Poor Water Quality Evaluation on Putting Greens

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OBJECTIVE

To determine the efficacy of fungicides when using poor irrigation water on golf course putting greens.

MATERIALS AND METHODS

The study was conducted at the O.J. Noer Turfgrass Research and Education Facility in Madison, WI on a mixed stand of creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) maintained at a 0.125 inch cutting height. The individual plots measured 3 ft X 5 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 two 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. Treatments were initiated on July 6th and were sprayed on a 14-day interval. The entire plot was irrigated by hand three times each week using water with salt added to mimic poor effluent water except when salinity stress was deemed critical and saltwater irrigations were stopped to avoid turf death. The poor irrigation water had an electrical conductivity of 10 mS/cm. Disease severity (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). Results of the disease severity and turfgrass quality ratings can be found in table 1 and 2, respectively.

RESULTS AND DISCUSSION

Salinity stress was high throughout the plot for the duration of the trial. On all rating dates, all treatments hovered around the demarcation for acceptable turf quality. However, frequent heavy rainfalls throughout much of the summer also impacted the consistency with which salt stress impacted the plots, and as such there were no significant differences in turf quality seen over the course of the trial.

Table 1. Mean number of dollar spot infection centers per plot at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2016.

	Treatment	Rate	Application Interval	Application Dates[b]	Dollar spot severity[a]		
					Jul 27	Aug 8	Aug 22
1	Non-treated control				29.8 a	10 a	13.5 a
2	Lexicon	0.34 fl oz/1000 ft2	14 day	IKMO	0 a	0 a	0 a
3	Insignia SC	0.7 fl oz/1000 ft2	14 day	IKMO	0 a	0 a	0 a
4	Signature Xtra	4 oz/1000 ft2	14 day	IKMO	2.3 a	0 a	4.8 a
5	Daconil Action	3.5 fl oz/1000 ft2	14 day	IKMO	10.5 a	3.5 a	14.8 a
6	Heritage Action	0.2 oz/1000 ft2	14 day	IKMO	7.3 a	0 a	3.5 a

[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).
[b]Application dates: I = 7/6, K = 7/18, M = 8/2, O = 8/18

Table 2. Mean turfgrass quality per plot at the O. J. Noer Turfgrass Research and Education Facility in Madison, WI during 2016.

	Treatment	Rate	Application Interval	Application Dates[b]	Turfgrass Quality[a]		
					Jul 27	Aug 8	Aug 22
1	Non-treated control				5.8 a	5.5 a	6 a
2	Lexicon	0.34 fl oz/1000 ft2	14 day	IKMO	6 a	5.5 a	6.5 a
3	Insignia SC	0.7 fl oz/1000 ft2	14 day	IKMO	6.3 a	6 a	6.3 a
4	Signature Xtra	4 oz/1000 ft2	14 day	IKMO	6.3 a	6.3 a	6.5 a
5	Daconil Action	3.5 fl oz/1000 ft2	14 day	IKMO	6.3 a	6.3 a	6.3 a
6	Heritage Action	0.2 oz/1000 ft2	14 day	IKMO	6.3 a	5.8 a	5.8 a

[b]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).
[b]Application dates: I = 7/6, K = 7/18, M = 8/2, O = 8/18