

Effects of Primo on Bentgrass and Bluegrass Fairway Establishment

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OBJECTIVE

The purpose of this experiment was to determine if Primo affected the establishment rate of creeping bentgrass and Kentucky bluegrass fairway turf.

MATERIALS AND METHODS

Turf establishment, maintenance and treatments.

The study was conducted at the O.J. Noer Turfgrass and Research and Education Facility in Verona, Wisconsin on a Miami silt loam soil. The study was planted twice during the spring (May and June) but severe rains washed out the study both times. On August 10, 2000 the remaining vegetation was sprayed with a 3% solution of Roundup. Very little vegetation was present at this time. On August 31, 2000 the study was seeded: 1250 ft² with 1.5 lb/1000 ft² 'Penncross' creeping bentgrass and 1250 ft² with 2 lb/1000 ft² of an elite blend (America, Award, Arcadia, Alpine, and Midnight) of Kentucky bluegrass (KBG). Seed was applied using a drop spreader (the KBG was seeded in two directions, the creeping bentgrass was seeded in three directions). Starter fertilizer was applied with a drop spreader to supply 0.75lbs/P₂O₅ per 1000 ft² (15-24-8). The seed and fertilizer was lightly raked into the soil to provide good seed to soil contact. Straw mulch was lightly applied, approximately 35lbs/1000 ft², to prevent seed washout. The irrigation was set to run 4X daily for 3 minutes per time. 'Penncross' germination was visible on September 3, and KBG began to germinate on September 11. On October 11 the irrigation was changed to a normal fairway schedule, 3X weekly to supply 100% ET. On September 26 the straw was raked up from the Penncross side of the plot, and 1/2lb/M P₂O₅ starter fertilizer (15-24-8) was applied to both the 'Penncross' and KBG turfs. Plots were mowed at 0.5 inch height; a walking greensmower was used for the first three mowings, subsequent mowings were performed using a triplex.

On September 27 the 'Penncross' received initial Primo treatments when turf cover was approximately 50%. The experimental design was a randomized complete block with four replications. Individual plot size was 5' X 8'. Primo was applied in 1 gal water per 1000 ft using a CO₂ powered backpack sprayer equipped with XR 8003 Teejet nozzles. The KBG portion of the study was treated on 16 Oct. when approximately 50% turf cover had been achieved. The

straw was raked off prior to treatment. A randomized complete block design was used with four replications; plot size was 5' X 8'.

The plot was sprayed preventatively for snow mold on November 3 with Chipco 26GT (iprodione) at a rate of 8 oz/1000 ft², and on November 15 with Heritage (azoxystrobin) at a rate of 0.4 oz/1000 ft². Both chemicals were applied in 1.55 gal carrier volume per 1000 ft². A dormant fertilization was applied on November 11: we supplied 1 lb. N/1000 ft² with a complete fertilizer (21-2-12).

Table 1. Treatment application rates and timing.

Treatment	Rate	Timing	Application Dates	
			CBG	KBG
Control	--	--	--	--
Primo	0.25 oz/M (1X)	4 weeks	9/27,10/25	10/16
Primo	0.5 oz/M (2X)	4 weeks	9/27, 10/25	10/16
Primo	0.125 oz/M (1/2X)	2 weeks	9,27,10/12, 10/25	10/16,10/31

Figure 1. Plot map for both the CBG and KBG plots. Plot size 5' X 8', 4 replications.

Primo 2X (4 weeks)	Check	Primo 1/2X (2 weeks)	Primo 1X (4 weeks)
Primo 1/2X (2 weeks)	Primo 1X (4 weeks)	Primo 2X (4 weeks)	Check
Primo 2X (4 weeks)	Check	Primo 1X (4 weeks)	Primo 1/2X (2 weeks)
Check	Primo 1X (4 weeks)	Primo 2X (4 weeks)	Primo 1/2X (2 weeks)

Data Collection.

