

TO EARTH



Stronger root action following coreing

provide first class playing conditions virtually year round is well established. In more recent times the increased popularity of golf and consequent greater pressures from play, especially on the free-draining links soil, has led to some deterioration. Much of this is due to the build-up of compaction and sheer wear and tear. In these circumstances the finer grasses are at a disadvantage. Root systems become shallow in compact, airless soil and recovery from wear is much slower, leading to a more open turf and inviting weeds, moss and free-seeding weed grass species, particularly *Poa annua*, to invade and bring a decline in playing conditions.

The advent of pop-up sprinkler irrigation has all too often been another nail in the coffin of fescue/bent swards, not because water as such is bad for grasses, but simply that applications have often been too excessive. The perceived answer to a thin sward was often more fertiliser and even more water. With high-pressure salesmen pushing high analysis N:P:K mini-granulates as hard as the could, (and in past times there was barely a single nitrogen only proprietary fertiliser on the market), there can be little wonder that soil fertility levels and thatch increased. Both practical experience and trials have shown that fescues are less successful with increased water and fertiliser use. Initially, the more aggressive bent grasses take over, but if high levels of play continue and aeration remains unsatisfactory, even they suffer. Thatch build-up and an increased spread of *Poa annua* completes the cycle of deterioration witnessed on far too many formerly excellent links courses.

Fundamental to the management of links is adequate provision of machinery and manpower and the correct deployment of both. Regular aeration, involving a combination of occasional Verti-draining or hollow coring treatment along with regular slit

ting, particularly during autumn and winter, is essential to promote deep rooting, the relief of compaction and aid thatch breakdown. Top dressings need to be very sandy in character, ideally using local soil and sand compatible with that existing on the course. Fertiliser use should be kept to a minimum and water applied in just sufficient quantity (and in the right places) to maintain slow, steady growth. Inevitably a significant amount of hand watering is required on featured greens.

It is important to appreciate that there are fairly strict limitations in the amount of use golf links can take whilst continuing to provide first class swards and playing conditions. It is widely recognised that turf consisting predominantly of fine fescues with relatively small amounts of browntop bent will provide firm, resilient and uniform playing surfaces year round, with excellence in summer when swards are closer mown and are dry, fast and true. Such systems are essentially low input and therefore relatively low output. They cannot support high levels of play both winter and summer.

Increase inputs of fertiliser, water and aeration to sustain higher levels of play and there are alterations in sward characteristics. Browntop bent becomes more vigorous whilst fescues decline to perhaps 25-30% of ground cover. Even so, playing qualities can remain first class throughout the year. Such an approach based on moderate input will still only support moderate output and a fairly tight rein should be kept on rounds played, say 30,000 to 40,000 per annum.

Heathland

Courses established on heathland are frequently based on sandy soils which have naturally free-draining characteristics. These soils are often acidic and basically low in fertility, again encouraging a sward dominated by finer turf species like fescues and browntop bents. Management must aim at preserving free-draining, well-aerated soils through a sound programme of mechanical treatments. This will include frequent slit tining and either Verti-draining or hollow coring in alternate years. Top dressings must be compatible with the existing sandy soil and should not be too acidic, thus maintaining soil pH levels more or less where they are. For similar reasons, limit the use of acidifying fertilisers, substituting chelated iron preparations (without added N) for sulphate of iron sprays in autumn and winter.

Parkland

Medium loam soils are frequently characteristic of parkland courses. These may be slightly acidic, are often of moderate fertility and can support excellent browntop bent swards, though often with a good deal of *Poa annua* and some courser species, notably Yorkshire fog grass. Such soils rely entirely on soil structure for drainage and the maintenance of good structure is of paramount importance. Compaction from over play leads to a reduction in soil air content and slows down drainage quite dramatically. This can quickly initiate a cycle of deterioration, especially where attempts are made to escape the situation with excessive inputs of fertiliser and water. If this path is followed, typically there is increased thatch accumulation in surface layers, a further slowing down of drainage and production of a soft, spongy, moisture-retentive turf which becomes dominated by *Poa annua*. Not only is this bad for golf, it also encourages fungal disease. The effects of winter die back – and dead patches due to disease – produce disastrously weak and uneven playing surfaces through spring and early summer. All too often the response, perhaps in desperation to escape criticism from members and committee alike, is to reach for the fertiliser bag! A shot in the arm from high analysis complete fertiliser, or worse still Nitro-chalk, may at best provide temporary relief, but like the drug addict, you have to keep going back with more!

