

TIMELY TURF TOPICS

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UNITED STATES GOLF ASSOCIATION GREEN SECTION

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AVAILABILITY OF PESTICIDES: There have been no new restrictions on use of insecticides, fungicides, and herbicides. For more than a year it has been impossible for manufacturers to use mercury in manufacture of turf fungicides. However, tetramethyl thiuramdisulfide has been demonstrated repeatedly to be equally as effective as mercurials in control of dollarspot, brownpatch and snowmold, and the manufacturers of this product (available commercially under the trade name Thiosan) anticipate that they will be able to supply all normal needs this season at a price somewhat less than that of last year.

As to insecticides, sale of rotenone and derris root as well as pyrethrum is still restricted. The situation so far as pyrethrum is concerned is decidedly more critical than before because of increased demands of the armed services. Mowrah meal is not restricted and may be used if obtained. Arsenate of lead, calcium arsenate and other arsenicals may still be applied to turf if obtained.

So far as arsenical herbicides are concerned, only those already placed on the market will be available. Some sodium chlorate may be purchased for weed control but a Government license is necessary to purchase or even possess it, so it is doubtful that there will be much demand for it for control of turf weeds or poison ivy. Lawn Sinox, which has given generally satisfactory results in control of turf weeds, will not be manufactured for the duration of the war but some quantity of it is still available on the market. Sinox, a very similar preparation, is still available in considerable quantity. Ammonium sulfamate can be purchased without restriction provided not more than 100 pounds are bought in one month by a single customer.

VETERANS--POSSIBLE SOURCE OF GOLF CLUB EMPLOYEES: The Veterans' Employment Representative in your State may be able to help you solve a labor problem. In his office he has a registry of all veterans from his State, with information concerning their pre-war experiences, types of disability, etc. Disabled veterans of this war are registered before they leave hospital and their cards are sent to their home states before the men themselves get home, the hope being to have a useful place in civilian life ready for them when they reach home.

If you are interested in the possibility of at least partially solving a labor problem and at the same time helping to reinstate disabled veterans in useful civilian lives, contact the Veterans' Employment Representative in your State. He will require the following information before assigning available War Veterans: place of work, type of work, number of working hours, amount of pay, whether or not room and board are included, white or colored, kind of experience necessary, and name and address of person at the club to be contacted. With this information at hand, he will probably be glad to cooperate with you in placing disabled War Veterans in golf club work.

GREEN SECTION SERVICES TO MEMBER CLUBS: Active membership in the U. S. Golf Association entitles a club to the professional services of the Green Section in connection with problems of establishment and maintenance of turf, as well as to receive gratis two copies of each issue of our publication TIMELY TURF TOPICS. Although our reduced personnel and budget do not make possible trips to member clubs for consultation purposes during the war, we are able in our Washington office to test soil samples, identify diseases, weeds, insects and other pests, and to make recommendations accordingly.

June, 1943

GASOLINE FOR MAINTENANCE EQUIPMENT: In spite of acute shortages of gasoline in the East, there are still no national restrictions against its use in equipment necessary to maintain golf course turf. In this connection the Green Section office would like to obtain figures on the amount of gasoline used last year for turf maintenance on golf courses, particularly in the Eastern States. We would appreciate receiving any such information from clubs which have their records broken down so as to indicate the amount of off-highway gasoline consumed per season.

MOLE CRICKETS TROUBLESOME IN TURF IN THE SOUTH: Particularly heavy infestations of mole crickets which, in most cases, have been resistant to arsenate of lead have been reported causing considerable trouble on southern courses last fall and this spring. These pests are commonly referred to as Porto Rican mole crickets. However, as reported in the November, 1941, issue of *TIMELY TURF TOPICS*, several years ago entomologists in the Department of Agriculture recognized 2 species of these insects. One was apparently susceptible to poisoning by arsenate of lead, whereas the other was comparatively resistant to it.

Recently the Bureau of Entomology and Plant Quarantine issued a press release throughout the Southern States on control of mole crickets in truck crops. According to that information, further studies have been made of the 2 species of mole crickets involved. They are reported being "as alike as identical twins," and they may often occur in the same fields. Apparently the outstanding difference between the 2 species lies in the fact that the one called the southern mole cricket cannot be effectively controlled by arsenate of lead, whereas the Porto Rican mole cricket can. Unfortunately the southern mole cricket apparently is particularly fond of turf.

