

Wise up for winter

Prevention, they say, is always better than cure. It is certainly cheaper! Never is this adage better confirmed than in early autumn when preparing a course for winter. My comments are based on the knowledge gleaned over more than four decades from practical men, who in turn probably learned their skills not just in the hard world of experience but from their elders, so that some of this lore may well go back in direct line to the early years of this century.

Early in my advisory career I was taught much of my practical greenkeeping by a quiet and immensely wise Aberdonian greenkeeper, Frank Smith, who in the early thirties left Cruden Bay, then almost rivalling Turnberry as a holiday and railway hotel course for rich Glaswegians, to take charge of the plots at the newly established Research Station at St. Ives, Bingley. He it was who, with immense patience, corrected not just my enthusiasms and follies but in later years those of my fellow advisers – if they would listen – passing on his unique knowledge of seaside grasses and links management. Never was he more needed than today!

Recording such comments is meant in no way as trying to teach experienced men how to suck eggs, but it may be useful, both to guide those starting and also to remind others of facts which may have been forgotten. If it proves anything, it is firstly that nothing basically changes in sound greenkeeping, since the grasses and their needs do not change, and furthermore that there are no instant cures, but plenty of instant problems.

It was Frank Smith who impressed on me that 'you don't apply fertilisers after the end of July'. Remember that the temptation to try and speed up recovery from war time neglect and abandonment of golf courses in the autumn of 1945 was enormous. The wiser heads stressed mechanical aids; fools rushed in with fertilisers; and some today are still rushing, though perhaps even they have learned not to use nitro chalk – or have they?

This ban applied equally to all fertilisers, even those containing little nitrogen. To start with, there is virtually no need for phosphates on any fine turf at any time – the demand is minimal and the existing supply in the soil more than sufficient, in most cases, for the next century let alone this. Soluble potash merely goes to the drains in autumn and nitrogen stimulates lush growth, which promptly goes down with *Fusarium* patch disease at the least provocation.

This does not mean that it is anything other than sensible to use sulphate of iron in the autumn. Apart from it being a mild fungicide and discouraging annual meadow grass, it has the great advantage of greening up turf – for the benefit of those who confuse colour with quality – without making it lush. The old greenkeeping term was that 'it hardens the turf'. In passing, a moment's reflection will prove that what impresses the non-expert viewer of turf, be it a lawn or a putting green, is uniformity – and iron does produce a uniform colour!

A vitally important facet of disease control is the 'management' (ie. removal) of shading vegetation. Shaded greens suffer not only from never seeing the sun in winter, but in staying frost-bound longer, and from lack of air from thorough ventilation. As soon as the leaves fall, get in with scrub clearance and removal of shading trees around greens and tees. Blame the clearing on

the equinoctial storms if you like, or christen your chain saws 'Thunder' and 'Lightning', as does Patrick O'Brien of the USGA Green Section, but do it! Remember, there is no way of putting it back, but you need the support of allies.

Remember also that such scrub clearance is good conservation – akin to coppicing – which resulted in former years in carpets of wild flowers, which would otherwise be smothered under bramble and scrub. Get some air flowing through the greens and you will get much less disease; much healthier turf; drier, firmer putting surfaces and happier golfers. After a week, very few will be able to remember what it was like before the clearance.



Jim Arthur, a retired agronomist who for two decades was consultant to the R&A Championship Committee, is a serving member of the working party (technical panel) of the Joint Golf Course Committee. Currently he is instrumental in the establishment of new acceptable European standards for golf course green construction specifications.

Another precaution that can be very effective is also linked with keeping surface humidity low, and that is to avoid smothering the turf. Sometimes smothering is inevitable – as with snow – but some can be prevented, notably in avoiding top dressing – especially heavily – when there is no growth for the turf to absorb it. In my early advisory work it was common practice, as soon as winter came – and that meant the cessation of almost all play save for a handful of expatriate Scotsmen – to go onto winter greens and literally smother the main greens with one heavy application of 'compost', burying the grass so completely that it took a week or so for it to show through. The inevitable result – especially when allied to the ubiquitous autumn fertiliser – was all too often a crop of 'snow mould' that defied treatment and left scarred surfaces until growth resumed in the spring.

