



grant or some other incentive.

The sun can also be harnessed to heat water. This is arguably the most viable 'solar' system to consider as it is 'relatively' inexpensive to retrofit a collection array and solar hot water system into an existing building. The key is to ensure the hot water generated is used to supplement an existing system. You cannot rely on a solar system to generate hot water year round or on overcast summer days. But when in action, modern collectors can generate impressive amounts of hot water, even in winter. The downside is commercial systems can be costly, even allowing for capital allowances.

Grants may be available to cover certain 'green' initiatives, but these are currently thin on the ground. The best way to establish what may be on offer is to contact bodies to include the Solar Trades Association (www.solar-trade.org.uk) and the Energy Savings Trust (www.energysavingtrust.org.uk).

On more general matters, the Golf Environment Organisation has an excellent paper on this issue. Entitled 'Practical ways to improve energy efficiency in golf facilities' it outlines ways to save energy that do not necessarily involve doing anything more than managing your resources more efficiently:

www.golfenvironment.org/pub/doc/tree/10/EnergyEfficiencyinGolfFacilities.pdf



ABOVE: A top golf club will focus upon all the small details that make playing a round pleasurable from start to finish. Helpful staff, good signage, affordable refreshments and good presentation can all help keep existing custom and attract visitors. Behind the scenes, keeping an eye on costs is a key to remaining buoyant in choppy economic water.

LEFT: Recycling and composting waste generated during course maintenance is by no means a new idea, but few clubs have the room to deal with large piles of unsightly debris. The answer is to shred everything to reduce its volume, but a shredder is not a cheap tool. So why not hire one in? Tight budgets need not interrupt good course management.



LEFT: Harvesting rain water need not cost a fortune. As a guide, a system that can store around 100,000 litres of water collected from roofs may cost a little as £5000. Used as a non-potable water source for vehicle wash bays and irrigation, harvested water is a great way to save money. What is more, you do not need a huge roof area; from a roof space of 50 x 10 metres you can expect to collect up to 600,000 litres of water a year.



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The 2mm Debate



Eight leading figures from golf clubs across the country give their views on the current big talking point in greenkeeping

Earlier this year the BIGGA website bulletin board was buzzing with discussion over the merits and potential effects of low cutting heights and aggressive maintenance versus a more traditional approach.

The effect on sward composition of various management strategies, and in fact what type of sward is desired, was very much at the heart of the discussion.

The discussion brought together many differing opinions and passions, all in the strong belief that their management technique is the right one in each case. There is no doubt that part of the beauty and fascination of the profession which is greenkeeping, is that we all work in such varied locations, and often under differing conditions, financial resources and customer base. Much of the current thinking is one of the sustainable management of golf courses. This philosophy has its roots in traditional greenkeeping techniques and has the backing of the games governing body, the R&A. The STRI have also played a fundamental role in the need for a more sustainable approach and the publication of STRI Disturbance Theory, Bechlet et al (2007), sparked numerous nationwide education seminars and subsequent debate within the industry.

Key to the success of any management strategy is meeting the balance of achieving the agronomic requirements while providing surfaces which are desired by the golf club. Today's global television and 24 hour media coverage enables the golfer to form an opinion and expectation to what is considered as acceptable in terms of playing performance. This expectation may well be unfair and formed with blinkered vision to what resources the greenkeeper has available and to what type of construction is being managed.

Many viewpoints have been heard since the discussion board thread first sparked intense interest and debate in such an important topic. Harrogate Week 2010 will include a debate session entitled "2mm or above", and will involve many key players within the industry. Managers and Superintendents from some of the country's most high profile courses will exchange frank views with representatives of the Gingerbread movement and those who employ aggressive management techniques. The debate will also draw on the opinions of STRI, R&A and from the world of golf architecture.








The interactive debate will take place on Wednesday, January 22, in the Harrogate International Conference Centre. As a forerun-

ner and introduction to the event Greenkeeper International present the first of two articles which outline the management strategy employed by some of the Course Managers who will be on the debate panel.

