

# Evaluation of PGR Materials Applied to Fairway Height Creeping Bentgrass

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## Introduction

This study was conducted on a mature stand of fairway height 'Penneagle II' creeping bentgrass (*Agrostis stolonifera*) at the Valentine Turfgrass Research Center, Penn State University, University Park, Pa. The objective of the study was to determine the efficacy of various plant growth regulator compounds combined with iron using color ratings, measurements of plant height, and fresh weight foliar yields.

## Methods and Materials

This study was a randomized complete block design with three replications. Treatments were applied on June 4 (JUNE) and June 30, 2009 (4 WAT) using a three foot CO<sub>2</sub> powered boom sprayer calibrated to deliver 87.12gpa using one, flat fan, TP9508EVS nozzle at 40 psi.

The test site was maintained similar to that of a golf course fairway (Figure 1) with respect to pest control, irrigation, fertilization and mowing. Turfgrass height was measured using a Turfcheck 1 prism (Figure 2). Clipping weights were taken once a week with a seven bladed John Deere reel mower bench set to a height of 0.450" and modified to collect clippings.

## Results and Discussion

Turfgrass color was rated eight times during the study (Table 1). No unacceptable (7.0 or lower) turfgrass color was observed on any rating date.

Turfgrass height was rated eight times during the study (Table 2). It should be noted that following the first application of materials some significant reduction and some significant increase in height was observed when compared to non treated turfgrass. Following the June 30 application (4WAT) there was no significant change of any kind during the July rating dates. This data are too variable to draw a solid conclusion.

Fresh clipping weights were collected and analyzed eight times during the study (Table 3). Turfgrass treated with Goldwing at 11 oz/M, plus Cutdown at 4 or 8 oz/A, plus Iron revealed significantly lower fresh clipping weights when compared to non treated turfgrass on June 10, 17 and 24, 2009. Finally, on July 8, 2009 turfgrass treated with Goldwing at 11 oz/M, plus Cutdown at 8 oz/A, plus Iron had significantly lower fresh clipping weights when compared to non treated turfgrass.

The combination of Goldwing and Cutdown has revealed a trend that appears to reduce fresh clipping weights without harm to the turfgrass sward.

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**Table 1.** Creeping bentgrass color ratings on a scale of 0-10 where 0 = poor color, 7 = acceptable, and 10 = dark green color, taken in 2009.

Treatment	Form	Rate oz/M	Timing	Color							
				6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/30
GOLDWING IRON	L	11 4	JUNE/4 WAT JUNE/4 WAT	8.5	9.0	9.0	8.3	8.8	9.0	8.8	8.5
GOLDWING CUTDOWN IRON	L	11 2 oz/A 4	JUNE/4 WAT JUNE/4 WAT JUNE/4 WAT	8.7	9.7	8.8	8.5	9.0	9.0	8.8	8.5
GOLDWING CUTDOWN IRON	L	11 4 oz/A 4	JUNE/4 WAT JUNE/4 WAT JUNE/4 WAT	8.2	9.3	9.0	8.7	9.0	8.8	9.0	8.5
GOLDWING CUTDOWN IRON	L	11 8 oz/A 4	JUNE/4 WAT JUNE/4 WAT JUNE/4 WAT	8.5	10.0	9.0	8.7	9.0	9.0	9.0	8.5
CHECK				7.5	8.0	8.3	8.0	8.0	8.0	8.2	8.5
CUTDOWN IRON	L	2 oz/A 4	JUNE/4 WAT JUNE/4 WAT	8.3	8.5	8.5	8.2	8.5	8.5	8.5	8.5
CUTDOWN IRON	L	4 oz/A 4	JUNE/4 WAT JUNE/4 WAT	8.2	8.7	9.0	8.3	8.7	8.7	8.7	8.5
CUTDOWN IRON	L	8 oz/A 4	JUNE/4 WAT JUNE/4 WAT	8.5	9.0	8.7	8.2	8.7	8.7	8.7	8.5

