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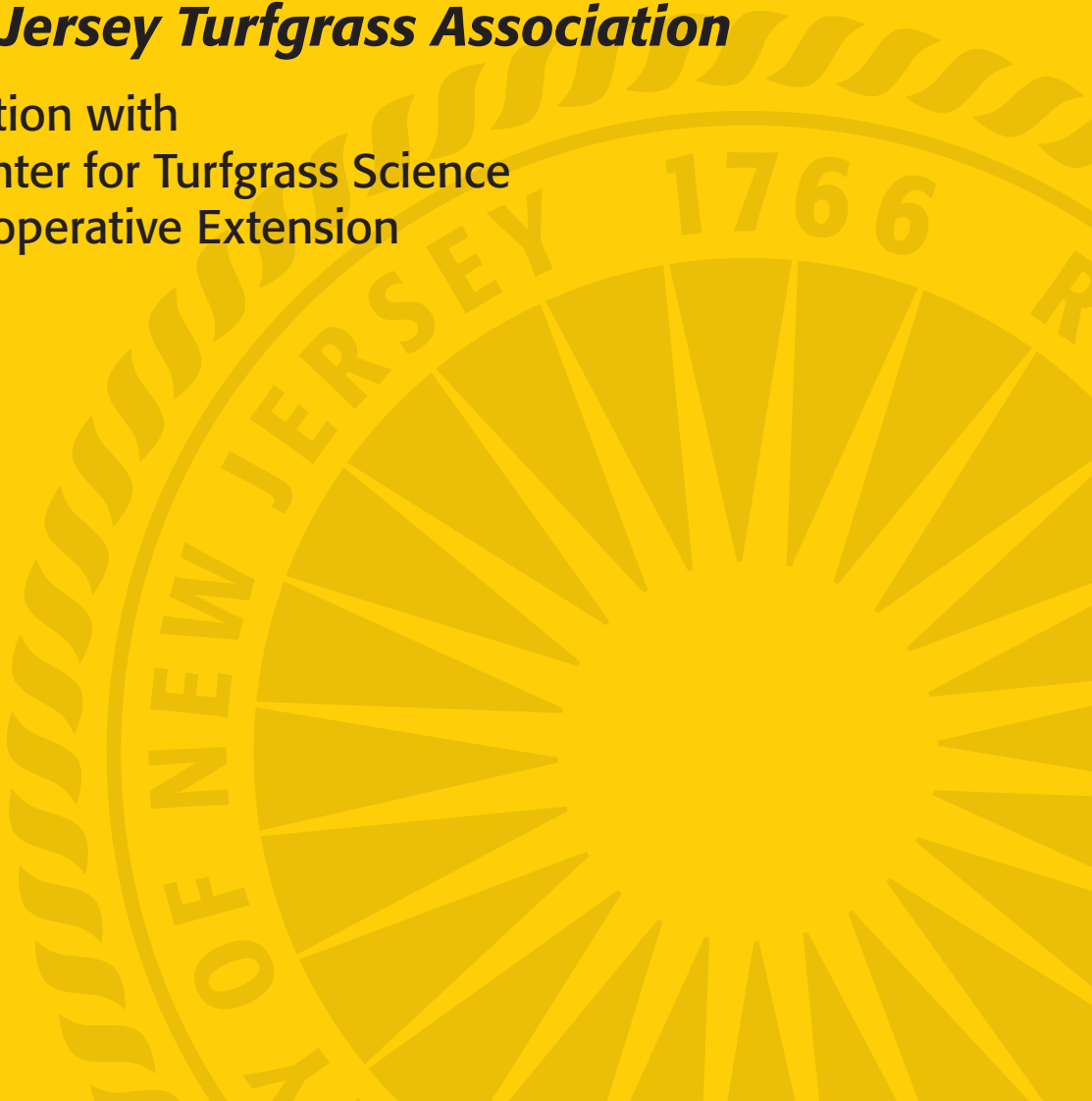

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The Rutgers Turfgrass Proceedings is published yearly by the Rutgers Center for Turfgrass Science, Rutgers Cooperative Extension, and the New Jersey Agricultural Experiment Station, School of Environmental and Biological Sciences, Rutgers, The State 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 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.

