AUSTRALIAN
Turfgrass MANAGEMENT
ISSN 1442-2697 RRP $6.00 PLUS GST
VOLUME 7.5 OCT - NOV 2005

Colin Phillips
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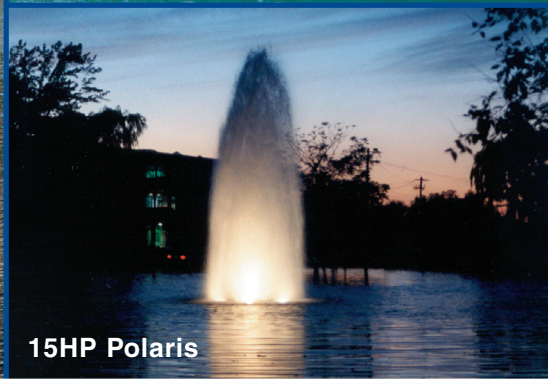
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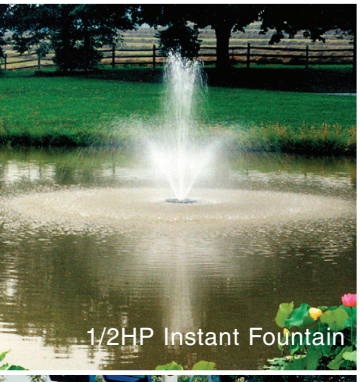
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Australian Turfgrass Management
Published by:
Australian Golf Course Superintendents' Association
ABN 96 053 205 888

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Welcome to ATM's fantastic new supplement called 'Offshoot'. Kicking things off we profile Torquay Golf Club superintendent Shane Brogan who recently came across from the prestigious New South Wales Golf Club. Inside Offshoot you will find the latest turf industry job vacancies, classified ads as well as AGCSA member benefits and the fully stocked AGCSA bookshop. Enjoy!

respecting the fine art of golf course maintenance

You don't become a five-time British Open champion without having an extensive appreciation for the great game of golf. From the game's traditions, the fundamentals of swing, stance and grip through to the fine art of turf management and golf course design, Australian golfing maestro Peter Thomson has lived and breathed the game all his life.

Recently, Thomson penned his first book, a small hardcover offering titled 'Lessons I Have Learned', to coincide with the 50th anniversary of his Open win at St Andrews in 1955. The engaging book contains small extracts of wisdom collected over Thomson's many years of playing and observing, from anecdotes about iconic contemporaries Sam Snead, Ben Hogan, Jack Nicklaus, Bobbie Locke and the Von, through to his five Open titles and his views on modern-day course design.

However, it's one particular entry that caught my eye. Under the heading 'Integrity Matters', Thomson espouses the virtues of some of the great Australian courses – Royal Sydney, Royal Adelaide and the wealth of sandbelt gems in Melbourne. But it's his final comments which will be of most interest to superintendents. Thomson writes: "Integrity… means strength of features and proper dimensions… Add to this a high standard of maintenance which may well be the most important thing of all."

Another iconic figure in Australian golf, albeit in a totally different capacity, is Colin Phillips. For the past three decades, Phillips has overseen the development of the game in Australia and has been better placed than most to witness the advances in golf course maintenance. In September, Phillips stepped down as executive director of the AGU and in this edition we talk with him about the greenkeeping profession and how he has seen it develop into the highly regarded profession it now is. One thing that quickly becomes evident is the high regard in which Phillips holds superintendents and the vital role they play in the senior management structure of any golf club.

As you are probably aware by now, this edition's cover story heads back down to Victoria's Mornington Peninsula to see how preparations for the 2005 Australian Open are progressing. Thomson's unique creation, Moonah Links, is set to host its second Open in three years and we stop by to discuss with superintendent Leigh Yanner how the monster has matured in the intervening years.

Just as Moonah's Open Course has undergone a few subtle changes in character, this edition of ATM magazine also contains a few tweaks which will become apparent as you flick through. The main difference is the addition of a brand new supplement called 'Offshoot'. As well, we introduce a dedicated opinion section where we ask five members of the industry to cast their learned opinions on a certain topic. And what a subject to kick off with - contract maintenance.

Enjoy the read and I look forward to seeing you at the Australian Open in November.

Brett Robinson
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Simone Staples (TGAA VIC)
Leigh Yanner (Moonah Links)

foreword thinking

AGCSA CHIEF EXECUTIVE, STEVEN POTTS

Welcome to the October-November edition of Australian Turfgrass Management magazine. The world has watched in disbelief in late August the devastation caused by Hurricane Katrina on the southern American city of New Orleans. Many golf facilities in the Gulf Coast region have been impacted with storms and flooding and our thoughts and best wishes are with all who have been affected.

After 27 years as executive director of the Australian Golf Union, Colin Phillips officially retired on 15 September, 2005, although he will stay on until his successor is named. Colin has been a great supporter of superintendents and the AGCSA and on behalf of all Australian superintendents I would like to thank Colin for his ongoing commitment and wish him the best for his future. A full interview with Colin is included on page 14 of this issue.

I am pleased to announce that a draft golf environmental management policy has been endorsed by the Australian Golf Union. The environmental policy will be officially launched in the near future and is a statement by the golf industry of its intentions and principles in relation to its overall environmental performance, which provides a framework for action and for the setting of environmental objectives and targets.

It is recognised that of all the major land based sports, golf has the most significant interaction with the environment. Golf course superintendents are required to manage many situations and issues that impact upon the environment. The industry requires an efficient, systematic and proactive approach to managing its interaction with the environment and the Australian Golf Environmental Management Policy is the first step.

This systems approach has been met with a very positive response from many of the state EPA's regarding moving towards a self-regulated industry. This is a very positive step for our industry and I look forward to keeping you updated with our progress.

More recently, the AGCSA has joined forces with the Irrigation Association of Australia, The Nursery and Garden Industry Australia, the Australian Institute for Horticulture, the Australian Landscape Industry Association, Parks and Leisure Australia and the Turf Producers of Australia to form the Lifestyle Horticulture Council.

The Lifestyle Horticultural Council has been formed to develop a national proactive position on water restrictions and the ongoing challenge of access to water for lifestyle horticulture, and represents the people and businesses that deliver healthy, thriving and viable gardens, parks and open space to provide liveable cities and sport and recreation amenities for their communities.

The aim of the Lifestyle Horticulture Council is to secure equitable water access for lifestyle horticulture by:

- Documenting the importance of lifestyle horticulture to healthy towns and cities;
- Developing industry positioning, media messages and credible argument;
- Influencing appropriate decision making at a national and subsequently state level;
- Demonstrating the costs and impacts of changes in water policy on the community and industry.

The Australian Open is set to return to Moonah Links from 24 to 27 November and once again the AGCSA will be looking for volunteers as part of the Course Quality Officials program. This is a great opportunity to be part of the Australian Open and is an excellent educational opportunity for assistants and aspiring superintendents to get an insight into major event preparation. Please see the website for details on how to register.

The AGCSA website (www.agcsa.com.au) has continued to grow with 16,322 visitors during the month of August which is an average of 526 a day. The website has become a very valuable communication tool for the turf industry and I would like to thank everyone for supporting the website.

Enjoy the magazine.

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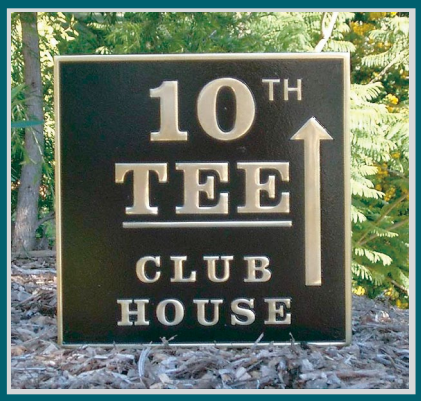

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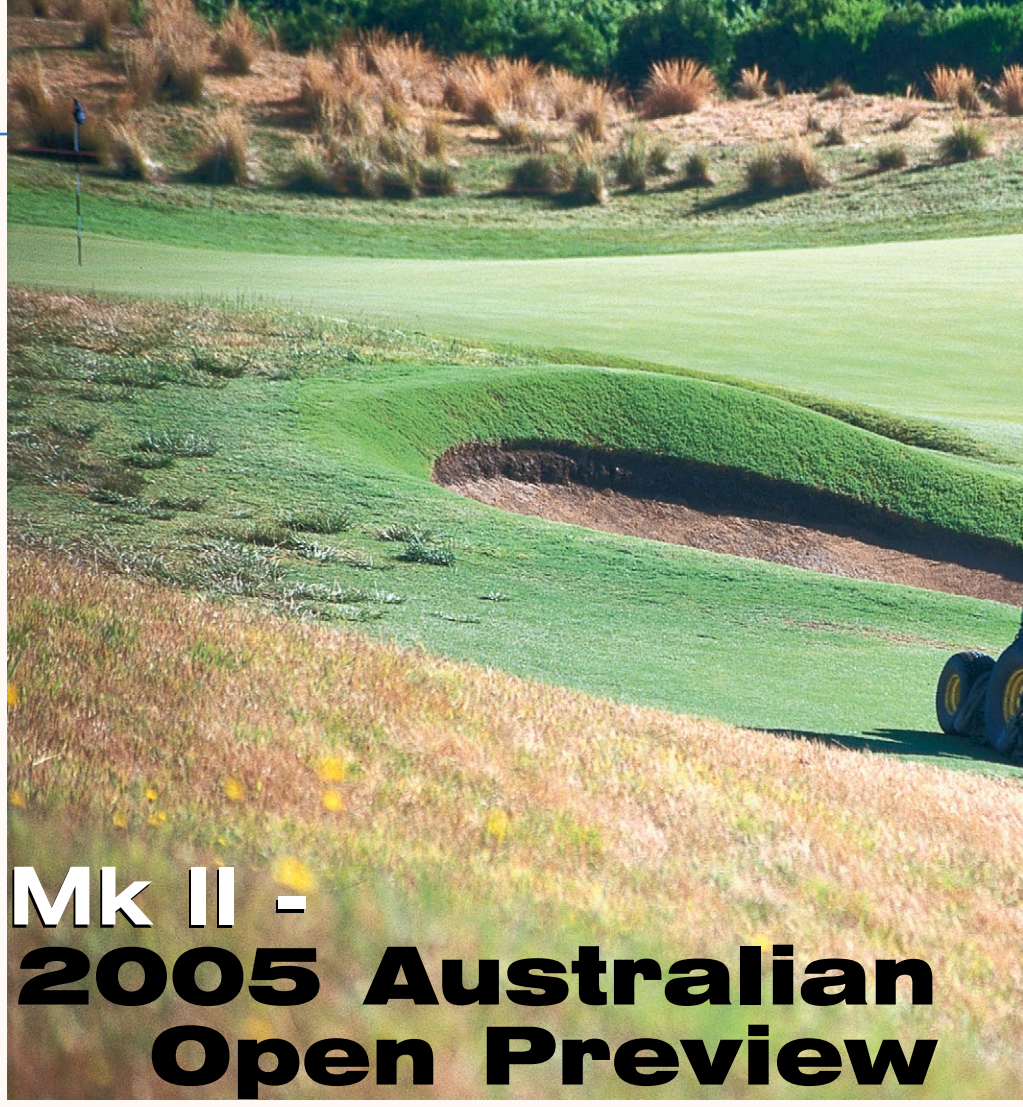


Moonah Mk II - 2005 Australian Open Preview

In 2003, Moonah Links hosted its first Australian Open to widespread acclaim. Two years on and with maturity on its side, the Open Course will again play host to Australia's flagship tournament this November. In the lead-up to the big event, ATM magazine caught up with superintendent Leigh Yanner to look back on the 2003 Open and what lessons he and the crew will take into 2005.

