



2015-2016 Snow Mold Control Evaluation: Cherokee Country Club – Madison, WI

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OBJECTIVE

To evaluate fungicides for the control of Typhula blight (caused by *Typhula incarnata*) and Microdochium patch (caused by *Microdochium nivale*) on golf course turfgrass.

MATERIALS AND METHODS

This evaluation was conducted at Cherokee Country Club in Madison, WI on a creeping bentgrass (*Agrostis stolonifera*) and annual bluegrass (*Poa annua*) golf course fairway maintained at a height of 0.5 inches. 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 CO₂ 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 ft². All applications were made on 20 Nov 2015. The experimental plot area was not inoculated. There was consistent snow cover on the experimental area from late January until mid-March, a total of nearly 60 days. Disease severity and turf quality were measured on March 16th, 2016, and color was recorded on March 9th, 2016. Disease severity was visually rated as percent area affected, turfgrass quality was visually rated on a 1-9 scale with 6 being acceptable, and Normalized Difference Vegetative Index (turfgrass color) was rated using a FieldScout TCM 500 NDVI Turf Color Meter from Spectrum Technologies, Inc. (Aurora, IL). Treatment means were analyzed using the Fisher LSD method and are presented in Table 1. In addition, surface temperature on the research plot was recorded using a Spectrum Watchdog® data logger and is presented in Figure 1.

RESULTS AND DISCUSSION

No snow mold was observed on the experimental area in 2015-2016 due to mild temperatures and below-average snowfall. Minor differences in turf color were observed using the NDVI meter, and treatments containing pigments did appear slightly more green and resulted in a slight increase in the turf quality rating. Phytotoxicity was not observed with any treatment.

Table 1: Mean snow mold severity and turf quality were assessed on March 16, 2016, and turf color was assessed on March 9th, 2016 at Cherokee Country Club in Madison, WI.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
1	Non-treated control			0a	6.8c	0.65a
2	Fame T	0.44 fl oz/1000 ft2	Late	0a	7bc	0.663a
3	Fame T	0.67 fl oz/1000 ft2	Late	0a	7bc	0.64a
4	Fame T	0.89 fl oz/1000 ft2	Late	0a	7.3abc	0.633a
5	Fame SC	0.36 fl oz/1000 ft2	Late	0a	7bc	0.643a
6	Fame SC Tourney	0.36 fl oz/1000 ft2 0.44 oz/1000 ft2	Late	0a	7bc	0.625a
7	Fame SC Tourney	0.18 fl oz/1000 ft2 0.44 oz/1000 ft2	Late	0a	7bc	0.64a
8	Fame SC Tourney	0.36 fl oz/1000 ft2 0.37 oz/1000 ft2	Late	0a	6.8c	0.673a
9	Tourney	0.44 oz/1000 ft2	Late	0a	6.8c	0.633a
10	Fame C	6.0 fl oz/1000 ft2	Late	0a	6.8c	0.655a
11	Fame C Chipco 26GT	6.0 fl oz/1000 ft2 4.0 fl oz/1000 ft2	Late	0a	7bc	0.663a
12	Adjuvant UW2015-114	8.0 fl oz/1000 ft2 6.86 ml/item	Late	0a	7bc	0.618a
13	Banner MAXX II UW2015-114	2.0 fl oz/1000 ft2 6.86 ml/item	Late	0a	7.3abc	0.628a
14	Insignia SC Trinity Daconil Ultrex Turficide	0.7 fl oz/1000 ft2 1.0 fl oz/1000 ft2 5.0 oz/1000 ft2 8.0 fl oz/1000 ft2	Late	0a	6.8c	0.658a
15	Insignia SC Trinity Chipco 26GT Turficide	0.7 fl oz/1000 ft2 1.0 fl oz/1000 ft2 4.0 fl oz/1000 ft2 8.0 fl oz/1000 ft2	Late	0a	7bc	0.67a
16	Insignia SC Trinity Turficide	0.7 fl oz/1000 ft2 1.0 fl oz/1000 ft2 8.0 fl oz/1000 ft2	Late	0a	7bc	0.68a
17	Insignia SC Trinity Chipco 26GT Daconil Ultrex	0.7 fl oz/1000 ft2 1.0 fl oz/1000 ft2 4.0 fl oz/1000 ft2 5.0 oz/1000 ft2	Late	0a	7.3abc	0.635a
18	Concert II A19188A Par WIN15008	6.375 fl oz/1000 ft2 0.75 fl oz/1000 ft2 0.37 fl oz/1000 ft2 10.0 fl oz/A	Late	0a	7.3abc	0.678a
19	Torque	0.6 fl oz/1000 ft2	Late	0a	7.3abc	0.633a
20	Chipco 26GT Daconil Weatherstik	4.0 fl oz/1000 ft2 5.5 fl oz/1000 ft2	Late	0a	7bc	0.653a

