(7/24) (Table 7), the 14 day treatments had been applied three times (6/17,6/30,7/13) and the 21 and 28 day treatments had been applied twice (6/17,7/7 and 6/17,7/13 respectively).

As data Table 6 indicates, Chipco 26019 and Bayleton were among the fastest curative treatments used in this test. By the date of the second rating, however, compounds such as SDS 6608, Fore, and Daconil 2787 were also quite effective at arresting disease development and promoting turf recovery (Table 7).

No phytotoxicity was observed during the course of this study.

Yellow Tuft Fungicide Trial - 1989

Hancock Turfgrass Research Center, MSU, E. Lansing, MI

The 1989 yellow tuft (*Sclerophthora macrospora*) fungicide study was conducted on an irrigated Penneagle creeping bent grass putting green at the Hancock Turfgrass Research Center on the MSU campus. Treatments were applied preventively to 3'x6' plots in three replications of a random block design. Treatments were applied foliarly with a CO_2 small-plot sprayer at 30 PSI and 48 gal/A.

The initial applications were made on July 7, with subsequent applications being made on a 21 day schedule through September 28. Following each application, mild phytotoxicity was observed in the Aliette plots beginning on approximately day 2 and continuing through approximately day 9. This phytotoxicity was expressed as a bleaching of the leaf tips and a mild yellowing of the turf. Because of this phytotoxicity, the re-treatment interval was increased to 21 days from the contractual request of 14 days. The Subdue plots maintained good turfgrass quality and disease control throughout the season with no phytotoxicity observed (Tables 8 & 9).

Necrotic Ring Spot Fungicide Studies - 1989

Preventive Studies

As with our summer patch fungicide research, we decided to attempt preventive control of necrotic ring spot (Leptosphaeria porrae) in our fungicide field trials for the 1989 season. Two preventive studies were established on irrigated Kentucky bluegrass lawn areas in Novi, Michigan, where disease was present in previous years. All treatments were applied prior to disease occurrence in three replications of a random block design utilizing a 6' x 9' plot size. The turf was moved at a 2" height of cut and was to be fertilized at the rate of 1 lb N/1000 ft^2 in May, July and September. These areas were treated for weeds and insects, however, no other fungicides were applied during the course of the season.

Applications were made foliarly using a CO_2 small-plot sprayer at 30 PSI and a volume of 48 gal/A. Application intervals and frequencies were altered from contractual protocols when necessary to conform to a preventive, two-application format.

Curative Study

When it appeared to us that preventive studies #1 and #2 might not yield data this year (as explained in following sections), we decided to establish a curative fungicide-fertilizer study in an area which was currently, experiencing a severe disease outbreak. This study was located on the Hancock Turfgrass Research Center on the MSU campus in East Lansing, MI, and is further described in the following sections.

Necrotic Ring Spot Curative Trial #1 - Hancock Turfgrass Research Center, MSU, East Lansing, MI

This curative necrotic ring spot study was established on an irrigated, 10-year-old seeded Fylking Kentucky bluegrass (Poa pratensis) turfgrass research area which has been developing increased necrotic ring spot disease pressure for the past 5 years. Fertility was applied dormantly (1 lb N/1000 ft^2) in late 1988, followed by applications of 1 lb N/1000 ft^2 on June 8, 1989 and July 26, 1989 and ½ lb N/1000 ft^2 on October 16, 1989 (Turf Restore and Sustane plots received no supplemental fertility). Irrigation was provided as needed to prevent wilt. In general, fertility and irrigation were provided in adequate quantities to promote recovery and also maintain disease pressure in the study area.

Because the available research area was limited, not all contracted compounds or rates were included in the study. We did, however, attempt to include most of the experimental compounds we had been testing all season.

The initial curative application was made on Aug. 3 and the plots were rated for percent disease incidence. A second application was made on Sept. 6 and a rating of percent recovery from initial disease levels was taken. We are reporting the data as percent recovery/plot rather then as percent area diseased/plot because disease incidence was not uniform in the study area (Table 10).

Necrotic Ring Spot Preventive Trial #1 - Country Place Condominiums, Novi, MI

The necrotic ring spot study at Country Place Condominiums was initiated preventively on May 10, 1989 when the soil temperature reached 65°F at a 2" depth. A second application was made on June 8, 1989, or approximately 30 days after the first application. Fertility was applied to this study at the rate of 1 lb N/1000

ft^2 in May and July. The September application was omitted when it was noted that the old disease scars and grown shut and no new disease activity was occurring. Unfortunately disease pressure never did re-develop in the plot area (through Nov. 30), so no data was available from this plot site in 1989.

No phytotoxicity was observed.

