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Influence of Glyphosate Timings on Conversion of Golf Course Rough from Tall Fescue to 'Sharps Improved II' Buffalograss

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Abstract

All treatments, except the control that received no glyphosate application, resulted in acceptable buffalograss establishment (>90% buffalograss green cover) by 70 days after seeding (DAS). However, any treatment not sprayed prior to seeding date or that received a 7 DAS application lagged behind in establishment for 6 weeks after seeding.

Keywords

buffalograss, establishment, tall fescue, conversion

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Influence of Glyphosate Timings on Conversion of Golf Course Rough from Tall Fescue to 'Sharps Improved II' Buffalograss

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Summary. All treatments, except the control that received no glyphosate application, resulted in acceptable buffalograss establishment (>90% buffalograss green cover) by 70 days after seeding (DAS). However, any treatment not sprayed prior to seeding date or that received a 7 DAS application lagged behind in establishment for 6 weeks after seeding.

Rationale. Buffalograss [*Buchloe dactyloides* (Nutt) *Engelm.*] is a native warm season turfgrass that is being utilized for water conservation on golf courses. Proper timing for glyphosate applications for limited green cover loss is vital for golf courses planning a transition. Limited information exists on glyphosate timings including pre- and post-seeding for conversion from tall fescue (*Lolium arundinacea*) to buffalograss to reduce the green cover loss period.

Objective. Determine the best glyphosate timing for conversion of tall fescue to buffalograss.

Study Description. A field study was conducted in 2015 at the Rocky Ford Research Center in Manhattan, KS. Glyphosate (2.2 kg ai/ha) was applied to established tall fescue with pre- and post-timings as shown in Table 1. Plots were seeded with 4 lbs/1000 ft^2 non-deburred 'Sharp's Improved II' buffalograss. Experimental design was a 5 by 5 factorial, randomized complete block design with four replications. Treatments (Table 1) were applied to 4 × 4 ft plots on designated intervals with the seeding date as July 7, 2015. Buffalograss visual cover (0 to 100%), tall fescue visual cover (0 to 100%), buffalograss color (1 to 9), buffalograss quality (1 to 9), digital

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image analysis (% green cover), and weed cover (0-100%) were collected weekly. All data were analyzed using SAS (SAS Institute, Inc., Cary, NC), and means were separated according to Fisher's Protected LSD ($P \leq 0.05$).

Results. Buffalograss establishment was slowed when not spraying tall fescue prior to seeding or if spraying 7 DAS. However, all treatments provided acceptable establishment by trial conclusion (70 DAS), except the control that received no glyphosate applications. Initial difference in establishment can be seen at 21 and 35 DAS (Table 1).

Figure 1. Plots of tall fescue on the date they would be seeded into (July 7, 2015) at Rocky Ford Research Center. Effects of prior glyphosate applications can be seen.

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Table 1. Mean percent visual buffalograss cover at 21, 35, and 49 days after seeding (DAS) at Rocky Ford Research Center (Manhattan, KS)

Treatment number	Variables	Mean % visual buffalograss cover		
		21 DAS	35 DAS	49 DAS
1	UNTRT × UNTRT	0.00z i	0.50 k	0.00 e
2	UNTRT × 0 DAS	3.75 fghi	32.50 hi	90.00 ab
3	UNTRT × 2 DAS	2.25 ghi	23.25 ij	82.50 bc
4	UNTRT × 4 DAS	1.50 ghi	12.00 jk	70.00 cd
5	UNTRT × 7 DAS	0.50 hi	13.00 jk	58.75 d
6	4 WBSy × UNTRT	12.00 bcd	57.50 abcdef	90.00 ab
7	4 WBS × 0 DAS	13.00 abcd	61.25 abcde	94.50 ab
8	4 WBS × 2 DAS	11.25 cd	52.50 cdefg	92.50 ab
9	4 WBS × 4 DAS	15.00 abc	60.00 abcde	97.00 ab
10	4 WBS × 7 DAS	3.25 ghi	40.00 fghi	95.25 ab
11	3 WBS × UNTRT	10.00 de	55.00 bcdef	90.75 ab
12	3 WBS × 0 DAS	15.00 abc	67.50 abc	95.00 ab
13	3 WBS × 2 DAS	16.25 ab	72.50 ab	97.50 a
14	3 WBS × 4 DAS	17.50 a	75.00 a	97.50 a
15	3 WBS × 7 DAS	4.00 fghi	43.75 defgh	89.50 ab
16	2 WBS × UNTRT	10.75 cd	63.75 abc	92.50 ab
17	2 WBS × 0 DAS	9.50 de	70.00 abc	97.25 a
18	2 WBS × 2 DAS	9.75 de	67.50 abc	99.50 a
19	2 WBS × 4 DAS	8.25 def	61.25 abcde	97.00 ab
20	2 WBS × 7 DAS	4.50 fghi	42.50 efgh	93.75 ab
21	1 WBS × UNTRT	5.25 efgh	52.50 cdefg	98.50 a
22	1 WBS × 0 DAS	5.25 efgh	53.75 bcdef	98.75 a
23	1 WBS × 2 DAS	5.75 efg	62.50 abcd	98.75 a
24	1 WBS × 4 DAS	4.50 fghi	57.50 abcdef	98.50 a
25	1 WBS × 7 DAS	4.25 fghi	33.75 ghi	91.50 ab

zMeans in columns for percent visual buffalograss cover followed by the same letter are not significantly different according to Fisher's LSD at the .05 significance level
yWeeks Before Seeding

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