

1992 DMI RESISTANT DOLLAR SPOT STUDY
Robert Golembiewski, J.M. Vargas, Jr., & R. Detweiler
Botany and Plant Pathology, M.S.U.
East Lansing, MI

Laboratory:

Strains of *Sclerotinia homoeocarpa*, the causal agent of dollar spot, were isolated from several golf courses where demethylation inhibitor (DMI) fungicides had been reported to give little or no control. Laboratory tests provided evidence that the strains of *S. homoeocarpa* were resistant to the DMI fungicides. ED₅₀ values for 50 isolates of *S. homoeocarpa*, from each of 6 golf courses, were determined for 4 DMI fungicide concentrations based on radial mycelial growth. Isolates collected from golf courses where DMI fungicides were used on a regular basis had higher ED₅₀ values than isolates from golf courses where DMI fungicides had never been used. These studies indicated that resistance of *S. homoeocarpa* to the DMI fungicides had occurred under field conditions.

Field:

Four fungicide trials were conducted on two different golf courses. The first site was the Lochmoor Country Club in Grosse Pointe, MI. This golf course had reported no control of dollar spot with the DMI fungicides, such as Bayleton, Rubigan, and Banner. The second site was the Country Club of Jackson in Jackson, MI. This golf course had reported shortened periods of control of dollar spot with the use of DMI fungicides. A third site was established at the Brookshire Inn in Williamston, MI., but treatments were never applied due to the lack of disease pressure. This golf course had never used DMI fungicides on their fairways.

Treatments were initiated preventatively at both the Country Club of Jackson and the Lochmoor Country Club on 7/20 and 7/21 respectively. Treatments were applied in four replications of a random block design using a CO₂ small plot sprayer operating at a volume of 48 gal./acre and a pressure of 30 PSI. All plots were 2' x 12' in size, with the exception of Study A at the Lochmoor Country Club where 6' x 6' plots and three replications/treatment were used. All studies received 1/4 lb. N/1000 ft² every 14 days.

LOCHMOOR COUNTRY CLUB, GROSSE POINTE, MI.

The studies were conducted on a mix of annual bluegrass (*Poa annua*) and creeping bentgrass (*Agrostis palustris*). The area was irrigated daily, moderately fertilized (1/2 lb. N/month), and mowed at 3/8" height of cut.

Treatments were initiated preventatively on 7/21. The total number of applications for treatments with various time intervals were as followed: 10 day interval-7 times, 14 day interval-5 times, 21 day interval-4 times, 10 day alt. 14 day interval-6 times, 10 day alt. 21 day interval-5 times, and 21 day alt. 21 day interval-4 times.

Disease ratings were taken, however, the disease pressure was much greater in study A, initiated in 1991, compared to study B which was initiated in 1992. The area used for study B had been treated extensively with contact fungicides in 1991, therefore, resulting in mild disease pressure in 1992.

Recommended label rates of the DMI fungicides (bayleton, rubigan, and banner) failed to control dollar spot. Laboratory analysis of the fungal population within each individual field plot indicated that the strains of *S. homoeocarpa* became more resistant following the application of DMI fungicides. Both of the contact fungicides, daconil 2787 and dyrene, provided excellent control on a 10 day spray interval.

COUNTRY CLUB OF JACKSON, JACKSON, MI.

The studies were conducted on a mix of annual bluegrass and creeping bentgrass. The area was irrigated daily, moderately fertilized (1/2 lb. N/month), and mowed at 3/8" height of cut.

Treatments were initiated preventatively on 7/20. The total number of applications for treatments with various time intervals were as followed: 10 day interval-6 times, 14 day interval-5 times, 21 day interval-3 times, 10 day alt. 14 day interval-5 times, 10 day alt. 21 day interval-4 times, and 21 day alt. 21 day interval-3 times.

Disease ratings were never taken from this golf course due to the lack of disease pressure.

BROOKSHIRE INN, WILLIAMSTON, MI.

The studies were established on a mix of annual bluegrass and creeping bentgrass. The area was mowed at 3/4" height of cut, irrigated by rain only, and heavily fertilized.

Treatments were never initiated due to lack of disease pressure.