

2017-18 Bermudagrass Spring Dead Spot Fungicide Trial



Spring Dead Spot can be a devastating disease of bermudagrass turf, especially in cooler climates in northern California. Photo above taken of an untreated control plot on the 14th fairway (site of fungicide trial) at North Ridge Country Club, Fair Oaks, CA on 6 May 2018.

Research Report Brought To You By:



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The Bottom Line: Thirteen commercial or experimental fungicides were tested alone or in combination against an untreated control for management of spring dead spot (SDS) disease caused by *Ophiosphaerella* spp. on a bermudagrass fairway at North Ridge Country Club in Fair Oaks (suburb of Sacramento). Treatments were applied two or three times in September, October, or November 2017. Most treatments significantly reduced SDS severity and improved turfgrass quality compared to the untreated control; however, Maxtima (mefentrifluconazole) + Xzemplar (fluxapyroxad) produced the least overall disease severity. Results from three consecutive years of SDS fungicide trials at North Ridge CC have pointed to synergistic or additive effects of tank-mixing DMI or QoI with SDHI fungicides for enhanced control of SDS. Xzemplar (fluxapyroxad) appears to have the greatest activity on SDS at North Ridge CC among the SDHI fungicides followed by Velista (penthioopyrad) when applied at the highest label rate. Posterity (pydiflumetofen), a new sub-class of SDHI, provided good SDS control at higher rates or with three applications. A similar trend was observed for Exteris Stressgard (fluopyram + trifloxystrobin), a combination of SDHI and QoI active ingredients. Among the DMI fungicides, Mirage (tebuconazole) has provided the most consistent SDS control when applied alone or in combination with SDHI or QoI fungicides. Maxtima appears to provide similar effective control, but it has been tested only one season at North Ridge CC. Among the treatments containing QoI fungicides, Lexicon (pyraclostrobin + fluxapyroxad) has performed well over three years of testing and Navicon (mefentrifluconazole + pyraclostrobin) performed very well in this year's trial.

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Introduction:

Bermudagrass (*Cynodon* spp.) is considered by many to be the “go to” turfgrass species for golf courses, athletic fields, and other turf areas throughout most of California because of its water use efficiency, tolerance to drought, salinity, and traffic, and recovery from wear. Bermudagrass is also tolerant to most pests, especially in California's Mediterranean climate. However, bermudagrass can be susceptible to spring dead spot (SDS), a root disease caused by three primary species of fungi in the genus *Ophiosphaerella*. Typically, SDS occurs on intensively managed bermudagrass turf that is subject to freezing temperatures and winter dormancy. Although the disease is active during the fall and, in some cases, early spring, symptoms of circular dead patches do not appear until green-up and active growth in spring. Then, turf recovery in affected areas can be very slow and often symptoms reappear in the same vicinity year after year.

Cultural and chemical management of SDS provides no guarantee of complete disease control. However, it is best to avoid late season nitrogen fertilization even though results are mixed. Winter hardy bermudagrass cultivars that are best adapted for the U.S. transition zone tend to be more tolerant to SDS; however, these cultivars are usually not well adapted for use in California. If there is a history of SDS on bermudagrass in California, usually it is best to apply a fungicide or fungicides beginning in September or October followed by a repeat application 30 days after. Historically, the DMI (e.g., propiconazole, tebuconazole, etc.) and QoI (e.g., azoxystrobin) fungicides have been most effective on SDS. The objective of this research was to test these along with newer or experimental fungicides, particularly the SDHI fungicides including fluxapyroxad (Xzemplar), fluopyram (Exteris), and penthiopyrad (Velista).

Materials and Methods:

The study was conducted on the 14th fairway at North Ridge Country Club in Fair Oaks, a suburb of Sacramento. The fairways are a mix of common and hybrid bermudagrasses with a history of SDS caused by a species of *Ophiosphaerella* most closely resembling *narmari*. Experimental design was a randomized block with 4 replications. Plot size was 6-ft x 8-ft with 2-ft alleys. Fungicides were applied using a CO₂-powered backpack sprayer equipped with 8003VS nozzles to deliver 2 gal/M. Fungicide treatments were applied on September 26 and October 24, and a few treatments were applied again on November 21, 2017. The fairway was irrigated with 0.2 inches of water immediately following each application. Soil temperatures were ≤65F 2 inches into the profile from the day of initial treatment.

Results:

Spring dead spot distribution was sporadic as is typical of this disease, but severity reached as high as 38% mean visual disease cover in the untreated controls (Table 1). Although most of the treatments significantly reduced SDS disease cover compared to the untreated control, Maxtima (mefentrifluconazole) + Xzemplar (fluxapyroxad) produced the least overall disease severity.

