Stop #3: Evaluation of Fungicides for Control of Anthracnose and Summer Patch Diseases on Annual Bluegrass Putting Greens

Pawel Petelewicz, Brooke Gomez, Pawel Orlinski, and Jim Baird
Department of Botany and Plant Sciences
University of California, Riverside, CA 92521

Objectives:

This study was conducted to evaluate ability of 33 different fungicide treatments to control foliar and basal rot anthracnose (*Colletotrichum cereale*) and summer patch (*Magnaporthe poae*) diseases preventatively on an annual bluegrass (*Poa annua*) maintained as a golf course putting green.

Materials and methods:

The study was conducted on mature annual bluegrass (*Poa annua*) turf on a Hanford fine sandy loam amended with sand. Turf was mowed 5 days/wk at 0.125 inches and received 0.125 lbs N/1000 ft^2 in liquid form every 14 days. Fungicide treatments were applied every 14 days beginning on June 6, 2018 (before disease symptoms were present) for a total of 8 applications. Treatments were applied using a CO_2-powered backpack sprayer equipped with TeeJet 8004VS nozzles calibrated to deliver 2 gallons/1000 ft^2. Experimental design was a complete randomized block with 5 replications. Plot size was 4×6 ft with 1-ft alleys.

Starting from June 17, plots were evaluated every two weeks for visual turf quality (1-9; 9=highest), injury caused with treatments (0-10; 10=highest), turf green color intensity (1-9; 9=highest), anthracnose and summer patch disease cover (0-100%), disease symptoms severity within the area of pathogenic activity (0-10; 10=highest) and disease pressure, which calculation of was based on two previously mentioned parameters and introduced to distinguish severely damaged plots from those showing initial symptoms of disease activity within the comparable area of disease cover.

Results:

Some severe scalping occurred at the beginning of the trial on plots located in replications no. 1 and no. 4 due to excessive soil moisture, which was the reason to exclude those replications in statistical analysis performed for the purpose of this report.

Colletotrichum cereale acervuli were first noticed in the beginning of July, but significant anthracnose pressure in untreated control plots started in a first half of August. Before that, starting on July 17 severe disease pressure (even greater than when compared to control) started showing within all UCR 001 to 003 treatments and escalated until the most recent rating date (data not shown). Addition of Daconil Weatherstik and Medallion SC to the UCR experimental materials reduced disease

symptoms, but there was no significant difference between those treatments and untreated control in terms of disease cover, disease symptoms severity within cover and disease pressure by August 27, 2018 (Table 2).

By the most recent rating event before publication (August 27), the best treatments in terms of lowest disease cover (0-5%) included: Bayer Program No. 1, 2, 3 and 5, Intelligro Program No. 2, Anthracnose Program No. 2, A22758A, Maxtima and Navicon. Next in line (5-15% of disease cover) were: tank-mix of Daconil Action with Appear II and Primo-Maxx, tank-mix of A19188 with Medallion SC and Anthracnose Program No. 3. Also, Anthracnose Program No. 1, Intelligro Program No. 3 and tank-mix of Nivales T with Echo Dyad ETQ did not differ from control in terms of disease cover but significantly decreased severity of symptoms within the disease activity area on the plots and that directly and positively impacted overall disease pressure (Table 2).

Summer Patch was difficult to distinguish in this year's trial, because once both pathogens started to become active disease symptoms were indistinguishable. Starting on August 27, both diseases were evaluated together but until then treatment efficacy against summer patch mirrored that of anthracnose (data not shown).

Bayer Programs No. 1-3 and No. 4 demonstrated significantly higher quality compared to other plots on August 27, mostly due to improvement in color (together with Maxtima). However it should be mentioned that all Bayer Programs together with A22758A showed some slight initial injury, likely caused by DMI fungicides. No other phytotoxicity was noticed throughout the study with treatments containing Primo Maxx at various rates (Table 2).

Acknowledgments:

Thanks to BASF, Bayer, Intelligro, NuFarm, Syngenta and Wilbur-Ellis for supporting this research and/or for providing products.

Table 1. Treatments tested in the anthracnose and summer patch fungicide trial in Riverside, CA. 2018.