The entomologists in the Department of Agriculture, however, have developed a bait which, according to their investigations, will control both species. The active ingredient of this bait is sodium fluosilicate which, unfortunately, is generally recognized as being toxic to plants, particularly young plants. The bait, which has been demonstrated to be effective on both species of mole crickets on truck crops, is prepared as follows: 8 pounds of sodium fluosilicate are mixed with 100 pounds of wheat bran and sufficient water is added to bring the bait to a crumbly consistency. Good results have been obtained on vegetable crops by distributing 20 pounds of bait to the acre, scattering it lightly over the soil just before the crop plants are set out or the seed planted. When reinfestation occurs a second application is advised. Molasses apparently is not needed to increase the effectiveness of the bait. Best results are obtained when the soil is moist and the application made late in the afternoon.

In addition to being effective against both species of mole cricket, sodium fluosilicate is desirable where it can possibly be used because of its availability at this time when arsenicals are seriously needed in the war effort. Sodium fluosilicate is available in ample quantities since it is a byproduct in the manufacture of fertilizer. It apparently has strong insecticidal properties but the difficulty so far as its use on turf is concerned lies in the fact that it burns the foliage, particularly of young plants. However, where infestations of mole crickets are particularly injurious to turf it might be advisable to try the bait on small areas of turf and determine how serious the injury to the greens may be. Before it can be recommended for use on greens, its toxicity to closely-cut turf must be determined as well as its effectiveness on insects feeding on turf.

POOLING OF LABOR MAY BE ANSWER TO MANPOWER QUESTION ON SOME COURSES: Where neighboring clubs are critically short of help at crucial times during the growing season, the answer may lie in the clubs getting together and pooling their labor. If the work to be done is such that several men working together can accomplish more than the same men working individually, pooling labor may result in more efficient work. In such cases, both clubs will be better off for having shared their help with their neighbor. In some sections this method has worked successfully.

EFFECTIVE ERADICATION OF POISON IVY NOW POSSIBLE: Those susceptible to poison ivy, poison oak, ragweed pollen, etc., will be happy to know these weeds can now be eradicated easily and effectively with a chemical, ammonium sulfamate, which, according to WPB Order M-242, is available commercially for herbicidal purposes. The single restriction expressed in the Order is that if the chemical is to be bought by any purchaser in amounts exceeding 100 pounds a month, a priority statement must be presented.

This chemical and its parent compound, sulfamic acid, have been tested by scientists in various sections during the past 4 years for herbicidal properties against such weeds as poison ivy, poison oak, ragweed, wild blackberries, Canada thistle.

Green Section tests last year in collaboration with Mr. L. W. Kephart, of the Department of Agriculture, demonstrated its outstanding efficiency in control of poison ivy, even of very old and well established plants. Single applications of ammonium sulfamate eradicated the weed more effectively than did repeated treatments with sodium chlorate, ammonium thiocyanate, and sodium arsenite made throughout the season.

Ammonium sulfamate is a salt which is very soluble in water and consequently easily handled. It takes up water from the air and should therefore be stored in airtight containers and dry places. Applications are easily made with a knapsack sprayer. The solution is somewhat corrosive to galvanized metal and therefore should not be left in the sprayer can. However, the sprayer should be washed out carefully with water after ammonium sulfamate has been used in it.

Unlike the arsenicals which have been used in some cases in the control of poison ivy, the chemical is not poisonous to man or to animals which may graze on treated areas. Neither is it inflammable, as is sodium chlorate. As a matter of fact, it has been widely used as a fire retardant for fire-proofing fabrics and building materials. Ammonium sulfamate apparently does not have any injurious effect on soil, particularly when applied as recommended for poison ivy. This combination of effective herbicidal properties with other desirable characteristics in a single chemical compound is unique, and it would seem that it is the material for which the public has been waiting. The manufacturers recommend its use in solutions containing 1/2 to 1 pound of ammonium sulfamate in 1 gallon of water. When the foliage is well wetted with a solution of this concentration the treated plants usually succumb, even though in the case of perennials such as poison ivy the plants may be deep-rooted and well established. A second treatment is usually advisable after several weeks have elapsed, in order to treat any plants overlooked in the original treatment or any new shoots sent up from deep-seated perennial roots. About a year later the area should be checked to make sure no poison ivy has escaped.

