

CREEPING BENTGRASS (*Agrostis palustris* ‘Crenshaw’)

Dollar spot; *Sclerotinia homoeocarpa*

Yellow spot; Unknown

Turfgrass Quality

L.P. Tredway and E.L. Butler
Department of Plant Pathology
North Carolina State University
Raleigh, NC 27695

Preventative control of dollar spot in creeping bentgrass, 2004.

Fungicides were evaluated for their effect on dollar spot in creeping bentgrass when applied on a preventative basis. This trial was conducted at the NC State Faculty Club Turfgrass Field Lab in Raleigh, NC on ‘Crenshaw’ creeping bentgrass maintained under golf course putting green conditions. Mowing was performed 3 times weekly at a height of 0.156 in. with clippings collected, and the site was irrigated to prevent drought stress. Fertilizer was applied as 19-5-9 on 2 Feb (0.5 lb N/1000 sq ft) and 25 Mar (0.75 lb N/1000 sq ft) and as 25-5-15 on 4 Mar (1 lb N/1000 sq ft), 23 Apr (0.5 lb N/1000 sq ft). Insect pests were suppressed with Dursban Pro (1 fl oz/1000 sq ft) on 28 Apr and 28 Aug and Talstar (0.25 fl oz/1000 sq ft) on 15 May and 26 Jul. Plots were 3.33 ft x 6 ft and were arranged in a randomized complete block with four replications. Fungicides were applied in water equivalent to 2 gal per 1000 sq ft with a CO₂ powered sprayer at 40 psi using TeeJet 8004 nozzles. All treatments were initiated on 22 Apr and were reapplied the appropriate interval as indicated in the table. The number of dollar spot infection centers in each plot was assessed on 22 Apr, 28 Apr, 19 May, 26 May, 4 Jun, 10 Jun, 17 Jun, 23 Jun, 30 Jun, 8 Jul, and 15 Jul. Turfgrass quality was evaluated on 29 Jun, using a 1 to 9 scale (9=best, 5=acceptable) based on color, density, and uniformity. Yellow spot incidence was assessed by counting the total number of infection centers in each plot on 29 Jun and 28 Jul. Data were subjected to analysis of variance and means separation by Waller-Duncan k-ratio t test (k=100).

A low level of dollar spot incidence was observed in the experimental area when the trial was initiated on 22 Apr, however, no significant differences among treatments were detected on this date or on 28 Apr. Dollar spot incidence increased rapidly during May and early June, reaching a peak of 231 infection centers per plot in untreated plots on 10 Jun. Dollar spot activity declined thereafter due to consistent high temperatures in the high 80’s to low 90’s. Dollar spot incidence remained relatively constant during June and July due to slow bentgrass recovery during these conditions. Most treatments in this trial provided good to excellent dollar spot control on 19 May, 26 May, 4 Jun, 10 Jun, and 17 Jun. Only Compass (0.1 oz), Bayleton (0.5 oz), Compass + Bayleton (0.1 + 0.5 oz), 0214, Cleary 3336, and Spectro failed to provide good or excellent control on all of these dates. Most of the treatments that provided good to excellent dollar spot early in the season continued to do so through late June and early July, with the exception of Compass + Bayleton (0.2 + 1 oz), Insignia, and CL-EXP-2-04 (2.1 fl oz).

In mid June, symptoms of an unknown disease were observed in the experimental area, producing spots of chlorotic, yellow foliage that were 1 to 3 inches in diameter. Incidence of the symptoms increased steadily over time, but the symptoms did not become more severe, and necrosis of the turf foliage was not observed. This condition is being referred to as “yellow spot”, although it is also sometimes referred to as “*Curvularia*” due to the presence of this fungus in samples from affected areas. Few significant differences in yellow spot incidence were observed among treatments on 29 Jun or 28 Jul, but it is interesting to note that all plots treated with a chlorothalonil product every 14 days were completely free of yellow spot symptoms on both assessment dates.