^aAll fungicide treatments applied on Nov. 20th, 2015.

^bMean percent diseased area assessed on March 16th, 2016.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout TCM 500 NDVI Turf Color Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity and turf quality were assessed on March 16, 2016, and turf color was assessed on March 9th, 2016 at Cherokee Country Club in Madison, WI.

	Treatment	Rate	Applicatio Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
21	Chipco 26GT	4.0 fl oz/1000 ft2	Late	0a	7bc	0.633a
	Secure	0.5 fl oz/1000 ft2				
22	Turfcide	8.0 fl oz/1000 ft2	Late	0a	7.8a	0.683a
	Foursome	0.5 fl oz/1000 ft2				
23	Turfcide	12.0 fl oz/1000 ft2	Late	0a	7.5ab	0.66a
	Foursome	0.5 fl oz/1000 ft2				
24	Turfcide	16.0 fl oz/1000 ft2	Late	0a	7.3abc	0.64a
	Foursome	0.5 fl oz/1000 ft2				
25	AMV4820-G	8.0 fl oz/1000 ft2	Late	0a	7.5ab	0.678a
	Foursome	0.5 fl oz/1000 ft2				
26	AMV4820-G	8.0 fl oz/1000 ft2	Late	0a	7.5ab	0.685a
	Foursome	0.5 fl oz/1000 ft2				
	Daconil Weatherstik	4.0 fl oz/1000 ft2				
27	AMV4820-G	8.0 fl oz/1000 ft2	Late	0a	7.3abc	0.653a
	Foursome	0.5 fl oz/1000 ft2				
	Daconil Weatherstik	5.5 fl oz/1000 ft2				
28	AMV4820-G	8.0 fl oz/1000 ft2	Late	0a	7.8a	0.708a
	Foursome	0.5 fl oz/1000 ft2				
	Secure	0.5 fl oz/1000 ft2				
29	AMV4820-G	10.0 fl oz/1000 ft2	Late	0a	7.5ab	0.678a
	Foursome	0.5 fl oz/1000 ft2				
30	AMV4820-G	10.0 fl oz/1000 ft2	Late	0a	7.5ab	0.685a
	Foursome	0.5 fl oz/1000 ft2				
	Daconil Weatherstik	4.0 fl oz/1000 ft2				
31	AMV4820-G	12.0 fl oz/1000 ft2	Late	0a	7.3abc	0.638a
	Foursome	0.5 fl oz/1000 ft2				
32	AMV4820-G	12.0 fl oz/1000 ft2	Late	0a	7.3abc	0.653a
	Foursome	0.5 fl oz/1000 ft2				
	Daconil Weatherstik	4.0 fl oz/1000 ft2				
33	Interface	5.0 fl oz/1000 ft2	Late	0a	7.5ab	0.663a
	Mirage	2.0 fl oz/1000 ft2				
34	Interface	5.0 fl oz/1000 ft2	Late	0a	7.5ab	0.695a
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
35	Concert II	8.5 fl oz/1000 ft2	Late	0a	7bc	0.66a
	Banner MAXX II	1.0 fl oz/1000 ft2				
36	Concert II	5.5 fl oz/1000 ft2	Late	0a	7.5ab	0.628a
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
37	Concert II	8.5 fl oz/1000 ft2	Late	0a	7.5ab	0.655a
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				
38	Insignia SC	0.7 fl oz/1000 ft2	Late	0a	7bc	0.685a
	Trinity	1.0 fl oz/1000 ft2				
39	Insignia SC	0.7 fl oz/1000 ft2	Late	0a	7.5ab	0.67a
	Turfcide	8.0 fl oz/1000 ft2				
	Foursome	0.5 fl oz/1000 ft2				

^aAll fungicide treatments applied on Nov. 20th, 2015.