On such soils golfers must realise there are limits to the amount of use putting greens can take, especially during the wetter months of autumn and winter when the compacting effects of play on moist soil are at their worst. There comes a

'New constructions should follow modern practice on greens and tees, providing drainage carpets of stone with emptying pipe drains. A sand/soil mixture with drainage rates determined by lab tests must be provided as a growing medium'

point when even vastly increased aeration work becomes counter-productive, and, of course, ground conditions limit what can be achieved mechanically anyway. Where necessary, it is surely better to restrict play to temporary surfaces when the main greens are saturated with moisture in winter, or when they are affected by white frost of just thawing. In that way, the majority of members benefit from playing surfaces which have some chance of improving quickly in the spring, once weather conditions become suitable.

Regular slitting and use of the Verti-drain, combined with hollow tining to control thatch, will aid rooting and will help integrate top dressings. All are important. Use of sandy top dressing material will be beneficial in breaking up and diluting thatch, as well as helping to maintain acceptable pH values and, of course, is essential to maintaining smooth surfaces. The often kinder inland climate and more fertile soil allows moderate to strong growth with good recovery throughout the growing season, though care is still necessary to avoid over-use of fertiliser and three or four dressings with a mainly nitrogen product will usually suffice. Such soils are unlikely to be deficient in phosphate or potash. Use sulphate of iron with care, particularly where pH levels are already acidic – in that situation the chelated products which are much less acidifying are to be preferred.

Clay

Courses built on clay soils pose their own special problems. These are quite often fertile, retaining nutrients by the process of cation exchange. Phosphates in particular can build up to high levels if applied regularly. Soil pH values are relatively slow to change. The more acid clays often support excellent, hard wearing and wiry swards based predominantly on bents,

both browntop and creeping bent mixed with some fescue, especially on the less heavily trafficked fairways.

Neutral soils support more vigorous turf, often containing a great variety of grass species but predominantly browntop bents and *Poa annua* with paler-coloured, courser-leaved patches of Yorkshire fog on the greens.

The overriding characteristic of clay is its great moisture-retentive capacity and slow-draining properties. Surfaces readily smear and compact under the effects of play and use in winter can be severely curtailed. Where bad initial construction has destroyed what little structure there is, or has created severe compaction into the bargain, conditions in winter can become a quagmire.

New constructions should follow modern practice on greens and tees, providing drainage carpets of stone with emptying pipe drains. A sand/soil mixture with drainage rates determined by laboratory tests must be provided as a growing medium.

On established courses one has to make the best of what nature has provided or face up to the disruption and high costs of reconstruction. At low play levels, clay courses can provide acceptable conditions, almost year round, but with high membership figures and a lot of winter golf, Clubs soon come to grief. It is at this stage that the know-alls start to clamour for more fertiliser, water and lime application to promote faster growth and recovery from the damage created by over-use in winter. Bow to these pressures and within a year or two the tough, acid bent grass turf has been replaced by soft *Poa annua* dominated swards, riddled with worms and often weeds, building up thatch very quickly. Winter conditions are abysmal and putting surfaces are frequently only really acceptable from mid-summer to autumn, when growth of *Poa annua* is at its peak.

Clay soils at field capacity are slow-draining. That fact of life has to be accepted. Play on them when saturated in winter and you are storing up trouble for the season. It therefore becomes imperative to provide and use temporary greens whenever necessary, especially from November to March. Pipe drainage systems can help make the most of these soils but are no magical cure. Water still has to percolate through soil in order to reach the drains. Timely and regular aeration will of course help, and it remains important to ensure there are no compacted soil layers which act as barriers to the free movement of water through the soil profile. The Verti-drain is less effective in these conditions and can make matters worse where you put water to depth and there is nowhere for it to go. It may be necessary to utilise a mini-mole plough to form channels which can help lead such water more quickly to outlet via pipe drains. Hollow tine coring can certainly help, and by a process of soil exchange it is possible to develop a sandy top profile that can support play better without severe smearing or surface compaction.