Results from three consecutive years of SDS fungicide trials at North Ridge CC have pointed to synergistic or additive effects of tank-mixing DMI or QoI with SDHI fungicides for enhanced control of SDS. Xzemplar (fluxapyroxad) appears to have the greatest activity on SDS at North Ridge CC among the SDHI fungicides followed by Velista (penthiopyrad) when applied at the highest label rate. Posterity (pydiflumetofen), a new sub-class of SDHI, provided good SDS control at higher rates or with three applications. A similar trend was observed for Exteris Stressgard (fluopyram + trifloxystrobin), a combination of SDHI and QoI active ingredients. Among the DMI fungicides, Mirage (tebuconazole) has provided the most consistent SDS control when applied alone or in combination with SDHI or QoI fungicides. Maxtima appears to provide similar effective control, but it has been tested only one season at North Ridge CC. Among the treatments containing QoI fungicides, Lexicon (pyraclostrobin + fluxapyroxad) has performed well over three years of testing and Navicon (mefentrifluconazole + pyraclostrobin) performed very well in this year's trial.

Table 1. Spring Dead Spot disease severity (0-100%) in spring 2018 following fall applications of fungicides. North Ridge Country Club, Fair Oaks, CA.

No.	Product(s)	Company	Rate (oz/M)	Timing	4/23/18	5/6/18	5/16/18
1	Untreated Control	--	--	--	38 ab	33 a	25 a
2	Mirage	Bayer	2.0	AB	11 cde	9 cde	5 cd
3	Exteris Stressgard	Bayer	4.0	AB	30 a-d	23 abc	20 ab
3	Mirage	Bayer	1.0	AB			
4	Exteris Stressgard	Bayer	6.0	AB	13 cde	8 cde	1 d
4	Mirage	Bayer	1.5	AB			
5	Mirage	Bayer	1.5	AB	14 cde	13 b-e	15 abc
6	Exteris Stressgard	Bayer	5.0	AB	18 b-e	16 b-e	14 a-d
6	Mirage	Bayer	2.0	AB			
7	Velista	Syngenta	0.7	AB	9 e	7 de	3 cd
8	Posterity	Syngenta	0.0785	ABC	20 b-e	15 b-e	13 a-d
9	Posterity	Syngenta	0.0785	ABC	18 b-e	15 b-e	13 a-d
9	Headway	Syngenta	1.5	ABC			
10	Posterity	Syngenta	0.157	ABC	10 de	8 cde	4 cd
11	Posterity	Syngenta	0.157	AB	20 b-e	16 b-e	12 a-d
12	Posterity	Syngenta	0.157	AB	15 cde	15 b-e	12 a-d
12	Headway	Syngenta	3.0	AB			
13	Posterity	Syngenta	0.314	AB	8 e	3 e	5 cd
14	Velista	Syngenta	0.5	AB	10 de	10 cde	8 bcd
14	Banner Maxx	Syngenta	2.0	AB			
15	Velista	Syngenta	0.5	AB	22 a-e	16 b-e	14 a-d
15	Banner Maxx	Syngenta	4.0	AB			
16	Velista	Syngenta	0.7	AB	7 e	3 e	1 d
16	Banner Maxx	Syngenta	2.0	AB			
17	A19188		1.0	AB	15 cde	15 b-e	10 bcd
18	Banner Maxx	Syngenta	4.0	AB	42 a	27 ab	20 ab
19	Lexicon	BASF	0.47	AB	14 cde	12 b-e	5 cd
20	Xzemplar	BASF	0.26	AB	12 cde	8 cde	5 cd
21	Trinity	BASF	2.0	AB	7 e	3 e	2 cd
21	Xzemplar	BASF	0.26	AB			
22	Trinity	BASF	2.0	AB	32 abc	19 a-d	20 ab
23	Banner Maxx	Syngenta	2.0	AB	9 e	9 cde	3 cd
23	Xzemplar	BASF	0.26	AB			
24	Maxtima	BASF	0.8	AB	15 cde	12 b-e	3 cd
25	Maxtima	BASF	0.8	AB	4 e	2 e	1 d
25	Xzemplar	BASF	0.26	AB			
26	Navicon	BASF	0.85	AB	6 e	5 de	6 cd
27	Mirage	Bayer	2.0	AB	14 cde	8 cde	3 cd
27	Xzemplar	BASF	0.26	AB			

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

A = 26 September 2017; B = 24 October 2017; C = 21 November 2017.