

# **EVALUATION OF HERBICIDES FOR CONTROL OF SEEDLINGS IN KENTUCKY BLUEGRASS SEED PRODUCTION, 2001-2002**

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## **Abstract**

Herbicides were fall-applied in combination over two application dates to Kentucky bluegrass to determine seedling control, reduction in crop height, and reduced seed set. Treatments that included Axiom<sup>®</sup> provided the best seedling control (52-85 percent), depending on cultivar. Axiom treatments had the greatest effect on reducing crop height. Treatments with Axiom reduced seed set on 'Shamrock' by 83-88 percent at 11 oz/acre and 37 percent at 9 oz/acre, while 'Merit' and 'Geronimo' were generally unaffected.

## **Introduction**

During 2000-2001 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<sup>®</sup> plus Sinbar<sup>®</sup> generally provided greater control than Goal plus Diuron<sup>®</sup>. The objective of this project was to evaluate Axiom combinations and Beacon<sup>®</sup> on Kentucky bluegrass for seedling control, height reduction, and seed-set reduction.

## **Methods and Materials**

Plots were replicated three times in a randomized complete block design in three commercial Kentucky bluegrass seed fields (cultivars 'Merit', 'Shamrock', and 'Geronimo') north of Madras. Herbicide treatments were applied October 10 or 11 and November 12, 2001. Treatments applied in October included Axiom alone or in combination with Goal or Beacon, or Sencor<sup>®</sup> plus Goal. November treatments were Goal in combination with Sinbar or Diuron, or Beacon alone.

Treatments were made to 10-ft x 20-ft plots with a CO<sub>2</sub>-pressurized, hand-held boom sprayer at 40 psi and 20 gal/acre water. Plots were evaluated March 1, 2002 for seedling control and reduction in crop height, and June 14 for reduction in seed set.

## **Results and Discussion**

The best seedling control was provided by treatments containing Axiom at 11 or 13 oz/acre alone or in combination with Goal at 8 oz/acre, followed by Goal at 16 oz/acre plus Sinbar at 0.75 lb/acre (Table 1). There were differences in the effect on the various cultivars, with 85 percent seedling control for 'Merit', 52 percent for 'Shamrock', and 52 percent for 'Geronimo'. However, none of the treatments provided adequate seedling control across cultivars.

The treatments that had the greatest effect on reducing crop height contained Axiom (4-22 percent) (Table 2). Beacon generally had little effect on crop height (0-13 percent), while Sencor at 4 oz/acre plus Goal at 8 oz/acre followed by Goal at 16 oz/acre plus Diuron at 2 lb/acre had no real effect (1-3 percent).

Axiom did not significantly affect seed set on 'Merit' or 'Geronimo' (Table 3). However, seed set on 'Shamrock' was reduced by 83 - 88 percent with Axiom at 11 oz/acre and 37 percent at 9 oz/acre. It is unclear whether this is a varietal difference, or the result of differences in the developmental stages between the cultivars when Axiom was applied.

Table 1. Effects of herbicides on seedling control in Kentucky bluegrass, near Madras, OR, 2001-2002.

Treatment		Production/acre		Seedling control		
October 10, 11	November 12	October 10, 11	November 12	Merit	Shamrock	Geronimo
				-----%-----		
Axiom	Goal + Sinbar	11 oz	16 oz + 0.75 lb	85 a <sup>1</sup>	33 bcd	52 a
Axiom + Goal	Goal + Sinbar	9 oz + 8 oz	16 oz + 0.75 lb	75 ab	35 bcd	35 ab
Axiom + Goal	Goal + Sinbar	11 oz + 8 oz	16 oz + 0.75 lb	78 ab	52 a	40 a
Axiom + Goal	Goal + Diuron	11 oz + 8 oz	16 oz + 2 lb	85 a	45 ab	43 a
Axiom + Goal	----	11 oz + 8 oz	----	62 bc	37 abc	37 ab
Axiom + Goal	Goal + Sinbar	13 oz + 8 oz	16 oz + 0.75 lb	83 a	52 a	33 abc
Beacon	Goal + Sinbar	0.75 oz	16 oz + 0.75 lb	18 ef	20 de	7 d
Beacon	Beacon	0.375 oz	0.375 oz	35 de	23 cde	13 d
Sencor + Goal	Goal + Sinbar	4 oz + 8 oz	16 oz + 0.75 lb	52 cd	10 ef	15 cd
Sencor + Goal	Goal + Diuron	4 oz + 8 oz	16 oz + 2 lb	30 e	0 f	18 bcd
Untreated	----	----	----	0 f	0 f	0 d

