USGA

Effects Of Sulfur And Calcium On Microdochium Patch

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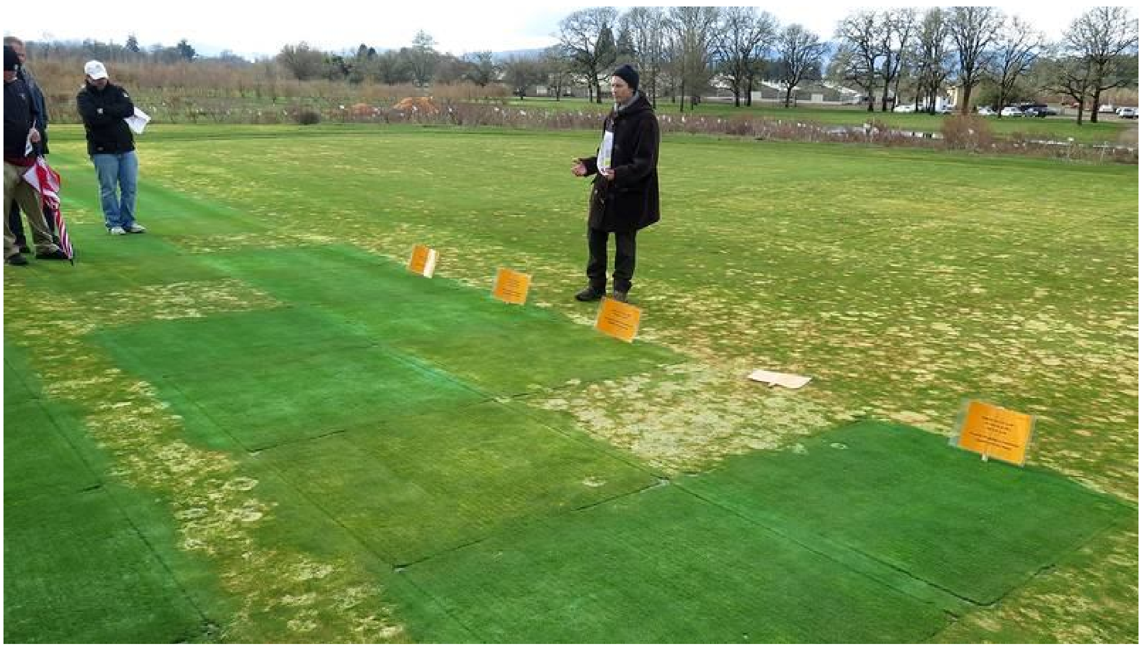

Oregon State University scientists look for new methods to control Michrodochium patch, a major disease problem in the Pacific Northwest during cooler weather.

Microdochium patch requires more fungicide applications in the Pacific Northwest than other diseases. Frequent fungicide applications are costly and could lead to fungicide resistance. Also, potential pesticide restrictions are cause to find methods that reduce fungicide applications.

Oregon State University researchers investigated if sulfur and calcium applications reduce fungicide use by monitoring the number of fungicide applications to manage Microdochium patch on an annual bluegrass putting green.

The control plot required 4.1 fungicide applications over an eight month period. Plots treated with 3 or 6 pounds of sulfur per 1,000 square feet required fewer fungicide applications (Table 1). The reduction in the number of infection centers was small and not significant.

Three pounds of sulfur per 1,000 square feet slightly reduced turf color ratings compared to the control. The 6-pound annual rate of sulfur was the same as the control (Table 1). Percent anthracnose disease was higher in August for the medium and high rates of sulfur. There were no differences in anthracnose disease from the calcium products.

Results from the study provide the following conclusions:

- Sulfur applications slightly reduced Microdochium patch on an annual bluegrass putting green.
- Applied sulfur reduced fungicide applications using infection centers as an action threshold.
- Sulfur applications increased Anthracnose activity when summer fungicides were not applied.

Table 1. Effects of sulfur rate and calcium source on microdochium patch infections centers, number of fungicide applications, turf color and percent anthracnose. Corvallis, Oregon.

Treatments	Microdochium patch		Turf color	Anthracnose
Sulfur rate[z]	Infection centers per 25 ft^2	Number of fungicide applications[y]	July 2016 (1=poor, 9=excellent)	August 2016 Percent cover (0 to 100%)[v]
0 lbs	2.2 a[x]	4.1 a	7.6 a	0.4 a
3 lbs	1.5 a	2.9 b	7.1 b	4.6 b
6 lbs	0.8 a	1.6 c	7.3 a	5.0 b
Calcium source[w]				
None	0.7 a	2.6 a	7.3 a	3.5 a
Calcium carbonate	3.2 a	3.0 a	7.4 a	3.0 a
Calcium sulfate	0.3 a	2.7 a	7.3 a	3.7 a
Calcium phosphate	1.7 a	3.1 a	7.2 a	3.1 a

[z] 0.0, 3.0 and 6.0 lbs. sulfur per 1,000 ft^2 annually, applied at 0.25 and 0.5 lbs. sulfur per 1,000 ft^2 per month x 12 months, respectively from Jan 2009 to Dec 2015. From Mar 2005 to Dec 2008, 0.0, 1.5 and 3.0 lbs. sulfur per 1,000 ft^2 annually, applied at 0.125 and 0.25 lbs. sulfur per 1,000 ft^2 per month x 12 months, respectively.

[w] All calcium sources were applied after core cultivation in May and Sep from 2005 to 2015 at a rate of 12.5 lbs product per 1,000 ft^2, totaling 25.0 lbs. product per 1,000 ft^2 annually.

[y] Fungicide applications of propiconazole plus PCNB (2.0 fl. oz + 6.0 fl. oz per 1,000 ft^2) were made on a per plot basis using the following infection threshold, 5 small spots or one spot exceeding 1 inch in diameter, from Oct 1, 2015 to May 31, 2016.

[v] No fungicides were applied to these plots after the conclusion of the 1 Oct 2014 to 31 May 2015 Microdochium patch scouting cycle.

[x] Means followed by the same letter within each factor of S rate and calcium source are not significantly different according to Fishers' Protected LSD (α=0.05).

Source: Alec Kowalewski, Brian McDonald and Clint Mattox, Oregon State University

Additional Information:

[Research in Turfgrass at Oregon State University]