

It is scarcely possible to seed perennial grasses and clovers so heavily that the resultant yield is seriously affected. With annuals, however, too dense seeding reduces the size of the individuals so much that the yield to the acre is also diminished.

In general the rate of seeding is least in regions where the crop is best adapted; that is, where the individual plants are most vigorous and the natural mortality therefore least. The weediness of the soil is also an important factor.

Where seed can be drilled, the amount necessary to secure a good stand is about 25 per cent less than when broadcasted. The reasons are evident; namely, the covering of the seed uniformly to the most favorable depths, as well as its more even distribution.

With the grasses used for fine turf there is not a very large body of definite experience or of accurate experiments. In general the seeding for fine turf should be relatively heavy, as the disappointment of a failure or partial failure is of far more consequence than the use of perhaps an unduly large amount of seed.

We have consistently advocated using for each 1,000 square feet of surface 3 to 5 pounds of redtop or Rhode Island bent or South German mixed bent; 7 pounds of Chewing's fescue; 3 to 5 pounds of Bermuda grass. Redtop contains about 4,000,000 seeds per pound; Bermuda grass, 1,800,000; Chewing's fescue, 500,000. Pure seed of the two fine bents has as many seeds per pound as redtop, but in the chaffy form in which they occur on the market probably only 1,000,000 to 2,000,000 seeds per pound.

From many trials we know that these amounts give excellent results. It may be possible to reduce them somewhat and secure equally satisfactory turf, but we have doubts whether the saving effected would compensate for the risk.

How Frequently Should Putting-Greens Be Mowed?

A Discussion

The following answers to the above question by fifteen different men, all of long experience, ought to be strongly suggestive, if not fully convincing. Probably all of the northern greens concerned in these answers are wholly or mainly bent grass; the two southern courses included have Bermuda greens:

I would unhesitatingly say, "Every day, if possible; remembering first that upon the character of the grasses will depend whether your greens are to be cut very short or longer. Bent grasses in this climate do better when cut *very close throughout the season*. Bluegrass, redtop, and fescue thrive better when not cut so close, but should be cut just as often; naturally they make slower greens. I am positive that down in this extreme climate it is injurious to allow any of these grasses to grow longer in excessively hot spells than at other times.

W. S. HARBAN,
Columbia Country Club, Chevy Chase, Md.

At the Detroit Golf Club we cut our putting-greens every week-day after the season gets under way.

At the beginning of the season we set our blades up somewhat higher, and gradually work them down to about three-eighths.

You will find a considerable difference of opinion as to how closely a putting-green should be cut, but our experience has been very satisfactory at three-eighths during the hot months.

We went through the long, hot, dry spell of last summer without having a single case of burning on any one of our 36 holes.

Many green-keepers advocate close cutting in order to help keep the weeds down. We eliminate our weeds by hand work or spearing with sulfuric acid.

A. J. HOOD,

Detroit Golf Club, Detroit, Mich.

I believe the best results are obtained by cutting the putting-greens close every day. Our practice is to begin cutting the greens as soon as the grass shows signs of growth in the spring and to repeat every day until the grass box shows no clipping, which event usually does not occur before the grass stops growing in the fall. From the beginning the mower knives are pushed down to the lowest notch and kept there without change.

Our reasons for this practice are:

- (1) To avoid a "slow green," which we consider unsatisfactory for good putting.
- (2) To prevent a stubby condition and to develop a fine surface texture of grass, which only daily and close cutting will accomplish.
- (3) To maintain an even grass surface. Putting-greens frequently, and perhaps usually, contain several kinds of grasses, and some of them grow more rapidly than others. Even where the green is composed entirely of one kind of grass there is often a difference in growth owing to varying soil and moisture conditions in different parts of the green.

ALFRED E. MCCORDIC,

Indian Hill Club, Winnetka, Ill.

