

Certainty and Velocity combined with overseeding creeping bentgrass for conversion on fairways

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Objective:

Determine the most effective strategy for conversion of roughstalk bluegrass infested areas to creeping bentgrass.

Rationale:

Roughstalk bluegrass is now a problematic weed on golf courses, home lawns and athletic fields from the Midwest to the Mid-Atlantic states. Herbicide control is important since management of roughstalk bluegrass does not seem practical to date. Two promising selective herbicides for roughstalk bluegrass control are Certainty and Velocity. Both herbicides are labeled for selective postemergence control of roughstalk bluegrass. Once roughstalk bluegrass is removed from an area through herbicide use, reseeding of the desired turf species is necessary. Control of roughstalk bluegrass must be combined with overseeding creeping bentgrass for long term success.

Materials and Methods:

Treatments were initiated in June 2006 and 2007 at the W.H. Daniel Turfgrass Research and Diagnostic Center, West Lafayette, IN, on a stand of 'Laser' roughstalk bluegrass with < 10% contamination of creeping bentgrass. The area was seeded in August 2004 at 2 lb/A. Treatments were arranged in a split plot design with eight herbicide treatments as main plots and two overseeding treatments as subplots. Four Certainty 75 WDG treatments, three Velocity 80 SP treatments and an untreated check were evaluated (Table 1). Certainty treatments included MON 0818 surfactant at 0.25% v/v. Overseeding was done on August 10, 2006 and 2007 and final applications for each treatment were made two weeks before overseeding. All herbicide applications were applied in 2 gal/water/1000 ft² water with a CO₂-pressurized backpack sprayer using a three-nozzle (TeeJet XR8001.5VS, Spraying Systems Co., Wheaton, IL) boom at 207 kPa.

One half of each main plot was seeded with 'L 93' creeping bentgrass at 1 lb/1000ft² (Table 2). Sixty four grams of milorganite was added to the seed as a bulking material. The seedbed was prepared by aerating the entire area with ¼' solid tines using a ride on aerifier with 2 x 2" spacing. Initial seeding was not successful in 2007 due to intense heat and disease presence and the area was reseeded in the same manner as previously described on September 5, 2007. Plots initially treated in 2006 were re-treated and re-seeded in 2007 following the same procedure as stated above. Percent cover of creeping bentgrass and roughstalk bluegrass was rated visually every two weeks in both years. This study will be repeated in 2008 and continued through 2009.

Results:

Study 1:

Roughstalk bluegrass:

- All herbicide treatments reduced roughstalk bluegrass cover to $\leq 50\%$ at 0 WAIS (weeks after initial seeding compared to the untreated control, which retained 83% cover (Figure 1).

- Certainty at 0.50 oz/A applied three times and Velocity at 0.65, 0.98, and 1.3 oz/A were the most effective in controlling roughstalk bluegrass, resulting in \leq 1% cover 0 WAIS and this trend continued through 14 and 42 WAIS (Figure 1).
- Seeded plots had 29% roughstalk bluegrass compared to 53% roughstalk bluegrass in the unseeded plots by 42 WAIS (Figure 2).

Creeping bentgrass:

- Plots treated with Certainty at 0.50 oz/A applied three times or Velocity at 0.65, 0.98, or 1.3 oz/A had \geq 43% creeping bentgrass at 14 WAIS compared to the untreated control with 5% creeping bentgrass (Figure 1).
- Plots that received Certainty at 0.50 oz/A applied three times or Velocity at 0.65, 0.98, or 1.3 oz/A had \geq 71% creeping bentgrass compared to 12% creeping bentgrass in the untreated control by 42 WAIS (Figure 1).
- Seeded plots had 51% creeping bentgrass cover compared to 18% in unseeded plots by 14 WAIS (Figure 1).
- Seeded plots had 69% creeping bentgrass cover by 42 WAIS compared to 39% creeping bentgrass in the unseeded plots (Figure 1).

Study 2:

Roughstalk bluegrass:

- All herbicide treatments reduced roughstalk bluegrass cover to \leq 13% by 0 WAIS compared to the untreated control with 50% roughstalk bluegrass cover (Figure 3).
- All herbicide treatments reduced roughstalk bluegrass cover to \leq 6% compared to 41% in the untreated control by 14 WAIS (Figure 3).

Creeping bentgrass:

- A significant seed x herbicide interaction occurred in creeping bentgrass primarily due to the untreated control.
- Little creeping bentgrass established in untreated plots regardless of overseeding (data not shown), likely due to competition from roughstalk bluegrass which retained 41% cover in the untreated control (Figure 3)

Conclusions:

- The most effective herbicide treatments for roughstalk bluegrass in this study were Certainty at 0.50 oz/A applied three times or Velocity at 0.65, 0.98, or 1.3 oz/A applied four times.
- Though herbicides will allow creeping bentgrass already present in the treated areas to spread, overseeding with creeping bentgrass will improve long-term roughstalk bluegrass control and speed conversion to creeping bentgrass.

