

Rachael and Gemma from Membership Services would like to welcome 76 new members to the Association and talk about fraudulent use of BIGGA cards.

Membership Update

Be Vigilant!

As reported in the news last month it has come to our attention that fake BIGGA cards are being used to gain courtesy golf. At first we thought the problem was confined to the North Yorkshire and Manchester areas, however we have since had a call from Cornwall, indicating the use of fraudulent cards is more widespread.

We are asking all members to show the Pro and the Club Secretary their cards so they are aware of what a valid membership card should look like.

If your club is presented with a fake card please ask for additional ID and if you can record the name and address of the user. If it is possible please confiscate the card. If you are at all unsure about a particular card please give the membership department a call and we will be happy to confirm the owner's membership.

Please inform us if any of these cards are presented at your club so we can build up a better picture.

The courtesy golf scheme relies on the goodwill of golf clubs and if the system is abused then you are at risk of losing it.

▼ An example of the correct BIGGA membership card



USEFUL CONTACT NUMBERS:

Please be ready to quote your membership number when calling.

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 BIGGA Websitewww.bigga.org.uk

National Championship 2004

The National Championships will this year be held at Alwoodley Golf Club, Leeds, on the October 4 and 5.

The Championship will produce the BIGGA National Champion over 36 holes of play, based on the lowest handicap score. This year the entry form for the championships appeared on page 10 of the May edition of Greenkeeper International. If you can't locate your May magazine then contact Sarah Norris for further details and an application form on 01347 833800 or see the website: www.bigga.org.uk and click on the 'events page'.

BIGGA welcomes...

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 Andrew Baillie, East
 Graeme Black, East
 Christopher Bruce, North
 Robert Bryant, East
 John Douglas, East
 Stephen Grant, North
 Mark Healey, West
 David Leys, North
 Ian McIntyre, Central
 Jon Methven, Central
 Craig Reynolds, Central
 Richard Thompsett, East

NORTHERN REGION

Michael Anderton, Northern
 Nick Armstrong, North East
 David Bateman, Northern
 Stewart Brown, North west
 Joe Buckley, Northern
 Michael Douglas, North East
 Benjamin Greaves, Northern
 Richard Hetherington, North East
 Mark Hirst, Northern
 Gavin Pickard, Northern
 Chris Stephens, Northern
 Gordon Street, Northern

MIDLAND REGION

Paul Barnes, BB&O
 Gareth Dennett, Midland

Glenn Gibbons, BB&O
 Lucy Giles-Townsend, Midland
 Rodney Ludgate, BB&O
 Kenneth Mackie, Midland
 John Munro, BB&O
 Alexander Piziura, Midland
 Edward Short, BB&O
 Paul Tustain, Mid Anglia
 Andrew Westley, East Midland

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Richard Edwards, East Anglia
 Daniel Frost, Essex
 James Gill, East Anglia
 Glen Holman, Kent
 Jason Hunt, Surrey
 Justin Hunt, East Anglia
 Alvin Huxen, Essex
 Alex Keene, Kent
 Paul Knight, Surrey
 Jason Lock, Kent
 Jonathan Marwick, Surrey
 John McDonagh, London
 Peter Millin, Sussex
 Gary Moore, Surrey
 Benjamin Scrivener, Essex
 Warren Torch, Kent

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 Chris Trott, South West

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 S Gooch, North West
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 S Thompson, N Ireland
 S Yamada, BB&O
 Tim Yates, BB&O

JUNE'S MEMBERSHIP DRAW WINNER

Just introduce one or more new greenkeeping members to BIGGA and your name will be placed into a draw to win a 0.5 litre isolating flask suitable for hot and cold drinks and soups.

Our congratulations go to Jeffrey Mills from Taunton and Pickeridge Golf Club.



Message of the Month Winner

Each month the person who has written the best message on the BIGGA Bulletin Board, which is found on the BIGGA website www.bigga.org.uk, receives an 18 litre Gelert Rucksack featuring a multi function organiser, 2 mesh pockets and a grab handle. (Rucksack supplied may be a different colour to that featured).

