

The only fertilizers used have been ammonium sulfate and ammonium phosphate, the former principally. They were applied either with topdressing or in solution by means of a proportioning machine.

No worm eradicator has been applied to any of the greens since August, 1926, and whilst the greens are still brushed before mowing, the worm casts are so few that this operation is hardly necessary.—Major R. Avery Jones, Baltusrol Golf Club.

QUESTIONS AND ANSWERS

All questions sent to the Green Section will be answered in a letter to the writer as promptly as possible. 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 Section.

• 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. **Fairway grasses for sandy soil.**—A portion of our course is over high, dry land of a sandy soil with gravelly subsoil. On the fairways here the turf is cuppy, the grass growing in bunches with small barren spots between these bunches. We have consulted an architect with a view to improving these fairways, and he recommends that these fairways be spike-rolled in the fall and then spread with 15 tons of stable manure and 15 yards of clay loam per acre. After this dressing is evenly distributed, it is to be leveled with a brush harrow and allowed to lie dormant over winter. In the early spring the fairways are again to be spike-rolled two ways and 300 pounds of his general-purpose fertilizer applied per acre. The surface should then be brush-harrowed again and seeded with a special fescue fairway mixture at the rate of 125 pounds to the acre. This is then to be again brush-harrowed, and lightly rolled. We are sending you a sample of the top soil from these fairways. Before taking any steps in the matter we should appreciate your suggestions. We might add that we have experienced considerable difficulty in growing bent on this soil. (Maine.)

ANSWER.—The sample of sandy soil you send should, in our opinion, grow perfect turf. The program suggested by your architect is a very expensive one. Your soil is similar to types of soil where fescue is often employed with great success. The only other grass that does well on that type of soil is Rhode Island bent, which can be also secured as Colonial bent, from New Zealand, and in the South German mixed bent, of which it constitutes about 75 percent of the mixture. We would not advise you to spike-roll your present turf, or to disturb it in any way, but to seed on top of it, about the middle of August, a mixture of 10 pounds of South German mixed bent seed or Colonial bent seed (preferably the former) and 20 pounds of redtop seed, per acre. These grasses will take care of the cuppy lies, and in the course of a few years the redtop should disappear and the fescue probably be crowded out entirely by the bent. Of course, if before seeding you could at no great expense topdress the

fairways with a clay loam, it would be well to do so, although we do not consider this absolutely necessary.

2. A new fungicide.—A great deal is being said in this section regarding the use of Nu-Green. Our experience with calomel this year has been very satisfactory, but if there is anything better or more economical in the market we, of course, want to use it and therefore will appreciate a word from you on the subject. (Kentucky.)

ANSWER.—Nu-Green is a combination of a fungicide and a fertilizer with quickly available nitrogen. It is effective against brown-patch, but you are not likely to find it better and certainly not more economical than the calomel treatment, for as we recall you are using calomel combined with a fertilizer. Grass needs nitrogen after an attack of brown-patch to enable the plants to produce new growth to hide the scars. For that reason we have always been in favor of an application of some nitrogenous fertilizer soon after or combined with any of the mercury treatments whenever the greens need fertilizers. There are times when a green which is sufficiently or over fertilized is injured by brown-patch. In such cases it is obviously not necessary nor desirable to add more nitrogen with the fungicide. As has been pointed out in THE BULLETIN our results indicate that the effectiveness of Uspulun, calomel or other mercury fungicides used against brown-patch depend primarily on the amount of mercury contained. Since mercury is the most costly ingredient in these combinations it is well to compare how much mercury is carried in each rather than to judge entirely on the cost per pound basis. One and one-half ounces of calomel contain approximately the same amount of mercury as one pound of Nu-Green. In addition to the fungicide one pound of Nu-Green contains nitrogen which is equivalent to that contained in one-half pound of urea, a little over one pound of ammonium sulphate or about 4 pounds of cottonseed meal. Since we do not know the prices your club pays for these different materials we shall leave the actual figuring of relative values to you.

3. Improving thin turf on fairways.—Our fairways are thin and will stand considerable reseeding. They were originally seeded with fescue. What would you recommend for permanent improvement? (Michigan.)

ANSWER.—The great majority of the better golf courses of the country have bluegrass fairways, always containing more or less white clover. In seeding fairways we have always recommended a mixture of bluegrass and redtop. Redtop grows much more rapidly but does not persist any great length of time. It is therefore very valuable as a somewhat temporary grass; besides it reduces the seed bill greatly. Under your conditions we would recommend a mixture of bluegrass and redtop in the proportion of 4 pounds of bluegrass to 1 pound of redtop. The redtop seeds are much smaller, so that in reality the mixture would contain more seeds of redtop than of bluegrass. This mixture should be sown between the middle of August and the first of September. The surface of the soil should preferably first be scratched, and if possible a topdressing applied. If you desire white clover also (to which there is no objection on the fairways), add one-fourth pound of white clover seed to the above proportions.

Where there is no grass at all this mixture should be seeded at the rate of 150 pounds per acre, but on your fairways probably 20 pounds per acre would be sufficient to fill in the thin spots. Do not use fescue. We are sure you would be disappointed with it. A good bluegrass fairway is equal to any, although in the New England states the bluegrass seed might advantageously be replaced by bent seed in the same proportions. Where there is even a small stand of grass in your thin spots we would advise you simply to topdress these spots during the winter with manure or good top soil, preferably the former.

4. Converting bluegrass-redtop greens to bent greens.—We have 9 bent greens, planted from stolons, and 9 bluegrass-redtop greens. We have been so well pleased with the bent greens that we desire to convert the bluegrass-redtop greens into bent. Can we convert these bluegrass-redtop greens to bent greens by sowing German mixed bent seed on them? (Nebraska.)

ANSWER.—Yes, and the best time to do this work in your location is about the first of September. In two or three years you should have practically pure bent greens. Of course the turf will be of mixed strains of bent, and not the uniform turf that you get from planting stolons. Moreover, the cost of seeding will probably be much below the cost of planting stolons. A number of clubs have gotten very good results by sowing chopped-up stolons of creeping bent on top of a green of other grass which has been cut very short, about the first of September, and then topdressing. If a green is thus treated and is kept out of play for two or three weeks the stolons will become well established and you can then go right on playing. It is important, however, to keep the green out of play for two or three weeks after sowing and topdressing the stolons, although we know of cases where greens have been successfully converted to creeping bent by this method without being taken out of play at all.

5. Bone meal as a fertilizer for fairways.—Some of our fairways are in need of fertilizer. Do you know of any fertilizer better for the purpose than bone meal? (Rhode Island.)

ANSWER.—The best fertilizer that we have found for fairways is barnyard manure. This may be applied any time during the winter, or in the late fall. In the absence of barnyard manure we would prefer fish scrap, cottonseed meal or tankage. From our recent observations we are inclined to advise against the use of bone meal as a fertilizer for fairways, and under no conditions would we advise its use on putting greens.

6. Whether to reseed fescue greens with fescue or with bent.—Our greens, which are several years old, contain a large portion of fescue. In reseeding them, where necessary, would you advise us to use fescue or bent grass? (Alberta.)

ANSWER.—We are not familiar with the behavior of fescue under your conditions. If it forms a satisfactory turf it would not be advisable to reseed with bent, as the two grasses do not blend satisfactorily for good putting turf. If, however, it is your experience that the fescue is killed out by close cutting, as it generally is in the United States, we would advise you by all means to use bent for reseeding.