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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey in cooperation with the New Jersey Turfgrass Association. The purpose of this document is to provide a forum for the dissemination of information and the exchange of ideas and knowledge. The proceedings provide turfgrass managers, research scientists, extension specialists, and industry personnel with opportunities to communicate with co-workers. Through this forum, these professionals also reach a more general audience, which includes the public.

This publication includes lecture notes of papers presented at the 2018 GREEN EXPO Turf and Landscape Conference. Publication of these lectures provides a readily available source of information covering a wide range of topics and includes technical and popular presentations of importance to the turfgrass industry.

This proceedings also includes research papers that contain original research findings and reviews of selected subjects in turfgrass science. These papers are presented primarily to facilitate the timely dissemination of original turfgrass research for use by the turfgrass industry.

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Dr. Ann Brooks Gould, Editor
Dr. Bruce B. Clarke, Coordinator

POST-EMERGENCE FALSE-GREEN KYLLINGA CONTROL WITH DISMISS NXT, 2018

Daniel P. Tuck and Matthew T. Elmore[1]

The objective of this experiment was to evaluate Dismiss NXT herbicide programs for post-emergence control of false-green kyllinga (*Kyllinga gracillima*) in a creeping bentgrass (*Agrostis stolonifera*) fairway.

MATERIALS AND METHODS

This experiment was conducted at Deerwood Country Club in Mount Holly, NJ on a creeping bentgrass fairway. Kyllinga cover was between 18 and 28% across the site at the beginning of the experiment. The false-green kyllinga tended to be interspersed amongst the creeping bentgrass. The site was mowed at the discretion of the superintendent with a reel mower at 0.375 inches. The site was well irrigated and natural rainfall was plentiful during the experiment. Fungicides were applied to prevent disease at the discretion of the superintendent.

Treatments (Table 1) were arranged in a randomized block design and replicated four times. The treatments were applied to 4 x 7-ft plots using a CO_2-powered sprayer calibrated to apply 44 GPA through a single 9504EVS nozzle at 44 PSI on 19 July (application code A) and followed by a sequential application on 3 or 9 August 2018 (application codes B and C, respectively). A 12-inch wide, non-treated buffer strip was maintained between each plot providing a 3 x 7-ft treated area.

False-green kyllinga control and turfgrass injury were evaluated visually on a 0 (no control or injury) to 100% (complete necrosis) scale relative to the non-treated control. Percent control was difficult to observe as air temperatures declined in the autumn. Therefore, false-green kyllinga green cover was evaluated instead of kyllinga control. Percent cover reduction was calculated by transforming the kyllinga cover for each plot on a particular rating date relative to percent kyllinga cover in the same plot before treatments were initiated. For example, if kyllinga coverage was estimated at 50% in a particular plot before treatments were initiated and cover was estimated to be 25% on a particular date after treatments were applied, this would be calculated as a 50% reduction in cover. Both percent control and percent cover reduction can be interpreted similarly. Data were subjected to ANOVA in ARM (v2018) and Fisher's Protected LSD ($p \leq 0.05$) was used to separate means.

RESULTS

False-green Kyllinga Control

Dismiss NXT at 5 oz per acre and Dismiss at 4 oz per acre provided more false-green kyllinga control than Dismiss NXT at 4 oz per acre from 2 to 4 WA-A (weeks after application A) and more control than Dismiss NXT at 3 oz per acre from 1 to 6 WA-A (Table 2). Dismiss NXT at 5 oz per acre and Dismiss at 4 oz per acre tended to provide more control than Dismiss NXT at 3 or 4 oz per acre at 8 WA-A, although this was not statistically significant.

Dismiss NXT at 5 oz per acre and Dismiss at 4 oz per acre provided more false-green kyllinga control than Sedgehammer and Celero from 1 to 3 WA-A, but these four treatments provided similar control from 4 to 8 WA-A.

