The Effect of Betasan on Four Creeping Bentgrass Cultivars Maintained at Green Height

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Betasan 4LF was evaluated for phytotoxicity on green height creeping bentgrass. This study was conducted at the Iowa State University Horticulture Research Station north of Ames, Iowa. The experiment was located in creeping bentgrass grown in native soil with a pH of 7.25, 5 lb/acre P, and 60 lb/acre K.

Four experimental plots were set up, one in each of four creeping bentgrass cultivars (Penncross, Penneagle, SR-1019, and SR-1020) mowed at 0.3 in. Each experiment was arranged in a randomized complete block design. Individual plots were 5 x 5 ft with three replications. There were three treatments including an untreated control. Betasan 4LF was applied at 20 pt. product/A initially and sequentially at 15 pt. product/A (Table 1). Double applications at these same rates and with the same timing were included to simulate overlap. The assignment of treatments to plots was randomized. Betasan 4LF was applied using a carbon dioxide backpack sprayer equipped with #8006 nozzles and a spray pressure of 30 psi.

The plots were irrigated with 0.5 - 1.0 inch of water immediately after applications. Supplemental irrigation was used to maintain the bentgrass in good growing condition.

The initial treatments were made May 29, 1996. Sequential applications were made on August 29. The plots were checked for turf quality and phytotoxicity periodically beginning June 3. Subsequent data were taken on June 10, June 26, July 3, July 18, August 8, August 29, September 5, and September 11. Visual quality was assessed using a 9 to 1 scale: 9 = best quality, 6 = lowest acceptable quality, and 1 = poorest quality (Table 1). Phytotoxicity data were assessed using a 9 to 1 scale: 9 = no damage, 8 = 10% brown, 7 = 20% brown, and 6 = 30% brown turf within the plot (Table 2).

Data were analyzed with the Statistical Analysis System (SAS) version 6.09 and the Analysis of Variance (ANOVA) procedure. Means were compared with Fisher's Least Significant Difference (LSD) test.

There were no signs of phytotoxicity on any of the treated bentgrass plots following the initial applications (Table 1). On September 5, seven days after the sequential treatments, there was some general browning on the entire green height bentgrass area including the experimental plots and surrounding areas. In the Penneagle plot, a more pronounced browning appeared to correspond with individual plots and to be a treatment effect. These symptoms were considered as possible phytotoxicity (Table 2). By September 11, the quality of the Penneagle was uniform among the treated and untreated plots. No other phytotoxicity was detected.

Table 1. Visual quality[1] of green height creeping bentgrass treated with Betasan 4LF in the 1996 Green Height Bentgrass Phytotoxicity Study.

	Material	Rate (pts product/A) initial/sequential	June 3	June 10	June 26	July 3	July 18	Aug 8	Sept 5	Sept 11	Mean quality
SR-1019											
1.	Untreated control	NA	9	8	8	8	9	9	6	7	8
2.	Betasan 4LF	20/15	9	8	8	8	9	9	6	7	8
3.	Betasan 4LF	40/30[2]	9	8	8	8	9	9	6	7	8
	$LSD_{0.05}$		NS	NS	NS	NS	NS	NS	NS	NS	NS
SR-1020											
1.	Untreated control	NA	9	8	8	8	9	9	6	7	8
2.	Betasan 4LF	20/15	9	8	8	8	9	9	6	7	8
3.	Betasan 4LF	40/30[2]	9	8	8	8	9	9	6	7	8
	$LSD_{0.05}$		NS	NS	NS	NS	NS	NS	NS	NS	NS
Penncross											
1.	Untreated control	NA	9	8	8	8	9	9	6	7	8
2.	Betasan 4LF	20/15	9	8	8	8	9	9	6	7	8
3.	Betasan 4LF	40/30[2]	9	8	8	8	9	9	6	7	8
	$LSD_{0.05}$		NS	NS	NS	NS	NS	NS	NS	NS	NS
Penneagle											
1.	Untreated control	NA	9	8	8	8	9	9	6	7	8
2.	Betasan 4LF	20/15	9	8	8	8	9	9	6	7	8
3.	Betasan 4LF	40/30[2]	9	8	8	8	9	9	6	7	8
	$LSD_{0.05}$		NS	NS	NS	NS	NS	NS	NS	NS	NS

[1]Visual quality was assessed using a 9 to 1 scale: 9 = best, 6 = lowest acceptable, and 1 = worst quality.
[2]Twice the Betasan and water were applied to plots receiving treatment 3
Initial applications were made on May 29 and sequential on August, 29, 1996.
NS = means are not significantly different at the 0.05 level.

Table 2. Possible phytotoxicity[1] detected September 5 in green height creeping bentgrass treated with Betasan 4LF in the 1996 Green Height Bentgrass Phytotoxicity Study.

	Material	Rate (pts product/A) initial/sequential[2]	September 5
SR-1019			
1.	Untreated control	NA	9
2.	Betasan 4LF	20/15	9
3.	Betasan 4LF	40/30	9
	$LSD_{0.05}$		NS
SR-1020			
1.	Untreated control	NA	9
2.	Betasan 4LF	20/15	9
3.	Betasan 4LF	40/30	9
	$LSD_{0.05}$		NS
Penncross			
1.	Untreated control	NA	9
2.	Betasan 4LF	20/15	9
3.	Betasan 4LF	40/30	9
	$LSD_{0.05}$		NS
Penneagle			
1.	Untreated control	NA	8
2.	Betasan 4LF	20/15	6
3.	Betasan 4LF	40/30	6

	$LSD_{0.05}$	NS

[1] Phytotoxicity was assessed using a 9 to 1 scale: 9 = no phyto, 8 = 10% brown, 7 = 20% brown, 6 = 30% brown turf per plot.

[2] Twice the Betasan and water were applied to plots receiving treatment 3.

NS = means are not significantly different at the 0.05 level.