STATION #1-B

HOST - Bermudagrass
(*Cynodon dactylon* 'TifEagle')
Spring dead spot
Ophiosphaerella spp.

Evaluation of Fungicide Chemistries for Preventive Control of Spring Dead Spot in Bermudagrass Putting Green Turf

3	1	4	3	6	2	1	5	9	8	7	4
2	9	6	5	8	1	9	7	6	5	2	8
1	2	3	4	5	6	7	8	9	4	3	7

----------Station 1-A----------

	Treatment	Rate oz. 1000 ft^{-2}	Carrier Volume	Spray Interval	App Timing
1.	Non-treated				
2.	Kabuto	3.2 fl	2.1 gal	Single app	Preventative
3.	Kabuto	1.6 fl	2.1 gal	21 days	Preventative
4.	CU-SDS2-Ex1	High	2.1 gal	28 days	Preventative
5.	CU-SDS2-Ex1	Low	2.1 gal	28 days	Preventative
6.	Maxtima	0.6 fl	2.1 gal	28 days	Preventative
7.	Rayora	1.4 fl	2.1 gal	28 days	Preventative
8.	Fame	0.36 fl	2.1 gal	28 days	Preventative
9.	Kalida Rayora	0.41 fl 1.4 fl	2.1 gal	28 days	Preventative

Fungicides were evaluated for prevention of spring dead spot disease, caused by *Ophiosphaerella* spp. This trial was conducted at the Pee Dee REC Turfgrass Facility in Florence, SC on 'TifEagle' bermudagrass maintained as a golf course putting green. Mowing was performed 5 times weekly at a height of 0.125 in. throughout the growing season. Mowing frequency was reduced to <3X weekly and mowing height was increased to 0.150 in in the winter months. The site was irrigated to prevent drought stress. The entire plot area was fertilized every 14 d with 0.2 lb N 1000 ft^{-2} as a foliar application (46-0-0 or 20-20-20) March Through October 2021. Wetting agent was applied monthly as Fleet (4 fl oz 1000 ft^{-2}) and plant growth regulator was applied every 14 d throughout the 2021 growing season as Primo Maxx (0.125 fl oz 1000 ft^{-2}). Kerb SC T&O (i.e., pronamide) was applied for control of annual bluegrass on 16 November 2021. Treatments were arranged in a randomized complete block design with 4 replications. Treatments were applied to 3' x 10' plots using a walk-behind CO_2 pressurized sprayer equipped with TeeJet 8002 nozzles calibrated to deliver 2.1 gal 1000 ft^{-2}. Treatments received post-application irrigation at ~0.125". All treatments were initiated on 15 October and reapplied on 10 November. Spring dead spot was systematically inoculated at 3 points per plot in spring of 2021. Spring dead spot disease was assessed when observed and turf quality was assessed regularly throughout the trial period. The experimental area entered semi-dormancy (tan-brown color) in mid-December and started to green up in March 2022. Fluctuating temperatures caused variations in turf color through April 2022, but treatment differences in spring dead spot were easily observed despite turfgrass color.

