

Maintenance Practices of 1932

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IN THE years immediately preceding 1932, turf excellence was stressed without close attention to cost. In this respect, clubs did not differ from the average individual or business establishment, but last spring, faced with the certain prospect of reduced income, clubs endeavored to adjust expenses in keeping with probable revenue. Some clubs in smaller cities reduced the course to nine holes, and a few of the larger clubs with several courses, restricted play to one 18-hole course. The actual saving was not proportional to the reduction in playing area, because some semblance of maintenance was necessary on the abandoned holes to permit resumption of play with the return of better times.

Most clubs met the necessity for economy by a general reduction in maintenance expense. Exact figures are not available, but in most districts the reductions were nominal in keeping with lower material costs and slightly lowered wages. Increased labor efficiency enabled some greenkeepers to dispense with a portion of the former maintenance crew. Greens and fairways received major attention, and where labor shortage compelled partial neglect, this was rightly confined to areas of lesser importance.

FORCING SUICIDAL CUTS IS DISASTROUS

IN A very few instances, new officers intent upon making a favorable financial showing during their term, attempted to force suicidal cuts in the maintenance budget over the vigorous protest of their thinking chairman and greenkeeper. If permitted and allowed to continue, the very existence of the club as a golfing establishment is endangered. Clubs which are faced with the necessity of curtailing expenses should consider carefully before reducing maintenance expenses below the absolute minimum



required to maintain acceptable and playable turf. Such procedure is false economy, because the supposed savings will be more than offset by the future cost of turf renovation. After all, golf is the plea for the club's existence and the better players will not continue financial support unless greens and fairways are reasonably good.

The present financial plight of many supposed golf clubs is chargeable to lavish club houses with attendant high taxes, large interest charges, and huge operating costs. These clubs are faced with one of two alternatives. They can neglect the golf course, or dispense with superfluous club house activities. To jeopardize support of the playing members is most certainly fatal to the clubs' continued existence.

The safer procedure is to eliminate all non-profitable social functions, and reduce club house activities to bare necessities. This is not a plea for carte blanc extravagance on the part of Green committees and greenkeepers. It is their clear duty to cooperate by providing and following a carefully considered, economical budget which will provide good turf at reasonable cost.

Greenkeeping embraces two major activities, labor management and turf culture. The labor payroll is the largest single item of expense on the golf course. The methods of turf culture employed largely determine turf excellence. Some practices reduce, and others needlessly increase maintenance costs. Each year old methods are modified and new ones introduced. Some stand the test of time, while others are found wanting, yet clubs waste money needlessly each year by wholesale adoption of untried schemes. The wise greenkeeper is rightfully wary, and does not revolutionize accepted practice until the new proposal has been thoroughly tested.

This is the only justification for a survey of practices used in preceding years.

FAIRWAYS WERE HARD LAST SUMMER

DUE to limited rainfall, fairways were brown and hard throughout the most important part of the 1932 playing season. The St. Louis district was a notable exception, as rains were general during August. On some of the courses, fairways were ruined, for abundant moisture encouraged crab grass to form a solid mat, and thus smother and crowd out the blue grass. Fear of this fairway pest dampened the ardor for fairway irrigation in that district.

Lack of green fairways aroused keen interest in water systems in most of the other metropolitan sections. The marked contrast with nearby watered courses made the unwatered fairways look pitiful, and golfers clamored for water systems, often pointing to heavier play on the neighboring watered course, but gave no thought to the added burden of expense. It is certain that golfers on a number of courses will be greeted with watered fairways next summer, and all indications for the future point to more general watering to appease the player.

Opinions differ as to the best type of water system, but the choice seems to have narrowed to two, either the so-called one-man high pressure system, or the modified hose system. With the one-man system high pressures and large volumes of water are essential. Water lines are installed down the center of the fairway with snap valves at appropriate distances. The large sprinklers used are supposed to cover the entire width of fairway, and only 5 to 7 sprinklers are needed. This system lacks flexibility, but is said to work satisfactorily. The main watering is done at night, and brown areas as they appear along the edge of the fairway are watered during the day with smaller sprinklers.

