RUTGERS

New Jersey Agricultural
Experiment Station

2018
Turfgrass Proceedings

The New Jersey Turfgrass Association

In Cooperation with
Rutgers Center for Turfgrass Science
Rutgers Cooperative Extension

2018 RUTGERS TURFGRASS PROCEEDINGS

of the

GREEN EXPO Turf and Landscape Conference
December 4-6, 2018
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 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.

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

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

WHITE CLOVER CONTROL WITH FIESTA GRANULAR, 2018

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

The objective of this experiment was to evaluate the efficacy of a granular formulation of Fiesta (Fiesta G) for post-emergence white clover (*Trifolium repens*) control.

MATERIALS AND METHODS

This experiment was conducted at the Rutgers Plant Science Research and Extension Farm, Adelphia, NJ on a simulated lawn. The site was a sandy loam soil with a stand of Grand Prix perennial ryegrass (Manhattan 5, Paragon, and Evening Shade) (*Lolium perenne*) and white clover (cover ~80%). The site was overseeded in September 2017 with Grand Prix perennial ryegrass at a rate of 4 lb per 1000 ft², and White Dutch white clover at a rate of 1 lb per 1000 ft², although a natural population was also present.

The site was mowed weekly at 3 inches with a rotary mower and irrigated as needed to prevent wilt. Fungicides were applied preventively for disease control on 29 June 2018 [Briskway (0.75 fl oz per 1000 ft²) + Segway (0.9 fl oz per 1000 ft²)]. No additional fertilizers or plant protectants were applied to the trial during the experiment.

Treatments (Table 1) were arranged in a randomized block design and replicated four times. The sprayable treatments were applied to 4 x 7-ft plots using a CO_2-powered sprayer calibrated to apply 88 GPA through a single AI9504EVS nozzle at 44 PSI. The granular treatments were applied with a shaker jar to dew covered plots. Applications A and B were made on 15 June and 10 July 2018, respectively. A 12-inch wide, non-treated buffer strip was maintained between each plot providing a 3 x 7-ft treated area.

White clover control and turfgrass injury were visually on a 100% scale, where 0 = no control or injury and 100 = complete control or necrosis relative to the non-treated control. Data were subjected to ANOVA in ARM (v9), and Fisher's Protected LSD ($p \leq 0.05$) was used to separate means.

RESULTS

White Clover Control

Fiesta G at 16.4 lb per 1000 ft² and Fiesta L provided greater white clover control than Fiesta G at 10.3 lb per 1000 ft² at all evaluation dates (Table 2). Fiesta G at 16.4 lb per 1000 ft² provided similar control to Fiesta L at 1, 5, and 10 weeks after application A (WA-A). Fiesta G at 16.4 lb per 1000 ft² provided greater control than Fiesta L at 2 and 3 WA-A. Halo provided no white clover control for the duration of the experiment.

Sequential applications of Fiesta G at 16.4 lb per 1000 ft² and Fiesta L at 25.2 fl oz per 1000 ft² provided similar white clover control in this experiment. Previous research suggests that sequential applications of Fiesta are required to provide commercially acceptable control. Sequential applications of Fiesta G at 10.3 lb per 1000 ft² did not provide commercially acceptable white clover control in this experiment.

Perennial Ryegrass Injury

Both Fiesta G treatments and Fiesta L resulted in similarly moderate perennial ryegrass injury at 1 WA-A (Table 3). By 2 WA-A, and for the remaining duration of the experiment, no turfgrass injury was attributed to herbicide treatments.

[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.

Table 1. Herbicide treatments applied to stands of white clover (*Trifolium repens*) and perennial ryegrass (*Lolium perenne*) at the Rutgers Plant Science Research and Extension Farm, Adelphia, NJ. Applications A and B were applied on 15 June and 10 July 2018, respectively.

Treatment	Product	Product rate (per 1000 ft^2)	Application
1	Non-treated	–	–
2	Fiesta G	16.4 lb	A *fb*[1] B
3	Fiesta G	10.3 lb	A *fb* B
4	Fiesta L	25.2 fl oz	A *fb* B
5	Halo	10 fl oz	A *fb* B

[1] *fb* = followed by

Table 2. White clover control following herbicide applications to a stand of white clover and perennial ryegrass on 15 June and 10 July 2018 in Adelphia, NJ.

Treatment	Product	White Clover Control (%)[1]				
		20 June 1 WA-A[2]	29 June 2 WA-A	5 July 3 WA-A	19 July 5 WA-A 1 WA-B[3]	27 Aug. 10 WA-A 7 WA-B
1	Non-treated	0 c	0 d	0 d	0 c	0 c
2	Fiesta G (16.4 lb)	80 a	80 a	76 a	93 a	86 a
3	Fiesta G (10.3 lb)	70 b	61 c	50 c	78 b	73 b
4	Fiesta L	80 a	70 b	63 b	95 a	85 a
5	Halo	0 c	0 d	0 d	0 c	0 c
	LSD at 5% =	8	5	6	6	8

[1] White clover 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 (15 June 2018)

[3] WA-B = weeks after application B (10 July 2018)

Table 3. Perennial ryegrass injury following herbicide applications on 15 June and 10 July 2018 in Adelphia, NJ.

		Perennial Ryegrass Injury (%)[1]		
Treatment	Product	20 June 1 WA-A[2]	29 June 2 WA-A	19 July 5 WA-A 1 WA-B[3]
1	Non-treated	0 b	0 a	0 a
2	Fiesta G (16.4 lb)	25 a	0 a	0 a
3	Fiesta G (10.3 lb)	21 a	0 a	0 a
4	Fiesta L	23 a	0 a	0 a
5	Halo	0 b	0 a	0 a
	LSD at 5% =	6	–	–

[1] Perennial ryegrass injury was evaluated on a 0 to 100% scale, where 0 = no injury and 100 = complete necrosis relative to the non-treated 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 (15 June 2018)

[3] WA-B = weeks after application B (10 July 2018)