2010-2011 Evaluation of Fungicides and Fungicide Rotations for Control of *Microdochium* Patch on an Annual Bluegrass Putting Green

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Introduction

The purpose of this trial was to evaluate the effectiveness of various fungicides applied on a 4 week interval in controlling Microdochium patch (*Microdochium nivale*) not under snow cover on an annual bluegrass putting green.

Materials and Methods

The trial was initiated October 21st on an annual bluegrass (*Poa annua*) putting green located at Oregon State University's Lewis-Brown Horticulture Farm in Corvallis, Oregon. The green was constructed using the "California method" where 12 inches of straight USGA sand was placed on top of a soil sub grade. Irrigation pipe and flat tile drainage was installed on the sub grade before the sand was installed. *Poa annua* sod (purchased from Boss Sod, Canada) was laid in early May of 2009. The mowing height was reduced to 0.150 inches by the middle of July and remained there throughout the summer, fall, and winter. Soluble nitrogen applications were made weekly during the summer at a rate of 0.10 lb nitrogen per 1,000 sq. ft. and 1.5 pounds of soluble nitrogen was applied over the duration of the trial.

Fungicide applications were made on a 4 week interval and were applied 6 times. Plot size was 25 square feet (5′ x 5′). Granular products were applied with a shaker can after adding screened cat litter to bulk up the amount and then watered using a watering can with 2 gallons of water for each plot (.13 inches) if rain was not forecast in the next few days. Plots were not mowed for a minimum of 2 days following application dates to avoid picking up the granular products. Spray products were applied with a two-wheeled bicycle sprayer using a CO_2 bottle and a pressure valve outfitted with TeeJet 80015 nozzles and applied at 30 psi in 2 gallons of spray solution per 1,000 sq. ft.

Daily high temperatures, relative humidity at the time of high temperature, rainfall on the date of application, and rainfall for the 3 days following application date are listed in the table below:

Date of Application	High Temperature (°F)	RH at Time of High Temp	Rainfall on Application Date	Rainfall 3 days Following
10/21/10	64	61%	0.00"	0.00"
11/19/10	47	79%	0.14"	1.08"
12/16/10	45	69%	0.01"	0.03"
1/14/11	58	72%	0.02"	0.06"
2/10/11	49	69%	0.03"	0.10"
3/09/11	59	63%	0.05"	0.18"

Disease symptoms did not develop until early February. Visual disease severity and plot quality ratings were taken on February 10th, March 1st, March 8th, March 17th, and March 25th. With the exception of the first rating date where the number of infection centers were counted, disease severity ratings were based on percent plot cover from 0 – 100 percent. Data from each rating date were subjected to analysis of variance using a randomized complete block design with 3 replications. Differences between means were determined by Fisher's LSD at the 5% level.

The treatments applied are listed below:

Trt #	Treatment	Rate (oz./1,000 ft^2)
1	Untreated Check	-----
2	Honor	1.10 Wt oz
3	Trinity	1.00 FL oz
4	Trinity alternated with Honor	1.0/1.1
5	Tartan SC	2.00 FL oz
6	Interface SC + Daconil Ultrex	4.0 + 5.0 FL/Wt oz
7	Interface SC + Daconil Ultrex	5.0 + 5.0 FL/Wt oz
8	Interface SC + Daconil Ultrex	6.0 + 5.0 FL/Wt oz
9	Concert	5.00 FL oz
10	Instrata SL	5.00 FL oz
11	Instrata SL	7.00 FL oz
12	Heritage G	48.0 Wt oz
13	Headway G	48.0 Wt oz
14	Headway 1.39 ME	3.00 FL oz
15	Renown	4.50 FL oz
16	Torque	0.60 FL oz
17	Tourney	0.37 Wt oz
18	Banner Maxx (1st app 2.0 oz/1.0 oz thereafter)	2.0/1.0 FL oz

Results

See percent disease and plot quality ratings in the tables below.