Our congratulations go to June's winner, Jason Bradbury from Royal Automobile Club whose message was posted on 30th April 2004 under the 'Talking Shop' section.



Course Feature



▲ Phil Chiverton

A Masterpiece

Scott MacCallum visits The Grove and meets the man charged with looking after a masterpiece.

At a time when a Picasso painting has sold for over \$100 million it is perhaps fitting to recognise an artist in another field, sharing a talent to take a blank canvas and create something unique. Renowned golf course architect, Kyle Phillips, is one such person and his latest British masterpiece, The Grove, confirms his status as one of the best around.

The man who designed Kingsbarns, near St Andrews, and Dundonald, the course recently purchased by Loch Lomond Golf Club on the west of Scotland, is justifiably proud of what he has created on the edge of Watford just inside the M25 loop, and he has received outstanding reviews since it opened late last year.

The responsibility for ensuring that the quality of the layout is matched by the course conditioning falls to Course Manager, Phil Chiverton, who joined The Grove in 2001 during the construction phase.

"I would say that it is an inland links," said Phil, when asked to describe The Grove, and you can readily see what he means.

Transport yourself away from Watford and you can easily see some of The Grove holes being included in the Kingsbarns or Dundonald layouts and vice versa.

The bunkers are small and deep and the greens have swales and fall away to devilish hollows like so many fine links courses. With a putter in your hand the greens leave little doubt as to which way the ball will break but plenty of doubt when it comes to determining speed and line.

Indeed it is around the green where Kyle's talent can be seen and those who play any Phillips' course know that they need their short game to be at its best if birdie, or indeed par, is to be threatened.

However, Kyle has not ignored influences which are more familiar to the south of England.

He wanted to go back to the roots of traditional parkland courses which featured some of the classic characteristics synonymous with the great designers such as Harry Colt and J H Taylor. To this end he spent many months with his shaper, Jason Dott, visiting some of the finest courses in the south of England including Sunningdale, Swinley Forest and Walton Heath before he even contemplated putting pen to paper.

The Grove, a top-of-the-range pay and play course, is privately owned and the search for a suitable site began back in the mid 90s with the

proviso that ease of access was all important. It took some time to identify the farmland site, purchase it and begin the arduous task of seeking planning approval.



▲ The Grove Hotel and 1st green

Once achieved MJ Abbott began the construction work and, as with Kyle's other courses which look so natural once completed, it masks the mammoth effort that went into reaching that stage.

In all 300,000 cubic metres of earth were moved during the construction phase and at one time more than 60 people were working on the project under the guidance of Abbott's.

Some fascinating discoveries were uncovered during this period including the outline of two old lakes which were subsequently dug out and re-lined with a pvc liner. A series of pumping chambers were then installed so that water taken from the discharge of the land drainage system could be pumped away if the level of the lakes becomes too critical. The end result is two distinctive water features situated on the front nine which look as though they have been there for many years.

Much of the work was carried out during one of the wettest winters we've experienced in recent years. The Law of Sod then kicked in and last year's cold drought slowed the establishment of the grasses just months before the official opening and during the important preview time.



▲ The 18th

However every cloud has a silver lining and the weather which caused the problems also created opportunities for Phil and his team.

"The wet time allowed me to identify potential problem areas on the course and bring in additional drainage and on the flip side the drought meant we could really test the Rainbird irrigation system in extreme conditions," said Phil.

"It is a high maintenance course and the level to which we maintain it is labour intensive with 20 greenkeepers and five gardeners working round the clock on the course, hotel and spa surrounds as well as the walled garden, which is the second biggest in England," he explained.

"All the greens are hand mown and many of Kyle's design features including the little swales in bunker surrounds and steep banks around the greens look dramatic but take time to maintain."



