# CONTROL OF ROUNDUP READY® CREEPING BENTGRASS IN KENTUCKY BLUEGRASS SEED PRODUCTION IN CENTRAL OREGON, 2003-2004

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## Abstract

The Oregon Department of Agriculture established a control area for the production of Roundup Ready® creeping bentgrass (*Agrostis stolonifera*) seed north of Madras, Oregon. Fall-applied herbicides were evaluated for control of potential creeping bentgrass escapes in Kentucky bluegrass (*Poa pratensis*) seed fields. This project was conducted in commercial plantings of Roundup Ready creeping bentgrass and Kentucky bluegrass. Creeping bentgrass plots were evaluated for control of seedling and established plants and the Kentucky bluegrass trial was evaluated for crop injury and reduction in seed set. A split application of Beacon® at 0.38 oz/acre plus Sinbar® at 0.5 lb/acre applied October 6 and November 10 provided 100 percent control of creeping bentgrass, but reduced seed set in Kentucky bluegrass by eight percent. Beacon at 0.38 oz/acre followed by Beacon at 0.38 oz/acre plus Sinbar at 0.5 lb/acre provided 98 percent control of creeping bentgrass and had no effect on seed set of Kentucky bluegrass.

## Introduction

The Oregon Department of Agriculture established a control area for the production of Roundup Ready creeping bentgrass seed north of Madras, Oregon. This area east of the Cascade mountain range was chosen because of its isolation from the Willamette Valley. The 50,000 acres of irrigated agriculture in this arid, high desert region are surrounded by sagebrush and juniper and includes Kentucky bluegrass and rough bluegrass (*Poa trivialis*) seed production. Commercial plantings of Roundup Ready creeping bentgrass were made within the control area in 2002.

## Methods and Materials

Herbicides were evaluated for control of potential creeping bentgrass escapes in Kentucky bluegrass seed fields. Treatments were applied October 6 and November 10, 2003 to plots 10-ft by 25-ft replicated three times in a complete block design. The trial was conducted in commercial fields of Roundup Ready creeping bentgrass and Kentucky bluegrass near Madras, Oregon. Applications were made using a $CO_2$ pressurized, hand-held boom sprayer at 40 psi and 20 gal/acre water. Plots were irrigated following the October 6 applications.

Plots were evaluated for control of seedling and established plants in Roundup Ready creeping bentgrass March 26 and June 4, 2004. Kentucky bluegrass was evaluated for phytotoxicity March 26 and reduction in seed set June 4, 2004.

## Results and Discussion

A split application of Beacon at 0.38 oz/acre plus Sinbar at 0.5 lb/acre provided 100 percent control of Roundup Ready creeping bentgrass, but reduced seed set in Kentucky bluegrass by eight percent. Beacon at 0.38 oz/acre followed by Beacon at 0.38 oz/acre plus Sinbar at 0.5 lb/acre provided 98 percent control of creeping bentgrass with no effect on seed set for Kentucky bluegrass. Sinbar at 0.5 lb/acre on 10 November provided 95 percent control of creeping bentgrass with no reduction in Kentucky bluegrass seed set. Despite the lack of injury at relative high rates of Sinbar and diuron in these evaluations, fieldmen generally recommend rates near 0.5 lb/acre for Sinbar and 2.0 lb/acre for diuron to ensure crop safety on the Kentucky bluegrass. No crop injury attributable to treatments was observed on Kentucky bluegrass during the March 26 evaluation.

Table 1. Control of established Roundup Ready bentgrass, near Madras, Oregon, 2004.