I am not in favour of pure sand top dressing. Too often there is no integration with the underlying soil and root systems are confined to the immediate surface. The turf becomes shallow-rooted, highly susceptible to drought in summer, and demands heavy watering and feeding with the inevitable spread of *Poa annua*. In winter the top may be firmer but drainage is often worse, due to the perched water table at the interface between the fine capillary pores of the clay and the sand layer. There are no simple answers on clay soils, especially where there are high levels of play.

In summary, adopt a management style which will suit the soil type on your course, with an emphasis on 'lean greenkeeping'. Committees and members must be prepared to back up their head greenkeeper with adequate levels of manpower and machinery. It is also essential that members recognise that whilst our mild climate may permit enjoyable golf almost 12 months of the year, soil conditions are always a limiting factor. Abuse putting surfaces through overplay in the winter and the inevitable result is poorer surfaces through the main competition season of spring and summer.

● David Boocock is a senior agronomist with the Sports Turf Research Institute.

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TERRALIFT



Letters

■ May I express my appreciation to both ICI and BIGGA officials for the hospitality shown to me during the recent ICI Premier Greenkeeper award held at Aldwark Manor.

I felt this to be a real learning experience and would urge all greenkeepers to support these educational competitions.

Finally, may I again congratulate David Whitaker on his success and wish all finalists good luck in the future.

TIM MCCREADIE Oundle, Peterborough

■ I feel I must enter the fray regarding the controversy arising from the cutting heights declared by George Barr at Ham Manor (October Greenkeeper International), and the subsequent letters which appeared in December.

First, I must come clean and admit to being a long-time Jim Arthur fan, though not always totally agreeing with everything he says, as will be seen from the following.

Reading your article, I considered it the most sensible and honest I had ever read since first becoming interested in this profession. I control eight golf courses and seven bowling greens and every one is managed in a very similar way to that outlined by George Barr, including height of cut. The only real difference is that my top dressing is an 80/20 mix of medium/course sand and sterilised soil, though I have used a straight sand in the past on numerous courses in Ireland, (where good soil is at a premium) with great success. My findings suggest that a medium/course sand, rather than a medium/fine, is infinitely superior as a green top dressing, with peat a definite no-no.

Returning to the point re Barr's seasonal cutting at 1/8" Messrs Bertinshaw and Jones suggest that this is not good greenkeeping practice, as does the STRI and, apparently, Jim Arthur. Indeed, judging by the number of courses I play with s-l-o-w greens, there are a large number of other greenkeepers who share this view.

Let me state a few facts on cutting height. First: If a basic maintenance programme is unsound, with soft, spongy surfaces produced as a result, then bench setting becomes irrelevant, as the mower will obviously be 'sitting down' into a thatch layer when cutting. This 'sitting down' produces scalping when cutting heights are dropped, the results of which could be seen to dramatic effect last year on television.

Second: I have been cutting greens to 1/8" for 12 years now, only raising to 3/16" in winter, and have never experienced any problems **because the surfaces remain firm** thanks to a solid maintenance programme. During 1990 my five bowling greens at Northfield hosted the Scottish Ladies, Scottish Mens and Ladies Home Internationals over four weeks in July/August. Over that time, plus a gradual drop over the preceding weeks, they were cut at 3/32" twice a day with Paladins and still retained the same high percentage of fine grasses found at the start of the season. Our bowling greens have been overseeded for the past 3 years in Autumn with a 50/50 mix of browntop and Emerald creeping bent – yes, creeping bent – and this works very well because they are not played on in the winter.

Third: In his book *Practical Lawn Care*, published in 1939, R B Dawson of the STRI reveals the results of an experiment in cutting heights carried out at St Ives, summarised as follows: Two areas were cut at 1/8" and 3/8" respectively. First result: the long cut produced only 75% – 97% of grass clippings depending on seasonal variations. Conclusion – the shorter cut encourages more vigorous growth. Second result: After two full seasons the plot cut at 3/8" contained (having been sown with highland bent) 17.6% *Poa annua* and 6.3% weeds, with the plot cut at 1/8" containing 0.5% *Poa annua* and 2.1% weeds. Moss was slightly more common on the shorter cut. Other results showed that counts of shoots and tillers on the 1/8" cut were outnumbering those on the longer cut by nearly 2-1, thereby giving a much denser sward. One other interesting fact revealed that worm activity was three times greater on the longer cut.

