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Buffalograss Tolerance to Post-Emergence Herbicides in the Intermountain West

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Buffalograss [*Buchloe dactyloides* (Nutt.) Engelman] is a warm-season turfgrass native to the Great Plains region of the United States, but is also grown in the Intermountain West. In northern Utah, buffalograss can be an alternative to the predominant cool-season grasses for low-maintenance applications, especially because of its lower irrigation requirements. However, a limitation of growing buffalograss is susceptibility to damage from some post-emergence broadleaf herbicides, particularly those containing 2,4-dichlorophenoxyacetic acid (2,4-D).

Post-emergence herbicides containing 2,4-D, used alone and in combination, caused unacceptable turf quality on 'Oasis' and 'Prairie' buffalograss in Florida (1). In Kansas, plant injury on buffalograss seedlings was observed after applications of 2,4-D, and other herbicides (2). These studies help create a perception among turf managers to avoid 2,4-D for weed control in buffalograss. The objective of this study was to determine tolerance of buffalograss to post-emergence broadleaf herbicides in the Intermountain West.

The experiment was conducted on five-year old 'Cody' buffalograss at the Utah State University Greenville Research Farm in North Logan, Utah. All herbicide treatments were applied at the highest label rate and included Trimec Classic [dimethylamine salt of 2,4-D (25.93%), dimethylamine salt of mecoprop-p acid (6.93%), dimethylamine salt of dicamba acid (2.76%)] at 1.5 oz/1000 ft², Speedzone [carfentrazone-ethyl (0.62%), 2-ethylhexyl ester of 2,4-D (28.57%), mecoprop-p acid (5.88%), dicamba acid (1.71%)] at 1.5 oz/1000 ft², and Gordon's Amine 400 [dimethylamine salt of 2,4-D (46.4%)] at 1.5 oz/1000 ft². Surge [sulfentrazone (0.67%), dimethyamine salt of 2,4-D (18.79%), dimethyamine salt of mecoprop-p acid (6.80%), dimethylamine salt of dicamba acid (3.02%)], which contains 2,4-D but is labeled for use on buffalograss, was applied at 1.2 oz/1000 ft². Confront [triethylamine salt of triclopyr (33.0%), triethylamine salt of clopyralid (12.1%)], which does not contain 2,4-D, was applied at 0.73 oz/1000 ft². A non-treated control was also included.

Two runs of the experiment were performed, initiating on 14 July 2008 and on 11 August 2008. When treatments were applied, temperatures were approximately 63°F on 14 July and 61°F on 11 August, with daytime highs reaching 88°F and 81°F, respectively. Average high and low temperatures during the experiments were 90°F and 58°F for Run 1, and 86°F and 53°F for Run 2. Herbicide phytotoxicity was evaluated 2, 4, 7, 9, 12, and 14 days following herbicide treatment, with visual observations on a scale of 1 to 9, with 9 having the most damage, and 1 having no damage. Our ratings were converted to the traditional 9 to 1 scale with 9 = no damage, 5 = acceptable, and 1 = most damage. Both runs of the experiment were a randomized complete block design, with three replications of 5-ft by 5-ft plots. Turf was mowed at 3 inches prior to application and then not mowed during the evaluation period to accurately evaluate herbicide injury and imitate common management of this species. The plots were fertilized with urea (46-0-0) at 1 lb N per 1000 ft² on 1 June 2008 and again 7 July 2008. The turf was irrigated every 3 to 4 days to replace approximately 70% of reference evapotranspiration (ET_o) as determined by a

Weather Reach controller and an ET 106 weather station. Phytotoxicity data were analyzed with PROC MIXED (SAS Institute Inc., Cary, IN) and means compared using Fisher's protected LSD. Analysis was done as a split-plot design, with run as whole-plots and herbicide treatment as the sub-plots.

Buffalograss in our study tolerated all treatments, and did not exhibit significant damage even though temperatures surpassed 80°F unlike previous recommendations (3). There were no differences in phytotoxicity means due to herbicides on any date during the two-week experiment, and the average ratings of phytotoxicity on all dates ranged from 8.4 (Confront) to 7.6 (Speedzone) (Fig. 1). Minor differences in the experimental runs existed seven and 12 days after treatment, but were small and not agronomically significant. Unlike in the Florida report (1), our nighttime temperatures were cool and may explain the differences between our results and Florida's. Our buffalograss was also well-established unlike in the Kansas report (2) and may explain our differences from their results.