Today, not least because winter play is almost as heavy as in summer, we adopt a 'little and often' procedure, in the growing season so that the fine screened top dressing is absorbed, almost within hours rather than days, by the growing grass.

Something else can be done to help greens stand up to a sustained winter assault and that is to leave plenty of grass on them! The vogue for shaving to produce faster greens (which has already ruined the greens on some of our famous courses) seems to be waning, but if you are unlucky enough to have one of these shaving fanatics in charge, you are going to have a battle. I personally would never mow greens closer than 3/16th, (though I might allow a dispensation for very special events if closer mowing were not prolonged for more than 10 days), because we can speed up greens in other, less damaging, ways and in any case it is the grass species which has

the greatest influence on speed. Certainly we should never cut closer than 3/16ths in September or October and raise the height, as well as lengthen the interval between cuts to help the grass put something back into the roots while soil temperatures are still high enough.

Severe scarification used to be a routine autumn task, but again this has always been condemned by experienced men, on the grounds that one should never tear the hell out of turf unless it was growing actively and could quickly recover. The advent of power scarifiers made it that much easier to remove huge quantities of surface growth or thatch, often encouraged twenty years ago by mismanagement (over watering and over feeding) which thankfully now seems less common. Far better of course to correct the thatch problems by deep routine aeration and other preventative treatment.

Talking of prevention, it is worth observing that routine spraying with systemic fungicides is an expensive non-solution to chronic disease problems. Such fungicides must be absorbed by the growing plant and have to be applied in anticipation of an attack and so can often be wasted if the attack does not materialise. Far better to cure the basic cause, when there will be no disease anyway. If a series of unplanned events does cause an attack, better to deal with it by contact fungicides before it gets a hold.

If your course suffers from poor drainage of greens – perhaps they were built without under-drainage or on heavy clay soils – then early autumn is the time to deal with the problem – for example by Vertidrainage early when the subsoil is still relatively dry and friable – and the greens firm enough not to wheel mark. This sounds fine – but the golfing calendar extends so late into the autumn today that operations, which must be done in early autumn to be effective, are postponed until so late in the year that damage and poor results are inevitable. Thus one preventative measure should be taken months earlier – education of the management and the members into accepting some slight inconveniences and disturbance, so that essential work can be done when it should be done and not left until the competition season is over.

Another preventative measure which must be planned ahead – especially regarding the 'education' of members – is to stop all irrigation after the end of August, no matter what the weather is like in September. The basis of sound irrigation is to start late and stop early. The idea is to go into winter with dry greens. Since none of us is blessed with the power of infallible weather forecasting (though some are better at guessing than others), the chances are that the gambler who acts on his belief that the autumn will stay dry will get caught in monsoon conditions, and nothing winters worse than sodden turf. But all this needs explaining to golfers – who are apt to assume that 'if it isn't green it's dead' and base their standards on the course being in perfect order on the day they want to play, never mind any other times.

There are of course many management tips on minimising winter damage, and especially the effects of concentrated wear, such as banning trolleys or at least requesting members to demonstrate their virility by carrying their clubs – or seven of them, but that is another story for another day.

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An overall view should be taken on upgrading work, particularly with drainage system improvement

DRAINAGE DECISIONS

Now is the time to start planning for drainage improvements. Wrong end of the winter period? Not at all. The recent wet weather has brought back for many the easily forgotten memories of heavy going which, for some, date back to real winters of several years ago.

