

Bermuda Putting Greens

The factors involved in securing and maintaining first-class Bermuda putting greens in the South are not yet well understood, but progress is certainly being made, as indicated by the improved quality of the greens on many courses. The following contributions should be helpful to all southern greenkeepers:

Experience at Atlanta, Georgia

H. H. BECKETT

After experimenting with Bermuda grass the past three or four summers it seems to me that the simpler the methods used the better are the results. To my mind too much fertilizer is not good nor necessary, especially commercial fertilizer.

In starting a new green special care should be taken that the soil is so well mixed with well-rotted barnyard manure that the soil becomes very loose and of a soft texture. Sodding a green is not advisable, as the growth is very slow and poor. Sprigging is much the better method; the growth is much faster and of a much better quality. After the runners have begun to grow and are two or three inches in height, a good top-dressing should be applied, not only to cover the runners and start fresh growth, but to smooth up the green and to give it a good putting surface. Cutting should commence just as soon as possible and be kept up every day. And this, I want to say here, is the secret of a good Bermuda green—cutting close and often, and by often I mean every day.

Where a green is already established it is hard to say just what are the best methods to use. It depends entirely on conditions. Where a green is very hard and the growth of grass is very poor, one can, instead of tearing up the green, take a garden fork, press it into the ground its full depth at an angle of about 45 degrees and gently raise upward so as to give an opening in the ground of about two inches. This should be done in one direction over all the green. Then after this is finished, the holes should be filled with a good dressing of screened cow manure or any good humus, after which the whole green should be rolled in the direction so that the roller will press the sod back into its original position.

Artificial watering is not essential. This I have proved to my own satisfaction after going through a few rainless months the past summer. In fact, I think that without water the runners become more firmly anchored, as the roots seem to go deeper into the ground for moisture. Where I was making a new trap and had to dig into the old green, we found that the roots had gone down at least two feet. Watering too much keeps the runners and roots too near the surface, where they become brown and have a dried-out look. All the moisture which a green needs is a good topdressing once in a while. Where a green starts off at the beginning of the season looking fine and then becomes stubby and brown, it is mostly due to the fact that either the knives on the cutter have been lowered too suddenly or that the grass has been allowed to grow a few days and then cut.

As I have already said, too much attention can not be paid to the cutting. The machines should be started early and kept going day in and day out with the knives set close. This keeps the runners down and forms a very good putting surface without any stubbles whatever.

Sand about every two years does very well for a winter dressing. Of course the quantity or how often sand should be applied all depends on the quality of the soil.

Commercial fertilizers such as tankage or cottonseed meal are very good in the spring of the year, using about 100 pounds to a green.

Practically no rolling should be attempted during the summer months. A little rolling during the fall months is not harmful.

During the winter months there appears on the greens a thick growth of annual bluegrass which grows in bunches, and on account of this we are compelled to stop regular play on the greens and use temporary greens. After trying out different ways of getting the bluegrass out at the beginning of spring, I find that the best method is to take a sharp hoe and scrape the whole top surface just deep enough, say about a quarter of an inch, to get the bluegrass and leave the Bermuda runners. This gives the Bermuda full sway with nothing in its way to keep it from getting a quick start and to come right along.

Experience on the Druid Hills Course, Atlanta, Georgia**DR. THOMAS P. HINMAN**

My experience in growing Bermuda is only of rather short duration.

You can not expect to have good Bermuda greens unless the green is an elevated one. The factor of elevation, of course, produces a perfect drainage and prevents seepage into the subsoil as well as overflow on the topsoil. If a Bermuda green is built in the side of a bank, it should have a deep, grassy hollow between it and the bank, and the bottom of this hollow should be lower than the center surface of the green. This will prevent the seepage from the hillside going in and injuring the growth of the grass.

Bermuda greens should not be watered except in very dry weather. In the early spring, if the green is dry, a little water is a very essential thing to start the growth. It is important also that Bermuda be not shaded. If there are any trees around the green, they should be cut away so as to let the sunlight come in. Our experience so far indicates that the green, if it is at all packed, should be carefully spaded with a spading fork before the grass begins to grow. Before the green is raked, but after it is weeded, we give about a hundred pounds of blood and tankage to each green, letting the fertilizer go into the holes that have been made by the spading fork.

Bermuda greens require a little more topdressing than the average green. Our experience is that it should receive a topdressing at least once a week. If the growth is very rank, then the runners become abundant, and this prevents a good putting surface. Bermuda greens will not stand as much cutting as greens of bent or fescue. We find, as a general proposition, it is best to cut every other day, unless it rains—then they might be cut every day. No two greens can be treated alike; one green will require cutting more frequently than another. This must be left to the judgment of the greenkeeper.

