

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. 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.

Ridding greens of coarse Bermuda grass.—We have been using in our summer greens for many years Bermuda grass grown from Arizona seed. It has been satisfactory except that some coarse Bermuda grass persists, which was doubtless introduced when the greens were first planted. We seed our greens each summer with the new fine strain of Bermuda grass but are unable to rid the greens of the old coarse strain. In several of our greens other grasses have become mixed with the coarse Bermuda and seem to make it a little finer and softer and better suited for putting purposes, by restricting its growth. Is it advisable to attempt to introduce bluegrass or some other grass into our greens in order to keep the Bermuda turf fine in texture? (North Carolina.)

ANSWER.—Practically all of the Bermuda grass seed on the market is grown in Arizona. It is true that considerable seed of the fine-textured Bermuda grass is produced in Arizona, but since Arizona Bermuda grass is not uniformly fine a considerable proportion of the Arizona seed is likely to be from the coarser strains. It would appear from this fact and the fact that you are seeding your greens each summer, that you are introducing some coarse Bermuda on the greens each year. It is probable that the proportion of fine strains is increasing; but since a considerable part of the Bermuda dies out each winter you are likely to introduce some coarse Bermuda with each seeding. It is also possible that some coarser strains can survive the winter better than some of the finer strains. We believe the best method of producing a uniformly fine Bermuda turf on all the greens of a southern golf course is the planting of stolons of selected fine strains of Bermuda grass in the same manner in which selected strains of bent grass are introduced into northern greens. A nursery of these fine strains can be established by selection of fine strains already in the greens. The greens can be planted each summer in the vegetative manner by scattering on the greens stolons cut from the nursery, and then top-dressing. In this manner nothing but the fine selected strains would be introduced on the greens. We know of nothing better than the fine strains of Bermuda grass for summer greens in your locality, unless it be creeping bent grass. Several courses in Virginia and North Carolina have all or some of their putting greens in the Washington or Metropolitan strain of bent grass, and it might be well for you also to try out one of these bent strains on your greens in view of the success appearing to result from their use under conditions very similar to yours.

Necessity for proper balance in complete fertilizers.—We are offered a commercial fertilizer analyzing 15-30-15 at \$90 a ton de-

livered. What is its value in comparison with cottonseed meal at \$45.50 a ton delivered? (Virginia.)

ANSWER.—We compare fertilizers for turf work chiefly on the basis of the nitrogen content since this is the element which is most costly and of most value for growing fine turf. Cottonseed meal usually analyzes 6-3-2. If 6 per cent of nitrogen, such as contained in the cottonseed meal, costs \$45.50 a ton, 15 per cent, as contained in the commercial fertilizer you mention, would be worth \$113.75 a ton. Therefore on the nitrogen basis alone the commercial fertilizer at \$90 a ton would be an economy. We do not, however, recommend a fertilizer analyzing 15-30-15 for regular use on putting greens or fairways, since it is too high in phosphorus (30 per cent) and potash (15 per cent). One or two applications of such a fertilizer to greens or fairways would probably be beneficial, but if used constantly the phosphorus and potash content of the soil might be increased to such an extent as to cause trouble from clover and weeds. Cottonseed meal, pulverized poultry manure, and activated sludge, each of which analyzes about 6-3-2, are in our opinion better balanced for fine turf purposes than the commercial fertilizer to which you have referred. These three 6-3-2 fertilizers possess further advantage in that, being organic fertilizers, they decompose more slowly and thus have a more lasting effect than the inorganic fertilizers. Where quick results are, however, desired, the inorganic fertilizers are to be preferred. Sulphate of ammonia and nitrate of soda are of this latter class, and are very valuable as such. Sulphate of ammonia at a cost of about \$60 a ton contains 20 per cent nitrogen. Detailed information on determining the value of commercial fertilizers is contained in the article on page 113 of the Bulletin for June, 1928.

Controlling chickweed with arsenate of lead.—We have usually been able to control chickweed in our greens by the annual weeding process, but this year it is altogether too much for us. One of our greens is liable to be entirely lost unless we can rid it of chickweed by some other method than weeding. In the Bulletin for September, 1927, a report is published of the control of chickweed by the use of arsenate of lead at the Pine Valley Golf Club. Would you recommend the use of this chemical under our conditions? (New York.)

ANSWER.—We have received a great many reports and have made some observations to the effect that arsenate of lead will rid turf of chickweed on some soils. If your putting greens are made up of any of the bents, fescues, or Kentucky bluegrass, we should recommend that you commence treating them with arsenate of lead, for it is probable that under your conditions the result would be successful. It is generally applied at the rate of 5 pounds to 1,000 square feet, mixed with compost or other top-dressing material. If however your turf is made up largely of annual blue grass (*Poa annua*), we should not advise you to apply arsenate of lead at this time, as we have received some reports that this chemical will kill annual bluegrass. You mention that one green is practically covered with chickweed. It is therefore probable that if the chickweed were killed there would not be sufficient grass turf to take its place. In that case it would be necessary to replace the dying chickweed with sod. When a green becomes too badly infested with a foreign grass or a weed, it is usually advisable to remove the turf and either replant with seed, stolons, or sod.

To live in a scientific age, an age of rapidly accumulating knowledge, imposes heavy obligations upon education and upon the resultant social and industrial controls. In the presence of modern science those who do not know can not long survive, else they must seek the primitive places of the earth where the more elemental practices may persist for a time. Even in these primitive places, science will soon catch up and there will again recur the old biological requirement to learn, to move, or to cease to exist.

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