The full list of the debate panel is as follows; Debate Chairman - David Croxton; Gordon Moir, Director of Greenkeeping, St Andrews Links Trust; David Cole, Course Manager, Loch Lomond; Kenny Mackay, Course Manager, The Belfry; Greg Evans, Course Manager, Ealing Golf Club; Stuart Yarwood, Course Manager, Lymm Golf Club; Daniel Lightfoot, Course Manager, Bearwood Lakes Golf Club; Paul Lowe, Course Manager, Bromborough Golf Club; Euan Grant, Course Manager, Turnberry; Richard Windows, STRI; Ken Moody, Creative Golf Design; Paul Seago, Course Manager, Renaissance Golf Club, and R&A advisor

This month's article is a Talking Heads' feature which explores the current management techniques and philosophies employed at each golf club.

In December's magazine we ask a series of questions based around the merits of aggressive management versus the traditional approach, and also looks at the practicalities of species transition programmes.

	What type of construction are you managing?	What is your estimated sward composition?	Do you have a target Summer green speed?
<p>Euan Grant Golf Courses & Estates Manager Turnberry</p> 	<p>Members & Hotel Residents Ailsa: native soil construction Kintyre/Arran:mixtureofnative soil and USGA construction</p>	<p>Ailsa: 80% bent / poa 20% other (fescue, Yorkshire Fog, rye) Kintyre / Arran: old greens similar to Ailsa, new greens 80% fescue, 20% bent / poa</p>	<p>No. Very weather dependant. Upwards of 8½`</p>
<p>Dan Lightfoot Course Manager Bearwood Lakes</p> 	<p>USGA (no blinding layer) at a private members club</p>	<p>80% annual meadow grass 20% creeping bent grass</p>	<p>10 for day to day play and 11 plus for tournaments</p>
<p>Gordon Moir Director of Greenkeeping St Andrews Links Trust</p> 	<p>The majority of our courses are Links and therefore build on a sandy base. However two of them, The Castle Course and Strathtyrum are both built on USGA spec greens, albeit to slightly different specs and standards.</p>	<p>This varies across the courses from 99% fescue/bent on The Castle Course to 80% fescue/ bent 20% poa/crested hair grass/rye on the Old to 50% fescue/bent 20%poa on the Strathtyrum</p>	<p>Anything between 8.5 to 10 depending on what is on, weather conditions etc. On The Castle Course we try to keep between 8.5 and 9 for the wind and slopes.</p>
<p>Greg Evans Course Manager Ealing Golf Club</p> 	<p>110 year old clay based 'push up' greens with little to no land drainage. Private members club</p>	<p>70 - 80% Poa 30 - 20% Colonial bent This is a visual estimate. This is from 100% Poa greens pre 2006.</p>	<p>10.5 - 11 everyday play 12 - Major club comps 13 - 14 Two external comps</p>
<p>Stuart Yarwood Course Manager Lymm GC, Cheshire</p> 	<p>8 x 101 yr old push up loam 4xUSGA 6yr old 6xClay push up 35yr old</p>	<p>65% Bent / 30% Poa / 5% Fescue/Yorkshire fog</p>	<p>8-9 1/2 ft</p>
<p>Kenny Mackay Director of Golf Courses and Estates</p> 	<p>A mixture of sand/ soil Brabazon and Derby and USGA on PGA and new green on Brabazon</p>	<p>70/30 poa/ bent</p>	<p>Brabazon 11 PGA 10 Derby 9</p>
<p>David Cole Golf Course Superintendent/ Estates Manager Loch Lomond GC</p> 	<p>10 Year old USGA greens</p>	<p>60-70/30-40% poa bent</p>	<p>9-10ft</p>
<p>Paul Lowe Course Manager Bromborough GC, Wirral</p> 	<p>USGA Members course</p>	<p>100% annual meadow grass</p>	<p>9ft Day to day 10ft tournaments</p>