Leigh Yanner cherishes tournaments. He loves the pressure, the scrutiny, the bringing together of a greenkeeping team dedicated to producing world-class turf surfaces.

It was one of the prime reasons he took up the superintendent posting at Moonah Links back at the start of 2002, making the move after three-and-a-half invaluable years as assistant superintendent at Melbourne's famous Metropolitan Golf Club. He knew the role the new Mornington Peninsula layout would play in hosting future Australian Opens, and like a moth to a lamp he was drawn.

Having helped prepare Metropolitan for a number of high-profile tournaments, Yanner was thrust into the limelight just 18 months into his new posting when Moonah Links held its first Australian Open back in 2003. It proved an extremely hectic time for the then 30-year-old and his crew, but ultimately they passed the acid test admirably.

Following the staging of the Open at one of its more established venues last year, the 2005 tournament returns to a more mature Moonah Links Open Course.

Just as the Legend fairways and Penn A1 greens have advanced, so too have Yanner, his lieutenants Scott Calder and Nathan Bennett and the devoted crew they oversee. Together they have nurtured the course through its formative years and are now eagerly awaiting the return of the pros come 24-27 November to see if they can once again tame the beast.

VALUABLE LESSONS

The 2003 Open was a giant learning curve in many respects for Moonah Links. Not only did Peter Thomson's self-proclaimed Leviathan get its first true test as a championship venue, the tournament also put Yanner and his unit through the rigours of preparing for this country's flagship tournament.

From a course perspective, Yanner can look back and feel pretty satisfied about the way the course came up. The greens were a challenging yet consistent 10-10.5 feet all week, the golden phalaris rough framed the lush couch fairways beautifully and the course's signature bunkers snared more than their share of title hopefuls.

The dramas that had befallen the Open the year before at Victoria Golf Club became a distant memory as the course received acclaim from far and wide – players, media, even the chief of the Royal and Ancient Golf Club, David Harrison, who commented that the Open Course was "an absolute classic" which

With the experience of 2003 under their belts, the Moonah Links maintenance crew head into the 2005 Australian Open with plenty of confidence

BY BRETT ROBINSON

would rate comfortably alongside any course on The Open Championship rota.

"I was happy with the way the course came up," reflects Yanner. "We didn't get the wind which would have made things more difficult and the rain kept the greens a bit softer. Obviously we learned a lot in regards to what's actually required and where we need to improve. I think the fairways, bunkers and roughs were all of good quality but we can improve on the greens surfaces.

"Overall I was very happy with how it went first up, but there is still plenty of room for improvement. But in saying that, I don't think there is a great room for margin because on this site we are restricted in how we can work the turf. We can't cut our fairways down to 9mm and have a nice tight surface. We have to provide a surface which is able to hold the ball on slopes.

"The same goes for the greens. We can cut them down to 3mm and get 15 feet out of them and have a much better surface, but due to the site and particularly the weather conditions, we are restricted. The staff and I see it that we do pretty well given the restrictions we have to work under."

From a personnel point of view, Yanner was able to gauge how his crew stood up to the demands of high-profile tournament preparation.

In the lead-up to 2003 there was plenty of hype about how Moonah would match up to the more established Open venues and with the media's intense focus on what happened at Victoria, Yanner was constantly having to reassure and reinforce to his staff that their job was simply to produce the best surfaces possible.

Not only was there that pressure, there was also the incredible amount of extra work going on around the Open. The Legends Course was due to open four days after the tournament, while there were numerous last-minute finishing touches needed to be made to the clubhouse and hotel surrounds.

"Last time we were exhausted after the event only because of what had been required in the lead-up to it," says Yanner. "I think one of the big things this time around will be trying not to overwork the staff.

"I think they may not have enjoyed the tournament as much last time due to the circumstances we had to work in, so in the lead-up this time I want it to be a good and enjoyable working environment so they can actually enjoy the tournament atmosphere.

"Looking back, the staff had very little experience as far as an Open tournament went but they handled it well. The feedback I got from our appraisals was that there wasn't a lot more we could have done to improve the turf surfaces."

As for himself, Yanner believes he measured up pretty well for his first time in charge. "I love tournaments. I love the pressure of bringing the team together to present a course to the world. I think I coped pretty well. I took it upon myself being the senior person not to try and show my direct feelings to the staff because I wanted it to run smoothly.

"The tournament wasn't that stressful because of the rain. The most stressful thing for a superintendent during a tournament is how much water to put on the greens to still provide the best possible surface, and to have trust in the weather. But the rain alleviated those concerns last time.

"My experiences from Metropolitan certainly paid off and realising that it's all a timing issue. Obviously you've always got that battle with nature, particularly down here, but we tried to work to a plan and stick to it as much as possible to achieve the best possible surfaces for that week. And I think we achieved that pretty well."

THE MATURE MONSTER

Two years may not seem a long time between Opens, but for the Open Course that time has proved immensely beneficial from a turf management perspective.

In Yanner's words the course has "settled ▶

Moonah Links superintendent Leigh Yanner and the crew

down" and one of the highlights has been the improvement in turf health, particularly on the fairways where growth is stronger and disease is not as evident as in previous years. As well, the A1 greens have remained *Poa* free, the roughs – comprising of pasture grasses – have thickened up, while some of the course's 77 bunkers have changed in character due to the weather.

As such, maintenance practices have also evolved and Yanner has moved from establishing and growing in to renovation and maintaining the surfaces to achieve a better sward of grass.

In February this year the fairways were heavily de-thatched and aerated and fungicide applied to prevent spring dead spot. Greens renovation has changed little and Yanner still maintains an intensive dusting program and vertidrain with needle tynes to a depth of 7.5 inches twice a year.

"The thing is with a 36-hole complex compared with an 18-hole course, you do things that work for you because you have to spread your resources over a bigger area," says Yanner.

"With the Legends Course coming online, resources have been stretched. Due to the focus on the Open this year the Legends has suffered a bit, but it is getting great accolades and a lot more return golfers. Once the Open has finished, the focus will be back on the Legends.

"It's mainly working on maintenance routines more now. We are still short-staffed which means in the past we have had to chop and change, and because of the weather it can get frustrating not being able to apply fertiliser or chemicals due to the wind."

The two years have also enabled Yanner to get a better handle on disease issues and patterns around the course, particularly in relation to spring dead spot, drechslera and winter fusarium.

"Spring dead spot was an issue last time and it's still an issue," says Yanner. "With fertiliser and management practices over the past three years we have controlled the disease more but it's still very evident and the fairways on 12 and 18 have been hit hard this year.

"That's the hard thing with this disease. You think you know where you are going to get it, but each year it changes and years gone by in areas where it was quite harsh it's not so bad anymore. They all haven't been treated any differently, but for some reason a different area gets hit hard. But if the weather is warm they will grow out naturally.

"Winter fusarium has also affected a number of greens quite badly this year which normally isn't the case. That's due to the high pH sands down here, and because of the weather we've been getting we haven't been able to apply preventive measures as we normally would. But again, that won't influence things come the last week of November.

"Overall, the turf is reasonably healthy. It's at about 80 per cent of where I would like to see it but that will improve as soil temperature starts to warm up."

Over the past two years, Yanner has also grown to appreciate the Moonah complex more. With the Legends Course complementing and contrasting the Open Course, Yanner is beginning to get to now their idiosyncrasies and respect the unique design features and character of each.

Coming from Metropolitan and a mainly sandbelt background, Yanner has had to learn different techniques, some of which are new to course management in Australia – understanding how to get the grass to look its best given the climate, how the roughs present and play their part in the overall design, as well as the bunkers which are vastly different from the winding complexes of the sandbelt.

"The main thing I think has been learning to appreciate two very different golf courses at the same time and being able to understand the different requirements and needs of each and pushing that on to the staff," says Yanner. "Generally about 70 per cent of things carry across to both courses but that extra 30 per cent makes the difference in the way each course is prepared."

Integral in that learning and development process have been Yanner's two assistant superintendents Scott Calder (Open Course) and Nathan Bennett (Legends Course).

"Obviously it's a massive help with Scott and Nathan," says Yanner. "They, as well as

Yanner's lieutenants Scott Calder (left) and Nathan Bennett

the rest of the staff that have stayed on since the last Open, have really cemented their position and knowledge of the site.

"Trust is a very important thing. I know that I don't have to necessarily be out there that much because of the trust I have of all the staff. That's particularly important with a 36-hole complex because you can't be everywhere all the time.

"They understand what I want and they are very proud of what they prepare and obviously having it associated with the Australian Open adds the enthusiasm and prestige of being here."

SUBTLE TWEAKS

Little physically has changed about the Open Course from 2003 bar a few subtle changes on and around the greens. In November last year minor contour changes were made to the 411m par four 9th to allow for more pin placements, while two of the par threes – 7 and 17 – have also undergone some fine redesign work.

Most daunting for the pros will be those alterations to the 17th, the Open Course's signature hole. Already a 185m blast across a deep exposed valley to a long, narrow elevated green, the two greenside bunkers on the front right have been brought more into play by raising the putting surface behind them, enabling tighter pin positions.

"We were close to having pins there, so we carried out a few subtle changes with the permission of Peter Thomson which will make all the difference come the tournament," says Yanner. "It means the bunkers will come into play more on 7 and 17 and if the wind gets up it now means we are safeguarded as far as pin placements are concerned as we have more options to work with."

Elsewhere, one of the greenside bunkers on the par three 5th has been given a more natural rugged look, while Yanner and his crew have laid about 3500 square metres of fescue to finish off some of the surrounds. New cart paths have also been constructed to help negate turf wear.

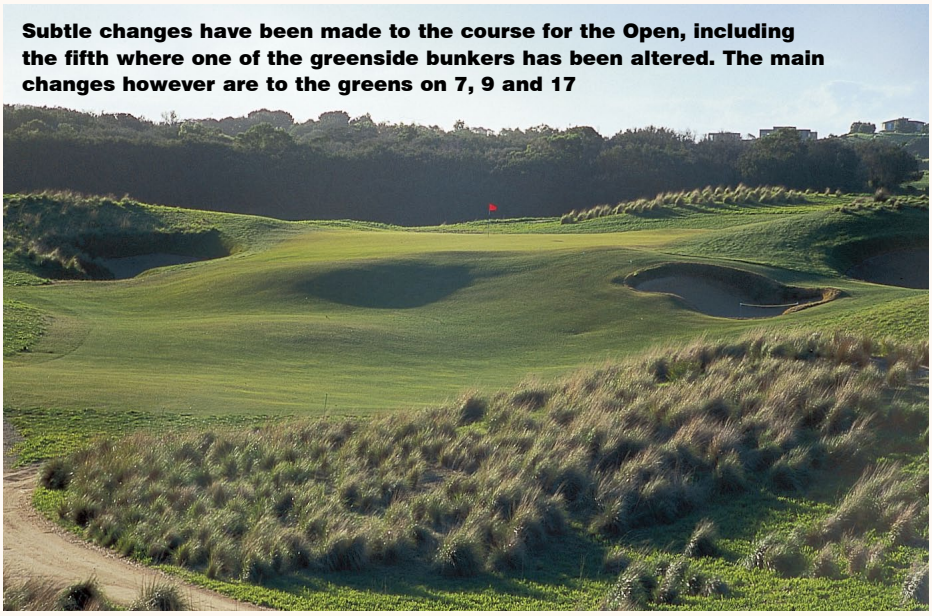
One major change which the pros or spectators won't notice is the new maintenance facility. At the time of the last Open the crew were confined to a glorified chicken coop as they awaited the construction of the new shed.