Table 1: Percent Disease Ratings (0 – 100%)

				Percent Disease				# of Infection Centers
				3/25	3/17	3/8	3/1	2/10
Trt #	Products	Rate	Units	Avg	Avg	Avg	Avg	Avg
1	Untreated	Na	Na	11.0	7.3	4.0	3.0	7.0
2	Honor	1.1	WT oz	7.7	6.0	2.3	1.3	4.0
3	Trinity	1.0	Liq oz	14.7	9.7	6.0	3.7	29.7
4	Trinity alt with Honor	1.0 /1.1	Liq/WT oz	10.0	8.3	4.0	1.2	4.3
5	Tartan	2.0	Liq oz	10.7	8.7	5.3	2.3	11.7
6	Interface + Daconil Ultrex	4.0 + 5.0	Liq oz/WT oz	1.4	1.1	0.7	0.5	2.7
7	Interface + Daconil Ultrex	5.0 + 5.0	Liq oz/WT oz	0.7	0.8	0.7	0.5	2.0
8	Interface + Daconil Ultrex	6.0 + 5.0	Liq oz/WT oz	0.7	0.7	0.7	0.7	5.7
9	Concert	5.0	Liq oz	0.8	0.7	0.1	0.1	1.3
10	Instrata SL	5.0	Liq oz	0.0	0.0	0.0	0.0	0.0
11	Instrata SL	7.0	Liq oz	0.0	0.0	0.0	0.0	0.0
12	Heritage G	4.0	WT lbs	11.0	8.0	5.0	3.3	14.3
13	Headway G	4.0	WT lbs	3.7	2.7	1.4	0.9	3.0
14	Headway 1.39 ME	3.0	Liq oz	0.0	0.0	0.0	0.0	0.0
15	Renown	4.5	Liq oz	4.7	3.7	2.3	0.8	6.0
16	Torque	0.6	Liq oz	5.0	3.3	1.8	0.4	0.7
17	Tourney	0.37	WT oz	7.0	5.3	3.2	0.8	2.7
18	Banner Maxx 1st app 2.0, thereafter 1.0	2.0/1.0	Liq oz	1.2	0.7	0.1	0.1	0.3
		LSD @ .05		**4.0**	**3.1**	**2.3**	**1.6**	**15.0**

Table 2: Turf Quality Ratings (1 – 9; 9 = best)

				Plot Quality				
				3/25	3/17	3/8	3/1	2/10
Trt #	Products	Rate	Units	Avg	Avg	Avg	Avg	Avg
1	Untreated	Na	Na	2.3	3.2	4.3	5.2	7.5
2	Honor	1.1	WT oz	3.3	3.7	5.0	6.7	7.7
3	Trinity	1.0	Liq oz	2.3	3.0	4.0	5.3	6.3
4	Trinity alt with Honor	1.0 /1.1	Liq/WT oz	2.7	3.0	4.3	6.8	7.5
5	Tartan	2.0	Liq oz	3.0	2.8	4.0	5.8	6.5
6	Interface + Daconil Ultrex	4.0 + 5.0	Liq oz/WT oz	6.3	6.5	7.2	7.5	7.7
7	Interface + Daconil Ultrex	5.0 + 5.0	Liq oz/WT oz	7.0	7.3	7.7	7.7	8.0
8	Interface + Daconil Ultrex	6.0 + 5.0	Liq oz/WT oz	7.0	6.8	7.2	7.0	8.0
9	Concert	5.0	Liq oz	6.7	6.8	7.5	7.8	7.8
10	Instrata SL	5.0	Liq oz	7.0	7.0	7.3	8.0	8.0
11	Instrata SL	7.0	Liq oz	6.7	6.8	7.0	8.0	8.0
12	Heritage G	4.0	WT lbs	2.3	3.2	3.7	4.8	6.7
13	Headway G	4.0	WT lbs	4.7	4.7	6.2	6.5	7.8
14	Headway 1.39 ME	3.0	Liq oz	7.3	7.2	7.8	8.0	8.0
15	Renown	4.5	Liq oz	4.0	4.0	5.7	6.7	7.8
16	Torque	0.6	Liq oz	3.7	4.8	6.0	7.7	8.0
17	Tourney	0.37	WT oz	3.0	3.0	4.3	5.2	5.0
18	Banner Maxx 1st app 2.0, thereafter 1.0	2.0/1.0	Liq oz	5.8	6.2	6.8	7.5	8.0
		LSD @ .05		**1.0**	**3.2**	**1.4**	**1.3**	**0.8**