With the hose system, water lines are placed along the edge of the fairways, or down the middle, with appropriately spaced openings. Sprinklers are first set to cover the far edges, and then gradually dragged across the fairway. This system can be operated with less total volume of water and at lower pressures. It is more flexible, and initial installation is cheaper, but operating costs are somewhat higher. Before proceeding, clubs should consider all items, and then install the system best adapted to local conditions.

FAIRWAY IRRIGATION REQUIRES CLOSE STUDY

FAIRWAY irrigation is not necessarily the panacea claimed by its most ardent supporters. True, it will provide a green turf and softer fairways throughout the playing season, but it necessarily complicates fairway management. The solution to some of the problems appear simple, but others will be more difficult.

Clover invariably spreads and becomes objectionable on watered fairways, unless steps are taken to check its invasion. Golfers rightfully object to clover because good lies are never obtainable when the ball rests in a patch of solid clover. It has been clearly shown that clover control is largely a matter of nitrogen feeding. On blue grass and fescue fairways the problem is simple, but where poa annua prevails there is always danger of encouraging such soft, weak growth by heavy nitrogen feeding that the grass will succumb during excessively hot weather.

Poa annua reappears in the fall even though the area be reseeded with other grasses. Nobody yet knows just what the answer is to clover control on poa annua fairways. It may be a matter of changing the kind of fertilizer or time of application so the effects of the nitrogen will be minimized or dissipated before the next summer season, or it may be a matter of changing water or cutting practices. These are mere conjectures, and the answer must await detailed and careful investigation.

The effect of water on crab grass has been mentioned. Its control with fairway watering is a matter of considerable moment in districts where this is a serious pest. There is some evidence for the belief that crab grass can be mastered, but as yet there is no basis for recommending a sure procedure.

When water systems were first installed it was believed that fertilization was unnecessary. The fallacy of this belief is now generally recognized. Fertilization and irrigation on greens supplement each other, and in this respect fairways are no different. Constant watering actually accentuates plant food losses by encouraging more abundant growth, and also enhances losses in the drainage water. Unless these losses are made good, gradual turf deterioration is inevitable.

On the other hand, fertilizers can be applied on watered fairways with positive assurance that there will be sufficient moisture to obtain full benefits.

Where water costs are high, proper feeding will slightly reduce the amount of water needed to maintain green turf, and thus effect a partial saving.

FAIRWAY FEEDING WAS NOT NEGLECTED IN 1932

FAIRWAY feeding was not neglected during 1932, and there is reason to believe that the practice was more general than in any preceding year. Opinions still differ as to what constitutes good practice. Need for nitrogen is generally conceded, but opinions vary regarding supplementary use of phosphoric acid and potash. A few believe a complete fertilizer should be used, others think nitrogen and phosphoric acid sufficient, and some claim nitrogen only is needed. From the standpoint of cost, this becomes a matter of importance on fairways. These different views can be settled only by careful, controlled trials, and until that is done, the only safe procedure is to follow practices which have been found to give satisfactory results.

Our own opinion may be subject to criticism, but nevertheless may be of some interest. Nitrogen is most important and turf cannot be improved unless it is used. Potash is seldom needed on heavy soils. Its use should be considered on very poor sands, peats, and mucks only. Need for phosphate can be judged by using one of the available soil phosphorus test kits now on the market, provided fairways have not been arsenated.

Where the supply of available soil phosphorus is high, phosphates are not needed, but where the soil supply is low, phosphates should be used. When phosphoric acid is required, applications every second or third year should suffice, for phosphorus is not lost in the drainage waters, and hence, interim feeding can be confined to nitrogen. Where complete fertilizers are needed, mixtures high in nitrogen with smaller amounts of phosphoric acid and potash are usually suitable.

FESCUE GROWS ON LOW SOILS

THERE is reason to believe that fescue will grow normally in soils too low in available phosphorus to support Kentucky blue grass. This may be one reason why fescue produces better turf in some of the northern districts where soils are acid and low in available phosphorus. If this belief is substantiated, it means that lower rates of phosphate applications can be used on fescue fairways with full assurance that satisfactory results will follow.

