

# Evaluation of Several Herbicides for Efficacy in Post-emergent Control of Cool-Season Annual Weeds in Dormant Bermudagrass Turf

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## Introduction

A common practice on many non-overseeded golf fairways located in the upper South or transitional areas is to apply a non-selective, post-emergent herbicide for winter weed control on dormant bermudagrass turf. Materials commonly used for this purpose include Roundup<sup>®</sup> and Finale<sup>®</sup>. The problem with this practice is determining dormancy of the bermudagrass turf. What appears to be totally dormant grass will often have enough non-dormant leaf tissue present to absorb enough herbicide to cause noticeable damage to the turf, which doesn't become apparent until Spring green-up. This study was conducted to evaluate and compare the performances of 2 formulations of Reward<sup>®</sup> with Roundup and Finale for winter weed control in a dormant 'Tifway' bermudagrass [*Cynodon dactylon* (L.) Pers. X *C. transvaalensis* Burt-Davy] turf.

## Materials and Methods

This study was conducted on a mature, dormant stand of Tifway bermudagrass turf that was contaminated with an even cover of *Poa annua* and other cool-season annual weeds at the Texas A&M University Turfgrass Teaching and Research Field Laboratory in College Station, TX. The area was mown weekly at a height of 1.0 inch and irrigated as needed to prevent wilt.

Treatments were applied using a hand-held CO<sub>2</sub> pressurized plot sprayer. Spray volume was equivalent to 50 gallons per acre with pressure set at 25 psi. Individual plots were 3' X 6' with 3 replications of each treatment arranged according to a randomized complete block design. All treatments and rates are listed on Table 1. All treatments were applied on January 20, 1999. Percent control was estimated by visually assessing the percentage of dead or burned weeds within each plot. Measurements were estimated on 1/22/99, 2 days after treatment (DAT), 1/25/99 (5 DAT), 1/29/99 (9 DAT), 2/4/99 (15 DAT), 2/10/99 (21 DAT) and 3/5/99 (44 DAT).

## Results and Discussion

In this study, Roundup-Pro at both rates offered the best long-term control of *Poa annua* of the products and rates tested (Table 1). The higher rates of the new formulation of Reward and in combination with Reflex<sup>®</sup>, gave good initial control of *Poa annua* but did not offer good long-term control (44 DAT). Better control of annual bluegrass with some products may have been obtained with sequential applications made 2 weeks after the initial application.

Most of the products tested did a fair to adequate job of controlling cool-season annual broadleaf weeds (Table 2.). Reflex by itself and in combination with the new formulation of Reward at the lower rate seems to have given the best control of cool-season annual broadleaf weeds even though there were no statistical differences among the treatments at 44 DAT. For some unexplained reason, the higher rate of Reflex by itself and in combination with the new formulation of Reward did not perform as well in controlling the cool-season broadleaf weeds in this study. The lack of statistical differences is likely due to the fact that only 3 replications of the test were made and inherent differences in plots. Statistical differences aside, Reward (new formulation) + Reflex at the lower rate, Roundup-Pro at 1.00 lbs. ai/A, Finale-Ignite at 1.00 lbs. ai/A, and Reflex at 0.38 lbs. ai/A offered the best control of cool-season annual weeds in dormant bermudagrass turf in this study.

Table 1. Control of *Poa annua* in dormant bermudagrass turf.

Treatment	Rate (lbs. ai/A)	% Control of <i>Poa annua</i> <sup>1</sup>			
		9 DAT	15 DAT	21 DAT	44 DAT
Reward-Old Formulation 2SL	0.50	55.0 a-d	35.0 b-f	23.3 cd	21.7 b-e
Reward-Old Formulation 2SL	1.00	68.3 abc	46.7 a-e	28.3 bcd	10.0 de
Reward-New Formulation 2SL	0.50	41.7 a-e	30.0 c-f	16.7 cd	18.3 b-e
Reward-New Formulation 2SL	1.00	88.3 a	76.7 ab	63.3 b	53.3 b
Reflex 2 SL	0.38	23.3 cde	20.0 def	18.3 cd	13.3 cde
Reflex 2 SL	0.50	16.7 de	15.0 ef	16.7 cd	13.3 cde
Reward-New Formulation + Reflex	0.50 0.38	68.3 abc	41.7 a-f	28.3 bcd	21.7 b-e
Reward-New Formulation + Reflex	0.50 0.50	83.3 ab	75.0 ab	51.7 bc	40.0 bcd
Finale – Ignite	1.00	46.7 a-e	66.7 abc	53.3 bc	46.7 bc
Roundup-Pro	0.50	31.7 cde	83.3 a	98.3 a	88.3 a
Roundup-Pro	1.00	33.3 b-e	58.3 a-d	98.3 a	98.3 a

<sup>1</sup> Average % control of target pest. Means within a column followed by the same letter are not significantly different ( $P \leq 0.05$ , Duncan's MRT)

Table 2. Control of cool-season annual broadleaf weeds in dormant bermudagrass turf.					
Treatment	Rate (lbs. ai/A)	% Control of Cool-season annual broadleaf weeds <sup>1</sup>			
		9 DAT	15 DAT	21 DAT	44 DAT
Reward-Old Formulation 2SL	0.50	73.3 a	70.0 ab	68.3 ab	68.3 a
Reward-Old Formulation 2SL	1.00	98.3 a	96.7 ab	95.0 a	95.0 a
Reward-New Formulation 2SL	0.50	91.7 a	96.7 ab	81.7 ab	80.0 a
Reward-New Formulation 2SL	1.00	90.0 a	91.7 ab	90.0 a	85.0 a
Reflex 2 SL	0.38	88.3 a	91.7 ab	80.0 ab	98.3 a
Reflex 2 SL	0.50	38.3 b	61.7 b	63.3 ab	55.0 a
Reward-New Formulation + Reflex	0.50 0.38	98.3 a	100.0 a	100.0 a	100.0 a
Reward-New Formulation + Reflex	0.50 0.50	85.0 a	85.0 ab	81.7 ab	65.0 a
Finale – Ignite	1.00	93.3 a	98.3 ab	96.7 a	93.3 a
Roundup-Pro	0.50	3.3 c	5.0 c	16.7 c	58.3 a
Roundup-Pro	1.00	3.3 c	8.3 c	40.0 bc	93.3 a

<sup>1</sup> Average % control of target pest. Means within a column followed by the same letter are not significantly different ( $P \leq 0.05$ , Duncan's MRT)

### Conclusions

Though not statistically significant on most rating dates, the new formulation of Reward applied at 1.0 lb. ai/A averaged better control of *Poa annua* in this test. At the lower rate (0.5 lb. ai/A), there appeared to be no difference between the old and new formulations of Reward in controlling *Poa annua* in this study. Both formulations of Reward appeared to be more effective in permanently controlling the broadleaf cool-season weeds in this study and less permanent in controlling *Poa annua*. None of the treatments applied in this study had any significant effects on spring green-up of the Tifway bermudagrass.