Ammonium sulfamate is more injurious to some plants than others but little is known about this and for the time being care should be taken to keep the spray solution away from valuable foliage.

The action of the chemical is notably slower than that of other herbicides used commonly for eradication of weeds. Toxic effects may not become evident for 24 hours or more after treatment and then only in the form of wilting or a browning of the edge of leaves. It may be a week or longer before the leaves finally become uniformly brown and brittle and the plants appear dead. The ammonium sulfamate apparently is taken up by the cells of the foliage and translocated through the plant, killing slowly as it goes. It is therefore important that the foliage be well developed at the time of treatment. Applications to perennial plants should be made before they begin to go into dormancy in late summer or fall. For poison ivy, therefore, it would seem best to apply the spray treatments sometime between May 15 and August 15.

Little has been done yet in considering possibilities of ammonium sulfamate for selective eradication of weeds. Our preliminary experiments last year indicated it may be possible to kill selectively certain weeds in turf by applying ammonium sulfamate in very dilute solutions. Applications of it at rates of 2 ounces and 4 ounces dissolved in 5 gallons of water to 1,000 square feet were notably less injurious to turf than was sodium arsenite applied at the same rate. In one instance when the applications at the 2- and 4-ounce rates were followed by rain within an hour, a stand of the turf weed lawn pennywort (*Hydrocotyle rotundifolia*) was reduced approximately

75 percent with no injury whatsoever to the bluegrass turf. A month after treatment the grass on the treated plots showed a definitely stimulated growth.

It is hoped additional experiments this year may demonstrate whether in these dilute concentrations ammonium sulfamate may be useful in selective control of turf weeds, and if so, what conditions may be expected to influence results.

AVAILABILITY OF NITROGEN FERTILIZERS: Apparently the situation concerning the amounts of chemical nitrogen available for use as fertilizers has improved considerably. On the other hand, the possibility of obtaining organic nitrogen for use on golf course turf is rapidly fading into the background. It is to be hoped, therefore, that the War Food Administration in drafting a new Order for the control of fertilizer consumption will give due consideration to the possibility of allocating enough chemical nitrogen fertilizer to maintain the turf on greens.

POSSIBLE EFFECTS OF ARSENATE OF LEAD IN SOIL ON GARDEN VEGETABLES: In areas where turf has been treated with arsenate of lead for the control of Japanese beetle grubs, the question has been raised repeatedly whether or not vegetables grown in soils previously treated with arsenate of lead would absorb arsenic in amounts sufficient to make them undesirable or dangerous for human consumption. In answer to this question the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture cites the results of experiments on the subject conducted at the Bureau's research laboratory in Moorestown, New Jersey.

In these tests the quantity of arsenate of lead added to the soil was from 2 to 8 times the amount customarily used for grubproofing turf (10 pounds to 1,000 square feet). In spite of this abnormal treatment only a negligible amount of arsenic was absorbed by most vegetables even the first year after treatment, except for onions, which were found to contain appreciably more than .025 grain of arsenic per pound, which is the arsenic tolerance announced by the Federal Security Agency for insecticidal residues on certain fruits entering interstate commerce.

The arsenate of lead at these abnormally high rates, however, did affect the growth of some of the plants, notably that of lima and snap beans. The beans germinated poorly and most of the resulting plants died. Therefore, it may not be desirable to plant beans and related crops on soils which have been treated in previous years with heavy applications of arsenate of lead, if untreated areas are available. According to the U. S. Department of Agriculture, "To do so may reduce the normal return for the effort and be incompatible with the current effort to conserve seed, fertilizer, and insecticide materials."

If your course is in an area where Japanese beetles occur, and you desire additional information on the possible effects of arsenate of lead already present in the soil on vegetables, it would be well for you to seek the advice of your Plant Quarantine Regulatory officials, or the entomologists in your State Agricultural Experiment Station, or your State Extension Service.

