Residual Control of Dollar Spot With Systemic Fungicides and Control of Typhula Blight (gray snowmold)

J. M Vargas Jr., James B. Beard, R. Detweiler

SYSTEMIC FUNGICIDE CONTROL OF SCLEROTINIA DOLLAR SPOT

A. Spray interval:

The purpose of this study was to determine how long spray intervals could be extended with systemic fungicides over the normal 10-14 days required with a surface or contact type fungicide. The study was conducted on toronto creeping bentgrass, replicated 3 times in a random block design. The plots were 4 x 4 ft and surrounded by a six inch untreated border so as to have inoculum adjacent to all plots throughout the study. The name of the contact fungicide which was not applied in accordance with the 10-14 day interval recommended on the label is ommitted. The fungicides were applied with a John Bean Spartan sprayer and a 3 nozzle boom on wheels which covered a 4 foot swath. The first spray application was made on June 23 after the dollar spot was first observed. The results are given in table 1. They show that 4 weeks and 6 weeks after application (7/20 and 8/2) all the systemic fungicide effectively controlled dollar spot while the contact fungicide check and the untreated check failed to do so. Seven weeks (8/10) after the fungicides were applied, the dollar spot began to increase in most of the systemic fungicide plots and in the control contact fungicide check, while the untreated check had a decrease in the number of spots. The disease was allowed to increase for an additional week (8/18), at which time all the fungicides were applied a second time. The first reading 3 weeks later (9/8) showed a decrease in the number of dollar spots in all plots receiving the systemic fungicides while the number of spots increased in the contact check and the untreated check. One month later the disease began to increase in most treatments.

Conclusion:

All the systemic fungicides tested appeared capable of controlling dollar spot for a period of 3 to 6 weeks depending on the disease pressure. This means they will give more residual control of dollar spot than the contact fungicides and will therefore require fewer applications during the growing season. However, because of the possible development of resistant strains of S. homeocarpa to the systemic fungicides, they should not be used exclusively but combined or alternated with some of the contact or surface fungicides in a total spray program.

B. Bi-weekly application of the systemic fungicides:

The systemic fungicides were applied in the same manner as described in part A, the only difference being that they were applied every two weeks instead of as needed. The fungicides were applied on the following dates: 6/23, 7/7, 7/21, 8/3, 8/18, 8/30, and 9/18. The results can be seen in table 2. They show good control throughout the season with some disease showing up on 8/10 under severe disease pressure.

The systemic fungicides will give excellent control of Sclerotinia dollar spot when applied on a bi-weekly basis. However, as mentioned above they should not be recommended on an exclusive basis. Tables 1 and 2.

SNOWMOLD FUNGICIDE STUDY

The 1971-72 snow mold fungicide study was conducted on 'penncross' creeping bentgrass in Harbor Spring, Michigan. The snow mold was extremely severe because of the warm fall which left the ground unfrozen before the first permanent snowfall. The plots were 8 x 8 ft and replicated 4 times in a random block design. The fungicides were applied with either a 15 gallon John Bean Spartan Sprayer or a 2 foot Scott's spreader.

The results (Table 4) show that both the wettable powder and granular formulation of Tersan SP and wettable powder formulation of Triarimol effectively controlled Typhula blight (gray snowmold) Typhula itoana. The triarimol was not effective in controlling Fusarium patch (Pink snowmold) Fusarium nivale

Conclusion:

Tersan SP and Triarimol are the only non-mecurial fungicides which effectively control Typhula blight under the severe weather conditions of northern Michigan. Triarimol appears very specific for Typhula blight, which is the major pathogen in this area. The fact that Fusarium patch occurred in the Triarimol and not in the Tersan S. P. plots suggests that Tersan S. P. may be effective against Fusarium Patch as well as Typhula blight. However, further testing is needed before a proper evaluation can be made.

Table 1 Sclerotinia dollar spot control

(fungicides applied as needed) 1972

Chemical	Rate/1000 ft^2	Total number of spots in 3 replications						
		6/23*	7/20	8/2	8/10	8/18*	9/8	9/15
Tersan 1991	1 oz.	3	0	0	32	77	0	4
"	2 oz.	0	0	0	21	55	7	12
Topsin M	1/2 oz.	3	1	6	16	44	0	43
"	1 oz.	3	0	1	9	54	0	41
EL 273	1 oz.	1	3	4	30	82	30	93
"	2 oz.	24	13	8	24	69	0	9
U-32-104	1 oz.	6	0	0	24	29	0	1
"	2 oz.	28	0	0	10	26	0	0
Bay Dam 18654	1 oz.	22	0	2	24	26	0	0
"	2 oz.	2	0	0	0	19	0	0
Fungo	1 oz.	28	3	0	10	39	0	10
"	2 oz.	16	0	3	28	41	0	2
Contact Fungicide Check	4 oz.	13	75	49	81	245	376	523
Untreated Check		79	130	118	45	125	300	300

