

QUESTIONS AND ANSWERS

All questions sent to the Green Committee will be answered as promptly as possible in a letter to the writer. The more interesting of these questions, with concise answers, will appear in this column each month. If your experience leads you to disagree with any answer given in this column, it is your privilege and duty to write to the Green Committee. While most of the answers are of general application, please bear in mind that each recommendation is intended specifically for the locality designated at the end of the question.

1. **Rate of application for ammonium sulfate.**—We have decided to use ammonium sulfate on our greens for quick fertilizer this year. Last year we used nitrate of soda, but expect to change so as to discourage the clover. We got better results by dissolving the nitrate of soda and want to use the ammonium sulfate in the same manner. Will you please advise us in just what proportions the water and sulfate should be used? Thanking you in advance for this information, as well as for the generous help the Green Section has given us in the past, we are—(Illinois).

You can use the ammonium sulfate just as you have used the nitrate of soda, by dissolving it in water. We have never experimented with this method, as we find it easier to mix the ammonium sulfate with dry sand, and, after broadcasting the mixture to water it in with a hose. If you use ammonium sulfate dissolved be sure to apply ample water. A strong solution is more likely to burn the grass than is a diluted one. But in any case do not apply it at a rate to exceed three to five pounds per one thousand square feet of green at a single application. Even lighter applications are preferable during the summer months.

2. **Weeds encouraged by lime.**—In preparing top soil for our new greens, would you advise the admixture of lime? (New York.)

In your locality the most serious weeds in putting greens are crab grass and white clover. These are encouraged by the use of lime. In the eastern part of the United States we have never learned of a soil so acid that it will not produce good turf. We would not advise your using lime.

3. **Fertilizers for putting-greens; barnyard manure and weed seeds.**—We wish to fertilize our greens but do not like to use barnyard manure owing to the weed seeds, as we have had a great deal of trouble with weeds and have worked several years to get clear of them. What kind of commercial fertilizer would you recommend and what quantities should be used for each application? It is our idea to mix the fertilizer with our compost dressing, which we apply each month during the cutting season. (New Jersey.)

Our best results from fertilizers on putting green turf have been obtained by one application of bone meal in the spring at the rate of 10 pounds per 1,000 square feet of turf, followed by monthly applications of ammonium sulfate at the rate of 3 to 5 pounds per 1,000 square feet. The ammonium sulfate discourages the growth of white clover and crab grass, and we have found it one of the most effective quick-acting fertilizers we have tried. We do not think you will have any trouble from barnyard manure if you will let it rot in the compost pile for about six months in

order to get rid of weed seeds. There is nothing that can quite take the place of well-rotted stable manure to make grass grow.

4. **Improving poor sandy soils.**—We have nine holes extending over a high and dry section of land. The soil is exceedingly sandy. The fairways were made three years ago by cutting the grass that was found on them, and have been maintained by heavy rolling since. The soil is poor, and the existing turf is thin, although it has shown steady improvement from the regular cuttings. Pure yellow sand is found at a depth of six inches. The land had been uncultivated and practically abandoned up to the time the club took possession of it. Scattered all over the course, intermixed with the prevailing grasses, is a clinging, yellowish-green growth, without roots, which is known here as dry moss. We have thought that the most economical method of obtaining good turf on our land is as follows, and we shall appreciate your advice with regard to our proposition. Top-dress in the fall with barnyard manure, allowing this to remain until spring, by which time the fertilizing qualities will have washed into the earth. Rake off what is left of the manure in the spring, storing it for composting purposes. Top-dress again in the spring with equal parts of humus and soil, and then lightly harrow the surface. Follow this with a seeding of redtop and bluegrass, mixing two pounds of the former with three pounds of the latter. Follow this with brush-harrowing. By this method none of the existing turf is harmfully disturbed. (Massachusetts.)

It has been our experience with sandy soil such as yours that the best remedy is an application of clay or clay loam. It is surprising how much benefit can be derived from a fairly light top-dressing of clay under such conditions. We feel very strongly that money spent for putting this on will do more good than anything else. The green growth of which you speak is probably some species of alga, which often appears on bare moist soil. As soon as the soil is put in condition to grow a good turf you will have no trouble from the alga. The use of barnyard manure is all right, but we would not advise your using commercial humus at the prices now asked for it. If there are any good deposits within hauling distance of your club it might pay you to get good black woods-earth or muck to incorporate with the manure. The addition of seed along with the top-dressing may give a little more turf; but you should have no trouble in growing grass if the soil conditions are right, as the New England climate is very favorable to turf plants.

