

TURFGRASS DISEASE RESEARCH 1974

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Typhula blight and Fusarium patch

Study 1

The 1974 snow mold fungicide evaluation trials were conducted at the Boyne Highland Resort, Harbor Springs, Michigan on "Pennncross" creeping bentgrass mowed at 1/2 inch. No fungicides were applied to the test area during the growing season. The wettable powder (WP) and flowables (F) were applied with a CO₂ small plot sprayer and the granular fungicide with a 3 foot Scotts spreader. The test was divided into two studies because of the large size. The plots were 6 ft. x 10 ft. and the treatments were replicated 3 times in a random block design for each study.

The results from the first study are given in Table 1. They show MF 582 6, 10, and 16 oz; Tersan SP 6 and 9 oz; MF 583 12 and 16 lbs; Cleary's 4222 8 lbs; Daconil 6F 1 pt + Tersan SP 6 oz and 3 oz; Daconil 6F 1/2 pt + Tersan SP 6 oz and 3 oz; Daconil 6F 1/2 pt + Tersan SP 6 and 3 oz and Tersan SP 9 oz + Tersan 1991 4 oz all gave significant control when compared to the untreated check.

Study 2

It was necessary to break the data from the second study into 3 parts because of the unusually large amount of Fusarium patch present (Tables 2, 2a and 2b). Table 2 shows the percent infection caused by both snow molds and their control. It shows that Terraclor and Tersan SP together, separately, and in combination with Acti-dione TGF, Acti-dione-thiram or thiram 75, had significantly less disease than the untreated control, as did Acti-dione TGF at the 4 oz rate. However, while some fungicides gave significant control compared to the untreated check during this year of moderate snow mold, those with more than 20 percent snow mold infection need further evaluation before they can be recommended.

Table 1. Percent Typhula blight on "Pennncross" creeping bentgrass at the Boyne Highland Resort, Harbor Springs, MI.

Chemical and Rate/1000 sq ft	Percent infected Area ¹			
	I	II	III Pink	AVE
MF 582 10 oz	2	0	2	1a
Daconil 6F 1/2 pt. + Tersan SP 6 oz	0	0	5	2a
Tersan SP 9 oz	2	0	5	2a
Daconil 6F 1/4 pt. + Tersan SP 3 oz	2	0	5	2a
Daconil 6F 1 pt. + Tersan SP 3 oz	2	0	5	2a
Tersan 1991 4 oz + Tersan SP 9 oz	10	0	0	3a
MF 582 16 oz	10	0	0	3a
Daconil 6F 1 pt. + Tersan SP 6 oz	0	2	10	4a

Table 1. (Cont'd.)

Chemical and Rate/1000 sq ft		Percent infected Area ¹			
		I	II	III	AVE
Daconil 6F 1/4 pt. + Tersan SP 6 oz		2	2	10	5a
Tersan SP 6 oz		5	0	10	5a
MF 583 12 lbs		10	0*	5*	5a
Cleary's 4222 8 lbs		5	5	5	5a
MF 582 6 oz		10	0	Pink 10	7a
Daconil 6F 1/2 pt. + Tersan SP 3 oz		10	5	Pink 10	8a
MF 583 16 lbs		20*	0*	5	8a
MF 583 6 lbs		20	5	5	10a
Daconil 6F 1 pt		5	30	20	18ab
Tersan SP 3 oz		10	40	10	20ab
Cleary's 4221 8 lbs		30	20	20	23abc
Daconil 6F 1/4 pt		10	2	Pink 40	28abc
U-34-910 8 oz		40	20	Pink 30	30abc
MF 583 10 lbs		90	0*	5	32abc
Daconil 6F 1/2 pt		20	Pink 10	Pink 40	33abc
Bromosan 8 lbs		40	0	60	33abc
Tersan 1991 4 oz		50	60	30	47 bcd
Bay 8 oz		90	20	30	47 bcd
Check		30	50	60	47 bcd
Cad-trete 8 lbs		90	30	40	53 cd
Rhodia 8 oz		90	70	40	67 d
Cleary's 3336 8 lbs		80	80	60	73 d

* Phytotoxicity

¹ Infection from Typhula blight (gray snow mold) except where otherwise indicated.
Pink - Fusarium patch (pink snow mold).