Range of mowing heights? General & low	Type of Mower?	Routine maintenance
3.5 – 5.5mm	Ailsa: Toro1000 through the week / GM3250 weekends Kintyre / Arran: Toro GM3250 or JD 2500E	Regular aeration – procore with star tines or hydroject . Fortnightly topdressing (light). Regular brushing, verticutting as necessary. Winter ½” vertidrain monthly / slit tining twice before Christmas
2.25 – 3 in summer 4-5 in winter	Toro 1000s for majority of weekday mowing Toro 3250 with DPAs for weekends and other circumstances eg before dressing / save time Graden turf iron and Greentek vibra rollers throughout summer	Two maintenance weeks Vertidrain, core, overseed and scarify, topdress, Otherwise tine once a month on average and v cut every 2 – 3 weeks during the season 100-150 tonnes per season of sand and groom regularly
Low 4mm for short periods. Winter 5.5mm although we may go to 6.5 on The Castle Course. Could cut as little as once/week through winter	A mixture of Toro 1000’s or Toro 3250D’s on all courses depending on time, staff and competitions. On The Castle Course we use Toro Flex 21’s, occasionally we use a 3250D at weekends. We use the Tru turf irons a lot, summer and winter including behind aeration.	Vertidrain twice a year Verticut as required Hydroject or solid tine monthly through the growing season. Topdress on a regular basis as required, mostly through spring and early summer And more...
2mm in summer 3mm winter If the need to speed the greens up is required, we add a roll as well.	Summer – JD 2500B ride-on. Eleven blades with no groomers. 8 months of the year (Mar – Oct). Winter – Range of hand mowers. 4 months of the year (Nov – Feb).	VC – Every fortnight. From 1 to 3mm plus in to the soil. Sand after every VC. Apply 200 tonn per year Verti-drain monthly from Mar-Oct. Range from 8mm to 25mm. Hollow core once a year in Oct. NO AERATION IN THE WINTER Irrigation is based on a weather station and course experience. Fertility is on a little and often method. A six week cycle based on one granular feed, followed by two liquid.
4.5mm-5mm summer 6mm-7mm winter	John Deere 2500 Triple summer John Deere 220B hand mowers weekly in Winter Turfworks Vibro rollers fortnightly Brush weekly	Vertidrain:- April (8mm) ; August 12mm, as deep as poss! Solid tine monthly/8mm/5mm ; Verticut 2-4 times /year Star slit/brush summer weekly ; Deep slit 8” winter weekly Earthquake Sept ; 100-150 ton Sand/Compost topdressing per season
Winter 4.5 to 5mm Summer 3 to 3.5mm	Toro 1000 Toro 3250 Roll greens every other day in the season to increase the green speed and keep surfaces smooth	V Mow in Spring Scarify hollow tine in summer for quick recovery Verti drain in winter Topdress once or twice in spring and then only in renovation about 150 tonne per year. Regular grooming and brushing
4-5mm	John Deere 180 pedestrian mowers. Alternate between groove and smooth rollers depending on weather and turf conditions. Utilise side winder and vibro rollers a couple times per week when conditions favourable	One ½ hollow tine in autumn combined with medium heavy topdress and fescue and browntop bent overseed Two ¼ hollow tine spring and mid summer combined with medium topdress and browntop bent overseed Pencil 5mm tine every 3 weeks combined with light topdress during growing season Verti drain 8mm tine at 200mm deep in winter Light Verti cut when weather condition allow
4 – 5mm summer 7mm winter	John Deere 220c hand mower x3 John Deere 2500 ride on	DT- phase one. Remove thatch problem – aerated 58 times – solid tine, slit and hollow tine. Verti-cut fortnightly during growing season brush in the winter. Regular top-dressing = 200 tonne. Wetting agent monthly. Hand water only.

