Common Ground Initiative

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OBJECTIVE

To evaluate different fungicide programs based off of the statewide average pesticide usage.

MATERIALS AND METHODS

The study was conducted at the O.J. Noer Turfgrass Research and Education Facility in Madison, WI. The study was conducted on creeping bentgrass (*Agrostis stolonifera* 'Pencross') maintained at a 0.5 inch cutting height. The individual plots measured 6 ft X 10 ft and were arranged in a randomized complete block design with four replications. Individual treatments were applied at a nozzle pressure of 40 p.s.i using a CO_2-pressurized boom sprayer equipped with 2 XR Teejet AI8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft^2. Four fungicide programs were tested in addition to the non-treated control. One was 100% of the statewide pesticide impact (using Hazard Quotient to measure impact) average based on 16 courses around the state that volunteered their pesticide records. The others were 75%, 50%, and 25% of the first treatment. Number of dollar spot infection centers per plot and turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil) were assessed every two weeks. Results were subjected to an analysis of variance and means were separated using Fisher's LSD (P = 0.05). Disease severity and turfgrass quality can be found in the following tables.

RESULTS AND DISCUSSION

Dollar spot pressure did not become severe until the middle of August. All fungicide programs performed similarly, reducing dollar spot severity significantly when compared to the non-treated controls. All fungicide programs were of acceptable turf quality throughout the summer as well. This study shows that the hazard quotient of a fungicide program can be significantly reduced without a reduction in turf quality.

Table 1. Hazard quotient and cost of all four fungicide programs.

Program	Hazard Quotient	Cost/Acre	Cost/30 Acres
100%	28,650	$1,750	$52,000
75%	21,820	$1,600	$48,000
50%	13,784	$1,300	$39,000
25%	6,465	$1,300	$39,000

Table 1. Mean number of dollar spot infection centers per treatment at the OJ Noer Turfgrass Research and Education Facility in Madison, WI in 2019.

		Treatment	Rate	Application Date	Dollar spot severity[a]		
					Aug 7	Aug 21	Sep 18
1		Non-treated control			10.8a	30.5a	171.3a
2	25 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 28	0.0a	0.8b	7.8b
		Banner Maxx	2.0 fl oz/1000 ft2	Jun 11			
		Velista	0.5 oz/1000 ft2	Jun 25			
		Secure	0.5 fl oz/1000 ft2	Jul 9			
		Secure	0.5 fl oz/1000 ft2	Jul 24			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 6			
		Emerald	0.18 oz/1000 ft2	Sep 3			
		Banner Maxx	2.0 fl oz/1000 ft2	Oct 1			
		Secure	0.5 fl oz/1000 ft2	Nov 15			
		Torque	0.6 fl oz/1000 ft2	Nov 15			
3	50 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 28	0.0a	0.0b	0.8b
		Secure	0.5 fl oz/1000 ft2	Jun 4			
		Secure	0.5 fl oz/1000 ft2	Jun 25			
		Secure	0.5 fl oz/1000 ft2	Jul 9			
		Secure	0.5 fl oz/1000 ft2	Jul 24			
		Banner Maxx	1.0 fl oz/1000 ft2	Aug 6			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 20			
		Daconil Ultrex	3.6 oz/1000 ft2	Aug 20			
		Banner Maxx	2.0 fl oz/1000 ft2	Sep 16			
		Daconil Ultrex	5.0 oz/1000 ft2	Sep 16			
		Daconil Ultrex	5.0 oz/1000 ft2	Nov 14			
		Torque	0.6 fl oz/1000 ft2	Nov 14			
4	75 % of State average	Secure	0.5 fl oz/1000 ft2	May 28	1.3a	0.0b	15.3b
		Xzemplar	0.26 fl oz/1000 ft2	Jun 11			
		Banner Maxx	1.0 fl oz/1000 ft2	Jul 1			
		Heritage TL	1.0 fl oz/1000 ft2	Jul 1			
		Xzemplar	0.26 fl oz/1000 ft2	Jul 24			
		Daconil Action	3.0 fl oz/1000 ft2	Aug 13			
		Concert II	3.0 fl oz/1000 ft2	Aug 27			
		26 GT	2.0 fl oz/1000 ft2	Sep 25			
		Banner Maxx	2.0 fl oz/1000 ft2	Oct 15			
		Instrata	9.0 fl oz/1000 ft2	Nov 11			
5	100 % of State average	Banner Maxx	2.0 fl oz/1000 ft2	May 14	3.5a	0.0b	8.8b
		Banner Maxx	1.0 fl oz/1000 ft2	May 28			
		26 GT	4.0 fl oz/1000 ft2	Jun 11			
		Renown	3.53 fl oz/1000 ft2	Jul 1			
		Daconil Weatherstik	3.6 fl oz/1000 ft2	Jul 16			
		Torque	0.6 fl oz/1000 ft2	Jul 30			
		26 GT	4.0 fl oz/1000 ft2	Aug 13			
		Heritage TL	1.0 fl oz/1000 ft2	Aug 13			
		Torque	0.6 fl oz/1000 ft2	Aug 27			
		Emerald	0.15 oz/1000 ft2	Sep 16			
		Instrata	7.0 fl oz/1000 ft2	Nov 20			
				LSD (P=.05)	8.38	9.47	24.77