**Table 2.** Height ratings (in inches) of fairway height creeping bentgrass, taken in 2009.

Treatment	Form	Rate oz/M	Timing	Heights							
				6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/30
GOLDWING IRON	L	11 4	JUNE/4 WAT JUNE/4 WAT	0.44ab	0.36c	0.43bcd	0.37abc	0.36ab	0.33a	0.44a	0.42a
GOLDWING CUTDOWN IRON	L	11 2 oz/A 4	JUNE/4 WAT JUNE/4 WAT JUNE/4 WAT	0.44ab	0.34c	0.42cd	0.34c	0.36ab	0.33a	0.41a	0.43a
GOLDWING CUTDOWN IRON	L	11 4 oz/A 4	JUNE/4 WAT JUNE/4 WAT JUNE/4 WAT	0.38b	0.33c	0.42cd	0.34c	0.33b	0.34a	0.43a	0.43a
GOLDWING CUTDOWN IRON	L	11 8 oz/A 4	JUNE/4 WAT JUNE/4 WAT JUNE/4 WAT	0.39b	0.32c	0.39d	0.38abc	0.36ab	0.35a	0.46a	0.42a
CHECK				0.49a	0.40b	0.47ab	0.35bc	0.37ab	0.33a	0.42a	0.41a
CUTDOWN IRON	L	2 oz/A 4	JUNE/4 WAT JUNE/4 WAT	0.45ab	0.44a	0.47ab	0.41a	0.39a	0.34a	0.43a	0.44a
CUTDOWN IRON	L	4 oz/A 4	JUNE/4 WAT JUNE/4 WAT	0.43ab	0.43ab	0.48a	0.39ab	0.37ab	0.36a	0.45a	0.44a
CUTDOWN IRON	L	8 oz/A 4	JUNE/4 WAT JUNE/4 WAT	0.46ab	0.43ab	0.45abc	0.41a	0.39a	0.35a	0.46a	0.46a

**Table 3.** Fresh turfgrass clipping weight (grams), taken in 2009.

Treatment	Form	Rate oz/M	Timing	Weights <sup>1</sup>							
				6/10	6/17	6/24	7/1	7/8	7/15	7/22	7/30
GOLDWING	L	11	JUNE/4 WAT	12.8abc	7.3bc	8.4bc	8.8a	7.0bcd	6.6b	7.9a	12.0a
IRON	L	4	JUNE/4 WAT								
GOLDWING	L	11	JUNE/4 WAT	12.7abc	7.3bc	8.5bc	9.7a	7.0bcd	6.9ab	8.2a	14.3a
CUTDOWN	L	2 oz/A	JUNE/4 WAT								
IRON	L	4	JUNE/4 WAT								
GOLDWING	L	11	JUNE/4 WAT	12.0bc	6.7c	7.1c	8.5a	6.7cd	6.7ab	7.6a	12.2a
CUTDOWN	L	4 oz/A	JUNE/4 WAT								
IRON	L	4	JUNE/4 WAT								
GOLDWING	L	11	JUNE/4 WAT	11.4c	6.3c	6.9c	7.9a	6.5d	6.6b	7.1a	12.1a
CUTDOWN	L	8 oz/A	JUNE/4 WAT								
IRON	L	4	JUNE/4 WAT								
CHECK				13.9a	8.8ab	10.1ab	8.9a	7.5abc	7.3ab	8.4a	11.5a
CUTDOWN	L	2 oz/A	JUNE/4 WAT	13.9a	9.4a	11.2a	10.4a	7.9a	7.6a	9.2a	14.6a
IRON	L	4	JUNE/4 WAT								
CUTDOWN	L	4 oz/A	JUNE/4 WAT	13.2ab	8.5ab	9.8ab	10.0a	7.6ab	7.6a	8.5a	12.9a
IRON	L	4	JUNE/4 WAT								
CUTDOWN	L	8 oz/A	JUNE/4 WAT	12.6abc	7.7bc	9.4ab	9.5a	7.5abc	7.5a	8.8a	12.3a
IRON	L	4	JUNE/4 WAT								

1 - Means followed by same letter do not significantly differ (P= 0.05 Duncan's New MRT)



*Figure 1: Randomized complete block test area with three replications. The test site was maintained similar to that of a golf course fairway*



*Figure 2: Creeping bentgrass heights were monitored using a Turcheck 1 Prism.*