	Overseeding	Expected nitrogen input	Annual Rainfall	Expected pesticide use
Euan Grant Golf Courses & Estates Manager Turnberry 	Seasonal overseeding – July -September. Pure fescue – 50% slender creeping red & 50% chewings	40 – 50 kg N / Ha	1000 – 1250 mm	Preventative used prior to larger comps. Contact applied as necessary – 1 or 2 pa
Dan Lightfoot Course Manager Bearwood Lakes 	Barenbrug All Bent 4gms/m ² 3 times/year May, August and whenever else we can fit it in!	165 – 175kgN/Ha	650mm	3 preventative – one each for maintenance and one in September/ October 1 extra for fairy ring in summer(heritage) 2 contacts at half rate when needed – hopefully not!!
Gordon Moir Director of Greenkeeping St Andrews Links Trust 	Barenbrug On greens two or maybe even three times a year. Usually with 100% fescue but occasionally an 80/20 mix	Between 30 and 80kg/ Ha Depends on the course	6 5 0 m although it seems like a lot more these past 3 years !	We might spray for leather-jackets depending on how active the crane flies are this autumn and if we notice a heavy infestation towards the end of the year.
Greg Evans Course Manager Ealing Golf Club 	3 times per year using pure colonial bent. Months will be Mar, July and Oct. First two will be at 3g/m ² with the last at 4g/m ²	100 – 140 kgN/ha	2008– 524mm 2009 – 328 so far	4 applications a year. 2 x preventative Oct & Nov 2 more if needed for the rest of the winter.
Stuart Yarwood Course Manager Lymm GC, Cheshire 	BSH Aberroyal Bent. 150kg in August Mascot Slender creeping/ Chewings fescue 150kg in sept	45-55kg/N/hect (Lawnsand, ½ 8.0.0, Sulphate Ammonia/ Iron) No P or K applied. No N after July, only sulphateiron/seaweed if needed.	950mm	1x Headway or iprodione in july/august for Dollar Spot Usually Knapsack, extending to blanket if needed! No preventative/curative Fus. Apps for 5 years.
Kenny Mackay Director of Golf Courses and Estates 	Don't overseed my green unless I have lost some grass coverage work with what I have in the sward.	95kg per hectare	850mm	Regular user of fungicide when required if the environmental conditions make it necessary preventative programmes in place for tournaments and high risk conditions in Autumn late summer
David Cole Golf Course Superintendent/ Estates Manager Loch Lomond GC 	Overseed greens fescue 25gms m ² and browntop bent 4gms m ² after ½ hollow tine. Overseed greens browntop bent after 1/4 hollow tine. 4gms per m ² . Overseed greens browntop bent after 1/4 hollow tine. 4gms perm ² .	75-100kgs/Ha Nitrogen 5-10kgs/Ha Phosphorous 150-200Kgs/Ha Potassium Micronutrients also utilised	2000mm	6 preventative fungicides every 8 weeks from March 1st. This limits the amount of curative applications. Curative if required but preventative apps has reduced this dramatically. Insect spray in Autumn
Paul Lowe Course Manager Bromborough GC, Wirral 	None... yet!	60kg	850mm	2x preventative & 2 contacts. Was 14 contact in 2006

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A QUICK GUIDE TO...

SPRAYING

Steve Graham offers some tips on spraying

1. *Communicate your intentions*

Golfers are also members of the public and many have a fear of pesticides brought about by lack of information and inaccurate media reporting. By providing advance notice of the spray operation and placing visible signs on the course will help reduce or even eliminate members concerns and misunderstanding. Always ensure your spraying practices are in line with Club policy and Risk Assessments.

2. *Spray only when conditions are favourable*

Always check the local weather forecast and note wind speed and direction. Spraying should only commence when climatic and ground conditions are favourable. On courses with ditches, ponds and lakes a LERAP* assessment must take place.

3. *Keep up to date*

Many chemical products that previously had Approval are being withdrawn from the list. Always check with your supplier the current status of all products before spraying and dispose of those that are out of date or that have been removed from the Approvals list. Read the product label and ensure the minimum recommended protective clothing is worn. Never leave pesticide containers unsupervised.

4. *Accurate targeting of the spray is essential*

Do not exceed the calibration speed when spraying as this may cause boom bounce or even spray turbulence, resulting in uneven application. Adding a spray pattern indicator such as 'Trailblazer' to the tank solution will alert the operator to excess overlap and/or missed areas. If there is insufficient spray solution left in the tank to complete the operation again check the pressure gauge but also recalibrate nozzle output and check for worn nozzles.



5. *Spray drift can be controlled*

Eliminate spray drift by selecting the correct pressure/nozzle combination. High pressure means smaller droplets that can carry in the wind. Fitting low drift nozzles such as the Billericay Air Bubble Jet can reduce spray drift by up to 75%. Stop spraying immediately when spray drift becomes unacceptable.

