

# Bermuda Green Maintenance Methods Detailed



Hal Lindsay, Ray Spangler, Col. Lawson and R. H. Green play out on the 18th green of the Druid Hills GC (Atlanta) made playable the year round by the use of Bermuda grass during summer months and winter rye grass during the season between frosts.

By **EVERITT A. SHIELDS**

*Greenkeeper, Druid Hills Golf Club, Atlanta (Ga.)*

Bermuda grass grows wild all over the south. I could only guess at the number of distinctly different strains we have. Bermuda is a permanent grass once it is planted in a given section, if you give it half a break. Many of the strains are very hardy, and farmers, or small time gardeners will tell you that it is impossible to kill by any method. Of course, trying to grow and trying to kill grass are entirely different things. You can do either that you care to if you will give the matter some thought.

We use Bermuda for almost every purpose. An acre can be sprigged with stolons and be made to cover within one year. Many of the strains put out long runners which intermingle and thereby make for a cushiony surface for fairways, tees, trap banks, washes in fairways or roughs. It will grow anywhere. We cannot tolerate a grass on a putting surface that puts out long runners, or becomes stubby, or bristly. There are as many methods of getting away from this condition as there are Bermuda greenkeepers. This is my method.

We use Bermuda for our greens only during the regular growing season—be-

tween frosts. I would like to have you think about what we do during the off season of Bermuda, and how we grow Italian rye—or common rye grass in the Bermuda greens so-called, off season. I feel that an explanation about our winter rye is important as we grow grass 12 months a year.

## Two Types of Greens

Many of our courses in my section of the south get by this problem by having two distinct or separate sets of greens: one for Bermuda, and another for this winter rye. On courses that have two sets of greens, most Bermuda grass greens are covered during the winter season with pine straw to keep out foreign weed seeds, to minimize freeze injury, etc. There is also the advantage of having the greens come along a little faster during the spring, since the covered area, being sheltered from the weather and elements, will sprout beneath the straw, often put out long runners, which must be removed.

On courses that use only the one set of greens, such as ours at Druid Hills GC, Atlanta, it is necessary to estimate your season so you will have a putting green for the entire 12 months. Bermuda, remember, is principally a summer grass. We plan to have Bermuda greens as soon after the first of June as we can. The season extends until the middle of October or the first killing frost.

In using the one set of greens system, it is necessary for us to sow rye the first week in October—in a regular season, whereby we will have a putting green throughout the winter playing season. Our course is seldom ever closed down, and if so, just for an occasional few days during a winter. This should give you a better picture of what we have to contend with in the south. The aforementioned rye grass has to be nursed along all winter, and requires much more attention than the summer grass, Bermuda.

Few greenkeepers, if any, are able to provide an A-1 rye green throughout its growing season, all the way around his golf course. Everything we do to our greens during the rye grass season is weighed with what it will, or could do, to the Bermuda grass which is beneath. Bermuda will start breaking through and intermingling with the rye about the middle of March (all assumptions being made on a regular season approximation). You being qualified as a greenkeeper will know what I mean. There is always the exception, somewhere on your course.

### Protect Against Disease

By the 10th of April our greens will be doing nicely, and will become stronger daily. About the 1st of May, when the temperature gets around 70 degrees, we begin to wonder if our rye will hold out until the Bermuda has caught up sufficiently to give our members a good putting surface. We usually have a wet spring. A good shower falls quite often in the morning. Then the sun will come out and the humidity is another worry for us. It is during this period of the spring that we have to give a lot of thought to brown patch, dollar spot, rust, algae, and sour conditions. Diseases should be treated ahead of an estimated attack—otherwise the disease will go from the rye grass into the Bermuda, and even if it doesn't bother



Number 9 green being poled for dew, heavy on southern courses during spring and summer months, to avoid onset of brown patch, dollar spot, rust, algae or sour condition as temperatures rise.

too much on Bermuda during the summer season, next fall you will have trouble getting the rye seed to germinate.

In using the one set of greens system we have one of two grasses growing requiring fertilizer during the entire year. In explaining our procedure I will refer back to the October planting of rye grass, because it is so important to you, if you want the complete picture.



EVERITT A. SHIELDS

During the winter season we are actually getting our surfaces in the proper condition for the expected Bermuda in March. I sow rye grass, on the one set of greens system of maintenance, at the approximate rate of 40 lbs. per 1000 sq. ft. of green, the first week of October. It is topdressed in. This amount of seed gives us a putting surface.

