

Evaluation of Palisade on Fifteen Kentucky Bluegrass Varieties Grown for Seed in Central Oregon, 2007-2008

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Abstract

The growth regulator, Palisade™ (Trinexapac-ethyl), was evaluated on 15 Kentucky bluegrass (*Poa pratensis*) varieties grown for seed at the Central Oregon Agricultural Research Center. The influence of Palisade on seed yield, plant height, and lodging were documented. Treatments were applied at the boot stage and varieties were harvested based on maturity. Seed yields were significantly increased for 7 of the 15 varieties and decreased for 1. Application of Palisade almost uniformly decreased lodging, while reduction in plant height was less consistent.

Introduction

Research to evaluate Palisade on Kentucky bluegrass was conducted in commercial seed fields of ‘Merit’ or ‘Geronimo’ from 1999 to 2003. Yields were increased by 31 to 36 percent 4 of the 5 years when Palisade was applied at 22 oz/acre from the second node (Feekes 7) to heads just becoming visible (Feekes 10.1). Late application when the heads extended just above the flag leaf (Feekes 10.4) produced the greatest reduction in plant size, while plants tended to outgrow the effect of earlier Palisade applications. No differences between treatments in weight per 1,000 seeds were observed, and percent germination was not adversely affected.

Methods and Materials

This research was conducted at the Central Oregon Agricultural Research Center (COARC) near Madras. A split-plot design was used, with 10-ft by 60-ft main plots and 3 10-ft by 20-ft subplots. Subplots were randomized and included Palisade, Beacon® (primisulfuron), and an untreated check. Main plots were replicated four times in a randomized complete block design. Palisade was applied at 24 oz/acre on May 14 when most varieties were in the boot stage. The exceptions were the early maturing varieties ‘Volt’ and ‘Shamrock’, where the heads were starting to appear.

Application was made with a CO₂-pressurized, hand-held boom sprayer at 40 psi and 20 gal/acre water using TeeJet 8002 nozzles. Plant height was measured on June 20 and percent lodging was estimated on July 2. A research-sized swather was used to harvest a 40-inch by 17-ft portion of each Kentucky bluegrass plot as varieties matured from July 5 to July 10. Samples were placed in large burlap bags and hung in the equipment shed to dry, then combined by hand-feeding the samples into a stationery Hege small-plot combine. Seed samples were transported to the Hyslop Farm near Corvallis where they were debarbed, run through a small scale clipper cleaner, and clean seed weight was determined.

Results and Discussion

Seed yield (Table 1) was significantly increased for 7 varieties by as much as 35 percent for ‘A01-299’ and 32 percent for ‘Atlantis’. Yield was decreased by 18 percent for ‘A00-891’, while there was no significant change for 7 varieties. Lodging was significantly reduced for 14 of the 15 varieties, with ‘Bariris’ showing no change. Results were mixed concerning plant height, with 11 varieties shorter by as much as 15 percent following Palisade application and 4 varieties taller by as much as 6 percent. These mixed results are likely the results of plants outgrowing the effect of Palisade by the time height measurements were taken.

Table 1. Effect of Palisade growth regulator on seed yield, lodging, and plant height for 15 Kentucky bluegrass varieties, Madras, Oregon, 2008.

Variety	Clean seed yield (lb/acre)				Lodging (%)		Plant ht (in)	
	Check	Palisade	% Check	Signif.	Check	Palisade	Check	Palisade
Atlantis	1287	1696	132	*** ¹	78	36	29.00	30.25
Merit	1660	1860	112	*	53	3	26.75	23.75
Rhapsody	1051	1040	99	ns	48	0	25.25	22.25
Valor	972	1029	106	ns	56	0	23.75	20.25
Bariris	827	1066	129	**	100	92	27.00	28.50
Crest	1593	1664	104	ns	63	7	26.50	25.25
Monte Carlo	1095	1015	93	ns	37	0	26.00	22.25
Shamrock	1581	2031	128	***	79	46	29.25	27.25
A00-891	1955	1595	82	***	81	23	25.25	24.00
A00-1400	957	1235	129	**	93	60	24.75	25.25
Bandera	1335	1299	97	ns	28	1	26.75	24.25
Bordeaux	1290	1527	118	**	95	21	26.25	27.00
Volt	1473	1457	99	ns	79	43	26.75	26.50
Zinfandel	1007	1006	100	ns	40	0	25.00	22.50
A01-299	912	1228	135	***	78	21	27.25	27.00

¹ Comparison with paired t-test: ns = non-significant, * for $P = 0.10$, ** for $P = 0.05$, *** for $P = 0.01$