Table 2. Total percent infestation of Penncross creeping bentgrass by Typhula blight and Fusarium patch.

<u>Chemical and Rate/1000 sq ft</u>		<u>Percent infected Area</u>			
		<u>I</u>	<u>II</u>	<u>III</u>	<u>AVE</u>
Terraclor 75	8 oz	0	0	1	.3a
Terraclor 75	4 oz	5	5	2	4 a
Acti-Dione RZ	8 oz	10	5	0	5 a
Acti-Dione Thiram + Tersan SP	(6+6 oz)	5	5	5	5 a
Terraclor Super X	2 lbs	5	10	10	8 a
Tersan SP	8 oz	5	10	15	10 a
Terraclor Super X	4 lbs	10	10	10	10 a
Acti-Dione RZ	4 oz	20	5	10	12 ab
Acti-Dione Thiram + Tersan SP	(4+4 oz)	20	10	10	13 ab
Thiram 75 + Tersan SP	(4+4 oz)	20	10	10	13 ab
Thiram 75 + Tersan SP	(6+6 oz)	2	30	10	14 ab
Acti-Dione TGF + Tersan SP	(4+4 oz)	5	20	20	15 ab
Tersan SP	4 oz	20	20	10	17 abc
Acti-Dione TGF + Tersan SP	(6+6 oz)	10	10	40	20 abc
Terraclor 10 G	4 lbs	15	40	10	22 abcd
Acti-Dione TGF	4 oz	10	40	50	33 bcde
Terraclor 10 G	2 lbs	35	50	30	38 cde
Thiram	8 oz	30	40	60	43 def
Thiram	4 oz	70	40	30	47 ef
Acti-Dione TGF	8 oz	50	70	40	53 efg
CHECK		70	40	70	60 fgh
Acti-Dione Thiram	8 oz	80	70	70	73 gh
Acti-Dione Thiram	4 oz	95	50	80	75 h

Table 2a. Percent Typhula blight on "Penncross" creeping bentgrass at the Boyne Highland Resort.

<u>Chemical and Rate/1000 sq ft</u>		<u>Percent infected Areas</u>			
		<u>I</u>	<u>II</u>	<u>III</u>	<u>AVE</u>
Terraclor 75	8 oz	0	0	0	0 a
Acti-Dione RZ	8 oz	0	0	0	0 a
Acti-Dione Thiram + Tersan SP	6 oz	0	0	0	0 a
Terraclor Super X	2 lbs	0	0	0	0 a
Tersan SP	8 oz	0	0	0	0 a
Terraclor Super X	4 lbs	0	0	0	0 a
Thiram 75 + Tersan SP	(4+4 oz)	0	0	0	0 a
Thiram 75 + Tersan SP	(6+6 oz)	0	0	0	0 a
Tersan SP	4 oz	0	0	0	0 a
Acti-Dione TGF + Tersan SP	(6+6 oz)	0	0	0	0 a
Acti-Dione TGF	4 oz	1	0	0	.3a
Terraclor 75	4 oz	5	0	0	2 a
Acti-Dione Thiram + Tersan SP	(4+4 oz)	0	5	0	2 a
Acti-Dione TGF + Tersan SP	(4+4 oz)	0	15	0	5 ab
Terraclor 10G	2 lbs	17.5	0	0	6 ab
Acti-Dione RZ	4 oz	20	0	0	7 ab
Terraclor 10G	4 lbs	7.5	28	0	12 ab
Thiram	8 oz	27	20	0	16 abc
Thiram	4 oz	63	0	5	23 abc
CHECK		30	20	20	23 abc
Acti-Dione TGF	8 oz	25	50	0	25 bc
Acti-Dione Thiram	4 oz	70	25	16	37 c
Acti-Dione Thiram	8 oz	70	70	35	58 d

Table 2b. Percent Fusarium patch on "Penncross" creeping bentgrass at the Boyne Highland Resort, Harbor Springs, MI.