No.	Treatments	Active ingredient(s)	Company	Rate (oz/1000 ft^2)	Timing
1	Untreated Control	-	-	-	-
2	Bayer Program No. 1				
	Mirage Stressgard	tebuconazole	Bayer	1.00	A
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	B
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Mirage Stressgard	tebuconazole	Bayer	1.00	C
	Insignia SC	pyraclostrobin	BASF	0.70	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	D
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	E
	Mirage Stressgard	tebuconazole	Bayer	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	F
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Mirage Stressgard	tebuconazole	Bayer	1.00	G
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	H
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
3	Bayer Program No. 2 *(continued on next page)*				
	Mirage Stressgard	tebuconazole	Bayer	1.00	A
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Signature XTRA Stressgard	aluminium-tris	Bayer	5.30	B
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Mirage Stressgard	tebuconazole	Bayer	1.00	C
	Insignia SC	pyraclostrobin	BASF	0.70	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Signature XTRA Stressgard	aluminium-tris	Bayer	5.30	D
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	E
	Mirage Stressgard	tebuconazole	Bayer	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	

3	Bayer Program No. 2 *(continued from previous page)*				
	Signature XTRA Stressgard	aluminium-tris	Bayer	5.30	F
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Mirage Stressgard	tebuconazole	Bayer	1.00	G
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Signature XTRA Stressgard	aluminium-tris	Bayer	5.30	H
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
4	Bayer Program No. 3				
	Mirage Stressgard	tebuconazole	Bayer	1.00	A
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	B
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	C
	Affirm WDG	polyoxin D zinc salt	Cleary / NuFarm	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	D
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	E
	Affirm WDG	polyoxin D zinc salt	Cleary / NuFarm	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	F
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	G
	Mirage Stressgard	tebuconazole	Bayer	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	H
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
5	Bayer Program No. 4 *(continued on next page)*				
	Mirage Stressgard	tebuconazole	Bayer	1.00	A
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	B
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	C
	Exteris Stressgard	fluopyram, trifloxystrobin	Bayer	4.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	

5	Bayer Program No. 4 *(continued from previous page)*				
	Chipco Signature	aluminium-tris	Bayer	4.00	D
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	E
	Exteris Stressgard	fluopyram, trifloxystrobin	Bayer	4.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	F
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	G
	Mirage Stressgard	tebuconazole	Bayer	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	H
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
6	Bayer Program No. 5				
	Mirage Stressgard	tebuconazole	Bayer	1.00	A
	Chipco Signature	aluminium-tris	Bayer	4.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	B
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	C
	Mirage Stressgard	tebuconazole	Bayer	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	D
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Insignia SC	pyraclostrobin	BASF	0.70	E
	Mirage Stressgard	tebuconazole	Bayer	1.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	F
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Mirage Stressgard	tebuconazole	Bayer	1.00	G
	Chipco Signature	aluminium-tris	Bayer	4.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Chipco Signature	aluminium-tris	Bayer	4.00	H
	Daconil Weatherstik	chlorothalonil	Syngenta	3.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
7	UCR 001	*classified*	-	-	A-H
8	UCR 001	*classified*	-	-	A-H
9	UCR 002	*classified*	-	-	A-H
10	UCR 002	*classified*	-	-	A-H
11	UCR 003	*classified*	-	-	A-H
12	UCR 003	*classified*	-	-	A-H

13	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
	UCR 001	*classified*	-	-	
14	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
	UCR 001	*classified*	-	-	
15	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
	UCR 002	*classified*	-	-	
16	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
	UCR 002	*classified*	-	-	
17	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
	UCR 003	*classified*	-	-	
18	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
	UCR 003	*classified*	-	-	
19	Daconil Weatherstik	chlorothalonil	Syngenta	3.60	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
20	Intelligro Program No. 1 *(continued on next page)*				
	LINK Quality Plus	NPK 5-20-20	Wilbur-Ellis	4.00	A
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Banner Maxx II	propiconazole	Syngenta	1.00	
	Medallion SC	fludioxonil	Syngenta	1.00	B
	LINK Quality Plus	NPK 5-20-20	Wilbur-Ellis	4.00	
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	C
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Velista	penthiopyrad	Syngenta	0.30	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	D
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Heritage	azoxystrobin	Syngenta	0.20	
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	E
	Affirm WDG	polyoxin D zinc salt	Cleary / NuFarm	0.88	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	

