

Taking the lid off TOP DRESSING

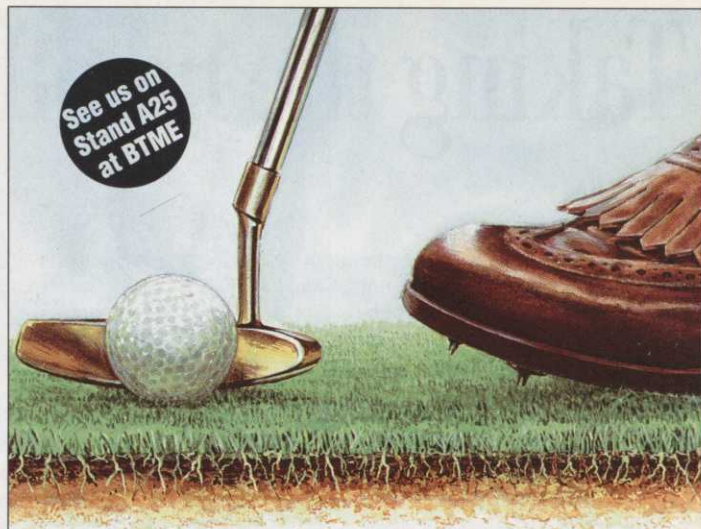


Before you decide which topdressing to use, you've got to understand why you are topdressing in the first place, says John Hacker of Professional Sportsturf Design

Applying bulky topdressings to golf greens has become common practice on most golf courses. As all greenkeepers know, there are three main reasons why topdressings are applied to the greens: to level the putting surface; to help dilute and keep well aerated the surface thatch layer; to replace and improve the existing rootzone.

With the emphasis on fast putting surfaces, topdressing cannot only level the putting surface and give a consistent roll across the green, but also speed up the pace of the green. Light topdressings during the year can help increase green speed as well as help dilute thatch. Thatch, as we all know, is becoming a major problem on many courses, partic-

ularly those with very acidic rootzones. The development of thatch is not down to one particular problem, but is a combination of an acidic rootzone, high fertilisation, reduced microbial activity and vigorously growing grasses. In addition, the rate of water movement down to the drains has been rapidly reduced on soil-based greens due to compaction caused by heavy use, particularly during the wet winter months. The reduction in water flow has meant that the surface remains wetter longer which in turn reduces advantageous microbial activity and leads to the increase of organic matter at the surface. The rate of water infiltration is also closely associated with the rainfall of any particular golf course and its natural rate of evapotranspiration. This would lead us to believe that thatch may be more of a problem in the wetter and colder northern/western parts of the UK and less of a problem in the warmer, drier southern

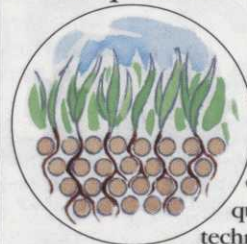


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Taking the lid off TOP DRESSING

and south eastern parts of the country. Given that thatch is not caused by one particular problem, topdressing can help by keeping the thatch layer more aerated and less wet, which encourages more microbial activity and therefore more natural breakdown of surface organic matter.

Topdressings can also be used to change the surface pH of the green in a slow but consistent way either up or down. As implied earlier, thatch is not always a problem on every course in the UK. Some courses I have visited do not have a thatch problem and this is normally associated with naturally free draining greens having a pH in the region of 6.5 to 7.2.

