

Dollar Spot Control With Propiconazole, Emerald, Sync and SMS ACTIVE PLUS

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Methods: The objective of this study is to determine the impact of Sync and SMS Active Plus on dollar spot (*Sclerotinia homoeocarpa*) with Emerald and Propiconazole. Turfgrass was PennTrio creeping bentgrass mown 2-3 times weekly at 0.525 inches. This trial was conducted on the driving range fairway at Bellewood Golf Club located in Pottstown, PA. Dollar spot and brown patch were managed the prior to study initiation with various fungicides applied on a 21-28 day interval. These fungicides include: boscalid, iprodione, various sterol inhibitors and chlorothalonil. Dollar spot was not active at the time of trial initiation, however, symptoms quickly developed. Treatments were 28 July and sequential treatment was applied 10 August 2010. Treatments were applied in 44 gallon per acre (GPA) using an 8004 even flat fan nozzle.

The treatment structure was a randomized complete block design with four replications. Individual plots were 5 feet by 5 feet. Dollar spot was rated on a percent scale from 0 to 100 where 0= no disease and 100= entire plot area blighted. The threshold for acceptable dollar spot control is 0.5% plot area blighted. Turfgrass quality was rated on a 0 to 10 scale where 7= unacceptable threshold for a bentgrass fairway and 10= optimal color, density and quality. All data are shown in table below. No phytotoxicity or non-target treatment effect was observed on any rating date (no data shown)

Results: It is important to note that both fungicides were applied at low rates to better separate treatment differences.

Dollar spot data are shown in table 1 below. Dollar spot pressure peaked on 30 August when 49.50% was observed in the untreated plots. Dollar spot developed quickly after the first application and on 10 August, there was 33% in the untreated plots. On 10 August plots treated with Sync and SMS Active Plus had dollar spot levels similar to the untreated control. This trend continued for the duration of the trial and these data suggest that neither Sync or SMS Active Plus have significant activity on dollar spot activity. Also on 10 August, all fungicide and surfactant combinations (i.e. propiconazole tank mixed (+) with Sync and SMS Active Plus; and Emerald + Sync and SMS Active Plus) had agronomically less dollar spot when compared to each fungicide applied alone. Plots were re-treated on 10 August and by 17 August, there was no significant differences observed among fungicides and fungicide + surfactant combinations.

Although the surfactants appeared to slightly boost the dollar spot control with Emerald and Propiconazole, the greatest residual benefits were observed with Emerald. On 24 August, complete dollar spot control was observed in plots treated with SMS Active Plus + Emerald (0.0% plot area blighted). Although statistically no different from the others, those plots had agronomically less dollar spot when compared to Emerald-alone (0.65%) and Sync + Emerald (1.38%). By 30 August, only plots treated with SMS Active Plus + Emerald had dollar spot levels below the acceptable threshold. This trend continued through 3 Sept. By 6 September all fungicide treated plots were above the acceptable threshold for dollar spot blighting.

Turfgrass quality data are shown in table 2. Generally treatments provided the best dollar spot control improved turfgrass quality. No phyto was observed on any rating date.

Discussion: These data indicate that both SMS Active Plus and Sync have the potential to boost dollar spot control-both short term and long term with two acropetal moving fungicides. The greatest differences with propiconazole were observed early in the trial (10 August) when pressure was low, however, once pressure increased these differences were not as clear and could be due to the low rate of propiconazole or lack of residual control from this active ingredient when applied alone. Although the differences were not statistical, they are agronomically important. The residual differences were observed with Emerald.

It is absolutely critical to evaluate this fungicides and surfactants combinations again in a real world scenario. It may also be prudent to evaluate other fungicide active ingredients and other diseases with these surfactants to better understand their interactions. It may also be prudent to evaluate tank mixtures with the surfactants for residual control. Many superintendents generally spray tank mixtures of fungicides (for example: propiconazole + chlorothalonil) and not just propiconazole, hence understanding the impact of these surfactants would be critical.

Table 1. Percent dollar spot as influenced by Propiconazole, Emerald, Sync and SMS ACTIVE PLUS. PA, 2010.