*Dates sprayed

Table 2 Sclerotinia dollar spot control

(fungicides applied every two weeks)

Chemical	Rate/1000 ft^2	Total number of spots in 3 replications								
		6/23	7/10	8/2	8/10	8/18	9/1	9/15	9/26	10/6
Tersan 1991	1 oz.	33	0	0	6	1	0	0	0	12
"	2 oz.	41	0	0	3	1	0	0	0	0
Topsin M	1/2 oz.	11	0	1	4	3	0	0	1	0
"	1 oz.	15	0	0	9	0	0	0	0	0
El 273	1 oz.	48	1	0	0	0	0	0	0	0
"	2 oz.	64	1	0	10	0	0	0	0	0
U-32-104	1 oz.	5	0	0	20	0	0	3	0	0
"	2 oz.	63	0	0	6	0	0	0	0	0
Bay Dam 18654	1 oz.	14	0	2	4	0	0	0	1	6
"	2 oz.	19	0	0	5	0	0	0	0	0
Fungo	1 oz.	37	0	1	1	0	0	0	0	5
"	2 oz.	17	0	0	1	0	0	0	0	0
Check		36	86	68	108	142	351	351	266	319

Table 4. The average percent Typhula blight present (except where indicated otherwise) in the 1971-72 Fungicide Trials

Treatment	Rate/1000 sq. ft.	Ave. % snow mold[a]			
Tersan SP (WP)	9 oz	7.5	a		
Tersan SP (GR)	5 lbs	7.5	a		
Tersan SP (GR)	3.5 lbs	11.25	a	b	
Triarimol	8 oz	20.0[b]	a	b	
Tersan SP (WP)	6 oz	22.5	a	b	
Triarimol	4 oz	35.0[c]		b	
Topsin-M (GR)	1.75 lbs	96.25			c
Topsin-Actidione-Thiram (GR)	3.5 lbs	97.5			c
Topsin-M (GR)	3.5 lbs	97.5			c
Topsin (WP)	4 oz	97.5			c
Topsin (WP)	8 oz	98.75			c
Topsin-Actidione-Thiram (GR)	1.75 lbs	100.0			c
Actidione-Thiram (GR)	3.5 lbs	100.0			c
Actidione-Thiram (GR)	1.75 lbs	100.0			c
Check	----	100.0			c

[a] Treatments followed by the same letter are not significantly different at the 5% level

[b] Infection caused by Fusarium nivale (Fusarium Patch)

[c] Infection caused by Typhula and Fusarium

Trade name or experimental number	Generic name	Chemical formulations
Tersan 1991	Benomyl	50% (WP) (Methyl-1-butyl-carbamoyl)-2-benzimidazole-carbamat e
Topsin M	Thiophanate-methyl	70% (WP) dimethyl 4, 4-0-phenylenebis (3-Thioalloplanate)
EL-273	Triarimol	25% (WP) a-(2, 4 dichlorophenyl)-a-phenyl-5-pyrimidinemethanol
Bay Dam 18654	----------	Methyl [1- [[(5-cyanopentyl) amins] carbonyl] -1 H-benzimidazol-2-yl] carbamate
Fungo	Thiophanate-methyl	50% (WP) dimethyl 4, 4-0-pheynlenebis (3-Thioallophanate)
Cleary's 3336	Thiophanate-ethyl	50% (WP) diethyl 4, 4-0-pheynlenebis (3-thioallophanate)
Tersan SP	Chloroneb	65% (WP) and 7.5% (gr.) 1, 4 dichloro-2, 5, dimethoxy-benzene
Actidione-thiram	Cyclohexamide-thiram	3- 2-(3, 5 dimethyl-2-oxyochohexyl)-2-hydroxyethyl -glutaramide and tetramethylthiuram disulfide
Nemacur		ethyl 4-(methylthio)-m-tolyl isopropylphosphoramidate
Dupont's 1410		10% (gr) S-methyl 1-(dimethyl carbamoyl)-N- [(methylcarbomyol) oxy] thioformimidate
Scotts Exp nematicide		----------
Upjohn U-32-104		----------
Niagara Exp.		----------

Trade name	Manufacturer or distributor
Tersan 1991	Du Pont de Nemours and Co., Inc.
Tersan SP	"
Du Pont's 1410	"
Topsin M	Pennwalt Corp.
Cleary's 3336	W. A. Cleary Corp.
Fungo	Mallinckrodt Chemical Works
Nemacur	Chemagro (Baychem Corp)
Bay Dam 18654	Chemagro (Baychem Corp)
Triarimol	Elanco (Eli Lilly and Co.)
Acti-dione Thiram	Tuco Products (Upjohn Co.)
Niagara Exp.	Niagara (FMC Corp)