▲ The 17th



▲ The 8th

The Grove also benefits from the input of Troon Golf the world's leader in golf resort and club management. With more than 140 clients worldwide in 11 different countries Troon Golf provides a comprehensive service which not only involves using the latest agronomic methods and expertise on the course but also maximises the wider aspects of developing and marketing the facility.

The annual maintenance programme has to be signed off by Troon Golf each year and Chief Agronomist Jeff Spangler visits The Grove three times a year to ensure everything is on track.

It is testament to the quality of Phil's team, that The Grove has been ranked third for course maintenance and fifth for the overall golf experience throughout the 140 resorts at Troon's Annual Meeting of Club Managers in Arizona recently.

"Prior to Troon Golf being appointed as our management consultants, I would like to personally thank Steve Jones, from Golf Course Solutions, and Mark Hunt, from Headland Amenity who have both made a huge contribution helping us

with our agronomic plan and management of our facility," said Phil.

"Steve's experience with the maintenance of the A4 grass on the greens and Marks help with our fertiliser programs, both working alongside ourselves and Jeff Spangler, from Troon Golf, have made a huge team effort in making the course a success and setting standards in the industry for others to hopefully follow.

Initially play will be limited to 20,000 rounds per annum and will gradually increase as the course develops. The Grove is certainly more than capable of staging a big tournament in the future and as Phil has supervised preparations for more than six tournaments at The Buckinghamshire, from where he moved to The Grove, and Wentworth he is well equipped to take the course to the next level.

What Kyle Phillips can be sure is that his English masterpiece will be looked after as well as Picasso's \$100 million painting.



Silver Jubilee for a Golden Key Supporter

Scott MacCallum visits Kubota UK Ltd, a big company who have recently rejoined the Golden Key scheme.

The beauty of the fine turf industry is that it caters for the huge multinational conglomerate right down to the single businessman working out of the back of the garage. Everyone is welcome and everyone has a contribution to make in this most diverse of industries.

One company which very much comes out of the multinational bracket is The Kubota corporation of Japan, who turnover several billion pounds annually, and BIGGA is delighted to welcome Kubota (UK) Ltd back into the fold as a Golden Key supporter.

"I've always considered BIGGA to be a very important part of our business," explained David Roberts, Sales Manager for the Tractor & Groundcare Division.

"We need to press the buttons of all the right people in the golf club but, most importantly, we need to get to the Course Manager as he is the key person in the club for us.

"What you can't replace in the golf course sector is credibility and BIGGA has a huge amount of credibility. It is the major organisation for the golf greenkeeping fraternity and we see many positives in being involved and Kubota's name being linked with BIGGA," said David, as we sat in the Board room the Kubota (UK)'s Thame headquarters.

"I think we owe it to the greenkeeping industry to put something back in," he added.

The more you examine Kubota as a company the more you are amazed at its sheer size and ability to pioneer the sort of equipment greenkeepers have become so familiar with over the last 25 years.

Indeed, 2004 represents Kubota UK's silver anniversary and a special silver edition tractor was unveiled at Harrogate this year to commemorate the occasion.

"The first compact tractors, brought into the UK in the early 1970s were from Kubota. In 1982 the first mini excavators in the UK were by Kubota and in 1984 the first diesel ride-on rotary mowers were by Kubota," said David, who added that particularly through the hire market their mini excavators were finding their way on to golf courses.

"The theme running through it all is that we were the first, true pioneers," he added.

Indeed Kubota were one of the first companies to introduce a reversible tractor and a zero turn mower but admits they were possibly a little too far ahead of their time when they did it. Indeed, a zero turn mower has recently

been re-introduced by the company

Add to that the fact that Kubota are the market leader in the golf market for compact tractors and that many of the major manufacturers use Kubota diesel engines to propel their own machines and you have a pioneering company with the scale to make a real impression on any market.

Kubota was founded in 1890 by Mr Kubota who started off with an engineering forge in Osaka, Japan, where he began producing engines from the early 1920's, one of the first Japanese to do so.

From those beginnings the company has grown into a massive corporation with 17 manufacturing plants in Japan alone and other major manufacturing bases in, among others, America and Germany.