Rating Date		Aug-10	Aug-17	Aug-24	Aug-30	Sep-3	Sep-6	Sep-10	Sep-17								
Rating Type		% plot area blighted by Dollar Spot**															
Days After First/Last Applic.		13	13	20	7	27	14	33	20	37	24	40	27	44	31	51	38
Trt No.	Treatment* Name	Rate Unit															
1	Untreated Control	-	33.00 a**	35.00 a	37.50 a	40.25 abc	35.25 a	30.25 a	29.25 a	29.00 a							
2	Sync Propiconazole	0.125% v/v 0.5 fl oz	3.75 bc	2.88 b	7.55 b	13.75 cd	15.25 ab	16.50 ab	15.00 ab	14.75 ab							
3	-SMS Active Plus Propiconazole	0.125% v/v 0.5 fl oz	2.50 c	2.75 b	12.50 b	18.00 bcd	20.25 ab	18.50 ab	16.50 ab	15.75 ab							
4	Sync Emerald	0.125% v/v 0.13 oz	3.00 c	0.75 b	1.38 b	2.25 d	2.75 b	2.93 b	2.88 b	2.88 b							
5	SMS Active Plus Emerald	0.125% v/v 0.13 oz	2.63 c	1.63 b	0.00 b	0.25 d	0.48 b	1.03 b	1.35 b	1.35 b							
6	Propiconazole	0.5 fl oz	5.50 bc	1.00 b	1.50 b	2.25 d	20.25 ab	18.00 ab	17.50 ab	17.50 ab							
7	Emerald	0.13 oz	10.00 bc	0.88 b	0.65 b	0.63 d	1.10 b	1.95 b	2.00 b	2.00 b							
8	Sync	0.125% v/v	21.25 ab	37.50 a	40.50 a	47.50 ab	39.25 a	37.25 a	35.00 a	34.50 a							
9	SMS Active Plus	0.125% v/v	30.75 a	36.50 a	40.00 a	49.50 a	39.25 a	35.75 a	35.00 a	30.75 a							
Treatment Prob(F)			0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001							

* Treatments were applied on 28 July and 10 August 2010.

** Percent plot area blighted by dollar spot was rated on a 0 to 100 scale where 0= no disease and 100= entire plot area blighted.

*** Means followed by same letter do not significantly differ (P=.05, Tukey's HSD).

Table 2. Turfgrass quality as influenced by Propiconazole, Emerald, Sync and SMS Active Plus. PA, 2010.

Rating Date			Aug-10	Aug-17	Aug-24	Aug-30	Sep-3	Sep-10	Sep-17							
Rating Type			Turfgrass Quality (0-10)**													
Days After First/Last Applic.			13	13	20	7	27	14	33	20	37	24	44	31	51	38
Trt No.	Treatment* Name	Rate Unit														
1	Untreated Control	-	4.25 b	4.00 b	4.25 d	4.50 de	4.3 e	3.5 c	3.3 c							
2	Sync Propiconazole	0.125% v/v 0.5 fl oz	7.00 a	7.25 a	6.95 bc	6.75 bc	6.3 c	6.3 ab	6.3 ab							
3	SMS Active Plus Propiconazole	0.125% v/v 0.5 fl oz	8.00 a	7.38 a	6.58 c	5.25 cd	5.3 d	5.3 b	5.5 b							
4	Sync Emerald	0.125% v/v 0.13 oz	7.63 a	8.50 a	8.25 ab	7.75 ab	7.0 bc	6.3 ab	6.5 a							
5	SMS Active Plus Emerald	0.125% v/v 0.13 oz	7.70 a	8.25 a	8.63 a	8.50 a	8.0 a	7.0 a	7.0 a							
6	Propiconazole	0.5 fl oz	6.50 ab	8.25 a	8.00 ab	7.38 ab	7.3 ab	7.0 a	7.0 a							
7	Emerald	0.13 oz	6.25 ab	8.25 a	8.38 a	8.38 ab	7.0 bc	7.0 a	7.0 a							
8	Sync	0.125% v/v	4.25 b	3.75 b	3.75 d	3.50 e	3.5 ef	3.3 c	3.8 c							
9	SMS Active Plus	0.125% v/v	4.00 b	4.50 b	4.25 d	3.75 de	3.0 f	3.3 c	3.8 c							

Treatment Prob(F)

* Treatments were applied on 28 July and 10 August 2010.

** Turfgrass quality was rated on a 0 to 10 scale where 7= unacceptable threshold for a bentgrass fairway and 10= optimal color, density and quality.

*** Means followed by same letter do not significantly differ (P=.05, Tukey's HSD).