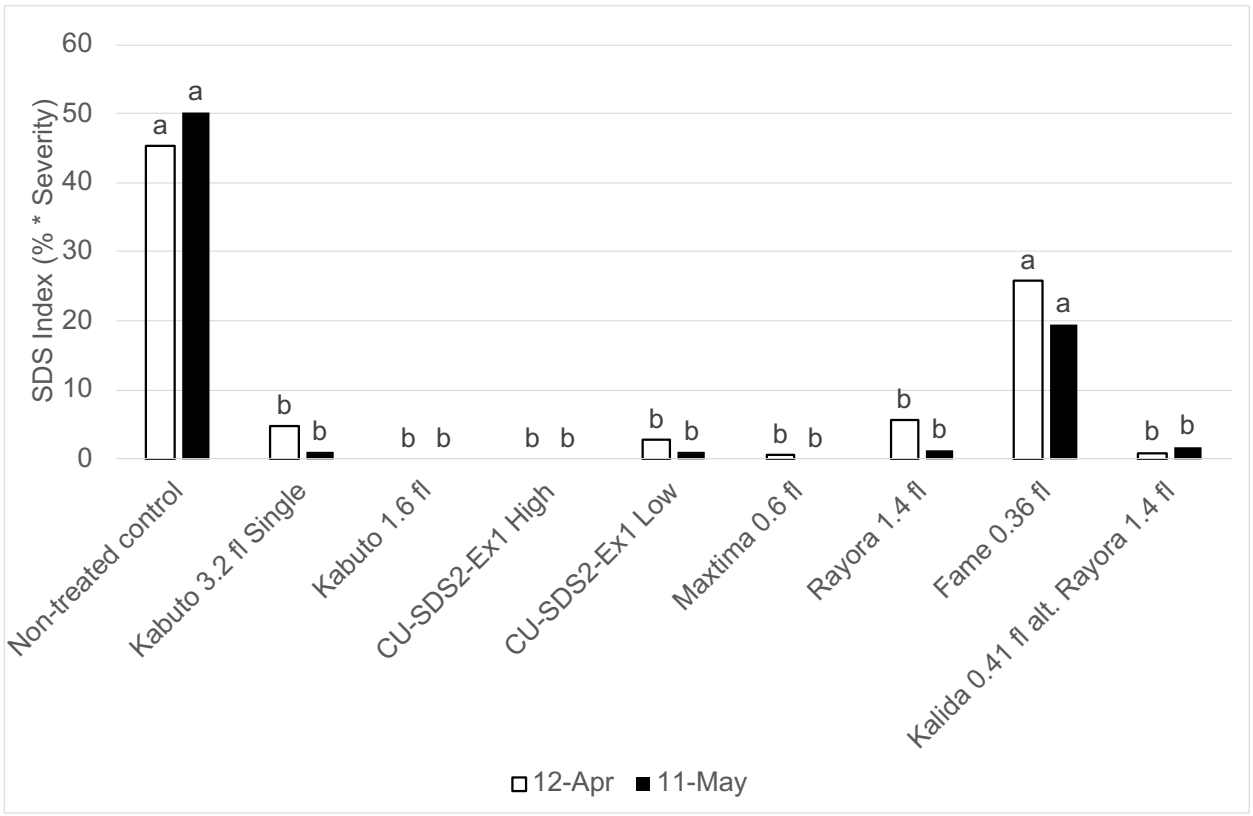

Figure 1. Spring dead spot index calculated for each plot using the formula [(% area infected * severity scale (1-9; 9=dead sunken patch)]

Table 1. Impact of Fungicide Applications on Quality of TifEagle Bermudagrass Maintained as a Putting Green

		Quality (Scale 1-9; 9=best)					
Treatment[a] and rate 1000 ft^2	Appl. Code[b]	Nov 3	Dec 1	Feb 8	Feb 22	Apr 12	May 11
Non-treated Check		5.8[c]	5.9	5.1	4.9	3.6 d	3.8 d
Kabuto 3.2 fl oz	A	6.0	5.9	4.5	5.0	5.4 ab	5.7 ab
Kabuto 1.6 fl oz	AD	6.4	5.9	4.4	5.5	5.6 ab	5.5 ab
CU-SDS2-EX1 High	AE	6.4	5.8	4.9	4.9	5.7 ab	4.8 c
CU-SDS2-EX1 Low	AE	5.9	5.8	5.0	5.1	5.8 ab	5.8 ab
Maxtima 0.6 fl oz	AE	6.1	6.0	5.0	5.5	6.1 a	6.1 a
Rayora 1.4 fl oz	AE	6.3	5.8	4.5	5.0	5.1 bc	5.5 ab
Fame 0.36 fl oz	AE	6.5	6.0	5.0	5.1	4.4 cd	4.5 c
Kalida 0.41 fl oz Rayora 1.4 fl oz	A E	5.9	6.0	4.1	5.0	5.6 ab	5.1 bc
ANOVA Significance		0.30	0.71	0.18	0.30	0.001	0.001

[a] Treatments applied at designated intervals using TeeJet flat fan nozzles designed to deliver product rates in 2.1 gal H_2O 1000 ft^{-2}. All treatments received post-application irrigation at 0.125".

