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Response of Seashore Paspalum to Postemergence Herbicides

Joseph DeFrank[1] and James Tavares[2]
1Department of Horticulture and 2Cooperative Extension Service–Kahului

Objective

This trial was conducted to evaluate several post-emergence herbicides for safety on established seashore paspalum turf. Seashore paspalum, *Paspalum vagina-tum*, is one of the newer grasses being used for lawns in Hawaii. Little information is available on its response to herbicides available for control of broadleaf weeds in ornamental grass sod.

Materials and methods

The site for this experiment was a production sod farm at the agricultural park on Maui. The soil was fertilized with 21-7-14 (Hydroprills) at a rate of 0.7 lb N/1000 ft^2 in February, 16 days after spraying (DAS).

The seashore paspalum sod was established from stolons and maintained for three years in a manner consistent with commercial landscapes. Herbicide treatments were applied in January with a three-nozzle boom using TeeJet 8004 LP nozzle tips at 16.5 PSI delivering 38 gal/acre. No wetting agent was used.

The herbicides evaluated are used to control broadleaf weeds in ornamental grass sod. The Trimec materials (BPI/Gordon Inc.) contain 2,4-D and require a restricted use applicator license for purchase and use. Neither Turflon Ester nor Confront (DowElanco) are restricted use materials. Trimec Classic currently allows use on seashore paspalum (ornamental lawns and turf), while Trimec Southern does not (use on specific grasses is indicated on the label). Both Turflon Ester and Confront have general labels for use on "ornamental turf" that do not restrict use on seashore paspalum.

Table 1 describes the treatments evaluated and gives amounts of formulated material needed to cover an acre or 1000 ft^2. The treatments were based on rates of application as specified on the product label. In all cases the lower treatment level corresponds to the lower end of the application range described on the label, and the higher level is double the lower rate. The treatments used for this experiment are within the use range found on the product label.

The plot size was 6 x 15 feet, and each treatment was replicated four times. Observations included visual evaluations of turf injury and maximum green color. Turf injury was recorded 6, 14, 21, and 28 DAS. The injury scale (pretransformed) ranged from 0 to 10, with 0 = no visible injury and 10 = complete kill; 3 or greater was considered unacceptable for commercial landscape use. Ratings for maximum green color were recorded at 14, 21, and 28 DAS. The color scale ranged from 0 to 10, with 0 = bleached white and 10 = maximum dark green color; 7 or lower was considered unacceptable for commercial landscape use. Data was subjected to an analysis of variance, and means were separated using Duncan's multiple range test.

Results

Turf injury was noticed 6 DAS with slight but noticeable injury still present 28 DAS on some treatments. Trimec Classic caused early (6 DAS) injury symptoms which had dissipated by the 14 DAS rating (Table 2). Turflon Ester injury also appeared early and persisted until 28 DAS, when only slight injury was noticeable.

Ratings for maximum green color followed a pattern similar to turf injury (Table 3). However, due to low fertility at the start of the experiment, all treatments were below maximum green color at the first rating. Turflon Ester caused the greatest reduction in green color, which reached maximum expression at 14 DAS. The high rate of Trimec

Table 1. Treatments applied to a commercially maintained sod of seashore paspalum.

Treatment	Form	Rate	Amount of product	
		lb a.i./acre	oz/1000 ft^2	oz/acre
Turflon Ester	4 EC	0.5	0.37	16
Turflon Ester	4 EC	1.0	0.73	32
Confront	3 SL	0.37	0.37	16
Confront	3 SL	0.74	0.73	32
Trimec-Southern	4.58 L	1.1	0.73	32
Trimec-Southern	4.58 L	2.2	1.47	64
Trimec-Classic	3.32 L	1.35	1.2	52
Trimec-Classic	3.32 L	2.70	2.4	104
Untreated	—	—	—	—

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Table 2. Visual ratings of turf injury taken at 6, 14, 21 and 28 DAS.

Treatment	Form	Rate (lb a.i./acre)	Turf injury rating[x], days after spraying							
			6		14		21		28	
Turflon Ester	4 EC	0.5	0.8	ab[y]	0.8	ab	1.3	bc	0.3	ab
Turflon Ester	4 EC	1.0	1.0	ab	1.8	a	2.3	a	0.8	a
Confront	3 SL	0.37	0.3	b	1.0	ab	0.5	cd	0.0	b
Confront	3 SL	0.74	0.8	ab	0.5	b	1.5	b	0.8	a
Trimec-Southern	4.58 L	1.1	0.3	b	0.0	b	0.0	d	0.0	b
Trimec-Southern	4.58 L	2.2	1.3	ab	0.3	b	0.5	cd	0.0	b
Trimec-Classic	3.32 L	1.35	0.5	ab	0.5	b	0.5	cd	0.0	b
Trimec-Classic	3.32 L	2.70	1.8	a	0.5	b	1.0	bc	0.0	b
Untreated	—	—	0.0	b	0.0	b	0.0	d	0.0	b

[x]Injury scale ranged from 0 to 10; 0 = no visible injury, 10 = complete kill, 3 or greater is unacceptable for commercial landscape use.
[y]Means within a column followed by the same letter are not significantly different using Duncan's multiple range test at the 1% level.

Table 3. Visual ratings of turf maximum green color taken at 14, 21 and 28 DAS.

Treatment	Form	Rate lb a.i./acre	Turf color rating[x], days after spraying					
			14		21		28	
Turflon Ester	4 EC	0.5	7.0	ab[y]	7.3	de	9.0	c
Turflon Ester	4 EC	1.0	5.5	c	5.8	f	8.0	d
Confront	3 SL	0.37	7.5	ab	8.3	bc	9.3	bc
Confront	3 SL	0.74	6.5	bc	7.0	e	9.0	c
Trimec-Southern	4.58 L	1.1	7.8	ab	8.8	ab	10.0	a
Trimec-Southern	4.58 L	2.2	7.0	b	8.0	bcd	9.8	ab
Trimec-Classic	3.32 L	1.35	7.5	ab	8.5	abc	10.0	a
Trimec-Classic	3.32 L	2.70	6.5	bc	7.8	cde	9.3	bc
Untreated	—	—	8.3	a	9.3	a	10.0	a

[x]Color scale ranged from 0 to 10; 0 = bleached white, 10 = maximum dark green color, 7 or lower is unacceptable for commercial landscape use.
[y]Means within a column followed by the same letter are not significantly different using Duncan's multiple range test at the 1% level.

Classic caused moderate yellowing, which diminished after the 14 DAS rating. The low rates of Trimec Southern and Trimec Classic resulted in green color that was not significantly different from untreated sod at all evaluation dates. Confront caused a slight but significant reduction in green color in comparison to untreated turf at all evaluation dates.

From this data it appears that Turflon Ester may be too detrimental to seashore paspalum sod color for use in commercial landscapes. However, because green color is less important in sod production settings, broadleaf weed control in sod production could be a suitable use for this herbicide.

Conclusions

Turflon Ester was most injurious to seashore paspalum. The turf injury and persistent reduction in green color would appear to limit its use in a commercial landscape setting in Hawaii. All other treatments caused some slight but noticeable injury and loss of green color. Since the entire site was in need of fertilizer when treatments were applied, it is not known if an improved nutrient status would have reduced the injury and discoloration recorded in this experiment. Since weeds were not present in the plots, no conclusion on weed control can be made. All rates evaluated were within the effective weed control range described on the product labels.

It is recommended that small areas be used when attempting to evaluate the usefulness of these materials at specific locations in Hawaii.

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