Control of Algae on Bentgrass Greens with a Coordination Product of Zinc Ion and Maneb

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An almost continuous application of water is required during the summer months to maintain the growth of bentgrass on golf greens in Oklahoma. Under these conditions, whenever the grass becomes thin due to attacks of diseases or insects or some other cause and light is admitted to the soil surface, small single-celled plants called algae begin to grow. A slimy green scum soon forms and when this scum dries out during the day a hard crust develops which is almost impervious to water. It then becomes impossible for the grass to reestablish itself in these areas. There is a need, therefore, for a chemical which will control the growth of algae, but which will not be toxic to the grass.

A study of chemical sprays for the control of the diseases dollar spot, caused by the fungus *Sclerotinia homeocarpa*, and large brown patch, caused by *Rhizoctonia solani*, was made during the 1964 growing season. A prevention type schedule was used in which the chemicals were applied at weekly intervals throughout the summer beginning in early June and ending in late September. Each chemical was applied in 15 gallons of water per 1,000 square feet in plots replicated three times. The study, (Chemical Control of Diseases Affecting Turf; Prog-

Table 1. Algae Control in the Disease Prevention Program, Green No. 12, Lakeside Memorial Golf Course, Stillwater, Oklahoma

Fungicide & rate used in ounces per 1000 sq. ft.		Type	Disease Rating[a]
CHECK[b]			8[c]
1. MERCURAM	(6)	organic mercury + non-mercurial	9
2. DYRENE	(4)	non-mercurial	7
3. DYRENE + VAPOR GUARD	(2) (32)	non-mercurial anti-transpirant latex	7
4. DITHANE M-45	(6)	non-mercurial	2
5. PHENMAD + THIRAMAD (Iron fortified)	(1) (3)	organic mercury + non-mercurial	9

aThe disease rating was made September 15, each plot rated by a scale of 1 to 9 based on the amount of area infested with algae. The higher rating indicates a more severe infestation of algae.
bSmall untreated plot at each end of green.
cChecks were sprayed twice during season (8-1 & 9-5) with either treatments 4 or 5 (Dithane M-45 or Phenmad + Thiramad plus) for control of other turf diseases.

ress Report 1964) was made on a creeping bentgrass green at Lakeside Memorial Golf Course, Stillwater, Oklahoma. During July the grass became rather thin in spots over the green, probably due to extremely poor growing conditions, and algae developed in these thin areas. Early in August it was noted that one of the chemicals used in the test was giving excellent control of the growth of algae. This was a coordination product of the zinc ion with manganese ethylene bisdithiocarbamate (Dithane M-45) applied at 6 ounces per 1,000 square feet. None of the other chemicals used was effective in the control of algae. Control ratings were estimated and are given in Table 1. The plots treated with Dithane M-45 produced a tighter, more dense turf, and a better putting surface was maintained.

On the Plant Pathology Farm, Oklahoma State University, newly planted turf plots, consisting of Tifgreen (Tifton 328) Bermudagrass and Seaside Creeping Bentgrass, developed a heavy mat of algae under a constant watering program. Eradication of the algae followed a single application of Dithane M-45 at 6 ounces per 1,000 square feet.

Dithane M-45 was later applied on greens where algae had developed at the Hillcrest Country Club, Bartlesville, Oklahoma, and at the Quail Creek Country Club, Oklahoma City. Good control was obtained in both cases.

A preliminary summary of the data indicates that Dithane M-45 has given good control of both dollar spot and brown patch diseases as well. Final analysis of the entire study will be published at a later date.

COMING EVENTS

January-March
Winter School for Turf Managers
University of Massachusetts
Amherst, Mass.

January 4-March 12
Winter Course for Turfgrowers
Rutgers College of Agriculture
New Brunswick, N.J.

January 13-14
Nebraska Turfgrass Conference
Nebraska Center for Continuing Education
Lincoln, Neb.

January 20-22
Turfgrass Conference
Rutgers University
New Brunswick, N.J.

January 27-28
Virginia Annual Turfgrass Conference
John Marshall Hotel
Richmond, Va.

January 27-29
Agronomy Short Course
University of Maryland
Chevy Chase, Md.

January 29
United States Golf Association
Green Section Golf Course Management Conference
Biltmore Hotel
New York, N.Y.

February 1-3
Southern Branch of the American Society of Agronomy
Adolphus Hotel
Dallas, Texas

February 7-12
GCSAA Conference and Show
Sheraton-Cleveland Hotel
Cleveland, Ohio

February 22-23
Southern Turfgrass Association Conference
Peabody Hotel
Memphis, Tenn.

March 1-3
Midwest Regional Turf Conference
Purdue University
Lafayette, Ind.

March 11-12
Turfgrass Conference
Michigan State University
East Lansing, Mich.

March 11-12
Massachusetts Turf Conference
University of Massachusetts
Amherst, Mass.

March 22
USGA Golf Course Management Conference
Pittsburgh, Pa.

March 24
USGA Golf Course Management Conference
St. Louis, Missouri

March 24-26
Royal Canadian Golf Association Turfgrass Conference
Toronto, Canada

March 26
USGA Golf Course Management Conference
San Francisco, Calif.