

Safety of Dimension 1EC on Seedling Turf - 2000 and 2001 Results

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Objective

To determine timing of Dimension 1EC applications in order to ensure safety of creeping bentgrass and tall fescue while minimizing 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 has promise in 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 applications after the second mowing of seedling turf. Initial Purdue research suggests that Dimension 1EC can be applied as early as 10 days after emergence (DAE) with no damage to desired species.

How It Was Done

The studies were established at Purdue University William H. Daniel Turfgrass Research and Diagnostic Center during 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 P₂O₅/1000 ft². The area was seeded with 1 lb/1000 ft² of 'Providence' creeping bentgrass or 6 lbs/1000 ft² of 'Bonanza II' tall fescue. The area was irrigated to encourage establishment and to prevent stress thereafter. Seedling emergence was defined as fifty percent of the desired species had emerged on each untreated plot. Emergence for both species was May 23, 2000 and June 1, 2001. Four weeks after emergence, 1.5 lbs P₂O₅/1000 ft² was applied. Herbicide treatments consisted of two rates, 0.25 lb ai/A and 0.50 lbs ai/A. Applications were made 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 3 lists seeding and application dates.

Results

- On creeping bentgrass, Dimension at 0.25 lbs ai/A was safe to apply at 21 DAE in 2000 and 10 DAE in 2001.
- Dimension 1EC at 0.5 lbs ai/A was safe to apply to creeping bentgrass at 24 DAE in 2000 and 10 DAE in 2001.
- Though early applications of Dimension 1EC caused damage to the creeping bentgrass seedlings, the stoloniferous growth habit allowed almost full recovery by the end of the study.
- On tall fescue, Dimension 1EC at 0.25 lbs ai/A was safe at 21 DAE in 2000 and 2001.
- Dimension 1EC at 0.5 lbs ai/A was safe at 28 DAE in 2000 and 2001.
- Since tall fescue is not a spreading grass, damage caused by Dimension 1EC did not recover by the end of the study

- Dimension 1EC has good margin of safety for annual grassy weed control in creeping bentgrass and tall fescue seedlings.

Table 1. Data of seeding, seedling emergence, applications, and data recordings of field study.

	Tall fescue		Creeping Bentgrass	
	2000	2001	2000	2001
Seeding date	4 May	23 May	4 May	23 May
Emergence	23 May	1 June	23 May	1 June
Applications (± 1 day)				
0 DAE	23 May	1 June	23 May	23 May
3	26 May	4 June	26 May	4 June
7	30 May	8 June	30 May	8 June
10	2 June	11 June	2 June	11 June
14	6 June	15 June	6 June	15 June
17	9 June	18 June	9 June	18 June
21	13 June	22 June	13 June	22 June
24	16 June	25 June	16 June	25 June
28	20 June	29 June	20 June	29 June
Data recording (± 1 day)				
14 DAE	6 June	15 June	6 June	15 June
21	13 June	22 June	13 June	22 June
28	20 June	29 June	20 June	29 June
35	27 June	6 July	27 June	6 July
42	4 July	13 July	4 July	13 July
49	11 July	20 July	11 July	20 July

Table 2. Percent cover of creeping bentgrass treated with Dimension 1EC after seeding in 2000.

Timing (DAE)	14 DAE		21 DAE		28 DAE		35 DAE		42 DAE		49 DAE	
	Rate		Rate		Rate		Rate		Rate		Rate	
	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5
0	53	26	57	18	69	25	87	59	96	81	92	60
3	45	40	45	32	62	37	85	79	95	85	83	75
7	74	65	75	40	75	38	83	65	95	85	83	68
10	92	95	96	86	95	82	98	88	100	97	99	95
14			96	98	95	92	96	92	100	96	97	92
17			98	99	97	96	98	95	100	98	98	91
21					99	97	100	98	100	100	100	95
24					99	100	100	100	100	100	98	100
28							100	100	100	100	99	100
Check		95		100		99		100		100		100

***Bold** denotes significant difference compared to check.

Table 3. Percent cover of creeping bentgrass treated with Dimension 1EC after seeding in 2001.

Timing (DAE)	14 DAE		21 DAE		28 DAE		35 DAE		42 DAE		49 DAE	
	Rate		Rate		Rate		Rate		Rate		Rate	
	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5
0	1	1	3	2	8	6	13	11	27	15	26	24
3	10	8	3	0	6	5	14	6	22	9	21	15
7	42	50	47	41	70	63	72	58	95	83	92	86
10	45	48	70	48	83	61	86	61	96	84	97	84
14			55	65	76	75	77	76	95	95	95	95
17			75	75	88	87	89	88	99	97	97	97
21					90	82	93	81	97	94	98	96
24					94	89	90	90	100	96	99	98
28							93	94	97	100	98	99
Check		48		67		87		91		99		98

***Bold** denotes significant difference compared to check.

Table 4. Percent cover of tall fescue treated with Dimension 1EC after seeding in 2000.

Timing (DAE)	14 DAE		21 DAE		28 DAE		35 DAE		42 DAE		49 DAE	
	Rate		Rate		Rate		Rate		Rate		Rate	
	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5
0	47	45	57	48	70	62	86	81	92	86	86	81
3	52	45	67	45	75	61	89	73	92	83	90	75
7	67	65	82	70	85	70	90	83	93	89	89	78
10	73	73	90	87	92	84	96	88	97	91	98	89
14			95	92	90	86	92	83	94	85	90	74
17			97	97	97	96	97	96	99	96	94	94
21					99	98	99	98	99	98	99	95
24					99	98	100	99	100	98	99	97
28							100	100	99	100	98	98
Check	75		98		98		100		100		100	

***Bold** denotes significant difference compared to check.

Table 5. Percent cover of tall fescue treated with Dimension 1EC after seeding in 2001.

Timing (DAE)	14 DAE		21 DAE		28 DAE		35 DAE		42 DAE		49 DAE	
	Rate		Rate		Rate		Rate		Rate		Rate	
	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5
0	4	1	5	2	5	1	8	3	18	7	25	10
3	8	8	6	4	4	3	8	4	24	6	33	9
7	28	43	37	25	37	23	38	25	57	33	77	55
10	43	30	55	31	54	28	52	18	69	33	80	57
14			63	52	68	48	66	38	75	46	85	62
17			75	77	76	88	76	78	89	86	96	95
21					89	89	93	89	98	91	99	95
24					91	87	91	78	96	86	100	93
28							92	91	98	98	99	97
Check	34		64		88		91		100		100	

***Bold** denotes significant difference compared to check.