

## Safety of Dimension 1EC on Seedling Creeping Bentgrass or Tall fescue - 2000 and 2001

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### Objective

To determine the effects of Dimension 1EC applied shortly after creeping bentgrass or tall fescue emergence in order to minimize weed competition during establishment of spring-seeded turf.

### Rationale

Annual grassy weeds are problematic because of their prolific seed production and persistence in the soil. Dimension 1EC is promising for minimizing annual grassy weed competition in seedling turf. Theoretically, Dimension 1EC applied over seedlings soon after emergence could suppress crabgrass germination with limited or no injury to the desired species. The Dimension 1EC label currently recommends waiting until the second mowing of seedling turf before initial applications. Preliminary Purdue research suggests that Dimension 1EC can be applied as early as 10 days after emergence (DAE) with no damage to the desired species.

### How It Was Done

The studies were established at Purdue University William H. Daniel Turfgrass Research and Diagnostic Center beginning May of 2000 and 2001. Soil type was Chalmers silt loam with a pH of 5.9 and 7.3 percent organic matter. Prior to seeding, the area was fumigated with methyl bromide, tilled, smoothed, and fertilized with 1.5 lbs P<sub>2</sub>O<sub>5</sub>/1000 ft<sup>2</sup>. The area was seeded with 1 lb/1000 ft<sup>2</sup> of 'Providence' creeping bentgrass or 6 lbs/1000 ft<sup>2</sup> of 'Bonanza II' tall fescue. The area was irrigated to encourage establishment and thereafter to prevent stress. Seedling emergence was defined as fifty percent of the desired species had emerged on each untreated plot. Emergence for both species was 23 May 2000 and 1 June 2001. Four weeks after emergence, 1.5 lbs P<sub>2</sub>O<sub>5</sub>/1000 ft<sup>2</sup> was applied. Herbicide treatments consisted of Dimension 1EC applied at 0.25 lbs ai/A and 0.50 lbs ai/A 0, 3, 7, 10, 14, 17, 21, 24, and 28 days after emergence (DAE). Percent cover was visually estimated weekly up to 49 DAE. Table 1 lists seeding and application dates.

### Results

- In 2000, Dimension 1EC at 0.25 lb ai/A was less damaging to creeping bentgrass than the 0.50 lb ai/A rate (Table 2).
- In 2000, Dimension 1EC provided commercially acceptable creeping bentgrass when applied 10 DAE at 0.25 lb ai/A or 21 DAE at 0.50 lb ai/A.
- Dimension 1EC applied 17 DAE or later provided acceptable creeping bentgrass cover in 2001, regardless of rate (Table 3).
- Creeping bentgrass recovered from early Dimension 1EC applications. If high weed pressure is expected, more aggressive applications 7 DAE at 0.25 lb ai/A or 0.50 lb ai/A could be used.
- The 0.25 lb ai/A provided overall better tall fescue cover throughout 2000 and 2001 compared to 0.50 lbs ai/A (Table 4 and 5).
- During 2000 and 2001, tall fescue was tolerant of Dimension 1EC at 0.25 lbs ai/A and 0.50 lb ai/A 17 DAE and 21 DAE, respectively.

**Table 1.** Seeding, seedling emergence, applications, and data recordings of field studies.

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	2000	2001
Seeding date	May 4	May 23
Emergence	May 23	June 1
Applications		
0 DAE	May 23	May 23
3	May 26	June 4
7	May 30	June 8
10	June 2	June 11
14	June 6	June 15
17	June 9	June 18
21	June 13	June 22
24	June 16	June 25
28	June 20	June 29
Data recording		
21	June 13	June 22
35	June 27	July 6
49	July 11	July 20

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**Table 2.** Effects of Dimension 1EC on ‘Providence’ creeping bentgrass cover applied shortly after emergence during 2000 field studies.