"We manufacture all over the world but also have distribution companies in most developed countries in the world. We're big," said David, who added that the Thame-base covers the UK and Ireland as well as Iceland.

Although a Japanese company, Kubota is keen to ensure that the national companies are run by the people who know the local market best.

"We have a Managing Director here as well as the Financial Director, a Technical Liaison Manager and a Product Specialist who are all Japanese but the company understands that no-one understands the UK market better than UK people. They don't come here and insist that we should do things the way they are done at home in Japan," said Dave, who also dispelled the stereotypical cliché that they all do Tai Chi every morning.

"What they are doing is bringing in the best of Japanese product and allowing us to sell it our way."

The other benefit from being a multi-national is that the UK and Ireland is the first stop when the Japanese company is looking to develop new grass cutting machinery.

"No-one grows grass like we do here so if you are going to develop a new grass cutting machine you test it in the hardest conditions and with our climate we are pretty demanding in terms of grass cutting machinery."

The first compact tractors were produced around the late '50s and early '60s as fundamentally a paddy field tractor and it was these that British entrepreneur, John Croft, saw in the early '70s and realised the potential for



▲ The first compact tractors in the UK were Kubota



▲ The special edition silver tractor to commemorate the Silver Anniversary

Kubota



commercial greenhouse owners in the UK for use in poly tunnels.

"That market, based on two models of Kubota compact tractor, ballooned as users in other markets saw the potential and in 1979 Kubota (UK) Ltd was set up to take advantage of it.

"We capitalised on having the market to ourselves. It was very embryonic but we had 100% of it. Obviously over the years other people have come in including some strong competitive names and our number one position has been attacked, but our heritage and legacy, is that history is very strong with Kubota.

"People don't forget that they first bought a Kubota tractor in the '70s, it served them well, had a good second hand value and that the next one they bought was also very good," said David.

The number of compact tractors in the Kubota range rose along with their popularity and new markets were identified, including chicken and pig farmers, horticulturists, estate managers and, of course, golf.

In percentage terms of the overall Kubota business golf does not represent an enormous element but David is of the opinion that in real terms golf has a significant strategic role for the company.

"With so many golf courses in UK and Ireland and so many people playing the game, golf is a superb shop window for our products. More than that it fills a huge chunk of the 30-60 horsepower market and if we didn't have golf we wouldn't have such strong sales in that sector."

He also sees the role of the tractor, which was under some threat a few years ago, growing. Eight years ago people were probably sounding the death knell for the tractor with self propelled fairway mowers and utility vehicles, but you need a tractor with creep speed and a good lifting capacity to carry heavy deep aeration equipment and we can offer that.

"The compact tractor is still the ultimate versatile tool. ATVs and utility vehicles are great at getting you from A-B but as a workhorse you can't beat a tractor.

"The role of the tractor has changed for us and there will always be a place for the tractor on the golf course."

Indeed, David feels that with the American influence, where larger, heavier implements are being introduced, you need larger, but lightweight, 80+ horsepower tractors with turf tyres and these are now being seen on UK courses.

"A Course Manager may need a larger but lightweight tractor on turf tyres but now farmers are asking for these tractors and we can add weight to them and put on agricultural tyres," said David, who added that Kubota were now exploiting the higher horsepower markets in general.

He is also keen to take increasing advantage of the fact that there are some sophisticated budgets operated at golf clubs and the fact the Kubotas

hold their value and that maintenance costs are low makes long term budgeting much easier.

"You can only set five year budgets if you know how much things are going to cost in the first place, how much they are going to cost to run over the period of the budget and, most importantly, how much they are going to be worth at the end of that period. Then you can fix your costs.

"Kubota have one of the best residual values in the business - second hand Kubotas are like hens' teeth at the moment, you just can't get them - so it makes them extremely attractive propositions."

The Thame headquarters of Kubota UK Ltd has a full time staff of 72 and the dealer network numbers 47 with many of them being multi branch operations.

