

Making Putting Greens on a Southern California Golf Course

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I. *Grass Greens.*

Nothing has been written in golfing journals about grass putting greens in Southern California for the simple reason that there have been none, until quite recently, to write about.

Eleven years ago there were three grass putting greens in this locality, and all of them were failures in every respect. They were poor to putt on and too hard to pitch upon. Not much could have been expected, as no attempt was made to get good soil or suitable seed. These three greens disappeared ten years ago, and during the next six years no attempt was made to get anything better than oiled sand putting greens. It was commonly understood that there was no use attempting to get grass greens; that while you could grow anything else in Southern California, you could not get putting greens.

An explanation can be made for a general lack of interest in the making of further experiments, which is that the majority of local golfers had learned the game on courses which had sand putting greens, and the fairgreens of which had a growth upon them for only a few weeks after the winter rains. It was not, however, until it became demonstrated by means of irrigation that good fairgreens were easily obtainable that any further attempt was made to get grass putting greens. About four years ago one of the local clubs made one grass putting green, and while it was not particularly good it was a sufficient improvement to encourage the gradual elimination of sand greens on that course. Inside of two and a half years all of the eighteen greens were in grass, and all were passable. The fairways were of Bermuda grass, which very quickly predominated in the putting greens. Most of these had been sown with mixtures of redtop, bluegrass, Australian rye and clover, but as no attempt was made to keep out the Bermuda very little could be concluded as to the suitability of any particular grass.

Something more than a year ago I took the responsibility of creating a golf course for the Wilshire Country Club in Los Angeles, and as it had been demonstrated that Bermuda grass would make excellent fairgreens in this climate, and on a similar soil, I chose it rather than try an expensive experiment. There was so little to be concluded from the local grass putting greens that very naturally I sought information from the east, and from such sections of the south as had used Bermuda grasses. From no one did I get much encouragement to believe that any particular grass would be an undoubted success, and in the end New Zealand fescue and redtop were sown in equal proportions upon the majority of the greens. From the previous local results I had made the following conclusions:

1. That to judge the results from sowing fescue and redtop a fight must be made to keep Bermuda grass out of the greens.
2. That the best way to keep Bermuda out was to isolate the greens as much as possible from fairways. This was made easy in a great many cases by the topography of the ground

3. That in cases where sand bunkers could not be used to separate the greens from the fairways, the greens must be very large so as to permit of a periodical and very thorough raking of the edges to keep the Bermuda out.
4. That a careful selection of soil must be made, not only to get a good seed bed, but to avoid adobe because of its hardness when dry.
5. That because the greens must depend upon continual and heavy sprinkling there should be no pronounced high spots; and that tiling was advisable.
6. That as Bermuda seed was being sown in the surrounding fairways it would be policy to sow the greens rather lightly at first to give a better opportunity to weed out such Bermuda as would inevitably blow in at the start.

The greens were sown in June, July, and August of last year, and were opened for playing in December. The grass was thin, but stood the heavy traffic from continual play during our cold weather unexpectedly well. The preparation of the soil was the same as would be required elsewhere, a good deal of sand and peat-moss being worked into the seed bed. It was impossible to get rotted manure of any kind, or mushroom soil; so in order to avoid weed seeds a manure from steers fed on cotton seed was used and found satisfactory.

In greens where an equal weight of Chewings fescue and redtop seed was sown, the redtop most decidedly predominated in growth, and became coarse. Where planted sparsely this grass became very coarse indeed—along the edges of sand-traps for instance. One green was sown with only Kentucky bluegrass and two greens with only redtop. The texture of these two grasses seemed identical for putting purposes, but neither gave good enough results to be continued alone, and in March of this year every green was sown with as much New Zealand fescue seed in weight as had originally been used of all seeds combined. This seed was worked in after the greens had been spike-rolled and a topdressing of soil, steer manure, and peat was applied. This new seed has already improved the greens to a most noticeable extent, and in a couple of months more there should be a very good and true putting surface.

There was some rye-grass in the greens, and while our mowing machines do not cut it, by now it is almost entirely eliminated.

