

COMMENTS ON
TURF CULTURE

Issued by the UNITED STATES GOLF ASSOCIATION GREEN SECTION
P.O. Box 73, Benjamin Franklin Station, Washington, D. C.
Frank M. Hardt, Chairman of Green Section Committee
Dr. John Monteith, Jr., in Charge of Washington Offices
Executive Offices, 73 East 57th Street, New York, N. Y.

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GREEN SECTION COMMITTEE MEETING

A meeting of the Green Section Committee of the United States Golf Association will be held on Thursday, June 5 at 11 A. M. at the Baltusrol Golf Club, Springfield, N. J., during the Open Championship.

The Committee comprises:

Frank M. Hardt, chairman, Philadelphia, Pa.	Norman Macbeth, Los Angeles, Cal.
Robert F. Arnott, Upper Montclair, N.J.	Dr. M. A. McCall, Washington, D.C.
Leo S. Bauman, St. Louis, Mo.	Robert McLean, Jr., Baltimore, Md.
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Spencer M. Duty, Cleveland, Ohio	James Morrison, Cincinnati, Ohio
Robert J. Foley, Huntington, W. Va.	Harry E. Radix, Chicago, Ill.
Dr. Walter S. Harban, Washington, D. C.	C. A. Tregillus, Everett, Ill.
Richard L. Jackson, Ridgefield, Conn.	Frank H. Wilson, Newton Centre, Mass.
George R. Jacobus, Ridgewood, N. J.	R. A. Young, Indianapolis, Ind.

THE CONTROL OF ANTS IN TURF

The Green Section has made numerous tests with various ant remedies and has received many suggestions from outside sources.

No method has yet been devised for ant control that is entirely efficient and practical for all purposes. One important difficulty is that there are numerous species of ants which are troublesome in turf and these species vary in their feeding habits.

Most of the ants on golf courses build nests in the ground in the immediate vicinity where they are feeding. Each colony has one or more queens which lay eggs in large numbers in the nests. These eggs hatch into larvae, which are fed with food brought in by the workers of the colony. In this manner the ant colony resembles a swarm of bees. Any treatment that merely kills the worker ants provides only a temporary checking of the insect. If poison can be applied into the ant nests to kill the queen and the young, the entire colony is destroyed. Now colonies may, however, move in from nearby and establish new nests.

The following suggestions are presented for trial. If one is not suitable for certain conditions, it is well to try others.

Killing Individual Colonies: Various methods have been used to kill ant colonies quickly. In the vicinity of buildings, walks or driveways they may be destroyed by drenching the nests with boiling water or injecting small quantities of kerosene or coal oil. These treatments, however, are likely to destroy grass and therefore cannot be used on turf.

A similar method, in which the killing agent is a volatile liquid (carbon bisulphide), has been used frequently on putting greens. It is described briefly on page 155 of Volume 5 of the Bulletin of the United States Golf Association Green Section, as follows:

"In using carbon bisulphide the hole in the ant hill is enlarged with a sharp instrument and two or three drops of carbon bisulphide are injected into the hole by means of a spring-bottom oil can. The hole is then at once closed by plugging with earth. Care must be exercised in the use of carbon bisulphide as in the use of gasoline, since it is equally as explosive."

One important objection to this method, however, is that unless used with great caution the carbon bisulphide is likely to injure the turf.

Extracts of pyrethrum have recently been substituted for carbon bisulphide. The method is essentially the same as the carbon bisulphide method. The ordinary commercial extract of pyrethrum is diluted 1 part to 100 in water, placed in an oil can, and used in practically the same manner as the carbon bisulphide. In tests at Arlington this treatment completely destroyed ant colonies without any injury to turf. Pyrethrum extract is a common insecticide sold under various trade names.

Where colonies form large ant nests, two or three ounces or more of either carbon bisulphide or pyrethrum extract is required. In such cases the treatment has been found to be more effective if the ant hill is covered with a wet blanket or heavy cloth for a time to retain the fumes of the chemical.

The above method, however, is impractical where the ant colonies are numerous, because of the excessive labor involved. In such cases it is best to use a less laborious treatment to get rid of most of the ants and to depend on the above for the final clean-up.

Calcium cyanide (Cyanagas) applied at the center of the hill is also effective. The amount held by the point of a pocket-knife blade is enough for a colony. Gas evolves as soon as the powder comes in contact with moisture, in this case from that in the soil. Care must be taken not to spill the chemical on grass and to keep it stored in a dry place.

Poisoned Baits: Ants can be controlled with poisons. In using poisoned baits it must be remembered that the right kind of bait must be used to attract the particular species that is present. Some species of ants prefer sweet substances, whereas others prefer fatty materials. If strong poisons are used the ants that eat them are immediately killed and the other ants will avoid that particular substance. Therefore, the principle of using ant baits is to use the poison sufficiently diluted so that before the worker ants feel any ill effects from the poison they will have been able to carry large quantities of it back into the nests where it may be fed to the reproductive forms and to the young and thereby destroy the entire colony. Ants frequently appear suspicious of poisoned baits and will avoid them. It is therefore well to change to different combinations when any particular poisoned bait no longer appears effective.