The new facility was completed in September 2004 and while Yanner says it won't make a difference to the way the course is prepared for the Open, it has boosted the morale of staff and, in particular, given his mechanics a proper space from which to maintain Moonah's impressive fleet of John Deere machinery.

"The greens are our strength here and I want to portray that"

THE SECOND COMING

With the 2003 Open under their belts, it is not surprising therefore that Yanner and his crew head into 2005 with a fair degree of confidence. With course maturity on their side, and the fact there won't be any outside issues causing distraction, in theory it should be business as normal. ▶



Subtle changes have been made to the course for the Open, including the fifth where one of the greenside bunkers has been altered. The main changes however are to the greens on 7, 9 and 17

One of the big differences this year, however, will be the timing of the tournament. In 2003, Seven's coverage of the Davis Cup meant the Open was pushed back the best part of a month. This year it is back to its normal late November timeslot which means soil temperatures won't be as high and the roughs may not be quite as aesthetically pleasing.

"The roughs were absolutely perfect last time," says Yanner. "The roughs are our tree-lines. They went golden and provided a perfect frame for the course. That's the hardest thing this year with the tournament being earlier – we may not have that. If we get some good warm weather in November then yes we will, but if we get some rain they will be green."

Over the past eight months Yanner has begun regular course inspections with outgoing AGU chief and Open organising committee chairman Colin Phillips and AGCSATech manager John Neylan. During that time Yanner and Neylan have been concentrating on turf health and looking at ways of achieving that, while there has also been plenty of discussion about the greens.

"Over the past six months we've looked at ways we can improve the greens without necessarily increasing the speed and playing around with different cutting techniques," says Yanner. "The last tournament we single cut in the morning at 4mm to achieve 10.5 feet. The greens were probably better the week before the tournament which was more to do with the weather, and also we were brushing a lot.

"This time we are going to implement an evening brush. In no way are we trying to achieve faster green speeds, but we're trying to achieve better putting surfaces. Whether we brush with reels and gauges or whether we just brush, that will be determined in the lead-up to the tournament.

"We need to convince the organising committee that by doing this we will not increase green speed to the point where they become unplayable. But we have a belief that the grass will grow significantly overnight and won't cause any difference in green speed throughout the day. We're not allowed to roll them or else they just get too fast. Our greens are regarded very highly but we can't work them to the degree where they can be really fantastic because of the restrictions due to wind.

"I think 10.5-11 feet will be our goal again and with some wind they could get up to 13. We are not changing the course in any way because we have an understanding now because of history. We know that those 15-20 knot wind days are going to be our tough days but the greens are able to cope with that given suitable pin placements. The greens are our strength here and I would like to be able to portray that during this tournament."

IN THE LAP OF THE WEATHER GODS

How the Open Course will play this time is anyone's guess, but as with any course down on Victoria's Mornington Peninsula, set-up will be dictated by the weather.

In 2003 the weather remained relatively benign and as such the much feared Leviathan didn't bear its teeth. In deteriorating conditions on the final day, Peter Lonard managed to sneak home with a final round three-under to win by one shot from Stephen Leaney and Chris Downs. It was only hours after he had held aloft the Stonehaven Cup on the 18th green that the weather turned violent.

Those Sunday conditions gave a slight hint of what the weather can throw the players' way if it gets up. The final round was played in steady rain and freshening south westerlies and as a result the course relinquished just 19 sub-par rounds compared with 31 on Thursday, 39 on Friday and 26 on Saturday.

"The course will definitely play different than last time because we can't possibly have weather like we did then," concludes Yanner. "We're going to have at least one day of wind.

"The last day of 2003 made it interesting and highlighted more how we envisaged the course would play. The conditions meant the players couldn't just rely on their set routine. They had to think more about how they would play the course and that's just what Lonard said afterwards – it was a course that made him think. We want the course to play fair but this time we want Mother Nature to add a little spice to it."

Final preparations for the Open will begin two weeks out when the course is closed

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After 27 years as the AGU's executive director, Colin Phillips stood down in September

September marked the end of an era in Australian golf. After 27 years at the helm of the Australian Golf Union, Colin Phillips officially stepped down from his role as executive director. In an exclusive interview with ATM magazine prior to his departure, Phillips recounts his thoughts on the greenkeeping profession and how he has seen it flourish in challenging times.

Recollections from the top

For the past three decades, the name Colin Phillips has been synonymous with the game of golf in Australia. From his early days working in the back office at Metropolitan Golf Club through the 27 years as executive director of Australia's premier golfing body, Phillips has been there at every major juncture the game has experienced in recent times.

In mid-September, Phillips officially stood down from the helm of the Australian Golf Union, bidding farewell to a long and illustrious career and leaving the game at a time when it is about to enter a new era in this country.

At times a controversial figure, Phillips has witnessed the dramatic rise of golf at both the social and professional level in Australia, and on the eve of his departure from the AGU the game was set to go through further change following the announcement that the men's and women's ruling bodies would merge to form Golf Australia.

That union will go a long way to securing the game's future in Australia and will go down as one of Phillips' final achievements. At the time of writing, Phillips' successor had yet to be named and he was staying on to administer the AGU as well as continue his role as chairman of the organising committee for the 2005 Australian Open.

From the phenomenal success of Australian Opens in the 1980s, through to youth development programs and the advent of the new home of Australian golf, Moonah Links, Phillips has been better placed than most to see first-hand how the greenkeeping profession has developed to meet an increasingly demanding golfing public.

What many superintendents may not realise is that Phillips is well versed in the art of turf management and actually completed the two-year course offered at the University of Melbourne's Burnley campus back in the 1960s.

"I started off working in the office at Metropolitan," recalls Phillips (61). "I remember I was the first non golf course worker to do the course at Burnley and they actually had a bit of a row about whether they would let me do it or not.

"It was really interesting for me and as a result I have always had an appreciation of turf

management and its major role in the game of golf."

Looking back at his years, there have been a number of highlights and lowlights. Giving Phillips the greatest sense of achievement has been the success in junior player development and the Australian Institute of Sport, as well as the growth of Australian golf in the international arena. However, he is under no illusions that his successor will face a raft of pressing issues from continuing player development through to the increasing concerns over water quality and water management.

In retirement, Phillips plans to still be active in golfing circles and will take his place on a couple of boards, including becoming honorary secretary of the Asia Pacific Golf Confederation. As well, Phillips intends on re-acquainting himself with Richard Forsyth's Metropolitan in an attempt to reduce his current handicap of 15 – which won't be that hard if his recent 39 points on Moonah's Open Course is any indication.

ATM magazine caught up with Phillips at the AGU's headquarters in South Melbourne just weeks before he was due to step down to discuss the greenkeeping profession, the upcoming 2005 Australian Open and some of the run-ins he has had with superintendents during his distinguished career.

When you became the Australian Golf Union's first full-time employee in 1978, what was the general perception of greenkeepers/superintendents?

It was obviously very different back then. I guess the biggest change I have noticed since then is that the quality of superintendents now is totally different. There were a lot of older superintendents around then that had been in the industry for many years who certainly knew

One thing Phillips will miss most upon his retirement – the Australian Open

a lot about it but never had the training or the background that the guys today do.

My introduction to all this was at The Australian Golf Club and the Australian Opens held between 1975-78 which were the first of a new type of event in Australia. They were sponsored by Kerry Packer's group and part of that arrangement with the golf club was to rebuild the course.

In doing that they brought out a team of Americans under Jack Nicklaus to build it and stay on to manage the course. I think we saw a totally different type of superintendent come through that way and I think a lot of that rubbed off on the rest of the country. It gave the industry a shot in the arm.

Back then was there that mentality that a superintendent was some bloke down the back shed who came out occasionally to cut the grass?

Certainly that would have been the case at a lot of golf clubs, but I have been in the industry all my life and grown up with it and I have seen that perception change a lot. If you look at the top clubs, they have always had top people there. In folklore that may be the case, but I don't think that is the case now.

You just have to look back at those guys like Claude Crockford at Royal Melbourne and the same at Metro and Kingston Heath; they may not have had the training but they certainly had the knowledge.

How important is the role of a superintendent to a golf club and how has that role evolved over time?

I think clubs have a much better appreciation of where the superintendent fits in the club structure. My comment has always been to clubs that the superintendent is the most important member of staff and I believe that firmly because he looks after the major asset of the golf club. I think that is such an important point and I found a lot of clubs didn't appreciate that years ago, but I'm pretty sure most of them do now.

There is much more golf played these days and I think that had a lot to do with the Canada Cup in the 60s. I go back to the 60s at Metropolitan and all the clubs were the same in those days. No one played December, January, February - they all went off somewhere else and the golf courses weren't looked after as much. The big change over the past 30 years is that people want to play golf 12 months of the year and that means a different method of maintaining a golf course.

How do you view the superintendent's role? Would it be one of the most challenging senior management positions at any golf course?

It is the key position. I don't think it has changed but I think there is more of an appreciation than there was. As we've seen a lot of superintendents have gone on to be course architects and do a lot with course design, so they are pretty much multi-skilled in all aspects. Do they get the recognition? ▶

Phillips' appreciation for turf management stems from when he completed the Burnley course back in the 1960s

I certainly think some of them do, but some of them don't. I think it depends to a certain extent on what events the club has as well.

Do you see the demands on superintendents changing in the future?

I don't think so. Today the emphasis is on the bank balance rather than on maintenance. I think superintendents have got their maintenance practices pretty right. Now committees are looking more to the superintendents to give them value for money. That's the same across every industry.

There has been a general swing in the way golf is played. More people want to play golf but less people want to join a club and we're seeing the results of that in the fringe areas of the big cities and the country areas where membership numbers are struggling.

If membership is struggling the money isn't there to maintain the golf course and if the course is not up to scratch people don't play. It's a vicious cycle. It's an issue for the AGU to see if we can't help in that area. We have introduced some programs recently to encourage people to join clubs.

A lot of clubs have to look at the way they present their membership and what they offer, particularly for the younger golfer. Recently we've seen clubs swapping courses with each other for a day which was unheard of years ago. That shows what members want.

Have player expectations increased as far as course presentation goes?

I think dramatically so, particularly when you see what some of the superintendents are achieving. I have been at Metro for 40 years and when you go there and see the great standard the course is in all the time it does rub off, and when visitors go they question why their course can't look like that. That's had an enormous bearing on the way courses are presented.

Do golfers have a full understanding of what it takes to maintain and present a course?

I think some of the older golfers do but maybe some of the younger fellas don't appreciate the time and effort and the problems that superintendents have in preparing a golf course.