### Fertilizing Practice

Since the Bermuda is active at the time we sow the rye, we do not fertilize the greens immediately before we plant, nor for approximately 30 days after planting. We figure on a good fertilizing in November, trying to get a break in the weather. By this time we have had a killing frost, and the Bermuda is dormant. We use Vigoro on this application, hoping that the young grass will store up enough energy to last it through December and January—our worst months. We use from 10 to 12½ lbs. per 1000 sq. ft. of putting surface.

This is broadcast lightly into the green criss-crossing to avoid skips, then, too, the men are more cautious if they know that they have to cover the entire green with their allotted bucket of fertilizer. After this application we water the green with a hand sprinkler. The first time over we sprinkle lightly with the nozzle well elevated whereby we get a rain reaction onto the grass. We are able to get our fertilizer down best this way. We go over the green a second time with the nozzle, this time we give the green a good soaking, but not puddled. It is necessary to double back

onto this green the next morning before anything else is done to it. We will get a reaction within a week ordinarily. Weather conditions, and greens ability to absorb water are the prime factors here.

Often if the weather is cool, and frosty, we have to stay after this application, as the frost or freeze tend to bring our fertilizer back to the surface, and it could burn the rye grass, which if severe enough would kill it. This fertilization carries us into February. Again we have to think about a break in the weather however, as playing conditions become better. We use about the same amount of fertilizer as before, namely from 10 to 12½ lbs. per 1000 sq. ft. of putting surface—watered in as our November fertilizer was, but I like to deviate from the 4-12-4 to a little more nitrogen. Our rye is rather shallow rooted and with our usual spring rains the fertilizer often soaks past the rye roots into the Bermuda roots, which though dormant at this time are most receptive to invigoration.

By the middle of March Bermuda is beginning to come up, intermingled with the rye, which is the predominating grass. Our program is stepped up a bit about the first of April, and instead of four to eight week applications, we usually fertilize at three or four week intervals. We continue to use inorganic fertilizer, alternating each time on the composition of nitrogen, phosphorus, and potash. By the middle of April we have a strong green with both grasses noticeable. We must continue to nurse the rye grass along until the Bermuda has taken over.

May is a trying month if you haven't thought about the Bermuda during its dormant season. If you were awake during winter you don't have too much to worry about, as a good fertilizing, of say about 100 lbs. of a high nitrogen fertilizer per green broadcast and left to scorch the rye a little will put on an altogether different putting green within one day's time.

#### **Topdressing Procedure**

We topdress onto this application with the best loamy topsoil we can get. It is my practice to give the green a thorough topdressing. We try to get a ¼ in. coverage of soil, which is permitted to dry thoroughly before we put the mats to work. One mat is then pulled clockwise toward the center of the green, another mat is started the other direction. We then criss-cross our dragging pulling the surplus soil off the green, being careful at this time not to drag from off the green onto the green whereby we might bring onto the green any unnecessary weed seeds. After the green is dragged it is checked for foreign matter and weak places of soil coverage, then sowed with hulled Bermuda seed.

We consult our notebook and visualize what we actually had at the close of our last Bermuda season, so we will know about the amount of seeds we will need. It will vary from 2 to 8 lbs. per 1000 sq. ft. of putting surface.

Our seeds are mixed with dry white sand and broadcast onto the greens. We do not use unhulled Bermuda seed on our putting surfaces if we can get the hulled. Unhulled has too many weed seeds ordinarily.

After sowing we drag one time clockwise and one time counter-clockwise toward the center of our green. We then water the green with a hand sprinkler going over it simulating rain, doubling back over the entire surface with a heavier application of water, being careful not to puddle the green, or remove the soil off the undulations. Our play is not halted during this procedure so we can't afford to track our topsoil or seed. During this period we often double back onto our greens after dark and give them more water.

This procedure will vary with your Bermuda coverage, weather, and availability of manpower. This is our most important dressing and we try to do it right. We often have to dress again on some greens during the summer. And occasionally we will have to re-sow with Bermuda seed if we are not satisfied with our surfaces.

Many of our greens have been planted for a long time and the old Bermuda wants to bunch, or put out runners on top of the green. We want only the fine tender leaves. As conditions adverse to good greens arise, we must make whatever adjustment we deem necessary. You all have the same decisions to make and will understand to what I am referring.

