

# 2013 UMass Snow Mold Data Summary



Spring Meadows GC



UMass Research Center



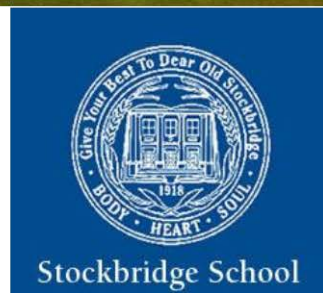
Berkshire Hills CC



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# **SNOW MOLD TRIAL SUPPORTERS THANK YOU**

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Spring Meadows Golf Club – Steve Hoisington  
Joseph Troll Turf Research Center - Thom Griffin  
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**This publication was prepared and distributed by the Turfgrass Pathology Laboratory, Department of Plant, Soil, and Insect Sciences, University of Massachusetts-Amherst as a service to the turfgrass industry.**

CREEPING BENTGRASS (*Agrostis stolonifera*)  
ANNUAL BLUEGRASS (*Poa annua*)  
Gray Snow Mold; *Typhula incarnata*, *T. ishikariensis*  
Microdochium Patch; *Microdochium nivale*  
Turf Quality; Abiotic

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### **Snow mold control on a creeping bentgrass, annual bluegrass fairway, 2012-2013.**

This evaluation was conducted at Glens Falls Country Club in Queensbury, NY on an annual bluegrass (*Poa annua*), creeping bentgrass (*Agrostis stolonifera*) fairway maintained at 0.5-inch mowing height. Individual plots measured 3 ft x 6 ft (18 ft<sup>2</sup>) and were arranged in a randomized complete block design with four replications. Fungicides were applied based on labeled or suggested rates. Individual treatments were applied at a nozzle pressure of 40 p.s.i using a CO<sub>2</sub> pressurized boom sprayer equipped with two XR Teejet 8004 VS nozzles. All fungicides were agitated by hand and applied in the equivalent of 2 gallons of water per 1000 ft<sup>2</sup>. All fungicide treatments were applied on 7 Nov 2012. Phytotoxicity ratings were taken in the fall at three time points and again in the spring and were assessed on a 0-5 scale (0 = no damage and 5 = complete death). Snow mold severity (caused by *T. incarnata*, *T. ishikariensis*, and *M. nivale*) was visually assessed as percent snow mold symptoms per plot and turfgrass quality was assessed on a 1-9 scale with 6 being acceptable on 18 Mar 2013. Data was subject to an analysis of variance and means were separated using Fisher's protected least significant difference.

Phytotoxicity ratings were taken in the fall at three time points. Overall, mild phytotoxicity (ratings ranging from 1-3) was observed in select treatments and was most commonly associated with treatments that included Turfcide. A dose response was observed as Turfcide rates increased and resulted in higher phytotoxicity. The addition of Foursome (0.5 fl oz/1,000 ft<sup>2</sup>) to Turfcide (8 fl oz/1,000 ft<sup>2</sup>) reduced phytotoxicity in fall evaluations.

Snow cover persisted on the experimental plot from late December until mid-March (approximately 70 days) and moderate disease severity (18%) was observed within untreated plots. Majority of the snow mold damage was caused by Typhula blight (*T. incarnata*). Most treatments provided significantly better control than the untreated, with the exception of 11 out of the 59 treatments. All treatments that included multiple active ingredients controlled snow mold well ( $\leq 5\%$ ). The turf pigments Par and Foursome and fertilizer Phosphite 30 did not provide snow mold control. Similar to fall ratings, treatments that included Turfcide were associated with mild phytotoxicity and lower turf quality. Treatments that included the turfgrass pigment Foursome (0.5 fl oz/1,000 ft<sup>2</sup>) with Turfcide reduced phytotoxicity and improved turf quality. In general, treatments that included a turfgrass pigment or fungicides that contain green color showed better turf quality and reduced or no phytotoxicity.

Table 1. Glens Falls Country Club 2012 Fall Phytotoxicity<sup>z</sup> ratings.

