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TIMELY TURF TOPICS

from the USGA Green Section

ONE MAN'S METHODS

Management Procedures at the Fairfax Country Club

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There are many excellent golf courses in the Washington, D. C., area. The condition of these courses gives evidence of the technical, scientific and managerial skill of the greenkeepers.

The Fairfax Country Club in Fairfax, Va., managed by William Glover, in all probability would be listed among the best public golf courses in the Mid-Atlantic area. Therefore, this report on its management practices is offered for the help it may afford other greenkeepers.

The reason for selecting Fairfax Country Club for this study are:

1. The course is relatively new, the second nine holes having been completed in June, 1947. This gives rise to management problems in the field of new construction as well as maintenance and management of the older, established areas.

2. The most modern maintenance methods are employed.

3. The course is as completely mechanized as any within the Washington area.

4. Fairfax Country Club receives a tremendous amount of play. This taxes the knowledge of the greenkeeper and his aids to the utmost and requires that maintenance be accomplished rapidly and efficiently.

5. Mr. Glover, who is manager, professional and greenkeeper, has complete responsibility for the upkeep of the course.This places the source of information with but one party.

6. As a golf-playing greenkeeper, one who shoots consistently in the high 70s, Mr. Glover has a complete understanding of course management from the player's standpoint.

7. Mr. Glover keeps abreast of the latest developments in the field of turf research and management. He subscribes to the USGA JOURNAL, GREENKEEPERS' REPORTER and GOLFDOM. He is an active member of the Mid-Atlantic Greenkeepers' Association, and in the past has served two consecutive terms as president of the association. In addition to attending the Greenkeepers' Short Course sponsored each year by the University of Maryland for the Mid-Atlantic Greenkeepers, he also attends the Penn State Short Course and the Greenkeeping Superintendents' Association National Conference held each year by greenkeepers from all over the country.

8. Last, but far from least, Mr. Glover has been extremely affable and generous in sharing his time, knowledge and facilities with the writer.

Location

Fairfax Country Club is on Route 237, one and one-half miles from the town of Fairfax, Va., and twelve and one-half miles from Washington, D. C. It encompasses a total land area of 235 acres, of which 100 acres are wooded. Sixty acres are in fairways and the remainder is made up of rough, bunkers and greens. The terrain ranges from gently rolling to steeply rolling. Some slopes on a few of the holes are greater than 30 per cent, making an extremely picturesque setting. A creek passes through the eastern side of the course, allowing an additional water hazard on four holes as well as serving as an inexpensive source of water for irrigating the greens.

The first nine-hole course was constructed by Robert Trent Jones, and the second nine-hole course was constructed by William F. Gordon. Mr. Jones and Mr. Gordon are members of the American Society of Golf Course Architects. The fact that Mr. Glover worked closely with the architects is reflected in a course which not only offers the best from the standpoint of esthetic values and player skill but also is constructed with the proper regard for ease of maintenance and turf management.

Labor Requirements

Labor problems confronting the greenkeepers are extremely important in maintaining a smoothly functioning operation. Although the operation of a golf course is not entirely a seasonal enterprise, the majority of play is confined to about nine months of the year. This naturally gives rise to the problem of acquiring sufficient well-trained personnel during the spring, summer and fall when player traffic is most intense. Mr. Glover is fortunate in having two sons who help him during the summer vacation. He also hires one other schoolboy during that period.

Seven men are employed on a fulltime basis, and there is a definite need for one more. All of these men are excellent mechanics. Mechanical skill is a necessity on a golf course that is so completely mechanized as is the Fairfax Country Club. Inasmuch as the management feels that "good pay is cheap insurance," the men are extremely well paid. It is interesting to note that during the past three years, 50 men have worked on the golf course. The present seven employees were selected from this group. In addition to top wages, employer-employee relationships are also on a high plane. The greenkeeping superintendent plays golf with his men whenever it is possible and takes them along to the various turf field days held in the area. Each man is also delegated certain authority and responsibility for machinery and other maintenance duties.

Equipment

Without a high degree of mechanization, seven men could not do the work on an 18-hole golf course. In ordinary day-to-day maintenance the only handwork necessary at the Fairfax Country Club is the raking of the bunkers, the changing the location of the cups and the watering of greens.

Three high-speed tractors carrying a combined total of 22 30-inch mowing units (17 fairway units and five blitzers) are capable of mowing the fairways and roughs in four hours. Fairways are mowed at a height of 1 inch. Roughs are mowed at a height of 2¼ inches.

