

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. **Impracticability of establishing a bent nursery from seed.**—Why can't rows of bent grass seed be sown in order to start a bent nursery? (New Jersey.)

The bent seed on the market is of two kinds (1) German mixed bent and (2) Rhode Island or Colonial bent. Rhode Island or Colonial bent spreads very slowly from the base and does not root at the joints. In German mixed bent seed there is very little seed of true creeping bent, so little that it would be hopeless to undertake to get stolons from seeding. Mature plants of the true creeping bent must first be developed before vegetative planting is practicable.

2. **Fall renovation of fairways.**—Our fairways have been first class in every respect for years. They showed a little wear last year, and this spring I made up my mind that they would have to be attended to. First, do you think that I am correct in believing that seeding the fairways and then top-dressing is a waste of seed? If seeding has to be done, ought not a spike-tooth harrow to be run over the fairway, the seed planted, and then a good top-dressing applied, and the treatment carried through this fall, which, of course, would interrupt the fall playing? Second, my judgment is that the best plan would be to apply a liberal top-dressing of rich compost about the 15th of September, which would feed the grass and give it a good chance this fall. We have a very heavy growth of crab grass on all of our fairways and I am uncertain as to whether the top-dressing had better be applied in September, while the crab grass is still vigorous, or whether I should wait until the first frost kills the crab grass and then apply the top-dressing. (Maryland.)

As a general rule, our attempts to increase the stand of grass by the use of seed on old turf have been disappointing. We have, however, accomplished the results you desire to secure by the use of top-dressing and fertilizers. It is an excellent thing to top-dress fairways occasionally, not only to feed the grass but to fill up depressions and thereby enable the turf to thicken. From what you say with regard to the history of your course we feel sure that what is needed most of all is manure and fertilizer. If you can get well-rotted manure and mix it with loam and sand in the proportion of about one-third of each, we believe it will put your fairway turf back into fine condition. This need not be applied except where the properly played shots land. All of our experiments with raking and harrowing turf have caused injury rather than benefit. If you are going to use seed it had best be applied early in September—that is, before the crab grass is killed: this will give it a chance to start as soon as the crab grass dies, which is important, as the young seedlings are likely to be winter-

killed if they do not get well rooted this fall. We would advise you to sow the seed right on the crab grass and then top-dress, without any other treatment. It will be necessary, however, to work the top-dressing down into the grass if it is applied at all heavily, otherwise it will smother and kill out the turf you now have.

3. **Improving fescue greens with bent.**—During the past three years we have entirely rebuilt our 9-hole course, seeding 9 new greens with redtop and fescue. Our greens were constructed with a clay base and about 12 inches of top soil on top of this base. The last 4 inches of this soil was mixed well with humus and sand and fertilizer (bone meal and ammonium sulfate), and we have never had any reason to believe that our soil was not of good quality. We had fairly good results at first with the grass on these greens, getting a good catch of both redtop and fescue, and had about a 50 per cent spread of fescue early this spring. However, at the present time (July) the fescue seems to be disappearing, and as we had not sowed very heavily with redtop this year that grass is also very scarce, and considerable clover has come up in its place. We are situated so that we can not very well use temporary greens and have not much facilities for a bent garden. Our water supply is not the best, although we try to give each green a good soaking each day. Would it be advisable to seed just the centers of our greens this year in order to cut down on the expense of this work? Is the statement true that bent grass will crowd out all other grass, such as redtop, clover, and wild grass, as it spreads? (Kentucky.)

It has been our experience that a great deal of the money spent for seed to put on old turf is wasted. However, with greens seeded originally with redtop and red fescue which begins to get thin, there is no other alternative for getting them into good bent turf without putting the greens out of play. Redtop and red fescue almost invariably behave in the manner you describe. We would advise seeding lightly to bent about the middle of September, and then top-dressing. Do not use more than 5 pounds of seed per green; heavier applications are a waste of money. There have been a few attempts made to dibble in creeping bent stolons in old redtop turf. We have done that with fairly good success in our grass garden, but it is a slow process, and we are not yet ready to recommend it as a practical means of getting good turf. We believe it would be more satisfactory to grow the creeping bent turf in a plot of ground by itself and when the sod is in condition for play to resod a green; this should not keep the green out of play for more than two or three weeks. It has been our experience that the bents crowd out redtop, bluegrass and the fescues. This does not however mean that the bent greens do not get infested with crab grass, *Poa annua*, and other weedy grasses; yet it has been our experience that it is much easier to keep bent greens weeded than is the case with greens of other grasses.

