The Weed Problem with Suggestions for Control

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The problem of controlling weeds in the fine turf of golf greens is still a source of great annoyance and expense to most golf clubs. Much experimental work has been done during the past few years on this general proposition of weed control and it is proposed in this article to correllate the main results of these investigations together with certain results obtained in my own experimental work at Riverton, N. J.*

The Source of Weeds

There are two main sources of weeds as far as their being in greens is concerned: 1. Certain weeds such as dandelions, have very light seeds and these are blown onto the green from the surrounding rough and fairway. From the standpoint of weed control alone it pays to mow the rough at frequent intervals, thereby preventing in a large measure the ripening of these windblown seeds. 2. The second source of weeds is the topsoil used as an ingredient of the topdressing. Topsoil nearly always carries an abundance of weed seeds and it is the topsoil used in topdressing that is one of the leading sources of weeds in greens.

Weed control methods may be arbitrarily classified under the following headings although they merge to a certain extent. 1. Weeding by hand. 2. Acid-reacting fertilizer. 3. Composting. 4. Steaming and baking of compost. 5. Arsenate of lead.

Hand Weeding

It may be stated as an axiom that regardless of all the methods employed in controlling weeds *some* hand weeding will be necessary. This is the case because no method or combination of methods will give 100 percent weed control. Under the circumstances it would seem advisable to use common sense in the management of hand weeding operations. Unfortunately most clubs resort to one extensive hand weeding campaign about the height of the crab grass season and do very little weeding during the rest of the year. This is a fundamental mistake in fine turf management and can only result in poor and thin turf.

Fine grasses can not compete with some weeds under the closely mown conditions of the modern golf green. If you study the grass in the immediate vicinity of a weed you will note how the weed dominates the situation with its broad leaves, denser growth and in many cases a tap root of tremendous water and food obtaining capacity.

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The bigger and broader the weed the more it drains the vitality of the fine grass in the immediate vicinity.

Under the circumstances *hand weeding should be made an important part of the routine work throughout the growing season.* At the beginning of the growing season particular attention should be paid to this detail of course management.

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. This thick heavy turf will be less infested with crab grass because the soil surface is already crowded with fine grass and the crab grass has more difficulty in getting established.

Ordinary observation will prove the truth of this statement. Examine a green at crab grass time and you will note that the crab grass is thickest where the fine turf is thinnest. The moral therefore is to spend the time and money throughout the season prior to crab grass time in weeding, fertilizing, topdressing, etc., with the object of thickening up the turf to withstand the crab grass invasion.

It is better to spend money in the above way than to waste it in digging out masses of crab grass in August leaving the greens looking badly and in poor playing condition. A green thus cleared of crab grass is a thin and sorry sight but it is a sorrier job to thicken it up at that time of the year when growth is naturally beginning to slow up. In fact it is an impossible job. If you want a nice *Poa annua* green this is the easiest way to get it.

Fertilizers

From the standpoint of weed control fertilizers, particularly acid-reacting fertilizers such as ammonium sulfate and ammonium phosphate are valuable for two reasons. 1. They cause the soil to gradually become acid in nature thereby creating a soil condition most favorable for the growth of fine grasses such as the bents and fescues and least favorable for the growth of many (but not all) weeds. 2. They stimulate the growth of the fine turf grasses and create a thick, heavy and luxuriant turf, in which weeds have a greater difficulty in gaining a foothold. From both these angles proper fertilization is of the utmost importance in weed control. Irregular fertilizer applications means that you are giving the weeds the edge. Fine turf can not prosper without this feeding but weeds can and do.

Watering

Careless and indifferent watering gives weeds the edge because most of them are deeper rooted than the fine turf and can withstand drier soil-surface conditions.

The Treatment of Topdressing Compost

In view of the fact that the topdressing is such a fertile source of weed seeds there have of late been many advocates of the treatment of compost in such a way that these weed seeds will be killed before it is applied to the green.

Allowing the ingredients of the compost pile to rot for a year or more before using, in addition to making the ingredients more desirable for topdressing, also results in the death of many short-lived weed seeds but it does not kill many of those weed seeds possessing hard coats.

Steaming the Compost

Several articles have appeared in THE BULLETIN within the past year describing methods of treating topdressing material with steam for the purpose of killing weed seeds as well as toning up the compost so treated. Steaming is a very efficacious method of so treating compost. Unfortunately, it is an expensive method inasmuch as the apparatus is costly and the labor and time involved is considerable. Furthermore, it is quite possible to oversteam soil, thereby devitalizing it for long periods of time. From the standpoint of the average greenkeeper I doubt if steaming will ever become a very popular method in modern greenkeeping practice.