Table 1. Herbicide application dates for 2006 and 2007.

Herbicide	Rate (oz/A) ^y	2006	2007
Certainty 75 WDG ^z	0.25	13 July, 27 July	12 July, 27 July
Certainty 75 WDG	0.25	29 June, 13 July, 27 July	29 June, 12 July, 27 July
Certainty 75 WDG	0.50	13 July, 27 July	12 July, 27 July
Certainty 75 WDG	0.50	29 June, 13 July, 27 July	29 June, 12 July, 27 July
Velocity 80 SP	0.65	15 June, 29 June, 13 July, 27 July	15 June, 29 June, 12 July, 27 July
Velocity 80 SP	0.98	15 June, 29 June, 13 July, 27 July	15 June, 29 June, 12 July, 27 July
Velocity 80 SP	1.3	15 June, 29 June, 13 July, 27 July	15 June, 29 June, 12 July, 27 July
Untreated control	--	--	--

^yApplied every two weeks.

^zAll Certainty treatments included MON 0818 surfactant at 0.25% v/v.

Table 2. Seeding dates for Studies 1^x and 2 in 2006, 2007, and 2008.

	2006	2007	2008
Study 1	10 Aug	10 Aug/5 Sept ^y	--
Study 2	--	10 Aug/5 Sept	10 Aug ^z

^xStudy 1 was initiated in June, 2006 and Study 2 was initiated in June, 2007.

^y2007 seedings were unsuccessful because of intense heat and disease pressure, and were reseeded.

^zStudy 2 will be re-treated and re-seeded in 2008.

