

Postwar Fairway Maintenance

By O. J. NOER

SINCE Pearl Harbor retrenchment has been the watchword for turf maintenance on golf courses. Governmental restrictions in machinery and repairs, in supplies and labor became terrific handicaps. They were accepted willingly, and observed scrupulously, despite full knowledge of the post-war task of rehabilitation.

Restrictions on the use of mercury have been lifted, some potash as such is now available for direct application. On V-E Day most other restrictions will be lifted, and then the trek toward normalcy will begin. With the prospect of V-E Day arriving before the next golf season starts, keen interest in the resumption of normal maintenance is in the air everywhere.

The problem is a simple one at clubs where the turf survived with little or no deterioration. Fulfillment involves recruiting a competent labor crew, replacing worn equipment, and renewing depleted stocks of fertilizer, fungicide, and miscellaneous supplies.

In other instances the task is more complex because fairway turf suffered more or less badly. Some clubs stopped watering altogether as an economy measure, due to an acute labor shortage, or because local restrictions prohibited the use of water for fairway sprinkling due to the heavy demand of nearby war industries. Fairways were reasonably good during 1943. There was enough residual fertility in the soil, rains were timely and well distributed throughout the growing season. This year was different, especially along the Atlantic Seaboard. Midsummer drought, excessive heat, and chinch bugs played havoc with bent grass, and poa annua. Knotweed and clover have taken possession on the courses where watering stopped abruptly. In such cases heroic treatment will be needed to restore good turf. Fairway degeneration occurred also on many courses which were never watered, as evidenced by more clover, plantain, dandelion, and knotweed.

The search for a solution has already started, which is quite proper. Instead of groping blindly, somebody should be appointed to devise a plan. The Greens Committee, a special one, or a competent official should be designated. Besides devising a plan, they should supervise its execution until the project is finished.

Continuity is essential to success. Every possible method should be explored and outside suggestions sought if need be. The draft of the final plan should be approved

by the directors and funds provided to complete the task, bearing in mind the fact that several years may elapse before satisfactory turf is obtained.

The practice of changing committees with each incoming administration may be all right in other departments, but not for grounds maintenance. Many an otherwise good program has failed for no other reason. About the time a new greens committee begins to function and fathom the problems of turf upkeep, they are replaced. This practice should stop. When clubs amend by-laws, or make other provision to keep the greens chairman and most of the committee in office for not less than three years, the problem of fairway improvement will be simplified.

After the program is approved, but before work starts, the committee in charge should prepare a concise statement and provide each member with a copy. It should set forth the objective, state how it will be attained, and tell members what they can expect during progress of the project and after it is completed.

The problem of fairway renovation seems perplexing. Some clubs made a start this fall, and many others intend to begin in 1945. In the meantime the search for a satisfactory solution is underway. Basically the problem is one of fertilization, with or without reseeding and chemical weed control.

Nitrogen is the foundation upon which the fertilizer program must be built. Full effects from its use are obtained only when every other factor affecting growth is favorable, and possible need for other plant food elements has been satisfied. There are no dependable chemical methods for determining soil deficiencies in nitrogen on grasslands. Need for it can be judged by the behavior of the grass. Thin turf, poor color, slow rate of growth and the presence of clover and weeds are the surest signs.

Unlike nitrogen, need for lime, phosphate and potash is not easily judged by inspection of the turf. There are suspicious signs, but it is better to confirm suspicions by having representative soil samples tested for reaction and content of available phosphorus and potash. On soils requiring lime, a determination of available calcium and magnesium is helpful to decide whether a dolomitic limestone containing magnesium should be used to correct acidity. Soil tests should be made this fall before the fertilizer program is formulated.

Unless soil samples are collected care-

fully, results of quick tests may be misleading. On cropped land it is customary to take samples to the plow layer depth. Soil in that zone is mixed constantly by plowing and cultivation. The soil is never disturbed on fairways. Lime, phosphate, and potash accumulate near the surface. Penetration beyond the second inch occurs slowly. Consequently, samples drawn to a depth of four inches or more invariably show lower content of plant food than those taken from the first two inches. Deep sampling tends to obscure past practice with respect to lime, phosphate, and potash, so each plug should be taken to an exact depth of 2 inches. They should be uniform in diameter throughout their entire length. The sample from each fairway or area sampled should be a composite made up of 8 to 10 plugs. Each composite should be put in a clean, new paper sack. The one-half or one pound size, obtainable at any grocery store, is satisfactory. The name of the club, number of the fairway, and any other identifying description should be written on the outside of the bag with a soft lead pencil. Samples should be dried without the aid of artificial heat and then sent to the soil testing laboratory.

Soil reaction is now expressed in terms of pH. By this method the figure 7 represents a neutral soil. Lower ones denote increasing acidity, and higher ones increasing alkalinity. Probable need for lime is indicated when reaction is below pH 6.0, especially if Kentucky blue grass predominates.

If lime is required, it should be applied this fall, so winter frosts and the moisture from melting snow will speed penetration. The rate of application should be 1 to 2 tons per acre. The heavier rate should be used on strongly acid soil, and the lighter one on those that are medium to slightly acid. When soil content of available magnesium is low, a finely ground dolomite containing 20 percent or more of magnesium reported as the oxide should be used.

Possible need for phosphate and potash should be considered next. Potash is least important, and seldom required, with the possible exception of peat and poor sandy soil. Kentucky blue grass thrives best in a soil which is well supplied with phosphate and lime. Where this is the principal grass, phosphate may be sorely needed. A soil test is the best way to judge need for it, provided a dependable method is used and that the sample is drawn in the manner suggested above. The initial application of phosphate should be generous when available phosphorous is low (50 pounds per acre or less by the Truog Method). The rate should correspond to 400-500 pounds per acre of 20 percent grade superphosphate. Should mixed

fertilizer be used instead, it should contain two to three times more phosphoric acid than nitrogen, and little or no potash. Subsequently, a fertilizer containing one-third to one-half as much phosphoric acid as nitrogen should be used. When the soil test for available phosphorus is medium or more (75-100 pounds by the Truog Method), a fertilizer containing twice as much nitrogen as phosphoric acid can be used right from the start.