We do not plan on fertilizing any more until the latter part of July or early August.

#### **Organic in Late Summer**

It is at this time that I like to give my greens a little good organic fertilizer. I like about 10 to 15 lbs. per 1000 sq. ft. of putting surface. Some of my fellow greenkeepers in Atlanta go to the other extreme with fertilizer. They go heavy, and sometimes too often, thereby necessitating a lot of additional topdressing. Too much invigoration during the heat of the summer will ruin your greens. My next fertilizer goes on about the middle of September and is applied with soil. Watering procedure constant on all fertilizer applications. In this application I like to use a light nitrogen fertilizer, high on phosphorus and potash, so that my Bermuda roots will be put away in a strong condition.

If you put your greens away in a strong healthy condition you will not be



### Two Women Attend Rutgers Short Course

Total of 57 turf men and two "turf women" attend Rutgers Univ. 17th annual Short Course in Turf Management under the leadership of Ralph Engel, research associate in Farm Crops. The five day program consisted of lectures and discussions supplemented by laboratory demonstrations where possible on such subjects as soils and soil management, use of fertilizers and lime, drainage, turf plants, insect pests, diseases, seeds and methods of turf management.

ashamed of them next June, when a lot of greenkeepers will really have to sweat it out. Stay after your course, know what goes on where your greens are concerned. Keep a record that you can refer to, and use a little common sense as well as your good judgment. Don't be bashful about some condition that is worrying you. Try to figure out what is happening, and if you can't, go visiting. Talk to some fellow greenkeeper who might be able to help you. It is a good idea to have the association of your fellow greenkeepers anyway. The old days of every fellow for himself never did anyone as much good as they might have thought. The shoe can get on the other foot you know. Don't tell your little troubles to your greenchairman or members. Do your worrying alone. Repeated stories most always vary—molehills becoming mountains.

### Aeration Source of Trouble

Our aeration gives us a little trouble occasionally during the middle of the summer. Although we try to dress our greens with the best sweet loamy topsoil (woods dirt) we can get, we still have to be on the lookout for tight soil.

Our water program after our June top-dressing is rather extensive until we get the greens into the best possible shape. We usually are able to taper off on this watering during the latter part of June, thereby making it necessary for our greens to put on a deeper rooting system.

If you continue heavy watering you will get the root system so shallow that when the first drought hits, you will lose your greens, or permanently injure them.

In aerating the greens we run our spike disc cultivator over the putting surface from many directions—trying to get maximum penetration. If the aeration is needed in a high place in the green we use a 9 tooth 9 in hand spiker trying to get 4 or more inches of penetration. This varies with the condition of your greens surface.

After the spiking, regardless of which method I elect to use, we give the most affected areas a light dressing with sand, of about No. 2 screen. This is watered in well by hand that night, almost puddled. The next day when we come to mow this green we run over the entire green twice with the mower reels disconnected—thereby forcing the sand down off the grass and into the green. That also saves your mowers.

During this time of year, we also know what to expect later in the season as to our cushion. By the middle of July, the Bermuda grass is growing plenty and it isn't much trouble to give a green a good dressing with peat moss, mulch, or moates. I prefer to apply Georgia peat moss. We skip the mowing on a green for a day or two, then apply peat moss to the green. Applications will vary from 200 lbs. to 500 lbs. per green as we figure it is needed. This is either raked in lightly, or dragged in with a mat. The green is mowed immediately after this application and an oscillating sprinkler is started to work. It is best to do this job the first part of the week, so that your play will not be inconvenienced by this application which will be bumpy until the grass catches up sufficiently.

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## Wisconsin GA Launches Caddie Service Program

The Wisconsin State GA has launched a new program to assist all golf courses in the state to improve caddie service to the player and to send deserving caddies to college on full tuition scholarship. The program officially approved at the annual meeting of the WSGA with full support of the Wisconsin section of the PGA pledged was finally completed by representatives of the WSGA who met with WGA Exec. vp John C. Kennan in Milwaukee recently. Representatives included: Dr. Ernest W. Miller, E. P. Allis, Lee Werner, Earl Langworthy and Walter H. Gaedke.

"Invitations to join with WSGA and WGA in this unique project," said Dr. Miller, President WSGA, "have been sent to every club in Wisconsin. We expect a large and immediate response."

