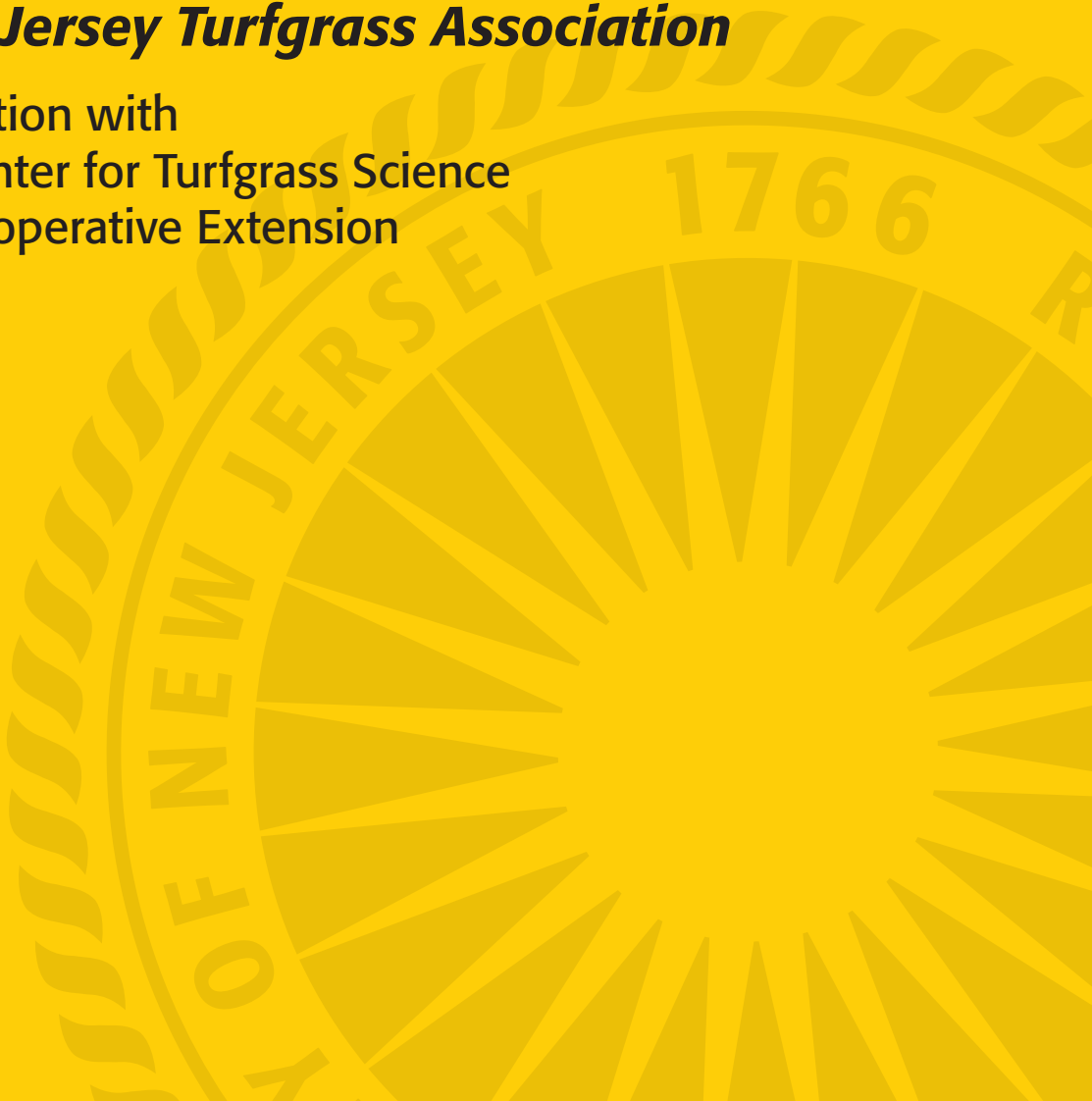
RUTGERS
New Jersey Agricultural
Experiment Station

2017
Turfgrass Proceedings

The New Jersey Turfgrass Association

In Cooperation with
Rutgers Center for Turfgrass Science
Rutgers Cooperative Extension



2017 RUTGERS TURFGRASS PROCEEDINGS

of the

GREEN EXPO Turf and Landscape Conference
December 5-7, 2017
Borgata Hotel
Atlantic City, New Jersey

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 2017 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.

Special thanks are given to those who have submitted papers for this proceedings, to the New Jersey Turfgrass Association for financial assistance, and to Barbara Fitzgerald and Anne Diglio for administrative and secretarial support.

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

ANNUAL BLUEGRASS CONTROL WITH XONERATE, 2017

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

The objective of this experiment was to evaluate sequential application programs of Xonerate 2SC for annual bluegrass (*Poa annua*) control in a perennial ryegrass (*Lolium perenne*) fairway.

MATERIALS AND METHODS

This experiment was conducted at Hominy Hill Golf Course in Colts Neck, NJ on the fairway of the 18th hole. The fairway consisted of perennial ryegrass and annual bluegrass. Annual bluegrass cover ranged from 70 to 80% in all plots at the start of the experiment. Treatments were arranged in a randomized complete block design and replicated four times. A non-treated control was included for comparison. Insecticides to control annual bluegrass weevil and fungicides to control disease were applied by the golf course maintenance staff. Dithiopyr was applied at 0.5 lb per acre to the trial site on a granular fertilizer carrier in early May by the golf course maintenance staff.