This, remember, was back in 1939. I do not subscribe to the theory that because of heavier play nowadays things have changed. Certainly, there is a greater need for vastly improved aeration, but not for cutting heights.

One other point concerns winter cutting. Every old publica-

Something to say?
Letters on all aspects of greenkeeping are welcomed. Send your correspondence to the editor, Greenkeeper International, 13 Firle Close, Seaford, East Sussex BN25 2HL. We reserve the right to edit submissions.

tion I have ever read on greenkeeping states categorically that grass should be cut regularly in winter. My experience certainly confirms that not cutting, or cutting too high or too infrequently, causes course growth and wet, soft patches prone to disease and damage.

Finally, I would take issue with Mr Bertinshaw over his comments on cutting height adjustment. Surely he can work with millimetres if he wishes, just as I and many others work in sixteenths of an inch, as we wish. If he cannot set a mower accurately using a ruler and straight edge then he apparently still has a bit to learn.

DUNCAN GRAY

Golf Course and Bowling Green Superintendent,
Kyle and Carrick District Council, Ayrshire

■ In order to avoid possible misinterpretation and confusion, I would like to observe that the otherwise excellent, informative (and condemnatory!) article by Tim Colclough on sand greens (January Greenkeeper International) is fatally marred by his failure to specifically differentiate between sand-only green constructions and those with 'sand based root zones'. Virtually all greens are now built with sand-based root zones, ie. sand/soil/peat; sand/fen soil; or even sandy links greens with the links sand ameliorated by natural build up of humus, as Tim correctly observes.

The recommendations and observations in his article, based on STRI research and practical observation, refer to **sand-only construction**. Even if followed, they cannot prevent severe and serious attacks of *Ophiobolus* (Take-all Patch) and eventually *Poa annua* dominance.

I must ask that all concerned realise that greens with root zones (however sandy and free draining) which incorporate a humus rich additive to act as a buffer or nutrient-retaining element should never be fed with phosphate or lime and only exceptionally with potash using only limited amounts of basically slow release nitrogen, or *Poa annua* invasion will be as rapid as it is extensive.

However, if omission of the qualification about sand only, as opposed to sandy humus-enriched root zones, was the result of an oversight, his qualification to the unarguable statement that "there is no place for pure sand greens in this country" except where there is "a complete lack of suitable local materials and a tight construction budget" is illogical and misleading. If money is short, why install a system which demands very intensive and expensive management to even postpone the inevitable disastrous end result? Furthermore, there are nationally available ideal sources (no monopoly of any one firm, though some are better than others) of suitably organic-rich light soils with very low clay and silt fractions for admixture with quality controlled sand at prices which add, at most, 1% to construction costs.

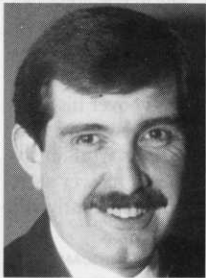
It is to be noted that the use of 'local soil', which I have long condemned as being expensive to extract and screen, unreliable, often contaminated and very rarely physically suitable, not to mention the restoration costs involved on site, is now "not advised by the USGA Green Section". Hopefully, we shall soon have an agreed specification for British and European green construction – if it can be agreed before the Germans (and their 'Greens') get theirs in first on the EC table – for if that happens the resultant problems and embargoes will be horrendous.

When German architects state that they want their courses to look like Disneyland (I quote verbatim) where will our Royal and Ancient sport still be played?

JIM ARTHUR Budleigh Salterton, Devon
GREENKEEPER INTERNATIONAL February 1992 13

Reduced registration fees makes top award more accessible

Be a Master of your profession



BIGGA Education Officer David Golding: 'I urge all members to apply for an MGC registration form'

None can deny that the recent happy occasion – the presentation by BIGGA President, Viscount Whitelaw, of Britain's first ever Master Greenkeeper Certificate to Laurence Pithie – which took place at the BIGGA Turf Management Exhibition in January – represented a new era in the recognition of greenkeeping as a vitally important profession, together with the continuing need to have clearly definable professional qualifications.