After eliminating lime, phosphate, and potash, improvement becomes a matter of providing nitrogen. The quantity to apply depends upon turf density. In the days when manure was used, applications of 10 to 20 tons per acre were not uncommon. Since good quality manure contains about 10 pounds nitrogen per ton, these quantities furnished 100 and 200 pounds nitrogen per acre respectively. It is hardly reasonable to expect comparable results with 500 pounds per acre of a fertilizer containing 4 to 6 percent, or only 20 to 30 pounds nitrogen per acre. From two to four times this amount is usually needed. It is difficult to apply chemical fertilizer at rates exceeding 200 to 400 pounds per acre without discoloring the grass. Vegetable meals and other natural organics with low content of soluble nitrogen are safe to use even at heavy rates. Common practice is to use both kinds. In the belt from New York across through Chicago, and farther north, spring and fall fertilization with nitrogen is desirable. Another application in June may be advantageous on watered fairways. Farther south in the crab grass region, major nitrogen feeding should be in the fall.

Generous fertilization should continue until turf of desired density is obtained. Then rates can be reduced somewhat. Once good turf is obtained, it is easier to keep fairways that way by fertilizing every year, rather than go through the throes of periodic renovation.

Turf on many fairways was severely injured by grubs of the May and June beetle during 1944. Affected areas should be grub-proofed with lead arsenate before turf improvement is attempted.

Re-seeding is not necessary on fairways where existing grass is thin but uniformly distributed, provided it consists of species adapted to local soil and climate. On courses which have never been watered, re-seeding should be confined to bare spots and larger areas devoid of grass. Early fall is the best time to re-seed. If there are only a few bare spots, they can be seeded lightly with a cyclone seeder in late winter or early spring, when the ground is honey-combed from frost action. The method is feasible in the cooler parts of the North, especially if water is available for sprinkling.

Fairways on some of the watered

courses have very little grass. Clover, chickweed, knotweed, and poa annua predominate. It is useless to re-seed without first eliminating the clover and weeds. They can be killed with sodium arsenite or arsenic acid and then re-seeding can follow without stopping play. This is a drastic procedure, but it is the only one aside from plowing which will produce turf on some courses. Treatments should start in July or August and seeding should follow during early fall.

Local conditions govern choice of seed and rate of seeding. It is impossible to make specific recommendations which have general application. As a rule, Kentucky blue grass is the most dependable grass for fairways. It can be used on watered and unwatered courses. Success with it depends upon providing enough fertility, especially phosphate and lime, and not to cut too close. Fescue will not survive on heavily watered fairways anywhere, and is not dependable in the region below Philadelphia and Chicago. Farther north it may prove better than blue grass on sandy soil and on dry hillsides. By using both grasses in the mixture, the one best suited will predominate and is most likely to survive. When used in a mixture, the percentage by weight for fescue should be 40 to 50, and the rate of seeding should be increased somewhat because individual seeds are large.

On watered fairways it is customary to include some colonial bent in the mixture. The amount seldom exceeds 10 percent. The balance may be all Kentucky blue grass.

Fairway watering is still a subject for debate. Each side has its ardent supporters. Overwatering, extreme close cutting, and failure to follow an adequate fertilizer program has ruined many fairways. On the other hand, there are exceptionally fine fairways on some of the watered courses. They have watered judiciously, cut wisely, and fertilized consistently.

Some clubs have decided to discontinue watering altogether. The decision is not necessarily wise. They should ban overwatering. Instead of stopping altogether, clubs should water sensibly and not permit grass to suffer badly during periods of severe and prolonged drought.

Bent grasses predominate on some watered courses. If watering is stopped abruptly, most of the bent will disappear as sure as night follows day, and then clover and weeds will take over. Mention has been made of chinch bug damage in the East. Injury was more severe on unwatered than on watered fairways. Chinch bugs do not like moisture. That and close cutting are reasons why they are less troublesome on greens than on the adjacent aprons.

A club in Cleveland and another in New York had identical unique experiences this summer. Both were unable to obtain a night waterman. Instead of watering in daytime, fairway sprinklers were allowed to run all night in the same spot. Fairways got water every second or third week, instead of twice every week. The proportion of good blue grass increased and crab grass was less prevalent. Both greenkeepers remarked that it took a war to teach something they would never have learned otherwise. The scheme seems sensible, provided turf is mostly blue grass, or a mixture of blue grass and colonial bent. Where poa annua and creeping bent predominate, it will fail from the golfers' viewpoint. Poa annua will die during mid-summer and clover increase. Such fairways must have water constantly. The other alternative is to curb clover and weeds with sodium arsenite or arsenic acid, re-seed and then revise watering practices.

Those contemplating the installation of a fairway watering system should recognize its disadvantages as well as its obvious advantages. Watering complicates rather than simplifies maintenance. As stated above, overwatering and close cutting ruins rather than improves turf. Fertilizer must be used regularly and more generously than on unwatered fairways. More frequent mowing is another added expense. Unless the members are willing and able to bear these additional costs, the project should be abandoned.

If the decision is to install an irrigation system, water should be used judiciously. The aim should be to preserve the good grasses, rather than have turf a vivid green color and fairways very soft underfoot. When used that way, water can be an asset rather than a liability, which has been the experience in altogether too many instances. The pressure from members to overwater has been irresistible.

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