

WINNER OF 8 AWARDS AT THE ANNUAL TOGA INTERNATIONAL COMMUNICATORS CONTEST

AUSTRALIAN

Turfgrass



VOLUME 9.6 NOV-DEC 2007

MANAGEMENT

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COVER: The Australian Golf Club, NSW

Looking from behind the green back down the 1st at The Australian Golf Club, which for the second time in four years hosts the Australian Open in December.

Inset: The 6th approach and green at Huntingdale Golf Club where the Mastercard Masters will be played from 22-25 November.

Photos by:
Brett Robinson.



Tradition continues for Huntingdale's new master

6

When TV golf commentator Sandy Roberts utters that iconic Masters phrase 'the tradition continues' this November, it's fair to say he probably won't be thinking of Huntingdale Golf Club's course superintendent. Yet when the 29th Mastercard Masters tees off, Michael Freeman will remarkably notch up his 25th Masters tournament, his sixth as superintendent. ATM catches up with and profiles the new master of Huntingdale.

Dome sees a new light

12

Since opening in March 2000, Melbourne's Telstra Dome has constantly been in the firing line over its surface. Over the years many products and methods have been employed to improve turf quality and recovery, but none quite as bold as the \$2.2million project about to be unveiled ahead of the 2008 AFL season. Arena manager Gavin Darby gives ATM an exclusive look into what is set to be an Australian first.

The long road from Coonabarabran – 2007 Australian Open

18

The Australian Open returns to Sydney this year with The Australian Golf Club hosting the tournament for the second time in four years. While the course has changed little since the 2004 tournament there have been plenty of changes elsewhere, none bigger than the appointment of a new superintendent. ATM catches up with David Honeysett to see how preparations are progressing for Australia's most prestigious golf tournament.

Turfgrass environmental risk management

24

Environmental risk management expert Terry Muir looks at how turf managers can protect and enhance their ability to deliver better environmental outcomes by successfully integrating risk management strategies into their daily operations.

Fairways far away

28

The Ohio State Program sparked a three-year journey around some of the world's finest turf facilities for young Pambula-Merimbula greenkeeper Pat Wilson. From the Robert Trent Jones Golf Club and the 2005 Presidents Cup, to the All England Lawn Tennis and Croquet Club and Wimbledon, Wilson recounts a trip of a life-time.

AGCSA water management initiative

56

Continuing its drive to improve best management practices across the golf course maintenance industry, the AGCSA is set to launch a new water management initiative.



RESEARCH

Does splitting nitrogen applications decrease leaching?

40

University of Western Australia researchers outline results from a two-year study looking at how nitrogen fertiliser management practices affect nitrogen leaching losses from kikuyu turfgrass.

Contents



Introducing

Nutri DG.



Sometimes, Not Seeing Is Believing

NEW SECTION

Turf equipment technicians 58

This edition of ATM sees the start of a regular section dedicated to a superintendent's most important asset – their turf equipment technician. Over the course of future editions this section will deliver regular turf technician features as well as news and views from the various state technicians associations. To kick things off, Royal Melbourne Golf Club turf technician Luke Spartalis looks at how the role of an equipment tech has transformed in line with new technology.

Thatch or fiction? 42

Matt Roche from the QDPI&F Turf Research Group asks whether thatch is a real or perceived threat when it comes to the occurrence of sporting injuries.

IN EVERY EDITION

Foreword Thinking	4
AGCSATech Update	32
Tech Talk - Stem Weevil	36
The Pulse	38
News	48
Around the Trade	54
State Presidents' Reports	60

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Dyson Appleyard (VGA)
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Pat Wilson (Pambula-Merimbula GC)

tournament time

Welcome to this final edition of Australian Turfgrass Management for 2007. The year ends just as it started with the country in the grips of widespread drought with little respite in sight. Talking with superintendents at the Cairns conference in July, it really was the key issue on most minds and while some areas have received some relief in the intervening months, there are just as many still struggling with the prospect of another tough summer on the cards.

In this edition of ATM we visit two courses which are gearing up to host two of the country's biggest professional golf tournaments. The Mastercard Masters returns to Huntingdale Golf Club in Melbourne for the 29th time in late November, while up in Sydney The Australian will be the venue for the 2007 Australian Open, the second time it has hosted the tournament in four years.

Superintendents Michael Freeman (Huntingdale) and David Honeysett (The Australian) have reached the peak of their profession in extremely contrasting manners, but at the end of the day they share a passion for their vocation and no doubt will again set new benchmarks for course presentation during their upcoming events.

Freeman, the current VGCSA president, has spent his entire turf management career at Huntingdale Golf Club, and this year's Masters will remarkably be his 25th, his sixth as superintendent. Freeman was destined to enter the game thanks to his father who was superintendent at Yarra Yarra for over two decades and who dragged his young son around to all the famed sand belt giants.

Honeysett, by contrast, grew up in the small NSW country town of Coonabarabran and spent the early half of his career working at country courses which honed some good honest greenkeeping skills. It was a big decision on his behalf to sever ties with the country to move to Sydney nine years ago, but he now finds himself in the top job at one of the country's oldest and grandest golfing establishments.

Having spent some brief time in the company of both Michael and David recently, I would personally like to wish both gentlemen and their crews all the best for their tournament preparations and indeed to all other superintendents hosting major tournaments at their clubs over the summer months.

Elsewhere in this edition, Telstra Dome arena manager Gavin Darby gives ATM an exclusive insight into the radical project about to be undertaken to help improve recovery and surface quality at the Melbourne stadium. Following extensive research, the Dome has purchased a number of artificial light rigs which have been successfully employed at a number of Europe's major sports stadiums, including Wembley and Twickenham. The technology behind it is extremely interesting and it is hoped that the \$2.2million project will go a long way to resolving some of the surface issues which have plagued the arena since its opening.

Finally, this edition marks the inclusion of a new section dedicated to turf equipment technicians. As most superintendents will attest, a tech is without doubt the one member of their crew they can least afford to be without, yet finding one these days is increasingly becoming difficult. Following discussions with the NSW and Victorian turf technicians associations we have invited them to contribute articles as part of a regular new section and I would like to thank Luke Spartalis (VTETA) and Sam Olah (NSWTETA) for their assistance in getting the section up and running. If you have any comments or feedback on this section, or ways we can improve the content, then please don't hesitate to contact me.

Enjoy the read and have a safe and happy end to 2007.



B.R.
Brett Robinson
Editor



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The AGCSA is about to enter into a very exciting phase with a variety of initiatives on the verge of being delivered to assist the turf industry and our members.

The first of these initiatives can be found in this edition of Australian Turfgrass Management magazine - the inclusion of a dedicated turf technicians section. This is the first phase in working closer with turf technicians to assist with their needs.

The AGCSA recently met with representatives from the Victorian and NSW turf equipment technicians associations to discuss issues affecting their industry. At the top of the list is the critical shortage of technicians due to the lure of mining industry jobs that pay significantly more. Exacerbating this is the shortage of apprentices entering the industry because clubs do not have the funds.

To overcome this hurdle, the AGCSA is looking at setting up a 'club sharing' turf equipment technician apprenticeship programme, whereby the AGCSA would co-ordinate an apprentice to work at two or three clubs with the costs being shared. The AGCSA looks forward to assisting the turf technicians in the future as they are a vital component of the wider turf industry.

You will also find a new section dedicated to the AGCSA's Water Management Initiative. This section highlights the new initiative which will set up an online water management plan and water resource centre for turf managers. After the plan is completed turf managers will derive an action plan with projected water savings, costs of infrastructure changes and a timeline for delivery. We are then hoping to

have grant monies available to assist clubs with implementing such changes.

In other news, the AGCSA Board is set to welcome a trade member to sit in on board meetings. This person will be there to offer valued advice and opinion from an industry perspective. At the time of writing, trade members of the AGCSA had been notified of the opportunity and asked to put forward nominations for a representative.

The AGCSA is also excited about the new HR and best practice service, with manager Daryl Sellar recently touring the country as part of the AGCSA's spring workshop series. At the workshops delegates were given a CD with tools to assist in short- and long-term planning, including man hour allocation by task and day. If you were unable to attend these workshops you can purchase the presentation from the AGCSA.

Finally, the AGCSA continues to gain credibility and respect for the profession and its importance to the wider golf industry. The Australian Golf Industry Council (AGIC), of which the AGCSA is part of, conducted the Australian Golf Industry Forum in September where 140 senior golf industry representatives were informed and encouraged to openly debate key issues affecting Australian golf.

Titled 'The industry working together to meet the challenges ahead', the forum was highlighted by presentations from industry leaders such as PGA of Australia chief executive and AGIC chairman Max Garske, Golf Australia chief executive Tony Hallam as well as AGCSA joint general manager Scott Petersen.

The AGCSA was able to demonstrate



the importance of presenting quality golf courses and how superintendents need to be supported with an array of resources including education, water management plans, environmental management plans, quality staff and equipment.

The AGCSA also highlighted how golf club committees are developing a poor reputation when it comes to using the new industrial relations laws to instantly dismiss superintendents without warning. It was quite obvious from discussion that for the 23,000 people that derive a vocation from the game of golf in Australia they are generally managed by less educated volunteer committees. We will work closely with the other associations to develop a board/committee induction manual or possible certificate to educate incumbent volunteers about the industry.

It is great to be a part of an industry as progressive as golf is in Australia at the moment. The AGIC is focused on addressing issues to improve the game and a national marketing campaign to grow the game at all levels. 🙌

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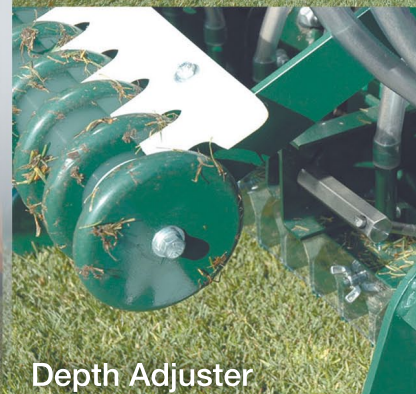
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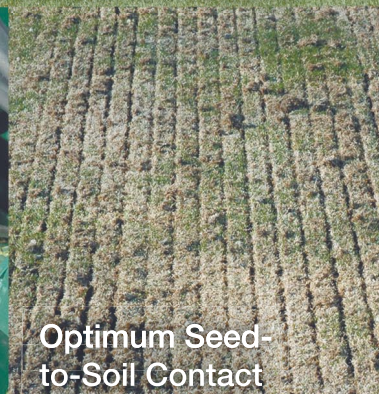


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BY BRETT ROBINSON

Huntingdale Golf Club holds a unique place in Australian golf, being the sole host of the Australian Masters since 1979. Over the years the greats of the game have strode the fairways of the Melbourne sand belt course which continually has set new standards in course presentation. Helping ensure that Huntingdale remains an integral part of a proud tradition is course superintendent Michael Freeman who will notch up his 25th Masters when the tournament tees off on 22 November.



Tradition continues Huntingdale's new

When Channel 7 commentators Jack Newton and Sandy Roberts rip out the now-famous line “the tradition continues” when the Masters returns to Huntingdale Golf Club this November, it’s fair to say they probably won’t be thinking of course superintendent Michael Freeman.

They will probably be more thinking along the lines of Huntingdale’s unique position as home to the Masters every year since 1979, or the tournament’s uncanny knack of producing dramatic finishes which has made it one of this country’s most endearing professional golf tournaments.

Yet when this year’s tournament tees off at the earlier time of 22 November, the man entrusted with the upkeep of one of Melbourne’s iconic sand belt courses will be continuing a tradition all his own.

Having joined the groundstaff as 17-year-old apprentice in 1982, Freeman has risen through the ranks over the past two decades to become the new master of Huntingdale,

and this year will mark his 25th Masters tournament, his sixth as superintendent.

Huntingdale has produced some spectacular moments over the years – Greg Norman’s six Golden Jackets heads an exemplary list – and at the same time has also set new benchmarks for course presentation and since taking over from former superintendent John Spencer in 2002, Freeman has continued and enhanced that tradition of excellence.

GREEN BLOOD

Freeman’s rise to the peak of his profession comes as little surprise considering his background. His entire life has revolved in and around golf courses and he has many memories of being dragged around Royal Melbourne, Metropolitan and Kingston Heath by his father Lawrence who for 23 years was superintendent at another of Melbourne’s famed sand belt courses, Yarra Yarra.

A young Freeman would chip in and help

out the old man during tournaments at Yarra Yarra, whether it was raking bunkers, divotting tees or picking up litter, and whenever one of the other sand belt courses was gearing up for a tournament, father and son would head down and pitch in. On one occasion, although he can’t recall when, Freeman was introduced by his father to legendary Royal Melbourne superintendent Claude Crockford.

Freeman’s father retired from the industry at a relatively early age in the 1980s but before doing so was able to instil in his son a passion for the industry and a work ethic that still holds him in good stead today.

It was no surprise then that as soon as he finished school Freeman went straight into the game, initially applying for a job under Graeme Grant at Kingston Heath. Failing to get the nod there, he learnt of an opportunity a few kilometres away at Huntingdale under superintendent John Spencer. The year was 1982 and Freeman was 17. The rest, as they say, is history and Freeman can now reflect



Huntingdale Golf Club superintendent Michael Freeman will notch up his 25th Masters tournament this November, his sixth as superintendent. Freeman's turf management career has spanned a quarter of a century at the Melbourne sand belt course

for master

on a career which has spanned a quarter of a century at one of Australia's most prestigious courses.

MASTERING HUNTINGDALE

Freeman had only been on staff for a few months before getting his first taste of Masters tournament preparation in early 1983. It was the same year in which Norman would collect his second Masters title and befitting the duties of any young greenkeeper, Spencer handed Freeman a board, the key to the bunker rake and told to go and tend to the bunkers. The memory brings a smile to Freeman's face, who now as superintendent will commit a team of at least five to manicure the traps before and after each day's round.

Huntingdale has continually set a new benchmark for tournament presentation and in the lead up to this year's Masters, Freeman's crew of 15 will swell to 24

As the years and Masters tournaments went by Freeman gradually worked his way to assistant superintendent and for 12 years was Spencer's right hand man until taking over the top job himself six years ago. Having played such a major part of so many tournament preparations, Freeman is in a unique position to fully understand what it takes to get a facility into prime condition year in, year out.

"There are so many different facets which need to come together," reflects Freeman. "I guess it's about believing in what you've done in the past and having the confidence in your decisions, sticking by them and making them work.

"It certainly helps having been involved with the Masters for this length of time and being able to draw from past experience. I learnt a lot about tournament preparation off John (Spencer) who was one of the best in the industry when it came to tournaments.

"Obviously my methods are slightly different to what John did and it's very much trial and error, seeing what works and what doesn't. If it does work you file it away and do it again the following year.

"The key thing is you have to be very observant of your turf, know where you are heading and not be afraid of listening to other people. I put a lot of faith in my assistant Barry

Proctor, who has been a fantastic asset since arriving here the last couple of years.

"We are given very little direction from the club as to how the course is prepared. It's basically up to us to how we want to present it, so in that respect I encourage the staff to have ownership of the property and be proud of what they are doing which ultimately makes their job more enjoyable.

"I'd like to think we put a lot more emphasis on the presentation of the course than maybe in the past. Even though it may be a bit Americanised, say in the way we pattern cut fairways, but we are trying to dress the golf course up so that the beauty of it stands out."

SUBTLE TWEAKS

While preparing the course each year to host one of this country's premier golf tournaments is a challenge in itself, Freeman has also had the added pressure in recent times of undertaking major course works in between each tournament.

Delegates at the 2004 Australian Turfgrass Conference would have seen first-hand the extensive work undertaken to the 8th and 11th holes, while the following year the 6th and 13th holes received considerable makeovers with greens rebuilt, bunkers reshaped and lakes enlarged.



The par three 3rd hole at Huntingdale. The front nine's other par three – the 5th – has undergone some subtle tweaks since the last Masters to make it more strategic from the tee

The rebuilding programme has continued this year with the par three 5th undergoing some subtle tweaks in January/February. The tee complex was reconstructed, carry way re-contoured and front approach redeveloped. The existing three-tier green shed a tier as part of the greens redevelopment, while the surface was returfed with a mix of 1020 and Crenshaw creeping bentgrass. The hole's four bunkers were brought more into play and overall the hole now requires a far more strategic approach from the tee.

"We are very pleased with way the 5th has come up and it will be very interesting to see how the pros play it," says Freeman. "It's probably a bit harder from their perspective, but a lot fairer from a putting point of view now with the two tiers.

"We've been very busy over the past few years and it has been a credit to the club and management to rebuild the whole property underneath the golfers' noses, host the Masters every year and bring it up to a championship standard.

"In the early 1990s 20-under was the winning score, whereas nowadays 11- or 12-under is more likely to win it. The changes are more strategic for the better player while providing a better course overall for the members.



"I really enjoy the construction side of things. It breaks up the routine and you are playing a bit with history because what you're constructing will be there for the next 20 or 30 years."

LOOKING TO THE HEAVENS

While course alterations have kept Freeman busy in between tournaments, the current drought has also increasingly taken up more and more of his planning schedule. Huntingdale is one of the more fortunate sand belt courses when it comes to water, compared to say the likes of Royal Melbourne, Victoria and Commonwealth, but that hasn't stopped Freeman and the club from taking a proactive stance in ensuring the facility's future water supply.

The club currently has a license to take 70M of ground water from bores scattered around the property, however with high salinity and bicarbonate levels, water quality is a major issue. When ATM visited Freeman in late

September he was about to sink a few more bores as well as investigate some existing bores that had been out of commission. While Freeman knows they will have lower yields, he is hopeful that salt levels will be less than what is currently coming from the others.

To supplement the supply, over the past 10 years Huntingdale has been able to pump in water from a quarry on the opposite side of Huntingdale Road. While that has provided the club with an abundance of the wet stuff in the past, levels in the quarry are now at the stage where quality is becoming a real issue.

Like most golf clubs in this current climate, Huntingdale has formed a water committee which is looking at a number of alternative options, including desalination, and has already spent in the vicinity of \$150,000 on stormwater harvesting projects around the course.

A harvester has been installed on the 6th which collects all water off the clubhouse roof, car park and southern end of the golf course (six fairways), while another is situated at the northern end of the property on 16, capturing runoff from the surrounding residential area. Estimates given indicate that in an average rainfall year Huntingdale will be able to capture anywhere between 30-40 megalitres of stormwater.

First, however, the rains need to come and given the current climate that seems a long way off. Despite a solid winter which saw good average rainfalls (Huntingdale recorded 67mm in June and 88mm in July), Melbourne has endured another lean spring (the August-September period netted just 30mm) with the prospect of a severe summer just around the corner.



The 6th green complex received an extensive makeover a couple of years ago, in particular the bunkering

"We went through a very tough summer last year and the way we are heading this year it will probably be just as hard," predicts Freeman. "For everybody's sake I hope we get some spring and summer rains to ease the intensity of the drought.

"It's certainly some of the harshest conditions I have experienced. It can be hard because you have to keep yourself up all the time so as not to bring the rest of the staff down. You just have to keep plugging away and hold the course as best as you can until you get a bit of a break. Every golf club is in the same boat.

"At the Cairns conference it was the only topic everyone was talking about – how are you off for water, what are doing to get through, what are your plans to get more. You tried to network with as many people as you could to land a good idea which you could adapt and present to your club.

"I've never used so much wetting agent in all my life. Usage of wetting agents and penetrants has probably doubled. Last year I put out a penetrant in November, which I have



Huntingdale is well known for its pattern cutting of fairways and greens which add to the course's stunning appearance during the Masters

never done before, and the way it's heading this year I'll probably have to do the same.

"It all boils down to water management and trying to get as much water as we can on to our property and looking at the various avenues to go down to achieve that. It's now about being self-sufficient. The treated effluent pipeline to the sand belt will probably not happen. It has been talked about for a long time, gone hot and then cold again, but the clubs that are most desperate for it, like Victoria and Royal Melbourne, are now undertaking projects of their own in order to become self-sufficient."

PEAK CONDITION

Preparations for this year's Masters have started a good two weeks earlier than usual following the rescheduling of the three major professional tournaments. Usually the final

tournament before Christmas, the Masters is this year the first major of the calendar (22-25 November), which, as it has transpired, is the same weekend as the recently announced Federal election.

Freeman's usual staff of 15 will swell to 24 as extra hands are brought in to finetune the playing surfaces closer to the tournament. Among that number will be an intern which Freeman takes in each tournament as well as the regulars who return each year to help out.

Caravans are set up out the back of the maintenance facility for staff to bunk in together for the duration of the tournament and Freeman says that while the hours are long a great camaraderie develops among the crew.

In the lead-up to the tournament Freeman has been hitting the greens pretty hard with Endothal to get the 1020 bentgrass surfaces clean, as well as a minimal drip feed fertiliser

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programme to get them as firm and fast as possible.

“As a turf manager, that first and second week of December is the best time to present a golf course,” says Freeman. “In the earlier days when the tournament was held in February it was an extreme challenge to hold the greens in the tough, hot, windy conditions, but it was easy to get the fairways up.

“With the tournament brought back before Christmas and now this year being in late November, it will be a challenge trying to get the fairways up. The greens will be no worry; it’s more getting the fairways up. When you want to start pattern cutting the fairways like we do, there’s not a great deal of growth in the Santa ana couch at that time of year.

“We will be trying to encourage them along as much as we can with applications of nitrogen, iron, magnesium etc (we liquid feed by hand) to try and colour them up. But without the warmth there’s not a lot you can do. You have to have everything going for you.

“We had some warm days in September and October, but you need that consistency.



The 15th borders the northern end of the property, near to where a stormwater harvester has been put in



Delegates at the 2004 Melbourne conference will recall the work undertaken to Huntingdale’s 8th green

It’s amazing what two weeks’ difference can make and how much more growth you get and preparation you can do in that period.

“The challenging part I guess, which is taken out of your hands somewhat, is the current climate here in Melbourne. The extreme drought has obviously presented us with some issues and like most places we are in desperate need of a fair bit of rain to flush the greens and get rid of any salinity issues and bicarbonate problems due to the poor quality bore water we have.