^bMean percent diseased area assessed on March 16th, 2016.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout TCM 500 NDVI Turf Color Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity and turf quality were assessed on March 16, 2016, and turf color was assessed on March 9th, 2016 at Cherokee Country Club in Madison, WI.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
40	Torque	0.6 fl oz/1000 ft ²				
	Turfcide	8.0 fl oz/1000 ft ²	Late	0a	7.5ab	0.665a
	Foursome	0.5 fl oz/1000 ft ²				
41	Torque	0.9 fl oz/1000 ft ²				
	Turfcide	8.0 fl oz/1000 ft ²	Late	0a	7.3abc	0.633a
	Foursome	0.5 fl oz/1000 ft ²				
42	Concert II	8.5 fl oz/1000 ft ²				
	A18126B	0.16 oz/1000 ft ²	Late	0a	7.5ab	0.673a
	Par	0.37 fl oz/1000 ft ²				
43	Concert II	5.0 fl oz/1000 ft ²				
	A18126B	0.16 oz/1000 ft ²	Late	0a	7.3abc	0.693a
	Par	0.37 fl oz/1000 ft ²				
44	Concert II	8.5 fl oz/1000 ft ²				
	A18126B	0.16 oz/1000 ft ²	Late	0a	7.5ab	0.67a
	Medallion SC	2.0 fl oz/1000 ft ²				
	Par	0.37 fl oz/1000 ft ²				
45	Concert II	8.5 fl oz/1000 ft ²				
	Secure	0.5 fl oz/1000 ft ²	Late	0a	7bc	0.678a
	Par	0.37 fl oz/1000 ft ²				
46	Concert II	5.0 fl oz/1000 ft ²				
	Secure	0.5 fl oz/1000 ft ²	Late	0a	7.5ab	0.695a
	Par	0.37 fl oz/1000 ft ²				
47	Concert II	8.5 fl oz/1000 ft ²				
	A19188A	1.0 fl oz/1000 ft ²	Late	0a	7.3abc	0.653a
	Par	0.37 fl oz/1000 ft ²				
48	Concert II	5.0 fl oz/1000 ft ²				
	A19188A	1.0 fl oz/1000 ft ²	Late	0a	7.3abc	0.675a
	Par	0.37 fl oz/1000 ft ²				
49	Daconil Weatherstik	5.5 fl oz/1000 ft ²				
	A18126B	0.16 oz/1000 ft ²	Late	0a	7bc	0.64a
	Par	0.37 fl oz/1000 ft ²				
50	Daconil Weatherstik	5.5 fl oz/1000 ft ²				
	A19188A	1.0 fl oz/1000 ft ²	Late	0a	7.5ab	0.643a
	Par	0.37 fl oz/1000 ft ²				
51	Headway	3.0 fl oz/1000 ft ²				
	A18126B	0.16 oz/1000 ft ²	Late	0a	7.8a	0.645a
	Par	0.37 fl oz/1000 ft ²				
52	Headway	3.0 fl oz/1000 ft ²				
	Secure	0.5 fl oz/1000 ft ²	Late	0a	7.5ab	0.673a
	Par	0.37 fl oz/1000 ft ²				
53	Concert II	8.5 fl oz/1000 ft ²				
	Banner MAXX II	1.0 fl oz/1000 ft ²	Late	0a	7.5ab	0.645a
	Par	0.37 fl oz/1000 ft ²				
54	Renown	2.5 fl oz/1000 ft ²				
	A18126B	0.16 oz/1000 ft ²	Late	0a	7.5ab	0.648a
	Par	0.37 fl oz/1000 ft ²				

^aAll fungicide treatments applied on Nov. 20th, 2015.

^bMean percent diseased area assessed on March 16th, 2016.