There are peculiarities at each course, whether it's drainage, soils or climate. I admire some of the supers for what they can produce with what they have to work with.

Do you think superintendents have become more professional over the years?

Well, they all wear ties when they come to my meetings (laughs). I always like the superintendent to attend the organising committee meetings for the Open. That wasn't always the case and it was sometimes hard to get the club to agree with that, but it's important from my point of view that the superintendent knows what's going on with it all, not just what affects him.

Superintendents are facing increasing issues such as environmental compliance and water management, with some experiencing difficulty with greens committee managers in getting this message across. Warringah was a case in point. Are clubs starting to be more aware and getting their superintendent more involved?

That is the case and I think it's probably more the other way around. The superintendents are now getting their committees to be more aware of what their requirements are and their liabilities and the ramifications if they don't.

In the past, I think a lot of club committees were prepared to sweep things under the carpet if they didn't have a system in place, but the superintendents in my view have been the leaders in understanding the problems and bringing it to the attention and getting support at committee level.

Contract maintenance is another issue for superintendents. What are your thoughts on the issue?

I haven't had a lot to do with it, but I don't support it. I think the club needs a superintendent to be on staff and be the person that has the responsibility of looking after the golf course, whereas my understanding of contract maintenance is that you can't always get things done.

We were certainly not a supporter of that at Moonah Links. Initially there were discussions with the crew that built the course that they would stay on and do the maintenance, but we were not in favour of that and I think the way it has worked out has vindicated that decision.

Maintenance costs are rising as are many costs associated with running a golf club. Do you think clubs see their course maintenance budget as one of the main areas where they can make cuts?

I don't see it as one area they can cut back on, but obviously it's one of a number of areas that clubs are looking at saving some money. The committees are seeking superintendents to have more of an input in the area of costs and to find ways of keeping costs under control.

I don't think the major clubs have had a problem in that area and those clubs with a waiting list don't seem to have the financial strains on them than those that don't.

During your time at the AGU you have seen the rise and development of the AGCSA. How has the AGU's relationship with the AGCSA developed during that time?

I'm quite proud of the fact that we helped to get the national secretariat up and running. We hosted the office for some years to give them a start, knowing that's how we started. I was the first employee the AGU had and I knew how difficult it was to get up and running. It was a catalyst to get the secretariat on a stable financial footing before it went out on its own and I have admired the way it has progressed since then.

How do you see that relationship developing into the future?

There are a lot of issues that the AGU and the AGCSA will need to work together on. I think the major issue for the future is water. Currently there are issues at club and state level and eventually I think there is going to have to be a national approach on water, looking at the whole issue of drought, use of effluent, use of potable water and so forth. Whatever the issue, it's important that we do work together.

The Australian Open returns to Moonah Links this year. Now that the course has had a chance to mature, are you looking forward to seeing how differently it will play?

The course is a couple of years older and has settled down a lot. It was pretty good in 03 and I think it will be just as good this year. I think the major factor this year will be the weather. We were lucky in 03 with four relatively perfect days which is pretty unusual down there, although the day after the tournament finished you couldn't stand up on the first tee.

It would be nice this time to see a day that wasn't perfect to see how the players handle the course under those conditions. The course is just perfect for an Open event or any big event. We're not going to do anything different from last time but we are restricted with the weather conditions. There have been a few subtle changes to some of the greens to allow for more pin positions which will make those holes more interesting. We think we are now safeguarded if it does become really windy as far as pin placements go.

How did you feel the first Open at Moonah Links was received?

The first practice day was pretty nervous for all of us particularly coming off what happened at Victoria the year before. But when the first players started coming in and saying they thought the course was great, there was a large sigh of relief I can assure you.

I suppose there was a bit of damage done at Victoria? Does that still haunt you?

There was a fair bit of damage done that day. It was disappointing. It's easy to look back now and say maybe if we had a third party that situation may not have occurred.

Victoria doesn't haunt me. I certainly think back to it and look at things we could have done differently. I just don't think we were fully informed and I don't think the club was fully informed of what was happening, so it has to be written off to experience.

Following the drama at Victoria, the AGU is now working with the AGCSA in relation to course preparation for the Open. How important is that relationship to the future success of the tournament?

I think the arrangement has helped the AGU's image as well as the AGCSA's. I've been very happy with the way it has worked both at Moonah in 03 and last year at The Australian. It's a completely third party being involved and gives us an assurance that we've got someone with an independent view looking at things.

What it has done is give the superintendent another avenue to seek advice if they need it. I have noticed over the last couple of years with John Neylan and the superintendent, who obviously know each other well, there has been such a good relationship between them and they feed off each other which is great to see.

Would you like to see it develop into something like the USGA has in place where Tim Moraghan works up to five years out from each US Open.

I'm not sure we would ever go down the same path the USGA does. I don't think we want to make our golf courses so hard that you are on the edge the whole time. When we had that problem at Victoria I spoke to David Fay of the USGA afterwards and he said to me, 'Well I know how you feel, we have been in that position a number of times but we've always managed to get out of it', which was ▶

Phillips, pictured here inspecting the 17th at The Australian last year, believes the superintendent's role is the most pivotal at a golf club

ironic because I don't think they got out of it at Shinnecock the other year. I was on the rules committee the last time the US Open was at Shinnecock (1995) and it was very hot that weekend and I remember it was pretty close to going over the edge.

I don't think we want to be in that position. We don't want to grow rough that's unplayable six inches off the backs of greens and have greens running at 15 feet. I'm satisfied with us going in two to three years in advance and then doing the course inspections every month or so throughout the year in the lead-up to the tournament.

What is Moonah's future role with the Australian Open?

At this stage the arrangement is to host the Open at Moonah one in every three years. It's obviously better for us if we stage it at a course that we have an interest in. There's a fairly large financial saving having it down there but we will always keep the Open on a national roster.

We don't want to lose the right to play it at other major clubs around the country. I'd like to see it get to Perth occasionally and up to Queensland a bit more often, but you can't always do that because television dictates so much these days and it's not always financially viable to take it away from Melbourne and Sydney.

Turf surfaces have changed a lot over the past 30 years. What have been some of the big changes you have noticed?

Instant turf. Thirty years ago you could never go out and buy a green or buy enough turf to fix up something that had gone wrong. I recall an Open we had at Metro, I think it was 1986. Metro had two new USGA greens – one and two – but the grass just wouldn't grow.

So Kingston Heath loaned them enough to re-turf those greens about a month out. Even though it was close, we got by because they were one and two rather than 17 and 18. Then a couple of years later we had a problem at the Heath – the 17th green – and Metropolitan returned the favour. So that turf was used on two different courses at two different Opens.

I guess that greens surfaces have improved, particularly in regards to *Poa* control. The new grasses have certainly contributed to that and you are seeing a lot of courses adapting the new bentgrasses.

Have you had any interesting run-ins with superintendents over the years?

There are certainly some characters out there and I've had plenty of memorable discussions (laughs). I recently spoke at the annual dinner at Kingston Heath and recounted the story of the time when Graeme Grant was the superintendent and the course was hosting the Australian Match-play Championships.

I went out on a Sunday afternoon about a fortnight before the event just to walk a few holes by myself to see how things were going. I got around the bend to the 12th and I looked down the fairway and saw about 25 bums up in the air on the green and Graeme's standing there replacing the grass!

Needless to say we had words over that and we often had words, particularly about hole placements because he had definite ideas on things even if we had decided on something else the day before.

But at the end of the day we have always been good friends and I think it was just the way that it worked; we had some very funny times together but we also got a bit close to the bone at times.

As an interesting aside, we are looking at the possibility of an Open going to Woodlands at some stage in the future. The first time I went down there I was introduced to the chairman of the greens committee and guess who it was - Graeme Grant!

How do you view the strength of the greenkeeping profession?

I've seen a lot of good young superintendents coming on in the industry and I was very pleased this year at The Open at St Andrews to see a couple of Australians working on the crew there. It shows how well respected the industry is becoming over here.

It's great to see these young greenkeepers going to different parts of the world and working their way around. It's not only fantastic for them, but it's also fantastic for us when they come back with broader experiences.

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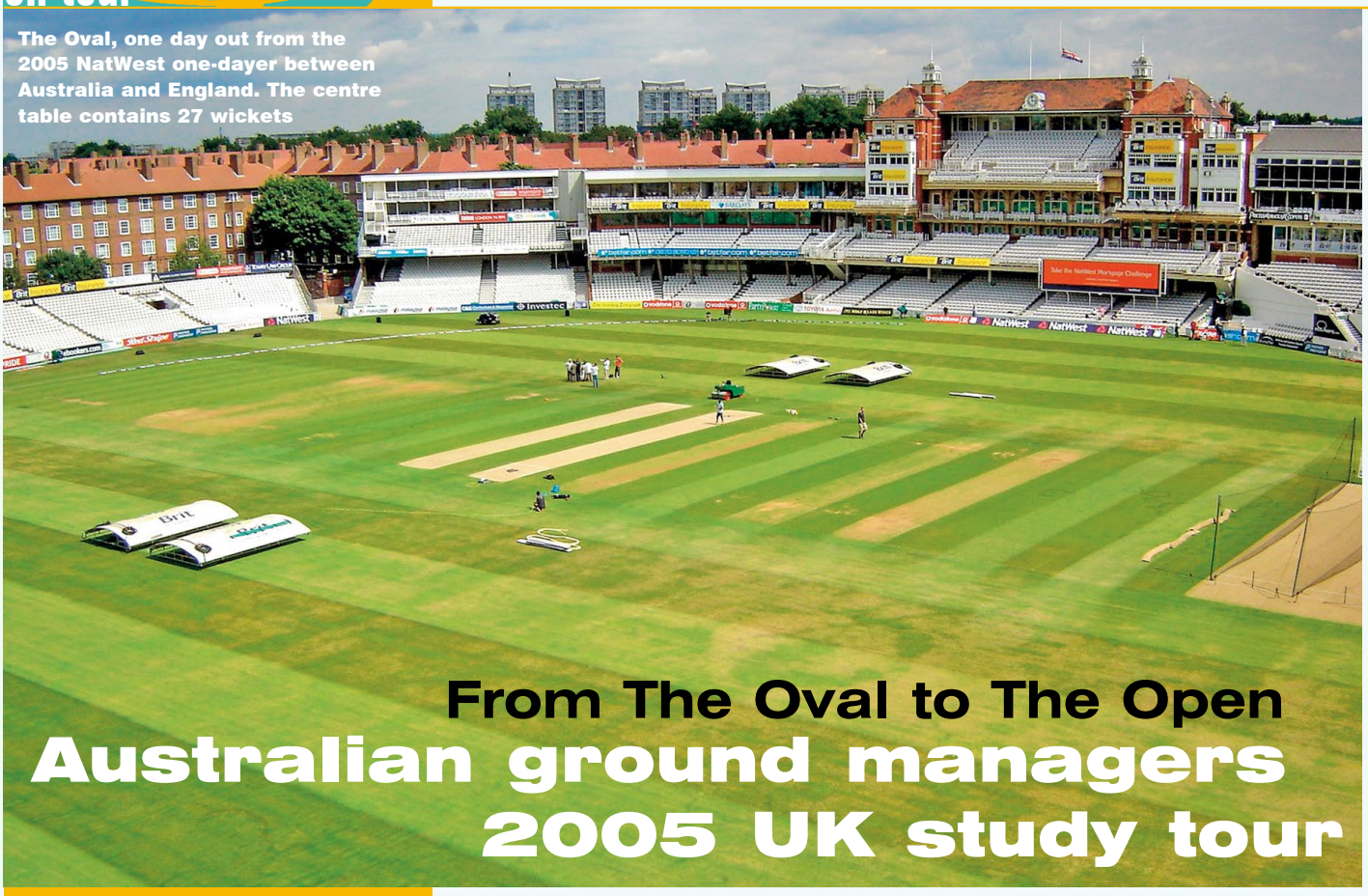

The Oval, one day out from the 2005 NatWest one-dayer between Australia and England. The centre table contains 27 wickets

From The Oval to The Open
Australian ground managers 2005 UK study tour

In July, Wesley College grounds supervisor Rob Savedra was part of the inaugural TGAA study tour to the UK which compared maintenance practices and set up future exchange opportunities. Here he provides an overview of the tour which included visits to austere Ashes venues Lords, Old Trafford, Edgbaston and The Oval.

