

# Effects of Trinexapac Ethyl (Primo) on Perennial Ryegrass Seedlings - 1996

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The effects of the growth regulator, trinexapac ethyl, were evaluated on the establishment and early growth of seedling perennial ryegrass. This study was conducted at the Iowa State University Horticulture Research Station north of Ames, Iowa. The experimental plot was an area where Kentucky bluegrass sod was cut. The soil in this plot was a Nicollet (fine-loamy, mixed, mesic Aquic Hapludoll) with 2.8% organic matter, a pH of 6.9, 5 ppm P, and 71 ppm K.

The experiment was designed as a randomized complete block. There were three replications with 5 x 5 ft individual plots laid out a single row measuring 90 x 5 ft. Primo IEC was applied at the same rate five different times throughout the growth and establishment of the ryegrass. All Primo applications were made at 1.0 oz/1000 ft<sup>2</sup>, the requested rate for perennial ryegrass. Treatments included an application of Primo at seeding, 1 week after seeding (1 WAS), and subsequent treatments at 2, 3, and 4 weeks after seeding. An untreated control was included for comparisons (Table 1).

To prepare the plot for seeding, it was sprayed with Roundup, tilled and raked. Phosphorous was applied at 1 lb P<sub>2</sub>O<sub>4</sub>/1000 ft<sup>2</sup> and nitrogen was applied at 1/2 lb/1000 ft<sup>2</sup> prior to seeding. Perennial ryegrass was seeded at 4 lbs/1000 ft<sup>2</sup>. A PAR 3 ryegrass blend from D & K Products, Des Moines, IA was used. It contained 33.6% Palmer II, 33.6% Prelude II, and 28.8% Repell II. The origin of these cultivars was Oregon and the germination was rated at 90%. It was tested 1/96 and was lot 40024-1. Seeding was performed on June 26, 1996. Following seeding, the plot was rolled and watered. Supplemental irrigation was employed to keep the plot moist for good germination.

Ryegrass emergence was observed on July 3. On this same date the 1 WAS treatment was made. Rainfall occurred on July 7 (Table 2). The 2 WAS application was made on July 10, the 3 WAS on July 19, the 4 WAS on July 25 (delayed because of adverse weather and 1996 Turfgrass Field Day).

The initial fresh clipping weight, visual quality, and percent ryegrass cover data were taken on July 30. Subsequent data were taken on August 8, August 23, and September 5. Visual quality was assessed using a 9 to 1 scale: 9 = best quality, 6 = lowest acceptable quality, and 1 = poorest quality (Table 1). Clipping weights were measured as grams fresh tissue (Table 2). Mowing height for collecting clippings was 2 inches. Ryegrass cover was determined by a visual estimation of the percentage of ryegrass cover in each plot (Table 3).

Data were analyzed using the Statistical Analysis System (SAS) version 6.09 and the Analysis of Variance (ANOVA) procedure. Means were compared with the Fisher's Least Significant Difference (LSD) test.

Primo had no detrimental effects on either quality (Table 1) or percentage cover (Table 3) of perennial ryegrass. There were no significant reductions in growth of the seedling ryegrass (Table 2) although the 4 WAS treatment did numerically reduce clipping weights from 137 g in the control to 93 g in the treated plots.

**Table 1.** Visual quality<sup>1</sup> of perennial ryegrass treated with Primo 1EC in the 1996 Primo Seedling study.

Materials	July 30	August 8	August 23	September 5	Mean Quality
1. Untreated control	8	8	7	7	7.5
2. Primo 1EC at seeding	8	8	7	7	7.5
3. Primo 1EC 1 WAS <sup>2</sup>	8	8	7	7	7.5
4. Primo 1EC 2 WAS <sup>2</sup>	8	8	7	7	7.5
5. Primo 1EC 3 WAS <sup>2</sup>	8	8	7	7	7.5
6. Primo 1EC 4 WAS <sup>2</sup>	8	8	7	7	7.5
LSD <sub>0.05</sub>	NS	NS	NS	NS	NS

<sup>1</sup> Visual quality was assessed using a 9 to 1 scale: 9 = best quality, 6 = lowest acceptable quality, and 1 = poorest quality.

<sup>2</sup> WAS = weeks after seeding.

Perennial ryegrass was seeded and treatment 2 was applied on June 26, treatment 3 on July 3, treatment 4 on July 10, treatment 5 on July 19, and treatment 6 on July 25, 1996.

NS = means are not significantly different at the 0.05 level.

**Table 2.** Clipping weights<sup>1</sup> of perennial ryegrass treated with Primo 1EC in the 1996 Primo Seedling study.

Materials	July 30	August 8	September 5	Mean Weight	Total Weight
grams fresh tissue					
1. Untreated control	27	6	74	46	137
2. Primo 1EC at seeding	31	40	74	48	145
3. Primo 1EC 1 WAS <sup>2</sup>	31	35	70	46	137
4. Primo 1EC 2 WAS <sup>2</sup>	24	34	78	45	135
5. Primo 1EC 3 WAS <sup>2</sup>	34	34	53	40	121
6. Primo 1EC 4 WAS <sup>2</sup>	31	15	47	31	93
LSD <sub>0.05</sub>	NS	NS	NS	NS	NS

<sup>1</sup> Clipping weights are expressed as grams fresh tissue.

<sup>2</sup> WAS = weeks after seeding.

Perennial ryegrass was seeded and treatment 2 was applied on June 26, treatment 3 on July 3, treatment 4 on July 10, treatment 5 on July 19, and treatment 6 on July 25, 1996.

NS = means are not significantly different at the 0.05 level.

**Table 3.** Percentage of perennial ryegrass cover in plots treated with Primo 1EC in the 1996 Primo Seedling study.

Materials	July	August	August	September	Mean ryegrass cover
	30	8	23	5 <sup>1</sup>	
% cover					
1. Untreated control	80	83	90	83	84
2. Primo 1EC at seeding	80	83	90	92	86
3. Primo 1EC 1 WAS <sup>2</sup>	80	85	90	83	85
4. Primo 1EC 2 WAS <sup>2</sup>	80	82	90	77	82
5. Primo 1EC 3 WAS <sup>2</sup>	80	87	90	90	87
6. Primo 1EC 4 WAS <sup>2</sup>	80	85	90	92	87
LSD <sub>0.05</sub>	NS	NS	NS	NS	NS

<sup>1</sup> Differences in ryegrass cover are attributable to the percentage of weed cover.

<sup>2</sup> WAS = weeks after seeding.

Perennial ryegrass was seeded and treatment 2 was applied on June 26, treatment 3 on July 3, treatment 4 on July 10, treatment 5 on July 19, and treatment 6 on July 25, 1996.

NS = means are not significantly different at the 0.05 level.