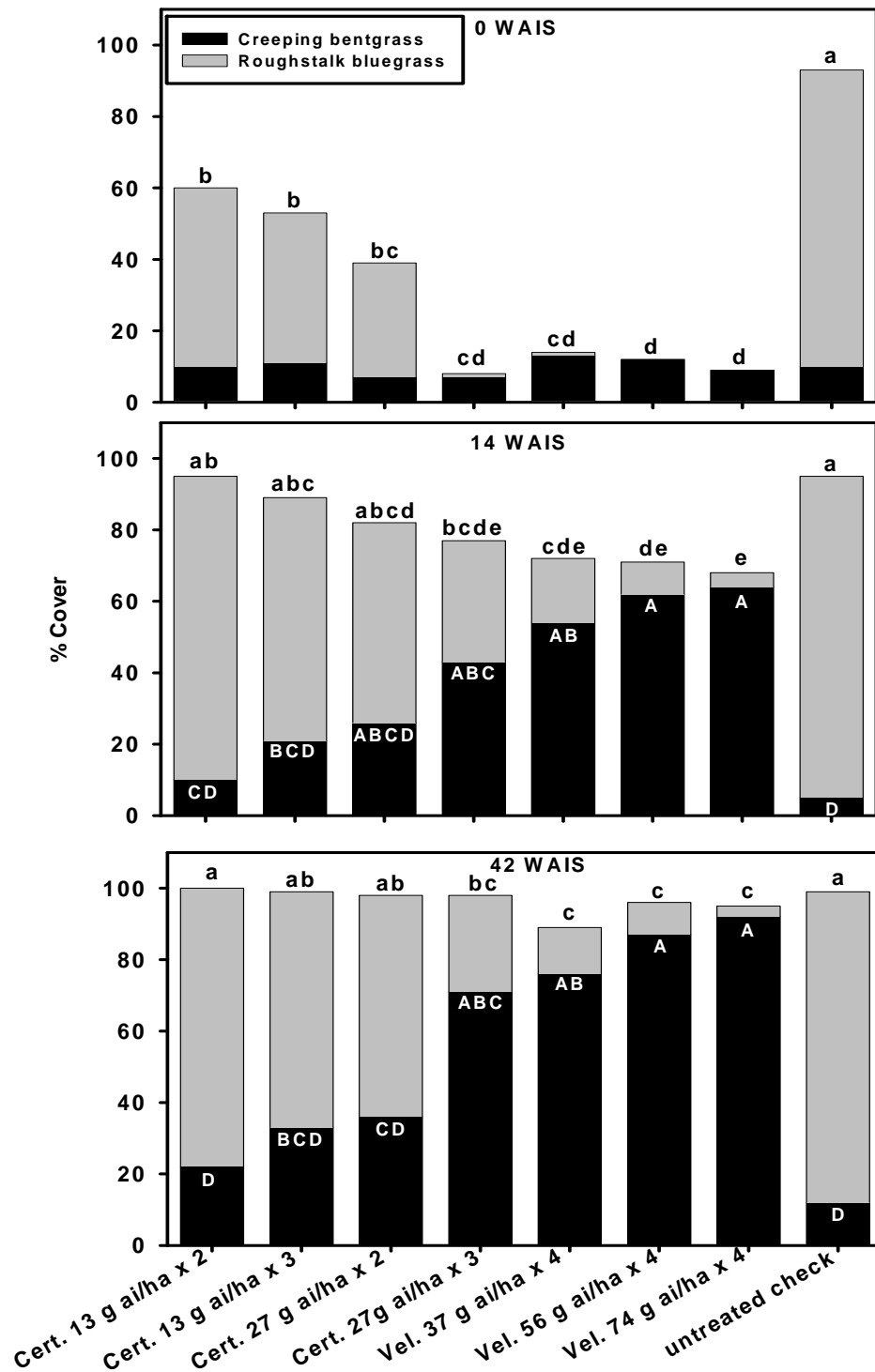


Figure 1. Roughstalk bluegrass and creeping bentgrass cover as a result of Certainty (Cert.) and Velocity (Vel.) 0, 14, and 42 WAIS (weeks after initial seeding) in 2006. Means are over two seeding treatments and three replications. Lower case letters indicate differences ($P < 0.05$) in roughstalk bluegrass cover while upper case letters indicate differences ($P < 0.05$) in creeping bentgrass cover. Bars with the same letter and case, or no letter are not significantly different ($P < 0.05$).

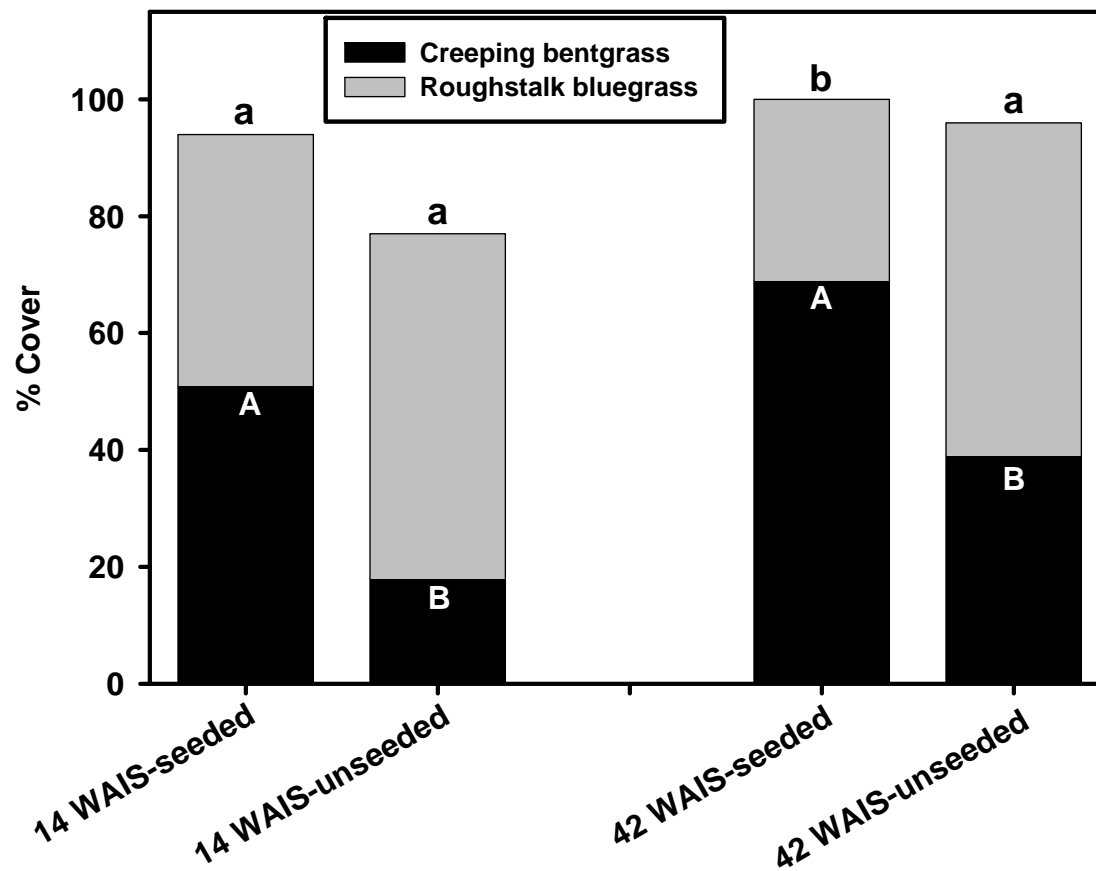


Figure 2. Roughstalk bluegrass and creeping bentgrass cover at 14 and 42 WAIS (weeks after initial seeding) as a result of seeding treatments in 2006. Means are over eight herbicide treatments and three replications. Lower case letters indicate differences ($P < 0.05$) in roughstalk bluegrass cover while upper case letters indicate differences ($P < 0.05$) in creeping bentgrass cover. Bars with the same letter and case, or no letter are not significantly different ($P < 0.05$).