“But at the end of the day the course is pretty consistent throughout; the problem is

as a superintendent you tend to look at your weak areas more than your better areas and you tend to get a bit wound up and be a bit hard on yourself. But when you look at the overall property it’s not that bad.

“I’ve seen some magnificent golf courses presented over the years and one that stands out in my mind is Metropolitan when it hosted the World Matchplay Championships. (Superintendent) Richard Forsyth had that place immaculate, and if I could try and emulate or get close to that level, I’d be a happy man. But I haven’t as yet so I’ve still got Richard in my sights.” 🙏



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Since the official launch in August and the PGA Golf Expo in September: Cane-It Tees are now available in many Pro Shops & retail golf accessory outlets...proud to say that the growing number of these stores are welcoming our product with open arms and the opportunity to provide the general public with a much needed & requested environmental alternative in tees as environmental awareness has now reached "Priority Levels"

Golf being a "green grass sport" is one of those sports where Environment and Sport can combine and where all within the industry are doing their utmost to provide anything possible by way of new sensible products to maintain in keeping with Environmental Awareness...

The golf tee is no exception as the common wooden and plastic tees are one of the main and worst contributors in creating negative environmental impacts and rising maintenance costs

Hundreds of Thousands of trees are cut down every year to produce Wooden Tees; they are not made of compacted glued sawdust...totally Unacceptable, Inappropriate and Irresponsible

Plastic tee fragments on the other hand are nothing but a pollutant providing an unsightly mess on tee-off areas and a major problem for grounds staff with maintaining of mower blades and general maintenance, once these tee fragments are left behind, they finish up in the surrounding landscape, our waterways or buried into the soil if not picked up and put into provided bins...now lets be honest, how many golfers does anyone know of who picks up tee fragments and places them in those bins???

Here are some further startling statistics to consider: current tee fragments are also responsible for approximately 10,000 tons of rubbish on a global scale every year, taking into consideration that approximately 12 Billion Tees are manufactured each year...and around 4plastic tees in weight is the equivalent to the plastic used to manufacture around 6 plastic shopping bags....

Why are we tending to use eco friendly bags when shopping, then go and use plastic tees???

There is a simple mathematical equation to consider: the more maintenance costs keep rising, the more expensive it becomes in membership fees and to play a round of golf, someone has to cover these costs...

There is also a very simple solution to consider: simply provide an environmental responsible alternative product that assists in reducing these rising costs and problem solved.....

Just plain old common sense and so simple...

There is no justifiable reason or excuse for golfers to keep on using plastic or wooden tees unless they simply do not care.....I am very proud to say that there is not many people in our nation that don't....we may be tough and competitive, but we do care....

So many pro shops are now following the trend in getting rid of old plastic and wooden tees and replacing them with the new Cane-It tees made from plantation grown bamboo cane....

They have the same appearance as a natural wooden and standard plastic tee; do the job a tee should do, cost much the same as the other tees and no one is out of pocket, and above all; when broken, are not a visual or an environmental pollutant...

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Now that the public are being made aware of how damaging existing wooden and plastic tees are to the eco system and overall damaging to our environment and to their favourite club, much needed positive changes have started to take place and the caring public are fully supportive.....

The Golf Course Superintendents Association have also been informed of all the negatives and statistics associated with existing tees; somewhere and sometime in the near future, I feel these new tees may well become the golf tee of regulation.....

The Australian PGA Tour & the South African PGA Tour, Ladies and Men, use Cane-It as the preferred tee and talks are in place for the Asian PGA Tour to commence using Cane-It starting with the Hong Kong Open...it will not be too long before all PGA Tours around the globe are using Cane-It tees. Our touring professionals are out to lead the way and set a standard with environmental best practice for all to follow.....

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BY GAVIN DARBY



Dome sees a new light

Even when it was in the design stages, the challenging growing environment that would be created upon completion of Melbourne's Telstra Dome (or Colonial Stadium as it was originally known) was well documented.

Of all the issues we face at Telstra Dome, low light levels are by far the greatest limiting factor to producing a healthy turf sward. These light levels are at their lowest in winter which coincides with the majority of our event schedule being AFL.

As the traffic on the arena increases to a point that surpasses the plant's ability to withstand the wear and recover, a decline is seen in plant health and subsequently plant density and numbers. This decline continues to a point where the surface presented is inadequate and requires replacement. Replacing turf has created its own issues with continuity, hardness and traction and the cost of turf replacement has also exceeded financial models produced at the venue's inception.

Over time we have improved and continue to refine our shade management techniques. This has seen an improvement in our surface to the point that in three of the last four years we have set new low benchmarks for turf replacement quantities. A total of about 8700m² of replacement turf was used in 2007

Telstra Dome in Melbourne ranks as one of the toughest environments in which to grow and maintain high quality turf. Since its opening in March 2000 the arena's surface has been the focus of much debate and numerous methods have been trialled to combat issues created by a coliseum-like seating bowl and retractable roof. The latest and boldest move is the use of artificial lighting rigs which have been employed effectively at a number of Europe's major sporting arenas. Here Telstra Dome arena manager Gavin Darby gives ATM an exclusive insight into the \$2.2 million project which will be unveiled ahead of the 2008 AFL season.

which was less than 30 per cent of the quantity used in some of our previous seasons.

SHEDDING NEW LIGHT

With light being identified as our greatest limiting growth factor, we have for several years been seeking solutions or ways in which to increase our light levels. These have included reflective curtains, mirrors, translucent roof panels and artificial lighting. Our first experiments with

artificial lighting were conducted in 2005 and continued in 2006. Although these were not completely successful they did prove that artificial lighting could work in improving the Dome's surface.

Concurrently to our own research into artificial lighting, we had been closely following the progress of developments being made at a number of European venues with this technology. The first use of such technology

Telstra Dome is set to employ a series of artificial lighting rigs in 2008 to help improve turf recovery and quality. The Dome has bought 13 MU360 rigs, identical to the ones seen here at Tottenham Hotspur's White Hart Lane, which illuminate an area of 360m²

was on a penalty box area at Sunderland Football Club's aptly named Stadium of Light in late 2002.

From there we are not aware of any developments until Philips Stadium in the Netherlands introduced a full system in August 2004, reportedly at the insistence of PSV Eindhoven's coach Guus Hiddink who believed an inferior pitch was detracting from the quality of football being played by his team.

2006 witnessed an explosion of venues taking up the technology with one company, SGL Concept of the Netherlands, dominating the market. SGL Concept founder Nico van Vuuren is also a principal partner in a Dutch company that made its name by producing roses in a controlled environment. Forty thousand roses a day, every day of the year, are grown and sold to market in a glasshouse more than twice the size of Telstra Dome.

In February this year Telstra Dome chief executive Ian Collins (AM) and I embarked on a research tour to Europe to investigate first hand the latest developments. Our tour entailed meetings with two companies producing artificial lighting rigs for stadiums – SGL Concept and Mobile Lighting Rig – and we also visited 11 venues in five different countries, eight of which were using artificial lighting systems. Those venues were:

- Philips Stadium (PSV Eindhoven)
- Parken Stadium (Denmark)



The MU360 rigs have six arms of 10 light fittings for a total of 60 600watt lights providing about 160 micro mol of light energy

- Emirates Stadium (Arsenal FC)
- Twickenham (England)
- Wembley (England)
- White Hart Lane (Tottenham Hotspur FC)
- City of Manchester Stadium (Manchester City FC)
- Millennium Stadium (Wales)

We discovered that venues with a sufficient quantity of artificial lighting have eliminated the use of turf replacement systems, some of which historically replaced the entire surface up to threetimes annually. Others currently employing such technology are English Premier League football clubs Bolton Wanderers, Chelsea, Liverpool, Middlesborough, Newcastle and West Ham.

On the advice of AGCSATech's John Neylan we also trekked to the middle of England to meet with Dr Andy Newell at the Sports Turf Research Institute (STRI) in Bingley, West Yorkshire, who has become a

leader in this field of research. The STRI has developed a programme that produces a detailed light analysis of shaded areas and then has the ability to forecast the potential benefits of artificial lighting rigs. Following that visit we contracted Dr Newell to complete a 'Light Distribution and Potential Use of Supplementary Lighting' report for Telstra Dome.

To obtain the data Dr Newell required, we gridded Telstra Dome into 126 points (Figure 1) and from each point we produced a hemispherical view drawing. These can be obtained from using a hemispherical camera, or in our case we contracted our stadium engineers Connell Wagner to produce these using an AutoCAD programme.

The views are best described as lying on your back looking straight up from each point. The black section represents the opening in the roof, the concentric circles are at 10° intervals

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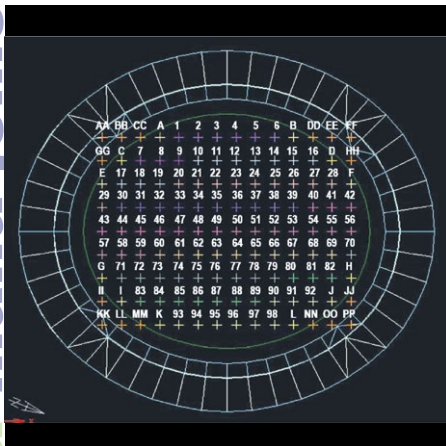
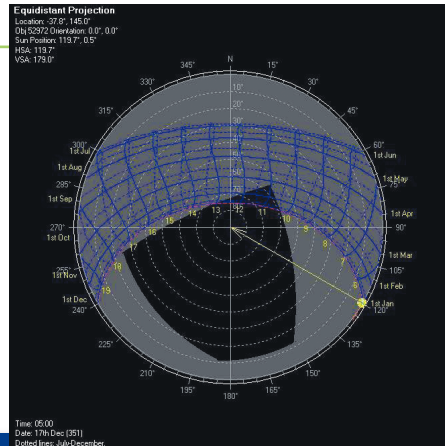
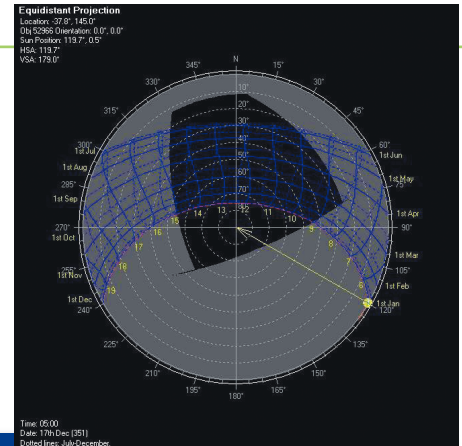


Figure 1. Telstra Dome was gridded into 126 points from which hemispherical view drawings were created



Figures 2 and 3. Hemispherical drawings from reference point H (north east corner) and reference point E (south west corner). The black area represents the opening in the roof and the blue lines are the relevant sun track for Melbourne



so represent the angle at the which the roof line is comparatively to the position. The blue lines are the relevant sun track for Melbourne, the more horizontal lines are for each month, and the more vertical lines represent time of day. In both instances solid lines are January through June and hatched lines being July through December. The overlap of the sun track in the roof opening shows the potential for direct sun light to reach each position.

Figure 2 is from reference point H in the north east corner of the arena, by far our most challenging area in which to grow healthy turf. It receives direct sun roughly from 10.30am-11.00am in November, 10.00am-12.30pm in December/January and 10.30am-12.00pm in February. For the remaining eight months it receives no direct sunlight. Conversely, Figure 3 is from reference point E in the opposite corner of the arena (south west corner). It receives direct sunlight every month of the year for between four-and-a-half to seven hours a day.

Once these drawings were completed and forwarded to Dr Newell, they were analysed by the STRI's software package to predict proportions of direct and diffuse radiation reaching the surface at different times of the day and year. The software package combines the drawings with historical global radiation figures specific to Melbourne. This data was obtained from the Australian Bureau of Meteorology and are a measure of total energy in megajoules/m².

These were converted to PAR (photosynthetically active radiation) using a conversion factor of 2.15 prior to drawing of the diagrams. This conversion was completed to make the analysis of supplementary lighting systems, which are rated in units of PAR, easier

to interpret. The result of this work is the PAR light diagrams (Figure 4).

The diagrams show the light levels for January are fairly high for the majority of the arena. From January through June these levels decline across the arena as the effects of the building's structure on light reaching the playing surface become more pronounced on the north side of the arena. In June there is a five-fold difference in predicted light levels between the north and south ends of the arena. From July through December the process reverses. The diagrams show that 60-70 per cent of the arena will suffer from light deprivation throughout the year.

These results are based on the roof

remaining open permanently which obviously does not occur with closures for events and the expectation of a dry surface requiring the roof to be closed when rain is forecast in the lead up to an event. So in practice our light levels are lower and therefore our issues exasperated further than demonstrated. Maximising roof opening times is a key management tool and but one area we have been improving over time (Table 1).

TABLE 1. ROOF OPENING TIMES

Month/Year	2004	2005	2006	2007
May	66%	63%	70%	87%
June	66%	60%	69%	81%
July	63%	54%	60%	66%
August	62%	60%	76%	79%
Average	64%	59%	69%	78%

SEEING THE LIGHT

In consultation with Dr Newell we have set 10 mol m⁻²/d⁻¹ as a minimum target for all areas of the arena. This represents a light level similar to a European spring/autumn, which is being replicated through the Northern Hemisphere winter in venues using such systems. This is also a benchmark we have matched to selected reference points in our venue during the process of producing the report.

Once our existing light levels were measured and a minimum benchmark was set, we began to look at deployment plans for the various sized products available. The artificial lighting rigs are available in a range of sizes from 18m² up to 850m². Each sized rig has a different PAR output so the size and rating of each rig need to be considered in the deployment plan and operating hours.

All of the aforementioned factors, combined with our venue knowledge, were used to create

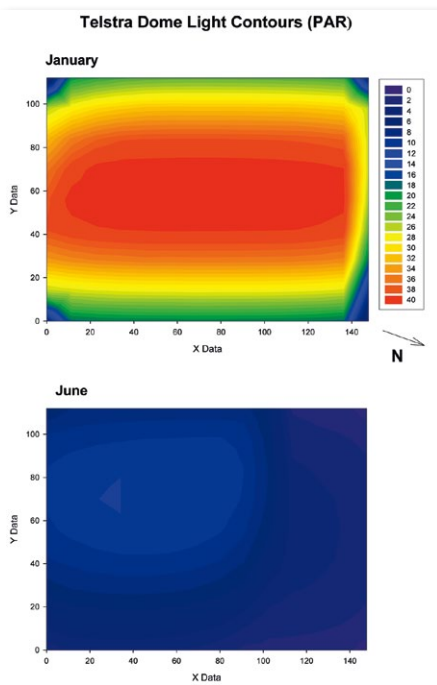


Figure 4. PAR diagrams for January and June show the huge difference in light levels reaching the Dome playing surface

a deployment plan for our selected product being the SGL Concept MU360 (Figure 5). The plan has 10 positions through the corridor and seven in each of the northern pockets for a total of 24 deployment positions covering 8640m² or approximately 49 per cent of the arena.

From the deployment plan data, inputs including natural light levels, deployment positions, area covered for each rig, total area to cover, daily lighting hours available, light energy, total energy from lights, days available per month for deployment, local electricity costs, rig electricity consumption and target PAR light levels are entered into the programme.

The results produced detail the number of hours required for each deployment position, how many rigs will be required to fulfil this requirement in any given month, electricity consumption and costs.

At this stage of the project we had gathered a considerable amount of data allowing us to ascertain that the use of artificial lighting rigs in our venue could assist us in improving our



The Dome has also purchased two smaller rigs which illuminate an area of 18m². These will be used between games to treat high wear areas such as goal squares and the centre circle

surface. The next stage was to complete a cost benefit analysis of the project, from the capital expenditure required through to the ongoing maintenance and the effects on our general business.

Our forecasting also included the costs associated with purchasing commercial quantities of 'green power' from renewable sources. Although the lighting rigs will account for less than five per cent of Telstra Dome's total energy requirements, we are currently in

negotiation with various energy providers to ensure all power requirements for the lighting rigs are from renewable sources.

Our initial expenditure was not limited to the purchase of the rigs but included:

- Consultants reports;
- Freight of 13 40-foot containers;
- Customs duty;
- Internal electrical infrastructure to hard wire over 800amp from the venue's two substations to the arena boundary;
- Movable electrical switchboards to distribute this power from the arena boundary to each lighting rig;
- Security infrastructure for a storage area;
- New equipment to transport the rigs and electrical infrastructure; and
- Turf renovation equipment to allow for an increased maintenance regime.

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We do not envisage being able to eliminate turf replacement from our venue due to the additional wear of AFL compared to soccer and the variety of non-sporting events we host such as concerts, product launches and functions. Therefore our financial analysis includes a reduced allowance for turf replacement. Our ongoing costs will include;

- Replacement bulbs every 10,000 hours;
- One additional full-time staff member;
- Two part-time staff specifically for rig deployment;
- Electricity;
- Ongoing education in the use of this new technology; and
- Turf replacement.

A BRIGHTER FUTURE

Almost three months after returning from our European tour we had collated all of the information available and arrived at the decision to purchase 13 SGL MU360 rigs, two smaller SGL MU18 rigs and an SGL Analyser. The total cost of implementing the project, including all of the matters detailed previously, is AUD\$2.2 million; the forecast reduction in turf replacement quantities will see a positive return on our investment.

In what we believe to be the first time artificial lighting on this scale has been deployed in a stadium outside of Europe, our rigs will arrive in Australia during January ready for deployment starting March 2008,

As the name suggests, each MU360 illuminates an area of 360m², being 24m long and 15m wide. When all 13 rigs are operating we will have an illumination footprint of 4680m². The actual size of each rig when operational is 22m long, 11.5m wide and 2.6m high; when collapsed for transport and storage the rig is 11.5m long, 2.3m wide and 2.6m in height.

Each MU360 has six arms of 10 light fittings for a total of 60 600watt lights providing about 160 micro mol of light energy. Each arm can be operated individually but we do not envisage this occurring. The light energy output reaching the turf below the rig is a constant factor determined by the light's height, spacing and rating.

The smaller MU18 units, consisting of a single boom carrying 12 600watt lights, are for isolated areas and will be used overnight in between games to treat high wear areas such as goal squares and the centre circle area.

The SGL Analyser includes sensors for

relative air humidity/temperature, soil humidity/temperature and moisture. Importantly, it also contains several light sensors, including one to be installed on the roof of the venue. This will allow us to compare the actual natural light levels against our modelled data. Therefore in combination with our artificial lighting targets we can increase or decrease our lighting hours to ensure use is optimised.

All data collected through the SGL Analyser, in combination with our actual lighting hours recorded manually for each deployment position, is collated through the SGL Portal and accessed via the Internet. This information will form a database from which to review our use of the technology and refine our deployment plan for future use. With the permission of other individual users on the system you have the function to access their data, which can be used as a benchmark or for educational purposes.

The rigs are towed or manually pushed to a position and left stationary for between 24-48 hours depending on the deployment plan which details each position's requirement for each month. The rigs have no automated or mechanical parts and therefore repairs and maintenance costs are limited to the light fittings, all of which are warranted for 10,000 hours of operation.

Our programme will start in March 2008 on only six of the 24 deployment positions with a total of 33 days of treatment required. This will

rapidly increase through to June when all 24 positions will receive treatment for a combined total of 272 days before slowly decreasing through to October when use will cease until the following March.

To meet our treatment targets for May through August we will require the use of all 13 rigs almost constantly outside of event times. This will see a change to the timing of our general practices such as fertilising, applying chemicals, aerating and topdressing.

These practices, which for continuity reasons require access to the entire arena in a single process, will be completed in a compacted time frame immediately following the last event of each weekend. Tasks such as mowing, divoting and line marking can continue beneath the rigs. Irrigation will be applied prior to the positioning of the rigs as we cannot irrigate when they are deployed, however they can operate during rainfall.

