



Care of the Course

Turf Production

By T. H. RIGGS MILLER

THE power of reproduction among the prolific breeders in the animal and fish kingdom is gauged and proportioned to the dangers that are sure to make an end of them before arriving at maturity. This being true, one is forced to believe an analogy exists in the seed and plant world, more especially in the case of grass seeds.

Such grasses as Creeping Bent, Rhode Island Bent and Red Top contain 6,000,000 seeds to the pound. Blue Grass contains 2,400,000, and Red Fescue, the largest of fine turf grasses has 500,000 seeds in a pound, according to the best authorities. In actual practice, however, this quantity will only sow 20 x 20 feet.

If it were not for the loss from one source or another, a pound of each of the five varieties mentioned would certainly be enough to sow an ordinary putting green.

In any discussion about seeds and seeding one can never overlook the pioneering work done by the seed houses of England, such of Carters' and Suttons'. What the green section is to America, these houses have been and still are to Great Britain and the Continent. They have ever been in favor of heavy seeding. Having been brought up in this school of greenkeeping, I have carried out the practice in the States for the past twelve years with uniformly good results. Dr. Piper believed that 100 to 150 pounds gross weight of seed was sufficient to sow an acre of fairway. I have always believed that 350 to 400 pounds gross weight of grass seed is necessary to sow properly an acre of fairway.

Why a difference of three times the amount recommended by a government expert, against that of a practical construction man? The answer might be found in the opening paragraphs of this article. Dr. Piper's theory was based on the following hypothesis: At the Washington experimental grounds, in 8 x 8 feet test plots, he found that there was no apparent difference between a plot sown with 3 ounces of seed which equals 150 pounds to the acre and plots sown with more. His deduction was that this amount was enough; therefore, to sew any

greater quantity was sheer waste. Sufficient consideration was not given to the fact that conditions existing at the experimental grounds were exactly opposite to those of actual practice.

Now, what actually happens when we are confronted with the problem of sowing down 40 to 50 acres of fairway, 20 to 30 acres of rough and 4 to 5 acres of putting greens, in a space of 20 days? It stands to reason that 60 to 80 acres of fairway and rough cannot be hand-raked.

It is absolutely necessary to use mechanical means in order to finish in the time allotted, even though aided by favourable weather, free from wind and rain. Let us see first how much actual seed we get out of 150 pounds gross weight.

Here are average fairway mixtures containing respectively the following grasses, their purity and germination, and the actual grass seeds that will germinate under hot-house conditions: Red, 30 pounds, 96-90, 25.8; Blue Grass, 50 pounds, 80-80, 38.4; R. Fescue, 45 pounds, 98-75, 33.0; Mixed Bent, 15 pounds, 80-80, 6.4.

The purity and germination I have given here is above the average, nevertheless the mixture shows a loss of 30 per cent. In other words, every 150 pounds of seed gross weight we actually sow only 103 pounds of seed that will germinate under hot-house conditions. The sowing of large areas has to be done by machines, then gone over by a horse, with a horse rake and brush harrow, or with a tractor doing the

same thing. Now, who is to say what per cent. has been buried to a point where it will not germinate; or what per cent. the birds will eat; or what per cent. after it has germinated will die for lack of moisture; or what per cent. will be killed from too much water (heavy rains); or what per cent. will be destroyed from other sources we know not of? That some per cent. will be destroyed from one, or more, or all, of these conditions must be admitted by all. It also goes without saying that the more seed sown, the thicker the ground will be covered with millions of grass plants—each protecting the other from the cold, sun and wind; not being able to expand, the roots go down, (Continued on page 63)



PUTTING GREEN TURF SEVEN MONTHS OLD

Seeded at the rate of 23 pounds to 1000 square feet. Saucon Valley Country Club, Bethlehem, Pa.



FAIRWAY TURF SEVEN MONTHS OLD AT SAUCON VALLEY

Seeded at the rate of 350 pounds to the acre. The fairway was sown in September and the photograph taken the following May

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with the result that a dwarf, fibrous and hardy turf is produced.

I do not wish to infer that 150 pounds gross weight of seed to the acre will not produce turf, but there is an element of time that enters into it. For instance, I have always made a practice of sowing rough at the rate of 150 pounds to the acre, and have had ample opportunity of noting what kind of turf this amount of seed will produce. Experiments along this line without exception prove that turf produced from 150 pounds of seed to the acre when subjected to regular fairway treatment, i.e., frequent mowings with orthodox fairway tractor mower units, invariably shows a thinning out or patchy turf. During the summer, the direct rays of the sun on these bare spots raises the temperature of the earth and bakes the grass to such a degree that growth is stopped and instead of the grass spreading and taking possession of the bare spots, the opposite is true. The edges recede, the spots become bigger and the grass becomes less. I know of no greater task in all green-keeping than to try to re-establish a fairway that has been improperly prepared and insufficiently seeded.

On the other hand, when the rough is allowed to grow to a height of approximately four inches, 150 pounds becomes a liberal seeding. The reason being, that it is unmolested by constant cutting and the height of the grass shades the roots of its neighbours, thus preserving the moisture content and preventing quick evaporation that takes place when the grass is cut short. Turf of this kind, if it is not allowed to grow over four inches for a period of three years and is then cut down to fairway length will, with the aid of a little fertilizer, make a fine fairway turf.

This is the element of time. On seeding large areas for the past twelve years I have found that 400 pounds to the acre will produce turf in 6 months; 250 pounds to the acre will produce turf in 12 months, and 150 pounds to the acre will produce turf in 3 years. These figures are given for land that has been properly cultivated, fertilized and prepared. Nowhere do I want it understood that the quantity of seed is sufficient in itself. Thorough preparation, both chemically and mechanically, of the seed bed is of equal importance.

The question of having or not having turf is decided very quickly after the seed has been sown. If the seeding takes place during the latter part of August or the first twenty days of September, and there has been a September shower or two, germination will start from seven to ten days, sometimes in four days. If at the end of three weeks you are not preparing to cut the fairways and greens, both having a dense covering of grass, do not wait, take advantage of the growing season that remains and sow some more seed.

Golf courses are classified largely by the quality of turf found on the greens and fairways. The average committee in charge of construction of a new course scarcely realizes the actual saving which will result from the shortening of the time required to get the turf ready for play. For example, land, course and club house costing \$500,000, at 6 per cent. interest means \$30,000 per year. To this must be added cost of upkeep and loss of revenue, etc.; which can easily amount to another \$30,000, or a total of \$60,000 a year. In other words, a cost to the club of \$5,000 a month whilst the turf matures, and this is all dead loss. Really high-class turf can be had from the start, and the resultant money saving is well worth the consideration of a new club.