

WHY We Have Weeds; HOW We Prevent 'Em

By B. R. LEACH

IN August GOLFDOM I discussed the virtues and weaknesses of ammonium sulfate as a weed control agent, pointing out that the value of the chemical in this regard rests upon the fact that it tends to make the soil more acid in nature, thereby making the latter more suitable for the growth of the fine turf grasses and less so for the growth of many weeds which prefer a sweet or alkaline soil. It was shown that ammonium sulfate was most efficient as a weed control agent in soils of a neutral type, that is, midway between acid and alkaline, but that where the soil was naturally endowed with limestone or where the water used on the course was impregnated with lime the ammonium sulfate was laboring under too great a handicap and could not be expected to give satisfactory weed control. Under the circumstances ammonium sulfate cannot be correctly considered as a weed control agent for universal use. Soil conditions must of necessity be just about so for the chemical to function.

Analyze Your Soil

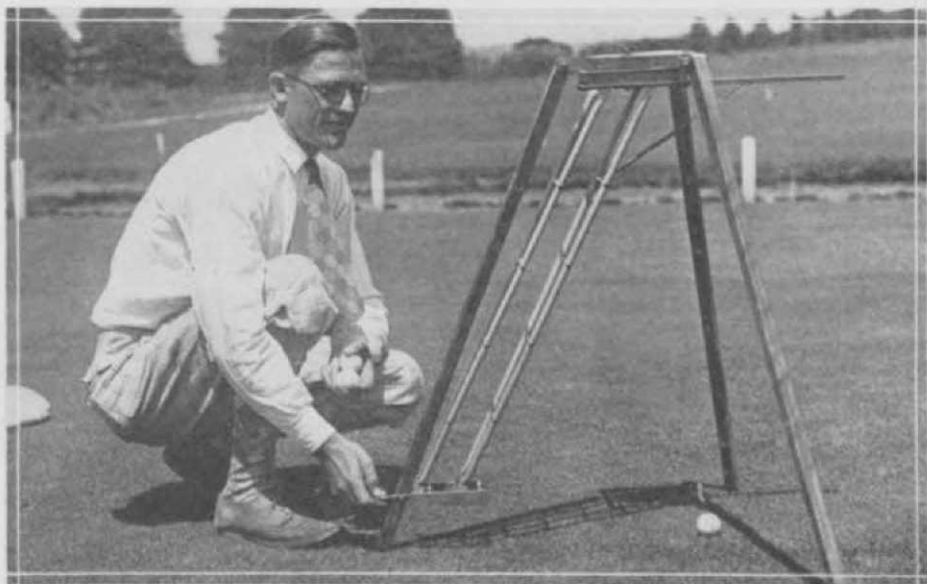
Apropos of the above paragraph the question may be very aptly raised as to how the officials of a given golf course are to know whether the use of ammonium sulfate will produce results in controlling weeds on their particular course. This is a fair question and can be fairly answered. As a matter of fact the officials of not one golf course in ten have any adequate knowledge of the soil comprising their course or the soil, sand, etc., they are using for topdressing purposes. Many of these golf courses, struggling along under a load of expensive maintenance troubles, would be well advised in spending the small amount of money required for the services of a competent soil technologist, who in a few days' time would thoroughly examine the fundamental nature of the soil making up the course, determining whether it was naturally acid, neutral or alkaline in nature, and whether its original nature had been changed by the fertilizing program of the club during the previous years.

At the same time he could examine the chemical nature of the water supply and check up on the degree of acidity of the ingredients of the topdressing. With this information in hand it would be a simple matter for instance to ascertain whether you can expect anything from the use of ammonium sulfate. Many a golf course is using ammonium sulfate and then applying topdressing so alkaline that it more than counteracts the acidity of the sulfate. A proper soil examination would disclose such a condition and all possible corrective measures could be applied. For the services of a competent soil technologist it is advisable to get in touch with your state experiment station.

Weed Origin and Dispersion

What is the origin of the innumerable weeds found on the majority of golf greens? They do not occur spontaneously. Rather they are the result of a definite phase of nature's handiwork. If you cast your eye over a golf course, taking in the rough, fairway and green areas you will see weeds everywhere. Each and every one of these weeds is growing with one definite object in view, namely to reproduce itself by means of *seeds*. When these seeds ripen nature scatters them largely through the instrumentation of wind and water, although birds and other animals play some part in the process. As a result of this constant weed seed production and dissemination the soil surface *everywhere* is well supplied with weed seeds and if given half a chance they will germinate and grow.