The management of turf in such a challenging growing environment combined with an event schedule at least the equal of any venue in the world will remain a significant challenge as the expectations of our stakeholders and the general public continue to grow. We do not believe the artificial lighting rigs will be a one-stop solution to all our issues, but another useful management tool to be used in combination with other management practices as we continue to improve our surface. 🌱

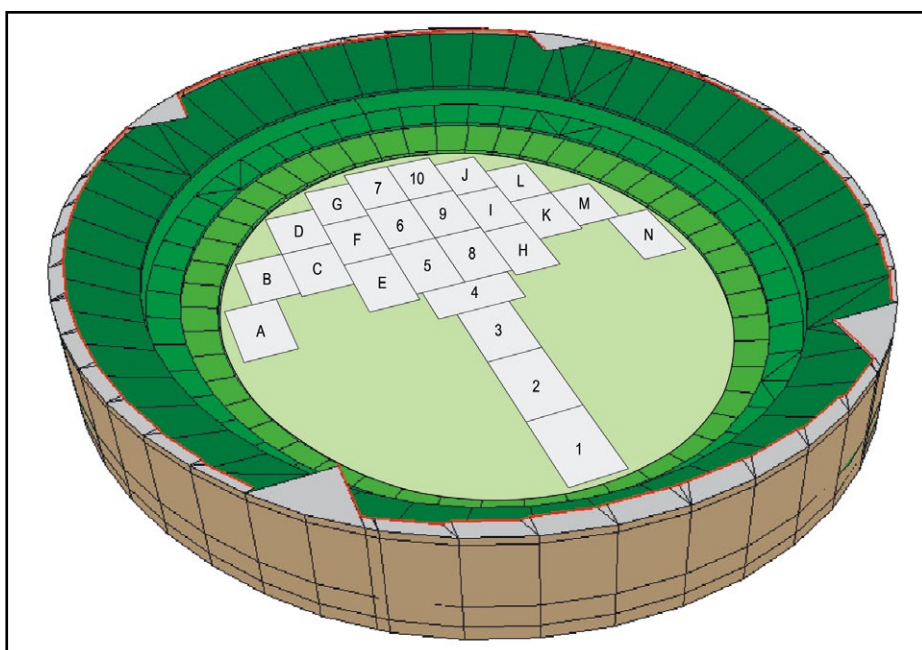
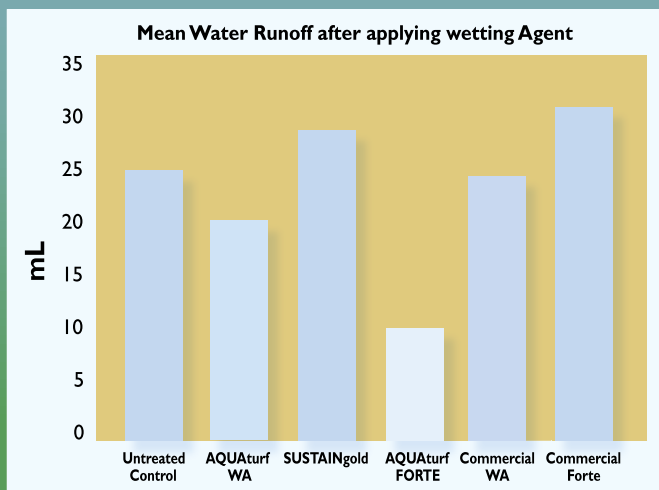
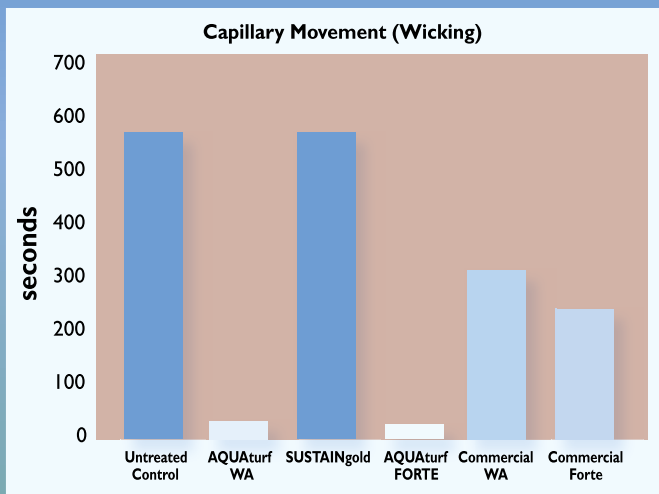
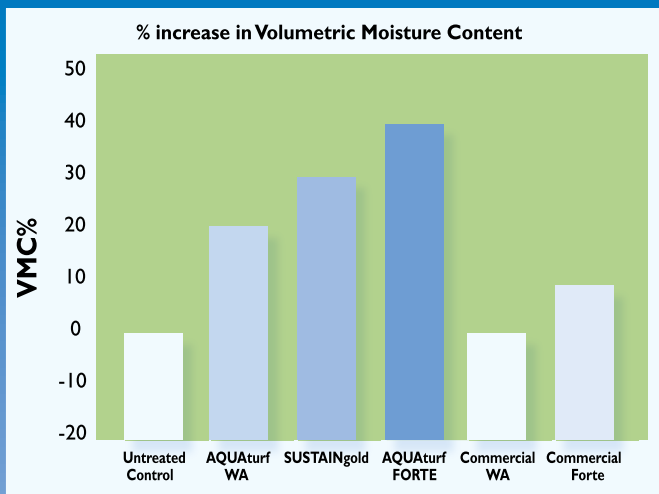


Figure 5. The deployment plan for the Dome has 10 positions through the corridor and seven in each of the northern pockets

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- (6) Competitor Forte (2+5) @ 40L/ha

The trials evaluated:

- **Water Holding:** using soil columns to measure the volumetric water held after applying each treatment. In this trial AQUAturf FORTE (40L/ha) imparted exceptional water holding capability to the treated soil - a whopping 40% more than the untreated control.

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- **Infiltration:** using a runoff trial that measured penetration of surface flowing water. In this trial AQUAturf significantly reduced runoff compared to other treatments, while AQUAturf FORTE again raised the bar by further increased infiltration and less runoff.

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BY BRETT ROBINSON



The long road from Coonabarabran

The Australian Golf Club stands as one of the most exclusive courses in the country and for course superintendent David Honeysett it couldn't be further removed from where he started his career in turf management.

Hailing from the small country NSW town of Coonabarabran, five-and-a-half hours northwest of Sydney, Honeysett has come a long way since his early days as an apprentice greenkeeper at the town's local nine-hole course where operations consisted of just him and one other greenkeeper.

He now finds himself in charge of agronomic operations at one of the country's oldest and grandest golfing establishments and in just over six weeks time will present the course to host its seventeenth Australian Open.

Appointed to the top job in September 2005, following the departure of long-serving custodian Rob Ashes, Honeysett has over the past two years embarked on a major restructuring of turf management operations, both on and off the course, which will ultimately get a thorough examination with the hosting of Australian golf's most prestigious tournament now on the doorstep.

HUMBLE BEGINNINGS

As the saying goes, you can take the boy out of the country, but you can never take the country out of the boy, and it certainly holds true for

The 2007 Australian Open returns to the Sydney suburb of Rosebery where The Australian Golf Club will entertain the game's elite for the second time in four years. While the course has changed little since Peter Lonard last lifted the Stonehaven Cup aloft there in 2004, ATM discovers that down in the engine room there has been a major restructure in turf management operations.

Honeysett. Born and bred in Coonabarabran, located between Tamworth and Dubbo, Honeysett fell into the greenkeeping trade more by accident.

Leaving school, he took on a plumbing traineeship but was left stranded after his employer left for Darwin. Contemplating transferring his traineeship across to the local

council, a greenkeeping apprenticeship became available at the nine-hole Coonabarabran Golf Club. The then 17-year-old successfully applied for the role and for the next four years he would complete his apprenticeship while attending Orange TAFE.

Honeysett's agronomic ability was quickly recognised and the promising student took out apprentice of the year and was put forward for the state award. That entailed a trip down to Sydney for an interview at which he met then superintendent at The Lakes, Phil Knight. Despite not winning the award, no sooner had Honeysett returned home than Knight was in contact offering him a position back down in the big smoke.

Being a country lad at heart, Honeysett ummed and ahed over whether to make the move to the city, but did so for a bit too long as when he called back the position had gone. Fortunately Knight knew of a greenkeeping position becoming available at Monash Country Club under Dave Potter.

Making the big step, Honeysett moved down to Sydney to get a taste of golf course operations at a major metropolitan course. A yearning for the country life, however, proved too strong and after a year there he accepted the head greenkeeper role at Narrabri Golf Club, an hour north of his old home town.

After a year there he was approached by some people from Armidale Golf Club

The Australian Golf Club in Sydney will play host to its seventeenth Australian Open this December

who enquired whether he would be interested in moving up there as the club was about to undertake extensive works. Grabbing the opportunity, Honeysett would spend six-and-a-half busy years as superintendent during which time he undertook a major greens resurfacing programme.

Not only did his time at Armidale enable him to hone some "good honest greenkeeping skills", it also provided a solid grounding in project and people management, which would ultimately prove beneficial given his next move.

MAKING THE BREAK

Despite being rather settled in Armidale, Honeysett came to the realisation in the mid-1990s that if he was to really make it further in the profession and get a break at a major club, he needed to sever ties with the country and head back to the city.

Around the same time the 3IC position became available at The Australian Golf Club under then superintendent Rob Ashes. Getting the nod, he was elevated to assistant superintendent just 18 months later and after seven-and-a-half years as Ashes's right hand man, took over following Ashes's decision to move on after 23 years in mid-2005.

"It was a big decision to make, particularly taking a couple of steps back in terms of position even though it (The Australian) was a totally different arrangement," recalls Honeysett of his move from Armidale to Sydney. "But I got



The Australian Golf Club superintendent David Honeysett

myself into a mindset where I was here to step back and learn how things were done and it was a very busy and interesting time working under Rob.

"The lifestyle I had in Armidale was fantastic, but I always had it in the back of my mind that I wouldn't be satisfied, because I was always very career motivated and knew where I wanted to go in the industry. I knew I just wouldn't be happy with myself if I didn't make the break and give it a go.

"You become a very industrious sort of person working at a country golf club. You're in a position where you haven't got the budget to do things, you learn to compromise and improvise pretty quickly and you just put your head down and get the job done. I don't think you ever lose that for the rest of your career and I certainly appreciate where I have come from, which in turn makes me appreciate more where I am at now.

"Looking back now, I could have easily

stayed in the country. But it was a natural progression in the end and I'm certainly happy with way it has panned out. I wouldn't change a thing."

On Ashes's departure Honeysett was placed in a caretaker role for a couple of months before being officially handed the role of superintendent in September 2005. The new role didn't come too much as a culture shock, as on the one hand he knew intimately the operations and processes of the club, while on the other Ashes had placed a great deal of responsibility on him which effectively ensured the takeover was pretty much seamless.

Once confirmed in the big seat, Honeysett set about putting in place a structure where he could totally focus on the superintendent role as well as get to the stage where he could start to achieve what he wanted to do with the course. Central to that was hand-picking a lieutenant and after the best part of 18 months without an official assistant, following a recommendation from Ellerston Golf operations manager Rod Hinwood, he brought in former Ellerston senior greenkeeper Tony Walker just five months ago.

"I wanted to scout around and hand-pick someone if I could," says Honeysett. "I didn't rush. I let things fall into place, although certainly once the Open was announced it was imperative that we got the assistant position sorted out. It was probably to my own detriment not having an assistant for all that time but I'm happy with the way it has unfolded and the structure that is there now.

"Tony has hit the ground running and is coming to terms with how the club operates. He'll move into another phase of people management and programming things now ►

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Honeysett has undertaken a major review of operations since taking over in 2005, with *Poa* management on the A1 greens coming under close examination

with the Open coming up. I'm bringing him up to speed as quick as I can but he's a mature young guy and I certainly won't have any problems with him performing."

FINE-TUNING OPERATIONS

While Honeysett has carefully gone about setting up a new staff structure, a similar process has been undertaken in regards to agronomic operations. With the blessing of the board, Honeysett has totally reviewed how the course is managed and after a fairly intensive couple of years a number of significant changes have been made which Honeysett feels will set the course up well for the future.

"It really feels like two months rather than two years, but I'm now in a position where I can initiate strategies that will enable me to manage the course the way I consider it needs to," says Honeysett. "The course will hardly change in terms of layout or from the firm, fast and lean course which it is when it's at its best.

"We won't be moving away from that, but we have examined the entire maintenance operations in detail with the board and identified areas where we can improve on, for instance *Poa* control and keeping the course as clean as possible.

"We've looked at different approaches and whether or not there are better options or alternative ideas to achieve a positive result. It's been a very interesting process and I think



we have made some very good ground over that time."

The Australian, along with Concord Golf Club, was one of the first in the country to fully convert greens to the Penn series bents in 1999. Honeysett played a major role in the process, undertaking extensive trial work to assess the different varieties before the club ultimately decided to go with A1.

Two of the A1s major management issues are *Poa annua* control and thatch management and it's those two areas where Honeysett has made some significant changes in strategy in recent times now that the greens have matured. Honeysett is now less aggressive with hand-weeding and has moved into a more gradual programme chemical control of *Poa* (pre-emergent and growth regulators), while he has also introduced a more rigorous greens renovation programme.

"The A1 is still a great grass," says Honeysett. "We obviously identified a few

issues after a few years of having it down in a true playing surface situation. Probably the biggest issue is that you have to be very aware of thatch management and what I've found in the last two years is that dusting alone and minimal surface disruption isn't the way to go in the long-term.

"You really have to pull a plug and get some of that thatchy material out because with the combination of sand dustings and thatch you get an organic layer that can't decompose at a rate you want it to which can create issues. As a result I have found that a more intense renovation programme has been needed to maintain the actual surface.

"Minimal disruption will continue up until the Open this year as part of our scheduled surface preparation plan, but straight after the tournament we will give the greens a pretty heavy mini-tine and light scarify and a heavy topdress."

In regards to *Poa* control, an issue which has always created headaches at The Australian, Honeysett has moved away from Endothal and increased the use of pre-emergent Exposan. He has taken the strategy of going in monthly right through spring to autumn due to the variability of weather conditions which can cause *Poa* to germinate pretty much all year round.

Honeysett has gained a permit through the APVMA to use Tramet (a pre- and a post-emergent) for use on greens, however with the Open coming up he has only had the opportunity to trial it on a few greens. Having used it before in Armidale, Honeysett knows



Fairways are now more aggressively renovated with Santa ana coverage upwards of 85 per cent

the results he can get with it, which may be “too good, too quick” for the Open.

“When the Open was put on us in early February this year, I had to submit a report to the board on the impact of the tournament, being so soon, on our current course management strategies,” says Honeysett. “One of the main points I tried to hammer home was that we needed to stand back a bit, review what we needed to do with *Poa* management knowing that we had to prepare surfaces for the tournament later in the year.

“From that we decided on a programme that we know will set us up for the tournament and that some of the different methods and techniques we were working on and wanting to try will be held back until once the tournament is over. We certainly don’t want to take any risks in the lead up.”

Hand-weeding was also a major part of previous *Poa* control strategies, but the disruption factor as well as the fact that a lot of the plants being hand-weeded were perennial types that had been there from the outset, it was decided to discontinue hand-weeding and go in with more gradual chemical control.

One of the unexpected benefits of the change was that because the club had budgeted for manual labour to come in and hand-weed greens, Honeysett was able to move those people on to the course and over a month long period last summer hand-weeded a substantial amount of chemical-resistant *Poa* out of fairways and roughs, an exercise which proved so successful that Honeysett is considering replicating again next year.

While *Poa* infestation and thatch management rank among the some of the major management issues, pitch marks continue to remain an ongoing maintenance issue, more so than in the past.

“The biggest issue here is the size of the greens,” says Honeysett. “The lack of lateral growth and repair with the A1 means pitch mark recovery does become an issue and you have to tailor your management practices accordingly – increase dustings to keep the greens firm, keep them as dry as you can, use products to help toughen the leaf and plant to make them more resilient, yet not be too carried away trying to promote too much growth and ending up with excess thatch.

“Nutrition needs to be constantly monitored. The A1 likes to be fed gradually and slowly so you keep it ticking over rather

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than heavily fertilising and trying to promote a lot of recovery because you just won't get it."

Just as the greens have been more intensely worked in recent times, so too have the fairways. Oversown with Santa ana couch in 2002, they were aggressively renovated (verticutting) in January 2005 for the first time which really stimulated growth and promoted further establishment. Honeysett now estimates there is between 60-85 per cent Santa ana across all fairways and similar renovations in the future will only increase that percentage.

BIG TICKET ITEMS

While Honeysett has had his hands full fine-tuning agronomic operations, one area under review is the 25-year-old irrigation system which is on the agenda to be replaced in the near future. A Melbourne based company is currently drawing up design concept plans.

Although fortunate to have five bores pumping excellent quality irrigation water, water conservation is a major consideration for the club. A new irrigation system would potentially save up to 20 per cent of the course's daily water use, and the club is also

conducting a stormwater harvesting feasibility study as part of an investigation to better utilise this precious resource.

Another big ticket item Honeysett is gunning for is a new maintenance compound. While a number of OH&S and environmental management issues have been resolved with the existing facility – the machinery washdown bay has been modified and a WaterStax treatment system installed – there is little room for modification or expansion.

Honeysett is hopeful that in the future a new facility can be built further in course, on the site of the current nursery, which would not only provide greater freedom but also allow the club to lengthen the fifth and sixth holes.

TRIED AND TRUE

Although the upcoming Open will be Honeysett's first as superintendent, he can call on the experience gained at the two previous Opens the club hosted in 2004 and 1996. The difference this year, however, is that with the rescheduling of the three major tournaments – Masters, PGA and Open – the Open will now be played in mid December which will give

Honeysett a few more weeks of warm weather to get the fairways ticking beautifully.

"I'm really looking forward to the tournament," says Honeysett, who will bring in a couple of US greenkeepers to supplement his crew of 18 in the lead-up to the tournament. "It won't be too much of a shock due to my previous role when I was under Rob.

"The main issue will be consistency. Essentially preparations won't change dramatically from the previous Open and we'll be staying with tried and true. I have been taught over the years not to forget basic turf management and try not to complicate something that does not need to be.

"The main thing that always goes through my mind and something I try and instill in the guys is we've got the grass which will do the job, it's us that could potentially cause ourselves problems. We know the golf course; it's a matter now of fine-tuning the surfaces which we know we can do. We just need everyone focused because one lapse in concentration could be disastrous. But I'm lucky that I've got some great personnel here and I'm very confident we can do the job." 🌱

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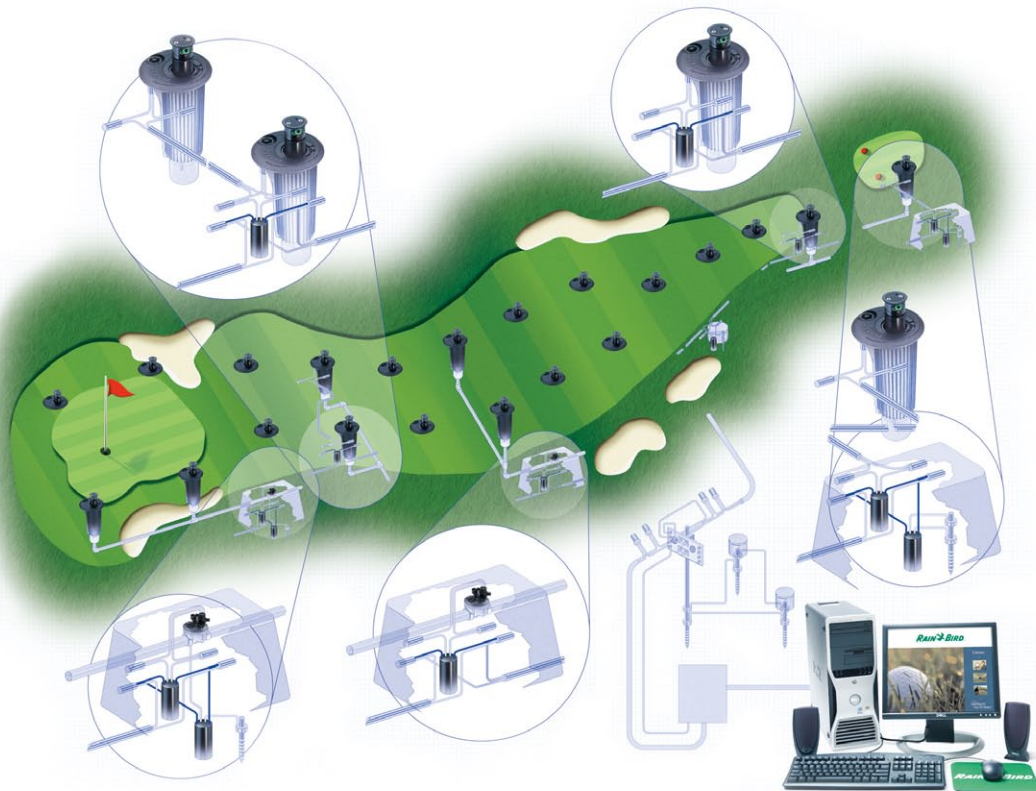
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BY TERRY MUIR

Terry Muir looks at environmental risk management and discusses how turf managers who successfully integrate risk concerns into their organisational structures can protect and enhance their ability to deliver better environmental outcomes.



Even though environmental risk management costs money, it can help avoid even bigger costs that arise from poor risk management

Turfgrass environmental risk management and the concept of 'de-risking'

Turfgrass management professionals operate in an environment fraught with environmental risk. It goes with the territory and ignoring the element of environmental risk when turf management strategies are being framed is unimaginable and dangerous.

Environmental risk management is simply a process that involves making a distinction between acceptable risk and unacceptable risk. A turfgrass manager must decide for themselves what is acceptable and what is not.

Even though environmental risk management costs money, it can help avoid even bigger costs that arise from poor risk management. By strategically managing environmental risk a facility will be able to identify areas where they must try harder, and areas where they can afford to maintain or even slow their efforts. Only by analysing and documenting the real state of their environment can the turf manager meaningfully find ways to improve.

MANAGING RISK EFFECTIVELY

Environmental risk is uncertain and that's why it is important to take action to reduce exposure by adopting three simple steps:

- Assess your risks and vulnerabilities;
- Create prevention, contingency and response plans;
- Choose financing options that reduce your risk and protect your key business assets.

Let's look at a practical example to illustrate this - managing the risk of water pollution from a chemical spill during mixing.

The first step is to start by assessing the potential impact on you and your organisation. Consider the likelihood of a spill and the impact of the spill on the environment. Also consider the potential costs of remediation and possible prosecution. How vulnerable are you?

The second step is then to plan to prevent or mitigate significant losses. Planning enables you to manage your risk effectively. As a result of planning, you'll identify some steps you can take to prevent a spill and limit its impact, should one occur.

Some steps are obvious – ensure mixing occurs in a contained area; train all staff; have a standard operating procedure for chemical mixing; have a standard operating procedure for spill management; have a spill kit.

Step three, determine how to spread your risk. Instead of automatically spending money on spill kits to 'fix' the problem, it is best to identify options for prudent coverage and significant savings.

For example, is it more important that the staff receive training in chemical mixing than it is to have a spill kit in your circumstances? Is it more important to ensure chemical mixing is undertaken in controlled circumstances, therefore the development and implementation of standard operating procedures for mixing may be more important initially than developing a spill response procedure.

It is important to think strategically. If, for example, in the last 12 months you mixed chemicals on 100 occasions in a contained mixing area and had two spill incidents – one of tank overfilling and one incident in which

the chemical container was knocked over and a small amount of product spilt because the lid was not replaced – would the better risk management option here be to spend money on a spill kit? Perhaps not.

Other more appropriate risk management strategies may include:-

- Purchase a shut off hose fitting to reduce the risk of overfilling;
- Develop standard operating procedures for chemical mixing to ensure lids are replaced on drums after use;
- Conduct a chemical filling demonstration exercise for staff; and
- Regularly monitor staff operations during filling.

