



## 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 3 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<sub>2</sub> pressurized boom sprayer equipped with 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<sup>2</sup>. Four fungicide programs were tested in addition to the non-treated control. One was 100% of the statewide average pesticide usage, the others were 75%, 50%, and 25% of the first treatment, using Hazard Quotient to assess environmental impact. Number of dollar spot infection centers per plot, 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 was high at different points throughout the season with average dollar spot infection centers per plot as high as 133.5 in the nontreated control plots on August 8th. There were very few differences among the four fungicide programs evaluated throughout the season. At certain points, treatment 5 had some significant dollar spot breakthrough, likely due to the program's high reliance on the contact fungicide chlorothalonil during July. Turf quality was at acceptable levels for all treatments throughout most of the season. This initial study shows that environmental impact, as measured by Hazard Quotient, can be significantly reduced while maintaining a high level of disease control and turf quality.

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

<b>Program</b>	<b>Hazard Quotient</b>	<b>Cost/Acre</b>	<b>Cost/30 Acres</b>
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 2018.**

	Treatment	Rate	Application Date	Dollar spot severity <sup>a</sup>			
				Jul 12	Aug 8	Sep 7	
1	Non-treated control			17.0a	133.5a	4.0a	
2	25 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 17	1.0b	0.0c	6.3a
		Banner Maxx	2 fl oz/1000 ft2	Jun 14			
		Velista	0.5 oz/1000 ft2	Jun 28			
		Secure	0.5 fl oz/1000 ft2	Jul 10			
		Secure	0.5 fl oz/1000 ft2	Jul 25			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 9			
		Emerald	0.18 oz/1000 ft2	Sep 6			
		Banner Maxx	2 fl oz/1000 ft2	Sep 27			
		Secure	0.5 fl oz/1000 ft2	Nov 16			
		Torque	0.6 fl oz/1000 ft2	Nov 16			
3	50 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 17	0.8b	0.0c	8.0a
		Secure	0.5 fl oz/1000 ft2	Jun 5			
		Secure	0.5 fl oz/1000 ft2	Jun 28			
		Secure	0.5 fl oz/1000 ft2	Jul 10			
		Secure	0.5 fl oz/1000 ft2	Jul 25			
		Banner Maxx	1 fl oz/1000 ft2	Aug 9			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 27			
		Daconil Ultrex	3.6 oz/1000 ft2	Aug 27			
		Banner Maxx	2 fl oz/1000 ft2	Sep 20			
		Daconil Ultrex	5 oz/1000 ft2	Sep 20			
		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 31	0.0b	2.3c	2.0a
		Xzemplar	0.26 fl oz/1000 ft2	Jun 14			
		Banner Maxx	1 fl oz/1000 ft2	Jul 3			
		Heritage TL	1 fl oz/1000 ft2	Jul 3			
		Xzemplar	0.26 fl oz/1000 ft2	Jul 25			
		Daconil Action	3 fl oz/1000 ft2	Aug 14			
		Concert II	3 fl oz/1000 ft2	Aug 30			
		26 GT	2 fl oz/1000 ft2	Sep 20			
		Banner Maxx	2 fl oz/1000 ft2	Oct 4			
Instrata	9 fl oz/1000 ft2	Nov 10					
5	100 % of State average	Banner Maxx	2 fl oz/1000 ft2	May 17	1.5b	29.3b	15.0a
		Banner Maxx	1 fl oz/1000 ft2	May 31			
		26 GT	4 fl oz/1000 ft2	Jun 14			
		Renown	3.53 fl oz/1000 ft2	Jul 3			
		Daconil Weatherstik	3.6 fl oz/1000 ft2	Jul 19			
		Torque	0.6 fl oz/1000 ft2	Jul 31			
		26 GT	4 fl oz/1000 ft2	Aug 14			
		Heritage TL	1 fl oz/1000 ft2	Aug 14			
		Torque	0.6 fl oz/1000 ft2	Aug 30			
		Emerald	0.15 oz/1000 ft2	Sep 20			
		Instrata	7 fl oz/1000 ft2	Nov 20			
LSD (P=.05)				10.4	19.81	15.12	

<sup>a</sup>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 2018.**

	Treatment	Rate	Application Date/Interval	Turf Quality <sup>a</sup>			
				Jul 12	Aug 8	Sep 7	
1	Non-treated control			6.5a	4.3d	6.3a	
2	25 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 17	7.0a	7.0a	5.5a
		Banner Maxx	2 fl oz/1000 ft2	Jun 14			
		Velista	0.5 oz/1000 ft2	Jun 28			
		Secure	0.5 fl oz/1000 ft2	Jul 10			
		Secure	0.5 fl oz/1000 ft2	Jul 25			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 9			
		Emerald	0.18 oz/1000 ft2	Sep 6			
		Banner Maxx	2 fl oz/1000 ft2	Sep 27			
		Secure	0.5 fl oz/1000 ft2	Nov 16			
		Torque	0.6 fl oz/1000 ft2	Nov 16			
3	50 % of State average	Xzemplar	0.26 fl oz/1000 ft2	May 17	7.0a	7.0a	6.8a
		Secure	0.5 fl oz/1000 ft2	Jun 5			
		Secure	0.5 fl oz/1000 ft2	Jun 28			
		Secure	0.5 fl oz/1000 ft2	Jul 10			
		Secure	0.5 fl oz/1000 ft2	Jul 25			
		Banner Maxx	1 fl oz/1000 ft2	Aug 9			
		Xzemplar	0.26 fl oz/1000 ft2	Aug 27			
		Daconil Ultrex	3.6 oz/1000 ft2	Aug 27			
		Banner Maxx	2 fl oz/1000 ft2	Sep 20			
		Daconil Ultrex	5 oz/1000 ft2	Sep 20			
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 31	7.0a	6.3b	7.0a
		Xzemplar	0.26 fl oz/1000 ft2	Jun 14			
		Banner Maxx	1 fl oz/1000 ft2	Jul 3			
		Heritage TL	1 fl oz/1000 ft2	Jul 3			
		Xzemplar	0.26 fl oz/1000 ft2	Jul 25			
		Daconil Action	3 fl oz/1000 ft2	Aug 14			
		Concert II	3 fl oz/1000 ft2	Aug 30			
		26 GT	2 fl oz/1000 ft2	Sep 20			
		Banner Maxx	2 fl oz/1000 ft2	Oct 4			
		Instrata	9 fl oz/1000 ft2	Nov 10			
5	100 % of State average	Banner Maxx	2 fl oz/1000 ft2	May 17	7.0a	5.0c	6.3a
		Banner Maxx	1 fl oz/1000 ft2	May 31			
		26 GT	4 fl oz/1000 ft2	Jun 14			
		Renown	3.53 fl oz/1000 ft2	Jul 3			
		Daconil Weatherstik	3.6 fl oz/1000 ft2	Jul 19			
		Torque	0.6 fl oz/1000 ft2	Jul 31			
		26 GT	4 fl oz/1000 ft2	Aug 14			
		Heritage TL	1 fl oz/1000 ft2	Aug 14			
		Torque	0.6 fl oz/1000 ft2	Aug 30			
		Emerald	0.15 oz/1000 ft2	Sep 20			
Instrata	7 fl oz/1000 ft2	Nov 20					
LSD (P=.05)				0.4	0.51	1.04	

<sup>a</sup>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).