Few treatments in this trial maintained turfgrass quality to acceptable levels (≥ 5) according to the 29 Jun assessment. Plots treated with Chipco 26GT, Super GT, Banner Maxx + Daconil, CL-EXP-2-04 (4.2 fl oz), all Emerald Programs, and both NCSU Programs exhibited acceptable turf quality on this date. The quality of turf was significantly higher in plots receiving NCSU Program 1 compared to NCSU Program 2. These programs differed only in the inclusion of Daconil Ultrex as a tank-mix partner in NCSU Program 1.

Table 1. Preventative control of dollar spot in creeping bentgrass, 2004.

Treatment and rate / 1000 sq ft	Application		Dollar spot incidence (infection centers/plot)					
	code	22 Apr	28 Apr	19 May	26 May	4 Jun	10 Jun	17 Jun
Chipco 26GT 2SC 4 fl oz	ACEGIK ^z	15 a ^y	10 a	0 c	1 f	1 h	1 g	1 i
Super GT 3SC 2.67 fl oz.....	ACEGIK	11 a	10 a	1 c	0 f	4 h	1 g	1 i
Compass 50WDG 0.1 oz	ACEGIK	9 a	5 a	12 bc	67 ab	97 ab	200 a	143 bc
Bayleton 50DF 0.5 oz.....	ACEGIK	4 a	4 a	8 bc	28 de	49 cde	91 cde	64 fg
Compass 50WDG 0.1 oz + Bayleton 50DF 0.5 oz.....	ACEGIK	9 a	5 a	3 c	12 ef	38 def	49 efg	61 fg
Compass 50WDG 0.2 oz + Bayleton 50DF 1 oz.....	ADGJ	15 a	11 a	2 c	7 ef	25 d-h	24 fg	32 ghi
Insignia 20WG 0.9 oz.....	ACEGIK	12 a	9 a	3 c	8 ef	21 e-h	53 efg	32 ghi
Emerald 70WG 0.13 oz	ACEGIK	12 a	12 a	0 c	0 f	1 h	4 g	7 i
Emerald 70WG 0.18 oz	ADGJ	12 a	11 a	0 c	1 f	0 h	0 g	2 i
Emerald 70WG 0.13 oz	ACEGIK	7 a	7 a	0 c	0 f	2 h	1 g	1 i
Emerald 70WG 0.18 oz	ADGJ	12 a	13 a	0 c	3 f	6 gh	8 g	0 i
Banner Maxx 1.24ME 0.5 fl oz + Daconil Ultrex 82.5WDG 3.2 oz.	ACEGIK	9 a	8 a	2 c	8 ef	15 fgh	3 g	11 i
Banner Maxx 1.24ME 1 fl oz + Daconil Ultrex 82.5WDG 3.2 oz.	ADGJ	7 a	5 a	1 c	1 f	18 e-h	5 g	19 hi
0214 F 4 fl oz.....	ADGJ	8 a	11 a	9 bc	57 bc	78 bc	185 ab	130 bc
Cleary 3336 4F 4 fl oz	ACEGIK	12 a	13 a	41 a	81 a	107 ab	214 a	151 ab
CL-EXP-2-04 F 2.1 fl oz	ACEGIK	16 a	13 a	2 c	9 ef	15 fgh	35 efg	33 ghi
CL-EXP-2-04 F 4.2 fl oz	ADGJ	19 a	18 a	2 c	1 f	10 fgh	6 g	13 hi
Spectro 90WDG 4 oz.....	ACEGIK	12 a	11 a	7 bc	17 ef	55 cd	36 efg	84 ef
<i>Emerald Program 1</i>								
Emerald 70WG 0.13 oz	ACIK							
Curalan 50EG 1 oz.....	E							
Manicure 82.5WDG 3.2 oz.....	GI							
Insignia 20WG 0.9 oz.....	K	11 a	10 a	0 c	0 f	0 h	0 g	2 i
<i>Emerald Program 2</i>								
Emerald 70WG 0.18 oz	AJ							
Propiconazole Pro 1.24ME 1 fl oz.D								
Curalan 50EG 1 oz.....	G							
Manicure 82.5WDG 3.2 oz.....	J	14 a	13 a	1 c	2 f	17 fgh	1 g	0 i
<i>Emerald Program 3</i>								
Emerald 70WG 0.18 oz	AJ							
Manicure 82.5WDG 3.2 oz.....	DG							
Propiconazole Pro 1.24ME 1 fl oz D								
Curalan 50EG 1 oz.....	G							
Insignia 20WG 0.9 oz.....	J	6 a	9 a	1 c	0 f	8 fgh	0 g	3 i
<i>NCSU Program 1</i>								
Daconil Ultrex 82.5WDG 3.2 oz ...	ACEGIK							
Banner Maxx 1.24ME 0.5 fl oz	A							
Curalan 50EG 1 oz.....	C							
Bayleton 50DF 0.5 oz.....	E							
Emerald 70WG 0.13 oz	GK							
Chipco 26GT 2SC 4 fl oz	I							
Insignia 20WG 0.9 oz.....	K	16 a	12 a	1 c	0 f	2 h	1 g	0 i
<i>NCSU Program 2</i>								
Banner Maxx 1.24ME 0.5 fl oz	A							
Curalan 50EG 1 oz.....	C							
Bayleton 50DF 0.5 oz.....	E							
Emerald 70WG 0.13 oz	GK							
Chipco 26GT 2SC 4 fl oz	I							
Insignia 20WG 0.9 oz.....	K	10 a	17 a	0 c	3 f	6 gh	11 g	1 i
Untreated Control	--	6 a	15 a	42 a	88 a	120 a	231 a	126 bcd