In 100 chemical filling events there were two circumstances in which a kit was required. The spills were small and manageable. Perhaps in this instance the capital expense of a spill kit would not be the preferred immediate option and attention to human behaviours might be the appropriate initial risk response strategy. This would enable the costs of spill kits to be appropriately budgeted for.



As an environmental risk manager it is important you recognise that a spill event represents just one element of your club's interaction with the environment. You also have air, noise, water, waste, soil, flora, fauna, groundwater, dangerous and hazardous goods, staff and contractor issues that require management.

DE-RISKING

The objective of environmental risk management is to provide a structured and systematic method for determining the magnitude of the risk. From this point, risks can be evaluated and prioritised to determine control treatments.

The risk management process can be implemented in stages, beginning with areas of operation that historically produce the greatest risks to the environment

One of the biggest challenges facing a turf manager is unacceptable environmental risk. Unacceptable environmental risk is undertaking an activity that presents a significant risk of harm to the environment without any controls. When you take time to manage environmental risk you effectively de-risk by reducing your vulnerability and mitigate potential costs should disaster strike.

What the turf manager must look for through risk assessment is work activity whose 'best' outcome will result in many benefits, while the 'worst' outcome will still allow adequate protection of the environment.

Generally, there are several courses of action open to the manager at any one time and a structured analysis of the different best/worst possibilities will enable you to balance the risks and chart the optimum course. Based on that kind of analysis, you can then proceed ►

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Standards Australia's HB 203 (2000) identifies a number of risk treatment options designed to minimise the impact on the environment. Some of those options relevant to golf courses are shown in Table 1.

CONCLUSION

A turf manager can measure risk management performance through indicators in three key areas:

- Structure – are the right elements in place to be able to identify and manage environmental risk?
- Process – are the right things being done to protect the environment?
- Outcome – is the result as intended and can we improve?

The risk management process can be implemented in stages, beginning with areas of operation that historically produce the greatest risks to the environment. Of importance is not how the risk management process is

TABLE 1: RISK TREATMENT OPTIONS FOR GOLF COURSES

RISK TREATMENT OPTIONS	
AR	Avoid the risk: Decide not to proceed with the activity or adopt alternative process or choose a more suitable location.
MR	Mitigate risk: introduce new technology or change practices.
RL	Reduce the likelihood: training or planning or supervision or monitoring or preventative maintenance to reduce the probability of an incident occurring or review work practices.
RC	Reduce the consequences: minimise physical exposure to risk sources by relocating an activity or improving contingency and emergency response preparedness or buffer zones or spill controls
RR	Retain the risk: Administrative responses such as development of standard operating procedures or basic training or plans to deal with outcomes if risk realised

Source: Standards Australia HB203:2000

undertaken, but that it is undertaken and is systematically continued.

Environmental risk management starts with the development of a programme of environmental management. Through the programme you will be able to systematically identify, document and address and manage environmental risk.

What society demands of a turf manager

in the 21st Century is good environmental governance to ensure both current and future risks that affect the environment are identified and managed and, in some cases, the risk turned into an opportunity.

Managers that integrate risk concerns into their organisational structures and daily operations will protect and enhance their ability to deliver better environmental outcomes. 🌱

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After completing his apprenticeship at Pambula-Merimbula, Pat Wilson spent time on the Ohio State Program where he was placed at the Robert Trent Jones Golf Club which hosted the 2005 Presidents Cup



Fairways far away

In the last edition of ATM, recently appointed Elanora Country Club superintendent Daniel Cook detailed how his time on the Ohio State Program ultimately led him to securing a position at the prestigious Augusta National Golf Club. The Ohio scheme has given many young Australian greenkeepers a unique opportunity to work overseas and for aspiring NSW greenkeeper Pat Wilson his involvement sparked a three-year journey around some of the world's finest turf facilities.

After finishing my apprenticeship at Pambula-Merimbula Golf Club on the far south coast of NSW, it was time to take the next step in my turf management career. I had heard numerous stories about the Ohio State Program and how many aspiring Aussie greenkeepers had signed up and gone on to work at some of the world's great courses.

Taking the plunge, I applied in 2004 and after being successful I was on my way. A 13-hour flight to the US would be the first step in what would turn out to be a three-year, once in a life time work experience opportunity.

Florida is a world away from Pambula-Merimbula and that was to be my first stop, working at the Greg Norman-designed Tiburon in Naples on the west coast of Florida. This was a great experience working with warm-season grasses and a very large multicultural crew including Mexicans and African Americans.

With very tropical temperatures and climate it was a real challenge keeping the course in tournament condition throughout the year. The 36-hole resort course had a very high budget and very professional course management, and gave me the chance to witness a lot of different cultural and management practices and the incredible attention to detail that superintendent Matt Fancher expected.

After being at Tiburon for four months I was successful in moving up the ranks into a spray tech position on the championship length Gold Course. I was in control of all fertilising, pest and fungicide applications which were on a very tight and busy schedule in order to keep the Bermuda in top shape.

On August 13, 2004 the course was smashed by Hurricane Charley, a category four beast which hit only a few miles up from Naples. This was one of six hurricanes that battered Tiburon in a 10-week period. The mess and damage was unbelievable, leaving us with a lot of work to get the course back to normal.

As October fast approached the weather in Florida was ideal as we began preparations for the Franklin Templeton Shark Shootout, where Greg Norman invites several well known players from the PGA tour. The tournament was a two ball event and made it very interesting to watch a different style of tournament golf. Greens were stimping at over 14' and were up there as the fastest on that year's PGA calendar.

Early starts saw 40 staff members set up for the first day's play. Attention to detail was enormous, with greens double cut and doubled rolled and all bunkers hand-raked.



TOURNAMENT TIME

With four months left on my visa, I had the option to extend for a further six months and take a different placement up north on a cool-season course. Talking with Ohio program manager Mike O’Keeffe I was successful in getting a position at Robert Trent Jones Golf Club in Gainesville, Virginia which was hosting the 2005 Presidents Cup.

On my way up to Virginia, I volunteered for the Players’ Championship at TPC Sawgrass, in Jacksonville, Florida. This was 10 days of long, hard work, and the weather certainly didn’t work in our favour.

Thunder and lightning interrupted the event several times. We squeegeed all playing surfaces and at one stage had 28 hand blowers in action, blowing fairways due to the wet and windy conditions. The organisation of superintendent Fred Klauk made the championship a huge success and the most memorable part for me was cutting the well known 17th island green.

From TPC Sawgrass I landed at Robert Trent Jones Golf Club, which is an 18-hole parkland course. Arriving at the tail end of winter, there were no leaves on the trees and with very cool temperatures there was little turf growth, but summer and the warm weather soon arrived quickly.

Superintendent Scott Furlong liked to keep the greens hard and fast, which during the middle of summer was a very tough task. Working 60-hour weeks, it was time to maintain the course to its best condition during the very hot weather patterns. With 40 staff members, the hand watering of all playing surfaces greens/tees/fairways was a daily practice. It was important to set the greens up each morning, giving all tiers and ridges a good water and in the afternoon we gave them a light syringe. The spray schedule was huge, with wall-to-wall applications for pest and disease prevention.

As part of our responsibilities working at Robert Trent Jones, we also had to maintain George Bush’s golf green at The White House! That meant a few trips into Washington D.C. to tend to his green and as an added bonus we also got a guided tour of The White House.

The back-to-back 80-hour weeks leading up to the Presidents Cup were intense. Attention to detail was unexplainable with Scott’s three assistants running the place like a well oiled



One of the more deadly hazards ground staff have to negotiate at Tiburon in Florida

machine. Players started to arrive for practice rounds and we had the opportunity to talk to a few of the caddies and players to get their feedback on how the course was playing. PGA officials stepped in two days out from the start of play and restricted watering to nothing.

The tournament teed off on Monday 19 September, 2005 and myself plus five other interns and assistants arrived at the RTJ maintenance shed at 4.45am to get all machines and gear ready for the 40 volunteers and 40 crew. This consisted of 18 fairway units, 18 walk behind greens mowers, six walk behind tee mowers and a lot of rakes for bunkers and fluffing of rough.

At 5am the morning meeting was held to make sure all personnel were heading in the right direction with their various tasks. Volunteers consisted of superintendents and assistants from all over the USA, other Ohio interns and even a few lads from Down Under.

Greens were double cut then rolled followed by a stimpmeter reading which was taken by Ohio program manager Mike O’Keeffe. Mike would then notify the guy rolling if he needed to give any greens another roll so all green speeds were the same. Holes were then changed to positions nominated by ▶

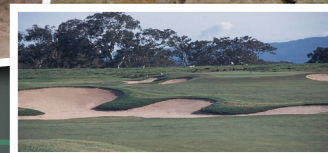
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the PGA. Superintendent Furlong would then come through behind everyone making sure nothing was out of place and all was perfect.

The bentgrass fairways were double cut each morning to show a great diamond effect. After everyone had finished mowing it was time to fluff rough! This made a big difference to the course's appearance and how it would play. The afternoon consisted of just a single cut to greens and fairways followed up by a big divot team.

Sunday came and the Jack Nicklaus USA side proved to be too strong for the internationals led by Gary Player. We were lucky enough to have a few beers with the player's caddies before we were invited out to a formal dinner in the very exclusive clubhouse.

TENNIS ANYONE?

After touring around the US for six weeks, I was then on a flight across the Atlantic where I landed a position at a private club – Coombe Hill Golf Club, located south west of London. Superintendent Sean Whipp had his staff of 10 greenkeepers, including a mechanic and his assistant, into a busy winter construction period, with temperatures around zero and no more than eight hours of daylight per day. During that time the crew built several new tees and pathways.

With spring on the way it was time to head a few postcodes north east to Wimbledon. Twelve months prior, while I was still in Virginia, I applied to join the crew at the All England Lawn Tennis and Croquet Club to work under head groundsman Eddie Seward from April to September 2006, which included The Championships for that year. I was one of 10 contracted employees that joined a full-time crew of 14 which included two mechanics.

Eddie and his assistant Mark Sheather have a combined 50 years' experience at Wimbledon



One of the added responsibilities of working at the Robert Trent Jones course was tending the green at The White House

and their management encompasses 42 lawn tennis courts (of which 19 are championship courts) as well as a large croquet lawn and different surface tennis courts (clay, shale, hard true and soft B).

After seven years working on golf courses it was an amazing experience to help prepare the courts for the game's most famous Grand Slam tournament. The courts were obviously a totally different surface and profile that I was used to with the soil profile consisting of about 25 per cent clay with the rest made up of silt and sand. This was about 300mm in depth, then 200mm of drainage which lay below. Courts were 100 per cent perennial rye grass which Eddie had a custom 50/50 mix of different varieties to suit the courts and conditions.

Two weeks prior to tournament you would start to see and meet the players and their trainers. Ten days out the courts would be covered each night and uncovered first thing in the morning, which allowed us to get the playing surface hard and true. We used a one tonne roller prior to this a few times but were lucky enough that the English summer produced some great weather to get ideal results.

Championship time had come and all the hard work started to pay off. I was in charge of mowing Courts 18 and 19 throughout the lead up and two week period. We would have the courts cut, marked out and dressed by 9.30am. Over the two weeks we had great weather resulting in pulling the covers only a few times and a lot of tennis watched. After each day's play was finished we would then give the courts a light syringe and cover up, then up for a few beers at Wimbledon village.

With the championships over it was time for autumn renovations, which are crucial to the success of the tournament the following year. We started on Centre Court by using a Koro top fieldmaker to shave off the top two inches which removed all traces of the rye grass and any *Poa annua*.

Courts were then aerated, soil added and levelled using a big four-metre level lawn. The loose soil made a great seed bed where the ryegrass would be sown. Four weeks later the courts would be healthy and ready to be cut and left for the cold winter period. The whole process took about eight weeks and set up the venue for the following season.

The end of renovations meant the end of my tenure at Wimbledon and it was sad to say goodbye to some great people. After a three-year stint overseas I was heading back to Australia with a heap of experience under my belt. This journey was something special and I would recommend it to anyone, especially if you have just finished your apprenticeship and looking to take that next step. 🙌



Wilson spent six months in 2006 working at the All England Lawn Tennis and Croquet Club during which time he helped prepare the venue for The Championships

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NUF21.50AT/MRed/handed

BY JOHN NEYLAN

With many turf facilities facing the prospect of declining water quality and resources, issues of salinity and sodicity are coming to the fore

As the impacts of widespread drought and water restrictions continue to affect the maintenance of sportsturf areas around Australia, many golf clubs, schools and councils are turning to alternative water sources to supplement or replace their more traditional water supply.

Many of these alternative water supplies, whether it is recycled effluent or groundwater, are relatively high in dissolved elements such as salts, sodium, chloride and bicarbonates. In particular, the effects of salinity and sodicity needs to be considered in managing these water sources.

SALINITY

The soluble salt level is a key indicator of the quality of bore, dam, recycled or runoff water used for irrigation. High-salinity water causes an increase in soil salts and as soil salinity increases it becomes more difficult for plants to extract water from the soil.

This is due to an increase in the osmotic pressure of the soil water, i.e. the salts 'hold' the water so strongly that plants cannot remove it and therefore appear to be under drought stress even when adequate moisture is present.

Table 1 outlines the different classes for irrigation water based on the soluble salt content. As a general rule, salts exceeding 1000 mg/L (about 1.5dS/cm) severely limit water use on turf; however, this is dependent on grass species (and variety), soil type, thatch level and irrigation and soil management. Salt-tolerant grasses growing on well-drained soils that are readily leached of salts can be irrigated with saline water with up to 2000mg/L (about 3dS/cm) total salts.

As the salinity of the water increases, periodic leaching or heavy watering is required to leach salts out of the upper rootzone. There are several methods for calculating the leaching fraction of which two are detailed as follows;

Formulae 1

Leaching requirement (creeping bentgrass putting green) = EC_{iw}/EC_{ts}

EC_{iw} is the electrical conductivity of the irrigation water and EC_{ts} is the electrical conductivity of the saturation extract (ECe) at the bottom of the rootzone. An appropriate



In this instalment of AGCSATech update, John Neylan examines water quality in a dry environment, in particular the issues of salinity and sodicity, as well as looks at the persistent Parramatta grass species and the various forms of control available to turf managers.

value can be chosen from Table 2 and then the calculation made.

To calculate the leaching requirement using Formulae 1;

- Bentgrass has an ECe of 3-6dS/m
- If the irrigation water was 2dS/m (1200 mg/L)
- $EC_{iw}/EC_{ts} = 2/3 = 0.7 = 53\%$ to $2/6 = 0.3 = 30\%$
- Leaching requirement is 30-53%. That is, the amount of irrigation required is 30-53% greater than if low salinity water is used.

The second method of calculating the leaching fraction assumes that the upper rootzone is not allowed to become completely dry and there is some salt accumulation in the bottom section of the rootzone.

Formulae 2

Leaching requirement (creeping bentgrass putting green) = $EC_{iw}/5EC_{ts} - EC_{iw}$

To calculate the leaching requirement using Formulae 2;

- $EC_{iw}/5EC_{ts} - EC_{iw} = 2/5 \times 3 - 2 = 2/13 = 15\%$.
- The leaching requirement is 7-15%. That is, the amount of irrigation required is 7-15% greater than if low salinity water is used.

The leaching fraction for bentgrass greens is likely to be somewhere in between and for water that is around 1200mg/L it will be about 20 per cent. This additional water can be applied every irrigation or as a single heavy irrigation once every two weeks. Depending on the weather and the frequency of irrigation, it will be possible to stretch the leaching application out to every three-to-four weeks.

For a more salt-tolerant grass species such as couchgrass and with a water of salinity of 2000mg/L, the leaching fraction using Formulae 2 will be;

TABLE 1: SALINITY CLASS OF IRRIGATION WATERS

Salinity Hazard Class	Comments	EC (micros/cm)
Low	Low salinity hazard, no detrimental effects on plants or soil build-up are expected.	< 750 750 – 1500
Medium	Sensitive plants may show salts stress, moderate leaching prevents soil salt accumulation.	
High	Salinity will adversely affect most plants. Requires selection of salt tolerant plants, careful irrigation, good drainage and leaching.	1500 – 3000
Very High	Generally unacceptable except for very salt tolerant plants, excellent drainage, frequent leaching and intensive management.	> 3000



TABLE 2: ESTIMATED SALT TOLERANCE OF COMMON TURFGRASSES (REFERENCE: HARIVANDI ET. AL., 1992)

Cool-season turfgrass		Warm-season turfgrass	
Name	Rating *	Name	Rating *
Annual bluegrass (<i>Poa annua</i> L.)	S	Bermudagrass (<i>Cynodon</i> spp.)	T
Chewings fescue (<i>Festuca rubra</i> L. spp. <i>commutata</i> Gaud.)	MS	Buffalograss (<i>Buchlon dactyloides</i>) (Nutt.) Engelm.]	MT
Colonial bentgrass (<i>Agrostis tenuis</i> Sibth)	S	Seashore paspalum (<i>Paspalum vaginatum</i> Swartz.)	T
Creeping bentgrass (<i>Agrostis palustris</i> Huds)	MS	St Augustinegrass [<i>Stenotaphrum secundatum</i> (Walter) Kruntze]	T
Creeping bentgrass cv. Seaside	MT	Zoysiagrass (<i>Zoysia</i> spp.)	MT
Creeping red fescue (<i>Festuca rubra</i> L spp. <i>rubra</i>)	MT	The ratings are based on soil salt levels (ECe) of: Sensitive (S) = <3 dS/m, Moderately Sensitive (MS) = 3-6 dS/m, Moderately Tolerant (MT) = 6-10 dS/m, Tolerant (T) = >10 dS/m.	
Hard fescue (<i>Festuca longifolia</i> Thuill.)	MT		
Perennial ryegrass (<i>Lolium perenne</i> L.)	S		

TABLE 3: SODIUM HAZARD OF IRRIGATION WATERS BASED ON CLAY TYPE CLASSIFICATION*

Na hazard classification	SAR or adj SAR*	Clay type	Comments on Na hazard
None	<6	Montmorillonite	Generally no Na hazard unless EC _w is very low
	<8	Illite	
	<16	Kaolinite	
Possible	6-9	Montmorillonite	Possible problem unless a Ca source and some leaching are used
	8-16	Illite	
	16-24	Kaolinite	
Probable	>9	Montmorillonite	Requires intensive corrective measures to use
	>16	Illite	
	>24	Kaolinite	

* Westcot and Ayers (1985)

- Couchgrass has an ECe of greater than 10dS/m
- If the irrigation water was 2.9dS/m (2000mg/L)
- $EC_{iw}/5EC_{ts} - EC_{iw} = 2.9/5 \times 10 - 2.9 = 6\%$.
- The leaching requirement is about 6%.

SODIUM

High concentrations of sodium, relative to calcium and magnesium, in irrigation water can adversely affect plant growth and soil structure and can lead to reduced permeability, aeration, infiltration, leaching and soil workability.

The degree to which soil dispersion occurs is also dependent on the soil's clay content and mineralogy, pH, Ca/Mg ratio, EC, organic matter content and the presence of iron and aluminium oxides. The most commonly used method to evaluate the potential for saline irrigation water to cause soil problems is to

calculate the sodium adsorption ratio.

The sodium adsorption ratio (SAR) is defined by the equation $SAR = Na+ / \sqrt{[(Ca^{2+} + Mg^{2+}) / 2]}$ where Na, Ca and Mg represent the concentrations in milli-equivalents per litre of the respective ions. Table 3 shows the sodium hazard based on SAR and related to clay type.

On some clay soils or soils with a low CEC, an SAR greater than 6-8 gives cause for concern and efforts have to be made to minimise the breakdown in soil structure. On sandy soils where permeability is less of a concern, the cation exchange sites become saturated with Na at the expense of Ca, K and Mg and sodium is taken up by the plant in preference to these other cations.

Sodium accumulation in the plant can then reach toxic concentrations, resulting in a loss of turf vigour, low recovery potential, lower tolerance to heat stress, reduced tolerance

to pests and diseases, reduced response to nitrogen and potential death of sodium-sensitive plant species.

The effects of sodium accumulate over the irrigation period and towards the end of the irrigation season the turf will lose vigour and exhibit some chlorosis (i.e. yellowing). Fortunately, most turfgrass species have moderate to good tolerance to sodium and while there may be a reduction in vigour and a lack of response to fertiliser, death of the plant is unlikely.

Calcium must be applied to counteract the effects of high-sodium waters, most often in the form of gypsum (CaSO₄). Gypsum can be applied directly to the turf, or it can be applied through the irrigation system. In situations where the sodium content of the water is very high and there is a need to apply large amounts of gypsum, regular small applications applied through the irrigation system are more convenient and effective than large, irregular applications to the turf.

MANAGING HIGH SALINITY AND HIGH SODIUM WATER

In order to better manage the effects of salinity and sodicity, there are several management strategies that can be implemented:

- Vertidrain regularly with needle tynes (particularly on greens). Vertidrain fairways prior to summer;
- During periods of no/low summer rainfall, heavily leach greens and fairways to flush accumulated salts from the upper rootzone;
- Apply gypsum during the irrigation season to counteract the effects of the sodium. A typical strategy with high sodium water is to apply the gypsum at the start of the irrigation season, mid-summer and then in autumn;
- In some situations increasing the nitrogen level slightly to stimulate growth will in part counteract the negative effects that salinity and sodium has on growth;
- Increase the application rate of potassium to 4-5kg/100m²/year; and
- Soil and plant tissue analysis should be undertaken at the end of each summer period.

PARRAMATTA GRASS

Parramatta grass (*Sporobolus africanus*) is a persistent grass species that is commonly found on golf courses in Australia. It is a tough, clumping grass that is difficult to cut, ▶

BY JOHN NEYLAN

Parramatta grass possesses many traits within its life cycle which makes it well adapted to Australian conditions

highly invasive, disrupts playing surfaces and very difficult to control. A native of South Africa, Parramatta grass has been introduced to North and South America, southern Asia, Indonesia, South Pacific Islands, New Zealand and Australia.

