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Intrava DX for Residual Weed Control in Spring Fallow

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Summary

Intrava DX, KFD-881, and Preview herbicide mixtures provided excellent control of kochia, Palmer amaranth, and Russian thistle through four weeks following application at Garden City and near complete common lambsquarters and horseweed control at Hays. At Garden City, Russian thistle control exceeded 94% with all herbicides at 77 days after treatment (DAT). Kochia control remained excellent with Preview at either rate 77 DAT as well. Only the high rates of Intrava DX and KFD-881 provided as much as 70% Palmer amaranth control at 77 DAT at Garden City. Overall, Palmer amaranth control was higher at Hays, but the high rates of Intrava DX and KFD-881 were most effective at this location as well. These results show promise that these herbicides may effectively control weeds in fallow for extended periods of time.

Introduction

Widespread herbicide resistance has made weed control during the fallow period between crops increasingly difficult. Biotypes of weeds such as kochia and Palmer amaranth have developed multiple resistance to several of the commonly used fallow herbicide classes. Therefore, the development of new herbicides to control these weeds is important. Amicarbazone is an herbicide not currently registered in fallow that may help control these weeds. The objective of these trials was to compare three herbicide mixtures — Intrava DX (amicarbazone + metribuzin), KFD-881 (amicarbazone + mesotrione), and Preview (metribuzin + sulfentrazone) — for residual weed control in spring fallow.

Experimental Procedures

Two experiments in Kansas compared Intrava DX, KFD-881, and Preview herbicides, each at two rates for preemergence weed control in spring fallow. Herbicides were applied using either a tractor-mounted, compressed-CO_2 sprayer delivering 19.4 gpa or a compressed-CO_2 backpack sprayer delivering 21 gpa. Application, environmental, and plant information is shown in Table 1. Plots were 10 by 30 or 35 ft, and arranged in a randomized complete block design replicated four times. Soil at each location was a silt loam. At Garden City, visual weed control was determined on May 28 and July 16, 2024. These dates were 28 and 77 days after herbicide application (DAT), respectively. At the Hays location, weed control was assessed visually on June 27 and July 12 (29 and 44 DAT, respectively).

Results and Discussion

At Garden City, kochia control at 28 DAT was 88% or more regardless of herbicide treatment (Table 2). KFD-881 at 21 oz/a and Preview at 14 or 21 oz/a gave the best kochia control (96 to 100%). Kochia control remained best (98 to 99%) with either rate of Preview at 77 DAT, whereas Intrava DX and KFD-881 controlled kochia 78% to 89%. Palmer amaranth control did not differ between any herbicide tested at 28 DAT, exceeding 95%. By 77 DAT, only Intrava DX and KFD-881, each at 21 oz/a, provided more than 70% Palmer amaranth control. Intrava DX, KFD-881, and Preview were very effective (95% or more) at controlling Russian thistle throughout the growing season.

At Hays, control of common lambsquarters was essentially complete regardless of rating date (Table 3), as was control of horseweed (data not shown). At 29 DAT, kochia control was best with the 21 oz/a rates of KFD-881 or Preview, and with the atrazine plus Starane Ultra treatment (Table 3). All herbicides except the low rates Intrava DX and Preview provided at least 90% kochia control at 44 DAT. Overall, Palmer amaranth control at Hays was greater than at Garden City with these herbicides. While most herbicides controlled Palmer amaranth 90% or more at Hays, the 21 oz/a rates of Intrava DX and KFD-881 were most effective (95 to 97%) at 29 and 44 DAT. These results suggest each of these herbicides can be effective at controlling troublesome weeds in fallow.

Acknowledgments

Funding for this research was provided by UPL, NA.

Table 1. Application, environmental, and plant information for the Intrava DX fallow trial

Location	Garden City	Hays
Application date	April 30, 2024	May 29, 2024
Air temperature (F)	57	83
Relative humidity (%)	78	51
Soil temperature (F)	58	77
Wind speed (mph)	3 to 5	3 to 5
Wind direction	South	Southeast
Soil moisture	Dry	Good

Table 2. Efficacy of Intrava DX applied preemergence in spring fallow at Garden City

		Kochia		Palmer amaranth		Russian thistle	
Treatment[1]	**Rate**	**28 DAT[2]**	**77 DAT[2]**	**28 DAT**	**77 DAT**	**28 DAT**	**77 DAT**
	oz/a	---------- % Visual ----------					
Intrava DX	14	88	78	100	60	98	100
Intrava DX	21	91	81	98	73	98	98
KFD-881	12	91	80	98	60	98	98
KFD-881	21	96	89	100	73	100	95
Preview	14	97	99	98	43	100	100
Preview	21	100	98	100	63	100	100
Atrazine	32	91	78	96	33	100	98
Starane Ultra	8						
LSD (0.05)		4	7	NS	10	NS	NS

[1] All treatments included glyphosate at 22 oz/a, dicamba at 16 oz/a, nonionic surfactant at 0.25% V/V and ammonium sulfate at 3.0 lb/a.

[2] DAT is days after herbicide application.

Table 3. Efficacy of Intrava DX applied preemergence in spring fallow at Hays

		Kochia		Palmer amaranth		Lambsquarters	
Treatment[1]	**Rate**	**29 DAT[2]**	**44 DAT[2]**	**29 DAT**	**44 DAT**	**29 DAT**	**44 DAT**
	oz/a	---------- % Visual ----------					
Intrava DX	14	73	78	88	92	98	100
Intrava DX	21	80	90	96	95	100	100
KFD-881	12	71	90	92	92	100	100
KFD-881	21	87	93	97	97	100	100
Preview	14	80	74	91	91	100	100
Preview	21	87	91	94	93	100	100
Atrazine	32	93	95	95	90	100	100
Starane Ultra	8						
LSD (0.05)		7	5	3	3	NS	NS

[1] All treatments included glyphosate at 22 oz/a, dicamba at 16 oz/a, nonionic surfactant at 0.25% V/V and ammonium sulfate at 3.0 lb/a.

[2] DAT is days after herbicide application.