20	Intelligro Program No. 1 *(continued from previous page)*				
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	F
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Medallion SC	fludioxonil	Syngenta	1.00	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	G
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Velista	penthiopyrad	Syngenta	0.30	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	H
	CIVITAS TURF DEFENSE Pre-M1xed	mineral oil	Intelligro	8.50	
	Insignia SC	pyraclostrobin	BASF	0.50	
21	Intelligro Program No. 2				
	LINK Quality Plus	NPK 5-20-20	Wilbur-Ellis	4.00	A
	Banner Maxx II	propiconazole	Syngenta	1.00	
	Medallion SC	fludioxonil	Syngenta	1.00	B
	LINK Quality Plus	NPK 5-20-20	Wilbur-Ellis	4.00	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	C
	Velista	penthiopyrad	Syngenta	0.30	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	D
	Heritage	azoxystrobin	Syngenta	0.20	
	Affirm WDG	polyoxin D zinc salt	Cleary / NuFarm	0.88	E
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	F
	Medallion SC	fludioxonil	Syngenta	1.00	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	G
	Velista	penthiopyrad	Syngenta	0.30	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	H
	Insignia SC	pyraclostrobin	BASF	0.50	
22	Intelligro Program No. 3 *(continued on next page)*				
	LINK Quality Plus	NPK 5-20-20	Wilbur-Ellis	4.00	A
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Banner Maxx II	propiconazole	Syngenta	1.00	

22	Intelligro Program No. 3 *(continued from previous page)*				
	Medallion SC	fludioxonil	Syngenta	1.00	B
	LINK Quality Plus	NPK 5-20-20	Wilbur-Ellis	4.00	
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	C
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Velista	penthiopyrad	Syngenta	0.30	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	D
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Heritage	azoxystrobin	Syngenta	0.20	
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	E
	Affirm WDG	polyoxin D zinc salt	Cleary / NuFarm	0.88	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	E
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	F
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Medallion SC	fludioxonil	Syngenta	1.00	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	G
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Velista	penthiopyrad	Syngenta	0.30	
	Alude	mono- and dibasic sodium, potassium, and ammonium phosphites	NuFarm	5.50	H
	Daconil Ultrex	chlorothalonil	Syngenta	3.20	
	Insignia SC	pyraclostrobin	BASF	0.50	
23	Nivales T	fludioxonil	Sipcam Agro	1.00	A-H
	Echo Dyad ETQ	chlorothalonil	Sipcam Agro	4.90	
24	Anthracnose Program No. 1				
	Heritage Action	azoxystrobin, acibenzolar-S-methyl	Syngenta	0.40	ACEG
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Daconil Action	chlorothalonil, acibenzolar-S-methyl	Syngenta	3.50	BDFH
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
25	Anthracnose Program No. 2				
	Secure Action	fluazinam, acibenzolar-S-methyl	Syngenta	0.50	ACEG
	Appear II	potassium phosphite	Syngenta	6.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Daconil Action	chlorothalonil, acibenzolar-S-methyl	Syngenta	3.50	BDFH
	Secure Action	fluazinam, acibenzolar-S-methyl	Syngenta	0.50	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	

26	Daconil Action	chlorothalonil, acibenzolar-S-methyl	Syngenta	3.50	A-H
	Appear II	potassium phosphite	Syngenta	6.00	
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
27	A22758A	*classified*	-	1.30	A-H
28	A19188	*classified*	-	1.00	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
29	Anthracnose Program No. 3				
	Velista	penthiopyrad	Syngenta	0.50	ADG
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Daconil Action	chlorothalonil, acibenzolar-S-methyl	Syngenta	3.50	BEH
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
	Heritage Action	azoxystrobin, acibenzolar-S-methyl	Syngenta	0.40	CF
	Primo Maxx	trinexapac-ethyl	Syngenta	0.10	
30	A15457	*classified*	-	0.24	A-H
	Medallion SC	fludioxonil	Syngenta	1.00	
31	Maxtima	mefentrifuconazole	BASF	0.80	A-H
32	Navicon	mefentrifuconazole, pyraclostrobin	BASF	0.85	A-H
33	Velista	penthiopyrad	Syngenta	0.30	A-H

Application codes (timing):

