EVALUATION OF HERBICIDES FOR CONTROL OF CHEATGRASS, PERENNIAL RYEGRASS, AND ROUGH BLUEGRASS IN CENTRAL OREGON GRASS SEED PRODUCTION, 2000-2001

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Abstract

Herbicides were fall applied in combination over two application dates to Kentucky bluegrass, perennial ryegrass, and rough bluegrass to determine efficacy and crop safety. No injury was observed to Kentucky bluegrass or established perennial ryegrass. Treatments that included Axiom® provided 90-100 percent control of established rough bluegrass and 97-98 percent control of volunteer perennial ryegrass. Follow-up treatments of Goal® plus Sinbar® generally provided greater control than Goal plus Diuron®.

Introduction

Cheatgrass (downy brome) control in Kentucky bluegrass is a major concern to the grass seed industry in central Oregon. Contaminated seed lots must either be re-cleaned at a significant cost to the grower or remain largely unmarketable. The objective of this project was to evaluate herbicide treatments on a commercial Kentucky bluegrass field, a perennial ryegrass field, and two rough bluegrass fields. The new product, Axiom, was of particular interest in combination with current products in use.

Methods and Materials

Plots were replicated four times in a randomized complete block design in a commercial Kentucky bluegrass (cultivar 'Geronimo') seed field north of Madras, in a commercial perennial ryegrass (cultivar 'SH-2') field between Metolius and Culver, and two commercial rough bluegrass (cultivars 'Laser' and 'Saber II') fields west and north of Madras. Each plot received two herbicide applications. Treatments were applied to Kentucky bluegrass plots on September 25 and November 16, to the perennial ryegrass and 'Saber II' rough bluegrass plots on September 26 and November 16, and to the 'Laser' rough bluegrass on October 18 and November 16, 2000. A non-ionic surfactant was applied in combination with all treatments at 1 qt/100 gal. Treatments were made to 10-ft x 20-ft plots with a CO_2-pressurized, hand-held boom sprayer at 40 psi and 20 gal/acre water. Plots were evaluated March 9, 2001 for control of cheatgrass, volunteer perennial ryegrass, and established rough bluegrass, as appropriate for each location. Kentucky bluegrass plots were evaluated for crop injury, perennial ryegrass plots were evaluated for injury to established plants and control of seedling volunteers, and rough bluegrass was evaluated for injury to established plants ('Laser') and cheatgrass control ('Saber II').

Results and Discussion

There was no observable injury to either established Kentucky bluegrass or established perennial ryegrass. However, treatments that included Axiom provided 100 percent control of volunteer rough bluegrass (Table 1), between 90 and 100 percent control of established rough bluegrass (Table 2), and 97-98 percent control of volunteer perennial ryegrass. The follow-up treatments applied November 16 that included Goal plus Sinbar generally provided better control than Goal plus Diuron. Treatments that included Axiom in the first application did not gain efficacy by adding Prowl to the follow-up application.

Table 1. Cheatgrass control in 'Saber II' rough bluegrass and volunteers in established perennial ryegrass near Madras, Oregon 2000-2001.

Treatment		Product/acre		Percent control			
Sept 26	Nov 16	Sept 26	Nov 16	Cheatgrass		Volunteer ryegrass	
Axiom + Goal	Goal + Diuron	11 oz 8 oz	1.0 pt 1.0 lb	70	ab[1]	98	a
Axiom + Goal	Goal + Sinbar	11 oz 8 oz	1.0 pt 0.3 lb	70	ab	97	a
Axiom + Goal	Goal + Diuron + Sinbar	11 oz 8 oz	1.0 pt 1.0 lb 0.3 lb	70	ab	98	a
Axiom + Goal + Prowl	Goal + Diuron	11 oz 8 oz 5 pt	1.0 pt 1.0 lb	60	ab	98	a
Axiom + Goal + Prowl	Goal + Sinbar	11 oz 8 oz 5 pt	1.0 pt 0.3 lb	76	a	98	a
Axiom + Goal + Prowl	Goal + Diuron + Sinbar	11 oz 8 oz 5 pt	1.0 pt 1.0 lb 0.3 lb	70	ab	97	a
Goal + Prowl	Goal + Diuron	8 oz 5 pt	1.0 pt 1.0 lb	40	c	73	c
Goal + Prowl	Goal + Sinbar	8 oz 5 pt	1.0 pt 0.3 lb	53	b	85	b
Goal + Prowl	Goal + Diuron + Sinbar	8 oz 5 pt	1.0 pt 1.0 lb 0.3 lb	56	b	88	ab
Beacon	Goal + Diuron	0.75 oz	1.0 pt 1.0 lb	60	ab	53	d
Beacon	Goal + Sinbar	0.75 oz	1.0 pt 0.3 lb	66	ab	53	d
Beacon	Goal + Diuron + Sinbar	0.75 oz	1.0 pt 1.0 lb 0.3 lb	66	ab	78	c
Untreated	----	----	----	0	d	0	e

[1]Mean separation with Student-Newman-Kuels (SNK) Test at $P \leq 0.05$.

Table 2. Control of established 'Laser' rough bluegrass near Madras, Oregon 2000-2001.

Treatment		Product/acre		Percent control	
Oct 18	Nov 16	Oct 18	Nov 16	Rough bluegrass	
Axiom + Goal	Goal + Diuron	11.0 oz 4.0 oz	1.0 pt 2.0 lb	90	a[1]
Axiom + Goal	Goal + Sinbar	11.0 oz 4.0 oz	1.0 pt 0.75 lb	97	a
Axiom + Goal	Goal + Diuron + Sinbar	11.0 oz 4.0 oz	1.0 pt 2.0 lb 0.75 lb	99	a
Axiom + Goal + Prowl	Goal + Diuron	11.0 oz 4.0 oz 5.0 pt	1.0 pt 2.0 lb	93	a
Axiom + Goal + Prowl	Goal + Sinbar	11.0 oz 4.0 oz 5.0 pt	1.0 pt 0.75 lb	100	a
Axiom + Goal + Prowl	Goal + Diuron + Sinbar	11.0 oz 4.0 oz 5.0 pt	1.0 pt 2.0 lb 0.75 lb	98	a
Goal + Prowl	Goal + Diuron	4.0 oz 5.0 pt	1.0 pt 2.0 lb	60	b
Goal + Prowl	Goal + Sinbar	4.0 oz 5.0 pt	1.0 pt 0.75 lb	86	a
Goal + Prowl	Goal + Diuron + Sinbar	4.0 oz 5.0 pt	1.0 pt 2.0 lb 0.75 lb	96	a
Beacon	Goal + Diuron	0.75 oz	1.0 pt 2.0 lb	91	a
Beacon	Goal + Sinbar	0.75 oz	1.0 pt 0.75 lb	93	a
Beacon	Goal + Diuron + Sinbar	0.75 oz	1.0 pt 2.0 lb 0.75 lb	91	a
Untreated	----	---	----	0	c

[1]Mean separation with Student-Newman-Kuels (SNK) Test at $P \leq 0.05$.