I think the frequency of mowing putting-greens depends upon the character of the soil of the course and also the season of the year. In general, I should say that during the growing season the greens should be cut every day, and there are times when some greens on certain courses with very rich soil really ought to be cut twice a day. Then again, in dry weather between growing seasons, and after the growing season is over in the fall, a day may be skipped without harm to the play. My general feeling is that greens should be cut every day, but not cut so short that the plants will be crowned and the grass burned out by dry weather.

ALAN D. WILSON,

Merion Cricket Club, Haverford, Pa.

I say, without hesitation, under normal conditions they should be cut every day. The texture of the grass will be finer, the surface smoother, which makes for truer putting, and the mat of roots will be thickened and strengthened. What more could be desired?

It has been our practice to cut one day north and south, the next east and west, and the third day diagonally, which keeps the grass always standing up; and we have no grain to putt against, as is the case where the cutting is less frequent.

JAS. L. TAYLOR,

The Ekwanok Country Club, Manchester, Vt.

During the heavy growing season we mow the greens at Glen Echo every morning. During the middle of the summer when the growth is not so vigorous we drop off to every other day, and, of course, in early spring and late fall there are times when twice a week will be found sufficient. It is our opinion that if greens are allowed to grow for two or three days without mowing during the intensely growing season, the grass becomes coarse and does not form as desirable a mat and putting surface as it does when mowed daily.

W. C. FERGUSON,

Glen Echo Country Club, Normandy, Mo.

During the playing season we cut our greens every day, including Sunday. Formerly we did not cut them on Sunday, but the last few years there has been such a demand from the players that we have cut them seven days in the week. The reason why we have cut them so often is, in my opinion, that that is the only way to keep them in perfect condition. If you skip a day in the growing season the grass becomes long and the green, therefore, is slower. It is the aim of every green-keeper to keep the greens as nearly uniform from day to day as possible. Therefore it is necessary to cut them every day.

WM. F. BROOKS,

Minikahda Club, Minneapolis, Minn.

I believe that putting-greens should be mowed every day, with no more rolling than is necessary to keep the surface smooth. Any variation in the

mowing made necessary by weather conditions should be accomplished by changing the setting of the machines, rather than by less frequent mowing. The benefit of mowing is twofold: first, it results in greens of finer texture; and second, it makes it possible to maintain about the desired putting speed with little variation from day to day. With us too much rolling results in a "crusted" surface, which, of course, is bad from every point of view.

N. S. CAMPBELL,
Agawam Hunt Club, Providence, R. I.

I find the more a putting-green is mowed the finer the grasses will show up and the more uniform a green will become. Close cutting also develops and encourages the growth of fine grasses. Of course, if the grasses are not growing, there is no need for mowing a green. That is for the green-keeper to decide.

There are a great many golf courses which could develop very fine putting-greens in a very short time if they would cut their greens closer. Many green-keepers have the idea that their greens would not stand close cutting in hot weather, but we find that they are just as easily kept cut closely as if we left them grow longer.

Greens should not be cut too closely at the first mowing. The machine should be set down by degrees so that the grasses can grow to suit the conditions.

At Oakmont, where our grass grows very strong, we mow our greens every day during May, June, and July. In August they are mowed about four times a week; the other three days we water and fertilize, which keeps them in a good healthy condition. Then in the fall they are mowed every day until the grass stops growing when the frost comes.

Last year our greens were mowed until the middle of December, which was an exceptionally long growing season for grass.

E. F. LOEFFLER,
Oakmont Country Club, Oakmont, Pa.

The ideal to be attained is uniformity—eighteen greens of uniform putting texture and greens that are alike throughout the season. Continuous close cutting is essential to the development of proper putting-green turf.

The minimum is cutting three times a week; the maximum is cutting every day.

There can be no hard and fast rule applicable to any course or to any number of courses. One green may be thin and another rank in growth. The grass may be growing luxuriantly, as in the spring, or it may be practically dormant.

The cutting must be determined by good sense and careful supervision. Cutting every day is probably the standard basis to assume, with omissions when conditions warrant. Three times a week is the minimum. The pocketbook should be considered. It all depends on conditions.

