

The Influence of Spray Adjuvants on Annual Bluegrass Control with Velocity

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Introduction

This study was conducted on a mature stand of 'Tifway' bermudagrass (*C. dactylon* x *C. transvaalensis*) at Egwani Farms Golf Course (Rockford, TN) overseeded with a 'Champion GQ' perennial ryegrass (*Lolium perenne* L.) blend (Seed Research of Oregon, Corvallis, OR). The objective of the study was to evaluate the influence of spray adjuvants on annual bluegrass (*Poa annua* L. var. *annua*) control with bispyribac-sodium (Velocity™).

Methods and Materials

The test site was maintained similar to that of a golf course fairway with respect to irrigation, fertilization and mowing.

This study was arranged in a randomized complete block design with three replications. Treatments were initially applied on 2 March 2009 to plots (10' x 5') using a CO₂ powered boom sprayer calibrated to deliver 30 gpa using four, flat-fan, 8002 nozzles at 18 psi, configured to provide a 5-ft spray swath. Bermudagrass green-up had reached approximately 50% when treatments were initially applied. Treatments requiring sequential applications were re-applied on 23 March, 13 April, and 4 May 2009 using the same spray apparatus.

Annual bluegrass control and perennial ryegrass injury were rated visually on a 0 (no control/injury) - 100% (complete plant death) scale at 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, and 85 days after initial treatment (DAIT). The percentage of annual bluegrass in each plot was determined on every rating date as well (data not shown).

Results and Discussion

Spray adjuvants did not enhance the efficacy of Velocity for annual bluegrass control in this study. For treatments initiated in early March, applications of Velocity at 30 g ai/a, mixed with either a non-ionic surfactant (NIS) or methylated seed oil (MSO), provided the same level of annual bluegrass control as applications of Velocity at 30 and 60 g ai/a alone (Table 1). A similar response was observed for treatments initiated in April. All treatments provided approximately 100% control of annual bluegrass at 85 DAIT (Table 1).

Perennial ryegrass injury was less than or equal to 10% on 11 out of 12 ratings dates for all treatments evaluated (Table 2).

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Table 1. Annual bluegrass control following applications of Velocity with various adjuvants in 2009.

Treatment	-Timing- -Month-	-Rate- (per A)	Annual Bluegrass Control											
			7DAIT	14DAIT	21DAIT	28DAIT	35DAIT	42DAIT	49DAIT	56DAIT	63DAIT	70 DAIT	77DAIT	85DAIT
1. VELOCITY	E-MARCH [‡]	30 g. a.i.	0.0 a [†]	25.0 a	60.0 a	73.3 a	85.0 a	88.3 a	96.3 a	96.7 ab	100.0 a	96.7 ab	100.0 a	100.0 a
VELOCITY	L-MARCH [¶]	30 g. a.i.												
2. VELOCITY	E-MARCH	60 g. a.i.	0.0 a	25.0 a	46.7 a	75.0 a	75.0 ab	86.7 a	91.7 a	100.0 a	100.0 a	100.0 a	100.0 a	100.0 a
VELOCITY	L-MARCH	60 g. a.i.												
3. VELOCITY	E-MARCH	30 g. a.i.	0.0 a	23.3 a	50.0 a	76.7 a	80.0 a	91.7 a	96.3 a	99.3 a	100.0 a	99.3 a	100.0 a	100.0 a
NIS	E-MARCH	0.25% v/v												
VELOCITY	L-MARCH	30 g. a.i.												
NIS	L-MARCH	0.25% v/v												
4. VELOCITY	E-MARCH	30 g. a.i.	0.0 a	20.0 a	36.7 a	73.3 a	73.3 b	88.3 a	93.3 a	100.0 a	100.0 a	100.0 a	100.0 a	100.0 a
MSO	E-MARCH	1% v/v												
VELOCITY	L-MARCH	30 g. a.i.												
MSO	L-MARCH	1% v/v												
5. VELOCITY	APRIL	30 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	10.0 b	68.3b	30.0 b	95.0 ab	100.0 a	100.0 a
VELOCITY	MAY	30 g. a.i.												
6. VELOCITY	APRIL	60 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	3.3 c	56.7 b	33.3 b	95.0 ab	100.0 a	100.0 a
VELOCITY	MAY	60 g. a.i.												
7. VELOCITY	APRIL	30 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	10.0 b	66.7 b	33.3 b	96.7 ab	100.0 a	100.0 a
NIS	APRIL	0.25% v/v												
VELOCITY	MAY	30 g. a.i.												
NIS	MAY	0.25% v/v												
8. VELOCITY	APRIL	30 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	10.0 b	68.3 b	33.3 b	93.3 b	100.0 a	100.0 a
MSO	APRIL	1% v/v												
VELOCITY	MAY	30 g. a.i.												
MSO	MAY	1% v/v												
9. UNTREATED			0.0 a	0.0 b	0.0 b	0.0 b	0.0 c	0.0 b	0.0 c	16.7 c	0.0 c	0.0 c	0.0 a	0.0 b

