RUTGERS

New Jersey Agricultural
Experiment Station

2020
Turfgrass Proceedings

The New Jersey Turfgrass Association

In Cooperation with
Rutgers Center for Turfgrass Science
Rutgers Cooperative Extension

2020 RUTGERS TURFGRASS PROCEEDINGS

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 proceedings 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 and Barbara Fitzgerald for administrative support.

Deborah Spinella, Proceedings Layout Editor
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SMOOTH CRABGRASS CONTROL PROGRAMS WITH HARRELL'S FERTILIZERS

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INTRODUCTION

The objective of this experiment was to evaluate the effect of various preemergence herbicides in combination with fertilizer programs on turfgrass quality and smooth crabgrass control.

MATERIALS AND METHODS

This experiment was conducted at the Rutgers Horticulture Farm No. 2 in North Brunswick, NJ, on a simulated Kentucky bluegrass lawn. The site was a sandy loam soil with a poor stand of 'Baron' Kentucky bluegrass and a history of smooth crabgrass infestation. The site was mowed weekly at 2.0" with a rotary mower and irrigated as needed to prevent wilt. Treatments (Table 1) were arranged in a randomized block design and replicated four times. Plots measured 4' by 7' and included a 12" wide non-treated buffer strip between each plot providing a 3' by 7' treated area. Sprayable treatments were applied using a CO_2- powered sprayer calibrated to apply 109 GPA through a single AI9504EVS nozzle at 40 PSI. Granular treatments were applied with a shaker jar. The fall fertilizer treatment was applied on October 24, 2019. Preemergence herbicide treatments were applied on March 30, 2020 and irrigated with 0.25" of overhead irrigation immediately after application. Fertilizer treatments were applied on May 18, 2020.

Turfgrass quality was evaluated on a 1 (poor) to 9 (excellent) NTEP scale. Smooth crabgrass control was evaluated visually on a 0 (no injury or control) to 100 (complete control) percent scale relative to the non-treated control. Dollar spot severity was evaluated on July 27th on a 1 (no dollar spot infection centers present) to 9 (severe disease). All data were subjected to ANOVA in ARM (v9) and Fisher's Protected LSD (P=0.05) was used to separate dollar spot and crabgrass control means.

RESULTS

Crabgrass Control

All treatments containing preemergence herbicides in combination with fall + spring fertilizer provided 100% crabgrass control on all rating dates (Table 2). The treatment containing Dimension with only fall fertilizer provided 94% crabgrass control which was statistically similar to herbicide + fall + spring fertilizer treatments. Dimension applied alone with no fall or spring fertilizer provided 91% control, which is less than provided by herbicide + fall + spring fertilizer treatments. Fall + spring fertilizer without preemergence herbicides provided up to 40% control in early August, but control was poor (<5%) from late August onward.

Dollar Spot Severity

Dollar spot severity was evaluated only on one date at the peak of dollar spot activity (Table 3). Dollar spot was most severe in the no fertilizer treatment. Fall + spring fertilizer treatments resulted in less severe dollar spot than the fall-only fertilizer treatment and no fertilizer treatment.

Turfgrass Quality

In spring 2020, turfgrass quality was greater for all treatments that received fall fertilizer applications (Figure 1). Herbicide + fall + spring fertilizer programs (treatments 2, 3, and 4) provided the greatest turfgrass quality throughout the experiment and there were no differences among these treatments on any rating date. Dimension + fall fertilizer resulted in poorer turfgrass quality than herbicide + fall + spring fertilizer programs from June 20 until the conclusion of the experiment but greater quality than the Dimension + no fertilizer program on most rating dates. As

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the growing season progressed, turfgrass quality in the fertilizer only program declined due to crabgrass infestation. Turfgrass quality in the treatment receiving preemergence herbicide and no fertilizer was low (≤ 6) from 6 June until the conclusion of the experiment despite >90% crabgrass control.

Table 1. Fertilizer and herbicide treatments applied at the Rutgers Horticulture Farm No 2 in North Brunswick, NJ for smooth crabgrass (*Digitaria ischaemum*) control. Sequential application timings are designated using letters and were made on October 24, 2019, March 30, 2020 and May 18, 2020, respectively.

Treatment	Product	Active ingredient	Product Rate (per 1000 ft^2)	Application Code
1	No herbicides	–	–	–
	32-0-8	–	4.75 lb	A
	21-0-20	–	9.5 lb	C
	CalMAX G	–	5 lbs	C
	ProMag	–	3.5 lbs	C
2	32-0-8	–	4.75 lb	A
	Dimension	dithiopyr	0.5 lb/A	B
	0-0-7	oxadiazon	3.0 lb/A	C
	21-0-20	–	9.5 lb	C
	CalMAX G	–	5 lbs	C
	ProMag	–-	3.5 lbs	C
3	32-0-8	–	4.75 lb	A
	Dimension	dithiopyr	0.5 lb/A	B
	21-0-20	–	9.5 lb	C
	CalMAX G	–	5 lbs	C
	ProMag	–	3.5 lbs	C
4	32-0-8	–	4.75 lb	A
	Echelon	prodiamine + sulfentrazone	0.75 lb/A	B
	21-0-20	–	9.5 lb	C
	CalMAX G	–	5 lbs	C
	ProMag	–	3.5 lbs	C
5	32-0-8	–	4.75 lb	A
	Dimension	dithiopyr	0.5 lb/A	B
6	Dimension	dithiopyr	0.5 lb/A	B

Table 2. Smooth crabgrass (*Digitaria ischaemum*) control provided by fertilizer and herbicide treatments applied at the Rutgers Horticulture Farm No 2 in North Brunswick, NJ.

