

HOW TO IMPROVE POSTWAR TURF MAINTENANCE

By O. J. NOER

FAIRWAYS—This is the second of two installments, the first of which, devoted to "Greens", appeared in the previous issue.

TEEES on most golf courses received scant attention during wartime because of the labor shortage. Very little was done aside from keeping them mowed. Improvement of tee turf is a postwar problem confronting many clubs. Spring is not the time for major renovation or rebuilding unless there is a nursery of good turf suitable for re-sodding. The task is best done in late summer or early fall, but the plan of procedure should be formulated now before the pressure of outside work starts.

The playing area on the tees at some clubs is wholly inadequate for the amount of play. A few tees are so small that it is impossible to keep turf of any kind on them. Grass can never recover when there is constant play from the same spot. On others, the lapse of time between moves of the tee plates is too short to permit full recovery of the turf, especially where there has been a marked increase in the amount of play. Infestation with clover, knotweed or crab grass is sure to follow. In either case a satisfactory turf cannot be maintained until the tees are made sufficiently large to support the amount of play. It is better to err on the side of making them a trifle too big, rather than too small. By building the tees so they can be cut with fairway units, the added cost of mowing is slight as compared with the expense of constantly re-sodding tees that are too small, or of fighting weeds and then seeding.

Tee Bank Construction

Banks along the sides of built-up tees are generally steep. This necessitates cutting the grass with hand mowers or with scythes. More frequent and heavier watering is required during hot weather, because of the added evaporation along the face of the slopes. There is no excuse for unsightly abrupt banks or slightly elevated tees. A gradual slope blends the tee into the landscape, and the grass on it can be cut quickly with a tractor-drawn 3- or 5-gang fairway mower. Occasionally the site chosen is

a spectacular one to provide an unusual vista, and may necessitate rather steep slopes on several sides of the tee. Sheep fescue is the best grass to use on these slopes. It thrives in poor soil, survives summer drought, prevents soil erosion, and seldom requires cutting.

Tees are often built in wooded spots, or are surrounded by trees with little or no clearing in between. Trees are always farther away from greens similarly located. Excessive shade is commonly blamed for different turf growth. Shade may be a contributing factor, but tree roots directly underneath the turf may be the real cause. In either instance poa annua is apt to predominate without any, or very little, permanent grass such as blue grass or bent. Turf is usually good in spring and fall when poa annua is at its best. The bad effect of tree roots can be corrected by digging a trench around the sides and back of the tee, as suggested for greens in the Fall, 1945 GOLFDOM. Enough trees should be removed from heavily wooded areas to admit sunlight to the turf for a portion of the day, the opposition of tree lovers notwithstanding. Where it is a choice of trees or grass, the trees taken out will never be missed.

Resume Lead Arsenate Use

Little or no lead arsenate was applied during the war years. As a consequence, worm casts have started to become objectionable and there have been a few instances of grub damage. The use of lead arsenate should be resumed to eliminate worm casts and control grubs. Applications can be made any time between now and early spring at 5 to 10 pounds per 1,000 square feet. The larger amount should be approached where lead has not been used for several years or more. The treatments should extend 3 to 4 feet out beyond the teeing area to produce a poisoned barrier which will stop worms or grubs from entering the tee proper. Some arsenic should be used every year to keep worms and grubs under control.

The use of lime is justified on tees if the soil is moderate to strongly acid; that

is if the soil is more acid than pH 5.5 to 6.0. Soils needing lime should be tested for available magnesium and a finely ground dolomite containing 20 to 30 percent magnesium reported as the oxide, should be used if soil supply of this element is low. The rate for applying ground limestone should be 25 to 75 pounds per 1,000 square feet, depending upon the degree of acidity. The full rate is justified on strongly acid soil. Lime can be applied at any time, but preferably before growth starts in the spring.

The tendency is to under-fertilize rather than over-fertilize tees. Nitrogen is the element most needed, phosphorus ranks second, and potash comes last. Phosphorus and potash are less important than nitrogen partly because clippings are not removed. The mineral elements in them become available to grass during the process of decay.

The importance of generous feeding has been demonstrated very strikingly by several greenkeepers in Cleveland and elsewhere. They use 2 to 3 pounds of nitrogen to 1,000 square feet every 4 to 5 weeks, except in July and August. These rates are safe for natural organic fertilizers of low solubility, and may be safe for mixed fertilizers when applied in early spring before growth starts. After that the rate at any one time for soluble fertilizer must be reduced to amounts which supply three-fourths to one pound of nitrogen per 1,000 square feet or less.