"I place a great deal of emphasis on our relationship with dealers and know full well that while they can't do without us, we certainly can't do without them.

"Our job is to service the end user and we can't do that without a dealer so we are intrinsically linked. I certainly don't tell them that I want 50 more units a year out of them or which demonstrator they must carry. That's down to them. If they are successful we're successful and vice versa."

Thame is split into three stand-alone divisions, Tractor & Groundcare products, an Engine division and the Construction Machinery Division.

Kubota supply diesel engines to Ransomes Jacobsen, Hayter and Toro among others and that particular division is enjoying a boom time at the moment.

"Kubota engines have very low emissions and with regulations becoming more and more stringent this is a very strong element in our favour.

"In the early '90s we were the first diesel manufacturer to meet and surpass the California Air Resources Board Emissions Test and now in Europe the Tier 1, Tier 2 and soon to be Tier 3 and 4 of regulations are raising the bar every time.

"We've got great confidence in knowing that in Japan there is a massive amount of engine development going on, because, as we are the largest manufacturer, we can afford to invest a lot of money into research and development," said David, who added that as well as low emissions, lower noise levels are also a great plus for the Kubota engine.

Kubota sees joining BIGGA's Golden Key programme as putting something back into the industry and an opportunity to get out and meet more greenkeepers.

"We'll be wearing our Golden Key ties with pride at BIGGA functions," said David.

I'm sure everyone at BIGGA will be delighted to see Kubota representatives at National, Regional and Section events.

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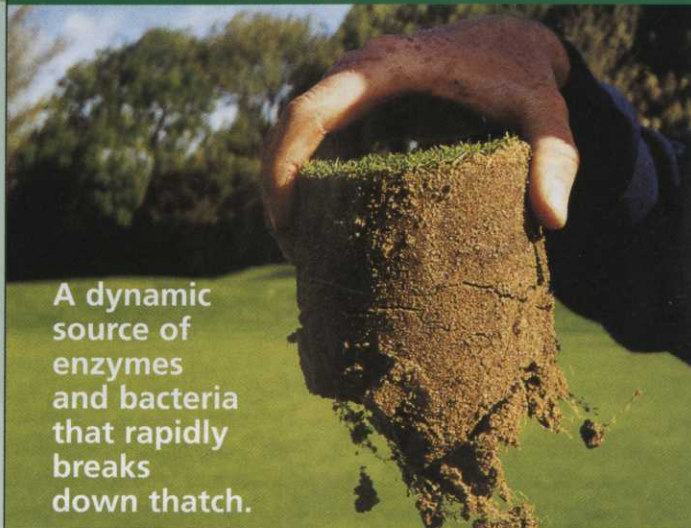
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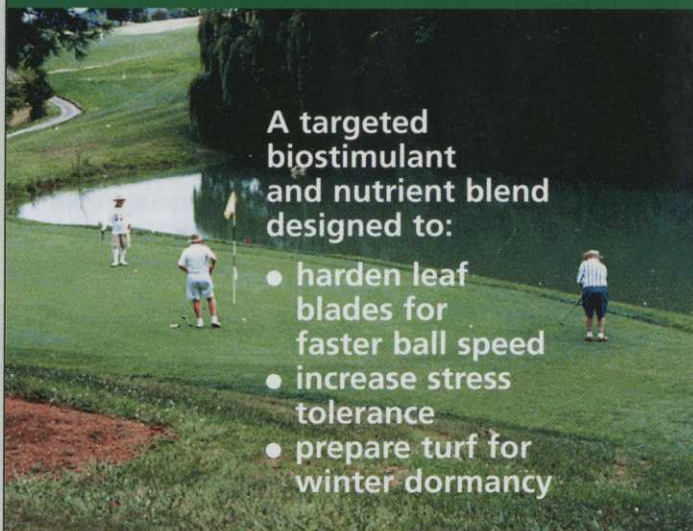
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Exploring the hidden mysteries beneath our feet – Thatch

TORO Count on it.