[1] Field Researcher III and Assistant Extension Specialist in Weed Science, respectively, New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State University of New Jersey, New Brunswick, NJ 08901-8520.

False-green Kyllinga Cover and Cover Reductions

All treatments except for Dismiss NXT at 3 oz per acre resulted in similar false-green kyllinga cover at 8 and 12 WA-A (Table 3). All treatments reduced false-green kyllinga cover similarly. Celero, Sedgehammer, and Dismiss NXT at 5.0 oz per acre reduced false-green kyllinga cover ≥ 95% at 8 and 12 WA-A.

Creeping Bentgrass Injury

All treatments containing sulfentrazone caused creeping bentgrass injury at 1, 2, and 3 WA-A (Table 4). No treatments caused injury from 4 WA-A until the conclusion of the experiment. Dismiss NXT at 5 oz per acre and Dismiss at 4 oz per acre caused more injury than Dismiss NXT at 3 or 4 oz per A at 3 WA-A. Injury was ≤ 20% on all rating dates and would be considered unacceptable to some superintendents at 1 and 3 WA-A.

CONCLUSIONS

Two sequential applications of Dismiss NXT at 5 oz per acre or Dismiss at 4 oz per acre provided excellent control of false-green kyllinga that was similar to commercial standard herbicides in a creeping bentgrass fairway. Dismiss and Dismiss NXT caused minor transient creeping bentgrass injury, which is typical for sulfentrazone.

ACKNOWLEDGMENTS

We thank Deerwood Country Club and GCS Brandon Perrine for hosting this experiment.

Table 1. Herbicide treatments applied for post-emergence control of false-green kyllinga (*Kyllinga gracillima*) in creeping bentgrass (*Agrostis stolonifera*) turf in Mount Holly, NJ. Applications A, B, and C were applied on 19 July and 3 and 9 August 2018, respectively.

Treatment	Product	Active ingredient	Product Rate (per acre)	Active Ingredient Rate (lb/acre)	Application Code
1	Non-treated	–	–	–	–
2	Dismiss NXT	sulfentrazone + carfentrazone	3 fl oz	0.07 + 0.01	A *fb*[1] B
3	Dismiss NXT	sulfentrazone + carfentrazone	4 fl oz	0.10 + 0.01	A *fb* B
4	Dismiss NXT	sulfentrazone + carfentrazone	5 fl oz	0.13 + 0.01	A *fb* B
5	Dismiss	sulfentrazone	4 fl oz	0.12	A *fb* B
6	Sedgehammer[2]	halosulfuron	1.33 oz wt	0.06	A *fb* C
7	Celero[2]	imazosulfuron	8 oz wt	0.38	A *fb* C

[1] *fb* = followed by

[2] Treatments containing Sedgehammer and Celero were tank-mixed with non-ionic surfactant (Activator 90) at 0.25% v/v

Table 2. False-green kyllinga control following sequential post-emergence herbicide applications initiated on 19 July and followed by a sequential application on 3 or 9 August 2018 in Mount Holly, NJ.

		False-green Kyllinga Control (%)[1]					
Treatment	Herbicide	27 July 1 WA-A[2]	3 Aug. 2 WA-A	9 Aug. 3 WA-A	20 Aug. 4 WA-A	7 Sept. 6 WA-A	17 Sept. 8 WA-A
1	Non-treated	0 d	0 d	0 d	0 c	0 c	0 b
2	Dismiss NXT (3 oz)	66 b	44 b	70 b	51 c	52 b	86 a
3	Dismiss NXT (4 oz)	74 a	49 b	74 b	70 b	78 a	84 a
4	Dismiss NXT (5 oz)	80 a	71 a	81 a	98 a	88 a	100 a
5	Dismiss (4 oz)	79 a	71 a	85 a	93 a	84 a	100 a
5	Sedgehammer[3]	15 c	26 c	49 c	100 a	85 a	95 a
6	Celero[3]	15 c	25 c	53 c	100 a	89 a	98 a
	LSD at 5% =	7	13	6	11	12	16

