

Field Evaluation Of ReTain And Palisade For Rough Bluegrass Shatter Control In Central Oregon, 2004

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Abstract

Growth regulators Palisade and ReTain were evaluated for shatter prevention in “Laser” rough bluegrass (*Poa trivialis*) near Madras, Oregon. Both products were applied alone at three rates, and in combination. Palisade at 1.5 and 2.1 pt/acre significantly increased seed yields compared to the untreated check, while ReTain did not.

Introduction

Seed shatter is one of the major causes of low and unpredictable yields in grasses and may decrease yields by 30 or more. Decreasing shatter losses would increase efficiency and profitability of grass seed production, and reduce volunteer plants in fields. Furthermore, decreasing shatter would facilitate production of native range grasses, an alternative crop for grass seed growers. Blocking ethylene action could arrest abscission layer development and keep the seed attached to the plant. Perennial ryegrass (*Lolium perenne*), bottlebrush squirreltail (*Elymus elymoides*), and rough bluegrass (*Poa trivialis*) differ in localization of the abscission layer. These three species were chosen for this cooperative project with Tom Chastain. Greenhouse research was conducted with all three species from 2001 through 2003, with one field evaluation conducted on perennial ryegrass during 2002.

Methods and Materials

The growth regulators ReTain and Palisade were each applied at three rates to 10 ft x 25 ft plots in a commercial field of ‘Laser’ rough bluegrass near Madras, Oregon. ReTain is used by fruit growers to prevent apples and pears from falling from trees prior to harvest. Palisade has been used by grass seed growers to increase yields, possibly due in part to reduced shatter.

Plots were replicated four times in a randomized complete block design. Palisade was applied at 1.5, 2.1 and 2.8 pt/acre on May 12 when heads were first visible. ReTain was applied 200, 300 and 400 ppm June 23 at full inflorescence and at 300 ppm July 13 just prior to swathing. A combination of Palisade at 2.1 pt/acre and ReTain at 300 ppm was applied at full inflorescence.

Treatments were applied with a CO₂-pressurized, hand-held boom sprayer at 40 psi and 20 gal/acre water using TeeJet 8002 nozzles. Prior to harvest, a Jari mower was used to cut three-foot alleyways across the front and back of each row of plots. A research-sized swather was used to harvest a 3.3 ft by 22-foot portion of each plot on July 13. Samples were placed in large burlap bags and hung in an equipment shed to dry, then transported to Corvallis for threshing with a Hege 180 combine at the OSU Crop and Soil Science’s Hyslop Farm. Thousand seed counts were conducted at the seed-conditioning lab with the National Forage Seed Production

Research Center in Corvallis, and germination testing was done at the Central Oregon Agricultural Research Center near Madras.

Results and Discussion

Palisade at 1.5 and 2.1 pt/acre significantly increased seed yields compared to the untreated check (Table 1). Yield increases of 20 percent were obtained, similar to previous research evaluating Palisade on rough bluegrass in central Oregon. ReTain did not significantly increase yields compared to the untreated check. There was no change in effectiveness when ReTain was applied just prior to swathing. A combination of Palisade at 2.1 pt plus ReTain at 300 ppm produced a 25 percent increase in seed yield. Unless there is a synergism between the two products, one would expect that the yield increase was the result of the Palisade with little effect from the ReTain.

Table 1. Effect of Palisade and ReTain on yields of rough bluegrass, near Madras, Oregon, 2004.

Treatment	Rate/acre	Timing	Yield	Percent check	Weight/1000 seed	Percent germination
			----lb/a----	----%----	----g----	----%----
Palisade	1.5 pt	Heads 1 st visible	1124 ab ¹	120	.2054	96
Palisade	2.1 pt	Heads 1 st visible	1130 ab	120	.2025	94
Palisade	2.8 pt	Heads 1 st visible	1022 abc	109	.2060	95
ReTain	400 ppm	Full inflorescence	1013 abc	108	.1972	89
ReTain	200 ppm	Full inflorescence	1003 abc	107	.1980	90
ReTain	300 ppm	Full inflorescence	873 c	93	.2003	95
ReTain	300 ppm	Swathing	983 abc	105	.2022	95
Palisade + ReTain	2.1 pt + 300 ppm	Heads 1 st visible Full inflorescence	1174 a	125	.2033	92
Untreated	----	----	938 bc	100	.2033	91
					NS	NS

¹Mean separation with Least Significant Difference (LSD) $P \leq 0.05$.