Relative Value of Topdressing Treatment for Weed Seed Control

Steaming or similar treatment (properly given) will kill most of the weed seeds in topdressing so treated and to that extent it is of value. Nevertheless the consistent treatment of all topdressing in this way, while it will aid to a certain extent in keeping the greens free from weeds, will not solve the weed problem entirely since topdressing is after all only one source of weed seeds. We still have wind and water borne weed seeds to contend with thereby necessitating hand weeding. Experience only will determine the value of topdressing sterilization for the individual golf club.

Arsenate of Lead as a Weed Control

Five years of experimental work have shown the value of this chemical as a control for grubs and worms and incidentally as a weed control in fine turf. It is being used in greater quantities each year. Those interested are referred to the article in the February, 1927, number of THE BULLETIN for detailed instructions regarding the use of this material.

The experimental plats at Riverton are at this writing a source of very interesting study. Plats poisoned with arsenate of lead at the rate of 35 pounds per 1,000 square feet of turf at the time of planting the stolons are practically free of crab grass and other weeds. Plats not so treated but topdressed with poisoned soil for two seasons show decided weed control while plats which have received no arsenate of lead contain crab grass and other weeds in abundance.

The value of arsenate of lead as a weed control agent is due to the fact that not many plants will grow in soil containing the chemical. The majority of weeds common to fine turf succumb to the poison and in fact many weed seeds fail to germinate in soil so treated. The fine turf grasses on the contrary seem to be stimulated in their growth by the arsenate of lead. From the standpoint of grub,worm and weed control the use of arsenate of lead would seem to be the easiest and cheapest method for the modern golf course. It is suggested that it be given a trial by those clubs having problems of this nature to cope with.

Conclusions

Weed throughout the season, making it an important part of the routine work. Thicken up the turf by proper fertilization, topdressing and watering before the beginning of the crab grass season. The weed problem can be lessened to a certain extent by steaming or some similar treatment. Give arsenate of lead a fair trial as a means of controlling grubs, worms and weeds.

Last year the Riverton Country Club had a force of 18 boys weeding the greens during August. This year they have a force of 4 boys, and the weeding is being adequately handled. The greenkeeper, Mr. Charles Ewers, attributes the decreased weed growth, the decidedly smaller weeding personnel and the consequently appreciable financial saving to the extensive use of arsenate of lead in all topdressing applied during the past year.

Some U. S. Golf Association Decisions on the Rules of Golf

A ball has been driven from the tee and apparently lost. A provisional ball has been put in play and only one stroke played with it. After one stroke had been played with the provisional ball the original ball was found. Has the player the privilege to cease playing the provisional ball and revert to the original ball, bearing in mind that the player only played one stroke with the provisional ball?

Decision.—The reason for playing a provisional ball is to save delay. If a player's ball seems to him to have lodged in territory where it might be lost or unplayable, he is entitled to play a provisional ball. This must be done, however, before he leaves the tee. A player is entitled to play a provisional ball until it is opposite or past the spot where the original ball is presumed to be, no matter how many shots this takes. He then must search for his original ball for five minutes or until it is found. If it is lost he must continue play with the provisional ball. If it is found the provisional ball must be picked up, unless the player considers his original ball unplayable, in which case he may continue play with the provisional ball.

Kindly advise the ruling of the U. S. G. A. with reference to a ball lost near to a water hazard. Is it assumed to be in the hazard if not found?

Decision.—If it is reasonably certain that the ball entered the hazard it may be treated under Rule 27. Local committees should see to it that the water hazards are marked with stakes so that the limits may be clearly defined, leaving little doubt as to where the ball ultimately came to rest. They should also have the grass cut so that it would be very difficult to lose a ball outside the limits of this hazard.

Drainage will not only dry and warm land that is wet and cold, but it has a marked effect upon the physical structure of the soil. Clays are usually very plastic and sticky when wet, very hard when dry, and permit the percolation of water very slowly, if at all. After drainage the same soils become looser, forming into small grains or crumbs. The granular structure gives large pore spaces, through which the water passes downward by gravity more freely, and breaks the continuity of the tiny capillary tubes by which the moisture moves upward as evaporation dries the ground surface. Therefore the drained clay neither remains saturated so long nor dries out so thoroughly as before drainage, but retains a film of capillary water about each soil grain, while the gravitational water passes out and is replaced by air. This is the soil condition necessary for a healthy growth of the usual cultivated crops.