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

POST-EMERGENCE WHITE CLOVER AND COMMON DANDELION CONTROL WITH EXPERIMENTAL SCOTTS HERBICIDES, 2017

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

The objective of this experiment was to evaluate various Scotts herbicides for post-emergence white clover (*Trifolium repens*) and dandelion (*Taraxacum officinale*) control.

MATERIALS AND METHODS

This experiment was conducted at the Rutgers Horticultural Research Farm II, North Brunswick, NJ on a simulated lawn and at the Rutgers Plant Science Research and Extension Farm, Adelphia, NJ. Both sites had a sandy loam soil.

The North Brunswick site was a mature stand of white clover and 'Baron' Kentucky bluegrass (*Poa pratensis*). Clover cover ranged from 53 to 60% in each treatment at the beginning of the experiment. This site was mowed at 2 inches weekly with a reel mower and irrigated as needed to prevent wilt. Nitrogen fertilizer (1 lb N per 1000 ft^2) was applied in April 2017, and fungicides were applied as needed to prevent Pythium blight in July and August 2017.

The dandelion site at Adelphia was a mature but poor stand of 'Manhattan IV' perennial ryegrass (*Lolium perenne*). Dandelion cover ranged from 26 to 34% in each treatment at the beginning of the experiment. This site was mowed at 2.5 inches weekly with a rotary mower. No fertilizers or plant protectants were applied in 2017.

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 4 August 2017. A 12-inch wide, non-treated buffer strip was maintained between each plot providing a 3 x 7-ft treated area.

Weed cover and weed and turfgrass injury were evaluated visually on a 0 (no cover or injury) to 100% (complete cover or necrosis) scale relative to the non-treated control. Percent bleaching was evaluated on crabgrass at 7 and 14 DAT (days after treatment) on a 0 (no bleaching) to 100% (complete bleaching) scale. Although necrosis or other injury was not considered a component of the bleaching rating, both bleaching and necrosis were components of the injury rating. Percent weed cover was evaluated on the day of treatment application and at 28 and 56 DAT. Data were subjected to ANOVA in ARM (v2017), and Fisher's Protected LSD ($p \leq 0.05$) was used to separate means.

RESULTS

No turfgrass injury was observed at any time during the experiment (data not presented).

Common Dandelion

At 1 DAT, Scotts Exp 177, 178, 179, and 1710 caused more dandelion injury than Roundup for Lawns, but no treatment caused more than 20% injury (Table 2). By 14 DAT, all treatments caused between 28 and 45% injury. Scotts Exp 1710 caused more dandelion injury than Roundup for Lawns (6.4 oz) on every rating date.

By 28 DAT, all treatments reduced dandelion cover similarly to <10%, compared to 39% in the non-treated control (Table 3). At the conclusion of the experiment (61 DAT), percent cover in the

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Roundup for Lawns treatments was lower (0%) than in all other treatments. Cover in plots treated with Scots Exp 177, 178, 179, and 1710 was similar (3 to 5%).

White Clover

White clover injury was generally similar across all treatments at 1 and 4 DAT and was < 25% (Table 4). At 7 DAT, both rates of Roundup for Lawns, Scotts Exp 179, and Exp 1710 caused more injury than other treatments. By 14 DAT, white clover in plots treated with Scotts Exp 179 began to recover, while plots treated with Scotts Exp 178, Exp 1710, and Roundup for Lawns caused more injury than all other treatments (60 to 87%).

Plots treated with Scotts Exp 177 and Exp 179 had more clover cover than all other treated plots at 32 and 62 DAT (Table 5). Plots treated with Scotts Exp 178, Exp 1710, and Roundup for Lawns had <2% white clover cover at 32 and 62 DAT.