4. **Improving injured putting green turf.**—Our greens seem to be deteriorating rapidly. The grass seems to be getting thin and moss is appearing on one green. We have top-dressed the greens lightly three times this year (it is now July) with top soil and sand, half and half, using about two cubic yards to a green. We have also given them four applications of ammonium sulfate, using about twelve pounds to the green. We have water on all of the greens and we believe that the greens have had a sufficient quantity of water even through the exceptionally dry weather which we have had. However, even with this watering

the grass is rather brown on the rolls on the back of some of the greens. Each time we have top-dressed we have put additional seed on the greens, especially on the places where the grass was thin. Three of our greens are in most excellent condition and are as good as any greens in this section, and we cannot understand why these should be so good while some of the others be of much inferior quality. Would you suggest any kind of fertilizer for these greens? Our greenkeeper applied about seventy-five pounds of bone meal to two greens yesterday; this was mixed with about two cubic yards of top-dressing made up of half top soil and half sand. (Pennsylvania.)

You do not say whether or not your greens have been attacked by the brown-patch fungus. Possibly this may be the cause of your trouble. Without knowing specifically of your conditions the only thing we can suggest at this time would be to water thoroughly and top-dress the greens with a light top-dressing of good compost in which, provided your greenkeeper is accustomed to handling it, you might add sulfate of ammonia at the rate of 1 or 1½ pounds to 1,000 square feet. We find that we can not use much sulfate of ammonia at this time of the year without danger from burning; but we also find that liberal watering and a light application of a good compost worked into the turf with the back of a rake or in a similar manner is very helpful to the grass. Bone meal at this time of the year is not likely to prove immediately beneficial, nor is seed added so early in the season. Reseeding is of doubtful value on old turf, although it is possible to get fair results by reseeding in the fall if bent seed is used.

5. Treatment of bent nurseries which are going to seed.—The bent in our grass garden is going to seed and does not seem to grow nearly as well as it did last year. What procedure would you recommend to improve its condition? Do you think the abundance of seed on the stalks will germinate to any extent when chopped up and broadcasted with the rest of the material on the greens? (New Jersey.)

It seems that in general the bents are making poor growth in nurseries this year. During the six or seven years we have been experimenting with these grasses we have never before seen such a tendency for the stolons to go to seed as happens this year in a number of grass gardens. We are at a loss to advise a remedy, but would suggest the cutting off of the seed heads immediately. This can be done with a scythe without cutting the runners which are near the ground. An occasional sprinkling with ammonium sulfate should have a tendency to increase the vegetative growth of the grass also. We believe, however, that the grass will commence to spread on the ground again now that the period of seeding is over. As for attempting to use the seed produced on the stalks, we have examined a great many of these seed heads of creeping bent this year and in previous years and never found any appreciable amount of seed. What appears to be seed, when the head stalks are rubbed between the hands, are found to be empty glumes, commonly called chaff.

6. Seeding and fertilizing new greens and fairways.—We are now building our first nine holes. The soil is clay. We are advised to purchase for our putting greens 60 per cent red fescue, 20 per cent superfine redtop, and 20 per cent German creeping bent, and to seed this mixture at the rate of 100 pounds to the green. We are also advised to purchase 90 bales of "golf fiber," 63 tons of mushroom soil, and 1 ton of grass fertilizer for the nine greens. We are told

to seed our fairways at the rate of 200 pounds per acre to a mixture of 35 per cent fescue, 35 per cent Kentucky bluegrass, 20 per cent redtop, and 10 per cent Italian rye-grass. The total area for the nine holes is about 27 acres. We are also advised to purchase 7 tons of fairway fertilizer. Last fall some of our members made the mistake of listening to the man who laid out the course, and purchased over \$3,500 worth of seed, with the result that we have lost thus far at least \$10,000. Your advice in this matter will be appreciated. (New York.)

Our conclusions on seeding are presented in the article on page 159 of the June, 1923, number of *THE BULLETIN*. In your specific case we would advise seeding your putting greens with a mixture of German bent and redtop. The redtop will last only about two years and then you will have pure bent greens. The fescues, taken all in all, are not satisfactory. We would advise you to seed your putting greens at the rate of 5 pounds per 1,000 square feet, the 5 pounds to consist of 3 pounds of re-cleaned redtop and 2 pounds of German mixed bent. Five pounds per 1,000 square feet is heavy seeding. One hundred pounds of seed per green, your greens averaging, we judge, about 6,000 square feet, is altogether too much. Mushroom soil is an excellent fertilizer, and if you can get it at a reasonable price you will make no mistake. We do not know what "golf fiber" is. If you can get mushroom soil you do not need any other fertilizer for your greens before they are seeded. In any event we would not advise you to purchase mixed fertilizers. The fertilizers that give the best results are the nitrogenous fertilizers, such as ammonium sulfate, sodium nitrate, and bone meal. These should, however, not be used until the grass is growing nicely.