Timing (DAE)	21 DAE			35 DAE			49 DAE		
	Rate			Rate			Rate		
	0.25	0.50	mean	0.25	0.50	mean	0.25	0.50	mean
	% cover <sup>a</sup>								
0	57	18	36	87	59	74	92	60	78
3	45	32	38	85	79	82	83	75	79
7	75	40	58	83	65	75	83	68	76
10	96	86	91	98	88	94	99	95	98
14	96	98	97	96	92	94	97	92	95
17				98	95	97	98	91	95
21				100	98	99	100	95	99
24				100	100	100	98	100	99
28				100	100	100	99	100	100
Mean	74	55		96	90		96	90	
Untreated check	100			100			100		
Anova									
Rate (R)	**			**			**		
Date (D)	**			**			**		
R*D	**			**			**		

<sup>a</sup> Backtransformed means from arcsin transformations of original data.

**Table 3.** Effects of Dimension 1EC on ‘Providence’ creeping bentgrass cover applied shortly after emergence during 2001 field studies.

Timing (DAE)	21 DAE			35 DAE			49 DAE		
	Rate			Rate			Rate		
	0.25	0.50	mean	0.25	0.50	mean	0.25	0.50	mean
	% cover <sup>a</sup>								
0	3	2	2	13	11	12	26	24	25
3	3	0	1	14	6	10	21	15	18
7	47	41	44	72	58	65	92	86	89
10	70	48	59	86	61	75	97	84	92
14	55	65	60	77	76	76	95	95	95
17				89	88	88	97	97	97
21				93	81	88	98	96	97
24				90	90	90	99	98	99
28				93	94	93	98	99	99
Mean	36	31		72	64		96	90	
Untreated check		67			91			98	
Anova									
Rate (R)		NS			NS			NS	
Date (D)		**			**			**	
R*D		NS			NS			NS	

<sup>a</sup> Backtransformed means from arcsin transformations of original data.

**Table 4.** Effects of Dimension 1EC on ‘Bonanza II’ tall fescue cover applied shortly after emergence to during 2000 field studies.

Timing (DAE)	21 DAE			35 DAE			49 DAE		
	Rate			Rate			Rate		
	0.25	0.50	mean	0.25	0.50	mean	0.25	0.50	mean
	% cover <sup>a</sup>								
0	57	48	53	86	81	84	86	81	83
3	67	45	56	89	73	82	90	75	83
7	82	70	77	90	83	86	89	78	84
10	90	87	89	96	88	93	98	89	94
14	95	92	94	92	83	88	90	74	83
17				97	96	97	94	94	94
21				99	98	99	99	95	98
24				100	99	99	99	97	98
28				100	100	100	98	98	98
Mean	78	68		95	92		95	98	
Untreated check		98			100			100	
Anova									
Rate (R)		**			**			**	
Date (D)		**			**			**	
R*D		NS			NS			NS	

<sup>a</sup> Backtransformed means from arcsin transformations of original data.

**Table 5.** Effects of Dimension 1EC on ‘Bonanza II’ tall fescue cover applied shortly after emergence to during 2001 field studies.

Timing (DAE)	21 DAE			35 DAE			49 DAE		
	Rate			Rate			Rate		
	0.25	0.50	mean	0.25	0.50	mean	0.25	0.50	mean
	% cover <sup>a</sup>								
0	5	2	4	8	3	5	25	10	17
3	6	4	5	8	4	6	33	9	19
7	37	25	30	38	25	31	77	55	66
10	55	31	43	52	18	34	80	57	69
14	63	52	58	66	38	52	85	62	74
17				76	78	78	96	95	96
21				93	89	91	99	95	97
24				91	78	85	100	93	98
28				92	91	92	99	97	98
Mean	33	23		59	46		95	88	
Untreated check		64			91			100	
Anova									
Rate (R)		*			**			**	
Date (D)		**			**			**	
R*D		NS			NS			NS	

<sup>a</sup> Backtransformed means from arcsin transformations of original data.