<u>Chemical and Rate/1000 sq ft</u>		<u>Percent infected Area</u>			
		<u>I</u>	<u>II</u>	<u>III</u>	<u>AVE</u>
Terraclor 75	8 oz	0	0	1	.3a
Terraclor 75	4 oz	0	5	2	2 ab
Acti-Dione RZ	8 oz	10	5	0	5 abc
Acti-Dione Thiram + Tersan SP	(6+6 oz)	5	5	5	5 abc
Acti-Dione RZ	4 oz	0	5	10	5 abc
Terraclor Super X	2 lbs	5	10	10	8 abc
Tersan SP	8 oz	5	10	15	10 abcd
Terraclor 10G	4 lbs	7.5	12	10	10 abcd
Acti-Dione TGF + Tersan SP	(4+4 oz)	5	5	20	10 abcd
Terraclor Super X	4 lbs	10	10	10	10 abcd
Acti-Dione Thiram + Tersan SP	(4+4 oz)	20	5	10	12 abcd
Thiram 75 + Tersan SP	(4+4 oz)	20	10	10	13 abcd
Thiram 75 + Tersan SP	(6+6 oz)	2	30	10	14 abcde
Acti-Dione Thiram	8 oz	10	0	35	15 abcdef
Tersan SP	4 oz	20	20	10	17 abcdefg
Acti-Dione TGF + Tersan SP	(6+6 oz)	10	10	40	20 bcdefgh
Thiram	4 oz	7	40	25	24 cdefgh
Thiram	8 oz	3	20	60	28 defgh
Acti-Dione TGF	8 oz	25	20	40	28 defgh
Terraclor 10G	2 lbs	17.5	50	30	32.5 efgh
Acti-Dione TGF	4 oz	9	40	50	33 fgh
CHECK		40	20	50	37 gh
Acti-Dione Thiram	4 oz	25	25	64	38 h

Conclusions: Tersan SP still gives satisfactory control of Typhula blight in Michigan. Cleary's 4222 (Chlorophanate), MF 582, MF 583 (PCNB + Theophanate-methyl) and Acti-dione-RZ (Cycloheximide + PCNB) show great promise for the future. There is also an indication that combining Tersan SP and Daconil 2787 may allow us to use lower rates.

Shade Study

1. Helminthosporium leaf spot is the most important disease on Kentucky bluegrass grown in the shade during most of the growing season and powdery mildew only becomes a problem late in the fall and then only on certain varieties. This susceptibility to Helminthosporium occurred on many varieties that are normally resistant to Helminthosporium in full sunlight. The two exceptions were Nugget Kentucky bluegrass and Warren's A-34 Kentucky bluegrass.

2. The two best grasses for dense shaded areas would appear to be Warren's A-34 and Nugget Kentucky bluegrass. They are even more adapted for dense shade than the red fescues which were previously recommended for such conditions.

Systemic Activity of Chloroneb in Turfgrass

Chloroneb was shown to be systemic in Merion Kentucky bluegrass. Penncross creeping bentgrass and Poa annua. This would suggest that to obtain the best Typhula blight control, chloroneb should be applied shortly after the last mowing, while the grass plant is still active.

Stripe Smut

This study was conducted on a Merion Kentucky bluegrass turf heavily infected with stripe smut. The fungicides were applied dormant in the fall following the last mowing. The three systemic fungicides used were Tersan 1991, Fungo, and Cleary's 3336. They were applied at an 8 oz/1000 sq. ft. rate and drenched into the soil immediately after application. These fungicides all significantly controlled the stripe smut when compared to the untreated check. However, where they were used alone there was severe thinning of the Merion turf due to Helminthosporium leaf spot infection.

A second part of the study was to use Terraclor, (PCNB) Scotts F+F II (Fertilizer + PCNB) and IBDU + Terraclor (Fertilizer + PCNB) by themselves and across areas treated with the three systemics. Where the PCNB treatments were used in conjunction with the systemic fungicides not only was stripe smut controlled by the systemics but the Merion turf had good density because the PCNB prevented a Helminthosporium leaf spot invasion. The plot treated only with the PCNB fungicide or one of the PCNB Fertilizer combinations had better density than the untreated controls or the systemic fungicide only plots, however, they had levels of stripe smut comparable to the untreated control which could lead to severe loss of turf during the heat and drought stress of summer.

Conclusions:

1. Systemic fungicides will control stripe smut when applied dormant in the fall.
2. Systemic fungicides applied dormant cause Merion to lose its resistance to Helminthosporium leaf spot, resulting in severe thinning of the turf.
3. Where dormant applications of systemic fungicides are used to control stripe smut a residual Helminthosporium control like PCNB must also be used.