

Spring Wheat Broadleaf Weed Control

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Abstract

Broadleaf weeds growing in wheat are frequently composed of a variety of species that differ in their time of emergence and susceptibility to herbicides. Weld[®] and Carnivore[®] are herbicides that combine MCPA and bromoxynil with other active ingredients for broadleaf weed control. A study was conducted near Madras, Oregon to evaluate the effectiveness of Weld[®] and Carnivore[®] for broadleaf control on spring wheat crops. Herbicides were applied at different rates, and with or without the addition of spray adjuvants. Results of the study suggest that Carnivore at 1 or 1.5 pints per acre and Weld at 1.3 pints per acre with the addition of an adjuvant are viable options for broadleaf control in wheat, particularly for fields infested with kochia and common lambsquarters. No crop injury was recorded in any of the tested treatments, indicating a high level of crop safety.

Introduction

Broadleaf weeds growing in wheat fields can adversely affect crop production in many ways. Weeds compete with wheat for light, water, and minerals, resulting in smaller crop yields. Weeds also interfere with crop harvest by raising moisture levels and contaminating the harvested grain. Weedy plant communities that infest wheat fields are frequently composed of a variety of species that differ in their time of emergence and susceptibility to herbicides, adding complexity to crop management. Weld[®] and Carnivore[®] are herbicides that combine MCPA (2-methyl-4-chlorophenoxyacetic acid) and bromoxynil with other active ingredients for broadleaf weed control. These herbicides are currently manufactured by WinField Solutions[®]. The objective of this study was to evaluate the effectiveness of Weld[®] and Carnivore[®] for broadleaf control on spring wheat crops. Herbicides were applied at different rates, and with or without the addition of spray adjuvants.

Materials and Methods

A study was conducted in an irrigated spring wheat field at the Central Oregon Agriculture Research Center (COARC) in Madras, Oregon, during 2012. The study design was a randomized complete block with four replications. Plot size was 10 feet wide by 30 feet long. Herbicides were applied with a backpack sprayer calibrated to deliver 20 gallons of spray solution per acre at 40 psi pressure using XR 8002 Teejet[®] nozzles. The application dates, environmental conditions, crop height, and weed growth stages are detailed in Table 1. Herbicides in the study included MCPA + bromoxynil + fluroxypyr (Carnivore[®]), MCPA + bromoxynil + clopyralid (Weld[®]), and 2, 4-D ester as the comparison standard. Herbicide use rates and spray adjuvants are detailed in Table 2. Herbicide efficacy was evaluated 15 and 30 days after treatment (DAT).

Results and Discussion

Control of kochia and common lambsquarters were observed at high levels at 30 DAT with Carnivore[®] at 1 and 1.5 pints per acre, with or without the addition of an adjuvant (Table 2). Similar levels of control of these two species were observed with Weld[®] only when an adjuvant was added to the spray solution. The mustard complex growing in the plots consisted mainly of tansy and tumble mustards. In general, all tested treatments showed a lower level of control of the mustards when compared to other species present. The best mustard control was achieved with Carnivore[®] alone at 1.5 pints per acre, or with an adjuvant at either 1 or 1.5 pints per acre. The growth of the mustard complex was affected by the rest of the treatments, although satisfactory levels of mustard control were not reached at any time. No crop injury was recorded for any of the tested treatments, indicating a high level of crop safety. Results from the study suggest that Carnivore[®] and Weld[®] with the addition of an adjuvant are viable options for broadleaf control in wheat, particularly for fields infested with kochia and common lambsquarters.

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Table 1. Applications dates, environmental conditions, spring wheat growth stage and average weed size at time of application.

	A
Application Date	5/16/2012
Time of Day	9:00 AM
Air Temperature	62
Relative Humidity	43
Wind Speed	1
Wind Direction	NW
Crop Stage	3-4 tillers height 7-8"
Weed Heights	2-3"

Table 2. Broadleaf weed control as percent compared to the untreated check, 15 and 30 days after treatment.

Treatment ¹	Product Rate	Unit	Percent Control						
			15 DAT			30 DAT			
			KCHSC	CHEAL	MUST	KCHSC	CHEAL	MUST	
1	Weld [®]	1.3	pt/acre	98	98	83	93	93	88
2	Weld [®]	1.3	pt/acre	98	99	74	97	97	86
	Interlock ^{®2}	4	fl oz/acre						
3	Carnivore [®]	1	pt/acre	99	99	84	98	98	88
4	Carnivore [®]	1	pt/acre	99	99	89	99	99	96
	Interlock [®]	4	fl oz/acre						
5	Carnivore [®]	1.5	pt/acre	92	98	83	97	99	93
6	Carnivore [®]	1.5	pt/acre	99	98	83	98	99	94
	Interlock [®]	4	fl oz/acre						
7	2,4 -D ester	1.3	pt/acre	97	95	83	95	98	90
	NIS	0.25	% v/v						
8	Untreated Check								

¹Abbreviations: DAT: Days After Treatment; NIS: Non Ionic Surfactant; KCHSC: kochia; CHEAL: common lambsquarters; MUST: tumble and tansy mustards

²Adjuvant