Treatments (Table 1) were arranged in a randomized block design and replicated four times. A non-treated control was included for comparison. The treatments were applied to 4 x 7-ft plots using a CO_2-powered sprayer calibrated to apply 44 GPA through a single 8002EVS nozzle at 40 PSI. Treatments were applied on 4, 18, 23, and 31 May 2017. Weather conditions three days before and seven days after each application are provided in Table 2.

Annual bluegrass control was evaluated visually on a 0 (no control) to 100% (complete control). The ANOVA was conducted in ARM and Fisher's Protected LSD ($p \leq 0.05$) was used to separate means.

RESULTS

Three applications of Xonerate 2SC at 4.5 fl oz per acre provided greater annual bluegrass control (40%) than any other treatment at 11 weeks after initial treatment (WAIT) (Table 3). All other treatments provided similar annual bluegrass control at 11 WAIT. Similar programs of Xonerate 2SC at 6 oz per acre and Xonerate 70 WDG at 2 oz per acre provided similar annual bluegrass control on all rating dates. While not statistically significant, three sequential applications generally provided more control than two sequential applications.

Perennial ryegrass phytotoxicity was not observed at any time (data not presented).

ACKNOWLEDGMENTS

The authors would like to thank Jeremy Schafer of the Monmouth County Park System for hosting the experiment and Alex Coward for technical assistance.

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

Table 1. Herbicide treatments applied for control of annual bluegrass (*Poa annua*) in a perennial ryegrass (*Lolium perenne*) fairway in Colts Neck, NJ. Applications A, B, C, and D were applied on 4, 18, 23, and 31 May 2017, respectively.

Treatment	Product[1]	Active Ingredient (AI)	Product Rate (per acre)	Application Code	Active Ingredient Rate (oz per acre)
–	Non-treated	–	–	–	–
1	Xonerate 2SC	amicarbazone	3 fl oz	ABD	0.8
2	Xonerate 2SC	amicarbazone	4.5 fl oz	ABD	1.1
3	Xonerate 2SC	amicarbazone	6 fl oz	AC	1.5
4	Xonerate 70 WDG	amicarbazone	2 oz wt	AC	1.4
5	Trimmit 2SC	paclobutrazol	16 fl oz	AC	4.0

[1] All treatments containing Xonerate were applied with non-ionic surfactant (Activator 90) at 0.25% v/v

Table 2. Twenty four-hour low and high air temperatures (°F) and average percent relative humidity (RH%) recorded in Belmar-Farmingdale, NJ (near the study site in Colts Neck, NJ), three days prior to the first herbicide application and seven days after each herbicide application. The application date is bolded. Weather data provided by weatherunderground.com.

24-hr Air Temperature (°F) and Percent Relative Humidity (RH%)			
Date	High	Low	RH (%)
1 May	82	48	87
2 May	75	61	67
3 May	66	51	43
→ **4 May**	**59**	**42**	**58**
5 May	66	51	94
6 May	66	53	79
7 May	55	46	70
8 May	57	41	58
9 May	63	39	56
10 May	57	46	70
11 May	57	44	70
12 May	57	42	75
13 May	51	45	94
14 May	68	44	80
15 May	70	48	55
16 May	79	50	51
17 May	91	57	55
→ **18 May**	**93**	**73**	**52**
19 May	91	73	56
20 May	71	48	60
21 May	63	45	64
22 May	62	53	95
→ **23 May**	**66**	**57**	**77**
24 May	64	55	81
25 May	61	53	98
26 May	75	57	79
27 May	73	57	73
28 May	70	55	85
29 May	59	55	91
30 May	57	53	95
→ **31 May**	**75**	**57**	**89**
1 June	81	59	73
2 June	78	53	50
3 June	75	52	62
4 June	70	52	66

(Continued)

Table 2. Air temperature and relative humidity (continued).

24-hr Air Temperature (°F) and Percent Relative Humidity (RH%)			
Date	High	Low	RH(%)
5 June	71	59	93
6 June	57	53	95
7 June	66	52	72

Table 3. Annual bluegrass control following herbicide applications in Colts Neck, NJ. Applications A, B, C, and D were applied on 4, 18, 23, and 31 May, respectively.

				Annual Bluegrass Control (%)[1]					
Treatment	Product	Rate (oz per acre)	Application Code	9 May 1 WAIT[2]	15 May 2 WAIT	23 May 3 WAIT	13 June 5 WAIT	22 June 6 WAIT	21 July 11 WAIT
1	Xonerate 2SC	3	ABD	0	0	1	14 a	19 a	16 b
2	Xonerate 2SC	4.5	ABD	0	0	3	15 a	25 a	40 a
3	Xonerate 2SC	6	AC	0	0	0	4 a	12 a	14 bc
4	Xonerate 70 WDG	2	AC	0	0	0	6 a	12 a	9 bc
5	Trimmit 2SC	5	AC	0	0	6	8 a	16 a	10 bc
–	Non-treated	–	–	0	0	0	0 b	0 b	0 c
			LSD at 0.5% =	NS	NS	NS	10	15	14

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

[2] WAIT = weeks after initial treatment