Martyn Jones explores the nature of thatch, its causes, and considers its management in various situations

Course Managers and greenkeepers are well aware of the deleterious aspects of excess thatch: Increased disease and insect problems, localised dry spots, chlorosis of the turf, proneness to scalping, foot printing, decreased heat, cold and drought hardiness, restricted rooting, nitrogen immobilization, reduced effectiveness of pesticides, a soft, spongy surface in wet weather, and the potential for black layer formation.

They are also conscious of the benefits of a limited depth (approximately 6mm) of thatch: Insulation of the soil surface, protection of the crowns of plants, buffer against surface soil compaction and smearing, recycling of nutrients, provision of a resilient surface, and absorption of chemical residues.

Literature on turfgrass management prior to 1950 rarely, if ever, makes reference to the term 'thatch'. Allied terms such as 'matted turf', 'fibre', and 'litter' were sometimes fleetingly used when discussing other topics such as 'droughty turf' or 'neglected turf'.

A number of American authors between 1953 and 1973 proposed definitions of thatch. Beard (1973) produced one that became universally accepted: "A tightly intermingled layer of dead and living stems and roots that develops between the zone of green vegetation and the soil surface". He also defined 'mat' as "an organic layer buried and/or intermixed with soil from topdressings. It is partially decayed thatch that has become part of the soil profile". However, Shildrick (1985) in a comprehensive review of thatch expressed the view that 'mat' is a misleading term and should be avoided. He also distinguished two subdivisions of thatch:

"**Fibrous thatch** usually overlies dry soil, the turf becoming very dry indeed and difficult to re-wet under drought conditions. It is most commonly found in acidic conditions where the sward consists of *Agrostis* and *Festuca* spp."

"**Spongy thatch** is waterlogged throughout most of the year and is likely to smell strongly of decay and stagnation. It is yellow-brown in colour with black streaks showing the activity of anaerobic bacteria. The underlying soil is often wet and compacted, and usually of clay with restricted drainage." Further comments on spongy thatch suggest, "Poa annua usually predominates in the sward with perhaps some surviving *Agrostis*."

While these subdivisions are useful, they are more descriptive of differing environmental influences on accumulation, as opposed to the actual constituents of thatch.

WHAT ARE THE CONSTITUENTS OF THATCH?

Thatch is composed primarily of a mixture of partially decomposed stems, roots, stolons and rhizomes, each of which varies in its resistance to decay. Leaves are the least resistant to decay and, contrary to popular belief, do not appreciably add to thatch accumulation.

Resistance to decomposition increases in order through sclerified vascular strands of stems and leaf sheaths, stolons and rhizomes, roots, and nodes of stems and crown tissues, these being most resistant.

*Continue
to learn*

Chemical analyses of thatch show an abundance of lignin, this being the most resistant to decomposition.

Fungi in the order Basidiomycete, the group of fungi that contain the familiar 'fairy ring fungi' and 'mushroom or toadstool fungi' are the primary decomposers of lignin. Cellulolytic fungi and bacteria, and many species of Ascomycetes and Fungi imperfecti decompose cellulose and hemicelluloses that are intermediate in decay rate. Rapidly decomposed organic compounds such as sugar and starch that are present in large quantities in leaf tissue are quickly decomposed by numerous species of bacteria, sugar fungi and shadow yeasts, as well as by a range of soil macrofauna.



▲ Core cultivation is an effective means of physically removing thatch and, when accompanied by a sound topdressing programme, creates a favourable environment for decomposition

WHAT ARE THE CAUSES OF THATCH?

A thatch layer develops in any situation where the accumulation rate of dead organic matter from the growing turf exceeds the rate at which it decomposes. Consequently, any cultural or environmental factor that promotes excessive shoot growth or impairs decomposition will encourage thatch accumulation.