Topdressings can also help improve the existing rootzone albeit rather slowly. With long hollow tines, the concept of rootzone or soil exchange has been understood for many years. This allows us to change the rootzone by deep coring and removing the existing soil slowly over a period of time. Suitable topdressings are then applied to replace the material removed. There are a number of problems with this procedure in that it does depend on what is beneath the improved layer as to how effective it is. For instance, if a green is hollow cored frequently at the same level a pan may develop at that level causing a reduction in water flow to the drains below. In another instance, hollow coring over heavy clay subsoil may only lead to a greater depth of wet rootzone if the water only sits on the impervious clay beneath. So it is important that the green as a whole is looked at to make sure that water can enter freely into the surface and also drain freely away from the base. It is very easy to create a perched water table where water sits in the sandy topdressing layer over the top of an impervious base. It is not unknown for greens with this problem to shake like a jelly when walked on during the winter period when they are effectively full of water. The outcome, as we all know, is a shallow rooted green usually with a thick thatch layer which therefore foot-

prints badly giving a poor putting surface. The sward is usually composed of *Poa annua* and is therefore more subject to fungal disease attack.

Physical properties

So now we have considered the reasons why we apply topdressings, what are the physical properties required of a topdressing? Golf green topdressings today are primarily composed of sand particles with small amounts of silt, clay and organic matter added to help retain water and nutrients. In an ideal world the topdressing should match precisely the existing rootzone. For greenkeepers with new greens composed of ideal rootzone material then it is easy to match the topdressing with the existing rootzone. Clearly, this is of no benefit when the existing rootzone may be a heavy clay loam which has compacted over a number of years and is in effect fairly impermeable. To enable rapid infiltration of rainwater and to prevent interlocking it is important that topdressing or rootzone for that matter, has most of the particles in two adjacent sand band ranges. Examples of rootzones available on the market today include the following:

% PARTICLE SIZE (mm)								
Code	>2	2-1	1-0.5	0.5-0.25	0.25-0.125	0.125-0.063	<0.63	O.M
1	2	6	29	55	6	T	4	6
2	0	1.9	9.3	37.9	38.9	5.8	6	NK
3	T	0.8	9.6	58.1	27.2	2.2	2.1	NK

Code Key:

1 Fen Turf Dressing
2 Martin Bros
3 Rufford Topdress

T = Trace
NK = Not Known
O.M = Organic Matter

The analyses above are taken from a range of topdressings supplied by each of the suppliers mentioned

At present it is not common practice to undertake hydraulic conductivity readings on topdressings, but this may be important in the future as the particle ranges within each of the bands above can vary dramatically. So although there may be a certain percentage of sand within say the medium band, how much is at the top end of that range or at the bottom end of that range? In addition, sands can be different shapes (rounded/angular) and this can affect how they interlock and therefore drain. So there is still some way to go on achieving uniformity and consistent performance of topdressing materials.

In addition to the physical properties of the topdressings the chemical attributes must also be considered. It is not common to undertake nutrient analysis on topdressing materials, but it is assumed that nutrient content of these products are going to be low. It is not uncommon though for greenkeepers to see a greening up response to the application of topdressings, although it is not clear whether this is nutrient within the topdressing or the effect of the previous tining operation encouraging natural breakdown of the surface thatch. There is no doubt though that any topdressing material containing organic matter or soil will have very small proportions of the macro and micro nutrient, particularly iron which some sands are naturally coated in. Perhaps the major point to consider is the lime content of any topdressing. A high pH topdressing may or may not have a high lime content. However, a topdressing with a high lime content will retain a high pH for some considerable time depending upon how much lime it contains. A common source of lime within a topdressing is shell which is found in seashore sands or sea-dredged sands. In the short term, the problem with sand containing a high lime content is the effect it might have on the disease 'take-all patch'. This has been shown to be promoted by a change in the surface pH of the green and, of course, is extremely damaging to bent grass swards.