With regard to your fairways, we would recommend that these be seeded to a mixture of bluegrass and redtop at the rate of 150 pounds per acre in the proportion of 4 pounds of bluegrass to 1 pound of redtop. We would not advise you to buy mixed fertilizers for the fairways. The safest and usually the cheapest and all in all the best fertilizer for you to buy, if you can not get well-rotted manure, will be bone meal, which may be applied on the fairways at the rate of 500 pounds per acre, or at a heavier rate if you care to. You can not do any harm in using bone meal.

On your putting greens endeavor to have the top 4 inches of soil rich. This is an ample depth of rich soil, as you can always control the fertilizing from the top.

7. Seed-bed and seeding of new putting greens.—We are building 18 new greens. We do not believe their cost will exceed \$1,000 each when finished. We first took the top soil and laid it to one side, and after the beds of the greens were shaped we relaid from 10 to 14 inches of the top soil, the top 2 inches of which we screened. We are using especial care in this work, inasmuch as there is a great deal of hard-pan on our course, which has given us much trouble in the past. Into the average green we are putting 16 yards of well-rotted horse manure, 10 yards of sharp sand, and 200 pounds of a commercial mixed fertilizer. The manure is being harrowed in in the usual way, then the sand, and then the mixture just before seeding. We expect to seed from August 20 to September 5, when the last greens will be ready for seeding. We would prefer to sow the greens to pure bent seed at the rate of 5 pounds to 1,000 square feet, but both our architect and our seedsman advise us to mix fescue and redtop with the bent. We should like to have your opinion with regard to the seed to sow,

with regard to the method we are following in the preparation of the seed bed, and as to whether or not we may expect the greens to be ready for play by June 1, next. (New York.)

If your 10 to 14 inches of top soil is of reasonably good quality we are sure you will find its depth sufficient. In fact, we are inclined to think that it is generally more satisfactory and more economical to start greens with 6 inches of top soil and top-dress liberally afterwards with top soil in compost. You do not give the size of your greens. Sixteen yards of manure for a green between 6,000 and 7,000 square feet is, in our opinion, more than is necessary or than can be used advantageously. If your top soil is rather heavy, 10 yards of sharp sand should improve it very materially. As for the 200 pounds of mixed fertilizer, we would advise the substitution of bone meal at the rate of approximately 25 pounds to 1,000 square feet. The use of manure in the quantity indicated in your letter should make the application of additional fertilizer, with the possible exception of bone meal, unnecessary. The main thing is to get the materials thoroughly mixed, and where manure is used it should be thoroughly comminuted and incorporated with the top soil. As to the kind of seed to use, we think the superiority of bent to fescue is so clearly demonstrated that there can be no doubt as to the relative value of the two grasses. Good bent seed sown at the rate of 3 pounds to 1,000 square feet of well-prepared seed-bed should give excellent results. A heavier rate of seeding is neither necessary nor advisable. The seed-bed should, however, be thoroughly prepared and the seed sown evenly and covered properly. Greens seeded with bent the latter part of August or the first of September in your locality should be in condition for play by June 1 of the following year.

8. **Over-fertilization of seedling grass.**—We built a green last fall and this year sowed it to redtop and bluegrass. Now we notice that when the young grass is about one inch high it seems to turn brown and die. This only occurs in spots. We have given this green 20 pounds of nitrate of soda—5 pounds to 50 gallons of water—and about 75 pounds of sheep manure, mixed with compost as a top-dressing. We took special precaution not to burn the new grass by applying the materials too heavy. The green has had plenty of rain. Do you think the fertilizer we have applied could in any way have been the cause of the condition we have outlined? (Indiana.)

While it is difficult to advise in regard to the putting green you describe we are inclined to think you have overdone the fertilizing. Young seedling grass will not stand as much soluble fertilizer as will old-established turf. We have seen grass killed out completely by the application of nitrate of soda immediately before seeding. We also have had trouble such as you describe where we incorporated too much manure in the soil before seeding. The only explanation we can give is that the soluble materials collect in spots, which cause the trouble. We know that the undiluted urine of animals will kill old turf, and so we must expect the same results from too much manuring or the use of highly soluble materials, as nitrate of soda or sulfate of ammonia, in large applications. Twenty pounds of nitrate of soda to an ordinary sized green should not ordinarily cause any burning. You do not mention the construction of the green and so we are assuming a case that might have happened.