Treatment and rate per 1,000 ft <sup>2</sup>	10 Nov	14 Nov	28 Nov
1 Untreated .....	0.0 e <sup>y</sup>	0.5 e-g	0.0 g
2 Interface 2.27SC 3.0 fl oz + Triton Flo 3.05SC 0.55 fl oz.....	0.0 e	0.0 g	0.0 g
3 Exp A.....	0.0 e	0.0 g	0.0 g
4 Interface 2.27SC 4.0 fl oz + Triton Flo 3.05SC 0.55 fl oz.....	0.0 e	0.0 g	0.0 g
5 Tartan 2.4SC 1.0 fl oz + Interface 2.27SC 3.0 fl oz.....	0.0 e	0.0 g	0.0 g
6 Instrata 3.6SE 7.0 fl oz.....	0.3 de	0.3 fg	0.0 g
7 Interface 2.27SC 3.0 fl oz + Triton Flo 3.05SC 0.5 fl oz.....	0.0 e	0.0 g	0.0 g
8 Interface 2.27SC 3.0 fl oz + Triton Flo 3.05SC 0.75 fl oz.....	0.0 e	0.0 g	0.0 g
9 Exp B.....	0.0 e	0.0 g	0.0 g
10 Exp C.....	0.0 e	0.0 g	0.0 g
11 Exp D.....	0.0 e	0.0 g	0.0 g
12 Exp E.....	0.0 e	0.0 g	0.0 g
13 Exp F.....	0.0 e	0.0 g	0.0 g
14 Exp G.....	0.0 e	0.0 g	0.0 g
15 Exp H.....	0.0 e	0.0 g	0.0 g
16 Instrata 3.6SE 9.4 fl oz + Par 0.37SC 0.36 fl oz.....	0.0 e	0.0 g	0.0 g
17 Banner MAXX II 1.3ME 2.0 fl oz + Par 0.37SC 0.36 fl oz .....	0.0 e	0.0 g	0.0 g
18 QP TM/C 66.6WG 6.0 fl oz + QP Ipro 2SE 4.0 fl oz + QP Propiconazole 1.3SC 2.0 fl oz + Foursome 0.50 fl oz .....	0.0 e	0.0 g	0.0 g
19 QP TM/C 66.6WG 6.0 fl oz + QP Ipro 2SE 4.0 fl oz + QP Tebuconazole 3.6SC 0.6 fl oz + Foursome 0.5 fl oz.....	0.0 e	0.0 g	0.0 g
20 QP Ipro 2SE 4.0 fl oz + QP Tebuconazole 3.6SC 1.1 fl oz + Foursome 0.5 fl oz..	0.0 e	0.0 g	0.0 g
21 Enclave 5.3F 8.0 fl oz + Foursome 0.5 fl oz.....	0.0 e	0.0 g	0.0 g
22 Torque 3.6SC 0.9 fl oz + 26/36 4F 4.0 fl oz + Spectro 90WDG 3.67 fl oz .....	1.0 ab	0.5 e-g	0.3 g
23 Exp I.....	1.0 ab	0.0 g	0.0 g
24 Plant Food Phosphite 30 6.0 fl oz.....	0.3 de	0.3 fg	0.3 g
25 Echo Dyad ETQ 4.0 fl oz + Eclipse ETQ 4.0 fl oz + Clearscape ETQ 1.2 fl oz ....	0.0 e	0.0 g	0.0 g
26 Echo Dyad ETQ 4.0 fl oz + E-Scape ETQ 2.6 fl oz .....	0.5 cd	0.0 g	0.0 g
27 E-Scape ETQ 2.6 fl oz.....	0.3 de	0.5 e-g	0.0 g
28 Turfcide 400 4F 8.0 fl oz.....	0.0 e	1.0 c-e	1.5 cd
29 Turfcide 400 4F 12.0 fl oz .....	1.0 ab	0.8 d-f	1.8 bc
30 Turfcide 400 4F 16.0 fl oz.....	1.0 ab	1.5 bc	2.0 b
31 Turfcide 400 4F 32.0 fl oz.....	1.0 ab	2.5 a	3.0 a
32 Exp J.....	0.8 bc	0.8 d-f	1.3 de
33 Exp K.....	0.5 cd	1.5 bc	1.0 ef
34 Exp L.....	1.0 ab	1.3 cd	1.5 cd
35 Exp M.....	1.0 ab	1.3 cd	1.8 bc
36 Exp N.....	1.0 ab	0.5 e-g	0.3 g
37 Exp O.....	0.8 bc	1.0 c-e	1.8 bc
38 Exp P.....	0.8 bc	1.0 c-e	1.0 ef
39 Banner MAXX II 1.3ME 2.0 fl oz.....	0.5 cd	0.8 d-f	0.3 g
40 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 8.0 fl oz.....	1.3 a	1.5 bc	1.5 cd
41 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 12.0 fl oz.....	0.3 de	1.3 cd	2.0 b
42 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 16.0 fl oz.....	0.8 bc	2.0 ab	2.0 b
43 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 8.0 fl oz + Daconil Ultrex 82.5WG 3.2 fl oz .....	1.0 ab	1.0 c-e	0.8 f

