

Bermuda Turf and Sand Greens at Pinehurst, N. C.

By Frank Maples

We have here at Pinehurst, within a radius of six miles, eight complete 18-hole golf courses, one 9-hole golf course, four polo fields, and one airport, all planted with Bermuda turf and covering over 400 acres. These have been built within the last 32 years, and my experience in their maintenance covers a period of 29 years. They were built by myself from the plans of a golf architect. Our soil is light and sandy and does not require much drainage.

Practically all of our play is in the winter when there is very little growth of grass. As the play is heavy, we have so far found it impossible to produce grass greens with a satisfactory putting surface. We have, however, wonderful sand greens. We have on our land a natural mixture of sand and clay, consisting of about 75 per cent of 1/16-inch-grain sand and 25 per cent of clay, which drains very quickly. We cover the greens with about 5 inches of this mixture, roll it and scrape it until it is thoroughly smooth and firm, and then apply enough 1/16-inch-grain sand, free from clay, to permit a ball to run true. In maintaining these sand greens for play, a circular space around the cup is sprinkled with water and then brushed with a carpet 5 or 6 feet wide.



In maintaining sand greens at Pinehurst, a circular space around the cup is watered and then brushed with a piece of carpet

Our Bermuda fairways are kept cut close and the fertilizer is applied during June, July, and August. We have tried almost every fertilizer that has been put on the market but have obtained best results from a commercial mixture, the base of which is Peruvian guano. One application of fertilizer a month, applied at the rate of 600 pounds to the acre, gives wonderful results on light sandy soils. We occasionally top-dress our Bermuda turf during June. A compost for top-dressing purposes is made very cheaply by taking a few acres of land and plowing in 6 or 8 inches of rough manure. This is left from 8 to 10 months, or until well rotted, and is then plowed and disced until well mixed. It is kept harrowed for about 30 days so as

to kill germinating weed seeds. Fresh stable manure is not used for top-dressing Bermuda turf, for it has been tried and found very undesirable. Since we have no water supply on our fairways, we have to depend entirely on rainfall. Occasionally when we have a drought our fairways have a tendency to burn or turn brown. We have noticed that agricultural lime is very helpful in carrying Bermuda fairways through a drought. Hydrated lime gives equally as good results more quickly but it is a little more expensive.

We have large Bermuda grass tees which we seed to Italian rye grass in the fall. We also seed around our putting greens with Italian rye grass and keep it cut close during the playing season. By doing this our approaches are kept smooth and even.



Distributing fertilizer on a Bermuda grass fairway at Pinehurst

One of our problems at Pinehurst has been the control of the grubs of the June beetle. We are able to control them satisfactorily by making an application of arsenate of lead at the rate of 8 to 10 pounds to 1,000 square feet. This is mixed with fertilizer and applied with a lime drill.

We have had good results from seeding new land since our soil on such areas does not contain seeds of troublesome weeds, such as crab grass. In preparing new golf course land for seeding to Bermuda grass, we clear the ground and, after plowing, disc it several times in order to mix the soil thoroughly for a seed bed. After the soil is well mixed, all roots removed, and smoothed, we make an application of organic fertilizer at the rate of one ton to the acre. When this is thoroughly mixed into the soil with a spike-tooth harrow, we seed Bermuda grass at the rate of 50 pounds of seed to the acre. This is then harrowed three or four times in different directions, raked with hand rakes, and rolled with a roller of about one ton in weight.

In preparing old land, which, as a rule, is infested with seeds of undesirable plants, we find we can obtain the quickest and best results by planting stolons of Bermuda grass. During April or May we cover the stolons by shallow plowing with a one-horse plow. The ground is then kept harrowed regularly with a spike-tooth harrow, in order to prevent the growth of crab grass and other weeds until the Bermuda has covered the ground. By following the above procedure we have been able to establish a beautiful, thick Bermuda grass fairway in one summer.

Turf Maintenance at Wappoo Links, Charleston, S. C.

By J. Keitt Hane, Jr.

The Wappoo Links of Charleston Country Club are in their infancy, relatively speaking. The course is now in its seventh year of play.

It is constructed on two types of soil, sandy loam and muck. In common with other golf courses in its neighborhood, the predominating soil type is a sandy loam. The entire course, including greens, tees, and rough, is thoroughly drained. The rough and fairways are drained with farm drain tile and troughs made of cypress. Perhaps it is too thoroughly drained when droughts are taken into consideration, a common condition in the last two years. On the other hand, without this thorough drainage it is possible we might be bothered more with salt concentration in the soil, as the course is below sea level. The concentration of salt in the soil appears to give us the most trouble.

The soil of the greens has been greatly improved by the use of good organic fertilizers and, about once a year, a complete fertilizer. The organic fertilizers have been cottonseed meal, castor bean pomace, and rape meal, and from these we have obtained excellent results. Twice a year each green receives 400 to 600 pounds of organic fertilizer, and about once a year 300 to 400 pounds of lime. The greens are 5,000 to 10,000 square feet in area. The use of castor bean pomace seems to discourage some of our most common pests, such as grubs, earthworms, and mole crickets. Tobacco stems, applied at a rate of 400 to 500 pounds to a green, also seem to be a good insecticide. By the use of these fertilizers a luxuriant turf is obtained. The fertilizer is applied immediately after top-dressing a green and three weeks or a month before seeding. In this way it can be thoroughly mixed with the top-dressing and worked into the turf at the same time, and becomes more available for the young grass than if applied at the time of seeding. Water is always applied immediately after fertilizing. I am a great believer in frequent applications of sulphate of ammonia. This we apply at the rate of 20 to 40 pounds to a green as often as it seems to be needed, which, with us, is about once a month. This tends to make the soil slightly acid, but any excess of acidity may be readily corrected by the application of lime.

Up to date we have been very unfortunate as regards water supply, but hope to have an ample supply in the near future. At present we have four surface wells, each averaging 1,500 to 2,500 gallons of water daily. This is very little water for courses in our section. This water receives natural purification and is free from salt, which, as I