

THE EFFECTS OF MOWING

HEIGHT AND FREQUENCY

OF CUT ON THE

QUALITY OF PUTTING

SURFACES

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Background

THE appearance and quality of putting surfaces are affected by the height of cut, frequency, time of day, as well as the pattern of mowing and type of equipment that is used. From the earliest days of preparation of lawns and areas used for sports turf, it has been appreciated that regular defoliation of any herbage is a severe regime, and thus one simple operation eliminates a large range of potential competitors.

It restricts plant populations to dwarf growing or mat forming species such as daisy, clover and the wiry, shorter growing grasses that can survive such conditions. Amongst the grasses, such treatment tends to favour the finer fescues such as Chewings and slender creeping red, both browntop and creeping bent and annual meadow-grass. Occasionally naturally selected forms of smooth-stalked meadow-grass, ryegrass and creeping soft grasses, will persist even under close cutting.

Mowing effect

The effects of close mowing include stimulating aerial shoot growth, improved density and smaller leaf size - fining down coarser bladed grass leaves. It also decreases root and rhizome growth and the manufacture and storage of carbohydrates. Clearly the cut leaf surfaces are potential entry points for disease organisms.

One of the basic laws of growing turf is that if grass is making height then it is not making density. It therefore follows that mowing should commence on a newly established sward as soon as the surface can take the equipment. A general rule of thumb is to remove no

more than one third of the green leaf tissue at any one mowing. Allowing the grass to grow away and then cutting back severely, removing say two thirds of the green leaf, weakens and thins out the plants.

The clear implication, and well proven in both trials and practice, shows that of turf cut once, three and five times a week, the sward cut most frequently consistently produced the best quality turf, densest sward and greater number of shoots per square inch.

Mowing Height

Effective height of cut is the height of the shoots immediately after mowing. It is similar but not exactly the same as the bench setting, i.e. the mechanically measured height of cut.

All cylinder mowers ride on the top of compressed foliage so the effective mowing height will be slightly greater than the bench setting. The extent of this difference will depend on stiffness, elasticity and size of grass shoots as well as the weight of the unit and size of front and rear rollers.

When ground conditions are soft following rain or on poorly drained surfaces, or where thatch is present, the mower can sink in enough to reduce the effective mowing height - sometimes below bench setting and often responsible for scalping or scrubbing, particularly at the edges of greens.

Close mowing can thus produce a turf which is aesthetically pleasing and suitable for the game of golf, but there are disadvantages. These include the sward being less tolerant of environmental stress, more prone to disease and very dependent on good management. The shorter root system cannot draw on deeper reserves of moisture or nutrients in the soil.

The greater number of shoots are under more competitive stress and so less tolerant of heat, cold, drought, disease and foot traffic. We must therefore compromise by adjusting the height of cut to suit both the game of golf, time of year and any additional stress the sward may be under.

Height of Cut

Traditionally in our mild climate greens are topped at 5/16th in during autumn and winter - from the time that growth slows down noticeably, usually in October. Longer grass inevitably means slower paced greens and often uneven surfaces, especially where a variety of grasses forms the turf cover. Species such as annual meadow-grass stop growing earlier; some browntop bents, Yorkshire fog grass etc. continue making slow growth and these differences in height, even when cut uniformly, result in unevenness. This begs the question 'why not continue cutting at summer height'?

The reason for raising the height of cut in autumn is straightforward and simple - imagine grass as the pile on a carpet. If you start winter with a short pile, the effect of continued play is to reduce it even further through wear and abrasion, exposing grass crowns to damage, thatch or even the soil. With less "cushion" or pile, the soil beneath is more vulnerable to the compacting effects of play and this damage results in slow recovery and growth in spring and, of course, a weak, thinner grass cover is much more prone to invasion by free-seeding species such as annual meadow-grass.

Winter cutting height has to be a compromise between what is acceptable for the game at that time of year and weakening of the plant. Topping occasionally as necessary to maintain the desired height is still important, since excess leaf cover encourages disease through creating a moister micro-climate in the leaf canopy.

Taken to extreme, too long a cover will weaken and thin out the grass through shade effects and, of course, is likely to cause bleaching or result in a severe check when cut down in spring.

In summer mowing objectives are different. There must, however, be a gradual transition between winter and summer height of cut. In our uncertain spring weather, too close cutting too early frequently gives rise to problems, severely checking growth if there is a late cold spell, leading to increased wear and slower attainment of full and sustained growth.

The height of cut adopted in summer aims to provide a uniform and smooth surface of consistent pace. Heights vary slightly according to the resources available at any given club, but a general average is 3/16th in., slightly lower, to say 5/32nd in., when sustained and vigorous growth is taking place, slightly higher when there are other stress factors, e.g. problems with irrigation during drought.

Greens can, of course, be cut even closer given a thin bottom blade and smooth surface and are often consistently mown at 2/16th in. all summer, purely with a view to maintaining pace. This particularly severe regime can be detrimental long-term - or even in the short term, if additional or more severe stress factors are not taken account of.