[†] Means followed by same letter do not significantly differ (P=.05 Duncan's New MRT)

[‡] Treatments applied in early March (2 March 2009)

[¶] Treatments applied in late March (23 March 2009)

Table 2. Perennial ryegrass injury following applications of Velocity with various adjuvants in 2009.

Treatment	-Timing- -Month-	-Rate- (per A)	Perennial Ryegrass Injury											
			7DAIT	14DAIT	21DAIT	28DAIT	35DAIT	42DAIT	49DAIT	56DAIT	63DAIT	70 DAIT	77DAIT	85DAIT
1. VELOCITY	E-MARCH	30 g. a.i.	0.0 a [†]	0.0 a	0.0 a	3.3 a	0.0 a	0.0 b	0.0 b	0.0 a	0.0 a	0.0 b	0.0 a	0.0 a
VELOCITY	L-MARCH	30 g. a.i.												
2. VELOCITY	E-MARCH	60 g. a.i.	0.0 a	0.0 a	5.0 a	1.7 a	0.0 a	5.0 a	0.0 b	0.0 a	0.0 a	0.0 b	0.0 a	0.0 a
VELOCITY	L-MARCH	60 g. a.i.												
3. VELOCITY	E-MARCH	30 g. a.i.	0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	5.0 a	0.0 b	0.0 a	0.0 a	0.0 b	0.0 a	0.0 a
NIS	E-MARCH	0.25% v/v												
VELOCITY	L-MARCH	30 g. a.i.												
NIS	L-MARCH	0.25% v/v												
4. VELOCITY	E-MARCH	30 g. a.i.	0.0 a	0.0 a	1.7 a	0.0 a	0.0 a	1.7 b	0.0 b	0.0 a	0.0 a	0.0 b	0.0 a	0.0 a
MSO	E-MARCH	1% v/v												
VELOCITY	L-MARCH	30 g. a.i.												
MSO	L-MARCH	1% v/v												
5. VELOCITY	APRIL	30 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	10.0 a	8.3a	0.0 a	15.0 a	0.0 a	0.0 a
VELOCITY	MAY	30 g. a.i.												
6. VELOCITY	APRIL	60 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	6.7a	6.7 a	0.0 a	16.7 a	0.0 a	0.0 a
VELOCITY	MAY	60 g. a.i.												
7. VELOCITY	APRIL	30 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	10.0 a	5.0 a	0.0 a	6.7 a	0.0 a	0.0 a
NIS	APRIL	0.25% v/v												
VELOCITY	MAY	30 g. a.i.												
NIS	MAY	0.25% v/v												
8. VELOCITY	APRIL	30 g. a.i.	N/A	N/A	N/A	N/A	N/A	N/A	10.0 a	8.3 a	0.0 a	8.3 ab	0.0 a	0.0 a
MSO	APRIL	1% v/v												
VELOCITY	MAY	30 g. a.i.												
MSO	MAY	1% v/v												
9. UNTREATED			0.0 a	0.0 a	0.0 a	0.0 a	0.0 a	0.0 b	0.0 b	0.0 a	0.0 a	0.0 b	0.0 a	0.0 a

[†] Means followed by same letter do not significantly differ (P=.05 Duncan's New MRT)

[‡] Treatments applied in early March (2 March 2009)

[¶] Treatments applied in late March (23 March 2009)