No rule can be devised that will obviate the use of common sense. My answer is, something between three times a week and every day, depending on conditions and pocketbook.

W. J. ROCKEFELLER,
Inverness Club, Toledo, Ohio.

"How often should a putting-green be mowed?" is like so many other questions asked in connection with green-keeping. There is no specific answer that can be made. It depends upon climate, soil, kind of grass and amount of water applied, to say nothing of the extent to which purely artistic considerations and personal idiosyncrasies are given weight.

Club members demand and are doubtless entitled to putting-greens that are true, of uniform velvety texture, and with turf of resilient consistency. Beyond this, however, arise differences of opinion that are really but matters of taste, such as whether the putting surface shall be so lively that every putt is merely a trickle; whether the color of the surface shall be of unvarying shade; whether the grass shall be of so vivid a green that it betokens hot-house forcing, etc., etc.

All of these matters enter into the determination of how often the greens shall be cut, for the more grass is fertilized, watered, and forced, the faster it will grow and the oftener it must be cut. It is certain that greens are, as a rule, watered more than is necessary to keep the grass growing well in a normally healthy condition. It would seem to be common sense that to keep the grass up to this standard and to go no further with any measures that tend to force the growth, would in the long run be the best plan to follow; it would produce

a constant growth, make a putting surface that could be kept true and provide everything needed to insure the desired reward for good putting.

If this plan were universally followed, one would immediately be face to face with the difficulty that the vast majority of putting-greens in America have not been properly laid, and the result would be that golf would be played, as a rule, upon greens that have practically no "bite" whatever, and the great joy of having a well placed, boldly played high approach-shot stop dead upon the green would be denied us.

The most common substitute for the needed care and attention to what constitutes a proper germinating layer and what drainage should be installed at the time of original construction, is to keep the surface saturated with water. This produces some "bite," but also introduces all the evils that give rise to the agitation regarding the "mud-on-the-ball" rule. It, of course, adds to the cost of maintenance and necessitates more frequent cutting.

Climatic conditions, as well as construction problems, have much to do in determining how often a putting-green should be mowed. If "weather" requires daily watering, daily mowing will be the rule. In many sections of the country these conditions do not obtain, and yet too frequent watering and cutting is practiced. The aim of the Green Section in eliminating waste expense and reducing generally the cost of maintaining golf courses is worthy of vigorous and universal encouragement; and in the matter under discussion there is a large field for education that should have good results.

The most important things for an ideal putting surface are trueness and uniformity of texture. The length to which the grass is permitted to grow varies with individual taste, but, as a rule, the grass on putting-greens in America is cut too short for real skill in putting. However, whether the grass is to be left long or short, it is necessary to cut the greens oftener than the fairways in order to attain uniformity and constant trueness.

It is absolutely unimportant that the grass should be the same length on the greens day after day; but on any one day it should be of uniform length throughout the green. When different grasses and different soil conditions are generally to be found on the same green, frequent mowing is unavoidable if uniformity is to be secured.

There is waste in this branch of our green-keeping that should be corrected; but it does not lie in the mere frequency of mowing alone. It is so in all of the matters closely related to the propagation of turf for putting-greens.

FREDERIC C. HOOD,

The Country Club, Brookline, Mass.

This is a question that interests the chairmen of the green committees and the members of the clubs of the United States exceedingly, for a good part of the pleasure of playing the game depends upon the condition of the greens. It seems to me that the problem of the cutting of the putting-greens can be divided into two parts; first, the method of cutting, and second, the reasons for the method.