Necrotic Ring Spot Preventive Trial #2 - Glen Haven Condominiums, Novi, MI

The second preventive necrotic ring spot study was located on an irrigated lawn area at the Glen Haven Condominium complex in Novi, MI. This study was first applied on May 15, 1989 shortly after soil temperatures reached 65° F at a 2" depth. A second application was made on June 14, 1989, or approximately 30 days after the initial application. Fertility was applied in late May at 1 lb. N/1000 ft^2. In July, the lawn care company which was maintaining the lawns at this complex inadvertently applied 2½ lbs. N/1000 ft^2 to the plot area. The turf growth surged, the previous years disease patches filled in, and the disease never re-developed throughout the rest of the season (through Nov. 30). Therefore, no data was available from this study either.

Necrotic Ring Spot Preventive Trial #3

The third preventive necrotic ring spot study was also located at the Glen Haven Condominium complex in Novi, MI. This study was first applied on May 26, 1989. It was established a couple weeks later then desired due to the late arrival of test compounds to our laboratory. A second application was made on June 26, 1989. Fertility was applied at ½ lb N on July 6, after which the lawn care company which was maintaining the area mistakenly applied 2½ lbs N/1000 ft^2 to this test site. As in study #2 above, this research area surged, filling in all existing disease patch symptoms. The area showed no renewed disease pressure until late fall (Oct. 24) when disease patches re-developed and a comparative disease rating was taken (Table 11).

As the data shows, the two standards (Rubigan, Banner) did an excellent job of preventing disease re-development five moths after application. The experimental compound, Terraguard, also performed well. The proprietary experimental treatments gave erratic results which made them statistically insignificantly different from the controls, along with Chipco 26019 (F).

Table 10. Necrotic Ring Spot (curative) Fungicide Trial #1 - 1989
Hancock Turfgrass Research Center, MSU, E. Lansing, MI
Percent recovery from pre-treatment disease level/plot
(negative numbers indicate disease increases)
Rated 11/21/89

Treatment[c]	Rate/1000 ft^{2}[b]	Applic. date	I	II	III	AVE	DMR (.05)[a]
Lesco 011092 (F)	8.8 fl oz	8/3,9/6	100	90	100	96.7	A
Banner	4 fl oz	8/3,9/6	100	100	80	93.3	A
SDS 66791	6 oz	8/3,9/6	100	100	75	91.7	A
Rubigan	4 fl oz	8/3,9/6	50	98	100	82.7	A
BAS 48000F	.25 lb ai	8/3,9/6	33	100	100	77.7	A
Lesco 011092 (F)	4.4 fl oz	8/3,9/6	75	30	100	68.3	A
Ch 26019 (F)	12 fl oz	8/3,9/6	80	17	100	65.7	A
Sustane	1 lb N	8/3,9/6,10/10	80	40	65	61.7	A
Turf Restore	1 lb N	8/3,9/6,10/10	88	14	80	60.7	A
SDS 66791	3 oz	8/3,9/6	70	97	-25	47.3	AB
Rubigan	8 fl oz	8/3,9/6	0	25	100	41.7	AB
SDS 66811	.06 oz ai	8/3,9/6	0	14	100	38.0	AB
SDS 66811	.03 oz ai	8/3,9/6	53	86	-33	35.3	AB
BAS 48000F	.12 lb ai	8/3,9/6	100	20	-40	26.7	AB
Control (fertilized)	---	---	-50	-16	-67	-44.3	B
Ch 26019 (F)	8 fl oz	8/3,9/6	50	14	-200	-45.3	B

[a]Treatments followed by the same letter are not significantly different at the 5% level.
[b]Rates listed are formulation unless listed as active ingredient (ai).
[c]Blanked out treatments are proprietary.

Table 11. Necrotic Ring Spot (Preventive) Fungicide Trial #3 - 1989

Glen Haven Condominium Complex, Novi, MI
Percent plot area infected
Rating date 10/24/89

Treatment[c]	Rate/1000 ft^{2}[b]	Applic. Date	I	II	III	AVE	DMR (.05)[a]
Rubigan	4 fl oz	5/26,6/26	0	0	0	0.0	C
Terraguard	8 oz	5/26,6/26	0	0	0	0.0	C
Banner	4 fl oz	5/26,6/26	0	5	0	1.7	BC
Terraguard	4 oz	5/26,6/26	5	0	0	1.7	BC
Control	---	---	10	20	25	18.3	ABC
Ch 26019 (F)	2 oz ai	5/26,6/26	10	25	25	20.0	AB

[a]Treatments followed by the same letter are not significantly different at the 5% level.
[b]Rates listed are formulation unless listed as active ingredient (ai).
[c]Blanked out treatments are proprietary.