

Vida Alone and in Tank Mixtures for Kochia Control in Fallow

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Summary

To learn more about kochia control in fallow, a comparison of Vida alone and in tank mixtures was conducted. Glyphosate alone provided no more than 40% kochia control, and was similar to Vida or 2,4-D alone late in the season. The tank mixture of Vida plus Gramoxone and Spartan controlled kochia the best regardless of rating date, and was the only treatment to provide more than 95% control at 28 days.

Introduction

Glyphosate has long been an important herbicide in fallow and row crops. However, in 2007, glyphosate resistance in kochia was first confirmed in Kansas, and has subsequently spread to at least ten states in the United States and three Canadian provinces. Consequently, new or different herbicide modes of action are needed to combat herbicide resistance. The objective of this study was to compare Vida alone and in tank mixtures to control kochia in fallow.

Experimental Procedures

An experiment was conducted at the Kansas State University Southwest Research-Extension Center near Garden City, KS, to compare Vida (pyraflufen) alone and in tank mixtures to standard treatments for postemergence kochia control in fallow. Herbicides were applied using a tractor-mounted, compressed CO₂ sprayer delivering 19.4 GPA at 30 psi and 4.1 mph. Application, environmental, and weed information are shown in Table 1. Plots were 10 × 32 feet and arranged in a randomized complete block design with four replications. Soil was a Ulysses silt loam with 3.4% organic matter and pH of 7.9. Kochia control was visually estimated on June 22, July 3, and July 16, 2018. These dates were 4, 15, and 28 days after treatment (DAT), respectively.

Results and Discussion

Vida alone provided no more than 33% kochia control regardless of rating date (Table 2), and was no better than glyphosate, 2,4-D amine, or dicamba alone. The tank mixture of Vida plus Gramoxone (paraquat) and Spartan (sulfentrazone) provided the best kochia control at 4, 15, and 28 DAT (58, 97, and 97%, respectively). Tank mixing of these three herbicides increased kochia control 11 to 74% compared to the individual herbicides applied alone. Vida plus Gramoxone and Spartan was the only treatment to control kochia more than 95% at 28 DAT.

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Table 1. Application information

Application date	June 18, 2018
Air temperature (°F)	97
Relative humidity (%)	28
Soil temperature (°F)	87
Wind speed (mph)	7 to 10
Wind direction	South
Soil moisture	Dry
Kochia	
Height (inch)	6 to 15
Density (plants/10 feet ²)	>10

Table 2. Kochia control with Vida in fallow

Treatment	Rate	Kochia		
		4 DAT ^a	15 DAT	28 DAT
	oz/a	----- % Visual -----		
Vida	2.0	10	23	33
Crop oil concentrate	0.5%			
Ammonium sulfate	2.0%			
Vida	2.0	17	33	40
Glyphosate	22			
2,4-D amine	8.0			
Ammonium sulfate	2.0%			
Vida	2.0	45	79	79
Gramoxone	32			
Nonionic surfactant	0.25%			
Ammonium sulfate	2.0%			
Vida	2.0	28	50	60
Glyphosate	22			
Dicamba	16			
Ammonium sulfate	2.0%			
Glyphosate	22	18	35	40
Ammonium sulfate	1.0%			
2,4-D amine	8.0	13	20	33
Nonionic surfactant	0.25%			
Gramoxone	32	43	85	86
Nonionic surfactant	0.25%			
Dicamba	16	28	50	50
Nonionic surfactant	0.25%			
Ammonium sulfate	2.0%			
Vida	2.0	30	65	65
Spartan	6.0			
Crop oil concentrate	0.5%			
Ammonium sulfate	2.0%			
Vida	2.0	35	69	69
Spartan	6.0			
Glyphosate	22			
Ammonium sulfate	2.0%			
Vida	2.0	30	70	68
Spartan	6.0			
2,4-D amine	8.0			
Nonionic surfactant	0.25%			
Ammonium sulfate	2.0%			
Vida	2.0	58	97	97
Spartan	6.0			
Gramoxone	32			
Nonionic surfactant	0.25%			
Ammonium sulfate	2.0%			

continued

Table 2. Kochia control with Vida in fallow

Treatment	Rate	Kochia		
		4 DAT ^a	15 DAT	28 DAT
	oz/a	----- % Visual -----		
Vida	2.0	23	38	35
Glyphosate	22			
Ammonium sulfate	2.0%			
Spartan	6.0	30	70	70
Crop oil concentrate	0.5%			
LSD (0.05)		6	8	9

^aDAT = days after treatment.



Figure 1. Untreated control.



Figure 2. Vida 2 oz/a applied postemergence, picture taken 17 days after treatment.



Figure 3. Glyphosate 22 oz/a applied postemergence, picture taken 17 days after treatment.



Figure 4. Gramoxone 32 oz/a applied postemergence, picture taken 17 days after treatment.



Figure 5. Vida 2 oz/a plus Spartan 6 oz/a plus Gramoxone 32 oz/a applied postemergence, picture taken 17 days after treatment.