After two years planning, during July this year three Turfgrass Association of Australia representatives travelled to the UK on the first of what is hoped to be a regular facilities and ground managers study tour.

The tour was set up to foster links with educational institutions, parks and gardens managers and elite sporting venues. By targeting various world-renowned venues the tour was able to;

- Measure Australian practices against another country's schools, venues and research facilities;
- Provide a balance between educational and management content;
- Create a foundation for continued exchange opportunities; and
- Learn and implement ideas picked up from the study tour.

After launching the tour at the 21st Australian Turfgrass Conference in Melbourne, three people accepted the invitation – Rob Savedra (grounds supervisor Wesley College, Melbourne), Bill Sciarretta (facilities manager Scotch College, Melbourne) and Warwick Starr (Parks and Gardens, Bankstown City Council, Sydney).

The timing of the trip could not have been better. Wimbledon had just finished, The Open Championship at St Andrews was being played, while Australia was in the middle of The Ashes tour. The trip also coincided near the end of the British school year as well as the International Turfgrass Research Conference.

Among the venues visited were Lords, The Oval, Old Trafford, Edgbaston, Headingly, St Andrews, Wimbledon, Twickenham, Stowe School, Rugby School, Haileybury College and the Cranfield Soil Science Laboratory.

ASHES VENUES

One of the highlights of the tour was taking in the various cricket grounds playing host to the 2005 Ashes series. And considering the dramatic way in which the Tests unfolded, we can look back at being there during one of the most riveting Ashes series ever.

OLD TRAFFORD

Flying into Manchester, our first port of call was Old Trafford. After visiting Manchester United's home ground, we were taken to the cricket ground where head groundsman Peter Marron gave us a tour of the facilities.

Old Trafford has 11 on staff – five for maintenance and five for grounds with an extra to help on game days. The ground holds a capacity of 23,000 and has a 12-pitch square. Soil composition comprises a sandy loam outfield with fibresand run-ups on the practice wickets. There is no irrigation system.

Equipment included a typical assortment

of mowers, scarifiers and rollers. The new 'Hovercover', which many would have seen during the Ashes coverage, was an innovative idea; a small engine pumps the cover up and it is so light it only takes four groundstaff to guide it into position and then deflate it over the pitch. At a cost of £100,000 pounds only the elite grounds can afford it but the guys love it.

According to Peter, test wicket preparation begins seven days prior to the game, reducing the sward each day to a final height of 2mm. Peter judges rolling requirements by instinct, feel and experience. All watering is done by hand as required. Covers could be down for days leading up to the match so the pitch is close to ready well before the start day.

THE OVAL

"In affectionate remembrance of English cricket which died at The Oval, 29th August, 1882. Deeply lamented by a large circle of sorrowing friends and acquaintances, RIP. NB: The body will be cremated and the Ashes taken to Australia."

Australia's first victory on English soil over a full strength England squad back in 1882, inspired a young London journalist, Reginald Shirley Brooks, to write this mock 'obituary' which appeared in the Sporting Times.

The Oval, the scene for the fifth and fateful final 2005 Ashes Test, is situated in London's south west and is steeped in Ashes history. Therefore it was a privilege to have head groundsman Bill Gordon give us a tour of his facility just a day out from the NatWest ODI.

The Oval has recently undergone a £25 million facelift with the reconstruction of the Vauxhall end which was opened by the Duke of Edinburgh before the one-dayer.

Unfortunately, no consultation took place between the curator and project organisers during construction of the new stand so ground orientation, surface levels and practice facilities all suffered and it cost a lot of money to make the ground fit the stand rather than the other way around.

The main pavilion was lower than the new stands so the National Trust took it down brick by brick. They then built a new bottom level and replaced the original pavilion back exactly as it was, only higher to match the new stands.

The wicket block at the Oval is something to behold. The table includes 27 wickets including four practice wickets on the end. Bill, who heads a staff of six (this swells to nine on matchdays), has been involved with Surrey cricket for the past 40 years and knows The Oval like the back of his hand.

He said one of their main tasks leading up to the fifth Ashes Test was protecting the Test wicket with covers during the ODI and county fixtures to avoid damage from players and weather.

Bill said that preparation begins two weeks prior with mowing, verticutting and scarifying to remove grass from the wicket, gradually dropping the height to 2mm.

Weather permitting, Bill said he and the staff will carry out up to 15 hours of rolling to achieve a true and consistent surface.

EDGBASTON

Scene of England's dramatic two-run victory in the second 2005 Ashes Test, Edgbaston in Birmingham has a staff of six and a budget of around £85,000. The main wicket table comprises 14 ryegrass wickets, with the practice oval containing an eight-wicket table.

Head groundsman Steve Rouse is a real hands-on curator who maintains his wickets ▶

Tour party members (from left) Rob Savedra, Warwick Starr and Bill Sciarretta

at 12mm. With the Test starting on 4 August, Steve flooded the wicket on 24 July and said to achieve the desired result he must control the rate in which the wicket dries out. A series of rolling and covering when cracks appear help achieve the drying process with the gradual lowering of the height of cut down to 3mm.

In the lead-up to the Test, Steve had plenty on his plate after a mini tornado ripped through Birmingham, narrowly missing the ground but causing extensive damage to surrounding houses.

The storm brought with it torrential rain which caused surface flooding on the ground and put preparations back a couple of days. The wicket was a little greener than what Steve had hoped and as a result Ponting didn't trust it, sent England in and chased leather for the next day and a half.

LORDS

Picture perfect all year round, Lords hosted the first 2005 Ashes Test which the Australian's won comfortably by 239 runs.

We were fortunate to meet with Lords' head groundsman Mick Hunt the day prior to the Test who pulled back the covers to show us the wicket. It was remarkable how calm and confident he was ahead of the big occasion, which obviously comes down to his many years of experience.

Mick heads a staff of six with a seemingly unlimited budget. The main wicket table comprises 17 wickets, while the 'Nursery' practice facility has three main centre wickets plus two synthetics and three net facilities including a drop-in wicket area.

Lords has recently been reconstructed with fibresand at 150mm depth to cater for heavy vehicles and marquees on the surface for events and the drop-in wicket technology. It was interesting that during this reconstruction they did not take out the famous slope for the wicket table dictated the levels of the ground.

As the wickets in England are built with far less clay content than in Australia, it takes three to five years to get a new wicket consolidated enough for First Class cricket. This timeframe was not acceptable for Lords to go without cricket.

All the groundsmen at Lords cite the weather as being the biggest influence on the way the wicket will present and play. They are all confident of their techniques but this cannot happen if it is raining or if damage has occurred from earlier matches.

For further information on pitches in England and the processes they implement, check out www.pitchcare.com.

ST ANDREWS – THE OPEN

As part of any turf study tour, an opportunity to get to St Andrews is a privilege. Fortunately it was hosting The Open when we were there and through contacts at Toro, including Tim Coram at ADE Turf Equipment, the doors opened for us not only to attend the tournament but also to meet with superintendent Gordon Moir who took us on a tour of the course while the tournament was in progress.

We were shown the maintenance sheds that housed the equipment for course maintenance along with two other compounds that housed the bigger machinery including spare parts, three hydrojects and spray units. The equipment was unlimited and attended to by seven full-time mechanics.

More than 50 groundstaff oversee the five courses and this swells to 100 for the tournament, with nine solely on divot duty.

The hallowed turf of Lords the day before the first 2005 Ashes Test

Many international turf managers were included in this staff and it was nice to say hi to Michael Love from Royal Melbourne Golf Club who was working there during The Open.

During the tournament the other courses still needed maintenance and some fairways were being vertidrained. The pumphouse where the four bores join as one was fascinating, as was the idea of running the sprinkler system on fairways for as little as one revolution.

WORSLEY GOLF CLUB

In complete contrast to St Andrews, while in Manchester we stumbled across a golf course that typified a traditional English course. Designed by James Braid, Worsley Golf Club comprised pure bentgrass greens, tees and fairways.

Maintained by six staff, this little jewel has 650 members and a budget of £40,000. Superintendent Nigel Smith makes his own soil from tree litter, sand and scarifying debris to use around the course. He uses bore water that needs acid to fix pH levels and the clubhouse is a relocated cricket pavilion.

Nigel has fairy rings that telltale when it is time to feed the greens. His predecessor used this technique, so the fairy ring is estimated to be at least 50-years-old. He feeds very little with 8.5-1-2 and maintains a natural habitat as much as he can with the funds available.

Nigel typifies a passionate turf manager that knows every blade of grass on his course and works tirelessly to give his members the best possible conditions day in, day out.

THE SCHOOLS

Schools visited during the tour were those that had the most in common with Australian independent schools. We visited Rugby, birthplace of rugby union, and Stowe, both highly regarded and steeped in history.

Rugby School, established in 1557, moved to its current location in the 1800s. Rugby is co-ed with 800 students, of which 65 per cent are boys, and sits on more than 112 hectares plus London estates. It has 12 boarding houses and two-day houses plus 75 dwellings in the town of Rugby for staff residences. The head groundsman gets a house in the town.

The number of sports pitches were impressive. They include rugby (11), cricket (7), soccer (11), hockey (2), lacrosse (1), rounders (4), softball (2) and volleyball (2). The facilities are managed in-house with a five manager system including architect, estates manager and project manager.

Under these managers are 18 groundstaff and 12 maintenance staff. All maintenance includes the school buildings and staff dwellings around town. The groundstaff are broken into grounds and gardens, with gardeners being issued with one boarding house each to care for the gardens and helping the Housemaster.

Over 7000 annuals are planted in gardens, hanging pots and planter pots throughout the school. Line marking of all the grounds is time-consuming as is mowing and the travel time of getting to and from locations.

Stowe School is located at the site that was owned by the Duke of Buckingham. Built in 1650, the school is on 295 hectares. As the National Trust oversees the entire site, Stowe School management are responsible for about 74 hectares. The school has a nine-hole golf course that has 300 members.

A groundstaff of 10 maintain 13 turf fields, 10 synthetic tennis courts and a synthetic hockey field. During summer months the groundstaff work seven days a week. With covers for cricket and greens mowing for golf, it is not uncommon for them to work 12-hour days all week.