<sup>z</sup> Phytotoxicity was rated using a 0 to 5 scale (0=no damage, 5=complete death) and was reported as a mean of 4 replications.

<sup>y</sup> Means followed by the same letter are not significantly different according to Fisher's protected least significant difference test ( $\alpha = 0.05$ ).

Table 1 cont. Glens Falls Country Club 2012 Fall Phytotoxicity<sup>z</sup> ratings.

Treatment and rate per 1,000 ft <sup>2</sup>	10 Nov	14 Nov	28 Nov
44 Daconil Ultrex 82.5WG 3.2 fl oz.....	0.8 bc <sup>y</sup>	0.8 d-f	0.3 g
45 Instrata 3.6SE 7.0 fl oz + Turfcide 400 4F 8.0 fl oz .....	0.8 bc	1.5 bc	1.5 cd
46 Interface 2.27SC 3.0 fl oz + Turfcide 400 4F 8.0 fl oz .....	0.0 e	0.0 g	0.3 g
47 Interface 2.27SC 3.0 fl oz + Triton FLO 3.05SC 0.75 fl oz + Turfcide 400 4F 8.0 fl oz.....	0.0 e	0.0 g	0.0 g
48 Interface 2.27SC 6.0 fl oz .....	0.5 cd	0.0 g	0.0 g
49 Triton FLO 3.05SC 0.75 fl oz.....	0.3 de	0.3 fg	0.3 g
50 Exp Q.....	0.8 bc	0.8 d-f	0.8 f
51 Exp R.....	0.0 e	0.0 g	0.0 g
52 Foursome 0.5 fl oz.....	0.0 e	0.3 fg	0.0 g
53 Par SC 0.36 fl oz.....	0.0 e	0.0 g	0.3 g
54 Turfcide 400 4F 8.0 fl oz + Foursome 0.5 fl oz.....	0.0 e	0.0 g	0.0 g
55 Turfcide 400 4F 8.0 fl oz + Pentathlon 75DF 10.0 fl oz + Foursome 0.5 fl oz....	0.0 e	0.0 g	0.0 g
56 Turfcide 400 4F 8.0 fl oz + Pentathlon 75DF 10.0 fl oz.....	0.8 bc	0.8 d-f	1.5 cd
57 Turfcide 400 4F 8.0 fl oz + Secure 4.17SC 0.5 fl oz .....	0.5 cd	1.5 bc	1.8 bc
58 Turfcide 400 4F 8.0 fl oz + Compass 50WG 0.3 fl oz + Banner MAXX II 1.3ME 2.0 fl oz + Foursome 0.5 fl oz.....	0.3 de	0.0 g	0.0 g
59 Turfcide 400 4F 8.0 fl oz + Banner MAXX II 1.3ME 2.0 fl oz + Foursome 0.5 fl oz.....	0.0 e	0.0 g	0.0 g
60 Daconil Weatherstik 6.0SC 5.5 fl oz + Banner MAXX II 1.3ME 2.0 fl oz + Foursome 0.5 fl oz.....	0.0 e	0.0 g	0.0 g

<sup>z</sup> Phytotoxicity was rated using a 0 to 5 scale (0=no damage, 5=complete death) and was reported as a mean of 4 replications.

<sup>y</sup> Means followed by the same letter are not significantly different according to Fisher's protected least significant difference test ( $\alpha = 0.05$ ).

Table 2. Glens Falls Country Club 2013 spring ratings.