There is nothing to beat a good monitoring period over the winter when areas can be marked on an accurate plan and studied for possible causes. Vital bits of kit include a spade for the bold or a turf repair implement for the tentative, with a dutch auger to examine soil conditions to depth. Oh, and of course two coat hooks, watering can, bin liner, and wellies (waders?) to men-

tion but a few of the specialist instruments of the trade. Wellies to get you into the ditches or water-courses where everything starts or finishes, depending on your point of view; the bin liner to leave a tidy turf surface; a watering can to crudely study sub-surface permeability. Coat hooks? – easily fashioned into an amazingly informative drain detector (send sae for details!)

An occasional examination, noting as much as is reasonable on what happened where and when following heavy rainfall or steady drizzle can be invaluable to the detective work that determining the cause of a problem can often become.

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Types of problem

On an established course, the first question asked should be 'are we dealing with an increased usage or similar surface condition problem, or with a deeper problem? Or both?'

Draining a straightforward compaction problem caused by many more feet passing over the surface is a waste of time, as is spiking turf over a high water table. One is a soil problem, the other a water problem, although inevitably one affects the other. Pipes do not last forever: they block with soil, roots, dead rats even! They settle through subsidence or soil shrinkage, or may be damaged, shallow clay tiles especially. They become overloaded as additions are tagged-on over the years. This overloading or surcharging can cause a problem some distance from the source. For instance a new surface drainage system which intercepts what was surface run off into the pipe could cause headaches as gradients fall.

Water flow or hydrology can change, although recently the tendency has been for these effects to reduce – with springs or seepage lines disappearing, though not forever. Rising water levels at the main outflow end, due perhaps to sedimentation on or off site or increased run-off upstream are more likely offenders. Suffice to say that a wide ranging approach is needed at the problem examination stage if the resulting options are to be in any way reliable.

Planning a scheme

Whether the proposed work is large or small in scale, careful planning is always worth the effort. Much may be at stake, not least the reputation of those involved in organising on behalf of the club or management.

Timing and logistics should be thought out in detail to minimise



Quick and painless: with good planning, drainage improvement is not such a major job after all.

Picture courtesy of White Horse Contractors Ltd

DRAINAGE DECISIONS

the inevitable disruption which must occur to a greater or lesser extent with any work. Various 'windows' in the usually busy annual calendar of a course can be identified and those occurring at the favourable times of year earmarked. Unfortunately the best conditions for work and the busiest time of the year often coincide. Let us not forget also that the best laid plans of mice and men are always at the complete mercy of the weather.

We can at least attempt to make any drainage work as efficient as possible from the organisation and design point of view. Without going too deeply into the design aspects, it is worthwhile taking a look at how design can affect installation unfavourably.

There are only rare occasions when there is really only one option available to either solve a problem or lay out a new system. Finding the right one is not always a simple question of cost: it may be more to do with minimising disruption in terms of time taken to do the work

or the effect on the course itself.

Design

Take for instance trenching, the core of most schemes. Width, depth, and excavation difficulties need to be addressed. All displaced soil has to be handled, probably removed. Anything which can be done to reduce volumes involved helps efficiency, eg. smaller pipe size = narrower trench. Designing for minimum volumes, both of soil removed and permeable fill brought in, is very important; but it cannot be of any detriment to the required drainage capacity of the system. Additionally, when 'trimming' a design, a thought must always be given to the equipment that is going to be installing it.

You may be specifying a system which requires several machines where one would do, or a machine which is not easy to locate. Digging-wheel type trenchers have a width and depth restriction, generally 50-75mm and 600mm respectively. Chain trenchers similarly cannot

generally go much less than 80-100mm wide, or much more than 150mm. At the greater widths and depths it is not easy to find a machine which can elevate soil directly into a trailer and thus soil handling becomes a problem. Deep drains, sometimes necessary for seepage lines, represent such a problem. The author has seen an ex-NCB loading shovel make an almost perfect job of lifting soil from a turf surface, following deep drain installation on a fairway, but who has the nerve to recommend this on their course! To avoid this type of problem the design might be adjusted. Is it possible to install two 150mm outfall points rather than one 300mm? Once out of even a large trenchers' capacity, a simple job can become a civil engineering exercise.

