

Observations on Brown-Patch Control in 1926

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In the December, 1925, number of THE BULLETIN an attempt was made to summarize the experiences of different clubs in controlling brown-patch during the preceding summer. It was felt that by supplementing the reports of experiments at Arlington by some such impartial summary of results obtained on greens in various sections of the country, the problem could be more generally understood and the practicability or limitations of any control method could be better defined.

It is well recognized by the Green Section that the experimental work at Arlington is only preliminary; that control methods used there may prove entirely impractical on many courses, due to different soil and climate or to various local circumstances. In our experimental work we can hope only to outline certain fundamental principles of control, the applicability of those principles to actual golf course maintenance must be determined by the various clubs under their own local conditions. On the Turf Garden at Arlington a large number of possibilities can be compared under identical conditions; the majority of them may be discarded as useless or impractical whereas the occasional promising method can be passed on to clubs for trial. We are fortunate in having throughout the country many men who are sufficiently interested in the work to try out these suggestions on their own courses. We are fortunate furthermore in having many of the much rarer type of individual who in addition to making such tests are willing and generous enough to report results that other clubs with similar problems may share their information. Thanks to this latter group we are able to prepare this summary of the past season's experiences in controlling brown-patch. Although the names of some of these contributors are not cited in this report, their information is equally valuable and as fully appreciated as those directly quoted.

Control of the disease by means of different mercury compounds has been the chief method of interest throughout the season. The two chlorophenol mercury preparations (Uspulun and Semesan) have been thoroughly tested all through the brown-patch region. The treatment with bichlorid as suggested in the October, 1925, and the July, 1926, numbers of THE BULLETIN was tested in an experimental way in several localities, and on some courses was used extensively.

The results obtained with Semesan and Uspulun were in general similar to those of the preceding season. In some cases Semesan is preferred while in others it is thought that Uspulun gives better control. Such differences are usually negligible and when reports are summed up it is apparent that these two preparations of chlorophenol mercury give results so similar that they may be regarded as interchangeable. In the St. Louis district, where brown-patch is usually extremely destructive, both of these chemicals gave satisfactory results. Mr. W. L. Pfeffer, president of the St. Louis District Green Section, in summarizing recent experiences states that until the last two seasons, "there had been hardly a year that brown-patch did not totally destroy a lot of greens and damage all of them to such an extent that rebuilding of greens in the St. Louis District was a common

occurrence. Prior to 1925, with a few exceptions, St. Louis never expected good putting greens after the middle of July, but since the experiments held at Algonquin in 1925 the Algonquin Golf Club and every other golf club in St. Louis that followed the practices established at Algonquin have had splendid putting greens and this is due to absolutely no other feature than to the elimination of brown-patch by the use of Semesan or similar hydroximercurichlorophenol disinfectants."

He emphasizes the value of some control treatment to carry the turf through the brown-patch season in a vigorous condition for the fall and winter months: "The treatments in 1925 not only carried our greens through the brown-patch period of July and August, 1925, but necessarily produced immeasurably stronger and better turf to go into the fall and winter with the result that the spring of 1926 found us with greens beyond our fondest hopes or expectations. Instead of rebuilding and replanting each year, as we formerly did, with the resultant seedlings with which to combat our torrid summers, we found ourselves with strong, well developed turf that even without any treatment whatsoever possessed so much more vitality than the young grass we formerly had that it would without doubt by its vigor alone go a long way towards surviving our brown-patch season, but with a resumption of the Semesan treatments based on the experiments of 1925, our greens went through the summer in almost as good condition as through any other month of the year and we now have vigorous, luxuriant bent on all the greens that have gone through two summers with the resultant increase in roots and vitality and without doubt will improve in texture and quality with each succeeding year."

The method generally used in the St. Louis district consists of repeated applications as needed throughout the summer. During periods of greatest activity of the fungus, an application may be required within a few days of the previous treatment. Commenting on the expense of this method Mr. Peffer writes: "Treatments of chlorophenol mercury were at first thought prohibitive but our experience has been that the expense can be minimized by a close inspection and immediate application of Semesan to the affected parts only, which eliminates the expense of continual drenching of the entire greens and naturally eliminates most of the expense. The expense, however, in this district is infinitesimal in comparison with the old system of rebuilding and reseeding to such an extent that even the reseeding costs as much or more than chlorophenol mercury treatments, to say nothing whatsoever of the appreciation in the quality of the greens under the mercury treatment and the peace of mind in knowing that you could produce a beautiful green and retain it."

Semesan and Uspulun have been likewise effective in many other sections of the country. As was the case last year, however, there are occasional reports of failure to control the disease by these chemicals. Many clubs have found that although brown-patch may usually be checked by this means there are times when the period of protection is too short to justify the expense of the treatments. There were also some reports of burning with both of these chemicals when used at the standard rate of 1 pound per 1,000 square feet, especially during July and August.