5. **Effect of trees on grass; *Poa trivialis*; red fescue, Kentucky bluegrass, and redtop as shade grasses.**—What effect has the presence of trees on grass? Is it a question of shade, or moisture, or something else? The other day I heard the theory advanced that the roots of the trees had a toxic effect on the grass. Is there anything to that theory? One of the park men here says they have to top-dress the grass under all the trees about an inch each spring. Why should the shade of itself be the cause of grass dying its second season under trees while it thrived in the same situation the first season it was planted? Which is the better shade grass, redtop or Kentucky bluegrass? Which of the cheaper grasses will take the place of the expensive *Poa trivialis* as a shade grass? How far south will *Poa trivialis* do well? (Illinois.)

It is not entirely clear just why most turf grasses do not do well in the shade. The shade itself is of course one reason, but probably not the only reason. Doubtless most areas shaded by trees are drier than the areas not so shaded. The trees themselves draw heavily on the moisture supply of the soil and likewise on the available plant food in the soil. For

these reasons the suggestion of watering and fertilizing would seem to have merit, and doubtless the use of a good compost in addition to the fertilizers would be helpful.

Redtop is not a desirable turf grass alone, and in places calling for permanent turf bluegrass is much better and will stand the shade equally well. Red fescue in the shade of trees in the northern part of the United States does very well if it is given considerable care. *Poa trivialis* is a much better shade grass, but it requires more moisture than does red fescue. *Poa trivialis* does not range as far southward as does Kentucky bluegrass. The seed of redtop, red fescue, and Kentucky bluegrass is cheaper than that of *Poa trivialis*.

6. **Extermination of pocket gophers.**—The majority of our clubs in this section are troubled by depredations of gophers, both the kind that only leave holes and the kind that throw up mounds of dirt. What is the best means of exterminating them? (Missouri.)

Pocket gophers are readily caught in several makes of special traps commonly on the market, and a few of these suffice to keep small areas free of these pests. For ridding alfalfa fields, orchards, and long stretches of ditch embankments of them, a very successful and much more practical method is to poison them by placing baits of sweet potato or of parsnips in their underground runways. The baits should be cut about an inch long and a half inch square, and washed and drained. From a pepper box slowly sift one-eighth ounce of powdered strychnine (alkaloid) and one-tenth of this quantity of saccharine (ground together in a mortar) over about four quarts of the dampened baits, stirring to distribute the poison evenly. The runways, which are usually 4 to 8 inches beneath the surface, can be located by means of a probe made of any strong handle an inch in diameter and 36 inches long. One end should be bluntly pointed. Into the other should be fitted a piece of three-eighth inch iron rod, protruding about 12 inches, and bluntly pointed. A foot-rest aids in probing in hard soils. By forcing down this iron rod near gopher workings, or a foot or two back of fresh mounds, the open tunnel can be felt as the point breaks into it. The blunt end of the instrument is now used to carefully enlarge the hole, a bait or two is dropped into the run and the probe hole closed. One soon becomes expert in locating the runs, and a man can treat 300 to 500 gopher workings in a day. Baits need be placed at only two points in each separate system of 10 to 30 mounds, which is usually the home of a single gopher. In our experience baits placed fairly in the open runs have invariably killed the gophers. The method has found great favor wherever it has been introduced.

A trap especially made for the trapping of gophers is known as the ----- trap, manufactured by the ----- Co.

7. **Soil preparation in establishing new turf.**—We have purchased 100 acres for another course. The ground is level. The past owner raised sugar beets on it for five years, but we are told that the last year the land was used, which was seven years ago, he plowed 18 inches deep, turning in the black sandy top loam and bringing up a heavy clay. We will begin plowing at once (June), and are told that in order to have same in shape for play next spring we must plant our grass seed before September 25. If you advise the growing of soybeans as a green-manure crop, how long should we permit them to grow before turning them

under? How many bushels would be necessary for the 100 acres? A large mushroom farm is located nearby, and we are told that they change the beds in July and that the old mushroom bed soil is of great value in building putting greens. What is your advice with regard to the use of same? If time does not permit the use of soybeans, would you recommend the use of—Humus? (Illinois.)

