemergence treatments alone (Table 2). The better treatments provided good control of Palmer amaranth, kochia, Russian thistle, crabgrass, green foxtail, and shattercane. All treatments elevated yield over the untreated control.

Introduction

Although Balance Flexx (isoxaflutole+a safener) provides good early season broadleaf control, it is often necessary to tank mix it with other products to augment the base level of control. Tank mixes of Balance Flexx and Corvus (isoxaflutole+thiencarbazone-methyl), Capreno (tembotrione+thiencarbazone-ethyl), Laudis (tembotrione), Harness (acetochlor), atrazine, glyphosate, and Diflexx (dicamba+a safener) were evaluated for broad-spectrum weed control.

Procedures

An experiment at the Kansas State University Southwest Research-Extension Center in Garden City, Kansas, evaluated weed control in irrigated corn with preemergence, early postemergence, or preemergence followed by postemergence herbicide treatments. Glyphosate-resistant corn was planted April 24, 2014, with preemergence herbicides applied the following day. Early postemergence and postemergence herbicides were applied on May 30 and June 16, 2014, respectively (Table 1). Preemergence herbicides were applied using a tractor-mounted, CO₂-pressurized sprayer calibrated to deliver 20 gpa at 30 psi and 4.1 mph. Early postemergence and postemergence herbicides were applied with a CO₂-pressurized backpack sprayer delivering 20 gpa, at 27 psi and 3.0 mph. Soil was a Ulysses silt loam with 1.4% organic matter, pH of 8.0, and cation exchange capacity of 18.4. The entire experimental area was overseeded with a mixture of shattercane (rox orange), green foxtail, and crabgrass. The kochia, Palmer amaranth, and Russian thistle populations were natural infestations. Plots were 10 by 35 feet, arranged in a randomized complete block with four replications. Weed control was visually determined 105 days after planting, which was 104, 69, and 52 days after application of the

preemergence, early-postemergence, and postemergence herbicides, respectively. Yields were determined October 27, 2014, by harvesting the center two rows of each plot and adjusting the grain to 15.5% moisture.

Results and Discussion

Most preemergence treatments followed by postemergence treatments provided better Palmer amaranth control than preemergence treatments alone or early postemergence treatments alone (Table 2). Treatments providing 86, 93, 89, 87, 84, or 91% control of Palmer amaranth, kochia, Russian thistle, crabgrass, green foxtail, or shattercane, respectively, were not statistically superior to the best treatment for control of that weed species. Kochia and Russian thistle pressure was not intense. Although data on these weed species are useful, they are not reliable as a sole source of information. Overseeding of foxtail and crabgrass provided good stands of these weeds. All herbicide treatments more than doubled corn yield compared to the untreated control. Treatments elevating yield above 82.4 bu/a were not statistically different from the best yielding treatment.

Table 1. Application information.

Application timing	Preemergence	Early-postemergence	Postemergence
Application date	April 24, 2014	May 30, 2014	June 16, 2014
Air temperature (°F)	53	86	71
Relative humidity (%)	39	33	79
Soil temperature (°F)	38	59	51
Wind speed (mph)	8	5	7
Wind direction	Southwest	South-Southeast	South-Southeast
Soil moisture	Fair	Fair	Good

Table 2. Weed control with Corvus, Balance Flexx, Capreno, Laudis, and Diflexx in glyphosate-resistant irrigated corn.

Trt.	Herbicide ¹	Rate (oz/a)	Timing ²	% Control						Yield ¹⁰
				105 DAP ³						
				AMAPA ⁴	KCHSC ⁵	SASKR ⁶	DIGSS ⁷	SETVI ⁸	SORVU ⁹	
1	Untreated control			0	0	0	0	0	0	44.8
2	Corvus	5.6	A	83	100	68	68	63	80	97.7
	Atrazine	32	A							
	Glyphosate+AMS	32	A							
3	Balance Flexx	4.0	A	86	73	75	93	91	83	91.2
	Harness	46	A							
	Atrazine	32	A							
	Glyphosate+AMS	32	A							
4	Balance Flexx	4.0	A	83	100	78	83	60	73	95.4
	Anthem ATZ	32	A							
	Glyphosate+AMS	32	A							
5	Balance Flexx	4.0	A	83	100	80	70	63	78	75.4
	Dual II Magnum	21	A							
	Atrazine	32	A							
	Glyphosate+AMS	32	A							
6	Capreno	3.0	B	84	100	98	88	83	100	102.0
	Banvel	8	B							
	Atrazine	32	B							
	Glyphosate+AMS	32	B							
	Superb HC	0.5%	B							
7	Corvus	3.3	A	93	100	83	90	86	98	109.7
	Atrazine	32	A							
	Glyphosate+AMS	32	A							
	Laudis	3.0	C							
	Atrazine	16	C							
	Glyphosate+AMS	32	C							
	Destiny HC	1.0%	C							
8	Balance Flexx	3.0	A	94	100	85	91	93	100	103.2
	Anthem ATZ	32	A							
	Glyphosate+AMS	32	A							
	Capreno	3.0	C							
	Atrazine	16	C							
	Glyphosate+AMS	32	C							
	Superb HC	0.5%	C							

continued

Table 2. Weed control with Corvus, Balance Flexx, Capreno, Laudis, and Diflexx in glyphosate-resistant irrigated corn.

Trt.	Herbicide ¹	Rate (oz/a)	Timing ²	% Control						Yield ¹⁰
				105 DAP ³						
				AMAPA ⁴	KCHSC ⁵	SASKR ⁶	DIGSS ⁷	SETVI ⁸	SORVU ⁹	
9	Corvus	3.3	A	78	100	78	75	63	93	96.7
	Glyphosate+AMS	32	A							
	Atrazine	32	A							
	Diflexx	10	C							
	Glyphosate+AMS	32	C							
	Destiny HC	1.0%	C							
	LSD @ 5%=			8.0	7.3	9.5	5.6	6.9	9.2	20.8

¹ AMS is ammonium sulfate at 1.5 lb/a.

² A is preemergence, B is early postemergence, C is postemergence.

³ Days after planting.

⁴ Palmer amaranth.

⁵ Kochia.

⁶ Russian thistle.

⁷ Crabgrass.

⁸ Green foxtail.

⁹ Shattercane.

¹⁰ Bu/a.