Fertilize, Top-dress All Tees

All tees should be fertilized and top-dressed this spring. Some of them may need seed in addition. When a soluble fertilizer is used, the tees that require seeding should be fertilized a week or 10 days before seeding. This precaution is advisable to prevent the possibility of retarding or inhibiting seed germination.

Spiking or severe raking immediately before seeding is important to prepare a seed bed. The job can be done quickly and thoroughly with a tractor drawn 3-gang spiker, such as the one illustrated. A light rolling after seeding and top-dressing is important to compact the surface. Then the seed will make contact with the soil and absorb the moisture needed to start growth.

The first application of fertilizer in the spring of 1946 should provide ample nitrogen. The amount of phosphoric acid used should be governed by a dependable soil test. Heavier rates are justified if the soil supply of available phosphorus is low, or if seeding is contemplated. Potash is not important unless the soil is sandy. Natural organics, such as cottonseed meal or Milorganite, should be applied at 40 to 50 pounds per 1,000 square feet, and when additional phos-

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phoric acid is needed, the rate for 20 percent grade superphosphate should be 10 to 15 pounds. The two materials can be mixed and applied together. When commercially mixed fertilizer is used, an analysis such as 10-6-4 or 10-8-6 is a good one for soils of moderate to high phosphorus content, but where phosphorus is low, or where seed is to be used, 6-12-4, 4-12-4, 5-10-5, etc., along with extra nitrogen is better. Mixed fertilizers are rarely used at rates exceeding 15 to 25 pounds per 1,000 square feet at any one time. They should be applied only when the grass is dry, and should be watered-in immediately to reduce the possibility of burning, which is caused by the soluble salts in the fertilizer.

Spring Seeding Tips

Spring is not a good time to seed permanent turf forming grasses, such as Kentucky blue grass and fescue, because it takes several weeks for the seed to germinate, and seeding growth is slow also. Late summer and early fall are the preferred times to seed them. Temporary grasses such as domestic or perennial rye grass, and red top, are the best ones for spring use. They germinate quickly and grow fast, but seldom persist beyond part of a season. Rye grass seed is large, so the seeding rate is usually heavy. Some greenkeepers use 15 to 25 pounds, or more, per 1,000 square feet. On the other hand, red top seed is very small, so several pounds of seed per 1,000 square feet is ample. Bent grass seed germinates in about the same time as red top and is a permanent grass that can be seeded in the spring with reasonable assurance of success. A colonial bent, such as Astoria or Highland should be used. Seeding in the spring should be confined to areas which are bare, or where the grass is exceedingly sparse. Fertilizer alone will do more good than seed, when permanent grasses are thin but coverage is uniform. Several applications at rates specified above, and spaced four to six weeks apart, will be needed.

Golfers desire firm surfaces on tees, so the top dressing should contain less organic matter than is used in the mixture for greens. The soil should be a loam, rather than a sandy loam, with not to exceed 10 percent by volume of organic matter. Such a soil will give a firm surface, and has a larger water-holding capacity than a sandy loam. A generous top-dressing in the spring should be enough to keep surfaces smooth and level.

Until recent years weed and clover infested tees were renovated the hard way. Sod was stripped from the tee, a seed bed prepared by spading or plowing, and then the tee was seeded. It was out of play from July until late Spring of the following year. Sometimes half the tee was renovated one season, and the other half the next year. Players were inconvenienced for the greater part of two seasons.

Tee Weed Control

Thanks to developments in chemical weed control, renovation can be accomplished without serious interruption of play. Farnham in Philadelphia, Kress in Milwaukee, and others have pioneered in this field, and deserve credit for devising a workable method. Sodium arsenite was used by them, and was applied dry because this method is less drastic on grass, especially in hot weather, than the spray method of application. Arsenic acid produces similar effects, but must be applied as a liquid spray. The arsenicals kill crab grass, are very drastic on poa annua, and will eliminate buckhorn, plantain, and dandelion, but at least three or four treatments are needed for dandelion. Both arsenicals prevent worm casts and help curb grubs.

The tees were treated with sodium arsenite three times, beginning in July or August, with an interval of two to three weeks between applications. The rate was 4 to 5 pounds per 1,000 square feet. It was safe for the dry method because there was enough moisture in the surface 5 to

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6 inches of soil to support plant growth. The grass turned brown, but recovered soon. The tees were spiked or disced just before the final treatment, fertilized with nitrogen and plenty of phosphate, seeded, and rolled.