6. *Plan to finish with a near empty tank*

Plan the spraying operation so that the tank contents are applied only to the target area. Where this is not possible, empty any remaining solution in areas that are compatible with its approved use or, in areas approved by the local environment agency. If there is excess spray solution left in tank it might mean that the pressure gauge is inaccurate or the filters are clogged.

7. *Personal safety is a 'no brainer'!*

Never eat, drink or smoke whilst spraying. If a break is taken during the operation remove any contaminated clothing and wash hands and face thoroughly. At the end of the operation, wash all exposed skin with soap and hot water. Also, don't forget to wash the protective clothing that was worn, including the inside of gloves, face visor or goggles.

8. *Clean up responsibly*

After spraying, hose down the outside of the sprayer (including the prime mover),

remove nozzles and thoroughly flush out the tank, pump and spray lines with clean water. This must be done in an area that complies with local environment agency regulations. To remove all traces of pesticide and keep the tank free from residue buildup, a tank cleaner such as Clearspray can be used.

9. *Be safe and, secure*

To complete the spray operation, ensure all chemical containers are securely closed and stored in an approved storage facility. Empty, or unwanted containers must be disposed of in accordance with the Code of Practice.

10. *It's the Law, but also your protection*

The law states that adequate records must be kept of all operations involving the use of pesticides. To comply with the Control of Pesticides Regulations (1986), records should be completed immediately after spraying has finished. Remember, memories quickly fade and these records are useful for referring back to applications undertaken in the past and as a record for any dispute that may arise if the operation was unsuccessful.

* LERAP – Local Environmental Risk Assessment Procedure

For further information and advice on spraying:

Contact Rigby Taylor Ltd
Freefone: 0800 424 919

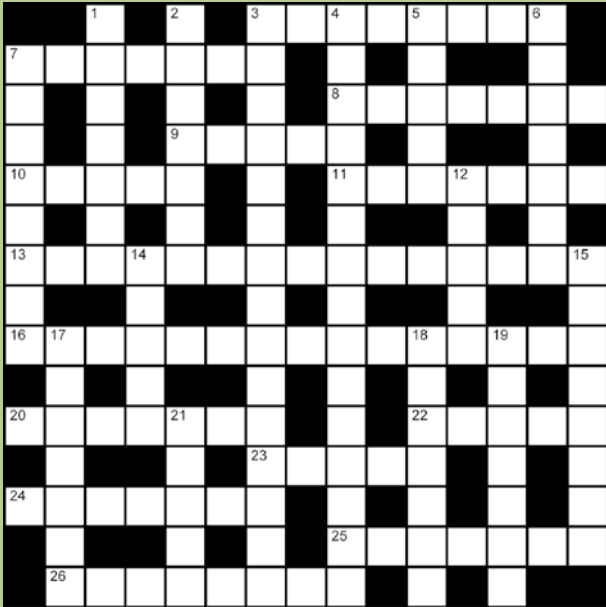
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in the shed

Our monthly puzzle page to keep you entertained when you're forced indoors..

CROSSWORD



ACROSS

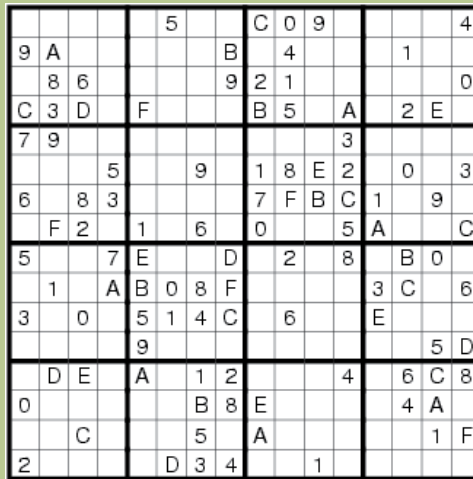
- 3 Staffordshire-based manufacturer of classical pottery (8)
- 7 Day of rest and worship (7)
- 8 Equivalent word (7)
- 9 Designation of (usually Scottish) mountain over 3000ft (5)
- 10 Strain of bacterium causing serious food poisoning (1,4)
- 11 US equivalent of estate agent (7)
- 13 Sign of continuing trade despite adversity (8,2,5)
- 16 Hyde Park event of 1851 (5,10)
- 20 Man who is devoted to pleasurable pursuits (7)
- 22 More or less, roughly (5)
- 23 Type of Japanese mattress (5)
- 24 Self-propelled underwater missile (7)
- 25 Long-tailed Australian marsupial (7)
- 26 Sailing boat with three hulls (8)