Conditions in the different parts of the United States vary so much that what is satisfactory practice at one place will not give equally good results in another. In describing what we do here it is well to state that we have a reasonable amount of rain regularly coupled with considerable heat in the middle of the summer—apparently a very satisfactory locality for the growth of the finer grasses. Our soil is a good farm land, but particularly well drained by the gravelly subsoil. In the spring of the year, when the grass first starts to grow on the putting-greens, and until the grass obtains its regular summer rate of growth, we cut for two or three weeks, depending upon the rapidity of the growth—possibly once the first week, and then two or three times a week thereafter. During the time of regular growth we cut seven days a week, and also roll the greens seven days a week, as I believe that regular rolling is conducive to better turf conditions. When the fall season comes and the growth of the grass is materially slowed down, we stop the daily cutting, first by cutting every other day, and later still less frequently, as the conditions seem to warrant. While the growth of the grass is slowing up, we gradually raise the height of the blade on the putting-green mower so that at the end of the season the turf is at least one-quarter of an inch higher than during the regular season, in order to allow the grass to make a heavier mat for the winter.

Here we have been believers in the relatively fast green, provided there is a good, thick turf; and in order to have this fast condition we have cut the grass seven days a week. Our program of cutting is to divide the eighteen greens among three men, each man having the same six greens to cut daily. Each man starts out at seven o'clock, and by ten-thirty or eleven o'clock his greens are mowed. The size of our greens runs approximately thirty yards in diameter. By having the same men cut the same greens we believe that a feeling of interest or pride in the condition of the greens he cuts is instilled into him. This condition of mind certainly induces him to do his best. We use a cutter 17 inches wide with eight blades to the mower, as, we believe, the more blades to the cutter, the smoother the surface of the greens can be kept.

I have always believed it is possible without injury to properly fertilize greens to keep them up to really tournament-playing condition the whole season through; and to maintain this condition regular close cutting is certainly necessary.

If a regular and definite program is not followed it means that the height of the grass to be cut will vary. On the properly kept putting-green, grass should grow rapidly and thickly. There is a tendency for the putting-green mower to cut unevenly, so that as you look across the surface of the greens you will see alternating ridges and hollows. This, we believe, is due to allowing the grass to get a little too long, and also to the fact that as the mowers grow older there is a tendency for them to do poorer work. We have kept it a policy here for a number of years always to start the season with three new putting-green mowers, using the discarded ones for the work on the tees and other places where it is necessary to cut the grass only fairly closely.

To sum up briefly the reasons for seven days a week of close cutting, I believe that the main points are as follows:

There is a smooth, uniform surface on all the greens, comparing each green to all the others. Where the turf is cut each day, it does not grow as long; consequently it is easier on both the men cutting and on the machines. Being easier for the men to cut, it naturally follows that it is done more quickly. Grasses such as the fescues and bents, cut closely regularly, tend to make a better and thicker mat of turf. Of course, if the green is not properly fertilized, there may be injurious effects due to the severe daily cutting of the plants. We have found that a closely cut regular green plays approximately the same whether it is dry or wet. With the definite cutting program, the average member of the club, who is not a putting expert, has a condition to face which is approximately the same on all the greens; and it is certainly for him that the golf course is maintained, for he is the backbone of any club. Anything we can do to make playing conditions fair for him, unquestionably is very much appreciated.

SHERRILL SHERMAN,

Yuhmandasis Golf Club, Utica, N. Y.

I believe the ideal condition would be the mowing of a green every other day; but some greens should be mowed every day. If a putting-green is mowed every day, the chances are that the grass will be cut so short that it will not have enough air through it for natural breathing; such treatment also bleeds the grass to a very considerable extent. I find that my best Bermuda greens are secured by mowing every other day.

THOMAS P. HINMAN,

Druid Hills Golf Club, Atlanta, Ga.

Of course, what we say regarding Bermuda grass is quite different from the treatment of the northern grasses. Here we have to cut the grass at least once a day during the entire growing season, to prevent runners and to keep the tender shoots coming through. About once every month the Bermuda greens have to be top-dressed, as they get coarse about that often, so that really we are playing on new grass all the time and not a mat of grass like you have in the north. The first frost, about November 12, stops all growing, and Bermuda becomes dormant, and we do not have to cut it again until about an average date between the 1st and 15th of April.

C. B. BUXTON,

Dallas Country Club, Dallas, Tex.