[a]Dollar spot was visually assessed as number of dollar spot infection centers per plot. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).

Table 2. Mean turf quality ratings per treatment at the OJ Noer Turfgrass Research and Education Facility in Madison, WI in 2019.

		Treatment	Rate	Application Date/Interval	Turf Quality[a]		
					Aug 7	Aug 21	Sep 18
1		Non-treated control			5.5b	4.5b	5.0b
2	25 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 28	7.0a	7.0a	6.8a
		Banner Maxx	2 fl oz/1000 ft2	Jun 11			
		Velista	0.5 oz/1000 ft2	Jun 25			
		Secure	0.5 fl oz/1000 ft2	Jul 9			
		Secure	0.5 fl oz/1000 ft2	Jul 24			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 6			
		Emerald	0.18 oz/1000 ft2	Sep 3			
		Banner Maxx	2 fl oz/1000 ft2	Oct 1			
		Secure	0.5 fl oz/1000 ft2	Nov 15			
		Torque	0.6 fl oz/1000 ft2	Nov 15			
3	50 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 28	7.0a	7.0a	7.0a
		Secure	0.5 fl oz/1000 ft2	Jun 4			
		Secure	0.5 fl oz/1000 ft2	Jun 25			
		Secure	0.5 fl oz/1000 ft2	Jul 9			
		Secure	0.5 fl oz/1000 ft2	Jul 24			
		Banner Maxx	1 fl oz/1000 ft2	Aug 6			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 20			
		Daconil Ultrex	3.6 oz/1000 ft2	Aug 20			
		Banner Maxx	2 fl oz/1000 ft2	Sep 16			
		Daconil Ultrex	5 oz/1000 ft2	Sep 16			
		Daconil Ultrex	5 oz/1000 ft2	Nov 14			
		Torque	0.6 fl oz/1000 ft2	Nov 14			
4	75 % of State average	Secure	0.5 fl oz/1000 ft2	May 28	6.8a	6.8a	6.8a
		Xzemplar	0.26 fl oz/1000 ft2	Jun 11			
		Banner Maxx	1 fl oz/1000 ft2	Jul 1			
		Heritage TL	1 fl oz/1000 ft2	Jul 1			
		Xzemplar	0.26 fl oz/1000 ft2	Jul 24			
		Daconil Action	3 fl oz/1000 ft2	Aug 13			
		Concert II	3 fl oz/1000 ft2	Aug 27			
		26 GT	2 fl oz/1000 ft2	Sep 25			
		Banner Maxx	2 fl oz/1000 ft2	Oct 15			
		Instrata	9 fl oz/1000 ft2	Nov 11			
5	100 % of State average	Banner Maxx	2 fl oz/1000 ft2	May 14	6.8a	7.0a	6.5a
		Banner Maxx	1 fl oz/1000 ft2	May 28			
		26 GT	4 fl oz/1000 ft2	Jun 11			
		Renown	3.53 fl oz/1000 ft2	Jul 1			
		Daconil Weatherstik	3.6 fl oz/1000 ft2	Jul 16			
		Torque	0.6 fl oz/1000 ft2	Jul 30			
		26 GT	4 fl oz/1000 ft2	Aug 13			
		Heritage TL	1 fl oz/1000 ft2	Aug 13			
		Torque	0.6 fl oz/1000 ft2	Aug 27			
		Emerald	0.15 oz/1000 ft2	Sep 16			
		Instrata	7 fl oz/1000 ft2	Nov 20			
				LSD (P=.05)	0.64	0.56	0.58

[a]Turfgrass quality was visually assessed on 1-9 scale, with 9 being excellent, 6 being acceptable, and 1 bare dirt. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).