Ever mindful of this need, the Association has announced a major change for those members contemplating registration for the Master Greenkeeper Certificate. **The initial cost of registering for MGC, which was £60, is reduced to just £10.**

BIGGA Education Officer, David Golding, has broken the MGC specification down into plain language, enabling members to clearly understand how the scheme operates and the 'scoring' which takes place.

"There has been a great deal of interest in the scheme by both members and employers, but many are unsure of the mechanics of the scheme," said David.

Details are as follows:

STAGE ONE

The 'goal' is 200 credits, with members gaining credits toward this goal by both experience in the workplace and educational exposure.

Experience: By definition, this is calculated by multiplying the number of years a member has been employed in greenkeeping by four, for example:

- Apprentice greenkeeper, Slyceham Golf Club 1970 -1973
- Assistant greenkeeper, Divot Valley Golf Club 1973 -1980
- Deputy head greenkeeper, Hackinatit Golf Club 1980 -1987
- Head greenkeeper, Shankem-on-the-Tee Golf Club 1987 - 1991

Thus our fictitious example gives a total of 21 years x 4 = a total of 84 credits.

Education: Credits are awarded for the completion of any of the following:

- Sports Turf Research Institute one week course...8 credits
- BIGGA Management courses (each of one week).8 credits
- Supervisory Course (Elmwood College) one week course8 credits
- City & Guilds
 - City & Guilds Phase I – one year course.....15 credits
 - City & Guilds Phase II – two year course54 credits
 - City & Guilds Phase III – one year course24 credits
 - City & Guilds Phase IV – one year course24 credits

Note: If any of the Phases I-IV are taken at an 'Approved College' of the Greenkeepers Training Committee, add three extra credits per phase (maximum 9).

- Scotec/Scotvec
 - Modules – 40 hours-6 credits
 - Half module – 20 hours3 credits

Note: The maximum credits attainable for greenkeeping craft level modules is 102, with 15 credits for supervisory modules. Three extra credits will be awarded for each set of

five modules, obtained at an 'Approved College' (maximum 9 credits).

- Attendance at BIGGA National Conference
 - From 1988 onwards: per conference.....5 credits
- Attendance at BTME Seminar Programme
 - From 1990 onwards: per session.....1 credit
- Attendance at BTME Workshops
 - From 1991 onwards: per workshop.....4 credits
- Attendance at Regional/Section Seminars
 - From 1990 onwards: per seminar.....3 credits
- Pesticides Certification
 - PA 1 – pass.....5 credits
 - PA2A or 6 Hand held or tractor mounted.....5 credits

Note: The maximum credits attainable under Pesticide Certification is ten.

The Association also exercises overall discretion to award additional credits for other approved qualifications not detailed above; and will be pleased to give any certificates held by a candidate due consideration. Copies of such certificates should be forwarded to HQ when registering. Upon registration, a detailed credits report is prepared for each candidate and forwarded to him/her. As further credits are gained, each candidates report is updated at BIGGA HQ.

When the magic '200' mark is reached, a further fee is required from candidates. The cost of this has been increased from £100 to £150, and upon payment the candidate moves to stages 2 and 3 of the MGC.

STAGE TWO

(For course managers and head greenkeepers only)

During the season of growth the candidates golf course will be visited by two assessors, this to ensure that correct management and maintenance practices are being implemented. The date of such visit will be confirmed following agreement between the candidate and David Golding. Assessment guide-lines are sent to each candidate to guide them in preparation for their course visit.

STAGE THREE

Upon receipt of the £150 fee for stages 2 and 3, candidates will be provided with a syllabus to work on prior to an examination, which is held annually in May. The examination consists of two three-hour papers: 1) A case study. 2) Five questions, one from each individual section of the provided syllabus.

Summarising, David Golding said: "The MGC is clearly seen as the 'Way Forward' for BIGGA members and I firmly believe that in the future many potential employers will increasingly refer to the MGC as the standard of excellence within our industry.

"Members should ensure they are not left behind by registering now. I urge them all to apply for an MGC registration form (obtainable from HQ), complete it, and send copies of certificates held and a cheque for £10 to BIGGA HQ.

