

What "Dose" Best for Brown-Patch?

By C. R. ORTON

THE number of inquiries regarding brown-patch indicates that this disease continues to be one of the real problems of the golf course. A great many remedies have been tested but only a few have shown any real promise of fulfilling the requirements which are as follows:

1. Any treatment must quickly destroy the fungi which cause these diseases.

2. The treatment must not injure in any way the healthy or weakened grass but on the contrary should act as a stimulant to restore quickly the weakened grass to its normal condition.

3. Any successful treatment must permit of ease and economy of application.

This problem seemed so important that experiments were initiated in 1924 at the Boyce Thompson Institute and have been continued. The first publication by Dr. G. H. Godfrey outlined experiments conducted on the greens of the Hudson River Country club and were published by the Institute as Professional Paper No. 1.

The writer began active work on this problem in 1926 and was fortunate in having a series of 10 plots of 9 different species and varieties of grasses used in golf greens as plots upon which to conduct the experiments in addition to the greens of the adjacent Country Club. It may be of particular interest to many greenkeepers to have a record of these grass experiments since they are the only tests so far as I know of comparative chemical treatments on several different grasses under the same condition.

The arrangement of the plots together with the treatments each received are as shown in Table 1. (*See opposite page.*)

Most of these grasses were secured through the courtesy of the Pedigreed Seed Company. Treatments started May 13 and were continued every two weeks throughout the season ending August 23, when the 8th treatment was applied with the exception of plot No. 7 (ammonium sulphate) which received only 4 treatments at 4-week intervals.

Why So Many Treatments

Naturally the question may be raised

why so many treatments were given. We were anxious to ascertain the toxic dose in one season of the various fungicidal chemicals in the case of each grass and we were able to do this with one exception, viz., treatment No. 3. The Green Section of the Westchester County Golf Association met at the Hudson River Country Club after the last treatment and inspected the plots as well as treatments on the greens. It was evident under these conditions at the end of the experiment that Metropolitan Bent was the best looking plot from all standpoints. This grass is the most resistant to mercury injury of all those in the test. It also made the best turf.

Corrosive sublimate followed by ammonium sulphate was the most injurious of all the materials used and practically killed Acme velvet bent, putting green mixture, European red fescue, and red fescue No. 2 at both concentrations. Its effect upon Virginia and Columbia Bents was also severe. Uspulun followed by ammonium sulphate caused slight yellowing in Acme velvet, Columbia and Virginia bents.

The most striking effects were produced by "Uspulun Nu-Green." This compound which is an organic mercury combined with nitrogen caused no injury to any of the grasses when applied at normal strength and only produced injury at the 8th application when applied at double strength.

In tests on the golf course "Uspulun Nu-Green" controlled brown-patch perfectly and brought the grass back to normal green about two days sooner than straight organic mercury and ammonium sulphate when used separately. There seems to be a decided advantage in this combined treatment as many greenkeepers witnessed last season. There is also a distinct saving in cost of materials and time through the use of "Uspulun Nu-Green" since it is less expensive than straight chlorophenol-mercury and one application produces better results than were for-

Table I—Extent of Injury to Putting Green Grasses by Various Treatments

TREATMENTS	<i>Wash. Bent.</i>	<i>German Creeping Bent.</i>	<i>Red Fescue No. 2.</i>	<i>European Red Fescue</i>	<i>Putting Green Mixture</i>	<i>Acme Velvet Bent.</i>	<i>Columbia Bent.</i>	<i>Va. Bent.</i>	<i>Metz. Bent.</i>	<i>Wash Bent.</i>
	No. 1	No. 2	No. 3	No. 4	No. 5	No. 6	No. 7	No. 8	No. 9	No. 10
1. Check (No Treatment).	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.
2. Uspulun Nu-Green 2 lb. per 1000 sq. ft.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	Slight Aug. 28	Slight Aug. 28	No inj.	Slight Aug. 28
3. Uspulun Nu-Green 1 lb. per 1000 sq. ft.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.
4. Uspulun 1 lb. per 1000 sq. ft. followed by ammonium sulphate	Slight June 3	Slight June 3	No inj.	No inj.	Slight June 3	Slight June 3	Slight June 3	Slight June 3	No inj.	Slight June 3
5. Corrosive sublimate 6 oz. per 1000 sq. ft. applied in 1-1200 solution and followed by ammonium sulphate ...	Sev. June 3	Sev. June 3	Sev. June 3	Slight June 3	Sev. June 3	Sev. June 3	Sev. June 3	Sev. June 3	Slight June 3	Sev. June 3
			Practically killed in July	Practically killed in July	Practically killed in July	Practically killed in July				
6. Corrosive sublimate 3 oz. per 1000 sq. ft. applied in 1-2400 solution and followed by ammonium sulphate ...	Mod. June 3	Sev. June 3	None June 3	None June 3	Sev. June 3	Sev. June 3	Sev. June 3	Sev. June 3	Slight June 3	Sev. June 3
			Sev. in July	Sev. in July	Practically killed in July	Practically killed in July				
7. Ammonium sulphate 2½ lb. per 1000 sq. ft. in solution	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.	No inj.

merly secured by two operations—mercury followed by ammonium sulphate.

1. Inspect greens every morning.

2. Apply disinfectant immediately upon the first indication of brown-patch. Treat the entire green—do not depend upon treatment of just the spots which are visible.

3. Do not limit the treatment to the putting surface. Brown-patch is generally present in the fairways, approaches and borders. At least treat the approaches and borders in order to prevent the fungus from being constantly tracked back into the green. This extra precaution will well repay the extra expense and time.

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