Sporobolus grasses are broadly adapted to Australian habitats. They grow on infertile, poorly drained silty clay loams, sands and clay loams, as well as well-drained fertile scrub and alluvial soils. It favours disturbed areas that are subjected to slashing (mowing), high traffic and where there is minimal competition.

Parramatta grass is present in NSW, mainly on coastal soils where it is a declared noxious weed in 40 council areas. Small colonies occur in southern Queensland and Western Australia and is widely distributed in Victoria. It is also present in south eastern South Australia and Tasmania.

LIFE CYCLE

Sporobolus grasses have many traits within their life cycle which make them well adapted to Australian conditions – long plant lifespan, seedlings and plants are difficult to kill, high seed production, large seed banks, drought tolerance and effective seed dispersal.

Parramatta grass is a C_4 plant (e.g. similar to couchgrass) which has increased high light and temperature tolerance and is more efficient in using water for growth than many other plants. This gives it a competitive advantage in semi-arid and tropical environments and it can seriously reduce pasture production. Its tough leaves and stems have been known to loosen the teeth of cattle and horses while grazing.

On golf courses, Parramatta grass is well adapted to sandy soils. It inhabits the rough and in particular on the extremity of the irrigation system where there is some water available to the plant but usually insufficient to sustain more desirable plant species. It occasionally invades the fairway but this is usually confined to the immediate edge of the rough and fairway where mowing can often be semi-regular.

It has a poor tolerance to low cutting heights with sharp cutting equipment, however, in close-cut surrounds, using floating head mowers, the cutting heads will often ride over the grass clump. Parramatta grass has very



good wear tolerance in high traffic areas and may persist where other grass species will not survive.

Seed production can be in the order of 300 seeds per head with over two million seed heads per hectare recorded (60,000 seeds per square metre). Seed banks have been recorded at 600-4000 seeds/m². Seed is the only method of dispersal. Seeds become sticky when damp and readily adhere to fur, clothes and machinery that come in contact with it. The majority of the seeds remain dormant and estimates of the time it would take the seed bank to decline to 1 per cent of the initial viable seed are in the order of 10 years.

For seedlings to germinate, they require at least four days of soil moisture but can emerge when soil moisture levels are at wilting point. Seedlings are tough when they reach 5cm high and resistant to desiccation and fire. Seeds germinate in spring, the young seedlings develop rapidly and produce flowering stems in mid to late-summer. Established plants grow rapidly from the crown during the warmer months but growth rate slows in late autumn. Growth may continue over winter in warmer areas, otherwise it ceases and aerial growth dies.

Some of the identified weaknesses of *Sporobolus* that can be targeted in its management are:

- Seed germination and seedling establishment is sensitive to competition;
- A fire can remove a large portion of the seed bank;
- It is sensitive to glyphosate;
- Seed transportation is largely under human control and can be reduced substantially;
- Maintaining strong competition with desirable species.

CONTROL OPTIONS

The control of Parramatta grass is very difficult and any programme undertaken by the turf

manager should involve persistence and a range of strategies. A number of methods that have been used in assisting control at various golf courses include:

- Hand weeding small plants;
- Spot treatments with glyphosate;
- Using a 'Wick Wiper' that attaches to the three-point linkage of a small tractor. This machine is used when the height of the Parramatta grass is significantly higher than the desired grass/plant species and driven over the top so the weed species comes in contact with the wick. The chemicals used are non-selective such as a tank mix of Glyphosate and Finale® (a.i. ammonium glufosinate);
- DSMA applied when the weather is hot. Two applications, two weeks apart is required and generally provides good control.
- Flupropanate is also being trialled, however, it can damage the desired turfgrass species;
- Keep Parramatta grass mown regularly to keep the seed heads under control (and therefore the seed burden);
- Where the Parramatta grass is controlled it is essential to encourage the development of a competitive turfgrass species such as couchgrass.

Editors note: While certain herbicides are mentioned, this does not imply that it is a recommendation. All chemicals must be used in accordance with label recommendations.

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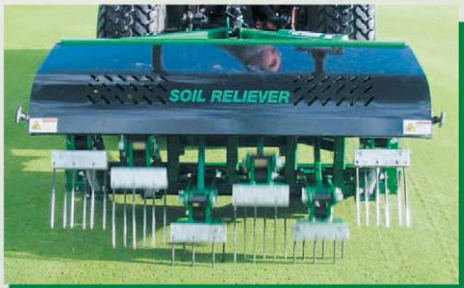
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The Argentine stem weevil undergoes complete metamorphosis which is characterised by four stages; egg, larva, pupa and adult. The larval stage is responsible for nearly all turfgrass damage from both the boring action within the leaf and also from feeding on the root system



Photo courtesy of Bayer Environmental Science

Stemming the weevils

Stem weevils, or correctly known as Argentine stem weevils (*Listronotus bonariensis*), can be a destructive pest in cool-season putting greens over the summer months. Generally, they have been confined to causing damage just on the mainland but damage was even recorded last year in Tasmania.

Australia is not the only country that suffers from Argentine stem weevil damage. They are a major pest of golf greens and pastures in New Zealand and the closely related species, annual bluegrass weevil (*Listronotus maculicollis*), causes significant damage to *Poa annua* greens in the northeastern United States.

In the last edition of Australian Turfgrass Management, recently anointed AGCSA Distinguished Service Award winner Reg McLaren detailed his encounters with stem weevils and credited their introduction to Australia from New Zealand.

Unfortunately (or fortunately, depending on your point of view) many of the cocktails of chemicals he used to control them, a lethal use of DDD and DDT, are no longer available to superintendents today.

One of the major reasons they can be so damaging is that the symptoms caused by Argentine stem weevil are often confused or mistaken for dry patch. Because of this, the most common remedy is simply to keep applying more water and it may not be until a week later or longer that the true cause of the problem is realised.

With summer fast approaching, Argentine stem weevil will be active in greens around Australia. Andrew Peart looks at this minute yet destructive pest and the various forms of control available to turf managers.

INSECT MORPHOLOGY

Insects differ from mammals in three distinct ways; their exoskeleton, their three distinct body parts and their growth stages. The exoskeleton, as the name suggests, refers to insects having their skeleton on the outside of their body rather than the inside. This gives them great strength compared to their size as well as providing protection against various control measures.

The three distinct body parts of an insect are the head, thorax and abdomen. The thorax (middle part) is where the wings and legs of the insect are attached, while the abdomen contains organs for respiration, digestion and excretion.

Insects usually have three pairs of legs but never any more. Caterpillars such as cutworms may appear to have more but these are not true legs as they are not jointed. Legs vary in

function among insects and their roles include jumping, clinging and digging.

Wings are only ever present on the adult stage of an insect. Most insects have two pairs of wings while a few have none and flies have only one. Wings give insects the opportunity to escape from predators, or in the case of the Argentine stem weevil, an opportunity to fly to another area that may be more favourable to lay eggs.

The last major difference is that insects develop through a series of growth stages. In the case of the Argentine stem weevil, it undergoes complete metamorphosis which is characterised by four stages; egg, larva, pupa and lastly adult. Firstly, an egg is laid which develops into a larva which will go through a series of instar stages before entering a resting period (pupa) in order for the transformation to an adult to occur.

STEM WEEVIL LIFE CYCLE

The female adult can lay hundreds of eggs over a number of weeks. The eggs are generally laid in grass leaf sheaths from which tiny maggot-like larvae hatch after about three to five weeks. The larvae tunnel into stems and shoots initially before getting too large and then they feed on grass roots.

The larval stage is responsible for nearly all turfgrass damage from both the boring action within the leaf and also from feeding on the root system. The damage is usually manifested as indistinct patches of chlorotic turf, usually followed by browning and death.

Larvae are creamy white in colour with a tanned coloured head and no legs. They grow to about 5mm in length prior to pupation. The pupae are immobile in the soil and take several weeks to form an adult. Once an adult they still stay in the soil until their outer skeleton hardens. The adult Argentine stem weevil is about 3mm in length, grey brown in colour with three pale longitudinal lines on its thorax.

Argentine stem weevils generally have more than one generation per year and usually up to three, with the first generation eggs being laid around October and, depending on the season, damage can be seen as early as November. Multiple generations occurring at once can make control more difficult due to adults and larvae being present at the same time.

STEM WEEVIL CONTROL

The two major insecticide chemical groups registered for Argentine stem weevil control are the organophosphates and pyrethroids. Fipronil is also registered which is in the chemical group phenyl pyrazoles. Organophosphates are a nerve poison and are generally regarded as the most toxic turfgrass pesticide to humans.

Despite the distinct differences from insects to mammals, one function that is relatively similar is the working of the nervous system. The nervous system is made up of axons that transfer information of signals. Between the axons is a gap called a synapsis which could be considered similar to the gap seen on a spark plug.

Rather than a spark crossing the gap to start an engine, a signal must cross the synapsis for information to be sent. A compound called acetylcholine enables this process to occur. Almost as quickly as the process occurs another compound acetyl cholinesterase is responsible for stopping the action. The mode of action of organophosphates is to interfere



The adult Argentine stem weevil is about 3mm in length and grey brown in colour

very low amounts of the actual active ingredient. Below is a table showing the chemical group and active ingredients registered for Argentine stem weevil control according to the APVMA website.

Group	Chemical Group	Active Ingredient
1B	Organophosphates	Chlorpyrifos Diazinon Methidathion
2C	Phenyl pyrazoles	Fipronil
3A	Pyrethroids	Betacyfluthrin Bifenthrin

In the early 2000's work was commissioned by the Victorian Golf Association to undertake trial work with entomopathogenic nematodes (ENs) as a possible control for Argentine stem weevil. The results, although not in a replicated trial, indicated a 90 per cent kill was achieved of the larvae after 14 days. The full report of this work can be viewed and downloaded from the VGA website (www.golfvic.org.au).

STEM WEEVIL DETECTION

The use of a pyrethrum spray mixture can be used as an irritant to bring Argentine stem weevils to the surface in order to monitor numbers. Unfortunately this is restricted to just adults and doesn't give a true indication of the number of larvae that may be present.

About 20ml of pyrethrum insecticide should be diluted in five litres of water and one litre of solution drenched on a 0.5mx0.5m area. This should be done in a few locations and the numbers of stem weevils emerging then counted.

The threshold number is probably around three adults per square metre for *Poa annua* greens, particularly if hot weather is forecast. The number is higher for bent greens – possibly around seven adults per square metre (Ford et.al 2000). 🌱

Pictures courtesy of Pest and Disease Image Library

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THE PULSE

In recent times much has been made of the plight of golf courses and superintendents struggling with drought, declining water resources and turf quality. While the focus has primarily been on those superintendents in the metropolitan centres, The Pulse quizzed five country/regional based superintendents about the main challenges they were coming up against and whether they were maintaining some semblance of sanity in these trying times.

ANDREW BOWLES Axedale GC, VIC



The drought has impacted on Axedale Golf Club in a variety of ways. With green fee and membership income reduced, the club has suffered income loss of 20 per cent. As a result,

some proposed capital expenditures have been postponed as the club looks to survival and the future. The club did manage to receive some funding via the Community Water Grants scheme which enabled an upgrade of the irrigation system for more efficient water use.

Club members have rallied with the volunteer base increasing, supporting club competitions and stepping up to help in any way they can. Member support in these ways has assisted staff morale greatly although it remains very disappointing to witness years of work disappear before your eyes. The lack of stimulating capital works has also impacted on staff morale. I feel last summer was worse for us since we had no prior experience of such conditions and were unsure of the likely extent or effect of the situation. This year we are better prepared in that we now realise that certain situations are beyond our control.

In terms of water, we have very little indeed. As of early October we have just 7M in storage with water allocation of just 1 per cent providing just 0.85M. Our only option to keep greens and tees alive is to purchase temporary transfer water at a cost of \$1000 per megalitre. With 30M required, the club's small operating budget will be stretched even further.

Although it's heartbreaking to lose the proceeds of previous work, at the end of the day we can only work with what we have and present the best possible course under the conditions we face. The committee is very supportive under the current conditions and appreciate the difficulties faced. There is a resolve to "get through" as we did last year with the hope of better times ahead. 🙏

BEN NORTON-SMITH Longyard GC, NSW



I don't think it matters where you ply your trade in our industry in Australia, the problems are many and variable. I do find, however, out here our green fees and membership are inexpensive, which results in limited budgets that won't improve until fees go up.

Time management is essential out here. Staff definitely get paid better than metropolitan courses, but a 40 hour week is very rare. Our time sheets look more like Don Bradman's batting average week in, week out. Currently we are transplanting 1000 mature olive trees onto the course and also renovating greens, tees, aprons and fairways. Our greens renovation will be the only part of this contracted out. Throw in preparing the course for comps and weekends, our four staff are pressed for time.

None of this compares to the rainfall situation and our irrigation system however. Our last drop was on 20 August. Fortunately we have a large water supply and can get cheap recycled water easily. The problem is getting it onto the course. The communication wires are constantly damaged from the heavily shale grounds. At the moment it is a matter of coming in late night and early morning to set programmes manually in seven boxes. This is run through a test programme which only ever allows us to irrigate for 16mins 39secs per station. Last November we purchased a radio control system which was to be operational this April. After one of the largest assumptions and oversights I have witnessed, I am still looking at my new system sitting in my office. Without going into detail, this situation would never have happened at a coastal course.

So all of these combined and trying to present high level playing surfaces each week, creates a lot of pressure, and not just at work! Am I staying sane? Ask me next March; I don't have time to go insane at the moment. 🙏



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BRYCE STRACHAN Pambula-Merimbula GC, NSW



At Pambula-Merimbula we are fortunate to have as our water source reasonably good quality treated effluent and as the only user of this resource we have an abundant supply.

One of our major problems is the large population of kangaroos that have made the course their home over the past 40 years. As the drought increases, so do their numbers as they move out of the bushland and onto the course. Current estimates are 1000 and growing. We are currently looking at controlling our problem with high frequency sound devices set up around the course to discourage them. Along with the increasing roo population is the high level of traffic from golfers, at around 100,000 rounds per year. These two issues cause major wear factors for the course and are a constant management challenge.

Like most country and regional superintendents you have the pressure of member and visitor expectations with limited resources at your disposal. This in itself is one of the major challenges for a superintendent in the country today. Good communication with the board and GM has helped me keep this growing problem in perspective.

Staffing levels are often hard to maintain as the pool to draw experienced groundsman or qualified staff is limited in country areas, adding further to the challenges to maintain and keep quality staff. Training and further education is also a challenge as this usually means long distance travel and associated costs.

As for my sanity, when a large percentage of your membership is retired and your lady membership exceeds 700, you can well imagine my stress levels at times. But for me being based in the country and only living 10 minutes from the shed and not one set of traffic lights or one traffic jam to contend with, makes it all worthwhile. 🌱

MAL GRUNDY Murray Bridge GC, SA



Murray Bridge is totally reliant on pumping irrigation water directly from the Murray River. Due to the drought and extreme low flows to the Murray Darling system, our normal 100 per cent irrigation allocation of 216 megalitres, of which we use on average 60-65 per cent (130-140M), has been reduced to 16 per cent (34.5M).

To make things worse, Murray Bridge has experienced extreme dry and windy weather when, in an average season, we get a bit of help from Huey! This has made us start our irrigation programme in mid August. Currently we have received only 280mm where we should get 380-420mm a year. Also during the height of summer our area hits an average ET rate of 10mm, that's 40 points/day for four months! River data also predicts salinity to rise above 1200ppm, which will also certainly have an impact on turf management, as also river levels are significantly lower and added cost of foot valve work.

The club has now looked at the priorities of turf with the obvious of green/surrounds, tees, approaches and fairways. The club has 'leased' a further 25M at a cost of \$26,000 and is currently crunching the numbers to see which rich members to suck up to first for another 20M. I have set a water budget over summer and any rain will be a bonus – greens 180kl, tees 200kl, and fairways 1M/week split over two irrigations. That's about 23 weeks of irrigation before the cheque book comes out.

The club relies on casual green fees to 120,000-130,000 a year. As the fairways dry off it's fair to say so will the dollars. I don't have to look far to see family farms being left by the score and I do feel that this situation has the potential to change the social fabric of the area forever! There are a lot of people doing it tougher than us but if significant rains don't fall soon things could get a lot worse. 🌱

DAVID THOMSON Bermagui CC, NSW



Bermagui Country Club is situated on the far south east coast of NSW. One of our biggest challenges is attracting qualified tradesmen to commit to such an isolated area with very little

other industry capable of providing work for wives/partners. The only method to combat this is to keep training young local staff. Out of six staff we have two apprentices and one youth employee. Training in-house assistants/tradesmen is the only way I can guarantee to fill these positions once they move on. The other obvious angle of attack was to give staff a better deal than what the industry award was offering. With these measures in place staff seem happy which means greater stability.

Another restriction being in a regional area six hours from Sydney is attending educational days. You pretty much have to take two-and-a-half days off work to attend, and, of course, there's accommodation and fuel costs. This becomes a costly exercise for a modest facility. Canberra, being three hours away, is realistically our only possibility to attend such days, yet the latest workshops are in most of the major cities except Canberra.

As far as water supply, Bermagui has a 50M dam fed by a large stormwater catchment. We also have the capability of topping this up with gravity-fed effluent water (maximum 350kl per day). Currently under the Bega Valley Sewerage Program, augmentation of the Bermagui treatment plant is required to facilitate the Wallaga Lake villages coming online to sewerage. With these changes our facility will be set up with two 1M tanks. The change for us is that we will be using 100 per cent effluent instead of a stormwater/effluent mix. This will enable the reduction in ocean outfall and solve our quantity inadequacies. The stormwater supply will remain online for greens flushing and as a back up supply. 🌱

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Over the past two years University of Western Australia researchers have evaluated how nitrogen fertiliser management practices affect nitrogen leaching losses from kikuyu turfgrass



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Does splitting nitrogen fertiliser

applications decrease leaching?



Australian turfgrass managers are seeking more cost efficient and environmentally acceptable approaches to manage turfgrass. Applying fertilisers contributes to the cost of managing turfgrass, and depending on the fertiliser management, can also pose a risk to the environment.

Applying water-soluble nitrogen fertilisers 'sparingly and frequently' is often recommended for minimising nitrogen leaching from turfgrass, yet optimal frequencies have not been reported. Furthermore, our understanding of turfgrass management practices and their effects on the environment is based mainly on data from cool-season turfgrasses grown in the Northern Hemisphere.

The overall aim of the University of Western Australia (UWA) project was to assess if 'splitting' nitrogen fertiliser application throughout the year minimises nitrogen leaching while also maintaining turfgrass quality.

ASSESSING NITROGEN LEACHING AND TURFGRASS QUALITY

Nitrogen leaching from turfgrass has been mainly investigated from young turfgrass swards less than six years old (Barton and Colmer, 2006). Yet most golf courses, and local government parks and ovals, in Australia include extensive areas of well established

Maintaining high quality turfgrass, while minimising the potential environmental impacts of nitrogen fertiliser use, requires information on how fertiliser management decisions affect nitrogen losses to the environment. The University of Western Australia, in partnership with Horticulture Australia Ltd and industry groups, is investigating how nitrogen fertiliser management practices affect nitrogen leaching losses from kikuyu turfgrass. The following article presents results from a two-year field study conducted at the university's research facility in Perth.

turfgrass that may be greater than 20 years old.

In our study, the effect of nitrogen fertiliser management on nitrogen leaching was investigated by including two turfgrass ages. Kikuyu turfgrass plots (10m²) were established at the UWA's Shenton Park turf research facility from either 20-week-old turfgrass ('young' turfgrass) or 20-year-old turfgrass ('old' turfgrass).

The young turfgrass was newly grown sod, cut to a depth of 15mm, while the old turfgrass was cut from a golf course fairway to a depth of 50mm so as to include a mat layer.

There were three replicate plots per treatment, plus turfgrass plots that received no nitrogen fertiliser.

Each turfgrass age received one of three nitrogen application rates (50, 100 and 150kg N ha⁻¹ per year), and at one of three fertiliser application frequencies (every four weeks, four times a year and two times per year). These nitrogen rates and application frequencies represent the range of nitrogen fertiliser practices used for maintaining established kikuyu turfgrass in Perth.

Irrigation occurred every second day by replacing 60 per cent of net evaporation, a

Louise Barton and John Forrest, with the help of TAFE apprentices, laying the 'old' turfgrass at the UWA's Shenton Park turf research facility



rate shown to maintain growth and not cause excessive drainage from the rootzone in the study environment. Turfgrass plots were mown weekly during spring to autumn and fortnightly in winter, at a height of 15mm.

The effect of the various nitrogen fertiliser regimes on nitrogen leaching was evaluated using soil lysimeters installed in each turfgrass plot. Lysimeters comprised of turfgrass grown on a column of soil (250mm in diameter by 900mm in depth) with a container at the base for collecting leachate.

Leachate was collected weekly, the volume measured and a sub-sample collected for total nitrogen, nitrate and ammonium analyses. Turfgrass growth (dry mass of clippings), colour, leaf nitrogen concentration and surface 'hardness' were also assessed for all plots throughout the study.

NITROGEN FERTILISER MANAGEMENT AND TURFGRASS QUALITY

Recommended annual nitrogen fertiliser rates often vary depending on turfgrass age (Barton and Colmer, 2006). In our study, quality of the old turfgrass was maintained without additional nitrogen in the first year and with 50kg N ha⁻¹ yr⁻¹ in the second year (Table 1), whereas the young turfgrass required at least 150kg N ha⁻¹ yr⁻¹ to maintain adequate colour, leaf

nitrogen concentration and hardness (Table 2). Mineralisation of the organic nitrogen in the mat layer probably supplied the old turfgrass with additional nitrogen, especially in the first year of study.

Other researchers have also noted that turfgrass nitrogen requirements decrease with time after establishment (Petrovic, 1990 and Qian et al., 2003). Estimates based on historical data and simulation modelling indicate that nitrogen requirements for cool-



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TABLE 1. OLD TURFGRASS: VARIATION IN TURFGRASS QUALITY WITH VARIOUS NITROGEN FERTILISER MANAGEMENT REGIMES IN YEAR 1 AND YEAR 2.