The site used water from its own lakes that make up part of the golf course and school grounds. The buildings are heritage listed and are currently going through a £42 million restoration over the next 10 years. However, with the announcement that London was to ▶

host the Olympics, this funding may now be diverted.

Stowe hosted the British Grand Prix ball on its oval and hired out the entire boarding facility to media, catering and ancillary staff as the Silverstone track is just down the road. This brings in good money for the school which has a recurrent budget of about £60,000 pounds, £20,000 of which is for the golf course along with a further £38,000 in capital items.

Mowing is an obvious issue along with line marking and tree maintenance around the facility. As the public come to tour both buildings and grounds, issues associated with public liability are always hovering.

Stowe is a truly magnificent school and the stories associated with its maintenance and upkeep are too numerous to portray in this overview, especially the house set aside for the school beagle keeper!

The final school we visited was Haileybury College. Established in 1858, Haileybury took over the land and buildings of the East India Company training academy. It has a sports academy with state of the art pool, indoor sports centre and huge grounds.

Every staff member is offered dwellings on site. The grounds are vast and there is land everywhere for future development such as a synthetic track and soccer pitch. When we were there they had just renovated the main rugby pitch the day before and had spent most of the day hand-picking the stones out of the topdressing.

It just goes to show that issues are the same in turf management everywhere. Some simple things end up costing time and give unnecessary angst. The renovations included a heavy scarify, seed and topdress much the same as here following the winter rigours.

The schools on the whole had quite similar

The Oval's head groundsman Bill Gordon takes time out ahead of the ODI.

hierarchical structure, turf management teams, budget and philosophies. The issues were the same - vandalism, rubbish, security, worker wellbeing and appreciation of commitment by groundstaff. Even though these underlying factors were similar, it was well worth the visit and we can still take away many ideas to implement here.

CONCLUSIONS

It was evident that many of the same issues transcend the globe as far as turf management is concerned and the tour proved to be a real eye-opener on how they prepare turf surfaces in the UK.

It was obvious the weather dictates the level of success a consistent and fair surface brings for each event and therefore their covering systems are revolutionary. The Blotter (super sopper) is a must for all sports facilities and most venues that can afford it have one or two.

Across the board, golf, tennis, cricket and rugby don't seem to fertilise as often as we do. Considering the intermittent rain received and the leaching of nutrients, we expected most grounds to be lush green and slow. In fact they were lean and quick.

The clay content of UK wickets is around 30 per cent so any damage from skidding and divots cause major problems and the areas must be patched up. The issues associated with low clay content on the wickets include cracking, spooning, layering and thinning grass. The wickets deteriorate quickly and can only be used once for a four or five day game. If plating occurs, the roots of the grass are literally torn off and full renovation has to be done to fix the wicket for the following year.

As there is no couchgrass used on the wickets, the ECB is constantly funding research into superior varieties of superfine ryegrass that have little or no crown on the surface to affect ball deviation.

The lack of irrigation if any on some major venues surprised us. With our water management issues so prominent in Australia, the English don't need to worry about such matters and are happy moving travellers if needed at all.

One main point highlighted by all the curators and groundstaff was the level of scrutiny the media pays to their craft. SkyTV shows most major sporting events including county matches, 20/20 matches, golf, tennis and rugby. The pressure the groundsmen are under to produce an optimum facility under any circumstances has become so important to each club. The money involved is enormous and there are many venues vying for an opportunity to host these 'earners'.

Many people are now involved with the way the turf is to be prepared for different reasons and the curator just tries to do the best with all those interests at heart.

In true groundsman spirit they just get on with the job and do their very best.

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THE PULSE

This edition of ATM marks the start of a regular opinion section where we pick the brains of five members of the industry. To kick things off we have come up with a topic which constantly polarises opinion – contract maintenance. The question posed was – "Is contract maintenance the big threat to the industry that many make it out to be, and how does this perceived threat affect the way you conduct yourself or your business?" Here are their responses.

Brad Sofield
President GCSAWA, Supt. Gosnells GC

I think in Western Australia the threat from turf maintenance contractors based here, offering total contract maintenance, is minimal. We have a few local companies offering legitimate contract services for golf courses, including renovations and construction, but to date no contracts for the maintenance of private golf clubs. I am positive this scenario could easily change. Golf clubs in WA have been receiving business profiles from a particular eastern state company for over a year now with little result. But we do keep a close eye on their performance nationally.

My opinion is that in WA our private clubs are maintained in accordance with strict regulated budgets. Are there the margins available within tight budgets for contractors to be financially successful while value adding to the presentation of the course, as well as realistic cost saving for clubs under such contracts? I don't believe so.

Most superintendents have been proactive in highlighting the sound benefits of in-house maintenance to managers, and I believe they appreciate the flexibility maintenance and service internal course staff offer. We must be vigilant in protecting our livelihood and the best step in achieving this is to assess ourselves and our operations and make sure we maintain a professional competent standing within our own workplace and industry as a whole.

Keep the door securely locked by going above and beyond your perceived call of duty. Offer your club more than anyone else can. State based associations play a considerable role in providing a platform for members to share information and guidance on a regular basis and thus developing and securing the roles of superintendents for the future.

Cameron Russell
Toro Commercial Turf Equipment Manager

Management of a golf course is a complex relationship between the classical management of a business and the agronomical management of a green environment. Bringing these two styles together in a cohesive and co-ordinated manner is wide and varied. An ideal result can be achieved in a number of ways. Contract maintenance is one of many options. It is not for everyone, but can be of use to some courses. It is like any business that operates today. Some companies prefer to provide all services inhouse and have the ability to carry out this function in a professional manner. Some businesses will prefer to outsource.

When you outsource you must be very clear about the scope and intent of the project. There are very competent businesses that carry out these functions. There are others that offer one thing and provide something very different. As with anything, 'buyer be aware'.

It is a concern that some clubs, who undertake to have full contract maintenance, wake up in the morning and wonder what they have done. Proper research is crucial.

In short, I do not see contract maintenance as a threat. It has its place like any other businesses in other industries. Depending upon the level of commitment, good management and communication between manager and super will play a pivotal role and always win.

From our position, contract maintenance companies will always run the product for longer and will usually have less of it. This does have some bearing on re-sale values, but overall we find it has little bearing on our business. We must have the focus of a supplier of product that meets and exceeds the expectations of the purchasers, no matter what the ultimate usage is.

SYNGENTA VALUES THE OPINIONS OF THE TURF INDUSTRY AND RECOGNISES THE CONTRIBUTION OF SUPERINTENDENTS' RESPONSES WITH A $50 EDUCATIONAL VOUCHER

Scott McKay
Supt. North Lakes GC, The Golf Course Co.

The Golf Course Company designs, constructs and maintains golf courses. We do not perceive ourselves as a threat to the 'traditional' superintendent, but rather a support network to them. Without question, the complexity of a superintendent's role has increased dramatically in recent times. A super must now be well versed in industrial relations, environmental responsibility, OH&S, fiscal management, risk assessment and many other 'supplemental' areas. This is matched by the development in modern turfgrass practices.

The Golf Course Company places a great value on the inputs from staff and supers. Our sites, with regard to agronomic decision-making, are run autonomously. Budget and policy are set in consultation with the super, it is then their responsibility to implement and manage those decisions.

So, as far as The Golf Course Company is concerned, we employ supers who are charged with maintaining a golf course. The company provides the labour, capital and management framework to complete these tasks efficiently. Hardly a threat to the profession. The Golf Course Company does not actively pursue the maintenance of clubs, however we respond to requests to provide maintenance proposals.

A more accurate question may be how is it that superintendents came to think of contract maintenance as a threat? Some may argue that the performance of some supers has remained static while the demands of modern greenkeeping has increased. As golf courses evolve in their complexity to manage and maintain, clubs will be faced with two choices; take on more skilled and expensive administrators, or outsource to a company that specialises in employing the very best.

Jason Foster
Supt. Arundel Hills Country Club

There is probably no more contentious issue concerning supers than outsourcing. I can take an objective view as I have seen both sides of the coin. I worked for Pacific Golf Operations and am now super at Arundel Hills where I took over from contactors.

A lot of clubs decide to outsource for the wrong reasons. Clubs that outsource for purely financial reasons are not looking at the whole picture, but at a short-term financial fix. There are so many factors to consider with outsourcing. The biggest concern for supers is job security. If all parties are upfront and honest from the start, the process will run smoothly. Clubs who decide to outsource for financial reasons should sit down with their super and discuss where money is being spent and where it can be saved.

A contactor must have a long-term vision for the course, as we all know if you cut corners now you will pay double to fix problems later. A club that chooses to outsource for the right reasons should not have this problem. Clubs who outsource will also have less admin costs, and for those who include machinery, less overheads. In saying that, the best advice I can give is if you have decided to outsource and sell all your machinery - don't. Put all your equipment into storage for a year and have a get out clause, just in case.

Outsourcing is here to stay. There are contractors out there looking to make a fast dollar without any concern for the industry, but there are contactors who are raising the bar. As supers, we can never let our guard down. Stay up to date with industry trends and never get complacent. If you do this your course should always be perfect and your club should never have a reason to look elsewhere.

Dennis Newcombe
General Manager, Southport Golf Club

What is the primary objective of a golf club board? It is simple – they want to have their course presented in the best possible condition at all times and have it accessible for members as often as possible. Is this always possible and at what expense? The manager must review this every time he puts a budget together.

What does a club gain from having permanent staff to conduct maintenance? First, and most essential, they have direct control over staff. The club has a professional super who controls the way the course is maintained and presented. The superintendent and his team are very dedicated to their job and will do almost anything to keep the course in prime condition. The course is a reflection of their abilities and pride. In comparison, a club that engages a contractor to maintain its course does not always have the control it wishes. Many contractors are very skilled in their trade and are often from the industry, but do they have the same passion for the job that an employed superintendent has? Some do, but if you pick the average Joe you could have a lot of expensive problems down the track.

While some clubs have transitioned to contract maintenance the majority are remaining with status quo for good reasons and will continue to do so. However, this topic is not going to just go away and will remain a threat to the industry. General managers will continue to entertain the idea of contract maintenance as pressure comes to bear on them to continually reduce expenditure.

But be warned. Examine everything prior to making such a decision. Make sure the decision is right for all the right reasons and not just a decision based purely on financial considerations.

AGCSATech Update

BY JOHN NEYLAN

The Australasian contingent at the ITRC in Wales

In June, John Neylan was part of a strong Australian contingent represented at the International Turfgrass Research Conference in Wales. In this instalment of AGCSATech Update, he reviews the conference as well as the recent racecourse managers gathering in Ballarat.

10TH INTERNATIONAL TURFGRASS RESEARCH CONFERENCE

I was fortunate to attend the 10th ITRC which was held in the old Victorian seaside resort of Llandudno (pronounced "Klan-did-no") in northern Wales. The ITRC provides a forum every four years for turf researchers from around the world to gather and discuss recent research findings.