Some striking effects produced by lime were noticed on a few test plots. This was particularly true on blue grass, but similar effects were visible on some of the other grasses also. The limed grass was greener and appeared to withstand drought better, but the differences disappeared in the fall.

The past year witnessed an increased use of lime on acid fairway soils in the East. The present view appears to be that moderate liming of blue grass fairways on acid soils every three or four years may be justified. Where fescue and bent predominate, lime is not essential, and its use should be confined to more acid soils, and lighter rates of application are fully as effective.

ABOUT THE USE OF LIME

EARLY in 1932 attention was called to the fact that lime tends to render applications of lead arsenate for grub and earthworm control less certain. It is thought that lime converts the arsenate into a basic compound, and its effectiveness is thus lost.

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This may partially explain why arsenate applications have not always produced desired results.

The incompatibility of these materials raises an important practical problem in districts where fairways require lime for turf improvement and arsenate for grub control. Until investigation develops a better practice, it is believed that lime applications should precede the use of arsenate, with as much time as possible between the two applications, and that no more lime should be used than is absolutely necessary. The same principle obviously applies to greens.

Cutting practices on fairways received more attention, due to the findings of Dr. Harrison. Fairways have, undoubtedly, suffered as the result of severe leaf defoliation in the past. Player objection continued to be the greatest obstacle to somewhat longer grass. This is warranted only when fairways contain numerous cuppy depressions, for it is almost impossible to lift a ball out of these holes when surrounded by longer grass. To overcome player objection, fairway turf of uniform density must be developed. This is a matter of feeding, and in some cases supplementary seeding, for cutting, although important, is but one factor in turf improvement.

GREENKEEPER HAS NO CONTROL OVER WEATHER

WEATHER is a factor over which the greenkeeper has no control, yet it may simplify or complicate turf maintenance on greens. Its effects are not fully understood by golfers and club officials. They recognize the obvious need for supplementary water on fairways during dry seasons, but fail to appreciate or willfully ignore the dangers attendant upon their insistent and often unreasonable demand for soft putting surfaces and deep green color. Until their attitude changes, serious loss of turf on putting greens during unusual seasons seems inevitable.

Losses occur during hot, humid weather, and are accentuated when heavy rains accompany the heat wave. Troubles are most likely in wet seasons, such as 1928, but they may occur even in comparatively dry years. This was the case in 1931 when serious damage occurred during a brief period of unusual weather early in July. Turf loss may also occur when rain does not accompany hot weather, if over-watering is the rule, and the underlying soil is heavy.

From the standpoint of greens, 1932 weather

caused very little trouble. There were very brief periods late in May and again in August with trouble in the making, but sudden changes localized injury to unusual greens, although in several instances *poa annua* fared badly. On several courses excessive use of water and too much nitrogen proved to be the undoing of turf on greens. In these cases, the underlying soil was too heavy for easy maintenance.

Since the greenkeeper cannot order weather to suit, severe turf losses can be avoided only by adopting practices which will produce sturdy turf able to withstand unseasonable weather. Each succeeding season since 1928 confirms the belief that this is possible, provided the underlying soil is not too heavy, and greens are not entirely *poa annua*, or planted with inferior strains of stolons. In 1932 greenkeepers paid closer attention to watering and feeding practices than ever before.

MIDSUMMER WATERING AND FEEDING MAY BE FATAL

DURING midsummer, generous nitrogen and copious watering must be avoided, because both tend to produce weak, soft leaves and stems. Such turf collapses quickly during periods of excessive heat, and the greenkeeper is helpless because there is no known quick remedy. The turf eventually recovers, but the process is necessarily slow, because new root formation must precede leaf development. It is useless to feed and water generously immediately following turf loss. This will retard rather than hasten recovery. Feeding is warranted only after the new root system is formed.

