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Fallow Weed Control with Preemergence Tank Mixes of Sharpen, Zidua, Sencor, Banvel, Atrazine, Balance Pro, and Corvus

R. Currie and P. Geier

Summary

With the exception of the tank mix of Sharpen and Sencor, all other tank mixes that provided 100% kochia control 53 days after treatment (DAT) were three-way tank mixes of atrazine herbicide plus, Banvel, and Balance Pro or Zidua. Only two tank mixes provided 98% kochia control 143 DAT. These were also three-way tank mixes of these chemistries. Combinations of Balance Pro and Sencor were needed to provide greater than 93% control of Russian thistle 143 DAT. No tank mix provided good control of Palmer amaranth 143 DAT. However, tank mixes of Sharpen, Sencor, and Zidua provided 84% control 143 DAT. This might provide a foundation for a subsequent postemergence application in a two-pass weed control program.

Introduction

With the advent of glyphosate-resistant kochia, it has become necessary for producers to apply more complex tank mixes of preemergence herbicides in the very early spring to achieve control. To reduce the rate that kochia evolves resistance to new chemistries, tank mixes of herbicides with different biochemical modes of action need to be tested. Two- and three-way tank mixes of compounds were evaluated for kochia control.

Procedures

Broadleaf weed control was evaluated with preemergence herbicides OpTill (saflufenil + imazethapyr), Sharpen (saflufenil), Sencor (metribuzin), Banvel (dicamba), atrazine, Balance Pro (isoxaflutole), Autumn Super (iodosulfuron + thienencarbazone), and Corvus (isoxaflutole + thienencarbazone) at the Kansas State University Southwest Research-Extension Center in Garden City, Kansas. The study site had a natural infestation of kochia that was allowed to grow uncontrolled during the summer of 2013. Applications were made March 14, 2014. Air temperature, soil temperature, wind speed, relative humidity and soil moisture conditions were 72°F, 32°F, 5 mph, 12%, and dry, respectively. Soil was a Ulysses silt loam with 1.4% organic matter, pH of 8.0, and cation exchange capacity of 18.4. Herbicides were applied with a tractor-mounted, CO₂-pressurized sprayer calibrated to deliver 20 gpa at 30 psi and 4.1 mph. Plots were 10 by 35 feet, arranged in a randomized complete block with four replications. Weed control was visually determined 53 and 143 days after treatment (DAT).

Results and Discussion

Abundant kochia seed was provided by dense stands that were allowed to grow in 2013. However, a shortage of spring rainfall limited surface soil moisture, which may have suppressed seed germination. The preceding kochia population also provided a dense mat of residue, which made herbicide movement to the soil surface challenging. Under normal conditions kochia populations would be expected to be in excess of 10 plants per square inch. However, the extremes in weather conditions in the spring of 2014 caused a several-fold reduction in expected weed pressure. Although populations were not as expected, they were uniform and sufficient to supply reliable data. With the exception of the tank mix of Sharpen and Sencor, all other tank mixes that provided 100% kochia control 53 DAT were three-way tank mixes of atrazine herbicide plus Banvel and Balance Pro or Zidua. Only two tank mixes provided 98% kochia control 143 DAT. These were also three-way tank mixes of these chemistries. The combinations of Balance Pro and Sencor were needed to provide greater than 93% control of Russian thistle 143 DAT. No tank mix provided good control of Palmer amaranth 143 DAT. However tank mixes of Sharpen, Sencor, and Zidua provided 84% control 143 DAT, which could provide a foundation for a subsequent postemergence application in a two-pass weed control program.

Table 1. Weed control in fallow with Zidua, Sencor, Sharpen, Balance Pro, Banvel, Corvus, and Atrazine.

Trt.	Herbicide	Rate (oz/a)	% Control				
			53 Days after treatment		143 Days after treatment		
			Kochia	Russian thistle	Kochia	Russian thistle	Palmer amaranth
1	Optill	2	98	96	83	70	50
	Zidua	2					
	Sencor	5					
2	Clarity	8	100	100	86	65	79
	Zidua	2.5					
	Sencor	5					
3	Sharpen	2	98	100	80	60	47
	Atrazine	24					
4	Sharpen	2	100	98	68	65	55
	Sencor	5					
5	Sharpen	2	97	100	80	68	29
	Clarity	8					
	Atrazine	24					
6	Sharpen	2	93	96	84	73	84
	Sencor	5					
	Zidua	2.5					
7	Balance Pro	3	96	100	85	90	29
	Sencor	8					
8	Balance Pro	2	98	100	88	93	32
	Sencor	5.4					

continued

Table 1. Weed control in fallow with Zidua, Sencor, Sharpen, Balance Pro, Banvel, Corvus, and Atrazine.

Trt.	Herbicide	Rate (oz/a)	% Control				
			53 Days after treatment		143 Days after treatment		
			Kochia	Russian thistle	Kochia	Russian thistle	Palmer amaranth
9	Balance Pro	1.5	93	100	76	79	61
	Sencor	4					
10	Balance Pro	3	100	100	98	93	25
	Sencor	8					
	Banvel	12					
11	Balance Pro	1.5	100	100	78	83	16
	Sencor	4					
	Banvel	12					
12	Balance Pro	3	98	100	89	89	42
	Sencor	8					
	Autumn Super	0.5					
13	Balance Pro	1.5	95	99	84	84	30
	Sencor	4					
	Autumn Super	0.5					
14	Corvus	3.5	96	100	91	83	34
	Sencor	8					
15	Corvus	3.5	98	100	93	91	34
	Sencor	8					
	Banvel	12					
16	Corvus	3.5	99	98	86	80	34
	Atrazine	16					
17	Corvus	3.5	100	100	98	95	24
	Atrazine	16					
	Banvel	16					
18	Atrazine	16	98	99	93	83	31
	Banvel	16					
19	Untreated control		0	0	0	0	0
	LSD @ 5%=		6.7	3.4	11.6	12.5	18.1