The Fairfax Country Club really has grass! As a result of this, fairway mowing is done on the average of once every two and one-quarter days

Three power putting-green mowers are used on the greens. All 18 greens are mowed by three men in from three to three and one-half hours. The greens are mowed daily. The mowers are set at a height of 5/16 inch in the early spring and as the season progresses are brought down to a height of 3/16 inch.

Other equipment consists of a 1½-ton dump truck, an aerifier, a fertilizer and lime spreader, a disc seed drill, a compost shredder, a 150-gallon-capacity spray tank with 100 feet of hose, an Over-green tractor, a chain saw, a buzz saw, a single bottom plow, a 20-section disc, two sod cutters, two 2-stage cen-

trifugal pumps that are powered by automobile engines and deliver 125 gallons of water per minute, a farm tractor and miscellaneous tools such as rakes, hoes, cup-cutters, screens and shovels.

The actual year-around management and maintenance problems will be discussed in their sequence of importance.

Greens

CONSTRUCTION

After the proper size and setting had been determined by the architect and greenkeeper, thorough initial preparation was undertaken before planting.

Subsurface grade was established and tile was laid following the contour of the green. Fairfax has a subsoil that is predominately clay. Therefore, tile lines were laid 15 feet apart. Gravel was then added to level the area. Next, eight inches of a special topsoil mixture consisting of one part coarse sand, one part ground Sphagnum moss and one part composted soil by volume were added to the established grade line. This was thoroughly mixed by the use of a rototiller and disc on the green site. Twenty pounds of lead arsenate to 1,000 square feet, agricultural ground limestone at the rate of two tons to the acre and 20 per cent superphosphate at the rate of 1,000 pounds to the acre were incorporated into the soil mixture.

Today Mr. Glover feels that it would pay to mix the above mentioned materials off the green site. Although this procedure would be more costly initially, the subsequent reduction in maintenance costs would more than offset the cost of such operation. The trouble lies in getting a thorough mixture of materials while the materials are on the green site. Thorough mixing is of extreme importance in preventing layering. A layer of any soil fraction, whether it is sand, clay or humus, will prevent moisture and air movement and root penetration.

After mixing, the soil was compacted by continual tramping. This is known as the "heel method", and in the absence of a 1,500 pound-"sheep's foot roller" it is as good as any method now used. Natural settling would be best, but too much time is required for the utilization of nature's methods.

Following artificial compaction, vegetative planting was accomplished by the use of a mixture of Arlington (C-1), Congressional (C-19) and Collins (C-27) bentgrass stolons. The stolons were scattered over the prepared site at the rate of 8 bushels to 1,000 square feet. Mr. Glover used and favors uncut stolons for this type of planting because cut stolons are hard to cover. Also, uncut stolons have their root systems partly intact, thus giving a much faster "take" with less mortality.

The stolons were then hand-covered with the previously mentioned soil mixture. Although this "bucket method" is slower and requires more time later in

COMING EVENTS

Aug. 30—Turf Field Day. Rutgers University, New Brunswick, N. J. Ralph E. Engel.

Sept. 7-8—Turf Field Day for Greenkeepers, Rhode Island State College, Kingston. J. A. DeFrance.

Sept. 9—Lawn Turf Field Day, Rhode Island.

Sept. 26-27—Turf Field Day and Golf Tournament, Pennsylvania State College, State College, Pa. H. B. Musser.

Oct. 19—National Turf Field Day, Beltsville Turf Gardens, Plant Industry Station, Beltsville, Md., on U. S. 1, three miles north of College Park. Fred V. Grau.

Oct. 24-28—American Society of Agronomy Annual Meeting, Milwaukee, Wisconsin. L. G. Monthey, 2702 Monroe Street, Madison 5, Wisconsin.

1950

Feb. 27-Mar. 2—Nineteenth Annual Turf Conference. Pennsylvania State College, State College, Pa. H. B. Musser.

Mar. 6-8—Midwest Regional Turf Conference, Purdue University, West Lafayette, Ind. G. O. Mott.

leveling the putting surface than would topdressing, Mr. Glover feels the extra time is worth-while—again because the mortality rate is lower and the catch is quicker.

Immediately after planting, the greens were watered thoroughly. Newly stolonized greens should never be allowed to dry out.

The greens were stolonized on September 1, 1946, and with an intensive program of fertilization, topdressing and watering, they were in condition for play by the following June.