The new weed-killer called 2,4-D has given a good account of itself, especially in killing dandelion, plantain and buckhorn. It does not affect crab grass or poa annua. Poa will smother most of the newly planted blue grass, fescue or bent seedlings unless something is done to retard its growth while the young grass is becoming established. Clover is checked but seldom killed completely by 2,4-D. Some of the bent grasses do not seem to tolerate 2,4-D too well.

In the future, 2,4-D alone may be satisfactory to kill weeds in the tee renovation program, provided crab grass, poa annua or clover are not bad. Then one spraying will suffice. But these instances are rare. Most of the tees which are poor have much clover, poa annua, and plenty of crab grass especially in the region from Philadelphia across to Kansas City. It is in this section that tees are a pressing problem. Then if dandelion are present in addition to the weeds previously mentioned, a spraying with 2,4-D followed by several treatments of sodium arsenite to kill crab grass and retard poa annua will be more effective.

Choice of Tee Grass

The choice of grass for tees is a much debated question. Each grass has its ardent champions. Fescue is ideal from the golfer's viewpoint. Leaf blades are stiff and wiry so the ball sets up, provided there is a good stand of turf. But fescue grows and spreads so slowly that it never recovers quickly from the effects of heavy play. It cannot withstand the competition of the more aggressive Kentucky blue and bent grasses when conditions are favorable for their growth.

Kentucky blue grass is a good grass for cool sections of the North, except for the fact that it is susceptible to leaf

spot and cannot withstand close cutting at less than 1 to 1 1/4 inches. Furthermore, it does not make a tight turf capable of resisting crab grass which is a curse and the reason for poor tees in many places.

The bent grasses make a dense turf which can resist the invasion of clover and weeds. Bent tees have been the only ones able to combat crab grass in the districts where it is bad. Yet bent is not popular, especially if the grass is of the creeping type. Failure to keep the turf tight by close cutting is the reason for player criticism. Unless it is kept tight, the creeping bents develop a cushion-like mat with almost no roots. Then the tee is not firm underfoot, golfers are unable to play a clean shot, and complain about grass between the ball and club head. Scars in the turf are long and slow to heal, due to the sparsity of roots. Routine treatments with fungicide are necessary to prevent brown patch in the area where this disease is rampant in hot weather.

Until a better grass is developed for tees, Kentucky blue grass and the bent grasses are the best bets. A combination of Kentucky blue grass and colonial bent is most dependable for the region north of the heavy crab grass belt. Not more than 5 to 15 percent of bent seed is needed in the mixture, and all the balance can be blue grass.

The rate of seeding on new tees should be 5 to 7 pounds per 1,000 square feet, and slightly less for re-seeding after using chemicals for weed and clover control. Stolen plantings of creeping bents, such as Washington, C-15, etc., can be used provided the turf is cut close and kept tight.

Dollar spot will not be a serious problem if the turf is fed properly, and brown patch will not be troublesome on these strains. In the crab grass belt, bent grass is still the best bet, despite the necessity for disease treatments and close cutting. With other grasses the

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tees will be crab grass in hot weather, and bare ground in fall and spring until the new crab grass takes possession again. Better strains of bent, which will outperform the ones now available, will be developed. Up to now selections have been made for use on greens rather than on tees. The C-1 strain has excellent qualities from the playing and from the disease standpoint, but is a slow grower and may not repair itself quickly under heavy play. A mixture of C-1 and C-19 has possibilities and is worthy of trial in a small way at first.

Zoysia Matrella Promising

There are some excellent tees of zoysia matrella on the city courses at Louisville, Ky., and Aubudon CC in the same city has 15 tees of the same grass. The turf is tight, excellent for play and remarkably free of crab grass, clover, weeds and turf diseases. Zoysia does not require frequent close cutting to keep the turf tight. This grass may be the answer for tees in regions where it does not winter-kill. Unfortunately, seed is not obtainable, so vegetative planting must be employed to develop turf. The clubs in Louisville grow the turf in a nursery and transfer it to the tee, because the time required to develop turf from direct planting in the tee is too long. Clubs in similar climatic regions would do well to obtain planting stock for a small nursery.

PENN MOWER PLANT MOVED.—

Pennsylvania Lawn Mower Works, acquired by the American Chain & Cable Co. in 1944 is to have its mowers made in the plant at 1575 S. 6th St., Camden, N. J., which American recently acquired. Production in the modern 3-story concrete building will be started this month. All correspondence for the Pennsylvania Lawn Mower division should be addressed to the Camden plant.



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