Nowadays it is assumed that topdressings are sterilised. This is to kill weed seeds and harmful fungi. In addition, the sterilisation act usually burns off excessive moisture, thereby reducing the water content of the topdressing and making it easier to apply. Sterilisation is probably one of those areas which has not been seriously looked at in a production sense. For instance, we do not know how much weed seed or harmful fungi might be present in any individual source of rootzone material. It is generally assumed that sand is inert, although we have recently seen the effects of dry patch disorder which have been associated with fungal depositions on sand

grains. It is certainly more likely that weed seeds will be present within any topsoil and to a lesser extent the organic matter used to mix with the sand. It is likely that every topdressing is going to be slightly different and so sterilisation is probably a safe bet. Clearly, it is very important that we do not apply weeds to the surface of our greens inadvertently and especially not pernicious weeds. While it is possible to control broadleaved weeds, weed grasses such as *Poa annua* could easily be brought in with an unsterilised topdressing. This is certainly an area where further work could be undertaken by each manufacturer on its own source material to determine the needs of that particular product.

Choosing suppliers

After stating the need for suppliers to be vigilant over the material they use and how they process it, which suppliers should you use? I suppose we can divide suppliers into three categories, those that have their own sands, those that have their own sand and soil and those that have their own soils. In addition there is the middle man who does not have any raw material himself but buys in both sand and soil and mixes them as a service to the greenkeeper prior to selling them with a small profit for that service. There are, as most greenkeepers know, a number of well known sands used throughout the UK. These include sands such as Leighton Buzzard, Kingsley Washed, New Platt Wood, White Moss, Chelford and a number of others. The reason the sands are considered good is they are uniform, plentiful, accessible and in the particle ranges required for golf greens (medium/fine, medium/coarse). There are of course a lot more quarries around the country, some of which will also contain sand suitable for application to golf greens. Some courses themselves will be able to quarry their own sand and apply it to the greens as they have done for many many years.

If you are considering buying your topdressing material from a supplier there are a number of questions which you should ask of that company:

- Has the company a reputation for producing consistent materials?
- Can they provide you with full

technical details of the materials, such as particle size analysis, pH and lime content? Does the company undertake regular, ie monthly, analysis of its materials to make sure it is maintaining its quality?

c) Is the material sterilised prior to delivery?

d) What reserves of materials do the company have, so that they can provide you with the same topdressing in say 5 or 10 years time? This is particularly important for the topsoil which is perhaps the most variable of the topdressing ingredients.

e) How does the supplier deliver the material and what are the back-up services available, ie is the material delivered on time in the size of wagon you require and covered to prevent it from getting wet?

It is not possible to give a definitive list of suppliers as many market their material not only under their own name but for other retailing companies.

So at the end of the day which topdressing should you use? Well



this is not an easy answer as it depends upon your particular greens, their rootzone and their current state. It is not necessarily good for instance to use a very high quality topdressing which may be very expensive if it does not match up with your existing rootzone. It is quite possible to end up with a perched water table overlaying your existing rootzone as mentioned earlier. In addition, changing from topdressing to topdressing can create root breaks occurring in the top 50-75mm of the green. This means that roots do not go into the soil itself and the whole turf can lift like a carpet when hollow cored. So is it true that you should use a cheap economy topdressing on soil based greens? Again it

depends upon the existing green and its rootzone. Any topdressing used should be naturally free draining and should not compact, so this sets minimum standards to start with. High quality, uniform topdressings may not always be the best solution, but poor quality topdressings are seldom the answer.

To determine which topdressing you should use, the important thing is to understand why you are topdressing, and what you are trying to achieve by applying this topdressing. Once you have determined this and what your existing rootzone is composed of, you can decide what topdressing is most suitable for your golf green. Ideally you should try and match the rootzone as much as

possible, although this will not be possible on soil-based greens which are probably suffering under heavy winter play. It may be that in some instances topdressing is not the answer to the problem that you have and a more radical solution may be required. Whatever you do, use the same material consistently over a number of years and do not switch from one analysis to another. This does not mean that you need to stay with the same supplier, but make sure that the analysis is consistent from year to year. It may sound like buying a topdressing is like walking through a minefield, but take heart, many of the larger topdressing suppliers are making big efforts to improve their quality and consistency and to highlight the quality differences between themselves and cheaper alternatives. There is no doubt that you will have to pay for quality, consistency and uniformity, but in the long term that additional cost is well worth paying.

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