N Rate (kg N ha ⁻¹ yr ⁻¹)	Application Frequency	N Concentration ¹		Colour ²		Hardness ³	
		Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
0		✓	✗	✓	✓	Low normal	Low normal
50	4-weekly	✓	✗	✓	✓	Low normal	Low normal
	4 times/year	✓	✗	✓	✓	Low normal	Low normal
	2 times/year	✓	✗	✓	✓	Low normal	Low normal
100	4-weekly	✓	✓	✓	✓	Low normal	Low normal
	4 times/year	✓	✓	✓	✓	Low normal	Low normal
	2 times/year	✓	✓	✓	✓	Low normal	Low normal
150	4-weekly	✓	✓	✓	✓	Low normal	Low normal
	4 times/year	✓	✓	✓	✓	Low normal	Low normal
	2 times/year	✓	✓	✓	✓	Low normal	Low normal

✓ indicates those treatments that have met the critical value for a particular quality parameter throughout the year; a cross (✗) denotes those treatments that have not met the critical value.

¹ Nitrogen concentration of leaf tissue measured every three months using a CHN analyser. A nitrogen concentration ≥ 2.2% was considered acceptable.

² Colour (hue angle) was measured monthly using a Chroma Meter. A hue angle ≥ 100 was considered acceptable.

³ Hardness was measured on the third drop of a Clegg Hammer. Hardness ratings: unacceptably low (<30 gravities), low normal (31–69 gravities), acceptable (70–89 gravities), high normal (90–120 gravities), unacceptably high (>120 gravities).

TABLE 2. YOUNG TURFGRASS: VARIATION IN TURFGRASS QUALITY WITH VARIOUS NITROGEN FERTILISER MANAGEMENT REGIMES IN YEAR 1 AND YEAR 2.

N Rate (kg N ha ⁻¹ yr ⁻¹)	Application Frequency	N Concentration ¹		Colour ²		Hardness ³	
		Year 1	Year 2	Year 1	Year 2	Year 1	Year 2
0		✗	✗	✗	✗	High normal	High normal
50	4-weekly	✗	✗	✗	✓	High normal	High normal
	4 times/year	✗	✗	✗	✓	High normal	High normal
	2 times/year	✗	✗	✗	✓	High normal	High normal
100	4-weekly	✓	✓	✓	✓	High normal	Acceptable
	4 times/year	✗	✗	✗	✓	High normal	Acceptable
	2 times/year	✗	✗	✗	✓	High normal	Acceptable
150	4-weekly	✓	✓	✓	✓	High normal	Acceptable
	4 times/year	✓	✓	✓	✓	High normal	Acceptable
	2 times/year	✗	✓	✗	✓	High normal	Acceptable

✓ indicates those treatments that have met the critical value for a particular quality parameter throughout the year; a cross (✗) denotes those treatments that have not met the critical value.

¹ Nitrogen concentration of leaf tissue measured every three months using a CHN analyser. A nitrogen concentration ≥ 2.2% was considered acceptable.

² Colour (hue angle) was measured monthly using a Chroma Meter. A hue angle ≥ 100 was considered acceptable.

³ Hardness was measured on the third drop of a Clegg Hammer. Hardness ratings: unacceptably low (<30 gravities), low normal (31–69 gravities), acceptable (70–89 gravities), high normal (90–120 gravities), unacceptably high (>120 gravities).

season turfgrass will be maintained for the first 10 years after establishment and then continue to decline for up to 60 years (Petrovic, 1990 and Qian et al., 2003).

Nitrogen uptake rates for varying ages of warm-season grasses grown under Australian conditions do not appear to have been reported. Instead we recommend turfgrass managers include plant tissue testing when developing their nitrogen fertiliser management plan.

Turfgrass growth and quality consistency throughout the year was dependent upon the frequency of nitrogen fertiliser application. In the present study, growth and quality was more consistent when annual nitrogen fertiliser was split across four applications rather than split across two applications. Reducing the frequency of application tended to increase growth and the risk of scalping in spring and autumn, especially for the old turfgrass at the highest nitrogen application rate.

NITROGEN LEACHING

Total nitrogen leaching did not differ between turfgrass age or between the different nitrogen fertiliser application rate or frequencies. On average, 51kg N ha⁻¹ was leached from nitrogen fertilised treatments and 49kg N ha⁻¹ was leached from non-fertilised treatments.

An average of 56 per cent of the nitrogen leached from the young turfgrass was in the form of nitrate, with the remaining in the organic (41 per cent) and ammonium (3 per cent) forms. For the old turfgrass, more than half of the nitrogen leached was in the organic form (52 per cent), with the remaining in nitrate (45 per cent) and ammonium (3 per cent) forms.

Nitrogen losses were not evenly distributed throughout the study. Instead about half of the total nitrogen leached, in the forms of nitrate and organic nitrogen, occurred within the first five months following planting. Shallow root development and increased soil nitrogen mineralisation probably contributed to the accelerated loss following establishment.

Other researchers have also reported elevated nitrogen leaching during the establishment of turfgrass and for up to seven months (Barton et al., 2006; Engelsjord and Singh, 1997; Geron et al., 1993 and Snyder and Cisar, 2000). Thus in the first year of measurement an average of 44kg N ha⁻¹ yr⁻¹ was leached. In the second year of measurement, an average of 7kg N ha⁻¹ yr⁻¹

was leached, and is more likely to represent the losses from established parks and golf courses.

CONCLUSIONS

Nitrogen losses appear to be low from established turfgrass that is not over-irrigated and has received moderate (e.g.: up 150kg N ha⁻¹ yr⁻¹) amounts of nitrogen fertiliser. Although decreasing the frequency of nitrogen applications may not necessarily increase nitrogen leaching losses, it may affect the consistency of turfgrass growth and colour.

ACKNOWLEDGEMENTS

This project has been facilitated by HAL in partnership with the turf industry. It was funded by voluntary contributions from the Parks and Leisure Association of Australia (representing a consortium of local and state government authorities), CSBP Ltd, Organic 2000, TGAA WA, GCSAWA, Baileys Fertilisers, Turf Master Facility Management, Turf Growers Association of Western Australia, Lawn Doctor, Micro Control Engineering and the Water Corporation.

Challenger TAFE, Lovegroves, local government and golf course staff are thanked for assisting with the establishment of the turfgrass plots. The Western Australia Golf Course is thanked for providing turfgrass. Members of the UWA Turf Industries Research Steering Committee and Kikuyu Research Committee are thanked for their support and advice. Greenacres Turf Farm is thanked for help in the design and maintenance of the irrigator.

Louise Barton, George Wan, Renee Buck and Tim Colmer are from the UWA's Faculty of Natural & Agricultural Sciences <http://www.fnas.uwa.edu.au/turfresearch/index.htm>.

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CHA 5581

Matt Roche details research work on thatch undertaken by the Queensland Department of Primary Industries and Fisheries Turf Research Group and asks whether thatch is a real or perceived threat when it comes to sporting injuries.

Thatch or fiction?

In recent years, sporting professionals, medical experts, stadium managers and turf scientists have disagreed over the influence of thatch on traction and injury occurrence to athletes participating on natural turf sporting surfaces.

Thatch generally varies in depth depending on species selection, field usage (wear patterns) and regular or scheduled management activities such as mowing and scarification.

In their recent work, Orchard et al. (2005) and Chivers et al. (2005) have expressed concern claiming that a heavier thatch layer leads to higher traction and trapping of players' boots thereby contributing to anterior cruciate ligament (ACL) injuries.

These authors have also suggested that a perennial ryegrass (*Lolium perenne*) sward, has less thatch and therefore less risk of obtaining an ACL injury than a pure green couch (*Cynodon dactylon*), or a mixed sward of couch and ryegrass.

Orchard (2004) also added that perennial ryegrass in the vast majority of circumstances leads to conditions with reduced shoe-surface traction due to ryegrass producing fewer rhizomes or stolons which may create excess friction between the players' footwear and the turf.

Orchard et al. (2005) grouped the risk factors associated with ACL injuries into two categories – intrinsic (personal) and extrinsic (environmental). Cochrane et al. (2007) evaluated the importance of intrinsic characteristics associated with ACL damage in Australian Rules football, which included the type of manoeuvre the player was attempting, direction of the knee when it 'gave way', running speed, knee angle, cutting angle and if the player was accelerating or decelerating when the injury occurred.

They studied available videos of 34 ACL injuries incurred in Australian Rules football during 1992 and 1998, in an attempt to depict the factors involved in each injury. Of the 34 ACL injuries studied, 56 per cent of the athletes were injured in a non-contact situation, with sidestepping accounting for 37 per cent of that total, landing (32 per cent), landing and stepping (16 per cent), decelerating (10 per cent) and undertaking crossover cut manoeuvres (5 per cent).

MEASURING TRACTION

Rotational and transitional (linear) traction are the two types of forces encountered when a player's footwear with studs, blades or spikes comes in contact with the playing surface following a change in footing.

For players, the higher the rotational traction the greater the tendency is for a foot to become fixed in its original position during changes of direction. Being able to take an accurate and meaningful measurement of rotational traction is therefore important in terms of minimising the risk of knee and ankle injuries to players with studded shoes.

A device enabling Australian researchers to acquire such reliable and repeatable traction measurements is the Automated Traction Tester (Australian patent number PAT/AU/2004270767) which has been developed for use by the Queensland Department of Primary Industry and Fisheries' (QDPI&F) Turf Research Group.

The portable testing unit measures the maximum torque reached during rotation of the studded disc, while generating a profile of torque (traction) showing changes over time and calculates the angle through which the studded disc moved before reaching maximum torque. Further information about the automated tester can be found in Volume 8.5 (Oct-Nov 2006) of Australian Turfgrass Management.

THATCH VS TRACTION

To investigate in more detail the influence of thatch on traction, the QDPI&F turf research





The QDPI&F's Turf Research Group has been undertaking trials, using its specially designed automated traction tester, to determine the influence of thatch on traction. Plots containing a thatch layer (left) and no thatch (within the pink highlighted area) were subjected to traction testing at four to five week intervals during the winter-early spring period in 2006 and 2007

Superimposed over the basic experiment was a two-level strip-plot design to accommodate wear treatments, which of necessity must be applied in straight lines. Strips within each level were again allocated at random.

The first level involved oversowing perennial ryegrass into two of the five sub-plots per cultivar to simulate standard winter management of elite fields, leaving the remaining three as a pure green couch sward.

The second level (wear frequency) involved imposing two wear treatments (weekly and fortnightly wear applications at equivalent overall intensity to simulate a home-and-away schedule) within each of the couch strips and a fortnightly wear treatment only within each of the oversown ryegrass strips. In both situations, the worn treatments were compared with an unworn control treatment.

Traction testing has been conducted at four to five week intervals during the winter-early spring period in 2006 and 2007. This has involved taking a total of 160 measurements from each sub-plot over the trial area (i.e.: five wear treatments per cultivar x eight cultivars x four replications = 160).

In winter 2006, bare ground increased rapidly before reaching relatively stable levels

of residual cover after about five to six weeks of wear. By the end of the 10-and-a-half week trial period, sub-plots ranged from 100 per cent bare ground through to complete ground cover.

At this stage, the dry matter yield of above-ground material on the control couch plots across all cultivars averaged 660g/m². Covariance analysis of the data taken at the end of the wear trial showed a significant linear relationship between bare ground and torque (Roche et al., 2007). Across the three sub-treatments receiving weekly or fortnightly wear, traction declined by 2.18 (± standard error of 0.702) Newton metres for every 10 per cent increase in bare ground.

Once torsion was adjusted for the level of bare ground, there were no longer any significant differences between treatments for torsion. These data, however, in all probability reflected some deterioration in the root-rhizome system on badly denuded sub-plots, because subsequently they were slow to recover and in some cases had to be replaced by new sod.

Comparable analyses of data taken five-and-a-half weeks after initiating wear showed no significant interaction between traction and the level of bare ground. At this stage, the rhizome-root system would have been in much

team used an ongoing wear trial, which involves eight *Cynodon* cultivars in a randomised block design located at Redlands Research Station in Cleveland, Queensland. The experimental site was constructed in March 2006 on an irrigated 15cm sand carpet profile with internal drainage to remove excess water. Individual plots (6m x 2m) of the eight cultivars were allocated at random within each of the four blocks.

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better condition than after a further five weeks of continued wear through to the end of the trial.

The above indirect inferences as to the effect of thatch on traction were subsequently confirmed by direct comparisons of peak traction values with or without above-ground material present in the control plots on 26 April and 5 July, 2007.

On both occasions, a small area in each of the 32 unworn (control) couch sub-plots was removed mechanically down to the stolons, so that the effect on traction could be determined by comparing traction measured in the cut area with a paired second reading taken among the intact thatch in the same sub-plot (see photo pg 44).

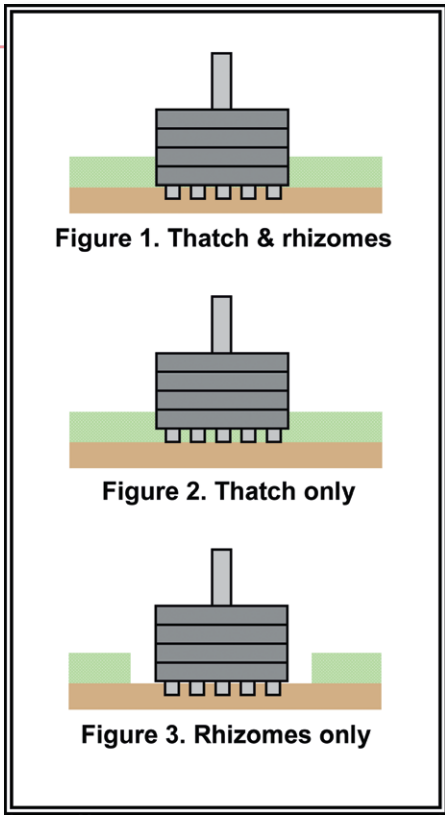
The dry matter yield of thatch was also determined on 5 July by cutting a 35cm x 35cm quadrat from each of the 32 control sub-plots and drying it at 60-70°C. On both occasions, we found no significant difference in traction, despite the removal of an average of 450g/m² of above-ground dry matter on the second occasion (Table 1).

CONCLUSIONS

Recent postulations by Orchard et al. (2005) and Chivers et al. (2005) that a heavier thatch layer leads to higher traction and trapping of players' boots, thereby contributing to ACL injuries, would therefore appear to over-estimate and over-emphasise the significance of the thatch layer.

Our findings indicate that the main plant factor determining traction is the stolon and/or rhizome and general root growth on and just within the ground surface. Provided the rhizomes of the established sod are still intact in areas where the top growth including thatch has been completely worn away, we have recorded almost no change in traction in these bare areas compared with nearby areas where the top growth is still intact (Roche et al., 2007).

Our experience elsewhere in sportsfield benchmarking activities is that, provided the rhizome-root layer is still intact and healthy, bare areas where the top growth has been completely worn away, can still record traction levels that are adequate for good playability (>30-35Nm – e.g. Bell and Holmes, 1988; Baker, 1999) and, in fact, tend to show little or no apparent reduction in traction compared with nearby areas with intact top growth.



A schematic of the various traction testing trials being undertaken

An obvious priority area for future studies is to define more accurately the critical level of rotational traction above which the playing surface could potentially lead to player injury. Previous assessments of playing quality versus traction (e.g. Baker, 1999) are based on ryegrass and other cool-season turfgrasses, which tend not to give traction readings above 50-60Nm.

Future research in this area must also include biomechanical studies, along with greater data on how such injuries might be affected by the angle of foot rotation up to this point. For example, Cochrane et al. (2007) showed that 17 of the 19 athletes injured in non-contact situations incurred ACL injury at extended knee angles of 30° or less.

Our work in relation to thatch highlights the need for greater research rigour in determining

field performance criteria and setting standards for playability and player safety. The development of the QDPI&F Automated Traction Tester (to enable more accurate and repeatable measurements of traction to be taken quickly and efficiently) also illustrates how improving the equipment available to researchers can also contribute to achieving more accurate and relevant benchmarking of natural turf playing surfaces.

Further information on traction and other trials being undertaken by the Queensland Department of Primary Industries and Fisheries Turf Research Group can be found at www.dpi.qd.gov.au/turf.

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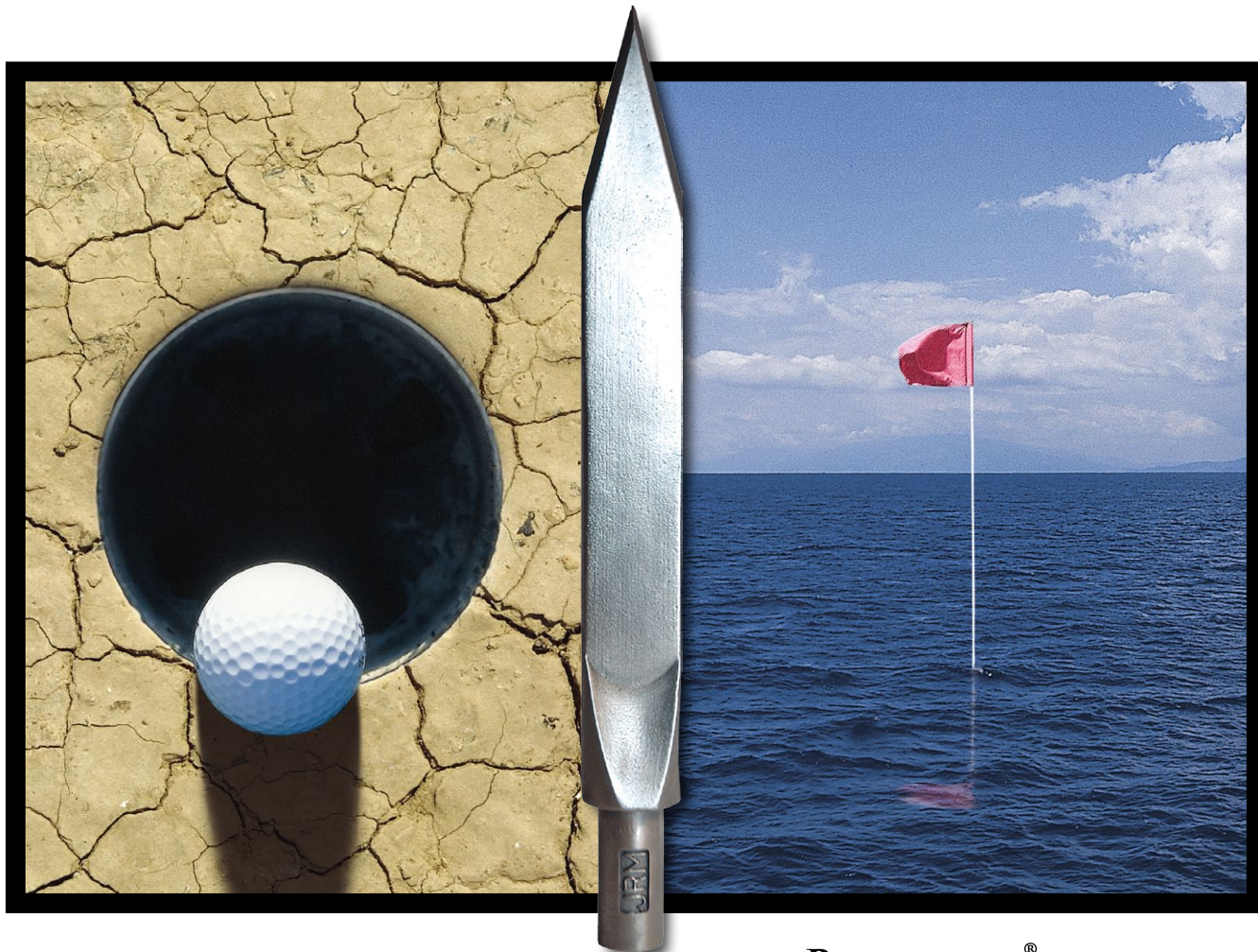
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TABLE 1. MAXIMUM TRACTION VALUES (NM) FOR BERMUDAGRASS WITH OR WITHOUT THE ABOVE-GROUND MATERIAL REMOVED

Date	Traction profile	Peak torsion (Nm)	Above-ground dry matter (g/m ²)
April 26, 2007	+ above-ground material	69.4	ND ²
	- above-ground material	71.5	
	Difference	NS ¹	
July 5, 2007	+ above-ground material	74.5	450
	- above-ground material	74.2	
	Difference	NS ¹	

¹ NS (not significant P>0.05) ² ND (not determined)

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The Tom Doak-designed St Andrews Beach is an exclusive members course on Victoria's Mornington Peninsula

ST ANDREWS BEACH MAINTENANCE WORKERS SACKED

Maintenance workers at one of Australia's top private golf courses were given their marching orders in early October in a case which the Australian Workers Union (AWU) is likening to the dockyards dispute of the 1990s.

Eleven maintenance staff, including the superintendent, at The Golf Club, St Andrews Beach on Victoria's Mornington Peninsula, were sacked without notice in early October and the following day the course's owners brought in staff from a subsidiary company to undertake routine maintenance of the course.

The situation developed after superintendent John Geary and his staff downed tools on 20 September refusing to undertake further work to the Gunnamatta Course until they were paid wages and superannuation entitlements owed to them by GC Operations Pty Ltd, a subsidiary company of course owners Golf Club Properties Ltd.

In some cases workers hadn't been paid for up to six weeks and no superannuation entitlements had been made for 2007. During this period employees had been seeking assurances with the owners for payment

of these outstanding entitlements without success.

Part payment of wages and salaries was forthcoming on 5 October, but workers refused to return to work until the remainder of monies owed were paid. That occurred on 8 October and maintenance staff agreed to return to work the following day on the proviso that their superannuation entitlements would be paid by the end of the week.