<sup>1</sup>Mean separation with LSD at  $P \leq 0.05$ .

Table 2. Effects of herbicides on crop height reduction in Kentucky bluegrass, near Madras, OR, 2001-2002.

Treatment		Production/acre		Height reduction		
October 10, 11	November 12	October 10, 11	November 12	Merit	Shamrock	Geronimo
				-----%-----		
Axiom	Goal + Sinbar	11 oz	16 oz + 0.75 lb	8 cde <sup>1</sup>	20 a	20 a
Axiom + Goal	Goal + Sinbar	9 oz + 8 oz	16 oz + 0.75 lb	12 abcd	3 de	7 b
Axiom + Goal	Goal + Sinbar	11 oz + 8 oz	16 oz + 0.75 lb	10 bcd	8 cd	15 a
Axiom + Goal	Goal + Diuron	11 oz + 8 oz	16 oz + 2 lb	20 ab	8 c	15 a
Axiom + Goal	----	11 oz + 8 oz	----	22 a	12 bc	6 b
Axiom + Goal	Goal + Sinbar	13 oz + 8 oz	16 oz + 0.75 lb	12 abcd	15 b	18 a
Beacon	Goal + Sinbar	0.75 oz	16 oz + 0.75 lb	2 de	0 e	0 b
Beacon	Beacon	0.375 oz	0.375 oz	13 abc	3 e	2 b
Sencor + Goal	Goal + Sinbar	4 oz + 8 oz	16 oz + 0.75 lb	2 de	2 e	3 b
Sencor + Goal	Goal + Diuron	4 oz + 8 oz	16 oz + 2 lb	5 cde	1 e	3 b
Untreated	----	----	----	0 e	0 e	0 b

<sup>1</sup>Mean separation with LSD at  $P \leq 0.05$ .

Table 3. Effects of herbicides on reduction in seed set in Kentucky bluegrass, near Madras, OR, 2001-2002.

Treatment		Production/acre		Seed set reduction		
October 10, 11	November 12	October 10, 11	November 12	Merit	Shamrock	Geronimo
				-----%-----		
Axiom	Goal + Sinbar	11 oz	16 oz + 0.75 lb	0	85 a <sup>1</sup>	2 bc
Axiom + Goal	Goal + Sinbar	9 oz + 8 oz	16 oz + 0.75 lb	0	37 b	2 bc
Axiom + Goal	Goal + Sinbar	11 oz + 8 oz	16 oz + 0.75 lb	0	88 a	8 a
Axiom + Goal	Goal + Diuron	11 oz + 8 oz	16 oz + 2 lb	7	83 a	2 bc
Axiom + Goal	----	11 oz + 8 oz	----	3	83 a	0 c
Axiom + Goal	Goal + Sinbar	13 oz + 8 oz	16 oz + 0.75 lb	7	88 a	7 ab
Beacon	Goal + Sinbar	0.75 oz	16 oz + 0.75 lb	3	0 c	0 c
Beacon	Beacon	0.375 oz	0.375 oz	0	0 c	0 c
Sencor + Goal	Goal + Sinbar	4 oz + 8 oz	16 oz + 0.75 lb	0	0 c	3 abc
Sencor + Goal	Goal + Diuron	4 oz + 8 oz	16 oz + 2 lb	0	3 c	0 c
Untreated	----	----	----	0	0 c	0 c
				NS		

<sup>1</sup>Mean separation with LSD at  $P \leq 0.05$ .