^zApplication code indicates the application date(s) for each treatment component: A, 22 Apr; C, 4 May; D, 13 May; E, 20 May; G, 3 Jun; I, 17 Jun; J, 24 Jun; K, 1 Jul.

^yValues are means of four replicates. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test (k=100).

Table 2. Preventative control of dollar spot in creeping bentgrass, 2004.

Treatment and rate / 1000 sq ft	Application code	Dollar spot incidence (infection centers/plot)				Yellow spot incidence (infection centers/plot)		Turf quality ^z 29 Jun
		23 Jun	30 Jun	8 Jul	15 Jul	29 Jun	28 Jul	
Chipco 26GT 2SC 4 fl oz	ACEGIK ^y	0 i ^x	16 klm	0 i	0 h	3 a	18 b-g	6.0 bc
Super GT 3SC 2.67 fl oz.....	ACEGIK	4 hi	19 klm	0 i	0 h	14 a	22 b-f	5.5 cde
Compass 50WDG 0.1 oz	ACEGIK	107 bc	160 cd	129 bc	141 cd	1 a	15 c-g	3.0 klm
Bayleton 50DF 0.5 oz.....	ACEGIK	61 de	131 def	40 fgh	31 gh	3 a	12 d-g	2.8 lm
Compass 50WDG 0.1 oz + Bayleton 50DF 0.5 oz.....	ACEGIK	49 ef	118 efg	30 ghi	29 gh	1 a	24 b-f	3.5 jkl
Compass 50WDG 0.2 oz + Bayleton 50DF 1 oz.....	ADGJ	51 ef	36 jkl	12 ghi	52 fg	0 a	8 efg	3.8 ijk
Insignia 20WG 0.9 oz.....	ACEGIK	49 ef	46 jk	11 ghi	2 h	12 a	28 a-d	3.8 ijk
Emerald 70WG 0.13 oz	ACEGIK	7 hi	8 lm	4 hi	0 h	11 a	22 b-f	4.5 f-i
Emerald 70WG 0.18 oz	ADGJ	1 i	1 m	1 i	0 h	3 a	15 c-g	4.3 g-j
Emerald 70WG 0.13 oz	ACEGIK	2 i	1 m	1 i	0 h	6 a	23 b-f	4.5 f-i
Emerald 70WG 0.18 oz	ADGJ	5 hi	1 m	0 i	0 h	3 a	13 c-g	4.8 e-h
Banner Maxx 1.24ME 0.5 fl oz + Daconil Ultrex 82.5WDG 3.2 oz...	ACEGIK	6 hi	27 j-m	6 hi	11 h	0 a	0 g	6.8 ab
Banner Maxx 1.24ME 1 fl oz + Daconil Ultrex 82.5WDG 3.2 oz...	ADGJ	31 fgh	26 j-m	4 hi	19 gh	0 a	0 g	5.0 d-g
0214 F 4 fl oz.....	ADGJ	90 bc	148 cde	144 ab	148 c	4 a	15 c-g	2.8 lm
Cleary 3336 4F 4 fl oz	ACEGIK	148 a	212 a	178 a	210 a	10 a	22 b-f	2.8 lm
CL-EXP-2-04 F 2.1 fl oz	ACEGIK	46 ef	57 ij	13 ghi	14 h	11 a	18 b-g	4.8 e-h