The first caddie scholarship winner in Wisconsin was in attendance at the Milwaukee meeting. He is Dr. Warren Williamson, Racine Country Club. Dr. Williamson graduated from Northwestern Medical School last December, and is now serving his internship at Milwaukee County Hospital. When asked to comment on the scholarship plan Dr. Williamson said, "If it hadn't been for Western Golf Association I don't know how I could have financed my education. I am sure every caddie in Wisconsin appreciates what the State Association is doing."

The Wisconsin Scholarship fund will be known as the Allis Scholarship fund of Evans Scholars Foundation, honoring one of its most revered amateur players—E. P. Allis. "Ned" Allis, ten times Wisconsin State Amateur Champion and medalist thirteen times, also won the Intercollegiate Championship, was runner-up in the Western Amateur and semi-finalist in the National Amateur. The fund will be built from the income of dues paid by individual golfers and all income will be used to send Wisconsin caddies to college in Wisconsin.

## Indiana PGA Business Meet, Indianapolis, April 18-20

Indiana PGA will hold its spring business session at Lincoln hotel, Indianapolis, April 18-20. The Hoosier pros plan a business clinic at which state pros and others will treat of the problems facing pros with golf settling down after early postwar years of readjustment.

The Indiana spring meeting will start at 7 P.M., April 18 with a business meeting of the association. Sectional and national officials will address the members the morning of April 19. That afternoon authorities on phases of pro business will

speak and in the evening the annual banquet will be held. On the 19th Stan Graves, pres., Indiana Greenkeepers' Assn.; Cliff Waggoner, sec., Indiana GA, and Warren Bevington, pres., Highlands G&CC will speak. That afternoon the meeting will conclude with a teaching clinic.

## MRS. HOWARD MEHLMAN DIES

Isabel (Mrs. Howard) Mehlman, wife of Denver (Colo.) CC mgr., died Jan. 4 at Denver after three years of severe suffering from spinal cancer. She is survived by her husband and their daughter, Marilyn, 5. Mrs. Mehlman was a lovely and merry young woman, known to many club managers' families. She put up a grand brave fight against her malady. She's mourned deeply by all who knew her.

## BERMUDA GREEN

*(Continued from page 74)*

We plan on our liming program starting soon after the first of July. Our soils in this section of the south are naturally acid, due partly to the clay base of our soil. Since we cannot safely lime our rye greens, and they are natural acid makers themselves, it is necessary to get our soil neutralized to as near a ph of 7 as possible. It will average between 400 to 500 lbs. per green, per season.

We alternate on our lime program much as we do with our fertilizers, however using only a dehydrate, basic slag, or agricultural lime. We water this into our greens by hand, but seldom double back to re-water. We try to give an application of 200 lbs. per green in July, and another 200 lbs. in August, with the remaining application as needed early in September. In our liming practices we watch for hill seepages into our greens, elevated sand trap seepages and bad shoulder drainage that may be causing a sour condition on some portion of the green. A lot of trouble on your green is caused by something off it—therefore, it is well to look around and try to properly diagnose your trouble.

## Weed Problem

Another subject I would like to mention is one that gives plenty of trouble to greens in the South. Unlike bent grass, Bermuda is not dense enough to crowd out many foreign, obnoxious weeds. If we have a mild winter in Atlanta with a wet spring, we wake up to the fact early in June that we have a weed problem deluxe. Crabgrass is perhaps our worst pest and it continues to become worse every year in the south. We also have a weed known as crowfoot, that is harder to cope with. In August and September no mowing machine of any description will mow it. It seeds prolifically from June to frost. It is a "must go" if you plan to have a putting



green. Then there is the old pest dutch clover which somehow always crops up on the summer greens. We also have mole ear, water grass, sweet grass, etc.

It is my policy to be as careful as I can about the soil I use on my greens. If I find I have a contamination of any or all of the above mentioned I start to work on them individually with ammonium sulfate (if I am fortunate enough to get it). This is a sure kill for any of the weeds mentioned, and many others, if you get to work with it intelligently.

Caution must be exercised in using ammonium sulfate; usually a 30 minute burn with it, in the heat of the day, in the summer will kill at one application. When the leaves become well covered with small droplets after your application merely water the remaining ammonium sulfate in and forget about your troubles. If you wish to do some burning on a green without it becoming generally known to your members, you can do it by a spray of Auragreen, which you apply after the blades of the grass have dried out from their watering. Bermuda will go off color in the burned areas for from three to seven days but it will come back stronger than ever.

