

## Controlling the Japanese Beetle

The putting greens on a number of golf courses in New Jersey and eastern Pennsylvania have suffered severely for some years from the ravages of the larva of the Japanese beetle. No entirely satisfactory means has been discovered for controlling this pest. So serious is the damage done by the beetle, from the agricultural standpoint, that the Bureau of Entomology of the United States Department of Agriculture has established a station at Riverton, N. J., for special experimental work in the control of the insect. Mr. C. H. Hadley is in charge of the department's work at the Riverton Station. An interesting question in the possible means of controlling the Japanese beetle has been brought up in a recent letter received from Mr. W. W. Smith, Chairman of the Green Committee of the Riverton (N. J.) Country Club. Mr. Smith's inquiry was referred to Mr. Hadley for attention. The inquiry, together with Mr. Hadley's reply, are here presented:

Philadelphia, Pa., January 20, 1923.

Green Committee, U. S. Golf Association,  
Washington, D. C.

GENTLEMEN:

I am interested in obtaining information as to the possible damage to greens by spraying while the sun is shining. The reason I am prompted to make this inquiry is due to the fact that our course is in the Japanese beetle-infested area, and unless we develop some means of keeping the beetles from leaving their eggs in the greens we are likely to lose most of the turf.

As a Japanese beetle flies only between the hours of 9:30 a. m. and 3:00 p. m., it has occurred to me that by spraying the greens with a very fine spray between those hours it would keep the beetles off. It is my thought that the spray should be as light as possible, and I am anxious to determine what damage, if any, would be caused by the action of the sun upon the dampened greens. It will be necessary to carry on this spraying, if it finally develops that it is advisable, during the last two weeks of June and the month of July.

Yours very truly,

W. W. SMITH,

*Chairman Green Committee,  
Riverton Country Club.*

Mr. Smith's letter was at once referred to the Bureau of Entomology of the United States Department of Agriculture for attention with regard to the problems raised in connection with Japanese beetle control. With regard to the possible damage to the turf from spraying during midday, Mr. Smith was advised that while no considerable turf experiments on the problem had ever been conducted, the probabilities are that little, if any, damage would result to the turf from the suggested procedure, although it is generally conceded that watering early in the morning or late in the afternoon is preferable to midday watering, principally because of the more favorable conditions for the absorption and retention of the moisture by the ground.

Riverton, N. J., February 5, 1923.

Mr. W. W. Smith, Chairman of the Green Committee,  
Riverton Country Club, Riverton, N. J.

DEAR MR. SMITH:

A copy of your letter of January 20, addressed to the Green Committee of the U. S. Golf Association has been referred to me with the request that I write you regarding the probable effect of spraying while the sun is shining upon the Japanese beetle.

There are several points to consider in this matter. In the first place there is to be considered the question of what spray you might use. A spray of water

alone would probably have an opposite effect from that desired; in fact, the beetles would to a certain extent undoubtedly be attracted to the greens if a fine spray of water was being applied, especially if the surrounding turf was quite dry.

Now, if a chemical spray were to be used, it is a question whether we know of any chemical which would be sufficiently repellent to the beetle to be effective without at the same time injuring the grass. In repelling the beetle we are concerned, in this case, with the question of making the turf distasteful to the beetle for egg-laying purposes. Our experience has shown that arsenate of lead is quite repellent to the beetle so far as the question of the feeding of the beetle is concerned. On the other hand, it is quite doubtful whether this material would act as a repellent from the standpoint of preventing deposition of eggs. It might be assumed that a repellent which would make the turf distasteful to the beetle for egg-laying purposes should be decidedly odorous material. In this case the probabilities are that the odorous material would be perhaps equally effective with individuals desiring the use of the greens for purposes of playing golf.

Should the question of color of material be considered, we do not have definite data as to the attractive or repellent effect of the differently colored materials upon the beetle for egg-laying purposes. We do know that, so far as feeding is concerned, the difference between black and white and the difference in coloration of other materials apparently have no influence on the question of whether or not the beetle will feed. In other words, color apparently does not play a very important part in the question of the repellent effects of spray materials so far as the feeding of the beetle is concerned. It is doubtful whether there would be any appreciable influence from variation in color of materials which might be used to treat a green so as to prevent deposition of eggs. Furthermore, it can be seen that the application of a very white material for the purpose of keeping insects away from a green might interfere with the use of the green for playing purposes.

So far as corrosive materials are concerned, which might result in the destruction of eggs as soon as or shortly after they are deposited by the beetle, it is quite probable that there would be a similar destruction of the grass from the use of such corrosive materials. You will perhaps recall that last summer on several of the greens, your greenkeeper scattered bluestone quite heavily, and so far as could be determined this material had no appreciable effect in preventing deposition of eggs.

We have, as you are aware, done considerable work the last year or two during the season along the lines of preventing or remedying injury to greens from the Japanese beetle. We feel now that we have something at least in the carbon bisulfid emulsion treatment, devised by Mr. Leach, of the laboratory, which, if not entirely satisfactory in all respects, will certainly help to reduce the injury to greens, and it is our hope to further perfect the method during the coming beetle season.

I understand that you will probably have a conference with us in the near future regarding means of ending injury to the golf course from the beetles, and if you so desire we can at that time take up this matter in greater detail than is possible in this letter, and can probably arrange for cooperative work during the coming season.

Very truly yours,

C. H. HADLEY,  
*Entomologist in Charge,*  
*Japanese Beetle Project.*

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