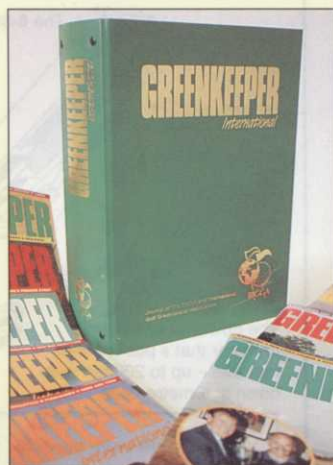
Design must carefully take into account gradients too. It is possible to 'grade-through' a hump or hollow, but the trenching depth capability becomes critical, as does an accurate means of levelling, ie. with well set-out boning rods, or → 46

Magazine binders: good sense and great value

A well-worn phrase borrowed from the world of antiques and collecting – today's disposable is tomorrow's collectable – is really a warning not to throw things away. If you doubt such wisdom, think how valuable an early version of the simple hand mower is today.

But there's more to the whole question of keeping things than mere profit. For writers, researchers, lecturers and all practical exponents of business; art; craft or science, the most valuable source of information is the magazine, especially those from days long past.

This applies equally to the magazines of today, and a visit to the office of most head greenkeepers will usually reveal well-



thumbed copies of even the most current issues of trade magazines, often stacked neatly with the good intent of keeping them

for posterity.

Sadly, these copies often get mislaid, damaged or 'taken away' and what began as good intent can end as infernal frustration.

With that thinking in mind, and conscious of the fact that the bulk of serious articles appearing within the pages of Greenkeeper International offer the means by which greenkeepers may return to a feature of particular interest – perhaps to refresh the memory on a well established though perhaps little-used technique or to merely confirm an understanding of a given method or philosophy – your Association have commissioned binders for your copies of Greenkeeper International.

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members can be witnessed in the provision of these clever binders, produced in the Association's green livery, stylish and convenient, and emboldened with the BIGGA logo on the spine.

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44 → (now more probably) with laser equipment linked to the hydraulics of the machine.

Many mistakes are made on the backfilling stage, often resulting from the design or specification. It is not necessary, for instance, to lay a normal drainage pipe on a bed of gravel or to support it on either side. I view this as a waste of effort and materials. It is not always necessary to fill a trench up to the same level with permeable fill. Up to the surface where surface water interception is required; at 100-150mm deep where connection with the topsoil layer, or a slit-groove system may be useful; perhaps none at all where the pipe function becomes water carrier rather than water collector. Remember too that it is possible to get unperforated pipe for this function, where sediment and root ingress is a possibility.

The topsoil finish to a drain presents difficulties too. Most excavating equipment has to remove all soil and replacing a proportion of that soil means most probably a separate operation, placing what is essentially subsoil on the surface – this is not desirable! A sand finish is often chosen over the permeable fill but many do not like the effect during dry weather, with drought induced yellowing lines appearing easily.

DRAINAGE DECISIONS

Furthermore, check bridging factors to avoid sand migration.

Summarising on the design aspect suggests a simple logical sequencing of what, how and when, thus avoiding the embarrassing if not disastrous afterthought.

Installation

I begin this section with an announcement to new course developers: put the most comprehensive system in now whilst the shackles are off, it pays in the long term. Big machines can be used with impunity, high work rates, low costs. The so-called trenchless drainage option is there, materials can be hauled around the site with regard only to caring for soil conditions.

Once the course is sown or (even worse) being played, material carting can become a nightmare. Excavating the turf is strictly taboo, interfering with the status quo, albeit a damp one, out of the question. Well okay, that's a bit strong, but better to avoid such problems at the construction stage. Even without

this there are often quick, effective ways to install remedial or new drainage systems which avoid the protracted struggles of green chairman and greenkeeper alike. The techniques and equipment do exist for all sorts of apparently unusual conditions, situations and requirements.

