

Kansas Agricultural Experiment Station Research Reports

Volume 7
Issue 7 *Southwest Research-Extension Reports*

Article 15

2021

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Recommended Citation

Currie, R. S. and Geier, P. W. (2021) "Fallow Weed Control with Vida Tank Mixtures," *Kansas Agricultural Experiment Station Research Reports*: Vol. 7: Iss. 7. <https://doi.org/10.4148/2378-5977.8114>

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Fallow Weed Control with Vida Tank Mixtures

R.S. Currie and P.W. Geier

Summary

The objective of the study was to compare Vida (pyraflufen) with various tank mix partners for glyphosate-resistant kochia control. Flixweed control was complete in fallow with all herbicides by 28 days after treatment. Kochia control was best when Vida was applied with glyphosate and Spartan. However, due in part to the extremely dry conditions, no treatment controlled kochia by more than 83% at 28 days after treatment, and kochia control began to decline after this 28 DAT.

Introduction

Due to the development of herbicide resistance, kochia has become one of the most difficult weeds to control in fallow. This ubiquitous Kansas weed has developed resistance to at least four herbicide modes-of-action. Therefore, the use of novel herbicides for its control is paramount. The objective of this study was to compare Vida tank mixed with various herbicides for weed control in fallow.

Materials and Methods

An experiment was conducted at the Kansas State University Southwest Research-Extension Center near Garden City, KS, to compare Vida (pyraflufen) tank mixed with various herbicides (Table 2) for control of glyphosate-resistant kochia in fallow. Herbicides were applied postemergence using a tractor-mounted, compressed CO₂ sprayer delivering 19.4 gpa at 30 psi and 4.1 mph. Application, environmental, and weed information is shown in Table 1. Plots were 10 by 35 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. Visual weed control was determined on May 13, May 19, and June 2, 2020. These dates were 8, 14, and 28 days after treatment (DAT), respectively.

Results and Discussion

The trial was conducted under severe drought conditions, such that less than 25% of normal precipitation was received from the time of herbicide application until the final evaluation date. Vida plus glyphosate alone, or with 2,4-D, controlled kochia less than 40% at 8 DAT (Table 2). The combination of Vida with glyphosate, 2,4-D, and Spartan (sulfentrazone) provided 50% kochia control 8 DAT. By 14 DAT, kochia control was best when Vida was mixed with Spartan (68 to 73%). At 28 DAT, only those treatments containing Spartan provided more than 75% kochia control. Kochia control reached a high point (83%) at 28 DAT, and plants soon began to recover (data

not shown). Vida tank mixed with glyphosate, 2,4-D and Spartan controlled flixweed 70% by 8 DAT. Vida plus glyphosate and Spartan, with or without 2,4-D, controlled flixweed 90% at 14 DAT. However, all herbicides completely controlled flixweed at 28 DAT. More research is needed to test these herbicides under more favorable growing conditions.

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Table 1. Application, environmental, and weed data for the Vida tank mix study in fallow

Application date	May 5, 2020
Air temperature (°F)	67
Relative humidity	28
Soil temperature (°F)	62
Wind speed (mph)	7 to 10
Wind direction	Northeast
Soil moisture	Dry
Kochia	
Height (inches)	1 to 4
Density (plants/10 ft ²)	25
Flixweed	
Height (inches)	8 to 12
Density (plants/10 ft ²)	3

Table 2. Weed control with Vida tank mixtures in fallow

Treatment ¹	Rate	Kochia			Flixweed		
		8 DAT ²	14 DAT	28 DAT	8 DAT	14 DAT	28 DAT
	oz/a	----- % Visual -----					
Vida	2.0	35	50	70	38	65	100
Glyphosate	24						
COC	1.0 %						
AMS	3.0 lb						
Vida	2.0	30	45	68	48	75	100
Glyphosate	24						
2,4-D amine	8.0						
COC	1.0 %						
AMS	3.0 lb						
Vida	2.0	45	68	83	55	90	100
Glyphosate	24						
Spartan	6.0						
COC	1.0 %						
AMS	3.0 lb						
Glyphosate	24	40	63	78	48	83	100
Spartan	6.0						
COC	1.0 %						
AMS	3.0 lb						
Vida	2.0	50	73	80	70	90	100
Glyphosate	24						
2,4-D amine	8.0						
Spartan	6.0						
COC	1.0 %						
AMS	3.0 lb						
LSD (0.05)		5	8	9	7	7	NS

¹ COC = crop oil concentrate. AMS = ammonium sulfate.

² DAT = days after herbicide treatment.



Figure 1. Untreated control.



Figure 2. Vida at 2 oz/a plus glyphosate 24 oz/a. Photo taken 37 days after treatment.



Figure 3. Vida at 2 oz/a plus glyphosate 24 oz/a and 2,4-D 8 oz/a. Photo taken 37 days after treatment.



Figure 4. Vida at 2 oz/a plus glyphosate 24 oz/a and Spartan 6 oz/a. Photo taken 37 days after treatment.



Figure 5. Glyphosate 24 oz/a plus Spartan 6 oz/a. Photo taken 37 days after treatment.



Figure 6. Vida at 2 oz/a plus glyphosate 24 oz/a, 2,4-D amine 8 oz/a, and Spartan 6 oz/a. Photo taken 37 days after treatment.