Treatment and rate per 1,000 ft <sup>2</sup>	Snow Mold <sup>z</sup>	Turf Quality <sup>y</sup>	Phyto-toxicity <sup>x</sup>
1 Untreated .....	18 a-c <sup>w</sup>	4.5 ij	0.0 g
2 Interface 2.27SC 3.0 fl oz + Triton Flo 3.05SC 0.55 fl oz.....	0 d	7.8 ab	0.0 g
3 Exp A.....	24 a	4.8 h-j	0.0 g
4 Interface 2.27SC 4.0 fl oz + Triton Flo 3.05SC 0.55 fl oz.....	0 d	7.8 ab	0.0 g
5 Tartan 2.4SC 1.0 fl oz + Interface 2.27SC 3.0 fl oz.....	0 d	8.0 a	0.0 g
6 Instrata 3.6SE 7.0 fl oz.....	0 d	5.8 e-h	0.5 e-g
7 Interface 2.27SC 3.0 fl oz + Triton Flo 3.05SC 0.5 fl oz.....	0 d	8.0 a	0.0 g
8 Interface 2.27SC 3.0 fl oz + Triton Flo 3.05SC 0.75 fl oz.....	0 d	8.0 a	0.0 g
9 Exp B.....	2 d	7.0 a-d	0.0 g
10 Exp C.....	1 d	7.5 ab	0.0 g
11 Exp D.....	0 d	7.5 ab	0.0 g
12 Exp E.....	24 a	4.3 j	0.0 g
13 Exp F.....	0 d	7.8 ab	0.0 g
14 Exp G.....	0 d	8.0 a	0.0 g
15 Exp H.....	0 d	8.0 a	0.0 g
16 Instrata 3.6SE 9.4 fl oz + Par 0.37SC 0.36 fl oz.....	0 d	7.5 ab	0.0 g
17 Banner MAXX II 1.3ME 2.0 fl oz + Par 0.37SC 0.36 fl oz .....	10 b-d	6.8 b-e	0.0 g
18 QP TM/C 66.6WG 6.0 fl oz + QP Ipro 2SE 4.0 fl oz + QP Propiconazole 1.3SC 2.0 fl oz + Foursome 0.50 fl oz .....	0 d	8.0 a	0.0 g
19 QP TM/C 66.6WG 6.0 fl oz + QP Ipro 2SE 4.0 fl oz + QP Tebuconazole 3.6SC 0.6 fl oz + Foursome 0.5 fl oz.....	0 d	8.0 a	0.0 g
20 QP Ipro 2SE 4.0 fl oz + QP Tebuconazole 3.6SC 1.1 fl oz + Foursome 0.5 fl oz..	0 d	8.0 a	0.0 g
21 Enclave 5.3F 8.0 fl oz + Foursome 0.5 fl oz.....	0 d	8.0 a	0.0 g
22 Torque 3.6SC 0.9 fl oz + 26/36 4F 4.0 fl oz + Spectro 90WDG 3.67 fl oz .....	0 d	7.8 ab	0.0 g
23 Exp I.....	19 ab	4.3 j	0.0 g
24 Plant Food Phosphite 30 6.0 fl oz.....	24 a	4.3 j	0.0 g
25 Echo Dyad ETQ 4.0 fl oz + Eclipse ETQ 4.0 fl oz + Clearscape ETQ 1.2 fl oz ....	0 d	6.8 b-e	0.0 g
26 Echo Dyad ETQ 4.0 fl oz + E-Scape ETQ 2.6 fl oz .....	0 d	7.3 a-c	0.0 g
27 E-Scape ETQ 2.6 fl oz.....	0 d	7.8 ab	0.0 g
28 Turfcide 400 4F 8.0 fl oz.....	9 cd	4.5 ij	1.3 b-d
29 Turfcide 400 4F 12.0 fl oz .....	8 cd	4.5 ij	1.8 ab
30 Turfcide 400 4F 16.0 fl oz.....	1 d	5.3 f-j	1.8 ab
31 Turfcide 400 4F 32.0 fl oz.....	0 d	5.0 g-j	2.0 a
32 Exp J.....	7 d	4.5 ij	1.3 b-d
33 Exp K.....	6 d	5.3 f-j	1.0 c-e
34 Exp L.....	10 b-d	4.8 h-j	1.0 c-e
35 Exp M.....	5 d	5.0 g-j	1.3 b-d
36 Exp N.....	9 cd	5.5 f-i	0.5 e-g
37 Exp O.....	1 d	5.5 f-i	1.3 b-d
38 Exp P.....	2 d	5.8 e-h	0.3 fg
39 Banner MAXX II 1.3ME 2.0 fl oz.....	5 d	5.5 f-i	0.3 fg
40 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 8.0 fl oz.....	5 d	4.5 ij	1.3 b-d
41 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 12.0 fl oz.....	2 d	5.0 g-j	1.8 ab
42 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 16.0 fl oz.....	0 d	5.0 g-j	1.8 ab
43 Banner MAXX II 1.3ME 2.0 fl oz + Turfcide 400 4F 8.0 fl oz + Daconil Ultrex 82.5WG 3.2 fl oz .....	0 d	5.5 f-i	1.5 a-c

