Management of Italian ryegrass in Spring Wheat with Pre-emergence Herbicides

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Cook Agronomy Farm in Pullman, WA

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Methods

The study was established at the Cook Agronomy Farm near Pullman, WA. The goal of this study was to evaluate the herbicide timing of pre-emergence herbicides at a later timing in spring wheat. The treatments of pre-emergence herbicides used were applied post emergence (POST) to 2 leaf spring wheat, detailed in Table 1. The study was conducted in a randomized complete block with 4 replications. Plots were 10' by 30' long. Huskie (13.5 fl oz A^{-1}) and MCPA (8 fl oz A^{-1}) were applied for broadleaf weed control.

Crop injury was visually rated 15, 37 and 85 days after treatment (DAT) (Table 2). Italian ryegrass control was visually assessed 37 and 85 DAT (Table 2). Mayweed chamomile control was visually assessed 85 DAT (Table 2). Plots were harvested using a plot combine on August 30, 2016. All data were subjected to an analysis of variance using the statistical package built into the Agricultural Research Manager software system (ARM 8.5.0, Gylling Data Management).

Results

Crop injury 15 DAT was observed in all treatments compared to the nontreated control. Zidua at 2.68 oz/A had the least injury with 5% crop injury and Linex at 2.50 pt A^{-1} had the greatest at 58% crop injury. At 37 DAT, significant crop injury was still present with most treatments. Fierce (1.50 oz A^{-1}), Zidua (2.68 oz A^{-1}), and Define at both rates (7.04 and 14.1 oz A^{-1}) were the only treatments with no significant crop injury compared to the nontreated control (Table 2). Crop injury lessened later into the growing season and by 85 DAT, significant crop injury was only observed for both rates of Linex (2.50 and 5.00 pt A^{-1}).

No significant differences in yield and test weight were observed between any of the treatments including the nontreated control.

All treatments had significant Italian ryegrass control 37 DAT with Zidua at 2.68 oz A^{-1} provided the best control at 93% compared to the nontreated control of 0%. Linex at 2.50 pt A^{-1} had the least Italian ryegrass control 37 DAT with 14% control. At 85 DAT all treatments, except Linex (2.50 pt A^{-1}), still provided significant control of the Italian ryegrass compared to the nontreated. Linex at 2.50 pt A^{-1} had only 10% control and did not provided significant control compared to the nontreated (0%). Significant mayweed chamomile control was observed with all treatments except for both rates of Zidua and Define, compared to the nontreated control. V-10425 and Fierce had the greatest mayweed control at 91% and 88% control, respectively.

Table 1. *Treatment application details*

Study Application	A
Date	May 2, 2016
Application volume (GPA)	15
Crop Stage	2-leaf stage
Air temperature (˚F)	76
Soil temperature (˚F)	58
Wind velocity (mph, direction)	4, N
Next Rain Occurred On	May 15, 2016

Table 2. *Percent crop injury and yield with pre-emergence herbicides applied to 2 leaf spring wheat. Pullman, WA, 2016. Means followed by the same letter are not statistically significantly different (α=0.05).*

Treatment	Application Code	Rate		May 17, 2016	June 8, 2016	July 26, 2016	August 30, 2016	
				Crop Injury	Crop Injury	Crop Injury	Yield	Test weight
			lb ai/A	%	%	%	bu/A	lb/bu
Nontreated				0 a	0 a	0 a	47	62 a
Linex	A	2.50 pt/A	1.250	58 cd	44 cd	33 b	43	61 ab
Linex	A	5.00 pt/A	2.500	49 abcd	50 d	43 b	45	59 b
Valor SX	A	1.50 oz/A	0.048	13 abc	11 ab	4 a	49	61 ab
Valor SX	A	3.00 oz/A	0.096	29 abcd	21 abc	4 a	54	60 ab
Fierce	A	1.50 oz/A	0.071	13 abc	8 a	6 a	53	60 ab
V-10425	A	6.00 oz/A	0.071	53 bcd	25 abc	15 a	50	60 ab
Fierce	A	3.00 oz/A	0.143	33 abcd	34 bcd	8 a	52	60 ab
V-10425	A	12.0 oz/A	0.143	64 d	40 cd	16 a	47	58 b
Zidua	A	1.34 oz/A	0.071	22 abcd	15 ab	11 a	48	60 ab
Zidua	A	2.68 oz/A	0.142	5 ab	3 a	4 a	47	59 b
Define	A	7.04 oz/A	0.272	30 abcd	9 a	4 a	40	60 ab
Define	A	14.1 oz/A	0.544	20 abcd	4 a	8 a	50	59 ab

Table 3. *Percent Italian ryegrass control and mayweed chamomile control with pre-emergence herbicides applied to 2 leaf spring wheat. Pullman, WA, 2016. Means followed by the same letter are not statistically significantly different (α=0.05).*

Treatment	Application Code	Rate		June 6, 2016	July 26, 2016	July 26, 2016
				Italian ryegrass control	Italian ryegrass control	Mayweed chamomile control
			lb ai/A	%	%	%
Nontreated				0 a	0 a	0 a
Linex	A	2.50 pt/A	1.250	14 b	10 a	48 b
Linex	A	5.00 pt/A	2.500	68 c	61 b	76 c
Valor SX	A	1.50 oz/A	0.048	70 c	69 b	85 c
Valor SX	A	3.00 oz/A	0.096	71 c	64 b	83 c
Fierce	A	1.50 oz/A	0.071	71 c	63 b	78 c
V-10425	A	6.00 oz/A	0.071	79 cd	75 b	79 c
Fierce	A	3.00 oz/A	0.143	76 cd	68 b	88 c
V-10425	A	12.0 oz/A	0.143	87 cd	76 b	91 c
Zidua	A	1.34 oz/A	0.071	68 c	63 b	0 a
Zidua	A	2.68 oz/A	0.142	93 d	84 b	0 a
Define	A	7.04 oz/A	0.272	79 cd	65 b	0 a
Define	A	14.1 oz/A	0.544	84 cd	75 b	0 a

Some of the pesticides discussed in this presentation were tested under an experimental use permit granted by WSDA. Application of a pesticide to a crop or site that is not on the label is a violation of pesticide law and may subject the applicator to civil penalties up to $7,500. In addition, such an application may also result in illegal residues that could subject the crop to seizure or embargo action by WSDA and/or the U.S. Food and Drug Administration. It is your responsibility to check the label before using the product to ensure lawful use and obtain all necessary permits in advance.