MAINTENANCE

Aerification

Of all the problems that confront a greenkeeper, compaction is one of the worst. The enormous amount of traffic in a limited area creates a compacted condition which virtually excludes oxygen from the soil unless corrective measures are applied.

The aerifier is used at Fairfax Country Club in both the spring and the fall. To quote Mr. Glover, "Fairfax was open for play every day this past winter. Had it not been for the aerifier, the course would have been closed on several occasions."

Aerifying was completed this year on May 1. Soil cores are removed and composted. Fertilizing and watering immediately follow the aerifying operation, and after a short lapse of time just enough topdressing is added to level the putting surface. The looser and more open the aerifier holes can be kept, the better will be the results. The ½-inch spoons are used on the greens at Fairfax, and the 1-inch spoons are used on fairways and tees.

Fertilization

Mr. Glover follows an intensive fertilization program on his greens. He delays fertilizing until late in the spring (this year April 8), but from then until July 1 he applies a total of 4 or 5 pounds of actual nitrogen to 1,000 square feet. The same amount of actual nitrogen is also applied over an equal period of time in the fall, starting with the advent of cooler weather. The fertilizer mixture used consists of inorganic 6-10-4, with organic Agrinite added to bring the analysis up to a 7-5-2. The addition of an organic fertilizer supplies many trace elements that would otherwise be lacking in a straight program of inorganic fertilization.

As previously mentioned, all the greens at Fairfax are planted vegetatively from bentgrass strains developed by the USGA Green Section. Mr. Glover believes that these superior strains may require more fertilizer than do seeded greens. This is especially true with the Arlington (C-1) strain of creeping bentgrass.

Sulfate of ammonia is also used to a limited extent and in small quantites (½ pound of actual nitrogen to 1,000 square feet) to stimulate growth following an attack of a fungus disease.

Raking

Raking of greens is another of the many vital jobs that must be done on several occasions during the year. It is also a job that confuses the layman to the utmost, because raking is done at Fairfax (and should be done) when the green is growing vigorously and looks its best.

The greens are thoroughly raked at Fairfax on five different occasions during the spring and raked again five or more times in the fall. The direction is reversed with each subsequent raking. It is felt that the following benefits are derived from raking: (1) Destruction of stolon mat; this mat prevents air and water movement into the soil and harbors fungus organism. (2) Coarse stolons are kept cut off; graininess is eliminated, thus making a smooth putting surface.

Disease Control

This section can be conveniently divided into two subheadings which will permit discussion of spray-management procedures used in controlling the two most serious diseases (brownpatch and dollarspot) found in the Washington area.

Before discussing these disease-control practices it might be well to mention that proper attention to green construction, fertilizing, aerifying, raking, watering and selection of bentgrass stolons is as important as, or perhaps more important than, the actual preventive spray measures that are employed.

In this area the main damage from dollarspot is confined to the spring and fall of the year. Usually by the end of May dollarspot damage has lost its severity. However, it is again in evidence during the middle of September and lasts until cold weather sets in.

Treatments usually are started sometime in April, the exact date depending on the weather. The first treatment applied is a double dose of Crag 531, a cadium fungicide. The fungicide is mixed in the 150-gallon spray tank at the rate of 1 pound of fungicide to 25 gallons of water. It is applied as a fog that covers a 12-to-15-foot width. It is applied from a straight nozzle and is delivered under a pressure of 250 to 300 pounds. Two men control the operation while walking backward over the green. One man handles the hose; the other controls the nozzle. By this method two men can spray 18 greens in four hours.

Unless trouble occurs, the greens are not sprayed again until a three-week period has elapsed. At this time a single dose (3 ounces to 1,000 square feet) is applied and usually carries the green through the spring dollarspot season.

Around the middle of September, a double dose is again applied for fall disease control; again, depending upon the weather, one or more subsequent, single-dose treatments will be applied at approximately a three-weeks interval.

Brownpatch is most severe during the hot, humid summer months. Treatments for brownpatch control are usually begun at Fairfax Country Club about the middle of May. At this time the danger from dollarspot infection still exists and Calo-clor is applied for dual protection. This is an excellent practice when the weather isn't hot enough to cause discoloration from use of the mercury compound. Mercury is an excellent fungicide for providing dual control, so long as a high nitrogen level is maintained. This application of Calo-clor usually gives control through the dollarspot season, or up until June 1. Calo-clor is applied at the rate of 2 ounces to 1,000 square feet.