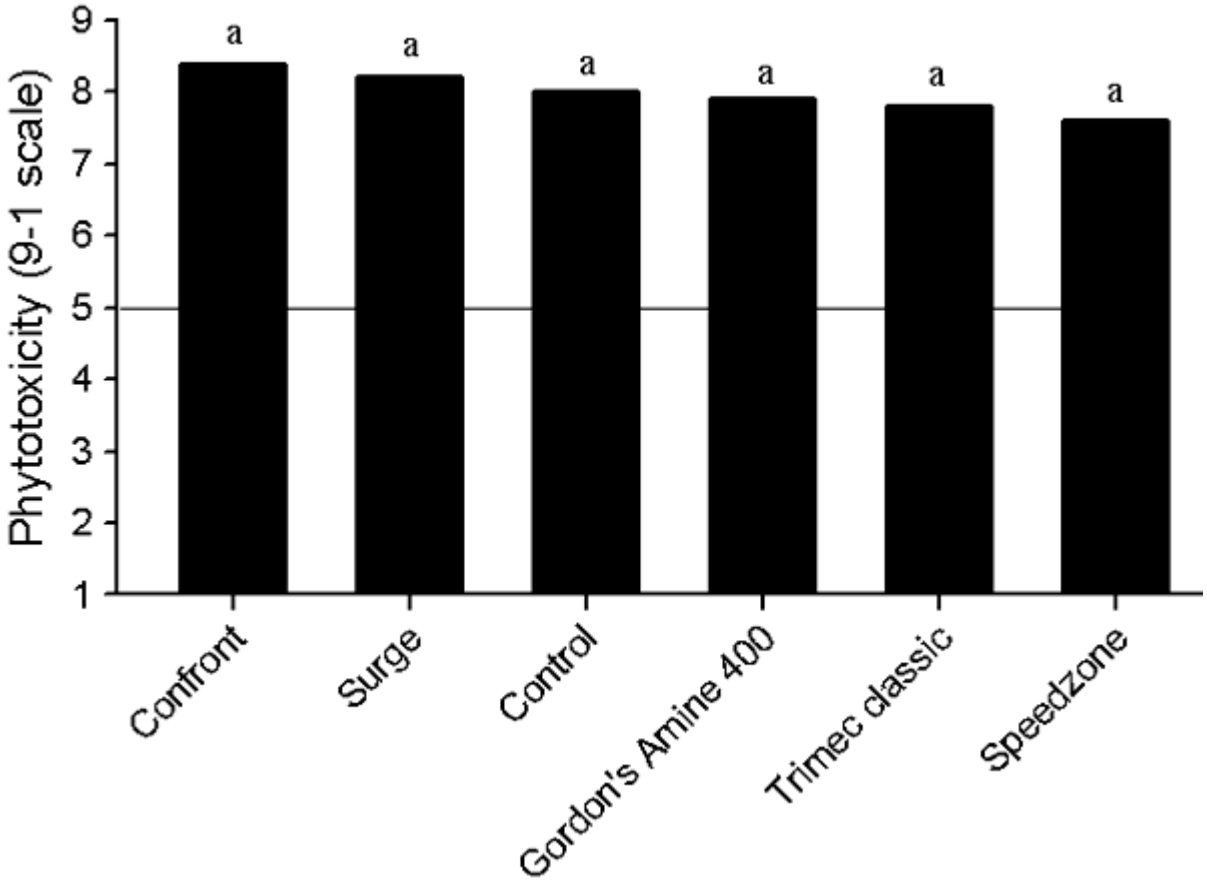

Fig. 1. Phytotoxicity means averaged over six rating dates from two experimental runs following post-emergence herbicide applications to buffalograss. A 9 to 1 rating scale was used with 9 = no damage, 5 = acceptable, and 1 = most damage. Means with the same letter are not different significantly (P = 0.05).

Based on these data, it appears that turf managers have significantly more options for post-emergence weed control in buffalograss, and that sensitivity to 2,4-D is not a significant concern in the Intermountain West, if applied according to the label.

Literature Cited

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