Under the circumstances, in considering the question of weed control by artificial means we are concerned with only the upper soil layer to a depth of one-half inch at the very greatest and usually not more than the upper eighth inch. If by any means whatsoever, we can prevent those weed seeds already present at or near the surface of the soil from germinating normally and if in addition we can prevent the normal germination of those weed seeds which are subsequently blown



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or washed onto the turf then we will have gone a long way toward lessening the weed problem in fine turf.

Steaming the Topdressing

The treatment of topdressing by means of live steam for the purpose of killing the weed seeds present therein is having considerable vogue in various sections of the country at the present time. It was very minutely discussed at the 1928 meeting of the Green Section in New York. The discussion brought out the fact that there were a few strong adherents of the method and many who questioned whether it would pay to inaugurate the steaming system.

There is no doubt that the proper steaming of topdressing will kill all weed seeds present therein and to that extent will lessen the weed problem on turf topdressed with the steamed compost but there are other aspects of the problem which should be thoroughly considered before embarking on a steaming campaign.

In the first place before you begin topdressing with this steamed, weed-seed free soil it will be necessary to take out all the weed growth already present in the turf to be topdressed for the plain and simple reason that this steamed soil will have no effect whatever on the weeds already present and established. Now it is relatively easy to take out dandelion, goose grass,

plantain, etc., but as anyone knows it is not quite so easy to make a clean job of the chickweed, crab grass, fennel and other weed growths of a matted and patch-like growth.

Furthermore after you have begun your system of topdressing with steamed weed-seed-free topdressing, how about all the weed seeds that are going to blow and wash onto the green. The steamed topsoil won't kill these new arrivals. Rather they will germinate and grow just as usual. So that in the last analysis the steaming of topdressing helps somewhat in the handling of weeds but it only covers about one-third of the problem, leaving the other two-thirds as wide open as ever.

Carbon Disulfide Method

The laborious process of steaming all topdressing often costs much money and it is doubtful if the labor and cost involved is always justified. Had I been satisfied of the wisdom and advisability of treating topdressing for the control of weed seeds I would long ago have published the details of a method of treating this material with carbon disulfide whereby all the weed seeds are killed and the soil freed of adverse bacteria and fungi. The cost of treating topdressing by the carbon disulfide method is reasonable. The fact that it might not pay to treat topdressing in

this way has caused me to withhold the details of the method as there are always a lot of novice green committee chairmen who will jump at any new method and involve themselves, their greenkeepers and their clubs in a lot of useless expense and trouble.

In fact the smug complacency if not utter indifference with which the average golf club turns over a quarter of a million dollars' worth of golf course to the machinations and tender mercies of the newly-elected, novice green-committee chairman is to me the most astounding of suburban phenomena. Apparently the ability to fill teeth so the fillings will stay in more or less permanently, to make money in the coal and lumber business, to be able to cut off a leg or remove an appendix, or what not, are often considered to constitute an admirable and complete training for the growing and preservation of fine turf.

The mental condition of some newly elected chairmen is a most interesting study from the psychological standpoint. In the first place, as Disraeli said of Gladstone, "He is inflated with the exuberance of his own pomposity," or in plain Americanese—all swelled up like a poisoned pup. His attitude or studied pose of pseudo patronizing tolerance toward the seasoned greenkeeper is maddening to behold.

The problem of the hard-headed green-committee chairman will require a great deal of research before it is solved. Fortunately the weed problem is not quite so complicated.

Correct and Incorrect Fertilizers

The fine turf grasses need only certain fertilizers for their best growth. As a general rule an adequate supply of well rotted manure together with available nitrogen in the form of ammonium sulfate, synthetic urea, etc., are all that is required. The rotted manure contains sufficient phosphorus and potash for the modest needs of fine turf. Under the circumstances the application of potash and phosphate fertilizers results in no appreciable benefit to the turf but on the other hand does set up a soil condition very favorable to the growth of weeds, for the plain and simple reason that most weeds make a better growth when potash and phosphorous are present in the soil in abundance. Consequently when such fertilizers as acid phosphate, sulfate of potash, bone meal, etc., are applied to turf, as is still the common practice on many golf

courses, the weeds benefit decidedly more than does the grass. The continued use of this type of fertilizers invariably results in a good stand of clover in the greens together with ever-increasing patches of such matted weeds as chickweed. Lime, either applied as such or inadvertently as an ingredient of sand, or soil in the top-dressing, also stimulates weed growth while its effect on the fine turf grasses is the exact opposite.