A month after these greens were first sown there were some greens on a neighboring course planted with New Zealand fescue only. The planting was much heavier than at the Wilshire Club, and the greens were given three months longer to grow before being played upon. The growth on these greens is very promising, and while the putting surface is not yet good, the stand of fescue grass was good, and encouraged me to use only fescue for the spring seeding of the Wilshire greens.

It is too early to draw definite conclusions as to whether fescue will thrive here, or whether the continual play throughout the year will be too hard upon it. So far it is an improvement upon redtop in every visible respect. Another twelve months should be a sufficient time to determine the fate of New Zealand fescue for putting greens, and if it grows successfully the principal menace to good putting greens will be the continual

enroachment of Bermuda grass. Time alone can tell whether the fight against it can be successfully maintained, although up to the present the Wilshire greens have been kept without it.

II. *Oiled Sand Greens*

In Southern California, where oiled sand putting greens were used for more than twenty years, the construction of them became well understood and uniformly good putting surfaces were obtained by the majority of the clubs. Where they can be afforded, grass greens are now being made, but many "skin" courses still remain in California and Arizona, and are likely to be used for some years to come.

All sand putting greens in this part of the world are treated with oil, and although I understand that there are sand greens made at Pinehurst which are sprinkled with water, I have never seen that type and cannot, therefore, draw comparisons. To obtain a good putting green with an oiled sand surface the method of construction described below cannot be departed from very much.

BASE.—The putting greens need a carefully prepared base, and, quite apart from reasons connected with the design of a golf course, care must be exercised to choose places for greens which are not settling basins for moisture. If moisture collects under the base it generally results in settling, and if the green is placed where rain water flows across it continued trouble from the washing of sand will result.

On a good many courses the sand putting greens are slightly raised above the level of the surrounding grass or dirt fairways, and on others the edges of the greens will be raised and the inner portion slightly dished. In my opinion it is generally more satisfactory to make them without any change in level from the surrounding ground, as when greens are raised an approach shot will frequently be deflected away from the center of the green, and when the greens are dished an approach will often gain impetus as it reaches the edge, or curl in from the sides, with a better result than was deserved by the player.

To make the base, the soil should be well broken up to a depth of four inches and dried so as to be friable. Crude oil (from 16 to 40 gravity) should be mixed into the soil and then a tamper should be used. This base should be made as compact as a soft mass can be, and I do not advise less than from 3 to 4 inches in thickness. If too thin it will peel up with continual play.

When the base has been well tamped and the oil has become fairly well-absorbed, the surface should be trued up with a straight-edge. A board $1\frac{1}{2}$ inches thick and 10 feet long, with sharp edges, will be found good for this purpose, and all hollows should be eliminated. Sand putting greens should be either perfectly flat, or else sloped distinctly in one direction only, for the reason that curves or undulations are extremely difficult for a player to see because of the dark color of oiled sand. When the surface of the base has been fixed, a coating of heavy oil should be applied. In California it has been customary to use what is called "85 per cent road oil," the coating being about a gallon to a square yard. This should be sprinkled with dry sand, which will absorb the surplus oil. Generally it is policy to apply dressings of sand lightly, several days apart and only when the sun has brought too much oil to the surface. This surface should be rolled and allowed to harden before being used to play.

PUTTING SURFACE.—This is made by applying a dressing of oiled sand to the base. The base should be hard enough so that it does not absorb oil from this topdressing and so that there is no adhesion of the topdressing to the base. The topdressing must be made of a sand which does not pack, and as a rule a sea sand will be suitable because it will be both fine and clean. There should be no silt or soil in it, as the presence of dirt makes it form into lumps. This sand should be mixed, before application to the greens, with a crude oil of about 16 gravity. The amount of oil to mix with it can be learned only by experience, but very thorough mixing must be given in order to get a uniform texture in the top dressing.

The top dressing of sand should be spread very thinly over the base and brought to a uniform degree of thickness by the use of a broom. A large street-sweeper's broom will be best for this, and most greenkeepers obtain the best surface by *dragging* the broom. The man using it will drag the broom after him and brush in a circular way, beginning at the hole and walking around it in a constantly increasing circle. This not only makes it easy to spread the sand fairly evenly, but it also makes the brush marks run *across* the line of a player's putt, no matter from what part of the green he may be playing the ball.