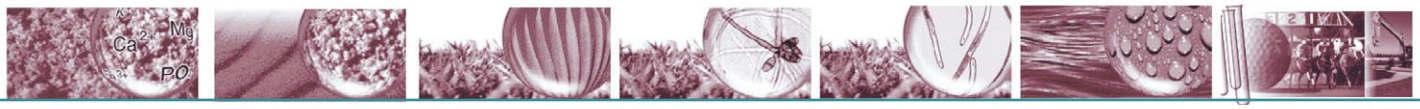
There were close to 300 registrants at the conference presenting 95 oral papers and 138 posters, all of which is published in a two-part journal. The amount of information at such a conference is quite extraordinary and with concurrent presentations running it is only possible to absorb a portion of the information presented. Australia was well represented at the conference with 15 attendees and there were seven papers and four posters presented by the Australian contingent.

PAPERS INCLUDED:

1. Comparison of the effects of potable water versus saline effluent used for irrigating bentgrass and *Poa annua* cultivars. **J. Neylan, A. Peart and D. Huff.**
2. The relationship of Australian Football League grass surfaces to anterior cruciate ligament injury. **I.H. Chivers, D. Aldous, Dr J. Orchard.**
3. Player perceptions of Australian Football League grass surfaces. **D. Aldous, I. Chivers and R. Kerr.**
4. Effect of organic amendments on microbial community activity in sand-based greens. **F. Holl, D. Aldous and J. Neylan.**
5. Taxonomy, distribution and ecology of Zoysia macranthra, an Australian native species with turf breeding potential. **D. Loch, B. Simon and R. Poulter.**
6. Morphological and developmental comparisons of seven greens quality hybrid Bermudagrass (*c.dactylon x C. transvaalensis*) cultivars. **M. Roche and D. Loch.**
7. Warm-season turfgrass diseases in Australia. **K. Bransgrove.**

POSTERS INCLUDED:

1. Can we have perfect greens all the time? **D. Barr**
2. Control of Guildford grass (*Romulea rosea*) with iodosulfuron. **J. Kaapro.**
3. Control of winter corbie (*Oncopera rufobrunnea*) in turf with the nematode Heterorhabditis Zealandica. **P. Ford and D. Nickson.**
4. Diseases in warm-season turfgrass plots in south east Queensland, Australia. **K. Bransgrove.**



In addition to the traditional topics of plant breeding, soils, pest management and weed science, there were also three specific themes for the conference.

- Turf management with no pesticides;
- Non-turf sporting surfaces; and
- The impacts of turf in the current urban environment.

TURF MANAGEMENT WITH NO PESTICIDES

This was a particularly interesting topic as the world continues to face the prospects of maintaining turf without traditional pesticides, with a number of European countries already highly restricted in their use.

Dr Daniel Potter, from the University of Kentucky, spoke on alternatives to the use of synthetic insecticides for the control of insect pests. One of his central themes was plant health and managing the soil/plant environment so that it does not favour insect pests.

In particular, he discussed the importance of irrigation management and keeping the soil relatively dry during the egg-laying phase of soil-inhabiting insects. Nitrogen management was also considered to be a key in not having the turf too lush and soft and therefore easily attacked by sucking and chewing type insects.

The development of insect-resistant turfgrass cultivars is seen as a good prospect, however, there is little or no natural plant resistance to root damaging insects.

Endophytes in turfgrasses, and in particular ryegrass, have provided improved resistance to particular pests and are also seen as a longer term alternative. However, endophytes are limited to particular turf species and pests.

Dr. Potter discussed the use of biological alternatives and manipulating the natural predators that exist in turf systems.

This requires a greater knowledge of natural predators and to avoid applying an insecticide that will kill these natural predators. Biological insecticides such as bacteria, entomopathogenic nematodes (EN's) and fungi are all possible alternatives.

EN's have been proven to be very effective, however, Dr Potter indicated that there have been problems with turf managers using them appropriately. Biological alternatives are certainly seen as the long-term alternative to synthetic pesticides but are unlikely to provide the same level of control.

Dr. Bruce Clarke, from Rutgers University, spoke on the alternatives for managing turfgrass diseases without protectant chemicals. He discussed the concept of Integrated Disease Management (IDM) by reducing the use of fungicides, increasing the diversity of soil micro-organisms and minimising the non-target effects of disease control strategies.

The main concept of an IDM program is to improve plant health and to reduce plant stress by reducing mowing frequency and increasing the height of cut, improving cultivation programs, improving turf nutrition (i.e. better control of N, using acidifying sources of N, applying manganese for the control of Take All patch) and re-evaluating the use of growth retardants and pre-emergent herbicides which can reduce the disease resistance of turf.

The use of biological agents was discussed, however, at this time there has been a low adoption rate because it requires turf managers to be more attentive to fungicide selection and disease monitoring.

Dr. Bert McCarty, from Clemson University, discussed the management of weeds using non chemical alternatives. While there are alternatives, the opinion was that the effects are variable and can cause turf damage.

Dr. Frank Rossi, from Cornell University, described the trials he has been undertaking on one of the golf courses at Beth Page. He has six treatments, replicated three times across the 18 greens on the golf course. The treatments vary from using biocontrols only, through to only using traditional chemicals.

The trials to date have demonstrated that a biological only approach will not work and that an approach with reduced use of pesticides will provide the best opportunity for maintaining satisfactory turf quality while minimising pesticide use.

Dr. Rossi suggested that biological alternatives such as Trichoderma for disease control should be introduced gradually, which in time is expected to reduce the overall use of pesticides. This is rather than trying to make a direct and sudden substitution and expecting the biological agent to provide the same control as the chemical alternative. He also stated that any biological program will be more labour intensive and therefore more expensive.

In summing up the presentations, there are no direct substitutes for the pesticides currently being used. Biological alternatives are variable and require a greater level of management but are expected to provide a reduction in the use of traditional pesticides.

NON-TURF PLAYING SURFACES

Non-turf or synthetic sporting surfaces are an unlikely topic at a turf research conference. However, with the improvement in synthetic surfaces and a greater acceptance as an alternative to natural turf, it is a topic that cannot be avoided. There were several speakers on this topic and the general consensus was that there are very good non-turf alternatives available.

Work undertaken by Dr. Stephen Baker from the STRI comparing the characteristics of synthetic and turf surfaces showed that well maintained turf and non-turf sportsfields are very comparable. His work also demonstrated a dramatic improvement in the playing characteristics of synthetic surfaces over the past 10 years.

A common message from all speakers was that synthetic surfaces are only as good as the installation and on-going maintenance. Poor installation and in particular poor levels can result in a potentially dangerous and unplayable surface.

The other strong message was that on-going maintenance is absolutely critical. In fact, unless the manufacturer's strict maintenance program is adopted, it may result in any warranty being voided.

THE IMPACTS OF TURF IN THE URBAN ENVIRONMENT

There were several papers presented on this topic relating to the use of fertilisers, pesticides and irrigation in the urban area and particularly the home garden. The general theme was that the urban environment is potentially a greater polluter than professionally maintained turf surfaces and this is primarily due to a lack of training and expertise among home owners in maintaining their lawns.

More significantly was a paper presented by Dr D. Park form the University of Florida on the research they have undertaken comparing the water use of landscaped areas (eg trees, shrubs etc) and lawns. In Florida, 30-70 per cent of potable water is used for landscape irrigation and lawns have generally been seen as high water users. In this study, it was observed that many so called low water use and drought tolerant shrubs and trees were greater water users then a well established lawn.

The research demonstrated that as the trees and shrubs matured they used more water compared to the adjacent Buffalograss (*Stenotaphrum spp.*) lawn. It was also ▶

BY JOHN NEYLAN

PHOTO COURTESY OF ALISTAIR DOWIE, TURFCRAFT INTERNATIONAL

Rhizomatous tall fescue from the trial plots at Bendigo Race Track

interesting to note that if the shrubs and trees were placed under water stress they suffered considerable (and potentially permanent) damage compared to the lawn area.

OTHER RESEARCH PAPERS

Among the many other papers that were presented, some of the topics that were of particular interest included;

- A paper that questioned the accuracy of soil testing and whether you should try to make a literal interpretation of the results. Soil testing is a monitoring tool for interpreting trends over time and not the absolute answer for determining fertiliser requirements.
- Plant tissue testing was discussed as a more useful tool for determining plant nutritional requirements.
- There was a paper on the evaluation of controlled-release fertilisers that indicated that they may not always provide the expected longevity, particularly in warm and humid climates.
- Organic fertilisers made from a range of waste products are being evaluated and the evidence to date does not indicate that they are any better or worse than the non-organic alternatives.

GOLF COURSE VISITS

During the conference there were several field trips organised where two golf courses were inspected. These were Heswall and Brombrough golf clubs which are located on an area of land between the rivers Mersey and Dee and the Irish Sea to the north west. This area is called the Wirral and with water on three sides it provides a unique climate where the winters are less severe.

Heswall is an interesting course where the front nine is typical links and is on the shores of the Dee River while the second nine is typical parkland. The most interesting aspect of this course is the native bentgrass and fine fescues that dominate the roughs and are the predominant species on the fairways.

Brombrough is a typical parkland course and has recently reconstructed all 18 greens to USGA specifications. It was interesting to note that there had been a week of warm weather (high 20's) and course staff were busily hand watering and treating localised dry spot with wetting agents. The greens were predominantly *Poa annua* and the fairways were a mix of bentgrass, fine fescue, ryegrass and *Poa annua*.

SAGCSA/GMA SEMINAR

I recently attended the annual SAGCSA/GMA seminar where golf course superintendents and their managers get together for two days of presentations, discussions and workshops.

I was fortunate to share the floor with John Odell (Royal Sydney) who spoke on managing upwards. It was a most interesting insight into how to develop a good working relationship with your general manager, greens chairman and president and how to "sell" your ideas up the line of management.

One key message that I took from the presentation was that instead of grizzling about how bad things are in dealing with management, you need to establish a strategy of co-operation.

I spoke on cost versus quality, looking at the importance of balancing expectations and reality, benchmarking your golf course and identifying its strengths and weaknesses and developing a course presentation document on which the maintenance standards and budgets can be based.

It was terrific to see the managers and superintendents in the same forum as it provides a great opportunity for both sides to discuss issues from both sides of the fence. I would strongly recommend that all states follow South Australia's lead.

RACECOURSE MANAGERS' CONFERENCE

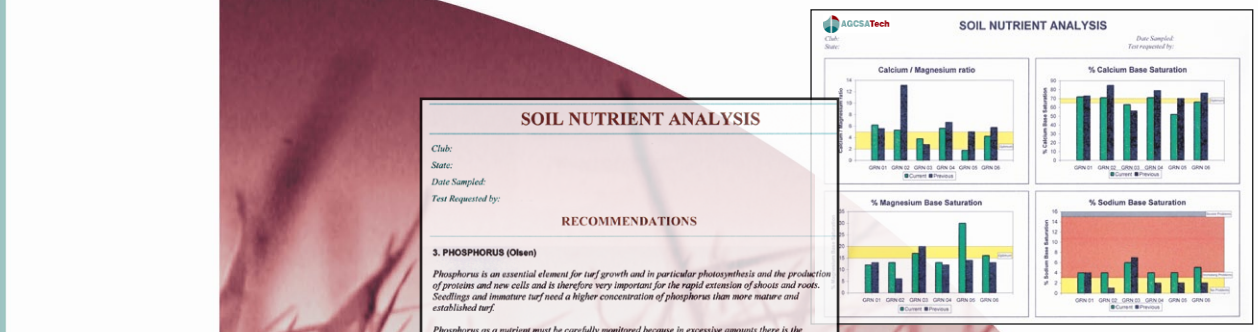
I was pleased to attend the Racecourse Managers Conference at Ballarat in August after a five-year absence. It's an event that I was involved in at its inception and it is pleasing to see how the event has evolved and particularly with the formation of the Australian Racetrack Managers Association.