The actual installation work is made much less traumatic if everyone knows what to expect: what is involved, how long it will take, when will the after-effects be gone etc. Weather unfortunately could be the biggest and unavoidable trauma of all. Provisional plans for alternative access routes, material drop-off points, lower ground pressure equipment, are sensible for critical schemes. The budget should also cover other weather effects such as standing time: hire costs; extra transport costs, even track-laying or returfing work.

Hopefully this article has clarified the position to some extent. Drainage work is pretty straightforward if planned properly. There is nothing wrong with the piecemeal

approach – of phasing work and gradually intensifying a system, patching up as required – in fact there is much to commend it. But if this approach is taken in hope rather than through calculation you may just possibly be prolonging the agony unnecessarily.

The benefits? Better turf wear, less disease, happier golfers, confident greenkeeper, less input/ higher output, bulging coffers! Well perhaps not bulging, but the financial potential is there.

Finally, as a last general comment, take a step back from the course occasionally and look objectively at the potential for major improvement work. Look at drainage; bunkers; landscaping; landform, tees and greens – and ask yourself if piecemeal improvement is the best way to raise the profile, to fend off competition or improve finances?

Highly skilled though most greenkeepers are, there comes a point where development plans outstrip staff capacity. In these cases, short-shrift could be made of such plans with the effective use of outside help.

■ The author, David Hemstock, is an independent consultant specialising in golf course development and upgrading.

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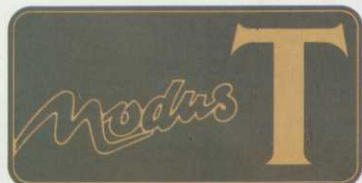
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Top Dressing

HARDWARE

Most golf courses use a variety of top-dressings for their greens, these varying greatly in moisture content and particle size and thus in their 'flowability' and ease of application. In addition there are a number of other materials, such as salt, grit, fertiliser and seed which may need application and which can be spread by specific machines. However there is always the danger of seeking a 'jack of all trades' machine which may be 'master of none'.

As with any machinery purchase it is vital to establish priorities, be they price, accuracy, longevity, low ground pressure or any other feature, and to establish which materials need to be spread, with what accuracy and at what volume and rate. Having set these goals it becomes easier to select or reject specific machines. Prices of spreading machinery vary from a low of around £500 – if you are prepared to accept the limitations of a spinner broadcaster – to £11,000 for a state of the art Turfco LA2 Mete-R-Matic.

Spinner broadcaster machines range from the simple single disc tractor mounted machines such as the Amazone EKS through to trailer spreader models of which the Charterhouse Bulk Dresser is an example. There are also many other makes of broadcaster with single or double discs. Critical appraisal may be needed with the former, ensuring that there is adequate agitation, but the latter in trailed form and designed or adapted for spreading volume material should be cost effective for high outputs.

More conventional for top dressing are machines such as

those produced by Sisis, Huxley, Modus T, Turfco, Charterhouse, McConnel and Ransomes. These machines place the material over a fairly narrow well defined band, often assisted by a rotary brush to break up and impel the dressing into the ground. They are available variously in fully mounted, semi-mounted (with rear support wheels) and fully trailed versions. Prices range from about £2,000 upwards. A number of machines, such as those from Sisis and Modus T Systems, are available in mounted or trailed versions and are easily converted – as is the Amazone spinner broadcaster. The most suitable form for specific situations will depend upon a number of factors, such as the prime mover available and capacity required.

The options for the prime mover range from (compact) tractors to turf maintenance vehicles (TMVs), such as Hydromain or Cushman. However there is a growing range of such machines, including those from Huxley, Jacobsen, Hauler, Kawasaki and John Deere. Compact tractors may need a more expensive trailed type of top dresser, as many are too light to be stable when the implement is fully loaded. For non-linkage, non-PTO prime movers, such as ATVs, a bogie or chassis with an independent engine is available, capable of carrying virtually any mounted implement including spreaders and sprayers.

