

## Fairway Conversion Using Roundup Plus Prograss

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Annual bluegrass has been a serious weed problem on golf course fairways for as long as superintendents can remember. In the last several years, new methods have developed for controlling annual bluegrass and converting fairways from annual bluegrass to other turf species. Work has been conducted at Michigan State for several years to develop an approach for converting fairways from annual bluegrass to creeping bentgrass using Roundup and Prograss.

This study represents a comprehensive approach to fairway conversion. We have always maintained that the conversion process should begin in mid-August so that the bentgrass is establishing before the peak annual bluegrass germination period in mid-September. Therefore, three seeding dates were used to determine if seeding date was indeed an important factor in a successful conversion.

One week prior to seeding, the plots were sprayed with Roundup at 1.5 lbs AE/A. The plot area was verticut in three directions and the debris removed. Each seeding date was fertilized with 1 lb N/M with a 12-12-12 starter fertilizer and then received 0.5 lb N/M at two week intervals for six weeks. Seeding dates were 18 August, 1 September and 15 September. Penncross creeping bentgrass was seeded on these dates at a rate of 1 lb seed/M.

Eight different rates and timings of Prograss were sprayed on the plots at various intervals after germination (Table 3). Results were dramatic. All rates and seeding dates with one exception, the 0.75 4 WAG + 1.25 6 WAG treatment at the 18 August seeding date, had significantly less annual bluegrass than the untreated plots. Turf injury was minimal in the fall and spring with only the 0.75 rate at 4, 6, and 8 WAG showing noticeable injury.

The most surprising result, however, was that the earliest seeding date had the most annual bluegrass, 11.5% averaged across all treatments, while the 15 September date had only 3.9% annual bluegrass when averaged across all treatments at that seeding date. We believe that this is because the maximum activity from Prograss comes when the herbicide is not watered in after application. The earliest seeding dates were watered frequently during the germination periods of the later seeding dates resulting in reduced Prograss activity.

The only treatment with more than 1% annual bluegrass at the last seeding date was the 0.75 at 6 + 10 WAG treatment which was the treatment with the most time between seeding and herbicide application and, therefore, the least herbicidal activity.

In the past, we have been very conservative in our recommendations for Prograss use. This study shows clearly that better stands of bentgrass will be obtained if Prograss is applied at least as early as 4 WAG at rates of 0.75 lbs AI/A followed by 1 to 2 more applications at 0.75 lbs AI/A. The effect of seeding date is exactly opposite of what we would expect and this study is being repeated in 1990 to determine if later seeding dates in combination with Prograss result in more effective annual bluegrass control.

Table 3. Effect of Prograss on turf injury and Poa annua establishment.

Prograss Rates (lbs AI/A) and Timing	TURF INJURY									
	10/30/89			11/13/89			4/12/90	% Poa 5/14/90		
	Seeding Date			Seeding Date			Avg. of Seeding Dates	Seeding Date		
	8/18	9/1	9/15	8/18	9/1	9/15		8/18	9/1	9/15
0.75 4 WAG + 0.75 8 WAG <sup>†</sup>	8.8	8.5	7.7	8.3	7.7	7.3	6.6	10.7	3.3	0.3
0.75 6 WAG + 0.75 10 WAG	8.0	8.7	9.0	7.3	8.0	8.7	7.1	5.3	14.7	2.3
0.75 4 WAG + 0.75 8 WAG + 0.75 12 WAG	8.0	7.8	8.0	7.3	7.5	7.3	6.7	5.0	1.0	0.3
0.75 4 WAG + 0.75 6 WAG + 0.75 8 WAG	7.3	7.5	8.2	7.2	6.2	7.7	4.9	1.3	0.7	0.3
0.5 4 WAG + 0.5 6 WAG + 0.5 8 WAG	8.0	8.5	8.0	7.5	7.5	7.5	6.5	5.7	1.3	0.7
0.75 4 WAG + 0.75 7 WAG	8.0	7.8	8.3	7.7	6.8	7.7	6.5	13.3	4.0	1.0
0.75 4 WAG + 1.25 6 WAG	8.8	7.3	8.3	8.7	6.5	7.7	5.8	21.7	0.0	0.3
0.38 2 WAG + 0.75 5 WAG	7.8	8.5	8.3	7.8	8.0	7.3	5.9	14.0	3.3	0.3
Control	8.7	9.0	9.0	8.0	8.5	8.3	6.9	26.7	38.3	30.0
LSD (P=0.05)	0.9	0.9	0.9	1.2	1.2	1.2	0.8	7.4	7.4	7.4

<sup>†</sup>WAG - Weeks after germination