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^dColor was assessed using a FieldScout TCM 500 NDVI Turf Color Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity and turf quality were assessed on March 16, 2016, and turf color was assessed on March 9th, 2016 at Cherokee Country Club in Madison, WI.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
55	Renown A19188A Par	2.5 fl oz/1000 ft ² 1.0 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.5ab	0.658a
56	Renown Secure Par	2.5 fl oz/1000 ft ² 0.5 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7bc	0.655a
57	A21664 Par	0.8 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.3abc	0.655a
58	A21664 A17856 Par	0.8 fl oz/1000 ft ² 1.0 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.8a	0.653a
59	A21664 A17856 Par	0.8 fl oz/1000 ft ² 2.0 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.3abc	0.665a
60	A21664 A13705 Par	0.8 fl oz/1000 ft ² 2.6 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.8a	0.613a
61	A18126B A13705 Par	0.164 oz/1000 ft ² 2.6 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.5ab	0.685a
62	A17856 A19188A Banner MAXX II Par	1.0 fl oz/1000 ft ² 1.0 fl oz/1000 ft ² 2.0 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.3abc	0.653a
63	A19188A A13705 Par	1.0 fl oz/1000 ft ² 2.6 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.5ab	0.67a
64	A19188A A17856 Par	1.0 fl oz/1000 ft ² 2.0 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.5ab	0.638a
65	A18126B A17856 Par	0.164 oz/1000 ft ² 2.0 fl oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.5ab	0.65a
66	Instrata Par	9.0 oz/1000 ft ² 0.37 fl oz/1000 ft ²	Late	0a	7.3abc	0.633a
67	Interface Mirage	6.0 fl oz/1000 ft ² 2.0 fl oz/1000 ft ²	Late	0a	7.8a	0.655a
68	Interface Mirage	4.0 fl oz/1000 ft ² 1.4 fl oz/1000 ft ²	Late	0a	7.3abc	0.66a
78	26GT Xtra Daconil Weatherstik Mirage	5.0 fl oz/1000 ft ² 5.5 fl oz/1000 ft ² 1.5 fl oz/1000 ft ²	Late	0a	7.8a	0.638a
79	26GT Xtra Daconil Weatherstik Mirage	6.0 fl oz/1000 ft ² 5.5 fl oz/1000 ft ² 1.5 fl oz/1000 ft ²	Late	0a	7bc	0.668a

^aAll fungicide treatments applied on Nov. 20th, 2015.

^bMean percent diseased area assessed on March 16th, 2016.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout TCM 500 NDVI Turf Color Meter from Spectrum Technologies, Inc.

Table 1(cont): Mean snow mold severity and turf quality were assessed on March 16, 2016, and turf color was assessed on March 9th, 2016 at Cherokee Country Club in Madison, WI.

	Treatment	Rate	Application Timing ^a	Disease Severity ^b	Turf Quality ^c	Turf Color ^d
80	26GT Xtra	8.0 fl oz/1000 ft ²				
	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	0a	7.5ab	0.663a
	Mirage	1.5 fl oz/1000 ft ²				
84	Compass	0.2 oz/1000 ft ²	Late	0a	7bc	0.693a
85	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	0a	7.5ab	0.663a
	Exteris	3.0 fl oz/1000 ft ²				
86	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	0a	7.3abc	0.653a
	Exteris	4.0 fl oz/1000 ft ²				
87	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	0a	7.3abc	0.668a
	Exteris	5.0 fl oz/1000 ft ²				
88	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	0a	7.3abc	0.685a
	Exteris	6.0 fl oz/1000 ft ²				
89	Daconil Weatherstik	5.5 fl oz/1000 ft ²	Late	0a	7.5ab	0.695a
	Tartan	2.0 fl oz/1000 ft ²				
91	Exteris	6.0 fl oz/1000 ft ²	Late	0a	7.5ab	0.693a
92	Exteris	4.0 fl oz/1000 ft ²	Late	0a	7.5ab	0.715a
	Tartan	1.0 fl oz/1000 ft ²				
93	Interface	3.0 fl oz/1000 ft ²	Late	0a	7.8a	0.658a
94	Interface	6.0 fl oz/1000 ft ²	Late	0a	7bc	0.688a
96	Mirage	1.0 fl oz/1000 ft ²	Late	0a	7.3abc	0.665a

^aAll fungicide treatments applied on Nov. 20th, 2015.

^bMean percent diseased area assessed on March 16th, 2016.