After the initial treatments were applied, weekly percent cover ratings have been taken to determine establishment rates. In the spring, ratings will be taken for spring green-up and winter injury. Percent cover and quality ratings will continue on both plots until they reach maturity. Data on shoot and stolon number, stolon and internode length will also be collected.

RESULTS

Conditions during the autumn of 2000 were favorable for turfgrass growth and establishment Fig. 1, 2, 3). Primo applications did not affect establishment rates of either creeping bentgrass (Table 1) or Kentucky bluegrass (Table 2). There was no phytotoxicity or other apparent detrimental effects from any of the applications.

Table 2. Percent cover rating mean averages for the creeping bentgrass plot.

Treatment	Percent Cover Rating Means				
	<u>10/6</u>	<u>10/12</u>	<u>10/19</u>	<u>10/26</u>	<u>11/3</u>
Check	52.5	53.8	60.0	67.5	72.5
Primo 0.25 oz	52.5	55.0	60.0	70.0	72.5
Primo 0.5 oz	58.8	58.8	63.8	70.0	70.0
Primo 0.125 oz	53.8	56.3	63.8	70.0	75.0
LSD 0.05	ns	ns	ns	ns	ns

Table 3. Percent cover rating mean averages for the Kentucky bluegrass study.

<u>Percent Cover Rating Means</u>				
<u>Treatment</u>	<u>10/16</u>	<u>10/19</u>	<u>10/26</u>	<u>11/3</u>
Check	42.5	46.3	52.5	56.3
Primo 0.25 oz	41.3	43.8	47.5	51.3
Primo 0.5 oz	41.3	43.8	48.8	55.0
Primo 0.125 oz	42.5	45.0	51.3	56.3
LSD 0.5	ns	ns	ns	ns

DISCUSSION

The relative lack of effects was not surprising as the results were similar to those we obtained during summer 1999 (Stier and Tetrault, 2000a; Stier and Tetrault, 2000b). The greatest difference was that in 2000 we did not see any reduction in coverage of creeping bentgrass at the 0.5 oz/1000 ft² rate of Primo. In 1999 this rate caused some minor, but statistically significant, decrease in coverage during establishment. The 1999 study was conducted during the summer when temperatures were occasionally fairly hot, while the 2000 study was conducted during the cooler autumn temperatures of autumn. These results indicate temperature may affect Primo metabolism. From a commercial standpoint, overseeding can proceed in autumn if Primo is used to control the growth of the existing turf. During the cooler temperatures of autumn, an accidental misapplication that results in higher than label rates (0.5 oz/1000 ft²) should not harm the seedlings.

Winter (low temperatures and snow cover) conditions appeared before the grass had fully established. The creeping bentgrass provided only approximately 70-75% cover before growth

ceased, while Kentucky bluegrass cover was only approximately 50-55%. The plants were too immature during the fall of 2000 to provide data on development parameters. We will continue to monitor the turf in the spring for several items: spring greenup, stolon and shoot development (i.e., shoot and stolon number, stolon and internode lengths), turf quality and weed encroachment. In a previous research project, an autumn application of Primo to mature Kentucky and supina bluegrasses delayed greenup following winter dormancy (Stier, 1997). This could have been due to insufficient time during the autumn for the Primo to be fully metabolized

LITERATURE CITED

- Stier, J.C. 1997. The effects of plant growth regulators on Kentucky bluegrass (*Poa pratensis* L.) and supina bluegrass (*P. supina* Schrad.) in reduced light conditions. Ph.D. diss. Michigan State Univ., East Lansing (Diss. Abstr. 97-34193).
- Stier, J., and D. Tetrault. 2000. Chipco Proxy effects on Kentucky bluegrass establishment. *Wisc. Turf Res.* XVII:97-101.
- Stier, J., and D. Tetrault. 2000. Primo use to speed bentgrass establishment. *Wisc. Turf Res.* XVII:102-105.