

Plant Growth Regulator and Fertility Effects on Divot Recovery

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Many claims have been made regarding PGRs and their effects. Golf course superintendents have benefited from PGR's on their fairways for the reduction of clippings and their associated disposal cost. Michigan State University initiated a study in the spring of 1994 to examine and quantify the effects of two nitrogen fertility regimes and ten PGR treatments on the response of a creeping bentgrass turf. The nitrogen programs called for 5.5 and 2.6 lb. N M⁻¹ annually for the high and low respectively. *Primo*(trinexapac-ethyl), *Cutless*(flurprimidol), and *Turf Enhancer*(paclobutrazol) were each applied at 0.25X, 0.50X, and 1.0X, where X is the labeled rate, to Penncross creeping bentgrass maintained at 0.625". PGR treatments were repeated on each fertility regime.

A system was developed to quantify the speed of divot recovery. Using a hand tool, divots were made in each plot. One divot was taken every week for four consecutive weeks. Healing was evaluated on a weekly basis to determine the percent recovery with a template based on the original size of the divot. Nitrogen regime proved to be the major component in speed of recovery although significant trends developed with PGR treatments. Divots made one week after PGR application in the high nitrogen program had completely recovered in 28 days (Table 1). Divots made in high nitrogen plots with no PGR recovered in 21 days. The low rates of PGR recovered faster than the high rates for each product. The following tables illustrate the number of days to complete divot closure for the low application rate of each product. The tables represent times for the low fertility and high fertility program respectively.

Table 1. Effects of N fertility and PGR's on divot recovery.

Days to Divot Closure (2.54 lb. N/1000 annually)					
	Rate lb. AI/A	1 WAT Divot	2 WAT Divot	3 WAT Divot	4 WAT Divot
Control		42	42	42+	35+
Primo	0.045	42	42	42+	35+
Cutless	0.25	35	35	42+	35+
Enhancer	0.06	35	35	42+	35+
Days to Divot Closure (5.5 lb. N/1000 annually)					
	Rate lb. AI/A	1 WAT Divot	2 WAT Divot	3 WAT Divot	4 WAT Divot
Control		21	28	42+	35+
Primo	0.045	28	28	35	28
Cutless	0.25	28	28	35	35+
Enhancer	0.06	21	28	35	35+

Clipping yields were taken to illustrate the degree of growth suppression provided by each product. Reduction in clippings may be important as landfill disposal becomes unavailable or cost prohibitive. The amount of clippings decreased as PGR rates increased, however fertility was the dominate factor. At several sampling times there was a 50% reduction in clippings attributable to fertility programs regardless of PGR treatment. As might be expected, quality ratings were drastically

affected by fertility program, only the highest rates of *Primo* and *Cutless* showed a significant loss in turf quality.

The current fertilizer programs will be followed through 1994. August 9 was the third and final PGR application for 1994. The Hancock Turf Center will add wear treatments, simulating golf cart traffic, to this study in 1995 and continue with divot recovery evaluation, clipping yield, and quality ratings.