A – 06/06/2018
B – 06/20/2018
C – 07/06/2018
D – 07/18/2018
E – 08/02/2018
F – 08/15/2018
G – 08/30/2018
H – 09/12/2018

Anthracnose/Summer Patch Fungicide Trial Plot Plan (12 G 4) ↑N

101 Trt 1	102 Trt 2	103 Trt 3	104 Trt 4	105 Trt 5	106 Trt 6	107 Trt 7	108 Trt 8	109 Trt 9	110 Trt 10	111 Trt 11	112 Trt 12	113 Trt 13	114 Trt 14	115 Trt 15	116 Trt 16	117 Trt 17	118 Trt 18	119 Trt 19	120 Trt 20	121 Trt 21
201 Trt 17	202 Trt 5	203 Trt 14	204 Trt 2	205 Trt 7	206 Trt 20	207 Trt 4	208 Trt 15	209 Trt 12	210 Trt 33	211 Trt 32	212 Trt 31	213 Trt 30	214 Trt 29	215 Trt 28	216 Trt 27	217 Trt 26	218 Trt 25	219 Trt 24	220 Trt 23	221 Trt 22
301 Trt 13	302 Trt 22	303 Trt 28	304 Trt 3	305 Trt 23	306 Trt 33	307 Trt 10	308 Trt 8	309 Trt 30	310 Trt 19	311 Trt 27	312 Trt 1	313 Trt 9	314 Trt 21	315 Trt 24	316 Trt 16	317 Trt 31	318 Trt 11	319 Trt 6	320 Trt 29	321 Trt 25
401 Trt 21	402 Trt 7	403 Trt 11	404 Trt 15	405 Trt 6	406 Trt 13	407 Trt 8	408 Trt 16	409 Trt 12	410 Trt 24	411 Trt 31	412 Trt 20	413 Trt 25	414 Trt 29	415 Trt 30	416 Trt 9	417 Trt 3	418 Trt 27	419 Trt 26	420 Trt 32	421 Trt 18
501 Trt 18	502 Trt 23	503 Trt 14	504 Trt 1	505 Trt 32	506 Trt 33	507 Trt 4	508 Trt 28	509 Trt 19	510 Trt 5	511 Trt 10	512 Trt 22	513 Trt 2	514 Trt 26	515 Trt 17	516 Trt 13	517 Trt 20	518 Trt 9	519 Trt 15	520 Trt 29	521 Trt 11
601 Trt 24	602 Trt 25	603 Trt 8	604 Trt 2	605 Trt 30	606 Trt 7	607 Trt 5	608 Trt 21	609 Trt 14	610 Trt 3	611 Trt 33	612 Trt 19	613 Trt 12	614 Trt 6	615 Trt 1	616 Trt 16	617 Trt 27	618 Trt 26	619 Trt 32	620 Trt 10	621 Trt 4
701 Trt 31	702 Trt 22	703 Trt 28	704 Trt 18	705 Trt 17	706 Trt 23	707 Trt 12	708 Trt 9	709 Trt 32	710 Trt 13	711 Trt 16	712 Trt 20	713 Trt 4	714 Trt 24	715 Trt 33	716 Trt 30	717 Trt 6	718 Trt 21	719 Trt 27	720 Trt 5	721 Trt 8
801 Trt 10	802 Trt 11	803 Trt 23	804 Trt 31	805 Trt 3	806 Trt 28	807 Trt 7	808 Trt 2	809 Trt 17	810 Trt 29	811 Trt 1	812 Trt 26	813 Trt 25	814 Trt 22	815 Trt 19				819 Trt 14	820 Trt 15	821 Trt 18

Table 2. Effect of treatments on turfgrass visual quality (1-9; 9=highest), overall disease cover (0-100%), disease symptoms severity within activity cover (0-10; 10=highest), overall disease pressure (0-10; 10=highest), green color intensity (1-9, 9=highest) on August 27 and on turfgrass injury (0-10, 10=highest) on July 3 evaluated on annual bluegrass turf. Riverside, CA, 2018.