^cQuality was visually assessed where 1 = dead, 6 = acceptable, 9 = dark green.

^dColor was assessed using a FieldScout TCM 500 NDVI Turf Color Meter from Spectrum Technologies, Inc.

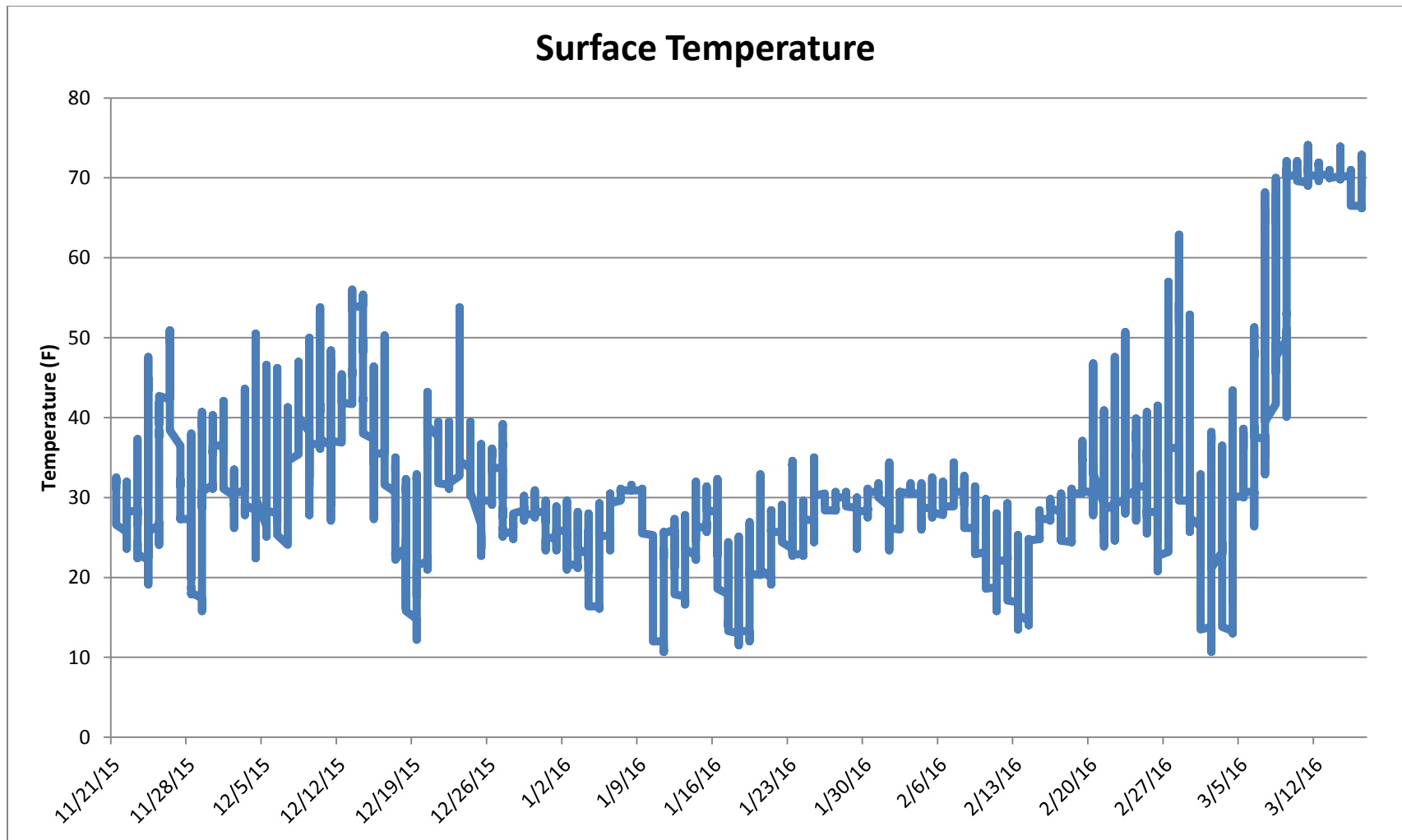


Figure 1: Surface temperature at Cherokee Country Club in Madison, WI during the winter of 2015-2016.