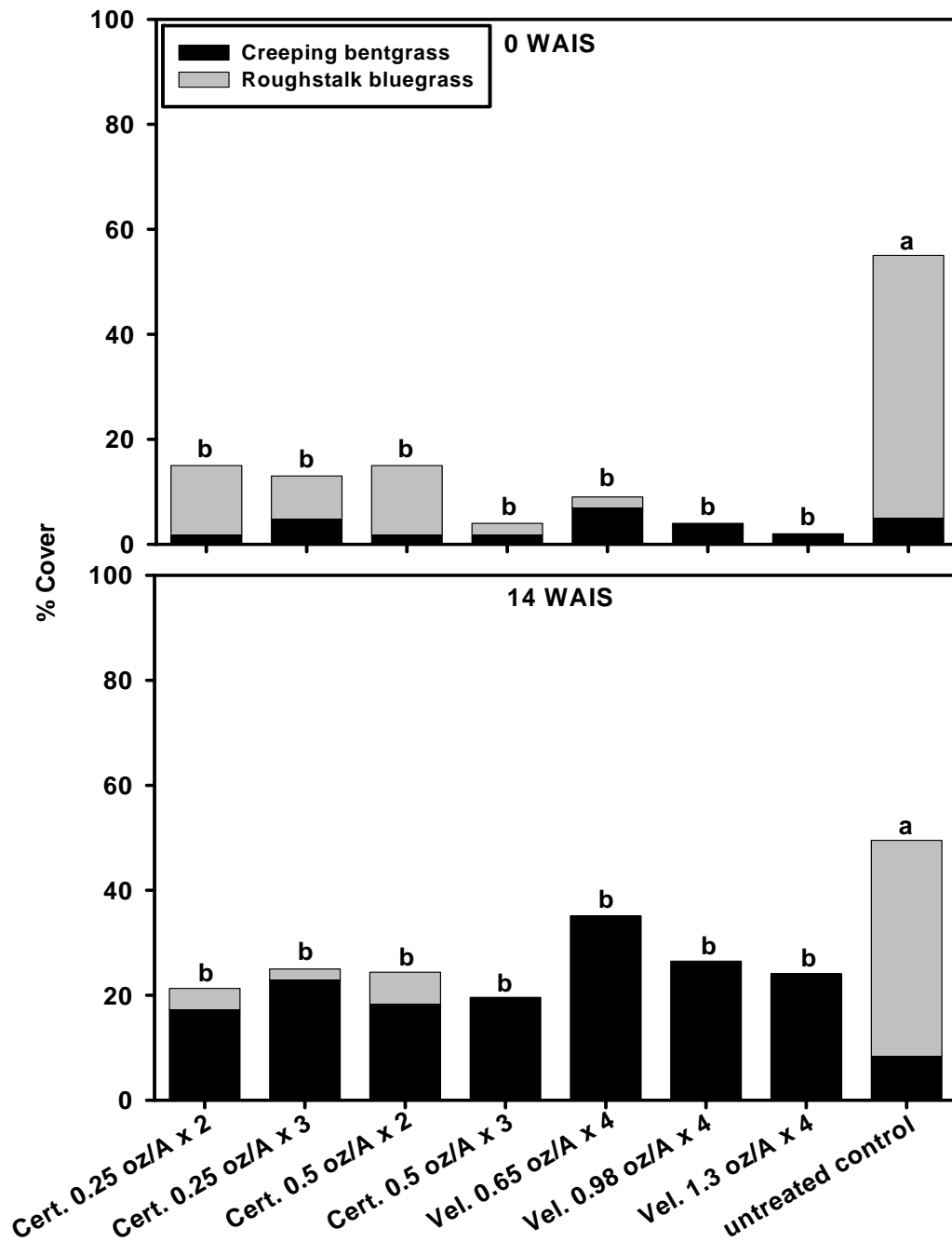


Figure 3. Roughstalk bluegrass and creeping bentgrass cover as a result of Certainty (Cert.) and Velocity (Vel.) 0 and 14 WAIS (weeks after initial seeding) in 2007. Means are back-transformed and are over two overseeding treatments and three replications. Lower case letters indicate differences ($P < 0.05$) in roughstalk bluegrass cover while upper case letters indicate differences ($P < 0.05$) in creeping bentgrass cover. Bars with the same letter and case, or no letter are not significantly different ($P < 0.05$).