DOWN

- 1 Easily understood (7)
- 2 Sir Walter Scott's epic poem about the Battle of Flodden Field (7)
- 3 Beatles song about growing old together (4,2,5,4)
- 4 Lack of order (15)
- 5 Dosh, moolah, rhino (5)
- 6 NASCAR speedway in Florida (7)
- 7 Drug-resistant bacteria (8)
- 12 Hungarian pianist, composer of La Campanella (5)
- 14 Country of which Lombardy and Piedmont are regions (5)
- 15 Semipermanent (4-4)
- 17 Preclude, dismiss from consideration (4,3)
- 18 Sir Walter Scott novel in which Robin Hood appears (7)
- 19 Hero-worship (7)
- 21 European freshwater fish of Cyprinidae family (5)

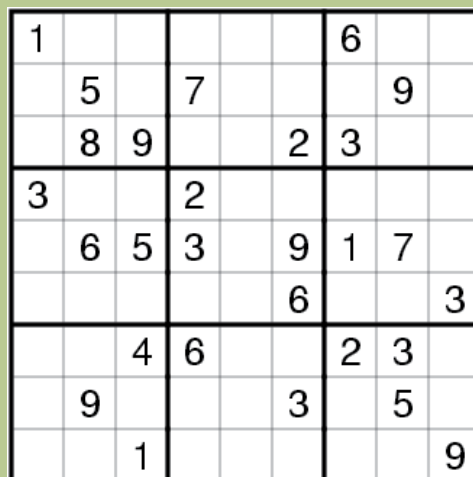
QUICK 'NINE HOLE' QUIZ

1. Who is the current BBC Sports Personality of the Year?
2. Who was the first person to break the four minute mile?
3. Who is the record goal scorer for the England football team?
4. Who was the last British driver to win the Formula 1 title more than once?
5. Who famously scored six sixes off one over in 1968?
6. Who secured a record fifth Olympic Gold Medal for the UK in Sydney in 2000?
7. Who has recently announced her retirement from competitive sailing
8. Who coached the England team which won the Rugby Union World Cup in 2003?
9. Who won the Olympic 1500 metres at both the 1980 and 1984 Olympics?
10. Who won The Derby in 2006?



MONSTER SUDOKU

Fill in the grid so that every row, every column and every 4x4 box contains the numbers 0 to 9 and the letters A to E.



SUDOKU

Fill in the grid so that every row, every column and every 9 box shape contains the numbers 1 to 9.

Puzzle
Answers
on
page 69

NEW WALK-BEHIND GREENS MOWER FEATURES HYBRID TECHNOLOGY

John Deere's new 220e E-Cut walk-behind greens mower combines hybrid electric drive with a contour hugging Quick Adjust cutting unit, and is designed to provide a top quality finish on golf greens, tennis courts, bowling greens and other fine turf areas.

This model joins the existing C Series range and features a standard 11 blade, 127mm diameter reel with a cutting width of 56cm and simple bedknife-to-reel adjustment.

Utilising the 2500's ball-joint yoke design and an electric drive motor eliminates the need for a mechanical drive link to the cutting unit. The independent contouring head therefore hugs the slightest undulations of the green, making it easier to achieve the perfect cut in any conditions.

The electric reel makes adjustment of the clip frequency particularly straightforward, by simply turning a dial to set the desired clip rate.

The hybrid design also reduces weight on the cutting head and allows the mower to be run at lower engine revs, making it quieter as well as more manoeuvrable. A weight transfer system linked to the drive roller means that as the standard grassbox fills, minimal weight is added to cutting head, which produces a more consistent height of cut across the green.

www.deere.co.uk

The September issue of the magazine featured John Deere's new Turf Sprayer but contact details were listed as Toro's Web address. Apologies to John Deere and Toro and anyone who experienced confusion as a result of the error.