CL-EXP-2-04 F 4.2 fl oz	ADGJ	35 efg	27 j-m	44 fg	11 h	8 a	18 b-g	5.0 d-g
Spectro 90WDG 4 oz.....	ACEGIK	80 cd	108 fgh	93 cde	102 e	0 a	0 g	4.0 hij
<i>Emerald Program 1</i>								
Emerald 70WG 0.13 oz	ACIK							
Curalan 50EG 1 oz.....	E							
Manicure 82.5WDG 3.2 oz.....	GI							
Insignia 20WG 0.9 oz.....	K	4 hi	6 lm	0 i	0 h	8 a	28 a-d	5.8 cd
<i>Emerald Program 2</i>								
Emerald 70WG 0.18 oz	AJ							
Propiconazole Pro 1.24ME 1 fl oz...	D							
Curalan 50EG 1 oz.....	G							
Manicure 82.5WDG 3.2 oz.....	J	8 ghi	2 m	2 i	1 h	4 a	13 c-g	5.3 c-f
<i>Emerald Program 3</i>								
Emerald 70WG 0.18 oz	AJ							
Manicure 82.5WDG 3.2 oz.....	DG							
Propiconazole Pro 1.24ME 1 fl oz..	D							
Curalan 50EG 1 oz.....	G							
Insignia 20WG 0.9 oz.....	J	6 hi	6 lm	0 i	0 h	1 a	6 fg	5.8 cd
<i>NCSU Program 1</i>								
Daconil Ultrex 82.5WDG 3.2 oz	ACEGIK							
Banner Maxx 1.24ME 0.5 fl oz	A							
Curalan 50EG 1 oz.....	C							
Bayleton 50DF 0.5 oz.....	E							
Emerald 70WG 0.13 oz	GK							
Chipco 26GT 2SC 4 fl oz	I							
Insignia 20WG 0.9 oz.....	K	1 i	0 m	0 i	3 h	0 a	0 g	7.0 a
<i>NCSU Program 2</i>								
Banner Maxx 1.24ME 0.5 fl oz	A							
Curalan 50EG 1 oz.....	C							
Bayleton 50DF 0.5 oz.....	E							
Emerald 70WG 0.13 oz	GK							
Chipco 26GT 2SC 4 fl oz	I							
Insignia 20WG 0.9 oz.....	K	3 i	1 m	0 i	0 h	11 a	46 a	5.3 c-f
Untreated Control	--	111 b	174 bc	125 bc	163 bc	9 a	18 b-g	2.5 m

^zTurfgrass quality on a 1 to 9 scale, where 9=highest quality and 5=acceptable quality.

^yApplication code indicates the application date: A, 22 Apr; C, 4 May; D, 13 May; E, 20 May; G, 3 Jun; I, 17 Jun; J, 24 Jun; K, 1 Jul.

^xValues are means of four replicates. Means within columns followed by the same letter are not significantly different according to Waller-Duncan k-ratio t-test (k=100).