I have also done some experimenting with 2,4-D on my experimental green; later, on two of my regular greens, for crowfoot. I had to double the dosage to get rid of crowfoot on a well fertilized putting green, or using 2 tablespoons to a gallon of water. I prefer to use a regular gardener's sprinkling can for this application; the spray often damages things you don't care to damage. I have also used 2,4-D as a killer for poison ivy, poison oak, nut grass, clover, etc. Your dosages will vary. Weather, shade and moisture in the ground will be governing factors. It is always advisable to experiment off your greens. However, keep in mind that your fertilized weeds are more hardy than undernourished weeds in your rough.

#### **Insect and Worm Pests**

Another pest we have to contend with in the south is our angle worms, grubs, and last year the army worms. Our weather is too mild in the winters for us to expect anything else. You can get rid of a lot of your annoyances though with a program calling for lead arsenate. I have found that you have to use about 8 lbs. of arsenate to every 1000 sq. ft. of green if you want to discourage your worms. One such application a year will be sufficient for grubs, and often for angle worms. However, it often takes additional treatments. I like my first application in late June so that I have at least 60 days to adjudge my dosage for the next application, if it is needed.

After a heavy arsenate application it is best to keep the green well saturated with water for several days. Get the arsenate into your green if you have to spike it in. We also often treat our greens during a regular fertilizing by mixing fertilizer, arsenate, and soil—applying with a Vigoro spreader. Hand watered, once light to get the application placed, then once over fairly heavy—then with the oscillating sprinkler.

The army worm scourge hit us last summer. The Atlanta area was lousy with these caterpillars. We had too many worms to try to kill them anywhere but on our greens and tees. We had good luck by mixing 6 lbs. of lead arsenate with 50 lbs. of hydrate lime. This mixture was put on the ground with our Vigoro spreaders, covering shoulders only. Don't take these worms too lightly as they are very destructive and they hit without warning. Fortunately, they only last for about 10 days. DDT was used by some as fairway worm preventatives.

#### **Mowing Most Important**

We now come to the most important task on anyone's golf course, that of mowing the greens. You can have the best greens in your section of the country but if you don't know how to mow them you might as well not have anything. It seems rather foolish to spend as much time as we do figuring out how best to grow grass, and then fail to finish up our work.

Spend plenty of time with your mower operators and see to it that they know what you want. I have found that you have to check every green regularly and see to it that the job is being done right. Be able to operate any and all of your equipment properly. Your men will have more confidence in you if you know how to operate.

Get the best crew you can get and back your men up. We do a lot of mowing in the summer. From March, right on through the summer we mow almost daily. In March my greens begin to break through with Bermuda. I lower my blades to approximately  $\frac{1}{4}$ " where I try to keep them until they are topdressed in June. We alternate our mow each time so that we minimize grooving.

The number of times you mow depends upon the growing condition of your greens. This is where your observation comes in handy. Cut every day after the June topdressing, often it is necessary to double cut once or twice a week to keep the Bermuda with fine leaves, soft, and healthy. Bermuda will do better if kept mowed. As soon as possible after my June topdressing I get onto the greens



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with my mowers at the height I want to cut. Competition is keen in Atlanta, as I have 20 plus courses to keep abreast of. I observe my competitors regularly and know all the time what the story is.

We continue to alternate our mow, mowing every day during the summer. We alternate the daily procedure on the greens also; a different green is mowed first every morning. We try to get the greens swept for dew as early as possible in the mornings during the summer season. We usually cut without the boxes on our Bermuda until the middle of the summer. In this way we help build up our cushion. Our lime takes care of the organic rotting of our mow. Quite often in the summer, in spite of the precaution we take against it, our greens become too thick in places and too weak in others. When this condition becomes existent we get our brush attachment and get the excess nap off. If you catch these deficiencies early you will not have too much trouble correcting them, and usually you will not have to re-topdress your green. However, if for some reason you don't catch them it means that you have a top-dressing job on that particular green. A few such extra jobs will make you much more cautious about watching what is going on.

We still have hopes of some day having bent grass greens but it will be a sad day when the southern greenkeepers' old stand-by, Bermuda, is removed. We like the grass, but too many of our members think that your pastures are greener—therefore, we hope some day to have a bent that will thrive in Dixie.



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