Dollar Spot Resurgence Following Fungicide Applications

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OBJECTIVE

To investigate how dollar spot disease rebounds after fungicide applications cease.

MATERIALS AND METHODS

The study was conducted at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI on a stand of Penncross creeping bentgrass (*Agrostis stolonifera*) maintained at 0.125 inches. The individual plots measured 3 feet by 10 feet 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 two XR Teejet AI8004 nozzles. All fungicides were agitated by hand and applied in the equivalent of 1.5 gallons of water per 1000 ft^2. All treatments were initiated on June 19, 2019 and subsequent applications were made at 14-day intervals until ending on Sep 19, 2019. Number of dollar spot foci per plot and turfgrass quality (1-9, 9 being excellent, 6 acceptable, and 1 bare soil) were visually assessed every 2 weeks. Disease severity and turf quality were subjected to an analysis of variance and means separated using Fisher's LSD (P = 0.05). Results of disease severity and turfgrass quality ratings can be found in table 1 and 2, respectively.

RESULTS AND DISCUSSION

When fungicide treatments were being applied during summer 2019, all fungicide treatments reduced dollar spot severity compared to the nontreated control. Once fungicide applications ceased, a new pattern of disease severity emerged. On Oct 9, 2019, 28 days after the last fungicide application, the highest disease severity was observed with the Daconil Weatherstik treatment, while the lowest disease severity was observed with the Banner Maxx treatment. The nontreated control and the rotation treatments fell somewhere in the middle, with the nontreated control plot typically performing better than the fungicide rotation. This phenomenon was observed through the end of the 2019 season and into the 2020 season. By late June 2020, the treatment differences started to disappear.

Table 1. Mean dollar spot severity per treatment on creeping bentgrass maintained at greens height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2019 and 2020.

	Treatment	Rate	Application Code[b]	Dollar Spot Severity[a]		
				Oct 9, 2019	Oct 23, 2019	Jun 17, 2020
1	Non-treated control			33.8bc	8.3c	34.5b
2	Daconil Weatherstik	5.5 fl oz/M	FHJLNPR	78.5a	49.8a	70.3a
3	Banner Maxx	2.0 fl oz/M	FHJLNPR	9.0c	2.3c	18.3b
4	Daconil Weatherstik Banner Maxx	5.5 fl oz/M 2.0 fl oz/M	FJNR HLP	40.0b	24.5b	65.3a
			LSD P=.05	28.68	15.79	26.69

[a]Dollar spot rated as number of dollar spot infection centers per plot. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application code F=Jun 19, 2019, H=Jul 3, 2019, J=Jul 17, 2019, L=Jul 31, 2019, N=Aug 14, 2019, P=Aug 28, 2019, R=Sep 11, 2019

Table 2. Mean turfgrass quality per treatment on creeping bentgrass maintained at greens height at the OJ Noer Turfgrass Research Facility in Madison, WI during 2019 and 2020.

	Treatment	Rate	Application Code[b]	Turfgrass Quality[a]		
				Oct 9, 2019	Oct 23, 2019	Jun 17, 2020
1	Non-treated control			5.8b	6.5a	5.8ab
2	Daconil Weatherstik	5.5 fl oz/M	FHJLNPR	4.5c	5.3b	5.0b
3	Banner Maxx	2.0 fl oz/M	FHJLNPR	6.8a	7.0a	6.0c
4	Daconil Weatherstik Banner Maxx	5.5 fl oz/M 2.0 fl oz/M	FJNR HLP	5.5b	5.8b	5.0b
			LSD P=.05	0.96	0.71	0.77

[a]Turfgrass quality was rated visually on a 1 – 9 scale with 6 being acceptable. Means followed by the same letter do not significantly differ (P=.05, Fisher's LSD).
[b]Application code F=Jun 19, 2019, H=Jul 3, 2019, J=Jul 17, 2019, L=Jul 31, 2019, N=Aug 14, 2019, P=Aug 28, 2019, R=Sep 11, 2019