		Percent Smooth Crabgrass Control					
Treatment	Product	6 Aug.		21 Aug.		7 Sep.	
1	Fertilizer only[†]	40	b	5	d	5	c
2	Fertilizer + oxadiazon + dithiopyr	100	a	100	c	100	a
3	Fertilizer + dithiopyr	100	a	100	bc	100	a
4	Fertilizer + Echelon	100	a	100	a	100	a
5	Fall fertilizer only + dithiopyr	98	a	98	abc	94	ab
6	No fertilizer + dithiopyr	96	a	96	ab	91	b
	$LSD_{0.05}$[‡]	*8*		*7*		*8*	

[†] For a more complete description of treatments see Table 1.

[‡]Means followed by the same letter are not significantly different according to Fisher's Protected LSD test; P=0.05.

Table 3. Dollar spot severity evaluated on a 1 (no dollar spot) to 9 (severe dollar spot) scale following fertilizer and herbicide treatments applied to Kentucky bluegrass (*Poa pratensis*) at the Rutgers Horticulture Farm No 2 in North Brunswick, NJ.

		Dollar spot severity (1 to 9)	
Treatment	Product	27 July	
1	Fertilizer only[†]	1.4	c
2	Fertilizer + oxadiazon + dithiopyr	1.8	c
3	Fertilizer + dithiopyr	1.6	c
4	Fertilizer + Echelon	1.9	c
5	Fall fertilizer only + dithiopyr	4.3	b
6	No fertilizer + dithiopyr	6.5	a
	$LSD_{0.05}$[‡]	*1.5*	

[†] For a more complete description of treatments see Table 1.

[‡]Means followed by the same letter are not significantly different according to Fisher's Protected LSD test; P=0.05.

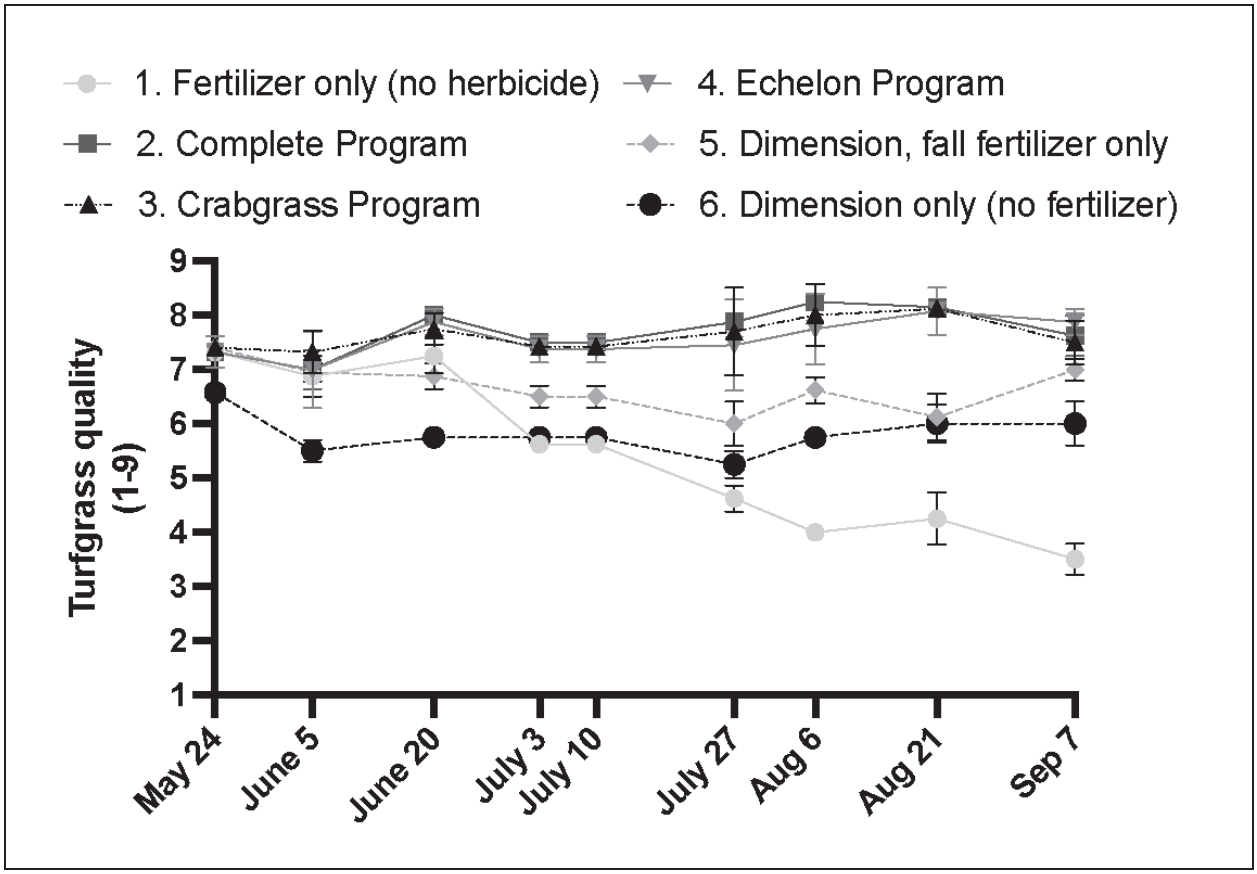

Figure 1. Turfgrass quality a 1 (poor) to 9 (excellent) NTEP scale following fertilizer and herbicide treatments applied to Kentucky bluegrass (*Poa pratensis*) at the Rutgers Horticulture Farm No 2 in North Brunswick, NJ. For a more complete description of treatments see Table 1. Bars represent standard error of the mean.