GOLF CLUBS AND THE FOOD PRODUCTION PROGRAM: Many golf clubs are streamlining their turf maintenance work into the nation's food production program in successful and ingenious ways. In Metropolitan New Jersey, for instance, 3 miles from the nearest railroad station, the Baltusrol Golf Club under the able management of Major R. Avery Jones is keeping up its two rambling courses, running a farm and garden, and maintaining a stable with six horses - all with half its former grounds staff.

Members, according to reports, thoroughly enjoy the 3-mile trip between the railroad station and the club in horse-drawn station wagons. That this rustic method of transportation is practical as well as enjoyable is evidenced by the fact that on each of the three days on the Memorial Day week-end, more than 100 members were transported to and from the club. And so golf goes on and Major Jones "keeps 'em swinging."

Between the two courses and a safe distance from even the wildest golf shots, several fields, each from 3 to 6 acres in size, have been fenced in. In one there are 30 Herford steers; in a second, 10 Guernsey heifers; and in a third, 30 Southdown

sheep. Naturally a 3-acre field offers 30 steers little but fresh spring water and a place to exercise. However, the stock is fed each day, morning and evening, with clippings from bunkers and rough, and greens when chemicals are not being used on the latter. According to Major Jones, the stock follow the truck up to the big trough from which they are fed and line up for the meal in perfect order. Apparently the members derive genuine satisfaction from the knowledge that their club is contributing to the country's food program, as well as from the picturesque touch furnished by the stock roaming the club's fields.

Major Jones plans to sell the steers about November; the heifers, when they drop their first calves; and the lambs in about August; thereby disposing of the stock before the green food supply runs out.

Meanwhile, 9 acres have been devoted to field corn and alfalfa, nearly 2 acres to garden crops, and 40 acres to hay and clover to be used for fattening the steers for market.

Last winter Major Jones kept his grounds staff together by having them build stables for 8 horses and cut 200 cords of wood for the members. Much of the farm work was done by the men before the golf season opened.

FORKING AND CHARCOAL TREATMENT IN PUTTING GREEN MAINTENANCE: Mr. Franklin L. Miller, Canterbury Golf Club, Cleveland, writes that after 5 years of experience using hollow-tine forking and granulated charcoal at his club they have established beyond all question the fact that the use of this method is a "must" in maintenance of satisfactory putting surfaces on their course throughout the year.

In 1938 a number of their greens began showing results of several years of hard play. They became packed, had shallow root growth, poor drainage, bad color, and were so thinned out that it was impossible to maintain good putting surfaces. Hot weather developed bare spots of alarming proportions. It was more than obvious that the need of cultivation was imperative. Fertilizing did not seem to help. On very hot days when a player walked across the greens he could see the grass turn blue and wilt under his feet. Traditional methods proved useless. The turf was so thin and weak that it could not maintain its integrity under ordinary treatment.

It was under these distressing circumstances that the use of hollow-tined forks on the turf was resorted to, and conditions began to improve substantially. The forks were made of 6 hollow tines $4\frac{1}{2}$ inches long and 7/16-inch in diameter, spaced 2 inches apart. The procedure followed was to start at the front of the green and work to the back, making rows of holes 10 inches apart and then filling them with charcoal ground to the size of granulated sugar. Some of the holes were filled with a mixture of 3/4 charcoal and 1/4 Milorganite, but this was abandoned because of a resulting washboard effect due to the density of grass around the tine holes.

The work was first done in October and the second forking was done in the following July, at right angles in the original forking, spacing the rows at 10 inches, as before. During the second forking, some of the holes made the previous fall were opened and were found to contain heavy roots 4 inches long.

This method of treatment has prevailed at Canterbury since 1938. During this time they have had no trouble. Watering results have been much better and there has been a thick, healthy stand of turf through the season.

Spring and fall seem to be the best times for turf-forking, due to better working conditions and normal root growth then. However, Mr. Miller believes that if a green needs attention, it should be forked and charcoal-treated regardless of the time of the year.

Time costs on this treatment can be figured at about 48 hours for an area of 6,000 square feet.

It is Mr. Miller's opinion that the benefits of this treatment have been due to a bellows action of the charcoal accompanying variations in the moisture content of the soil. The results have been a deeper root system, increased water efficiency, relief of sod-bound turf, increased soil aeration, improved drainage, and generally improved physical condition of the soil.