[b] Application codes representing intervals for treatment applications: A(15 October 2021), D(4 November 2021), and E(10 November)

[c] Letter designations represent statistical significance using Fishers Protected Least Significant Difference at Pr<0.01

Table 2. Impact of Fungicide Applications on Spring Dead Spot Development in TifEagle Bermudagrass Maintained as a Putting Green

		% Area Infected			Severity (1-9; 9 = worst)	
Treatment[a] and rate 1000 ft^2	Appl. Code[b]	Mar 1	Apr 12	May 11	Apr 12	May 11
Non-treated Check		4.3 a[c]	5.6 a	6.8 a	8.0 a	7.8 a
Kabuto 3.2 fl oz	A	0.2 cde	0.4 cd	0.6 c	2.8 b	1.0 c
Kabuto 1.6 fl oz	AD	0.3 cde	0.0 d	0.0 c	1.0 b	0.0 c
CU-SDS2-EX1 High	AE	0.1 d	0.0 d	0.0 c	1.0 b	0.0 c
CU-SDS2-EX1 Low	AE	1.1 bcd	0.5 cd	1.3 c	2.5 b	0.6 c
Maxtima 0.6 fl oz	AE	0.0 e	0.1 d	0.0 c	1.5 b	0.0 c
Rayora 1.4 fl oz	AE	1.1 bc	1.5 bc	1.0 c	2.8 b	0.8 c
Fame 0.36 fl oz	AE	3.2 ab	4.0 ab	5.0 b	6.5 a	4.0 b
Kalida 0.41 fl oz Rayora 1.4 fl oz	A E	1.1 bcd	0.1 d	1.5 c	1.5 b	1.0 c
ANOVA Significance		0.003	0.001	0.0001	0.0001	0.0001

[a] Treatments applied at designated intervals using TeeJet flat fan nozzles designed to deliver product rates in 2.1 gal H_2O 1000 ft^{-2}. All treatments received post-application irrigation at 0.125".

[b] Application codes representing intervals for treatment applications: A(15 October 2021), D(4 November 2021), and E(10 November)

[c] Letter designations represent statistical significance using Fishers Protected Least Significant Difference at Pr<0.01

Table 3. Impact of Fungicide Applications on Color of TifEagle Bermudagrass Maintained as a Putting Green

		Color (NDVI: Fieldscout CM1000)					
Treatment[a] and rate 1000 ft^2	Appl. Code[b]	Oct 20	Nov 6	Dec 22	Jan 10	Feb 22	Mar 8
Non-treated Check		0.76 bcd[c]	0.65 a	0.71	0.74 ab	0.64	0.74 a-d
Kabuto 3.2 fl oz	A	0.78 ab	0.65 ab	0.72	0.74 abc	0.66	0.74 bcd
Kabuto 1.6 fl oz	AD	0.77 abc	0.65 ab	0.71	0.74 abc	0.64	0.75 abc
CU-SDS2-EX1 High	AE	0.76 bcd	0.61 c	0.70	0.72 cd	0.64	0.71 e
CU-SDS2-EX1 Low	AE	0.79 a	0.66 a	0.72	0.76 a	0.66	0.76 ab
Maxtima 0.6 fl oz	AE	0.76 cd	0.65 ab	0.71	0.75 ab	0.64	0.75 abc
Rayora 1.4 fl oz	AE	0.76 cd	0.62 bc	0.72	0.71 d	0.62	0.73 de
Fame 0.36 fl oz	AE	0.77 abc	0.62 bc	0.75	0.73 bcd	0.65	0.76 a
Kalida 0.41 fl oz Rayora 1.4 fl oz	A E	0.75 d	0.64 ab	0.72	0.74 abc	0.64	0.74 cd
ANOVA Significance		0.06	0.05	0.83	0.04	0.51	0.02

[a] Treatments applied at designated intervals using TeeJet flat fan nozzles designed to deliver product rates in 2.1 gal H_2O 1000 ft^{-2}. All treatments received post-application irrigation at 0.125".

[b] Application codes representing intervals for treatment applications: A(15 October 2021), D(4 November 2021), and E(10 November)

[c] Letter designations represent statistical significance using Fishers Protected Least Significant Difference at Pr<0.01