Bichlorid of mercury as a means of controlling brown-patch has

been watched with especial interest this year. As has been previously pointed out in THE BULLETIN, this chemical is equally effective in checking the disease at Arlington, but more likely to produce burns than are the chlorophenol mercury compounds. The great cost reduction in using this treatment led many clubs to try it on an extensive scale during the past season. Perhaps the most outstanding course where this chemical proved successful was Baltusrol. When the National Amateur Championship was played there in September, Mr. R. A. Jones, general manager, reported that he regarded bichlorid, which had been used against brown-patch throughout the season, as far superior to either of the chlorophenol mercury preparations. In the case of Baltusrol the treatments were made under the direct supervision of Mr. Jones and every care taken to avoid careless or uneven distribution, with the result that no serious burning occurred throughout the season. Bichlorid was put on with the regular application of ammonium sulphate, using a proportioning machine. This treatment was coupled with his usual expert attention given to care of the turf; in which watering, mowing, fertilizing and such matters were not overlooked in keeping the grass in a healthy condition.

We have a similar report from Massachusetts by Mr. Ernest T. Clary of the Whitinsville Golf Club. Mr. Clary wrote that shortly after receiving the July issue of THE BULLETIN a bad attack of large brown-patch occurred on one of the greens: "We procured a supply of corrosive sublimate and applied it to this green as suggested, using about two pounds mixed with our regular topdressing which consists of compost and sulphate of ammonia. The results of this treatment were very satisfactory. The brown-patch was immediately checked and the poor spots began to come back.

"You may be interested to know, however, that about two weeks later brown-patch attacked the same green. We used the same treatment again with the same satisfactory results. This last treatment was made about two weeks ago and at the present time we can see very little evidence on this green of brown-patch.

"It will probably interest you to know that in our first application of the corrosive sublimate there were some traces of burning of the grass. This may have been due to the fact that in our haste to make the application we did not allow the mixture of topdressing to set over night. In fact we applied the topdressing just as soon as we could get it mixed up. Or it may have been due to improper watering-in of the topdressing. On the second application we did not experience any trouble with burning.

"There were slight signs of large brown-patch in several of our other greens so we proceeded to topdress all the greens with the corrosive sublimate in our mixture. No brown-patch has developed in any other green to date."

Mr. Fred Holmes, chairman of the Green Committee of the Country Club of LaFayette, Ind., on August 20 wrote: "We have completely checked two mild attacks of large 'brown-patch' with corrosive sublimate mixed with top dressing, some ammonium phosphate being included. Some untreated tees of Washington strain developed a few bad spots, but the greens showed very little discoloration either from 'brown patch' or treatment, although a careful inspection a week after the last attack reveals a few patches where the grass has not fully regained its vigor. We used a light application—about 5

ounces for 3,000 square feet, or 10 ounces to a green of 6,000 square feet. These applications seemed to give complete control under our conditions.

"In one case the greens did not need topdressing and in that case our greenkeeper only used about 1 pail of topdressing to 3,000 square feet, he treated six greens in two hours."

On September 3 he reported further experiences: "I am sorry to have to report that, although we did this successfully twice, the third time we did not use quite as much care with the result that two of the greens show small burned patches. Because of this we have decided that in treating greens in the future, we will use about 1 yard of compost and 20 ounces of mercuric chlorid for 6,000 square feet."

In the Philadelphia section bichlorid was given a thorough trial during the summer. It was reported that this chemical controlled the disease as satisfactorily as the chlorophenol mercury preparations but difficulty was experienced due to scorching the grass, particularly in late summer. Mr. H. Kendall Read, who was especially interested in the trials made on courses in the vicinity of Philadelphia, concluded that much of the burning was due to carelessness in applying the chemical. He makes another point against bichlorid in the observation that brass hose-couplings and nozzles are gradually destroyed by its corrosive action. Mr. Jones, on the other hand, states that although this had happened at Baltusrol it was found that by thoroughly washing the machine and hose immediately after use there was comparatively little loss, the saving in cost of material much more than compensating for the injury to couplings or spray discs.

In the St. Louis district where the chlorophenol mercury compounds gave such satisfactory results it was found that bichlorid, when applied in midsummer according to directions given in THE BULLETIN, caused some very severe burns. It was noted that in cases where the burning was but temporary the disease was checked. On the whole, however, this chemical was regarded as entirely unsatisfactory in that section.

In reviewing these reports we note, with a considerable degree of satisfaction and encouragement, that the experiences of various clubs coincide in general with the experimental results obtained at Arlington. The chlorophenol mercury preparations when properly applied apparently check the disease under practically all conditions. As at Arlington, this control has nowhere proved permanent, the protection varying from a very few days to several weeks, depending upon climatic conditions. From practically every section where it was tested we have reports that bichlorid controlled the disease as effectively as the chlorophenol mercury preparations, the period of protection likewise varying from a few days to several weeks. It is possible that soil conditions influence to a considerable degree the control by any of these chemicals. Excessive rain may reduce their effectiveness and at the same time favor the development of the disease; a situation which may account for many of the disappointments reported. "Failures" are not infrequent where a greenkeeper (who had perhaps been misguided by a too enthusiastic salesman) expected one or two treatments with Uspulun or Semesan to entirely solve all his brown-patch problems for the season. It is apparent that the turf must receive proper care, with due consideration of the

many cultural conditions that affect the development of the disease, if any mercury application is to be fully effective.