"I hope this clarification of the scheme will inspire many more greenkeepers to join and I will be happy to discuss any points – including any credits already earned – with them. I expect my telephone line to run 'hot' in the weeks ahead!"

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Viscount Whitelaw's proud message at the launch

If ever proof was needed that the greenkeeping profession is in a very healthy state – along with the industry that serves it – the undeniable evidence was to be found in Harrogate at our fourth and best-ever BIGGA Turf Management Exhibition – and it didn't take much finding!

From the opening ceremony, when a relaxed and smiling Viscount Whitelaw announced the launching of the new Greenkeeper Education and Development Fund, offered congratulations to Laurence Pithie on his Master Greenkeeper achievement and praised all members of the greenkeeping profession for having "arrived and come of age" in no uncertain measure, the feeling throughout was one of upbeat optimism.

Special awards were made, special thanks given, hearty congratulations offered. All this in a show that refused to lie down and wallow in the so-called doom and gloom of current business fashion. In a play on the initials BTME, one informed wag likened the letters to Brilliant Times, Magnificent Enthusiasm!



BTME means different things to different people, though above all else it means the opportunity to learn more of new technology, to take concentrated doses of professionalism in a busy and sustained seminar and workshop programme and to meet the trade in an interaction that is as important for them as it is for us. And it works. Order books were reportedly bulging, salesmen observed with grins from ear to ear and a good many green chairmen appearing enlightened in a way that had hitherto been merely wishful thinking on the part of their head greenkeepers. No doubt about it, BTME was a winner.

In a week in which so much took place it is well nigh impossible to highlight each and every happening. However, for this writer the events that remain indelibly fixed are of a human nature: the lump in the throat as Laurence Pithie took his first fitting of a very special "Masters" jacket, the Middlesbrough Golf Club Chairman, Jack Higgins, rendered near speechless at being presented with a plaque in recognition of the Middlesbrough Club's selfless encouragement of "our" Chairman, George Malcolm, and the solid mass of enthusiastic Scottish faces filling a multitude of theatre seats when their very own Jim Paton spoke of "Villains and Heroes." *Roll on BTME '93!*

DAVID WHITE



The Iseki Golf Tournament is now an established favourite with BIGGA members. Viscount Whitelaw presents Iseki's Colin Gregory, with a special award



Rufford's are longtime supporters of BIGGA's aims and have funded many worthwhile ventures. Viscount Whitelaw presents Rufford's MD, Peter Jefford, with a special award



Kubota UK Ltd have supported BIGGA generously in the provision of Aldwark Manor Management Training Courses. Viscount Whitelaw and Kubota Vice President, Brian Hurlley, share a quiet word or two



The contribution from ICI Professional Products is represented forcefully in both the ICI Premier Greenkeeper of the Year and our own National Golf Championships. Receiving a special award from Viscount Whitelaw is Roger Mossop, Marketing Manager of ICI Professional Products



An award was made to Alan Kite, seen here with Viscount Whitelaw, in recognition of his excellent trustee service following the transfer of BGGGA funds to the new BIGGA Education and Development Fund



Also present was Alan Gamble, a fellow trustee of BGGGA funds, who was presented with a special award by Viscount Whitelaw. The third trustee, former Association Chairman, Ivor Scoones, was awarded a special plaque in absentia

of best-ever BIGGA Turf Management Exhibition:

GREENKEEPING HAS COME OF AGE



A sentimental and altogether delightful award was made to Middlesbrough Golf Club Chairman, Jack Higgins, in gratitude for the Club's unselfish support of George Malcolm throughout his year of office



A gathering of the clans - as four previous Chairmen of the Association meet at Harrogate. From left: Walter Woods, Paddy McCarron, Jack McMillan, Neil Thomas (Executive Director) and George Malcolm



In recognition of Lindum Seeded Turf's support of the National Education Conference, Stephen Fell, Executive Director, receives a special award from Viscount Whitelaw



Pictured receiving their awards from Viscount Whitelaw for support of the Student Greenkeeper of the Year Award are Carlos Ochoa, Director of Golf International, Toro and Graham Dale, Managing Director, Lely (UK) Ltd.



