

EVALUATION OF PALISADE ON KENTUCKY BLUEGRASS, 2000

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Abstract

The growth regulator, Palisade (Novartis) was evaluated on a commercial Kentucky bluegrass seed field (var. 'Geronimo') near Madras, Oregon. Palisade at 11 oz/acre, 22 oz/acre and 33 oz/acre was applied at each of the following growth stages: when one to two nodes were detectable (Feekes 7), when the heads were just emerging (Feekes 10.1), and when heads extended just above the flag leaf (Feekes 10.4). Yields were increased by 36 percent by Palisade applied at 22 oz/acre from detection of the first and second node (Feekes 7) to when the head just becomes visible (Feekes 10.1) compared to untreated plots. Increasing the rate of Palisade increasingly reduced plant height and lodging. 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. There were no differences between treatments in weight per 1,000 seeds. Percent germination for Palisade-treated plots was equal to or better than the untreated plots.

Introduction

Research evaluating Palisade on ryegrass in the Willamette Valley from 1997 to 1999 indicates reduced lodging and increased yields with application of the growth regulator. Although lodging is not often a problem in Kentucky bluegrass grown in central Oregon, a cost-effective method of increasing yields would generate interest in the industry for Palisade. First-year research using Palisade on Kentucky bluegrass during 1999 provided promising increases in yield.

Methods and Materials

Plots 10 ft x 25 ft were replicated four times in a randomized complete block design in a commercial 'Geronimo' Kentucky bluegrass field near Madras, Oregon. The first treatment of Palisade was applied at 11 oz/acre, 22 oz/acre and 33 oz/acre to plots on April 26 at Feekes 7, when one to two nodes were detectable. A second set of plots was treated at the three rates on May 10 at Feekes 10.1, when the head was just becoming visible. The late treatments were applied May 22 at Feekes 10.4, when heads extended just above the flag leaf. Treatments were applied with a CO₂-pressurized, hand-held boom sprayer at 40 psi and 20 gal/acre water using TeeJet 8002 nozzles. Plots were evaluated for plant height on May 26, June 12, and June 29. No lodging had occurred by May 12, but lodging was evaluated on June 12 and June 29.

Prior to harvest, a Jari mower was used to cut 3-foot alleyways across the front and back of each row of plots. A 3-ft. by 22-ft. portion of each plot was harvested with a swather June 29. Samples were placed in large bags and hung in an equipment shed to dry, and then transported to Corvallis, Oregon, for combining with a Hege 180 at the Hyslop Farm. The seed was cleaned at the Hyslop Farm by Tom Silberstein. Thousand seed counts were conducted using the seed-conditioning lab at the National Forage Seed Production Research Center, Corvallis, Oregon, and

germination testing was done on the Central Oregon Agricultural Research Center, Madras, Oregon.

Results and Discussion

Yields were increased 36 percent by Palisade applied at 22 oz/acre from detection of the first and second node (Feekes 7) to when the head just becomes visible (Feekes 10.1) compared to untreated plots. Palisade at 33 oz/acre did not increase yields over the 22 oz/acre rate for any of the three application timings. On the early application date (Feekes 7) the 22 oz/acre rate significantly increased yields over the 11 oz/acre rates, as well as the untreated plots.

Increasing the rate of Palisade application increasingly reduced plant height and lodging. The late application, when the heads extended just above the flag leaf (Feekes 10.4), produced the greatest reduction in plant height and lodging. Plants outgrew earlier Palisade applications when the first and second nodes were detectable (Feekes 7) and the heads were just visible (Feekes 10.1).

There were no significant differences between treatments for weight per 1,000 seeds. There were differences in percent germination, but all Palisade treatments had equal or greater percent germination than the untreated plots.

Table 1. Effect of Palisade growth regulator on plant height and lodging of Kentucky bluegrass, Madras, Oregon, 2000.

| Palisade 250EC | Applic. date | Plant height (inches) | | | | | | Lodging (%) | | | |
|----------------|--------------|-----------------------|------|---------|----|---------|-----|-------------|----|---------|----|
| | | May 26 | | June 12 | | June 29 | | June 12 | | June 29 | |
| 11 oz | 4/26 | 20.3 | Abc1 | 27.8 | bc | 28.8 | abc | 33 | b | 48 | ab |
| 22 oz | 4/26 | 17.3 | d | 26.5 | d | 28.3 | abc | 0 | c | 5 | cd |
| 33 oz | 4/26 | 14.8 | e | 25.0 | e | 27.0 | cd | 0 | c | 0 | d |
| 11 oz | 5/10 | 21.5 | ab | 28.5 | ab | 29.0 | ab | 8 | bc | 30 | bc |
| 22 oz | 5/10 | 18.5 | cd | 27.3 | cd | 28.3 | abc | 5 | c | 18 | cd |
| 33 oz | 5/10 | 16.8 | d | 26.3 | d | 27.5 | bc | 1 | c | 0 | d |
| 11 oz | 5/22 | 21.5 | ab | 26.8 | cd | 28.3 | abc | 3 | c | 6 | cd |
| 22 oz | 5/22 | 20.5 | ab | 24.5 | e | 25.5 | de | 0 | c | 0 | d |
| 33 oz | 5/22 | 20.0 | bc | 22.8 | f | 23.8 | e | 1 | c | 0 | d |
| Untreated | | 22.0 | a | 29.3 | a | 29.8 | a | 63 | a | 65 | a |

¹Mean separation with less significant difference $P < 0.05$.

Table 2. Effect of Palisade growth regulator on yield, thousand seed weight, and percent germination of Kentucky bluegrass, Madras, Oregon, 2000.

| Palisade 250EC | Applic. date | Seed Yield | | | | Above-ground biomass (T/A) | | 1,000 Seed weight (g) | Germination (%) | |
|----------------|--------------|------------|-----|------------|-----|----------------------------|----------|-----------------------|-----------------|----|
| | | pounds/A | | % of check | | | | | | |
| 11 oz | 4/26 | 2,140 | Ab | 108 | ab | 3.8 4.1 | ab b | 0.438 | 93.5 | c |
| 22 oz | 4/26 | 2,708 | c | 136 | c | 3.7 4.2 | b ab | 0.432 | 90.3 | bc |
| 33 oz | 4/26 | 2,617 | bc | 132 | ab | 4.5 4.6 | ab a | 0.430 | 90.0 | bc |
| 11 oz | 5/10 | 2,214 | abc | 111 | abc | 4.0 4.1 | ab ab | 0.440 | 87.7 | bc |
| 22 oz | 5/10 | 2,713 | c | 136 | c | 4.1 4.1 | ab ab | 0.431 | 87.5 | bc |
| 33 oz | 5/10 | 2,221 | abc | 112 | abc | | | 0.437 | 85.7 | bc |
| 11 oz | 5/22 | 2,482 | abc | 125 | abc | | | 0.426 | 85.4 | bc |
| 22 oz | 5/22 | 2,377 | abc | 120 | abc | | | 0.430 | 82.2 | ab |
| 33 oz | 5/22 | 2,362 | abc | 119 | abc | | | 0.436 | 81.0 | ab |
| Untreated | | 1,989 | a | 100 | a | | | 0.431 | 76.2 | a |
| | | | | | | | | NS | | |

Mean separation with significant difference $P < 0.05$.