The cause of "burning" is still a question. Various cases of injury from each of these mercury compounds have been reported. At certain times any of them may be used greatly in excess without any evidence of harm while at other times even the so-called "standard" treatments have produced permanent injury. Since it has always been recognized that bichlorid is more likely to scorch grass than is chlorophenol mercury, THE BULLETIN has recommended that it be tried first in an experimental way. The reports from various clubs have further emphasized that this chemical must be used with greater care and that under certain conditions it may be entirely impractical. Much of the burning no doubt has been due to carelessness, but this by no means explains all cases of injury. Our work at Arlington this summer, together with these outside reports, indicate that previous recommendations were excessive. The use of 1/5 pound of bichlorid, rather than 1/3 pound per 1,000 square feet as previously recommended, is more nearly the equivalent of the standard 1 pound per 1,000 square feet of Uspulun or Semesan. There are times, particularly during July and August, when the grass is "soft" and more likely to be injured. In such periods, especially on courses or individual greens where the turf is more sensitive to chemical injury, the rate of applying any of the mercury compounds must be considerably reduced below the usual recommendation in order to avoid discoloration or more severe burns. It follows that such treatments must be more frequent.

From all the evidence we have been able to obtain, it is apparent that bichlorid has an important place in brown-patch control on many courses. In the early summer when injury to turf is rare it can undoubtedly be used to advantage on any course, for it serves to rid the green of earthworms as well as provide protection against early attacks of brown-patch. Again, toward the end of the brown-patch season, it is less likely to injure turf and may be used with comparative safety against the disease and earthworms. During July and August, when the risk is much greater, it should not be generally used unless the greenkeeper is thoroughly familiar with it.

While the difficulty due to burns experienced on many courses may be considered as altogether discouraging to those who hoped to find in bichlorid a cheaper means for control of brown-patch, the close correlation of the above tests with results at Arlington serves to give greater confidence in the likelihood that calomel will fulfill these requirements. The criticism against bichlorid has not been due to its failure to control brown-patch as effectively as Semesan or Uspulun but to its tendency to injure turf. As pointed out in the October number of THE BULLETIN, calomel during the past season at Arlington has been fully as effective as any of the mercury preparations and is least toxic to grass even when applied in excess. If tests in various parts of the country next year substantiate these preliminary observations, as is to be expected from the results with bichlorid, it is probable that the most economical use of mercury against the disease will in the future consist of an early season application of bichlorid against the fungus and earthworms followed by treatments with calomel during the months when burning is most likely to occur. This, however, remains for clubs to determine during the next brown-patch season, for as yet calomel has not been tested on golf courses.

There is one item which should perhaps be included in this summary since it has been brought to our attention from various sources during the past season. It has been claimed that there is abundant evidence that bichlorid, unlike the organic mercury preparation, accumulates in the soil and after being used a few times it causes discoloration and permanent injury to turf; such as is the case with bordeaux or other copper treatments. It is true that many cases of burning with bichlorid have been reported just as we have seen many cases of burning with Semesan or Uspulun. This "burning" is an immediate effect (either temporary or permanent) and is entirely distinct from the accumulative injury of copper compounds. That is, the damage is apparent soon after the application of the chemical, as is the case with ammonium sulphate, and the second or even the tenth is no more likely to burn than the first application. Much pseudo-scientific literature has been circulated emphasizing the difference between the inorganic bichlorid of mercury and the organic mercury compounds such as Uspulun and Semesan; pointing out the danger of an accumulation of bichlorid in the soil which it is claimed does not apply to the organic forms. Alarming as these arguments may sound to the greenkeeper or green committee not familiar with such complicated chemical distinctions, the fact remains that at Arlington after repeated and excessive applications of both forms we have as yet found no harmful accumulation of mercury from either. So far as we have been able to determine wherever both types of mercury combinations have been used against brown-patch any such unfavorable comparison between the organic and inorganic form is apparent only to those with direct financial interests in the sale of chlorophenol mercury.

QUESTIONS AND ANSWERS

All questions sent to the Green Section will be answered in a letter to the writer as promptly as possible. The more interesting of these questions, with concise answers, will appear in this column each month. If your experience leads you to disagree with any answer given in this column, it is your privilege and duty to write to the Green Section.

While most of the answers are of general application, please bear in mind that each recommendation is intended specifically for the locality designated at the end of the question.

1. Shade grass.—Please advise us whether you consider bluegrass or bent preferable for partially shaded tees. Or is there some other grass you recommend in preference to either of these? Water is available for watering the tees. (Illinois.)

ANSWER.—There seems to be relatively little difference between bluegrass and bent as regards ability to grow in shade. Neither is a particularly good shade grass, but of the two we would be inclined to choose the bent. A better shade grass than either is *Poa trivialis*, which is also called rough-stalked meadow grass, or bird grass. This is an excellent shade grass. It should be sown preferably with bent or redtop, as is the practice in sowing Kentucky bluegrass. It requires