No sooner had they resumed maintenance operations than company directors visited the maintenance facility on the afternoon of Tuesday 9 October informing them that GC Operations had ceased trading and that there was no longer work available. The next day, staff from another of Golf Club Properties' subsidiary companies were brought in to undertake routine maintenance operations at St Andrews Beach.

"We had been running maintenance operations on a shoestring for a long time and the course was actually looking pretty good considering the limitations," says Geary, who was superintendent at St Andrews Beach since 2004. "We weren't sacked for a lack

of performance; rather we got the sack for standing up for ourselves and asking where our wages and entitlements were."

After being contacted by St Andrews Beach staff in late September, the Australian Workers Union took GC Operations to the Industrial Relations Commission where the company's lawyer admitted that more than \$160,000 worth of wages and entitlements were outstanding.

While workers were paid some of their outstanding wages, they were yet to receive their superannuation entitlements and did not receive full redundancy entitlements upon their termination.

AWU state secretary Cesar Melhem said the union was also calling on the Australian Securities and Investment Commission to investigate whether the company's directors had complied with their duties to prevent trading while insolvent.

Geary and his fellow staff members organised two rallies outside the club in early October to highlight their plight and were heartened by the support they had received from their fellow turf management colleagues.

"It's unfortunate that it got to this stage and there are a few chapters still to be written yet," Geary said. "I would like to make a special mention to all those from within the turf industry who called me wishing me and the staff all the best.

"It's great to know that we have their support and hopefully this will show that these company directors really need to be held responsible for their actions and that this sort of behaviour is unacceptable." 🙏



Sacked St Andrews Beach workers held two rallies in October to highlight their plight to members

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As part of Troon Australia's carbon initiative, Pacific Harbour Golf and Country Club on Bribie Island will be set up as a base model for all environmental and greenhouse gas initiatives

CARBON INITIATIVE HAS TROON COURSES TURNING GREEN

Troon Golf Australia has signed an agreement with Environmental Business Solutions to use its e-par environmental management software to minimise the impacts the company's golf courses have on the environment.

Troon will be among the first golf company in the world to take part in a comprehensive study on the level of carbon emitted by golf courses, which it hopes will be used as an environmental benchmark on a global level.

Troon Golf Australia's director of agronomy David Lunardelli said the long-term goal of the e-par initiative was to make Troon Golf-managed courses across the world as carbon neutral as practically possible.

"Our aim is make Troon Golf courses as compatible with the environment as possible," Lunardelli says. "We are pleased to be a pioneer in this field and hopefully the results of our study will generate environmental benefits for golf courses across the world.

"Troon Golf is committed to addressing the issue of climate change through the implementation of programmes aimed at reducing and offsetting greenhouse gas emissions targeting reduction rather than large capital investment projects.

"Energy efficiency is recognised as one of the most cost-effective elements in any

greenhouse gas reduction strategy and we are investigating innovative energy conservation measures that will reduce energy consumption and offset our greenhouse gas emissions.

"Our ultimate goal is of sustainability, and we will continue best practice principles to reduce our energy demands."

While the programme is still in its infancy, Lunardelli says Troon, which oversees operations at more than 190 courses in 29 countries, has earmarked a number of initiatives as part of its bid to become carbon neutral. The first of these would be to include an energy management plan and waste management plan into each Troon Golf-managed facility's e-par system.

Lunardelli says that Pacific Harbour Golf and Country Club in Queensland would be set up as a base model for all environmental and greenhouse gas initiatives, with the findings then used as a template for all Troon facilities worldwide.

"Early energy audits estimate the average maintenance facility operation emits 600 tonnes of greenhouse gas per year and of that figure 400 tonnes is attributed to electricity use, and 100 each to equipment and waste," says Lunardelli.

"One study out of the US showed that the turf-only portion of an average golf club can

remove 80 tonnes of carbon per year, and that's not including all other plant life on a golf club. We will be conducting studies to quantify the carbon sequestered and demonstrate that our sites provide valuable carbon storage.

"If we considered switching facilities to use green power this could potentially remove 400 of the 600 tonnes of greenhouse gas emissions.

"If we can prove to facility owners that the additional cost of switching to green power, which on average is two cents per kilowatt more than normal power, can be offset by energy saving initiatives, we would be well on the way to achieving carbon neutrality.

"If we can save 600 tonnes of emissions across 190 clubs, this would amount to 114,000 tonnes per year of greenhouse gas or the equivalent of taking 1692 cars off the road."

To promote its environmental commitment, all Troon superintendents who attended this year's 23rd Australian Turfgrass Conference and Trade Exhibition in Cairns were able to neutralise the CO₂ emissions from their air travel.

Carbon offsets were purchased from Origin Energy to demonstrate the trip was carbon neutral and together the 10 superintendents were able to offset about 12 tonnes of greenhouse gas. [u](#)

PENNANT HILLS SEWER MINING PLANT NEARS COMPLETION

Despite delays over winter, construction of the Pennant Hills Golf Club sewer mining plant is progressing and commissioning is expected to occur in late December/early January.

Club general manager Stewart Fenton says Sydney's wet winter put construction back seven weeks, but excellent spring weather had seen the project move ahead quickly.

The project, the first of its kind undertaken by a golf club in Australia, will see Pennant Hills install a three-tank Zenon membrane bioreactor which will produce Class A+ quality water to stringent Queensland standards.

Two storage tanks holding 2.44M of water for back-up supply are also being installed and the club's current bore supply will be linked into the treatment plant to reduce salinity.

"Eleven of the top 12 largest recycled sewage treatment plants in the world use Zenon membrane bioreactors, so our plant is using leading edge technology," says Fenton. "The plant has a guaranteed output of 650kl per day which is limited only by available sewage in our main."

Over the past few months Fenton has spoken at a number of conferences about the project, including key note addresses at the Sydney Water Conference and the GE-sponsored World Water Tour Conference in Melbourne in August. Fenton will also be presenting to a gathering of Melbourne golf club general managers interested in investigating sewer mining in late November.

While the project has generated widespread interest among the wider turf management industry, Fenton says he is concerned that some golf clubs looking at sewer mining as an option are making poor decisions without doing the necessary research.

"There is a lot of interest in our project and we continue to assist many clubs looking into sewer mining," says Fenton. "However, there are many 'cowboys' coming into the water industry trying to make a quick buck.

"Having undertaken extensive research for this project, there are only a select few reputable organisations capable of producing consistent Class A quality water and a very small number who have plants running.

"My advice is to fully research the available options as there are many different types of technology available but few with proven consistent results. You basically get what you pay for and some of the cheap plants can be prone to problems.

"It's important to find out what the company is prepared to offer in terms of quality guarantee and warranty. This will normally give you an indication of what you might expect from the plant."

Fenton adds that clubs should make it a priority to seek help from those that have gone down the sewer mining avenue.

"It's important to go and have a look at working plants. If they do not have working plants supplying water for irrigation purposes, are you prepared to take the chance that the system can do what the salesman tells you when the quality of your course is at stake.

"There are many 'pro forma' style documents available for sewer mining that have been developed in recent times, and with the work we have done here I am only too happy to assist." 🌱



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HOT SUMMER AHEAD FOR EAGLE RIDGE COURSE STAFF

Eagle Ridge Golf Course superintendent Scott Balloch and his crew are set for a hectic summer after the decision was made to undertake extensive surface conversion and irrigation works.

The public access course, situated on Victoria's Mornington Peninsula, will be closed from 13 November to accommodate the works, with the full 18 reopening on 22 February, 2008. Nine holes are expected to be in play from 8 February.

The enhancement programme began in late October with the main works involving changing all fairways across from cool-season grasses to Santa ana couch and all green surrounds to Creeping Red fescue.

Upgrades and improvements will also be made to the course's irrigation system to enable the use of recycled water, as well as to increase the efficiency of watering and maintenance.

"With the heightened awareness surrounding sustainable environmental



Eagle Ridge is set to convert all fairways across to Santa ana and greens surrounds to fescue over summer

practices these changes will enable our reliance on groundwater to be reduced by over 40 per cent, as well as providing a superior playing surface," says Balloch.

"Completing the works in one season is a challenge, but my team and I are looking forward to it"

As well as the resurfacing works, Eagle Ridge also plans to bring more excitement to the course layout with new featured tees. The redesign process has begun in conjunction with designers and will involve works on some tees and associated cart paths as well as laser-leveling all the tees.

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1. Post application irrigation recommendation on the label of Meridian is 6-12mm, on Imidacloprid is 12mm.
2. Internal Syngenta trial results.

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SUSTAIN GREENS OVER SUMMER

MATCHplay has launched two new water saving products on to the Australian market ahead of summer – SUSTAINgold and AQUAturf FORTE.

When SUSTAINgold is washed into roots, soil will hold more water, and to make sure it is delivered effectively and evenly, MATCHplay has combined it with wetting agent in a product called AQUAturf FORTE.

By increasing the efficiency of wetting around every soil particle, SUSTAINgold and AQUAturf FORTE slow the drying process which means more time before the need to irrigate again (independent laboratory tests show 40 per cent more time). That also means a more stable rootzone environment with fewer extremes from dryness, so roots and soil



microbes remain healthier.

The choice between SUSTAINgold and AQUAturf FORTE depends on a facility's situation and soil. Both products are available in liquid form, for spray application or irrigation injection. AQUAturf FORTE is also available as a granule for the ease of a dry application. Being completely non toxic and safe to plants, this is safe to leave for the next rain or irrigation to wash it in.

For more details, or to find your local distributor of MATCHPlay products, call Rob Cooper from Living Turf on 0407 100 202 or visit www.livingturf.com.au

MATCHplay has launched two new water saving products – SUSTAINgold and AQUAturf FORTE

CANE-IT TEES OFF

Southport Golf Club superintendent Stuart Moore is hailing the new Cane-It golf tee as the tee the golf maintenance industry has been waiting for. The Queensland-based course is currently trialling the environmentally-friendly tee, made from plantation-grown bamboo cane, and Moore says it is providing a perfect solution to an age old problem.

Tees, traditionally made of plantation timber, have been dominated in recent times by non-biodegradable plastics and some tee manufacturers are now adding steel components to their mix which is a nightmare prospect for golf course superintendents due to the damage they can cause to maintenance machinery. Plastic tees can also find their way into water courses and marine parks as well as produce tonnes of non-biodegradable, unsightly litter on courses.

"The simple golf tee creates many problems for maintenance staff and a commonsense alternative is now available," says Moore, winner of the 2007 AGCSA Claude Crockford Environmental Award.

"My crew and I have been testing Cane-It tees over the past few months and the results have been positively outstanding. The tee does what it is supposed to do. When broken, and mowed over, the tee shreds into grass-like fibres without damaging our mower blades. The fibres then disappear into the landscape

ridding the tee areas of unsightly pollution.

"The tees have been impregnated with an organic formula consisting of minerals, nutrients and trace elements which will assist with soil rejuvenation by way of mulch without compromising turf management programmes in place."

Cane-It tees are starting to win over clubs in Australia and around the world and just recently Royal Pines Resort in Queensland replaced its total stock of 60,000 tees with Cane-It tees.

For more information about Cane-It tees phone (07) 5437 6900.



GARDNER FAREWELLS TORO

Toro's Commercial division has bid farewell to tireless marketing co-ordinator Jade Gardner. Gardner, who joined Toro five years ago as part-time office administrator and part-time marketing coordinator, departed Toro in early October to join Zodiac as marketing communications manager.



Gardner was responsible for a wide range of Toro marketing successes during her tenure and was one of the key figures behind the company's highly successful 22nd Australian Turfgrass Conference Trade Exhibition turf show in Brisbane.

In announcing Gardner's departure, Toro Commercial manager Cameron Russell commented: "Personally Jade helped me with the marketing in a way that gave me complete confidence in her ability to manage each and every part of the marketing function of the business and made sure we came in under budget. All at Toro will miss her and we wish her all the very best for the future, which I know will be a bright one."

CROPSOL APPOINTS NEW BDM

Paul Hudson has been appointed the new business development manager for Cropsol Water and Environmental, a sister business to Cropsol Soil and Irrigation Management. Hudson takes over from Marvin Tapia who will continue to remain in a consultancy role.

FAIRY RING MANAGEMENT

Chemtura Australia is now selling and distributing Moncut, a new generation fungicide that provides an effective tool in the management of fairy ring (*Basidiomycetes spp*) on golf greens.

Fairy Ring is a complex disease of turf and symptoms include rings or arcs of dark green grass, dead grass, depressions in the turf (thatch collapse) and mushrooms, in isolation or combination. Soil associated with the rings may become hydrophobic, resulting in moisture stress.

Independent trials in Australia from 2006/07 have shown that Moncut delivers a significant reduction in both the incidence and severity of fairy ring. Together with a wetting agent, Moncut has also been associated with a reduction in the incidence of dry patch following a hot, dry period, and an improvement in turf quality.

Moncut contains flutolanil in an easy-to-use suspension concentrate formulation. Flutolanil is a systemic (group G) fungicide with both curative and protective properties. It is primarily active against *Basidiomycete* pathogens, and shows high activity against *Rhizoctonia solani*.

Users of Moncut in Australia have reported reductions in thatch die-back, easing of thatch collapse, better water penetration and lessening of dark green grass colour in two to three weeks after application.

For further information and supply, contact Jenny Haupt on 0427 013 665.

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BY BRETT ROBINSON

Continuing its drive to improve best management practices across the golf course maintenance industry, the AGCSA is set to launch a new water management initiative. ATM looks at how the initiative will work and how it will ultimately benefit golf courses Australia wide.

AGCSA launches water management

The Australian Golf Course Superintendents' Association (AGCSA), in conjunction with the Australian Golf Industry Council (AGIC), recently conducted research into how the current drought and subsequent water restrictions have impacted Australian golf courses.

The results of the survey indicated that the industry is under severe strain from the drought, threatening the economic growth of the sport and jobs of the 23,000 people directly employed in the industry. The study also reported golf courses affected are currently pursuing a number of short-term practices to minimise water use.

Alarming, the survey also found that only 40 per cent of golf courses in Australia had a formal water management plan in place. In light of such findings the AGCSA has recognised that for the long-term security of the industry, all golf clubs should complete a water management plan. Such a process would provide a comprehensive audit of water management practices at the club and explore alternate solutions for drought proofing the course.

To drive this, the AGCSA is in the process of establishing a Water Management Initiative which will be made up of an online and



interactive water management portal and expert support network.

The central purpose of the portal is an online water management plan template for turf managers that not only assesses current practices but offers up water saving options in the form of products and services for turf managers to become aware of products and their water saving effectiveness in turf applications.

The water management portal will also offer advice on:

- How to apply for water grants;
- Contact details of water consultants;
- Reports of successful water management plans and the resultant changes made;
- New technology updates;
- Updated information on current water restriction levels for the turf industry across each state;
- Updates of research into drought tolerant turf species;
- How to prepare for change to alternative water sources such as stormwater harvesting, treated effluent and sewer mining for the turf industry etc...;
- Action planning and cost recovery budgeting for the installation/purchase of water saving infrastructure.

The initiative also aims to conduct training seminars to upskill or refresh the irrigation knowledge of turf managers.

Central to the initiative is an online template which turf managers can use to assess current water management practices

GOVERNMENT GRANTS

As part of the new water management initiative, the AGCSA will also seek support through the various rounds of water grants schemes available from both Federal and State Government.

The AGCSA will utilise NSW-based water consultancy company Water Conservation Group (WGC) and as a test case will put in an application to receive a grant from round five of the Victorian Government's Smart Water Fund.

WGC was successful in applying for grants totalling \$1.045million on behalf of the Aged Care Association of Australia in rounds two and three of the NSW Government's Water Savings Fund in 2006.

The first of those projects, which received \$545,000, was a water and energy savings programme across 10 residential aged care facility laundries which aimed to save 70 million litres of water a year. The second project also focused on water and energy savings in a programme that would install rainwater tanks, dual-flush toilets and water-efficient showerheads at 50 participating aged care facilities. Together the two projects aimed to save 120 million litres of drinking water a year.

The Victorian Government's Smart Water Fund has handed out about \$20 million to over 120 individuals, community groups, businesses and industry that are delivering innovative sustainable water use projects benefiting metropolitan Melbourne and regional Victoria. One such project funded is the Victorian Golf Association's evaluation of saline-tolerant

initiative

The AGCSA is in the process of establishing a Water Management Initiative which will be made up of an online and interactive water management portal and support network

have been identified through the initiative's online water management plan portal.

After reviewing this test case and depending on its success, the AGCSA would then open the opportunities up to other water consultants to provide a similar service in further rounds of funding.

AGCSA joint general manager Scott Petersen says that if this test case proves successful not only will the association be able to provide golf clubs with a central location for all necessary water information, they will also be able to access funds to help them deliver substantial water management savings at club level. The AGCSA will work closely with the state superintendent associations to implement the project.

For further information about the AGCSA's water management initiative, contact Scott Petersen on (03) 9548 8600 or email scott@agcsa.com.au

grasses and reclaimed water for golf course irrigation. Round five presents a further amount of up to \$5 million available.

If the AGCSA is successful in its Smart Water Fund application, it will potentially be able to provide hundreds of thousands of dollars to golf clubs in Victoria to pay for infrastructure improvements at clubs which

FEDERAL GOVERNMENT COMMUNITY WATER GRANTS

Earlier this year the Federal Government announced a further \$5 million in funding for 167 projects under Round 2 of its Community Water Grants scheme. A number of turf organisations were successful. They included:

NSW

Gerringong Bowling and Rec Club - \$37,173

Petersham Bowling Club - \$42,870

Jerilderie Golf Club - \$43,533

QLD

AFL Queensland - \$42,709

Pine Rivers Golf Club - \$39,984

VIC

Valley View Golf Club - \$45,436

Ballarat Bowling Club - \$27,370

Bendigo Golf Club - \$43,182

Round three grant applications will be announced in November/December.



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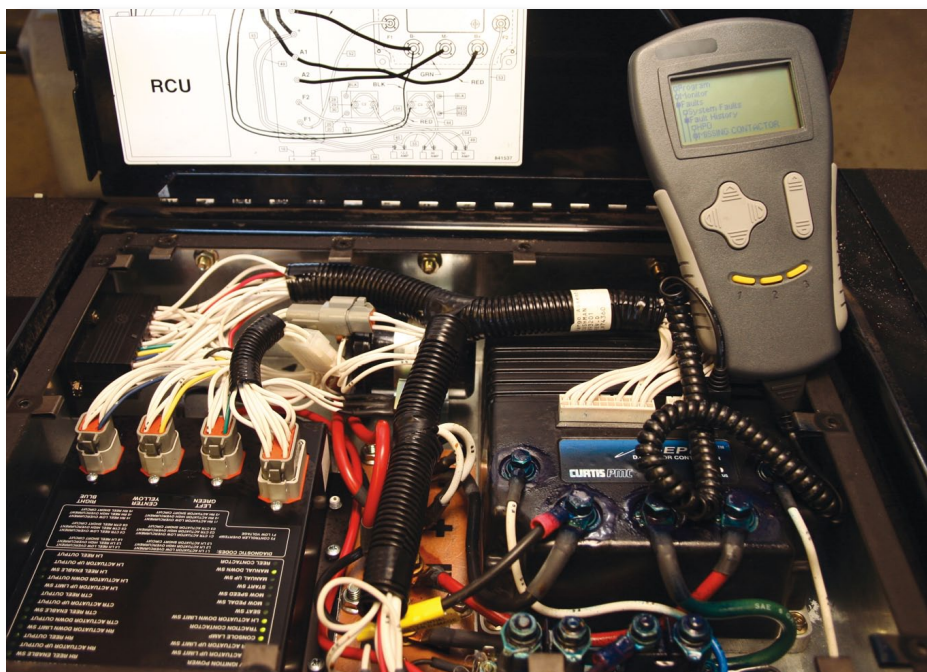


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BY LUKE SPARTALIS

Welcome to the first instalment of ATM's new dedicated turf technicians section. Over the course of future editions this section will deliver regular turf technician features and to kick things off, VTETA vice-president Luke Spartalis looks at how the role of an equipment tech has transformed in line with new technology.



With evolution in technology comes increased productivity and efficiency, but also a great deal of adjustment

Moving with the times

When Edwin Budding first patented the reel mower back at the turn of the 19th Century, he could not have envisaged the technology being developed for the golf course industry today.

With evolution in technology comes increased productivity and efficiency, but also a great deal of adjustment. Just as the thought of having a vehicle lift in a golf course workshop, or a full-time equipment tech for that matter, was once considered a luxury, both are now quite commonplace.

As advances are made in hybrid and battery technology, so too must the technician be able to adapt. Dedicated electric and 'hybrid' greens mowers are already upon us, with the tangible benefits being diminished operating noise, elimination of potential hydraulic spills and reduced pollution emissions.

The systems used to operate these machines are sophisticated and are obviously very different to petrol or diesel fuelled machines. Specialised repair equipment and training is needed to repair this equipment.

Battery powered turf equipment is a sensible alternative to fuel-burning machines, however, because of the weight and charge time involved with lead acid type batteries this technology has not been fully embraced as

As advances are made in machinery technology so too must the technician be able to adapt

yet. Ni metal and Ni Cad batteries are being researched, which may be the solution.

Advancements in battery technology are gaining momentum with the development of a newly structured material by researchers at MIT and the State University of New York. This material could reduce the weight of battery packs by four to five times. Other benefits include lower costs and faster charging times which would make it attractive to our industry. Extensive testing is still required and its use could be a while off, but it looks promising.



As well as battery powered turf equipment, GPS navigated, laser guided systems and programmable memory robotic machines are also being developed. Mowers with inbuilt soil moisture sensors are also being researched in an effort to efficiently utilise water resources. Information is uploaded into a central irrigation computer allowing dry areas to be remedied.

KEEPING UP TO SPEED

With all this technology being developed, it raises another topic - education. Unlike our US colleagues, no formal training colleges exist for golf course equipment technicians in Australia. Most current technicians started their careers elsewhere and have acquired their golf course skills on the job, with very few apprentices having been trained in the industry.

This means equipment techs must acquire knowledge wherever possible and the computer is the perfect means to achieve this. It is important for technicians to be made aware of up-to-date advancements. No longer are they required to just turn spanners, but must also be proficient in front of a keyboard.