The tendency was to reduce nitrogen feeding to a point where the grass showed slight nitrogen hunger with the approach of summer, and then use light rates to barely hold color. In a few cases fear of producing lush turf deterred greenkeepers from applying sufficient nitrogen to prevent serious clover invasion. It may be better to err on the side of safety, but best practice is to devise feeding methods which will avoid disaster and yet maintain good putting turf.

At first thought a definite schedule of greens feeding would seem to be the simple solution. There are several valid objections to such procedure. Seasonal variations in weather affect rate of growth and need for nitrogen. Grasses differ in their re-

sponse to nitrogen. Velvets are very easily injured by overfeeding, and the better strains of stolon-planted bents become fluffy if too much nitrogen is used. Local differences between greens on the individual course necessitate different rates of nitrogen application. Grass on greens in sheltered locations grows slower, hence less nitrogen is needed. Color, rate of growth, and sturdiness are the safe criteria for determining rate and frequency of fertilizer application.

WATER PRACTICES SHOULD BE STUDIED

WATER practices received more deserved attention. During midsummer the amount of water was stressed more than the time of watering. Greens were kept moist, but slightly on the dry side. Over-wetting, so water could be squeezed from soil pressed between the thumb and forefinger, was avoided. Greens in sheltered locations received closest attention, because they seldom dry out as rapidly as greens in the open, and hence need less water. Incidentally, restricting moisture supply tends to overcome the detrimental effects of too much nitrogen by reducing the rate of growth.

Controlling feeding and water practices not only minimized the danger of disaster, but tended to reduce the frequency and severity of brown patch attacks. This effected considerable saving because of the smaller amounts of fungicides required.

Spiking of greens was more general last year, especially during the hot summer months. Its advocates claim greens take water better following spiking, and that they are less apt to become water-logged. The practice probably has merit on soils which tend to pack, and to facilitate drying of the surface soil if it becomes water-logged as a result of excessive rain or over-watering.

Lime was more generally used on greens in districts where soils are acid. In most cases acidity determinations were the basis for determining its need. Finely-ground limestone or hydrated lime was applied, at light rates, sometimes in the late fall but more generally early in the spring. Very few courses in the midwest used lime. In most cases the high lime content of the sand used in the topdressing mixture supplied more lime than was required.

MORE INTEREST IN HUMUS MATERIALS

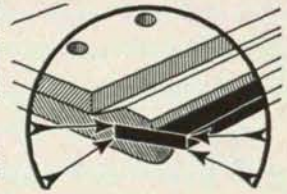
THERE is some evidence of increased interest in humus materials, to replace manure as a physical

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soil conditioner for new seedings, and as a constituent of the topdressing mixture. These materials show promise, provided they are properly used. No difficulties arise when they are incorporated with the soil prior to seeding, but when used in topdressing mixtures, some of the lighter, coarser products float out, and the particles gather in ridges or ruffles during watering. This interferes with putting.

The trouble has been overcome in several instances by preliminary treatment of the peat before incorporating it with the soil and sand topdressing. The usual procedure was to mix small amounts of nitrogen with the peat, wet the mixture thoroughly, and allow it to stand for from one to two weeks. Partial breakdown produces a final product which does not ruffle when used in topdressing mixtures.

The proportion of peat which can be used safely in topdressing mixtures has never been subjected to careful test. It is doubtful if more than 20 to 25 per cent of the finished topdressing should consist of these materials. Their tremendous waterholding capacity may make it difficult to prevent waterlogging of the surface soil during wet seasons, if the percentage greatly exceeds the above limit.

To date there is no evidence of general turf deterioration on golf courses. This is a tribute to greenkeepers and their committees. They cooperated with the club officials, and endeavored to maintain reasonably high standards. While it is certain the spending orgy of several years ago is at an end, this will not deter golfers from demanding high standards of maintenance. In the face of reduced revenues and the increasing complexity of turf culture, clubs who dispense with the services of competent greenkeepers are indeed pursuing a short-sighted policy.

What the future has in store nobody knows, but it is certain that the men who survive in their chosen life's work will be those who prove their worth. That greenkeepers are well aware of this fact is evidenced by their attendance at this convention.