Under the circumstances it is highly advisable to have a care in mapping out a program of fertilizer application. There is absolutely nothing gained by the application of unnecessary fertilizers with the subsequent expensive necessity of removing the resulting undue weed growth.

Watering

Fine turf is very shallow rooted as grown on the present day golf green whereas the weeds are as a general rule relatively deep rooted. In some cases they are tap rooted. Under the circumstances they can withstand a greater degree of soil surface dryness than can the shallow rooted grasses.

Careless and indifferent watering consequently gives the weed content of a green the edge every time. If the surface soil of a green is allowed to dry out unduly it can of course be brought back by careful watering but the grass is given a decided check during the process, a check from which it recovers much more slowly than do the weeds.

The philosophers tell us that the wages of sin are death. In greenkeeping the wages of such sins as carelessness, ignorance and indifference in the management of fine turf are invariably an abnormal amount of weed growth in the greens.

It may be stated almost as an axiom that regardless of all the methods employed in controlling weeds *some* hand weeding will be necessary as a sort of "mopping up" process. This is the case because no method or combination of methods will give 100% weed control. Since this hand weeding is necessary to a certain extent it would seem advisable to use common sense in the management of the operation and to so conduct the operation that the most good is obtained for the money expended.

With most clubs the weeding of the greens is made a sort of annual event and occurs when the crab grass begins to give indication of taking the green body and

soul. Aside from this annual weeding they do very little weeding during the balance of the growing season. This is a fundamental mistake in fine turf management and can only result in poor and thin turf.

Instead of one grand orgy of hand weeding at the height of weed growth the operation should be made an important part of the routine work throughout the growing season. As a result of this early weeding the fine grass has its own way and, provided proper fertilization and topdressing is practiced, the turf will be thick and heavy by the time crab grass begins to make its appearance. Under the circumstances the soil surface will be crowded with fine grass and the crab grass and other seasonal weeds will have greater difficulty in getting established.

In the last analysis the weed control problem is intimately bound up with every other phase of turf management, and as stated above mistakes in the handling of turf hurts the grass and gives the weeds the edge.

What I have said above may sound to a certain extent like old stuff. Old it may be but nevertheless it is true. I have taken the opportunity of repeating these seeming platitudes because they must still be borne in mind by the greenkeeper even if he institutes the use of arsenate of lead on his course as a means of controlling the great bulk of weed growth by methods which I shall describe in October GOLFDOM. The chemical will control many of the most noxious weeds in fine turf but not all of them, hence good turf management is an essential adjunct to its use.

Questions **GREENKEEPING** Answers

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Editor, GOLFDOM,
Sir:

I shall appreciate your suggestions as to the proper treatment of our fairways which are becoming badly infested with dandelions and other weeds. The weeds seem to be getting the best of the grass which is becoming thinner and thinner. The soil is a rather heavy clay with a little black loam on top. The soil is so heavy that the ground becomes unusually hard in dry weather.

Five or six years ago all of the fairways were given an application of crushed lime rock with an idea of softening them. At the same time, or perhaps prior to the lime rock application, they were treated with bone meal but I do not believe they have had any fertilizer within the past five years. It is difficult for us to obtain any except commercial fertilizer.

R. L. W. (Illinois).

Reply

This is a condition of relatively long standing caused, first, by the application of lime and bone meal, both of which encourage weed growth and do not stimulate the grass, and second, soil poverty due to

lack of proper soil fertilization over an extended period.

A situation of this sort cannot be corrected quickly or cheaply and the club must be prepared to spend considerable money in order to get those fairways back into shape.

Annual topdressing with manure supplemented with ammonium sulfate three times a year, spring, summer and early fall, 150 pounds per application per acre would work wonders on this course in a few years and if the blue grass did not work in of its own accord the soil would then be in shape so that a seeding applied in early fall would catch. It is useless to apply seed until there is something there to feed it.

In the absence of manure would suggest a combination of milorganite, cotton seed meal and ammonium sulfate.

B. R. LEACH.

Treatment of Bermuda

Editor, GOLFDOM,
Sir:

I notice quite a lot of information in your magazine which I think ought to be valuable to every greenkeeper, especially