Much depends on which grasses are the predominant species, soil type, amount of play and management skills of the greenkeeper. Generally speaking, prolonged over-close cutting such as this leads to a weaker turf, allowing moss to spread in, damage from play and invasion or further spread of annual meadow-grass.

Frequency of Cut

Practical experience and trial work over many years has shown that frequent mowing, not too closely, is far superior for both maintenance of the grass species best suited to golf, and for the game itself.

When grass is growing vigorously, daily mowing is routine, at most top class courses. Grass can put on between 1/16th and 2/16th in. leaf extension in 24 hours, most of that at night, which will dramatically alter pace and since grasses grow at different rates, there is some effect on smoothness too.

Daily mowing will eliminate these effects and present putting surfaces at as near the ideal height for play as possible.

The advent of triple mowers made such frequent cutting a practical proposition for those clubs with limited numbers of staff and certainly eases problems at the weekend when most club competitions are played.

Direction of Cut

Varying the direction of mowing is an important aspect of this routine operation. All grasses tend to develop a "grain" or "nap" if mowing is constantly carried out in only one direction. This results from leaves, stems and any stolons being pushed flat by the front roller and encouraged to grow in the one direction only. Over time this will certainly affect both pace and trueness of the surface.

Since we require grass to be growing as upright as possible, the direction of mowing should be altered at every cut, usually in each of four directions in turn. This is most easily achieved using hand mowers and the distinctive pattern they produce is more striking than that of triple units. A consecutive ribbon pattern is usually adopted for each individual mowing. It looks attractive, and minimises compaction during turning on surrounds.

Mowing with triples does present difficulties on some smaller greens, especially where some surrounds and features limit areas where turns can be made and quite often opportunities for varying the direction of cut too. Wherever practical, mowers should be turned on surrounds, not the green itself, and over a wide arc rather than a sharp, spin turn which scuffs and bruises the grass leaves.

Triples demand a wider turning circle and wear and tear thinning out the cover can be a problem around the edges of

the putting surface. Excessive speed on the final outer trim pass is the biggest single factor in wear here. Occasionally omitting this final pass, varying the width and wheel track by raising one or other of the outer units on triples which have this facility, and hand mowing once or twice a week, all help to minimise such damage.

Speed of Putting Surface

Green speed or pace are the current buzz-words to which golfers pay far more attention than is warranted. Committees in their ignorance pursue the concept of pace on greens as if this were the only aspect that counted on putting greens, often to their long-term detriment. Far too many people have the fixed idea that pace results simply and solely from closer cutting. Many an annual meadow-grass green has been "tarted up" for A Pro-Am by shaving far too closely for a few days and the general membership have lived to regret it in succeeding weeks, if not months, as the turf struggles to recover.

Height of cut is but one aspect affecting the pace of greens and in aiming for speed we must not risk losing all-year-round playing conditions. Speed depends on a number of factors including:

1. Weather Conditions: Weather patterns are unpredictable in the UK and weather always has the final say. Heavy rain before any match will always slow greens down, and if followed by drying winds pace can improve dramatically in a matter of hours - remember Royal Lytham during the 1988 Open.

2. Species of Grass: This is possibly the most important factor. Fine-leaved fescues will always be faster and annual meadow-grass greens the slowest.

3. Height of Cut: Shaving greens will speed them up for a time, but this kills fescue very quickly. Agrostis is rather less affected, but is weakened and opened up, thus letting free seeding annual meadow-grass spread and eventually dominate.

4. Frequency of Cut: Cutting 7 days a week at a sensible height gives far quicker greens than mowing alternate days and avoids the need for over-close cutting.

5. Grooming: Regular light grooming which helps keep surface nap to the minimum is useful once or twice a week during the growing season, as too is combing or brushing.

6. Verticutting: Surface thatch, fluffiness, straggly flattened stems, are all inimical to pace. Verticutting helps to maintain upright growth and carried out at a light setting once a week, provided growth is satisfactory, can improve pace quite noticeably. Trials have shown increases in pace of as much as 1 foot over stimp-meter readings of 7 foot before verticutting.

7. Drying greens out: Clearly dangerous if drying out goes beyond the point where it becomes difficult to restore permeability.

8. Lean greenkeeping: Referring to minimal use of both fertilizer and water - thus indirectly encouraging the finer grasses and avoiding the lushness and seeding of annual meadow-grass which slows greens up dramatically.

These points clearly show the dangers of going for excessively slick greens for a major event and risking their condition the rest of the year. The aim must be to keep blades to about 3/16th in. for most of the growing season, coming down to 2/16th in. for only limited periods, to mow daily (or twice daily) for really big events, to groom and verticut lightly and regularly when there is growth and to keep feed and water to the minimum.

This does not mean there should be no special preparation before a major tournament. Naturally, clubs and greenkeepers want their course to be enjoyed and be a fair test of the professional or amateur golfer's skill on the day. They will be as much in favour of having fast greens as all good golfers are, since the game is won on the green, but must keep things in perspective and within the restraints discussed above.

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