▲ Sensitive use of a well-designed irrigation system is vital to successful thatch management

It has been estimated that about 8000 kg ha⁻¹ of dry organic residues are returned to turfgrass soils each year. This comprises of approximately 3500 kg of roots, 2000 kg of clippings, and 2500 kg of other vegetative parts (Riem Vis 1981). Consequently, when clippings are removed, as in a golf green maintenance programme, the annual returns of organic residues will amount to around 6000 kg ha⁻¹. These quantities vary to some degree depending on the turfgrass species studied but, surprisingly, the quantity of nitrogen fertiliser applied has little effect on the final figure as the nitrogen is utilized in the most part in leaf growth that is removed by mowing.

Certain turfgrass species and varieties with increased vigour and density such as *Poa annua*, *Agrostis stolonifera*, and, in a favourable environment, some cultivars of *Poa pratensis* are notorious for thatch production.

Species such as fine-leaved fescues that have high lignin contents are more resistant to decomposition and in these cases it is the slow rate of decomposition of the organic residues that contribute to thatch accumulation, rather than the turfgrass growth rate. Low growing, prostrate species such as creeping bentgrass tend to form more thatch than upright species. For this reason, although the upright-growing *Lolium perenne* is a vigorous species, it is not a major thatch producer.

Strongly acidic conditions will inhibit micro-organism activity and, consequently, decrease the decomposition rate. The majority of organic matter consumers and decomposers prefer neutral to alkaline soil conditions. Bacteria and actinomycetes are more abundant in such soils. Although many fungi are tolerant of pH's as low as 4.0, they are more numerous in soils with a pH range of 5.0 to 6.5. Optimum activity of species capable of decomposing cellulose and lignin occurs at pH 6.5 to 7.5. Many studies have shown that continuous and excessive use of acidifying fertilisers such as ammonium sulphate will favour the development of thatch (Edmund and Coles 1958, Smith 1979, and Potter et al. 1985).

A lack of earthworms will impair decomposition. They are major consumers of soil organic matter and their activities in soil mixing play a major part in increasing microorganism populations and enhancing organic matter decomposition. Their digestive tract contains large numbers of bacteria and these are deposited into the soil in their casts to continue the decomposition process. Decimation of an earthworm population will invariably result in an increase in thatch accumulation; hence its association with intensively managed golf turf where earthworm activity is unacceptable.

Poor soil aeration resulting from fine-textured rootzones, compaction, excessive wetness, be it due to poor drainage, an inclement climate or excessive irrigation, will decrease the decomposition rate of organic residues. The majority of beneficial microbes are strongly aerobic and restricted soil aeration will impair their activity. Many species of fungi are able to tolerate relatively low soil oxygen concentrations but the majority are unable to function in anaerobic conditions.

Excessive nitrogen nutrition stimulates rapid shoot growth and shallow rooting and, therefore, encourages thatch accumulation. An excess of nitrogen will also create an unfavourable carbon/nitrogen ratio for decomposition of the organic residues. The optimum C/N ratio range for bacterial decomposition is 25:1 to 30:1 and ratios greater or lesser than this range will slow down the decomposition processes. Heavy applications of nitrogen, even if applied infrequently, can impair rooting and create a temporary upset in the carbon/nitrogen ratio. Surface applications of phosphorus can stimulate rooting within the thatch layer, thereby further aggravating the thatch accumulation rate.

Irrigation practices that stimulate rapid shoot growth will increase the thatch accumulation rate and excessive irrigation that maintains high moisture contents to the detriment of oxygen availability within the thatch layer will decrease the decomposition rates.

Extremely dry conditions, in stark contrast, can be equally detrimental. Although most bacteria and fungi are able to survive drought conditions, they require water to be active decomposers and extremely dry conditions in the thatch will reduce the decomposition rates. Additionally, lack of water can result in turfgrass drought stress, greater pest and disease damage, and an increase in thatch accumulation.

The use of pesticides has often been reported as a contributing factor in thatch accumulation by adversely affecting decomposition rates. Whilst there may well be some merit in this argument when considering highly toxic chemicals that were quite widely used in the past, evidence that the modern range of pesticides directly affect microbe activity is highly debatable. Smiley et al (1985) and Smiley and Fowler (1986) concluded that increases in thatch accumulation where fungicides had been applied could be attributed to a greater rate of tissue production, rather than due to a reduction in the decomposition rate.