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The way to spray

by JON ALLBUTT

The work of the consultant requires that he tread the turf of many a hallowed venue as well as that of the small Club. You would think that the level of equipment would be in keeping with the size of the budget, but not so! It is true that there is usually an impressive array of new tractors, Cushman's etc at the larger Clubs, but there is certainly no consistency with sprayers. There are many smaller Clubs with carefully maintained old sprayers that are still doing a very good job and there are also a fair number of new sprayers about too. What is surprising, at least at some of the larger Clubs, is to find some very tatty specimens indeed, often found in the corner of the sheds and covered in old hosepipe or fertiliser bags, and full of something very smelly and unidentifiable! Although the general standard of spraying equipment has improved over the last five years, there is still a long way to go.

To update or replace?

There is a temptation to upgrade an existing unit and in some cases this is a good idea. However, there are some important points to consider before making such a decision.

The Amenity Code of Practice sets the criteria whereby it should be possible to spray and minimise the impact to the environment. To meet this criteria, all sprayers must now be capable of applying a pesticide using nozzles and pressures that will ideally eliminate spray drift.

To ensure that nozzles do not drip they should be fitted with diaphragm or nozzle filter type check valves. Some old sprayers will not easily convert and may require new booms. Over the years, old pipework will have become worn, along with an accumulation of residues from old pesticides that will flake off and block filters. In addition, and this may come as a surprise to some, the inside of the main tank must be free of all residues. In reality, many aged tanks are so stained they are impossible to clean.

The sprayer should be fitted with a clean water tank to allow for the rinsing of containers away from the yard and also for emergency wash down. Some of these older sprayers are only ideal for use in applying seaweed and other liquid soil conditioners, and it may now be considered wise to purchase a new sprayer to apply pesticides, wetters and liquid Iron.

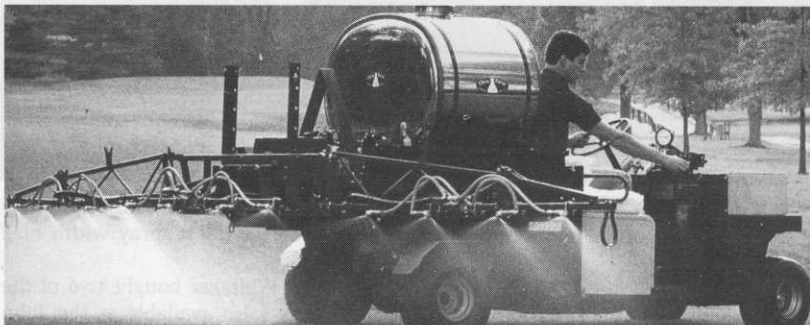
What to buy?

Compatibility with the tractor or other prime mover is a first consideration. Never assume the sprayer will fit, but always specify the prime mover when ordering new equipment. Make sure that the sprayer has all the necessary features to enable the operator to spray in accordance with the Code of Practice. These can be categorised thus:

- Bout markers. These are important to allow accurate spraying of fairways.
- Pump capacity. One that will allow all nozzles to apply at 1100 litres per hectare at low pressure with medium spray quality is desirable.
- Nozzles. Specify low pressure nozzles, or at least nozzles that will give good performance at 1-2 bar pressure, with no spray drift.
- Hand lances. The ability to use a hand lance directly from the main tank is important when applying growth retardants to banks; making spot treatment around trees; or total weedkilling of paths, not to mention the ability to apply a drench spray to greens when using fairy ring destroyers, wetters etc.

Electronic or manual controls?

The traditional method of operating sprayers is to manually



ChemPro/Cushman spray unit



Innovative Equipment spray unit

switch a valve on or off; pressure being set by turning a control valve one way or the other to achieve a desired setting. On tractor mounted equipment this usually requires the operator to turn around in his seat and operate the controls behind his head through an open window. It is difficult enough trying to keep a straight line without making matters worse by taking one's eye off the line of direction. In health and safety terms it is important to always be in control of the machine, for when operating on undulating ground and frequently looking away from the direction of travel, the work can be potentially dangerous.

Most manufacturers will supply electronic controls that operate the booms and pressure, these operated from within the cab. Some machines are also available with a control console which not only operates the booms and pressure but also ensures that the sprayer always sprays at the rate set, even if speed or pressure drops. These are very useful technical aids to safe spraying, but they do need to be checked regularly by calibration.