During the remainder of the summer a regular weekly spray treatment of Tersan (tetramethyl thiuramdisulfide) is followed. In a dry season 2 ounces of Tersan to 1,000 square feet are ample; otherwise the 3-ounce rate is applied.

In laying out a spray program a strict schedule cannot be adhered to. Unforseen troubles often arise that require additional spray treatments. For example, a heavy thundershower on the evening following application would to a great extent nullify control. From this statement it is obvious that the longer the spray remains on the grass leaves, the more lasting will be the control.

Watering

A good inexpensive source of water is a prime requisite on a golf course. Fairfax Country Club, with its storage dams and centrifugal pumps, has such a source that will deliver up to 125 gallons of water a minute.

At Fairfax the greens and approaches are watered early in the morning. There the two main reasons for this practice: (1) Watering at this time removes dew and fungus mycelium from the grass blades; fungi require a moist medium for growth, therefore danger of infection is most pronounced at this time. (2) Watering is fast and unhampered by the play of golfers.

Fairways

CONSTRUCTION

With the exception of fairway No. 8 and part of fairway No. 6 that were formerly in pasture, all fairways were newly constructed.

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Cargill, Inc., Seed Division, Minneapolis, Minn.
Link's Nursery, Inc., Clayton, Mo.
Mock Seed Company, Pittsburgh, Pa.

Stumps were removed, the ground was leveled to specifications and then fallowed for 10 weeks. After fallowing, 3 tons of ground limestone and 1,000 pounds of 20 per cent superphosphate were applied to the acre by spreading with a fertilizer spreader. This mixture was disced in with an orchard disc. The fairways were then "toothed combed" to remove roots that had been dug up by the discing operation. The areas were then disc-harrowed lightly in preparation for seeding. The seed mixture contained 10 per cent creeping red fescue, 35 per cent Chewings fescue, 40 per cent Kentucky bluegrass, 10 per cent domestic ryegrass, and 5 per cent Astoria Colonial bentgrass. Seed was applied at 125 pounds to the acre, using the fertilizer spreader. Fairways were then raked lightly with a spike-tooth harrow, dragged and cultipacked on the contour. Five hundred pounds of a 6-10-4 inorganic fertilizer to the acre was also applied just prior to seeding. The fairways were seeded between September 10 and 20 and were ready for play the following June.

MAINTENANCE

The fairways have been fertilized every fall since their construction with a 6-10-4 inorganic fertilizer applied at the rate of 1,000 pounds to the acre. Clover was a problem the first two years following construction. Continuous high nitrogen fertilization has corrected this problem.

Aerification has been necessary on the fairways having high degree of slope. The aerifier admirably has served its intended use on these slopes by establishing myriads of small pockets that trap water and prevent the fertilizer applications from washing down to the bottom of the hills.

The fairways are not irrigated, yet the turf is vigorous and well knit, and weeds are practically nonexistent. Weeds are no problem at Fairfax Country Club, because desirable grass species extend their root systems to a depth of from 10 to 12 inches and are growing so vigorously that it is impossible for weeds to invade them. Chemical weed control has not been used, and it is felt that such methods are completely unnecessary when regular mowing and adequate fertilization is practiced on adapted grasses. Chemical weed control at best is a temporary measure unless it is followed by intelligent management, and it is far from being the panacea that some people think it is.

Tees

Golf tees are the only problem areas that now exist at the Fairfax Country Club. The problem originated in their construction; the cost of building a golf course is such that where limited funds are available corners must be cut at some point along the line. However, the tees are gradually rounding into shape. Mr. Glover feels that his tees of the future will be combination tees of warm-season and cool-season grasses. He is working toward that objective at the present time. The southern grasses will have the growth and vigor necessary to repair intensive wear and damage brought about by summer play, while the cool-season bent and bluegrasses will accomplish the same purpose during the fall, winter and spring when they are growing most vigorously

Bunkers

From the standpoint of the relative area involved, bunkers are the most expensive maintenance problem on the course. One man at the Fairfax Country Club does nothing but work on bunkers. The bunkers must be hand-weeded (chemical control is not favored, because it is felt that chemicals strong enough to control weeds would burn the greens since explosion shots scatter sand over the green), hand-edged, hand-trimmed and mowed. Raking should be done every day, and at the Fairfax Country Club an average of 50 tons of sand must be replaced each year.

The Fairfax Country Club has only 41 bunkers. Many golf courses have anywhere from 100 to 200. The time, effort and cost of maintaining such areas is beyond comprehension.