Topdressing materials high in organic matter will add to the accumulation of thatch, particularly if the organic source is high in compounds such as lignin that resist decomposition. Topdressings should be aimed at diluting the organic content in the surface horizon to produce a rootzone mixture with a maximum of four per cent by weight organic matter.

Fine-textured soils present a physical barrier to rooting, in addition to their inherent problems of impeded drainage and restricted aeration porosity. Consequently, there is an increase in the accumulation of organic matter near the surface. The anaerobic conditions that readily occur in such soils also accelerate root death whilst depleting microbe activity. The moisture retentive nature of such soils also makes them slow to warm up in spring and the low temperatures inhibit the activities of soil micro-organisms. The net result is an increase in thatch accumulation and decrease in decomposition rates.

Low temperatures reduce the metabolic rate of micro-organisms and thatch decomposition is greatly retarded during extended periods of cold weather. This is particularly relevant in northern Europe where temperatures remain below 10 degrees C for a large part of the year and, consequently, where fungal and bacterial activity is extremely restricted.

During the 1960s, thatch was a common problem on golf greens. This coincided with the wider introduction and misuse of automatic irrigation systems, excessive use of compound fertilisers, chlordane as a wormkiller, mercury-based fungicides, sterilised organic-rich topdressings and agricultural soils management policies. Little wonder that thatch developed so significantly. Those were the glory years for thatch but the Dark Ages for turf management.

MANAGEMENT OF THATCH

Management of thatch falls into two categories, curative or preventative, depending on the degree of thatch present. The former consists of a series of renovation procedures while the latter is a maintenance programme. Similar techniques are adopted for both categories but there are generally significant differences in intensity and frequency of operations. For example, scarification into a thatch layer would be considered a renovation or curative technique whereas Verticutting and grooming are maintenance or preventative operations. There are similarities in the actions of equipment but major differences in the severity of the treatment.

Scarification or hollow-tine cultivation will physically remove existing thatch. Coring may not remove as much material in a single operation but it has an advantage, in conjunction with a sound topdressing programme, of establishing capillary continuity with the underlying rootzone material, an important element in improving drainage and modifying the thatch environment for enhanced decomposition.

Topdressing is an essential part of both curative and preventative thatch management but incorporation into an existing thatch problem can pose difficulties. Creating layers of thatch/topdressing must be avoided by thorough and frequent cultivation. This is best achieved by coring but other cultivation techniques such as spiking and slitting can also be beneficial.

Course managers and greenkeepers with greens constructed to USGA recommendations must preserve the integrity of the construction by timely topdressings with compatible sand. A USGA rootzone recommendation suggests a maximum of three per cent by weight organic matter content in its construction; it follows then that a topdressing schedule should aim at maintaining this percentage by diluting any thatch accumulation to similar proportions (Carrow 2004). In most instances, this would necessitate annual topdressings of sand at 4.00 to 5.00 kg m⁻², preferably divided into a number of small increments throughout the year.

Proper management practices will minimise thatch accumulation. Fertilisers should only be applied at rates that meet, but not exceed, the nutritional requirements of the turf. Similarly, irrigation must not be excessive and should not be applied before the desired turfgrasses shows signs of moderate moisture stress. Surface cultivation techniques to preserve drainage and adequate soil aeration should be appropriate to the site and soil type, and to the time of year.

All factors that contribute to thatch accumulation must be considered and management should be focused on enhancing decomposition rather than accumulation. Although the thatch may be beneath our feet and out of sight, it should never be out of mind.

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Martyn Jones is an internationally recognised educator and speaker. In addition to his teaching roles, he is a Founder Trustee of the National Turfgrass Foundation and Secretary of the British Turf and Landscape Irrigation Association.



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industry and drive it forward, which can only be a good thing!" he added.

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