We would not advise you to attempt to grow soybeans or other green-manure crops, as the amount of growth you would get before the time to turn the crop under would not be sufficient to justify the expense. If the mushroom soil to which you refer is like the mushroom soil one gets in the East, it would be excellent and good for greens and fairways. If you could get this soil at a reasonable cost it would be much more useful for improving the soil than a crop of soybeans. As for commercial humus, we have found it much less valuable than good mushroom soil; in fact, we do not regard it sufficiently useful to justify the cost of obtaining it. Our suggestion is that you apply manure or mushroom soil if available; if not available, use a good application of bonemeal and work the ground thoroughly so that you will have a good seed bed by the first of September. It is highly important that the grass seed be sown as early in September as possible, and a good firm under bed with a loose surface of an inch or two is what is needed for the best results. Bonemeal is an excellent fertilizer to apply before seeding. It should be thoroughly incorporated with the surface soil. This can be done of course by using a drag harrow. Mushroom soil or manure should be plowed under, or at least thoroughly disked in, and this should be done in ample time to allow it to decompose thoroughly before seeding.

8. Grasses for "low sour grounds" in the South; Bermuda putting turf; ground limestone vs. hydrated lime.—Our course has a great deal of low sour ground. Hydrated lime costs about \$20 a ton. We can get ground limestone at about one-third that figure. Will it do in place of the hydrated? (Georgia.)

It is not necessary to use lime in your vicinity on what you call "low sour ground," at least for the fairways. Your best grass for the fairways is carpet grass, which makes an ideal fairway turf and which succeeds perfectly on the low sour grounds you speak of. Of course, if there are spots due to insufficient drainage—that is, where the land becomes soggy—it is better to provide some drainage; but even on such ground carpet grass succeeds well. We imagine your putting greens have a Bermuda base. The secret of success in growing Bermuda turf is to have the surface soil of a clay loam type, as really superb Bermuda grass can not be grown on sandy soil. There is some evidence that Bermuda is helped a little by lime, but scarcely enough to make it a point worth considering. If you have Bermuda greens and they are not as satisfactory as you desire, it would be much better to invest your money in good rich clay soil, which, when mixed with a small percentage of sand, will make good Bermuda greens. In case however you desire to spend money for lime (which we really do not think necessary), we would advise that ground limestone is about half as effective as hydrated lime—that is, on such crops as alfalfa and clover, which are the crops mainly affected by lime. Even with ground limestone at over half the price of hydrated lime we would favor the ground limestone.

9. **Marl as a fertilizer.**—Just what value is there in marl? There is a great deal of it on our property and we are wondering if we would gain anything by using it as a fertilizer. We have been informed that it contains a great deal of lime and that soil requires lime in growing bluegrass. (Virginia.)

Marl is very good material to use for certain farm crops but we have serious doubts as to its value for golf turf. It carries a large amount of lime—in fact, the shells, which make up a large part of it, are pure carbonate of lime, which is the same as the ground limestone used for agricultural purposes. Some of the marls in eastern Virginia carry an appreciable amount of phosphorus and a little potash in addition to the lime. A liberal use of this on the fairways we are sure would encourage crab grass and other weeds to such an extent that it might offset any benefit that the bluegrass might derive from it. It has been our experience that bluegrass can be grown without the use of lime provided the soil is made rich by the use of commercial fertilizers or stable manure.

10. **Unsatisfactory results from top-dressing with soil alone.** We are sending you a sample of soil which we are using for top-dressing and would like your opinion as to whether or not the use of this soil as a top-dressing is likely to be injurious to our turf. We are having considerable difficulty in that the turf has a tendency to burn out. (Ohio.)

From our examination of your sample we would consider that if used as a top-dressing it would run together and bake, forming a hard crust on the surface of your greens. The top-dressing which we recommend is a compost made of about one-third soil such as your sample if nothing better is to be had, one-third well-rotted stable manure, and one-third sand. If you could find some good rich loam in the woods or low ground we believe it would be better for using in compost and top-dressing than the soil you are now using.

11. **Short-seeded perennial rye-grass.**—We have received a sample of grass seed under this name. Will you kindly tell us what kind of a grass it is? (Pennsylvania.)

It is also known as Pacey's rye-grass and consists of the smaller seeds screened out of perennial rye-grass seed. The smaller seeds are those which grow near the top of each spikelet. We have no definite experimental results but, seed for seed, we would regard the short-seeded as practically as valuable as the large-seeded. So far as we are able to find, there has never been on the market a similar machine-selected seed of Italian rye-grass: all of the short-seeded (or Pacey's rye-grass) which we have seen has been that obtained from perennial rye-grass.

12. **Protecting greens from overwash.**—The ground slopes toward one of our greens and when rains come the wash from the slope runs down and over the green. Would it be advisable to ditch the slope in some way so as to carry the wash around the green in order to avoid the washing of weed seeds on the green? (Kansas.)

Overwash is objectionable from almost every angle, the most important objection being that it means the introduction of weed seeds. It would be an excellent move to prevent this overwash. A properly constructed ditch or ridge in most cases will serve the purpose well. In some cases it may be necessary to do a certain amount of filling also.