<sup>z</sup> Percentage of plot area exhibiting snow mold symptoms (blighted patches of turfgrass) was reported as the mean of 4 replications.

<sup>y</sup> Turf quality was rated using a 1 to 9 scale (9=best, 6=acceptable) based on color and uniformity and was reported as the mean of 4 replications.

<sup>x</sup> Phytotoxicity was rated using a 0 to 5 scale (0=no damage, 5=complete death) and was reported as a mean of 4 replications.

<sup>w</sup> Means followed by the same letter are not significantly different according to Fisher's protected least significant difference test ( $\alpha = 0.05$ ).

Table 2 cont. Glens Falls Country Club 2013 spring ratings.

Treatment and rate per 1,000 ft <sup>2</sup>	Snow Mold <sup>z</sup>	Turf Quality <sup>y</sup>	Phyto-toxicity <sup>x</sup>
44 Daconil Ultrex 82.5WG 3.2 fl oz.....	5 d <sup>w</sup>	5.0 g-j	0.8 d-f
45 Instrata 3.6SE 7.0 fl oz + Turfcide 400 4F 8.0 fl oz .....	0 d	5.0 g-j	2.0 a
46 Interface 2.27SC 3.0 fl oz + Turfcide 400 4F 8.0 fl oz .....	1 d	6.3 c-f	0.0 g
47 Interface 2.27SC 3.0 fl oz + Triton FLO 3.05SC 0.75 fl oz + Turfcide 400 4F 8.0 fl oz.....	0 d	7.8 ab	0.0 g
48 Interface 2.27SC 6.0 fl oz .....	2 d	7.0 a-d	0.0 g
49 Triton FLO 3.05SC 0.75 fl oz.....	0 d	7.3 a-c	0.0 g
50 Exp Q.....	0 d	5.3 f-j	1.8 ab
51 Exp R.....	2 d	6.8 b-e	0.0 g
52 Foursome 0.5 fl oz.....	18 a-c	4.8 h-j	0.0 g
53 Par SC 0.36 fl oz.....	18 a-c	5.5 f-i	0.0 g
54 Turfcide 400 4F 8.0 fl oz + Foursome 0.5 fl oz.....	2 d	6.0 d-g	0.0 g
55 Turfcide 400 4F 8.0 fl oz + Pentathlon 75DF 10.0 fl oz + Foursome 0.5 fl oz.....	5 d	5.8 e-h	0.3 fg
56 Turfcide 400 4F 8.0 fl oz + Pentathlon 75DF 10.0 fl oz.....	4 d	5.3 f-j	0.8 d-f
57 Turfcide 400 4F 8.0 fl oz + Secure 4.17SC 0.5 fl oz .....	0 d	5.0 g-j	2.0 a
58 Turfcide 400 4F 8.0 fl oz + Compass 50WG 0.3 fl oz + Banner MAXX II 1.3ME 2.0 fl oz + Foursome 0.5 fl oz.....	0 d	7.0 a-d	0.3 fg
59 Turfcide 400 4F 8.0 fl oz + Banner MAXX II 1.3ME 2.0 fl oz + Foursome 0.5 fl oz.....	0 d	7.0 a-d	0.0 g
60 Daconil Weatherstik 6.0SC 5.5 fl oz + Banner MAXX II 1.3ME 2.0 fl oz + Foursome 0.5 fl oz.....	1 d	7.3 a-c	0.0 g

<sup>z</sup> Percentage of plot area exhibiting snow mold symptoms (blighted patches of turfgrass) was reported as the mean of 4 replications.

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