[1] False-green kyllinga control evaluated on a 0 to 100% scale, where 0 = no control and 100 = complete control relative to the non-reated control. Means followed by the same letter are not sigificantly different according to Fisher's Protected LSD test ($p \leq 0.05$)

[2] WA-A = weeks after application A

[3] Treatments containing Sedgehammer and Celero were tank-mixed with non-ionic surfactant (Activator 90) at 0.25% v/v

Table 3. False-green kyllinga cover and cover reduction following sequential post-emergence herbicide applications initiated on 19 July and followed by a sequential application on 3 or 9 August 2018 in Mount Holly, NJ.

		False-green Kyllinga Cover (%)[1]			False-green Kyllinga Cover Reduction (%)[2]	
Treatment	Herbicide	19 July 0 WA-A[3]	17 Sept. 8 WA-A	16 Oct. 12 WA-A	7 Sept. 8 WA-A	17 Sept. 12 WA-A
1	Non-treated	18	18 a	15 a	0 b	23 b
2	Dismiss NXT (3 oz)	23	3 b	6 b	86 a	72 a
3	Dismiss NXT (4 oz)	19	2 b	1 bc	84 a	95 a
4	Dismiss NXT (5 oz)	19	0 b	0 c	100 a	100 a
5	Dismiss (4 oz)	22	0 b	2 bc	100 a	88 a
5	Sedgehammer[4]	18	1 b	0 c	95 a	100 a
6	Celero[4]	28	1 b	1 bc	98 a	98 a
	LSD at 5% =	NS	7	6	16	37

[1] False-green kyllinga cover evaluated on a 0 to 100% scale, where 0 = no cover and 100 = complete cover. Means followed by the same letter are not sigificantly different according to Fisher's Protected LSD test ($p \leq 0.05$)

[2] False-green kyllinga cover reduction calculated by transforming the visual assessment of kyllinga cover for each plot on each rating date relative to percent cover from the same plot at 0 WA-A. Means followed by the same letter are not sigificantly different according to Fisher's Protected LSD test ($p \leq 0.05$)

[3] WA-A = weeks after application A

[4] Treatments containing Sedgehammer and Celero were tank-mixed with non-ionic surfactant (Activator 90) at 0.25% v/v

Table 4. Creeping bentgrass (*Agrostis stolonifera*) injury following sequential post-emergence herbicide applications initiated on 19 July and followed by a sequential application on 3 or 9 August 2018 in Mount Holly, NJ.

		Creeping Bentgrass Injury (%)[1]					
Treatment	Herbicide	27 July 1 WA-A[2]	3 Aug. 2 WA-A	9 Aug. 3 WA-A	20 Aug. 4 WA-A	7 Sept. 6 WA-A	17 Sept. 8 WA-A
1	Non-treated	0 c	0 c	0 c	0	0	0
2	Dismiss NXT (3 oz)	18 b	3 bc	14 b	0	0	0
3	Dismiss NXT (4 oz)	19 ab	5 ab	14 b	0	0	0
4	Dismiss NXT (5 oz)	19 ab	9 a	18 a	0	0	0
5	Dismiss (4 oz)	20 ab	8 a	18 a	0	0	0
6	Sedgehammer[3]	0 c	1 bc	0 c	0	0	0
7	Celero[3]	0 c	0 c	0 c	0	0	0
	LSD at 5% =	3	4	3	NS	NS	NS

[1] Creeping bentgrass injury evaluated on a 0 to 100% scale, where 0 = no injury and 100 = complete necrosis relative to the non-reated control. Means followed by the same letter are not sigificantly different according to Fisher's Protected LSD test ($p \leq 0.05$)

[2] WA-A = weeks after application A

[3] Treatments containing Sedgehammer and Celero were tank-mixed with non-ionic surfactant (Activator 90) at 0.25% v/v