

"Thiosan"—A New Turf Fungicide

By CARL HORN

AS supplies of mercury available for civilian use dwindle, the question is no longer, "Which mercurial for brown patch and dollar spot control?" but "What can we use in place of mercury?" This question, new, perhaps, to most of those engaged in controlling brown patch and dollar spot, is an old one to the plant pathologists and chemists of the Bayer-Semesan Company and its affiliates.

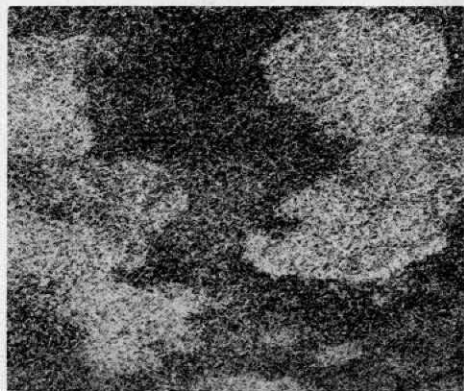
Surely among the hundreds of thousands of compounds, organic and inorganic, there must be some, one at least, that possesses the high order of fungicidal efficiency for which the mercurials are known. As compound after compound emerges from the chemist's laboratory and comes under the critical eye of the plant pathologist, however, the wonder grows that Nature has apparently bestowed her prizes for highest fungicidal efficiency on so many mercurials and on so few non-mercurials.

But out of all this sifting and painstaking examination of these thousands of chemical compounds comes an occasional bright promise to the searchers. One of the most promising of these non-mercurial fungicides is an organic compound of sulfur, tetramethyl thiuramdisulfide,* which is to be marketed as a new turf fungicide under the trade-mark "Thiosan". Containing neither mercury nor any other

metallic element, it is relatively non-poisonous to warm-blooded animals but toxic to fish. The formula for use on turf will provide a finely-divided powder with only a slight odor, which is not disagreeable. Although water insoluble, it disperses readily in water with a little agitation.

Although not in the same fungicidal class with the highly active ethyl mercurial compounds, used in seed treatments for grain and cotton, the new product does compare favorably with hydroxymercurichlorophenol and hydroxymercuricresol as represented by products sold under the trade-marks, "Semesan" and Special "Semesan", which are now widely used as turf fungicides. The effectiveness of this newcomer to the list of available fungicides has been demonstrated by tests on turf nurseries and on 18 playing greens in Delaware and New Jersey. Comparative tests carried out by spraying half of each green with 1 lb. of Special "Semesan" to 6,000 sq. ft. of turf and the other half with the same amount of "Thiosan" have shown the new product to have approximately the same fungicidal value as the mercurial.

Confirmation of the merits of tetramethyl thiuramdisulfide as a turf fungicide has come from the USGA Green Section in a report by Harrington. (*Science*,



Tests have shown that the new turf fungicide, "Thiosan," gives approximately the same fungicidal value as the mercurial in controlling brown patch (shown left above) and dollar spot (at right).



Workman is shown applying new non-mercurial fungicide "Thiosan" to green with power sprayer. In tests conducted at the Bayer-Semesan Research Laboratory, Minquadales, Del., and on playing greens in Del. and N. J. "Thiosan" has compared favorably with the mercurials commonly used in checking attacks by brown-patch and dollar spot fungi.

Vol. 93, No. 2413, P. 311). In discussing experimental results for 1940, he states that of the more than 100 chemicals tested, tetramethyl thiuramdisulfide is one of the most promising.

One of the outstanding and very desirable advantages of the new fungicide is the high degree to which it is tolerated by bent grass and most other foliages. The plant pathologist says it has a wide margin of safety, meaning that many times the effective dosage may be applied without injury. On Washington, Metropolitan, colonial, and velvet bent turfs, for example, applications of 4 lbs. to 6,000 sq. ft. at weekly intervals for 6 weeks did not produce any indications of yellowing or retarded growth. In these times when greenkeepers may need to depend on inexperienced workmen, this wide margin of safety may be particularly advantageous.

Lest some read too much between the lines, it should be said that "Thiosan" is not fool-proof; it does not take the place of the greenkeeper's skill, watchfulness, and judgment. Grass grows rapidly, and sometimes the brown patch and dollar spot fungi grow even more rapidly. No matter, therefore, how effective the fungicide used, it, like others, will fail dismally unless the greenkeeper watches weather conditions closely, and uses all his powers of observation, skill, and experience in applying suitable dosages at the right time.

Translated into terms of greenkeeping practice, this means that the dosage and

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Mower lapping mixture: Instead of emery and oil or greases for mower reel lapping in, use liquid or paste (soft) soap with the grit. After sharpening, just wash off with water, with no oil to dissolve.—CKB

intervals between applications will not be the same for all conditions. While applications of 1 lb. to 6,000 sq. ft. (2 2/3 oz. to 1,000 sq. ft.) at intervals of 7 to 10 days seem to be optimum under ordinary conditions when a preventive program of disease control is followed, it may be necessary to double the dosage when conditions unusually favorable to infection occur or are anticipated.

To summarize, it is believed that "Thiosan," the new turf fungicide, containing tetramethyl thiuramdisulfide, will fill a gap left by the scarcity of mercury, and that it will accomplish its task of disease control without injury to the grass.

*The use of tetramethyl thiuramdisulfide in the field of turf fungicides is covered by U. S. Patent No. 1,972,961.

New Greens Group Formed.—Thirty-five greensmen attended the first meeting of the newly organized Michiana Green-keeping Supts. Assn. March 23, in Michigan City, Ind. Among the speakers were Gus Brandon, national GSA secy-treas., John Darrah, Beverly CC, Bruce Matthews and Wm. Philipson of Grand Rapids, Mich., and Dr. James Tyson, Michigan State College, who talked on fairway cutting and bent grass. Brandon also showed two films pertaining to fine turf.

President of the new association is Mavor Boyd, Longwood CC, Dyer, Ind. Chester Keeley, Notre Dame GCse, is vice-pres., and Amos E. Lapp, Long Beach CC, Michigan City, Ind., secy-treas. April meeting was held April 20 at the Spaulding hotel in Michigan City, at which time directors were chosen and by-laws of the association set up.