Computers are becoming more commonplace in golf course workshops around the country, and the advantages are numerous. Machinery parts manuals, workshop manuals, service bulletins and machine specifications are currently available on equipment manufacturers' websites, as well as online ordering of parts.

Workshop environmental responsibilities are also part of the equipment technician's role and can be aided with the use of various management tools available online.

The above mentioned points, combined with the fact that catalogues and crossover charts are also available through the use of your PC, makes you wonder how you did without one. Gone are the days of scribbling service dates and hour meter readings on a greasy wall chart, or riffling through a cabinet full of service and parts manuals only to find the manual you're looking for isn't there. Records can be easily amended with the click of a mouse.

Several fleet management programmes are available to enable accurate records to be kept and accessed, and are a must for any workshop.

Education is also accessible through many other avenues. First, there are several dedicated golf course equipment technician forums available, with www.vteta.info and www.golftechs.net just two examples.

These forums are useful tools if a tech with a particular machinery problem or query needs to bounce an idea around, just post a question, and receive information and answers

from fellow techs around the world. This is particularly useful when purchasing new equipment.

Second, web cast training is also available. Although in-house and online training is obviously available to the equipment distributors, until only recently this has not been available to golf course technicians.

With the inception of the International Golf Course Equipment Managers Association this is now available via a web cast system, and through the use of the associated forums.

For those not familiar with the concept of web casts, a particular topic is hosted from anywhere in the world by usually a factory technician or engineer, live. Slides or video is viewed while you are participating. The main advantage is the ability to ask direct questions and receive an immediate answer. The IGCEMA website is www.igcema.org.

As with the wider golf industry, the turf technicians industry is continually evolving, and it certainly makes good sense to be prepared. 🌱

TETA COMMITTEES ELECTED

Both the NSW and Victorian turf technicians associations held their AGMs recently with new committees elected for the coming year. The respective committees are:

NSWTETA

President: Nathan Healy (Penrith GC); **Vice-president:** Todd Murphy (Castle Hill CC); **Treasurer:** Rob Rudel; **Secretary:** Mark Peatman (Ryde-Parramatta GC); **Marketing:** Sam Olah (Sam's Mobile Service); **Newsletter:** Albert Jones (Silvan Australia).

VTETA

President: Tony Hopcraft (Flinders GC); **Vice-president:** Luke Spotalis (Royal Melbourne GC); **Treasurer:** John Phelan (Woodlands GC); **Secretary:** Greg Stringer (The Heritage GCC).

Want to join?

If you would like to join either the NSW or Victorian TETA, contact:

NSWTETA: Sam Olah 0418 296 111 or email s-m-s@bigpond.com

VTETA: John Phelan john@vteta.info

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GCSAQ



It's that time of the year when renovations are in full swing and I hope that the weather has been kind to everyone and renovations have gone well.

The past couple of months have seen two successful GCSAQ education days. In September at The Glades Golf and Spa, Hydro Pumping and Controls, Florentine and Industrial Mowers were our sponsors for the day. David Hanby started the day with an open forum on irrigation system maintenance and troubleshooting with the main focus being foot valve maintenance and submersible pumps.

This was followed by Paul Dugmore who gave a run down on the Florentine range of fertilisers and the benefits of foliar feeding. Special guest Tom Parker from the Sydney Cricket Ground then entertained the gathering with a run down on the preparation of the wicket for last year's Ashes Test.

The October field day was held at Indooroopilly Golf Club which gave the 50 members who turned up a chance to see the extensive capital works being undertaken by the club on course. The day was sponsored by Ray Dufty (Tru-Turf Equipment).

Ray was on hand to give a brief outline on his company and to demonstrate the new Sandevil sand spreader and blower which left all in attendance very impressed and with

lots of questions. He also showed the latest electric greens roller.

The day also contained presentations from Andrew Hardy of Innov8 Safety-Pro OH&S management systems and Terry Muir from e-par which reinforced on us all getting this part of our workplace in order.

On behalf of all the members of GCSAQ I would like to thank all of our sponsors who have backed us over the past year. Hopefully these partnerships will continue for years to come. All members should get behind these sponsors whenever they can.

On the staffing front there has been quite a bit of movement within the industry in recent times. Paul McLean, formerly of Simplot, has taken over as superintendent at Royal Pines, while Ben Marshall has moved north from Pelican Waters to Laguna Quays. Marcus Hartup has left Pacific Harbour for Dubai and Geoff Bennell has returned to Queensland from New South Wales to take over as superintendent at Pacific Harbour. Darren Moore of Lakelands is now in China and Phil Soegaard has moved up from 2IC to superintendent, while Paul Bevan has replaced Paul McLean at Simplot. Good luck to all of you in your new ventures.

ROD COOK
PRESIDENT, GCSAQ



New TGCSA president Stephen Lewis
(Royal Hobart Golf Club)

The next TGCSA meeting will held in Hobart on Tuesday 27 November. It is a long time since we have had a meeting in the south of the state and the theme for the day will be irrigation.

The day will start at Royal Hobart Golf Club with a presentation on the new irrigation system and a course walk followed by a BBQ lunch at Tasmania Golf Club. That will be followed by a presentation from Pete Rand on the Clarence recycled water scheme before Tasmania superintendent Dan Gilligan shows us the new dam that has been constructed for holding recycled water for the course. Christmas drinks will finish the day off.

Invitations will be sent out closer to the event, so please put this date in your diary. To book please contact Stu Matthewson on 0417 557 488 or myself on 0419 206 402.

The new board of the TGCSA for the coming year is: **President:** Stephen Lewis (Royal Hobart Golf Club); **Vice-president:** Peter Medwin (Riverside Golf Club); **Secretary:** Stu Matthewson (Devonport Golf Club); **Treasurer:** Barrie Brtevnik (Rosny Park Golf Club); **Committee:** Phil Hill (Barnbougle Dunes), Kane McDonald (Port Sorrell Golf Club), Dan Gilligan (Tasmania Golf Club) and Doug Ollington (Tas Turf Solutions).

Melbourne will host the 2008 24th Australian Turfgrass Conference from 21-25 July. Now is the time to be putting your proposal to your board if you wish to attend. It's a great learning experience and a great chance to keep up with the latest trends.

PETER RUSCOE
PRESIDENT, TGAA WA

STEPHEN LEWIS
PRESIDENT, TGCSA

TGAA WA

With the start of the irrigation season in October, water conservation is back in the spotlight in WA. The State Government has introduced a range of new water efficiency measures aimed at reducing groundwater usage in the Perth region.

To help inform the turf industry of the latest developments, our association organised a Water Forum at the WACA in early October, presented by Leon English from the Department of Water and TAFE.

The forum provided an excellent opportunity to ask questions and raise issues with the Department of Water related to the use of groundwater for irrigating broad area turf. The water efficiency measures include a daytime watering ban, installing flow meters on bores, and preparing water efficiency plans.

The labour shortage in WA continues to have a serious impact on the turf industry. We are constantly losing skilled workers to other industries and there is no let up in sight. A

worrying sign is the lack of turf apprentices and the decline in demand for training. It is a very difficult issue to address and I am concerned that it will lead to a long-term drop in the standards of turf management.

On a more positive note, the annual WACA turf wicket seminar held in early September was an outstanding success. WACA curator Cameron Sutherland hosted over 70 curators and there was a great deal of interest in the partial reconstruction of the wicket block using the traditional WACA clay, designed to bring back the pace and bounce in the pitch.

The UWA kikuyu research project has wound up and a new study into the management of hydrophobic soils has just started. Our association is very supportive of the ongoing work at UWA and will continue as a financial contributor for this project.

It is with great pleasure as the new president of the NZGCSA that I get the opportunity to continue our association's participation in Australian Turfgrass Management magazine.

With a very successful conference behind us it disappoints me that no directive has been given from the governance board into the hosting and staging of the 2009 Turf Conference. Planning and organisation of these events will consume a lot of time of the relevant turf sectors to ensure programmes, speakers etc can be best utilised for greatest member benefit and surely succession planning should be a priority to help this process run as smoothly as possible.

The NZGCSA is not only indebted to the six years that Brett Burgess served as national president but also the previous years as an executive member also, and the continuity and stability that he brought to our association has seen us move ahead to a position today where we are now starting to ask ourselves "how do we take the next step" and continue to move forward.

Congratulations to Garth Williams from The Grange Golf Club in Auckland and welcome back to Grant Wilson from Taupo Golf Club as the newest elected members of the NZGCSA executive. Both of these gentlemen bring vast amounts of knowledge to our association, Grant having previously been involved heavily and holding the office as president.

At the recently held AGM, members of the NZGCSA inducted Nigel Lloyd and John Humphries as life members of the association. These two gentleman are real icons of the golf industry and I'm sure they won't mind me saying their passion and longevity in the industry is a source of inspiration to all of those they have come into contact with.

They have been very instrumental in our national association over a couple of decades as well as the various local regions they have worked in. Both are still as passionate as ever about our industry and are still very active today at their respective golf clubs and it was great to see them recognised with this honour.



New NZGCSA president Peter Boyd (Pakuranga Country Club)

2008 will again see a North and South Island turf conference take place during the year as it is our major conference year off. This gives the local regions the opportunity to run these events which are becoming more and more popular every year.

With a good solid membership and some ideas on where we should be heading as an association, I believe there are some exciting times ahead for the NZGCSA.

**PETER BOYD
PRESIDENT, NZGCSA**



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It is with pride that I pen this first report as the newly elected president of the GCSAWA.

On behalf of the committee and members I would like to thank Brad Sofield (Gosnells Golf Club), who stepped down as president of our fine association at the recent AGM, for his efforts, commitment and dedication over the last four years.

Brad made significant contributions in developing some important issues within our industry, such as trying to educate boards and clubs through the secretary managers association to encourage and support the rationalisation of wage structures through all levels of ground staff employees. He was also instrumental in the development and initiation of the Environmental Waste Audit for Golf Clubs. Brad always fulfilled his position with gusto and a unique passion and will be missed by all on the executive committee.

I would like to welcome Brad Anderson from Sun City Country Club as the GCSAWA golf secretary and wish him the best in his new role and look forward to working alongside him on the board. I also look forward to the continued support of the dedicated state executive committee who share the workloads without fuss, making my job much easier, as well as all members and trade in Western Australia.

Please feel free to contact myself or any other committee person with any issues regarding the industry and association in WA, and Allan Devlin if you have any AGCSA issues. We are fortunate to have Allan on the national board representing our views and concerns.

There are many superintendents concerned within Western Australia that good staff and staff in general are very hard to find with many clubs down significantly on numbers placing undue pressure on the remaining ground staff. Some clubs are operating at 50-70 per cent of their normal staffing levels with apprentices almost impossible to employ.

This issue needs to be raised at all levels and I ask all superintendents to provide feedback to me via email at dwilson@cambridge.wa.gov.au so we can estimate the full extent of the staffing shortage.

As we head into a busy summer, I would like to wish Dion Warr and his team all the best at The Vines in preparations for Australia's biggest female golf event this year, the Lexus Cup, in early December which will host most of the world's best ladies golfers, including



New GCSAWA president Darren Wilson (Wembley Golf Complex)

Annika Sorenstam.

The winter rains seem to be fading away with better figures than last year. At the time of writing we have had over 600mm so far with the dams over 40 per cent capacity and the Wellington dam near Collie overflowing!

I expect it's time to get ready for turning on the irrigation systems that haven't been used since early June except for maintenance reasons and welcome some spring weather to start warming us up, therefore making our time just that little bit busier.

The Golf Masters Cup has finished for another year, with the final round held at Joondalup Resort on 30 October. At the time of writing Peter Flemming was leading the pack heading into Joondalup with Brad Anderson close behind. We also had members of the AGCSA team visit in late October for the Spring Series Workshops at Wembley Golf Complex. If you missed out on this a CD of the workshop will be made available from the AGCSA.

Other events to put in the diary include the GCSAWA Christmas party which, by popular demand, will be held again at Rosemount Bowls on 7 December.

On a closing note, I look forward to representing everyone within the GCSAWA and hope I can achieve some of the association's goals in the coming year.

**DARREN WILSON
PRESIDENT, GCSAWA**

We often recognise the efforts of superintendents and individuals throughout the industry and rightly so. These folks, after all, are fundamental to our cause. I thought that we should also recognise the role of our sponsors as they have in no small way allowed our association to consolidate in recent years.

With their support we have been able to put several initiatives in place such as the hiring of a bookkeeper to relieve SAGCSA board members of some administrative processes. This will in turn create opportunities for board members to concentrate on more pressing issues, such as water initiatives and state representation. Our sponsorship partners have been loyal and shown genuine interest in association matters. I hope that we can maintain this relationship for many years to come.

Other initiatives have included the recent water management survey, which was released in September. I would like to acknowledge the support that we received from Daryl Sellar and the team at the AGCSA who helped to produce the survey in a web-based format that hopefully wasn't too scary for the end user.

Thank you to those who took the time to complete the survey. The information gathered will be used to generate discussion on how SAGCSA best represents the industry and will be a useful resource for water management strategies in the near future.

I would like to wish local supers all the best as we push towards the summer months. It appears that we are in for another tough summer with spring thus far producing little to no useful rainfall.

I know of several courses on the River Murray that are in for a really tough year due to small water allocations and/or extremely poor water quality. There have been some pretty amazing stories of survival over the past twelve months.

Our next SAGCSA meeting is scheduled for mid to late November at South Lakes Golf Club, which is dealing with a water crisis. The river water is now so salty that it can no longer be used to irrigate the course. I ask that all members show their support of South Lakes superintendent Leith Fletcher and his team by making the journey to Goolwa. I look forward to seeing you there.

**ANDREW BLACKER
PRESIDENT, SAGCSA**

Winter brought with it good rainfall, but unfortunately that didn't last into the early part of spring with August being one of our driest on record. Hopefully some late spring rains will have fallen by the time you read this in order to relieve summer restrictions.

In the last couple of months, there has been some movement within the industry in Victoria. Congratulations to Leigh Yanner who has moved on from Moonah Links to become course manager at The National Golf Club. Kyle Wilson has moved from The National, Ocean Course to take over Leigh's old job at Moonah Links. Gary Smith from Huntingdale Golf Club has also moved on and is now the course superintendent at Chalambar Golf Club. Good luck to all.

The VGCSA recently held its Bayer Environmental Science Golf Day on 11 October at Kingston Heath. All money raised from the event will be going towards the production of an OH&S DVD specifically directed at the maintenance side of the golf course.

Kingston Heath was presented in awesome condition which is a real credit to superintendent Martin Greenwood and his staff. Many thanks also to general manager Paul Rak who is a great supporter of the VGCSA. The day was very well organised by all staff from catering through to groundstaff and on behalf of the VGCSA I would like to thank you for a great day.

I would also like to thank Craig Wood from Bayer Environmental Science for his input. Without Bayer we would not be able offer the winner a \$2000 cheque to use on any turf registered conference. This year's winner was Michael Vozzo from Eastwood Golf Club with 38 points.

With that day behind us, we now have just the one meeting remaining for the year – the VGCSA Christmas function at Huntingdale Golf Club on Saturday 8 December. Enjoy the fine dining, light entertainment and a fond farewell to the end of the year with your peers and partners. If you would like to attend then please call me on 0419 804 135.

The VGCSA newsletter has come a long way over the past year. We have a fresh new look with different sections and articles and the ever-popular regional reports. The committee has decided that the regional reports should not be left to a few dedicated individuals.

From now on the regional reports will be left to you. If you are one of the many that get the newsletter and turn straight to the back pages to read the regional reports then you should provide a piece about your club. It only takes a few minutes of your time to write about the going ons at your club.

Before each newsletter an email will be sent to all superintendents reminding them of the deadlines. The regional reports can become an exceptional section of the newsletter but will only improve and grow with the help of the members of the association. Please make sure your details are correct so all correspondence will reach you.

**MICHAEL FREEMAN
PRESIDENT, VGCSA**

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Here in Victoria water is still a major issue, with most of the state still facing severe restrictions for the coming season, although flooding rains in parts of Gippsland eased their restrictions for the time being.

On 8 August we held our AGM/Seminar Day at Malvern RSL where even though the turnout wasn't as many as we would have liked, the information presented to those present was very valuable.

Phil Ford from NMIT, Alan Mathers and Dave Gudgeon from Highton BC conducted a presentation on the project at Highton and the use of the California method in the new greens



Peter Barron (right) was awarded the VGA's Distinguished Service Award at the recent AGM. Presenting him the award were Andrew Kent (left) and Bruce Hensel



2007 VGA Greenkeeper of the Year Shane Harling

construction. Those present were intrigued by the idea and the courage of the club to follow through with it. We all wait to see how a full season of bowls and summer weather impact on the performance of the green.

Des Horton from City West Water also spoke about the water shortages we are all facing, as well as showing charts of Melbourne's usage over the past decade. Stage 4 doesn't look very far away.

The Distinguished Services Award for 2007 (sponsored by Henselite) was presented to Peter Barron, whose services to the industry over the years have been exceptional. Peter,

who was also awarded the Australian Sports Medal in 2000 for services to Lawn Bowls, was VGA president from 1999-2002. During his term the following was achieved:

- Millennium Conference – Melbourne;
- State Government Grant \$100,000 over three years, which enabled the VGA to begin research and implement awards (Distinguished Service Award, VGA Greenkeeper of the Year);
- VGA was also set up with a computer, digital camera and video camera.

The 2007 VGA Greenkeeper of the Year was down to six finalists – Shane Harling, Dave Gudgeon, Dyson Appleyard, Barry Armstrong, Michael DeMattia and Nick Schofield.

The winner was Shane Harling from Kangaroo Flat BC in Bendigo. This is a fantastic effort from Shane who was not only able to produce fantastic greens during a severe drought, but also gained deserved recognition for his services to the industry over the past couple of years.

We can only hope now that we get some very heavy spring rains to help us through what is going to be a very difficult season again. Good luck to all greenkeepers out there for the impending summer ahead.

**DYSON APPELYARD
COMMITTEE, VGA**

VTETA

Hello and welcome to this inaugural report from the Victorian Turf Equipment Technicians Association in Australian Turfgrass Management magazine. Through this and future reports, as well as the dedicated section that will now appear in each edition of ATM, we hope to keep everyone up to date with what is going on in the world of turf techs.

As we all know, the seasons have come and gone quick and over the course of this year the VTETA has held four general meetings. Our first meeting was held at Toro's facility in Braeside, while the second meeting took in the new John Deere plant facility and parts warehouse at Derrimut. Our third meeting headed back out to Derrimut where we were hosted by PFG, which distributes Jacobsen, Daedong tractors, Cushman, Ransomes and Ryan turf products.

Our most recent meeting was the AGM held at Silvan Australia. Wilda Francis (Elf Oils

and Lubricants) opened proceedings and then Bob Gerritzen (Tricor Engineering) talked about workshop setups right through to fabrication.

Other presentations were given by David Swan (Lanotec Products), Michael Creak and Steven Maxwell (Blackwoods Industries) and Jim Brennan (JRM Industries) before hosts Silvan Australia showed us the effects of diaphragm failure within pumps.

Following lunch, Silvan Australia general manager Steven Lelli presented the very prestigious VTETA Turf Technician of the Year Award. After a tough decision from seven nominations, the very deserving winner was Greg Stringer from The Heritage Golf and Country Club. Congratulations to Greg for his years as a committee member and all the work behind the scenes.

The day concluded with the VTETA AGM where a new look committee was elected. To Steve Hall, Gary Lay and Rob Campbell who

stepped down from the committee, thank you for all your invaluable support and hard work, in particular Gary, our longest serving treasurer, who spent many years on the committee and helped put the association where it is now.

The new committee comprises vice-president Luke Spartalis (Royal Melbourne), secretary Greg Stringer, who is back for a second stint, and John Phelan who fills the big shoes left by Gary. Also at the AGM we elected Lindsay Tomlinson as chairman of our conference sub-committee.

To all our members, and especially our sponsors, thank you for your interest, attendance and support throughout the year. To all families, we at VTETA wish you the best for the remainder of 2007 and a safe and festive Christmas and New Year.

**TONY HOPCRAFT
PRESIDENT, VTETA**



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How Hydrovar reduces maintenance cost.

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What is Flowlink?



To assist green-keepers and Superintendents in the golf course, turf and irrigation markets, Lowara and TORO Irrigation teamed up together to develop a link between the Toro Sitepro software and Hydrovar.

The link operates with up to 4 Hydrovar pump systems and monitor running / fault conditions and measures pressure and flow of the pump system.

All these parameters are displayed on the central irrigation control computer

"The growing-in phase of a new golf course is critical and requires detailed planning, particularly when it comes to irrigation.

When the new Settlers Run Golf Course at Cranbourne was in the early stages of planning we had no hesitation in recommending a Lowara pumping system because of its better control, long term reliability and ease of maintenance.

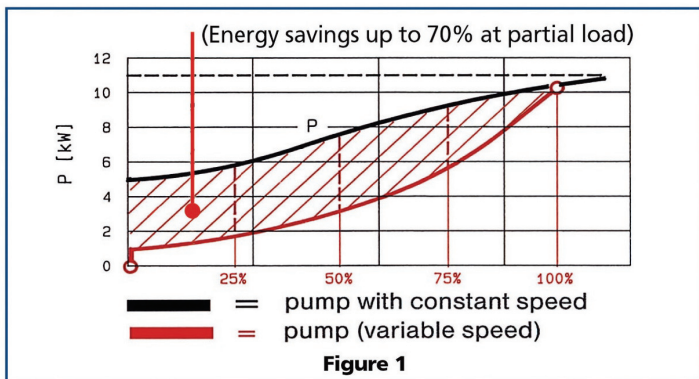
The Settlers Run pump installation incorporates 4 variable speed Hydrovars which are uniquely linked to Toro Irrigations' Sitepro software which delivers to the Superintendent precise information on the performance of the total pumping system, which is absolutely critical to the grow-in phase.

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Brendan Graham, A&M Watering

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