There are several American sprayers now available in the UK and these units are usually fitted with electronic controls. If you decide to invest in one of these imports remember they are set up for US rather than Imperial gallons, so ask for information on capacities and outputs to be provided in litres.

The new sprayers manufactured by Innovative Equipment Inc., a Canadian company, and under serious consideration for marketing in the UK by Jacobsen, have some interesting features: the boom sections travel on their own wheels – allowing the booms to take the shape of the ground being sprayed – and the boom sections are covered in a hood called a windfoil, designed to minimise any spray drift (this, however, will require some careful cleaning after spraying and may cause problems in instantly identifying blocked



The Hardi PS300
Cushman

nozzles). To minimise compaction on greens, hose-fed walking booms are available, these giving a spray width of 2 metres.

At the Wisley course, David Whitaker bought two of the American Hahn MultiPro 418s (also available as the John Deere sprayer), these being used by Wisley head greenkeeper, Bob Gilbert, and his staff. Bob, who has vast experience in using many different makes of sprayer, described the Hahn as a fantastic machine – praise indeed! The sprayer has a 568 litre tank, is very stable and manoeuvrable on the undulating ground at Wisley and will spray very large volumes, making it ideal for applying wetters, Iron and fungicides. The computer control system will work in metric measure and both US or Imperial gallons and stores valuable information about the spraying operation, which is then used to check the job and aid entry in the spray log and operator spray record book. There is a manual over-ride system in case of problems. Bob experienced a computer breakdown recently and was delighted when a replacement came from America within a week, faster service, perhaps, than some manufacturers here in the UK!

At the Buckinghamshire Golf Club, soon to be opened,

'Perhaps high-tech is the 'way forward' for the British greenkeeper. Time will tell!'

THELMA HOLLIS

Chris Marsden uses the American Chempro sprayer, imported by RFE Turf Machinery, with the Wilker Walker boom as an extra attachment for spraying greens. The Chempro also has a floating boom, which can be fixed in position. The bout markers are by Hardi, fitted here in the UK, though markers can be fitted at time of manufacture as an extra. Chris has used the system to good effect, the Wilker Walker working very well, though a marker dye is found desirable to assist with accurate covering of the greens. Like the Hahn, the system uses large volume hollow-cone nozzles, which spray an acceptable spray quality.

These systems are more expensive than any equivalent UK sprayer of similar specification. For example, the new Hardi PS300 Cushman can be fitted with electronic controls for on/off at an extra cost of £235.00 and a similar computer control system would be an extra £1150.00. This would take the total cost of the PS300 to nearer £3500.00, which is somewhat cheaper than the £8700.00 quoted for the Chempro with walking boom and bout marker.

The operators of these high-tech machines are very happy with them, all saying they are superior to the older, more traditional specification manual systems. We will all need to take a great deal more care in the application of chemicals in the future, so perhaps high-tech is the 'way forward' for the British greenkeeper. Time will tell!

● The author, Jon Allbutt, is an independent technical consultant to the leisure and amenity industry, best known to greenkeepers as a no-nonsense trainer and lecturer in pesticide regulations and the Code of Practice.

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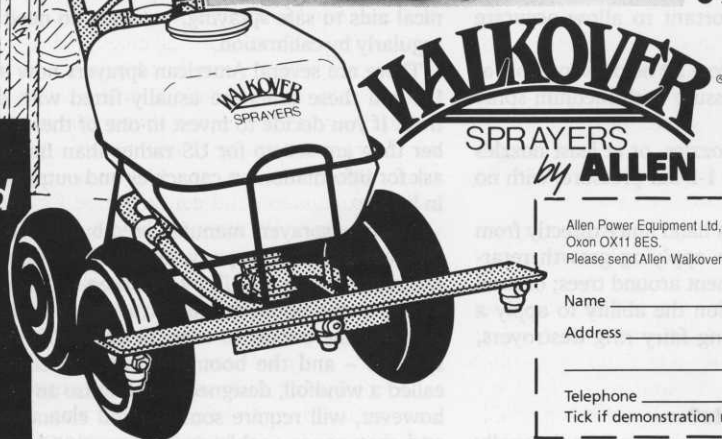


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