

ever, based on our experience, we can not recommend this grass for putting greens:

Poa bulbosa should be sown in the fall and if the bulblets are used the rate of sowing should be about 4 to 5 pounds per 1,000 square feet; if the underground bulbs are used a somewhat heavier rate is advised. The preparation of the soil for sowing *Poa bulbosa* should be similar to that for other grasses. Where it is to be sown on established Bermuda grass turf, all that is necessary is to cut the Bermuda as closely as possible and rake or harrow lightly in order to loosen the surface, after which the bulbs or bulblets may be sown broadcast. The ground should then be rolled and in case of a dry season an occasional sprinkling will be found beneficial until the grass becomes well established. Watering is not absolutely essential, however, as the bulblets will not start until moisture conditions are favorable. For this reason there is little danger of the plant starting and then being killed by drought.

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. Improving sandy fairway soil; growing rye for soil improvement.—We are preparing to build the last four holes of our 18-hole course. The area is about 15 acres, which were covered with a sparse growth of scrub-pine and scrub-oak. The land is extremely sandy. There is a top layer of about 1½ inches of black sand produced, no doubt, by the decomposition of vegetation over a period of years, but when plowed to a depth of about 4 inches, which was necessary in order to dispose of the pine needles and smooth and level the land, this black sand was turned under and pure sand brought to the surface. Loam is scarce and expensive here, costing about \$3 per cubic yard delivered. Stable dressing can be obtained only in small quantities and is also very expensive. Can you suggest some inexpensive method of fertilizing this area? It has been suggested that we grow a crop of rye on it in the spring, to be turned under as soon as sufficiently grown, thereby getting some organic matter into the soil, and then in early September to seed the land with equal proportions of red fescue and redtop. (Massachusetts.)

ANSWER.—If you can get a fair turf once started on your sandy soil you should be able to bring it later to good condition by fertilizing. If you have reason to believe that it would be unwise to sow your land until the soil is improved, and if you desire to seed the land this fall, we know of no other way by which you can bring your soil to a satisfactory condition than to add loam, and mushroom soil, or manure this spring. It is not likely that a crop of rye planted in the spring would make sufficient growth by early summer to permit you by turning it under to add any appreciable amount of humus to

your soil. In order to become of any value, the rye would have to be turned under so early in the season as to permit it to rot and give the soil time to settle so that a firm seed bed could be established by early September. Rye sown in the fall, however, may be expected to make sufficient growth by the following spring to permit being turned under to some advantage. As to sowing your fairways with red fescue and redtop in equal proportions, we do not believe either of these grasses will give you a permanent turf. Under the conditions you describe, your best fairway grass should be Rhode Island bent. Although Rhode Island bent seed costs more per pound than red fescue, the seed is much smaller, and you would therefore require considerably less seed, and even if sown in mixture with redtop would give you a permanent turf.

2. Value and use of pig manure.—We have available a large quantity of pig manure. Is it suitable for composting, and if so, how should it be treated? Can it be deodorized without destroying its value if used in compost heaps? (New York.)

ANSWER.—We consider pig manure as very good material to use in compost piles. The piles should be kept for a considerably longer period than in the case of cow manure, as the solid excrements of hogs decompose less rapidly than those of horses, cows, or sheep. There is a prejudice among farmers against the use of pig manure, but no real basis for this prejudice has ever been discovered. Probably the best preservatives to use in connection with the composting of manure, and both of which have more or less of a deodorizing effect, are gypsum and floats, the latter being raw rock phosphate finely ground. If either of these substances is used it should be used at the rate of 4 pounds to 100 pounds of manure.

3. Improving bent greens that are fluffy.—Two of our greens were planted from bent stolons last fall, but unfortunately the greenkeeper let them get away from him so that the mower could not cut the grass at all. The result was that the greens were practically hopeless; although soft and comfortable to walk on, they were impossible as putting surfaces, being neither true nor fast enough. Personally I think the turf is too thick and matted and far too long, and our problem is to get it into condition where it can be properly cut with a mower and kept so. (New York.)

ANSWER.—You have no remedy except to rake up and then cut away the tall, matted growth. When this is once done, by top-dressing every month and cutting closely each day you can get a good putting surface again. Your greens will look bad for a time, of course, but they can be kept in good condition only in the manner we have outlined.

4. Poultry manure as a fertilizer.—What in your opinion is the value of poultry manure as a fertilizer? (Pennsylvania.)

ANSWER.—In our experiments we have found pulverized poultry manure to be a very quickly acting and effective fertilizer. For bent putting greens, however, our best results so far have been obtained with ammonium sulfate and ammonium phosphate.