Table 1. Herbicide treatments applied singly at the Rutgers Horticultural Research Farm II, North Brunswick, NJ to a stand of white clover (*Trifolium repens*) and at the Rutgers Plant Science Research and Extension Farm, Adelphia, NJ to a stand of common dandelion (*Taraxacum officianle*). Treatments were applied on 4 August 2017.

Treatment	Product	Product Rate (fl oz per 1000 ft^2)
1	Non-treated	–
2	Scotts Exp 177	–
3	Scotts Exp 178	–
4	Scotts Exp 179	–
5	Scotts Exp 1710	–
6	Roundup for Lawns	8.5
7	Roundup for Lawns	6.4

Table 2. Common dandelion injury following herbicide treatments applied singly on 4 August 2017 at Adelphia, NJ.

	Dandelion Injury (%)[1]			
	5 Aug.	8 Aug.	11 Aug.	17 Aug.
Treatment	1 DAT[2]	4 DAT	7 DAT	14 DAT
Non-treated	0 c	0 c	0 d	0 c
Scotts Exp 177	14 b	21 ab	33 abc	40 a
Scotts Exp 178	15 ab	24 a	31 abc	40 a
Scotts Exp 179	15 ab	19 ab	34 ab	31 b
Scotts Exp 1710	19 a	30 a	41 a	45 a
Roundup for Lawns (8.5 oz)	3 c	21 ab	25 bc	30 b
Roundup for Lawns (6.4 oz)	4 c	11 bc	19 c	28 b
LSD at 5% =	5	12	14	9

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

[2] DAT = days after treatment

Table 3. Common dandelion cover following herbicide treatments applied singly on 4 August 2017 at Adelphia, NJ.

	Dandelion Cover (%)[1]		
	4 Aug.	1 Sept.	4 Oct.
Treatment	0 DAT[2]	28 DAT	61 DAT
Non-treated	34	39 a	39 a
Scotts Exp 177	29	5 b	3 b
Scotts Exp 178	28	6 b	3 b
Scotts Exp 179	28	5 b	3 b
Scotts Exp 1710	26	5 b	5 b
Roundup for Lawns (8.5 oz)	34	8 b	0 c
Roundup for Lawns (6.4 oz)	25	9 b	0 c
LSD at 5% =	NS	6	4-21

[1] Dandelion cover evaluated on a scale of 0 to 100% 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] DAT = days after treatment

Table 4. White clover injury following herbicide treatments applied singly on 4 August 2017 at North Brunswick, NJ.

	White Clover Injury (%)[1]			
	5 Aug.	8 Aug.	11 Aug.	17 Aug.
Treatment	1 DAT[2]	4 DAT	7 DAT	14 DAT
Non-treated	0 c	0 e	0 c	0 d
Scotts Exp 177	11 b	15 d	24 b	3 d
Scotts Exp 178	13 ab	15 cd	28 b	63 b
Scotts Exp 179	14 ab	21 a	48 a	24 c
Scotts Exp 1710	13 ab	20 ab	51 a	79 ab
Roundup for Lawns (8.5 oz)	15 a	19 abc	53 a	87 a
Roundup for Lawns (6.4 oz)	11 b	18 bcd	49 a	83 ab
LSD at 5% =	3	3	17	12-18

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

[2] DAT = days after treatment

Table 5. White clover cover following herbicide treatments applied singly on 4 August 2017 at North Brunswick, NJ.

	White Clover Cover (%)[1]		
	4 Aug.	5 Sept.	5 Oct.
Treatment	0 DAT[2]	32 DAT	62 DAT
Non-treated	60	56 a	70 a
Scotts Exp 177	54	23 b	44 b
Scotts Exp 178	57	2 c	2 c
Scotts Exp 179	59	26 b	50 b
Scotts Exp 1710	56	1 c	0 c
Roundup for Lawns (8.5 oz)	61	0 d	0 c
Roundup for Lawns (6.4 oz)	53	0 d	0 c
LSD at 5% =	NS	2-27	4-21

[1] White clover 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] DAT = days after treatment