No.	Treatment	Visual Quality	Disease cover	Disease severity	Disease pressure	Color	Turfgrass injury
1	Untreated Control	2.7 H-K*	48 A-D*	7.7 A-C*	3.7 A-E*	3.3 K-N*	0.7 B-D*
2	Bayer Program No. 1	8.3 A	2 G	0.3 K	0.0 J	8.3 AB	0.7 B-D
3	Bayer Program No. 2	8.0 AB	0 G	0.0 K	0.0 J	7.7 A-D	0.7 B-D
4	Bayer Program No. 3	7.7 AB	0 G	0.0 K	0.0 J	8.0 A-C	1.0 A-C
5	Bayer Program No. 4	6.3 B-D	15 E-G	2.0 H-K	0.9 H-J	6.7 A-G	1.0 A-C
6	Bayer Program No. 5	8.0 AB	0 G	0.0 K	0.0 J	8.7 A	1.7 A
7	UCR 001	3.0 G-K	38 A-F	8.7 AB	3.4 A-F	3.7 J-N	0.0 D
8	UCR 001	2.3 I-K	62 A	8.3 AB	5.1 AB	3.3 K-N	0.0 D
9	UCR 002	2.0 JK	53 AB	8.3 AB	4.4 A-C	2.7 MN	0.0 D
10	UCR 002	3.0 G-K	52 A-C	8.7 AB	4.4 A-C	3.0 L-N	0.0 D
11	UCR 003	3.0 G-K	45 A-D	8.3 AB	3.8 A-D	3.7 J-N	0.0 D
12	UCR 003	1.7 K	60 A	9.0 A	5.4 A	2.0 N	0.0 D
13	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M) + UCR 001	3.7 F-J	40 A-E	6.0 A-F	2.3 D-H	3.7 J-N	0.0 D
14	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M) + UCR 001	3.0 G-K	38 A-F	5.7 B-G	2.3 D-I	4.0 I-N	0.0 D
15	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M) + UCR 002	4.7 D-G	26 B-G	4.7 C-H	1.5 F-J	5.3 E-K	0.0 D
16	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M) + UCR 002	3.0 G-K	38 A-F	7.3 A-D	3.2 B-G	3.7 J-N	0.0 D
17	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M) + UCR 003	3.7 F-J	46 A-D	4.7 C-H	2.2 D-I	3.7 J-N	0.3 CD
18	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M) + UCR 003	4.7 D-G	28 B-G	6.7 A-E	1.9 D-J	4.7 G-M	0.0 D
19	Daconil Weatherstik (3.6 oz/M) + Medallion SC (1.0 oz/M)	3.0 G-K	46 A-D	6.7 A-E	3.0 C-G	3.7 J-N	0.0 D
20	Intelligro Program No. 1	5.0 D-F	20 D-G	4.7 C-H	0.8 H-J	5.0 F-L	0.0 D
21	Intelligro Program No. 2	6.3 B-D	4 G	4.0 E-I	0.3 IJ	6.3 B-H	0.0 D
22	Intelligro Program No. 3	4.3 E-H	28 B-G	4.3 D-I	1.7 E-J	4.3 H-M	0.0 D
23	Nivales T (1.0 oz/M) + Echo Dyad ETQ (4.9 oz/M)	4.7 D-G	23 C-G	2.7 G-K	0.6 H-J	5.0 F-L	0.0 D
24	Anthracnose Program No. 1	4.3 E-H	27 B-G	2.7 G-K	1.6 F-J	4.7 G-M	1.0 A-C
25	Anthracnose Program No. 2	5.3 C-F	5 G	1.7 H-K	0.1 J	6.0 C-I	0.3 CD
26	Daconil Action (3.5 oz/M) + Appear II (6.0 oz/M) + Primo Maxx (0.1 oz/M)	5.7 C-E	10 FG	2.3 H-K	0.5 H-J	5.7 D-J	1.0 A-C
27	A22758A (1.3 oz/M)	5.7 C-E	2 G	0.7 JK	0.0 J	6.3 B-H	1.3 AB
28	A19188 (1.0 oz/M) + Medallion SC (1.0 oz/M)	5.3 C-F	15 E-G	2.0 H-K	0.5 H-J	5.3 E-K	0.3 CD
29	Anthracnose Program No. 3	7.0 A-C	12 E-G	1.7 H-K	0.6 H-J	7.3 A-E	0.3 CD
30	A15457 (0.24 oz/M) + Medallion SC (1.0 oz/M)	4.0 E-I	48 A-D	3.7 E-J	1.9 D-J	4.3 H-M	0.0 D
31	Maxtima (0.8 oz/M)	6.3 B-D	7 G	0.7 JK	0.1 J	6.7 A-G	0.0 D
32	Navicon (0.85 oz/M)	5.3 C-F	2 G	1.3 I-K	0.1 J	7.0 A-F	0.0 D
33	Velista (0.3 oz/M)	3.7 F-J	38 A-F	3.0 F-K	1.2 G-J	3.3 K-N	0.0 D

*Means followed by the same letter in a column are not significantly different (P=0.05).