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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
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WHITE CLOVER CONTROL WITH EH1626, EH1580, AND SWITCHBLADE, 2017

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The objective of this experiment was to evaluate various PBI herbicides 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 mature stand of white clover and a mature stand of 'Falcon V' tall fescue (*Festuca arundinacea*). The site was mowed weekly at 3 inches and irrigated as needed to prevent wilt. 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 three times. The treatments were applied to 4 x 7-ft plots using a CO₂-powered sprayer calibrated to apply 44 GPA through a single 9504EVS nozzle at 44 PSI. Granular treatments were applied using a shaker jar to dew covered plots. Applications A and B were made on 20 June and 25 July 2017, 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 evaluated visually on a 0 (no control or injury) to 100% (complete control or complete necrosis) scale relative to the non-treated control. Data were sub-

jected to ANOVA in ARM (v2017), and Fisher's Protected LSD ($p \leq 0.05$) was used to separate means.

RESULTS

Both rates of Switchblade, Triplet, and EH1580 applied at 250 lb per acre provided similar clover control (>70%) by 2 weeks after initial treatment (WAIT) (Table 2). By 7 WAIT, both rates of Switchblade and Triplet provided >97% clover control; control provided by sequential applications of EH1580 was similar (>90%). Single applications of EH1626 and EH1580 tended to provide less control than sequential applications, but clover control was $\geq 80\%$ at 7 WAIT. By 10 WAIT, all treatments except Scotts Weed and Feed provided similar ($\geq 90\%$ clover control). Scotts Weed and Feed Provided <30% clover control on all rating dates.

These data demonstrate that EH1580, EH1626, and Switchblade provide commercially acceptable clover control.

Tall Fescue Injury

EH1580 applied at 250 lb per acre caused 10 to 22% tall fescue injury at 2 WAIT (Table 3). By at 7 WAIT, both sequential applications of EH1580 caused 32% tall fescue injury. This injury was likely caused by the penoxsulam in EH1580 which is not registered for use in cool-season turfgrass.

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Table 1. Herbicide treatments applied at the Rutgers Plant Science Research and Extension Farm, Adelphia, NJ to a stand of white clover (*Trifolium repens*) and tall fescue (*Festuca arundinacea*). Applications A and B were made on 20 June and 25 July 2017, respectively.

Treatment	Product	Active Ingredient	Product Rate (per acre)	Active Ingredient Rate (per acre)	Application Code
1	Non-treated	–	–	–	–
2	EH1626	pyrimisulfan + penoxsulam	187 lb	0.75 + 0.75 oz	A
3	EH1626	pyrimisulfan + penoxsulam	250 lb	1.0 + 1.0 oz	A
4	EH1580	pyrimisulfan + penoxsulam	187 lb	0.75 + 0.75 oz	A
5	EH1580	pyrimisulfan + penoxsulam	187 lb	0.75 + 0.75 oz	A <i>fb</i> ¹ B
6	EH1580	pyrimisulfan + penoxsulam	250 lb	1.0 + 1.0 oz	A
7	EH1580	pyrimisulfan + penoxsulam	250 lb <i>fb</i> 125 lb	1.0 + 1.0 oz <i>fb</i> 0.5 + 0.5 oz	A <i>fb</i> B
8	Scotts Turf Builder W&F	2,4-D + mecoprop-p	125 lb	2.5 lb	A
9	Switchblade	fluoxypr + dicamba + haloaxifen-methyl	2 pt	1.1 + 1.0 + 0.008 oz	A
10	Switchblade	fluoxypr + dicamba + haloaxifen-methyl	4 pt	2.2 + 2.0 + 0.016 oz	A
11	Triplet	2,4-D + mecoprop-p + dicamba	3.5 pt	1.05 + 0.28 + 0.1 lb	A

¹ *fb* = followed by

Table 2. White clover control following herbicide applications to a stand of white clover and tall fescue on 20 June and 25 July, 2017 at Adelphia, NJ.

Treatment	Product	White Clover Control (%) ¹			
		3 July 2 WAIT ²	11 July 3 WAIT	8 Aug. 7 WAIT	25 Aug. 10 WAIT
1	Non-treated	0 e	0 e	0 d	0 c
2	EH1626 (187 lb)	57 bcd	75 bc	80 c	90 a
3	EH1626 (250 lb)	40 d	67 bc	87 bc	92 a
4	EH1580 (187 lb)	40 d	70 bc	81 c	91 a
5	EH1580 (187 <i>fb</i> ³ 187 lb)	53 cd	61 c	90 abc	99 a
6	EH1580 (250 lb)	75 abc	82 b	83 c	93 a
7	EH1580 (250 <i>fb</i> 125 lb)	70 abc	80 b	96 ab	98 a
8	Scotts W&F	15 e	26 d	10 d	17 b
9	Switchblade (2 pt)	83 a	97 a	98 ab	100 a
10	Switchblade (4 pt)	85 a	97 a	100 a	100 a
11	Triplet	80 ab	95 a	97 ab	99 a

¹ White clover control evaluated on a scale of 0 to 100%, where 0 = no control and 100 = complete control relative to the non-treated control. Means followed by the same letter are not significantly different according to Fisher's Protected LSD test ($p \leq 0.05$)

² WAIT = weeks after initial treatment

³ *fb* = followed by

Table 3. Tall fescue injury following applications made on 20 June and 25 July at Adelphia, NJ.

Treatment	Product	Tall Fescue Injury (%) ¹	
		3 July 2 WAIT ²	8 Aug. 7 WAIT
1	Non-treated	0 c	0 b
2	EH1626 (187 lb)	2 c	0 b
3	EH1626 (250 lb)	5 bc	0 b
4	EH1580 (187 lb)	0 c	1 b
5	EH1580 (187 <i>fb</i> ³ 187 lb)	2 c	32 a
6	EH1580 (250 lb)	22 a	0 b
7	EH1580 (250 <i>fb</i> 125 lb)	10 b	32 a
8	Scotts W&F	0 c	0 b
9	EH1587 (2 pt)	7 bc	0 b
10	EH1587 (4 pt)	0 c	0 b
11	Triplet	0 c	0 b
LSD at 5% =		8	8

¹ Tall fescue injury evaluated visually on a scale of 0 to 100%, where 0 = no injury and 100 = complete necrosis relative to the non-treated controls. Means followed by the same letter are not significantly different according to Fisher's Protected LSD test ($p \leq 0.05$)

² WAIT = weeks after initial treatment

³ *fb* = followed by