Three types of drive are common for spreaders and top dressers: ground wheel drive, PTO or hydraulic. The advantage of ground wheel drive is that distribution is ➔ 50

HUGH TILLEY
reviews the
latest
hardware and
equipment for
top dressing

Pictured:
the Charterhouse
Bulk Dresser



Amazone Ground Care - GS15 dresser



Cushman Turftruckster fitted with fifth wheel attachment



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Height 1m 70cm	Tyres 12.5/80 x 15.3 14 ply
Length 3m	Minimum tractor requirement 45 h.p.

4 tonne and 2 tonne versions are also available for use with the smaller compact tractors.

FOR SALE OR HIRE



(0344) 860690

E & S SPORTS GROUND CONTRACTORS

39 KNOX GREEN, BINFIELD, BRACKNELL, BERKSHIRE RG12 5NZ.

Top Dressing HARDWARE

49 → related directly to the area covered irrespective of engine speed or gear ratio, the disadvantages being a danger of wheel slip, an impracticality for mounted machines, and spread cannot be instantly instigated or altered without forward travel.

PTO output is dependent upon gear ratio – double forward speed and you halve application rate – this being both an advantage and disadvantage. Most PTOs are now independent, thus making it easier to start and stop the run without having to stop forward travel, but perhaps the greatest advantage is that PTO drive is simple and inexpensive. A few tractors (such as some M-F 35s) have a ground speed PTO which forms an even more certain ground related drive. Hydraulic drive provides the most flexible system of operation, as speed can be infinitely adjusted within the limits of prime movers flow and pressure, and is equally easily stopped and started. Several machines use the PTO to drive a hydraulic pump for the implement's own closed circuit hydraulics. Hydraulic drive is also gear ratio dependent, but because of the system of pressure control it may be remarkably little effected by variations in engine speed, thus the operator may even be able to increase spreading rate or density by reducing engine speed.

Spread rate is normally controlled by either metering the dressing with a feed roller (or belt), or by using an adjustable gate. Some machines use both methods. Adjustment can be made by changing the speed of rotation of the roller (or belt) or by widening the feed gap or both, according to model. Some machines are easier and quicker to adjust than others. The feed roller system should give the most positive output and the ability to crush lumps, while a gate feeder has the advantage of equalising out the feed rather better. Rates with both types will vary according to the consistency and moisture content of the material being spread, thus if accurate rate control is needed then calibration is essential.

Some machines cannot achieve

very high or very low rates with certain materials, whilst others, such as the Modus T, have an optional fine material kit available for dry sand. Specific models may offer greater flexibility if pulleys (or sprockets) can be interchanged, thus reducing or increasing belt or roller speed. Some machines need the roller or belt to be clean in order to work with damp materials, but the fast rotating brush common to most top dressers has the double advantage of cleaning the belt/roller and 'flicking' the top dressing down into the turf. Damp materials also need a hopper design which prevents bridging, or a machine with an effective form of agitation. Not all machines offer agitation: on some it is optional, stoppable or removable, and this must be ideal (assuming that it is needed at all).

Most brochures give dimensions: weight, height, capacity, hopper opening size etc. Height and opening size will tell you how easy it will be to fill and how it will fit with existing or proposed manual or mechanical handling equipment. Mounted models may be difficult to fill with a large loader bucket and high sided models are not popular for filling by hand from bags – although it is usually possible to build a ramp or load from a trailer. The Charterhouse Easy Spread is unique in its ability to scoop up its own load.

Weight and capacity data provides several useful indications, while tyre size is important where compaction is a problem. Capacity can be equated very approximately as one kilogram per litre of capacity. Limited capacity can be compensated for if re-filling is quick and easy, say by fast travel speed or proximity to the heap, or filling from the trailer etc. Ease of cleaning, maintenance and servicing are other features which have values in terms of time, trouble and length of life, and which are thus worthy of consideration before you buy. On-site demonstration and the testimonial of a colleague (another greenkeeper) with experience of the machine are other 'musts' before committing cash.