

Spring Wheat Broadleaf Weed Control in Central Oregon

Gustavo Sbatella and Sasha Twelker

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 at the Central Oregon Research Center 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 Carnivore[®] and Weld[®] at 1.5 pints/acre performed similarly to 2, 4-D, the comparison standard in control of tansy and tumble mustard. The high levels of control recorded during the early evaluation for tumble mustard suggests that this species was more sensitive to the active ingredients tested in this study than tansy mustard. 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 2013. The study design was a randomized complete block with four replications. Plot size was 10 ft wide by 30 ft 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. Herbicides Weld and Carnivore were sprayed alone or tank mixed with Interlock[®] or Masterlock[®]. These adjuvants are both deposition aid, canopy penetration and drift control agents. 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

The weed population present in the study area consisted of tansy and tumble mustard. Tumble mustard control was high and uniform with all tested treatments at 15 and 30 DAT (Table 2). Control of tansy mustard although above 89 percent was variable between treatments 15 DAT. This variability was no longer observed 30 DAT. Weld at 1.5 pints/acre + Interlock was the treatment with the lowest percent control (91 percent) of tansy mustard 30 DAT. No crop injury was recorded for any of the tested treatments, indicating a high level of crop safety. Results from the study suggest that variability in tansy and tumble mustard control can be expected when using different active ingredients and the use of Carnivore[®] or Weld[®] provided good weed control.

Acknowledgments

The authors would like to thank Greg Dahl from WinField Solutions[®] for his support on this project.

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

Application Date	4/24/2013
Time of Day	10:00 am
Air Temperature	48°
Relative Humidity	32
Wind Speed	3
Wind Direction	W
Crop Stage	3-4 tillers height 7-8"
Weeds Heights	2-3"

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

Treatment ¹	Rate	Unit	Percent Control			
			15 DAT		30 DAT	
			Tansy Must	Tumble Must	Tansy Must	Tumble Must
1 Weld [®]	1.5	pt/a	93 a	98 a	96 a	98 a
2 Weld [®]	1.5	pt/a	89 a	98 a	91 a	98 a
Interlock ^{®2}	4	fl oz/a				
3 Weld [®]	1.5	pt/a	95 a	98 a	97 a	98 a
Masterlock ^{®2}	6.4	fl oz/a				
4 Carnivore [®]	1.5	pt/a	91 a	98 a	97 a	98 a
5 Carnivore [®]	1.5	pt/a	95 a	97 a	97 a	98 a
Interlock [®]	4	fl oz/a				
6 Carnivore [®]	1.5	pt/a	95 a	98 a	98 a	98 a
Masterlock [®]	6.4	fl oz/a				
7 2,4 -D ester	1.3	pt/a	97 a	98 a	98 a	98 a
NIS ²	0.25	% v/v				
8 Untreated Check			0 b	0 b	0 b	0 b
LSD			7	1	7	1

¹Abbreviations: DAT: Days After Treatment; NIS: Non Ionic Surfactant; MUST: mustard

²Adjuvant