We have not found much benefit from the use of lime on our greens. Our topdressing is composed mostly of woods earth which has been carefully screened, first through a quarter-inch and then through an eighth-inch screen.

We have not found rolling to be of much benefit after the grass has become prolific.

If too much water is used on the greens we find that the roots all come to the top and then when the hot sunshine hits it the green dies.

We have found that when we change the cup to another position on the green, if we give a very light coating of sand in a circle of about twelve feet around the cup, this gives enough sand to prevent the packing of the soil, which is clay mixed with woods earth.

Experience at Dallas, Texas**C. B. BUXTON**

Bermuda and mesquite are the only grasses that will stand the intense summer heat and long droughts that frequently occur in this section. Experiments have been made with other grasses, but without success except during the winter months.

Mesquite is a native grass, used to some extent on fairways, but it does not compare with Bermuda, as it does not form a solid mat and will not stand punishment.

My first experience with Bermuda grass was the fall of 1916, when I came here from Philadelphia. At that time it made an excellent fairway but poor putting-greens. Since then experienced greenkeepers have been developed, notably P. V. Hawkins, of the Dallas Country Club, and I can now truthfully say that a Bermuda green properly cultivated affords a fast, true putting surface better than the average putting greens of the New York and Philadelphia districts. Constant expert care is needed to keep the grass from becoming coarse. This is accomplished by frequent topdressing with sandy loam and sufficient fertilizer to stimulate the growth, daily close cutting, and watering only when absolutely necessary. Bermuda feeds from the top, and too much water makes the grass grow rank and destroys the desired putting surface. Occasional topdressing will keep the grass green during the hot summer weather without water.

There are three ways of planting Bermuda: spot sodding, or vegetative process; solid sodding; and seeding. In our black-land golf courses, spot sodding

has been the most effective method; but in our sandy loam soil all three ways have met with success.

In sodding the green solid after the foundation has been properly prepared, it is a good plan in black land or heavy soil to put on a three-inch layer of coal cinders and roll with a heavy roller. This makes for good drainage and discourages worms. This is not essential in sandy loam soil. Next put on a layer of about six inches of well-rotted cow manure and roll with heavy roller, then about three inches of loam soil. On this you carefully place your Bermuda sod. The grass should be clipped as closely as possible and the sod cut about ten inches square and $2/3$ inch thick. After the green is covered, roll with heavy roller, being careful to have all undulation with gradual slopes to avoid trouble in the future from mowing and washing. When the green is covered and moulded into the desired shape, top-dress with good, rich sandy loam or leaf-mold, with cottonseed meal added to stimulate growth. We use 100 pounds of meal to $2\frac{1}{2}$ yards of finely screened loam. This last top-dressing is not rolled but is raked perfectly smooth and watered by hand with a fine spray. As soon as the grass grows well, daily cutting and frequent top-dressing are essential to get a true putting surface.

If a green is not sodded solid, it can be spot sodded with pieces of sod dropped every ten or twelve inches, in rows about a foot apart, preferably with a small amount of cottonseed meal or well-rotted manure in the rows to stimulate growth. When the grass begins to run, use the same treatment as described for the solid sodding.

In seeding greens see that the soil is well worked and then rolled firm. Mix the seed (50 to 100 pounds, depending on size of green) with finely screened soil, about a gallon to the wheelbarrow load of soil, and sow the green until the entire space is covered; then top-dress lightly, smooth off, roll, and water thoroughly by hand, and cover the entire green with a light mulch, preferably short grass clippings. The green should be kept moist until the grass appears. Then rake off the mulch, being careful not to disturb the seedlings. This young grass should not be cut closely for the first month. Clipping it will cause it to put out runners and not grow straight up. Water at night and only with a light spray that will not disturb the surface of the green. Three top-dressings after the green is covered with grass will give the desired putting surface.

Be careful in the use of water and fertilizer during the summer months. Too much will make Bermuda grow rank and coarse. Cut close daily, top-dress once a month, and water at night once a week when absolutely necessary, and the greens will be kept in fine shape; at least under our conditions.

The Golf Ball and the Law of Trespass

E. J. MARSHALL

Nearly every course has one or two holes which parallel a neighbor's farm on which sliced or hooked golf balls are sown in profusion and growing crops are trampled beneath the feet of players and caddies. In most cases the neighbors are kindly disposed and recognize that the damage to fences and crops in each year is more than offset by the enhancement of land values arising from the location of the adjoining golf club; but now and then the feeling is not so friendly, and the irate farmer threatens to have the law applied to the golfers. To gain some idea of the rights and liabilities of the parties in such circumstances, the Green Committee of the United States Golf Association called upon counsel likely to take a sympathetic view of the golfers' side of the case, for an opinion, which, in substance, is as follows:

It is settled that an entry on land in the peaceful possession of another is deemed a trespass, without regard to the force used. Indeed, it is estab-