| Treatment[1] | Product/acre | Application Timing[2] | % Reduction in Biomass | | | |
|---|---|---|---|---|---|---|
| | | | March | | June | |
| Beacon + Sinbar | 0.38 oz + 0.5 lb | Oct | 98.0 | a[3] | 100.0 | a |
| Beacon + Sinbar | 0.38 oz + 0.5 lb | Nov | | | | |
| Diuron | 3.0 lb | Oct | 96.3 | a | 98.3 | a |
| Diuron + Beacon | 3.0 lb + 0.38 oz | Nov | | | | |
| Beacon | 0.38 oz | Oct | 88.0 | a | 98.0 | a |
| Beacon + Sinbar | 0.38 oz + 0.5 lb | Nov | | | | |
| Sinbar | 0.5 lb | Nov | 60.0 | bc | 95.7 | a |
| Beacon + Diuron | 0.38 + 2.0 lb | Oct | 94.7 | a | 95.3 | a |
| Beacon + Diuron | 0.38 oz + 2.0 lb | Nov | | | | |
| Beacon + Sinbar | 0.38 + 0.5 lb | Nov | 40.0 | cd | 90.7 | a |
| Diuron + Goal® | 2.0 lb + 12 fl oz | Oct | 92.0 | a | 90.3 | a |
| Beacon | 0.38 oz | Oct | 78.7 | ab | 83.3 | ab |
| Beacon + Diuron | 0.38 oz + 2.0 lb | Nov | | | | |
| Diuron | 3.0 lb | Nov | 50.0 | cd | 60.0 | bc |
| Goal + Sencor DF® | 12 fl oz + 0.33 lb | Oct | 87.0 | a | 43.3 | cd |
| Beacon + Diuron | 0.38 oz + 2.0 lb | Nov | 38.3 | cd | 36.7 | cde |
| Beacon | 0.38 oz | Oct | 35.0 | d | 21.7 | def |
| Beacon | 0.38 oz | Nov | | | | |
| Prowl + Goal | 4.0 pt + 12.0 fl oz | Oct | 30.0 | de | 13.3 | ef |
| Define | 9.0 oz | Oct | 11.7 | ef | 1.7 | f |
| Prowl | 5.0 pt | Oct | 3.3 | f | 0.7 | f |
| Untreated | ---- | ---- | 0.0 | f | 0.0 | f |

[1]Rivet® applied at 1 qt/100 gal with all treatments.
[2]Applications were made on October 6 and November 10, 2003.
[3]Mean separation with Least Significant Difference (LSD) at $P \leq 0.05$.

Table 2. Effect of herbicides for control of Roundup Ready bentgrass on seed set in Kentucky bluegrass, near Madras, Oregon, 2004.

| Treatment[1] | Product/acre | Application Timing[2] | Reduction in Seed Set -------%------ | |
|---|---|---|---|---|
| Diuron | 3.0 lb | Oct | 41.66 | a[3] |
| Diuron + Beacon | 3.0 lb + 0.38 oz | Nov | | |
| Goal + Sencor DF | 12.0 fl oz + 0.33 lb | Oct | 28.33 | b |
| Define | 9.0 oz | Oct | 25 | b |
| Diuron + Goal | 2.0 lb + 12.0 fl oz | Oct | 10 | c |
| Beacon + diuron | 0.38 oz + 2.0 lb | Oct | 8.33 | c |
| Beacon + diuron | 0.38 oz + 2.0 lb | Nov | | |
| Beacon + Sinbar | 0.38 oz + 0.5 lb | Oct | 8.33 | c |
| Beacon + Sinbar | 0.38 oz + 0.5 lb | Nov | | |
| Beacon + Sinbar | 0.38 oz + 0.5 lb | Nov | 5 | c |
| Beacon | 0.38 oz | Oct | 0 | c |
| Beacon + diuron | 0.38 oz + 2.0 lb | Nov | | |
| Beacon | 0.38 oz | Oct | 0 | c |
| Beacon | 0.38 oz | Nov | | |
| Prowl + Goal | 4.0 pt + 12.0 fl oz | Oct | 0 | c |
| Prowl | 5.0 pt | Oct | 0 | c |
| Beacon | 0.38 oz | Oct | 0 | c |
| Beacon + Sinbar | 0.38 oz +0.5 lb | Nov | | |
| Diuron | 3.0 lb | Nov | 0 | c |
| Sinbar | 0.5 lb | Nov | 0 | c |
| Beacon + Diuron | 0.38 oz + 2.0 lb | Nov | 0 | c |
| Untreated | ---- | ---- | 0 | c |

[1]Rivet applied at 1 qt/100 gal with all treatments.
[2]Applications were made on October 6 and November 10, 2003.
[3]Mean separation with Least Significant Difference (LSD) at $P \leq 0.05$.