No definite quantity of oil can be named as being exactly right for each cubic yard of sand used in topdressing the greens, as the temperature of the day will vary the conditions, as also will the kind of sand used. Ordinarily the putting greens will be keener to play on in the morning than later in the day, when the sun will have softened the oil somewhat. Too much oil can be very quickly corrected by sprinkling with dry sand, and after brushing this into the surface (rotary brushing) an immediate improvement will result. If the topdressing is too thick it should be corrected by removing sand, and this can best be done by using the broom in *straight lines* from the hole to the outside edge of the green, and shoveling the sand into a wheelbarrow for removal. The bare places can be covered by dragging the brush in the rotary manner previously suggested.

If the topdressing becomes too hard or crisp, as it sometimes does in cold weather, it can be softened by sprinkling with distillate and using the brush.

The amount of sand put on as a topdressing must be learned by experience, but of course very slow putting will result from a thick covering, and *vice versa*. Pockets or hollows in the surface of the base will fill up with sand and will not be noticed by players, but each one means a sudden slowing up of the ball, and great care should be taken to avoid them in making the base.

BRUSHING THE LINE OF PUTT.—There are few oiled sand greens which do not require continual brushing, because footmarks are left sufficiently deep in the topdressing to deflect balls. It is usual therefore to brush the line of the putt, and for this purpose a piece of old carpet is perhaps the most serviceable. The flag-stick used to mark the hole is frequently used as the handle of the "sweeper," and in such cases it should be only about 5 feet long. Attached to the top of it should be a cross-piece like a thin broomhead, 2 feet wide, and to this is nailed a strip of carpet.

This brushing of the line of putts is a nuisance which adds greatly to the time required to play round a course; but it is difficult to obviate. It is less necessary when the topdressing of the greens is thin and fairly dry; but I have never seen it eliminated. In some clubs on crowded days a man

will be kept at every green to do the rotary sweeping with the broom just after each match leaves a green, and the players are not then allowed to use the carpet sweeper. This saves time, but frequently one man or caddie in a fourball match will spoil the line of a putt.

Local rules are essential when oiled sand greens are used, as to brush a putt the ball must be disturbed and replaced; also it is necessary to allow the cleaning of balls on putting greens, as occasionally a grain or two of sand will, because of the oil, adhere to the ball and if in putting these come between the club face and the ball a muffled shot usually results.

In laying out a course on which it is intended to use oiled sand putting greens it is a great mistake to design holes requiring a pitch shot onto a green. No matter how much back-spin is imparted to the ball, it can seldom be made to hold, because the base of the greens is too hard. This type of green can be made so that it is delightful to putt upon; but on the whole an indifferently good grass green is preferable, because it does not eliminate pitch shots.

Experience With Brown-Patch at the Morris County Golf Club

W. D. VANDERPOOL

About three and one-half years ago, in the middle of August, the newly constructed greens and fairways at the Morris County Golf Club, Convent, N. J., were in splendid shape, considering their newness. The weeds and summer grass had all been removed and they were ready for the usual light topdressing which is applied at that time of the year.

By September 1 six of the new greens and six of the new fairways were practically ruined. The greens were so badly damaged that it was necessary to turn them under and reseed them. The fairways were given a heavy topdressing of compost, seed was sown the following spring, and they are now in good shape.

In this article I am going to describe the conditions; but I can not offer any positive solution of the problem, at least as far as the fairways are concerned.

There is no question in my mind (and this conclusion has been corroborated by the Department of Agriculture) but that the cause of the damage was the brown-patch fungus in its most virulent form. It is a very serious matter if this form of blight is going to do such extensive damage.

Shortly after the grass was seen to be getting brown, we started with light topdressings and sprinkling; this, however, had the effect of stimulating the growth of clover, and did not help the grass. On my return, about the first of September, I found dead patches of grass, with the very green clover growing rankly and spreading every day.

The fairways were badly damaged in places; but the clover was not as abundant there as it was on the greens. The new greens were all seeded with a mixture of Chewings New Zealand fescue and German bent in the autumn, and when the disease struck them they had had about twenty months' growth. The fairways were sown about the same time as the greens, and redtop was substituted for the bent; the greater part of the