Various ant poisons are available on the market under trade names. In many of these proprietary mixtures the basic poison is thallium sulphate. This chemical is extremely toxic to grass and in general should be avoided on golf courses until more information is available as to its possibilities for harm. In tests at the Arlington turf garden extremely small quantities of thallium sulphate sterilized soil so effectively that grass would not grow upon it for at least a year. Concentration of this poison by the ants in their nests may lead to serious turf injuries. Thallium sulphate baits, however, can be used with safety around the clubhouse or other buildings of golf courses.

Some ant poisons contain borax, which also is likely to cause injury to turf and therefore should be avoided in excess on putting greens.

Several simple baits which have been found to be effective are listed below. The sirup baits may be used most effectively by dipping pieces of sponge, absorbent cotton or cloth into the sirup and then placing them in containers such as metal salvo boxes or heavily paraffined pasteboard containers. Small openings are made in the containers so that the ants may have easy access to the sirup. The containers may be placed on the green in the evening and lifted in the morning.

The following poisoned sirups have been found effective:

Formula A: Dissolve 4 ounces of sugar in a quart of hot water. Then add $\frac{1}{2}$ ounce tartar emetic.

Formula B: Dissolve 1 pound of sugar in 1 quart of hot water. Add 125 grains of sodium arsenate, boil and strain.

Formula C: (Recommended only for the control of the Argentine ant, which occurs only in some of the Southern States and in certain parts of California)

Add 9 pounds of granulated sugar, 6 grams (approximately 30 grains equal 1 ounce) of tartaric acid (crystallized), and 8.4 grams of benzoate of soda to 4 $\frac{1}{2}$ quarts of water.

Boil the mixture slowly for 30 minutes, then allow it to cool.

Dissolve 15 grams of sodium arsenite (C.P.) in $\frac{1}{2}$ pint of hot water and allow it to cool. Add this poison solution to the sirup and stir well.

Then add 1- $\frac{1}{4}$ pounds of strained honey and mix thoroughly.

Another method for using the poisons listed above is to mix the sugar and chemicals dry with an equal volume of bran or corn meal. Add enough weak honey solution (honey in water) to make a crumbly mixture which can be scattered about the green.

Another dry mixture that is usually effective is:

Mix 1 ounce Paris green with 1 pound brown sugar.

Sprinkle the crumbs very lightly around the ant hills.

The poisons may also be mixed with lard to make a paste-like bait which attracts the species that feed on fatty materials. It must be remembered to keep the poison sufficiently diluted so that it may be carried to the nests.

Repelling with Water: A method that has some times been used effectively is that of driving ants from greens by leaving sprinklers running all night for several nights in succession. The ants dislike this excess water and will leave the greens. Because of the danger of complications due to excess water on heavier soils this method can only be recommended for greens with excellent drainage and sandy topsoil.

Tobacco dust and other repellants have proved to be effective under certain conditions. However, like the watering method, these remedies are only partially effective since they merely cause the ants to move out to new territory, from which they migrate back onto the greens as soon as conditions are again favorable.

Warning: The poisons listed above (except pyrethrum extract) are extremely poisonous to human beings and animals. Extreme care should therefore be exercised in their preparation, use and storage. The sirups especially should never be left where they may be reached by small children.

UNUSUAL WEATHER CONDITIONS IN 1936

Greenkeeping practices must always be modified in conformity with the prevailing weather conditions. Many golf course officials have for years been hoping for some standardized golf course maintenance methods. It is impossible, however, to standardize greenkeeping methods until someone develops a system of standardizing the weather. In the maintenance of grass, allowance must be made for not only the weather conditions prevailing at the time but also for unusual weather conditions of previous months, as well as anticipating possible extremes in the months to come.

The season of 1936 started with a variety of unusual conditions that have already had a decided influence on golf course turf and will no doubt influence turf culture throughout this summer.

The long, cold winter with plenty of snow, followed by a cold, wet spring, in many parts of the country resulted in severe damage from snowmold and winterkill. In many sections of the country the growth of turf; particularly annual bluegrass, was stimulated in early March by early spring thaws and in some places was completely killed by cold weather later in the month. The result was that large areas of golf course turf were destroyed and the cold weather that followed the seeding of these injured areas resulted in slow germination. The seedlings in these large areas, whether they are from seed that was sown in the soil this spring or from seed of Poa annua already in the soil, are faced with the possibilities of extremely hot, unfavorable weather before they are well established. This circumstance therefore will continue to threaten through the summer. Excessive fertilizing and watering to speed up the growth of grass in these weakened areas at this late date may only make conditions worse if early summer weather conditions prove unfavorable.

As an example of the extreme weather conditions that prevailed in the early part of 1936, the United States Weather Bureau has reported that in Oklahoma, for instance, the 111 days from January 1 to April 20 had approximately one-fifth of the normal rainfall for that season. This represents the smallest amount of rainfall that is on record for that period in Oklahoma. The driest previous record for a similar period was in 1910, which had, however, 60 per cent more