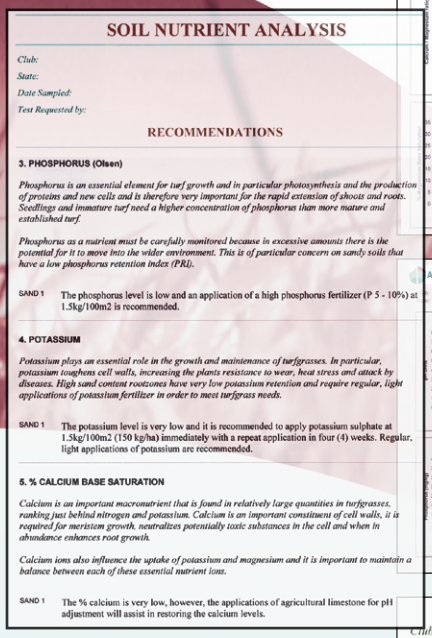
During the conference there were animated discussions that evolved around monitoring racetracks and in particular how to determine the "going". It is obvious that the lack of research data is inhibiting any resolution of these issues and the racing industry is being challenged to invest more money into research.

As with the turf industry in general, the demand for knowledge and resolution of problems in the racing industry is again being driven by the practitioners. The challenge then becomes one of selling the importance of undertaking this basic research to the administrators.

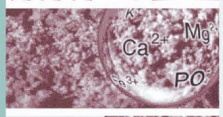
During the conference we had a track inspection at Bendigo Race Track where track manager Bernard Hopkins is presenting a high quality racing surface despite some challenging soil issues. During the visit we inspected the tall fescue plots that he had established and it was particularly interesting to observe the rhizomatous tall fescue and how it was spreading out from the edge of the plot (see photo).

Bernard was the Victorian winner of the Racetrack Managers Award with Lindsey Murphy (Rosehill and Canterbury) taking out the national award. Congratulations to them both.

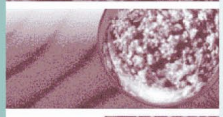





Research



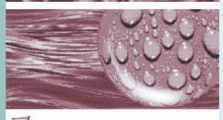
Soil Nutrient Analysis


Soil Physical Analysis

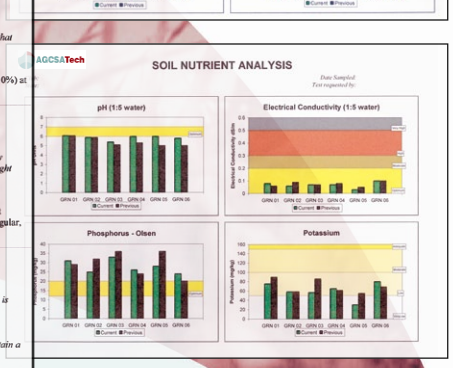

Plant Tissue Analysis

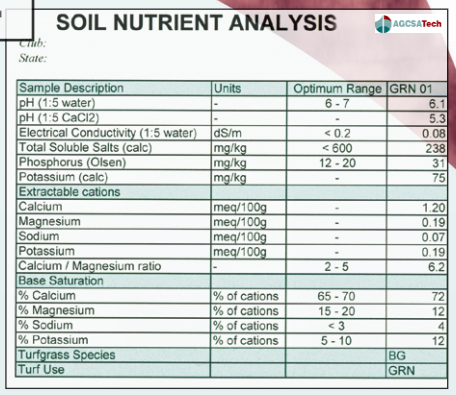

Disease Diagnosis


Nematode Diagnosis


Water Analysis


Advisory Services





SOIL NUTRIENT ANALYSIS

AGCSATech

Club:
State:

Sample Description	Units	Optimum Range	GRN 01
pH (1:5 water)	-	6 - 7	6.1
pH (1:5 CaCl2)	-	-	5.3
Electrical Conductivity (1:5 water)	dS/m	< 0.2	0.08
Total Soluble Salts (calc)	mg/kg	< 600	238
Phosphorus (Olsen)	mg/kg	12 - 20	31
Potassium (calc)	mg/kg	-	75
Extractable cations			
Calcium	meq/100g	-	1.20
Magnesium	meq/100g	-	0.19
Sodium	meq/100g	-	0.07
Potassium	meq/100g	-	0.19
Calcium / Magnesium ratio	-	2 - 5	6.2
Base Saturation			
% Calcium	% of cations	65 - 70	72
% Magnesium	% of cations	15 - 20	12
% Sodium	% of cations	< 3	4
% Potassium	% of cations	5 - 10	12
Turfgrass Species			BG
Turf Use			GRN


John Neylan and Andrew Peart

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Castings are a result of excretions from worms that are most prevalent during the winter months

Unearthing a menace

Earthworm castings can be a small yet frustrating maintenance issue to deal with for the superintendent. In this instalment of Tech Talk, Andrew Peart digs beneath the surface to shed some light on the often-asked question: Earthworm – friend or foe?

With the passing of another winter, once again many superintendents faced the backlash from members playing off dirty lies, not from bare ground but from an abundance of worm casts littering their fairways.

Castings are a result of excretions from worms that are most prevalent in the winter months. Not only are they a frustration to golfers but a management issue for ground staff. Are these macro-organisms a real benefit to the soil profile or simply a pest that seem to cause an annual disruption to the playability of golf course fairways.

SPECIES

There are reportedly about 6000 species of earthworms worldwide and an estimated 1000 species native to Australia and about 80 species that are introduced. Of the 6000 species there are 20 families of which three make up earthworms native to Australia and eight in total that represent both native and introduced species.

One of the most common native earthworms in Australia may well be the Gippsland Giant earthworm, *Megascolides australis* growing up to 3 metres in length.

Some of the introduced species are from the family Lumbricidae that are native to Britain and countries in North America and Asia. Earthworms from this family are known as 'peregrine' species because of their ability to travel from place to place. *Lumbricus terrestris,* known in North America as the night crawler, is often presented in Australian schools as a typical example of an earthworm.

Native earthworms are found more readily in undisturbed environments whereas the introduced species tend to dominate disturbed habitats such as home gardens and pastures.

HABITAT

Earthworms live in burrows because of the requirement for moisture to enable them to breathe. They do not have lungs but instead breathe through the skin and in order for gaseous exchange the outermost layer of an earthworm is very thin and must be kept moist.

The golf course fairway therefore provides the ideal environment for earthworms due to the constant irrigation that maintains soil moisture as well as a constant food source. The turfgrass canopy also provides insulation to help maintain a relatively constant temperature protecting the earthworm from extreme weather conditions.

The earthworm only emerges at night when the evaporating potential is low but retreat deep underground during hot dry weather. Light sensitive tissues near a worm's head enables them to detect light and therefore avoid venturing out during the day.

BURROWS

Earthworms tend to have two types of burrows, temporary and permanent. Temporary burrows are made by the earthworms when moving from one feeding site to another. Permanent burrows on the other hand are the earthworm's home which are usually more extensive and are open to the surface.

This allows the earthworm to select the most favourable microenvironment for feeding, such as moisture content and soil temperature.


Castings can lead to unsightly fairways

Permanent burrows are regularly cleaned or rebored to remove castings, organic matter or soil that has washed into the burrow.

CASTINGS

Earthworms cast for two primary reasons. Firstly, they must excrete the left over material after ingesting soil and organic matter for nourishment. Secondly, due to living in permanent burrows they ingest any deposited soil from washing after heavy rains to clean out their burrow.

Backman 1999, reports that fairways are often established on heavy soils that are more prone to compaction, which forces *Lumbricus terrestris* to expel the majority of their castings on the surface instead of in the voids within the soil.

BENEFITS

Some of the reported benefits to the soil from earthworm activity include;

- Initiation of thatch decomposition;
- Stimulating microbial activity;
- Releasing certain plant nutrients;
- Increasing soil aeration; and
- Increasing infiltration rate (Backman, Miltner, Stahnke & Cook 2002).

ELIMINATING CASTING

With the banning of Chlordane, a previous effective worm killer, there are few pesticides effective at severely reducing earthworm numbers and subsequent castings (Baker, 2002). However, with a greater emphasis on environmental issues today the use of pesticides to control earthworms may not be viewed as an appropriate method to reduce castings.

There are many hypotheses on minimising earthworm numbers and castings through the manipulation of the soil environment. These have included soil pH, food supply and topdressing. Backman et.al. 2002 and Baker 2002, reported on experiments undertaken investigating soil pH, clipping removal while Backman et. al. 2002 also investigated the use of sand topdressing on the effect on casting.

Backman et.al. 2002 reported that the effect of clipping removal from turf showed no sign on reducing earthworm casting caused by *L. terrestis* after two years. The spring and autumn hollow-core aeration treatment also had no effect on casting after two years.

Baker 2002 reported that collecting clippings consistently reduced the rate of casting by nearly 30 per cent over the whole year compared to the areas where clippings were not removed.

Backman et.al. 2002 reported that applications of ammonium sulphate, ferrous sulphate, dolomitic lime and Nitroform had no impact on casting after two years from the acidification of the soil in the 0-2cm and 2-6cm range of the soil profile. Likewise, an increase in casting was not observed due to heavy lime applications.

Baker 2002, however, reported that sulphur applications applied to a clay loam in an aqueous suspension reduced castings one year after the initial application by 48 per cent. It was also reported that on a sandy clay loam with an initial pH of 5.7 a total application of 65g/m^2 of sulphur and 360g/m^2 of aluminium sulfate applied in four dressings was sufficient to reduce castings by 50 per cent.

Backman et.al. 2002 observed the effect of sand topdressing on earthworm casting. It has been reported that the abrasiveness of sand particles and its susceptibility to drought can influence casting. Three treatments were established of 38, 19 and 0mm per year, applied over six equal applications from 30 May to 22 August. Results were taken in September 2000, October 2000 and March 2001. The high sand plots had significantly less casting than the low sand plots and the control on all three occasions.

CONCLUSION

While earthworm castings can be detrimental to turfgrass surfaces, particularly heavy textured fairways, over the winter months they tend to provide far more hidden benefits.

Research has been done to manipulate the soil environment through cultural practices in an attempt to reduce the severity of casting. Results have shown contradictory results and may well be dependant on the species of earthworm present.

It must be remembered that conditions that favour earthworm activity are the same as those that favour excellent plant health and by manipulating the soil environment to discourage earthworm casting may be detrimental to the overall plant health and other soil micro-organisms.

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The research objective at Michigan State was to determine if modifying the rootzone depth increases soil moisture uniformity across the slope of an undulating USGA putting green

The effects of rootzone material and depth on Moisture retention in sloping USGA greens

Research was undertaken at Michigan State University to determine if altering the rootzone depth of a USGA spec green – decreasing it in high areas and increasing it in low areas – increases soil moisture uniformity across the slope of an undulating putting green.

The USGA introduced guidelines for constructing putting greens over 30 years ago and since then the USGA green has become the standard. The concept behind the USGA recommendations is to build a green that provides a measure of resistance to compaction in the rooting zone and drains quickly to an optimum soil moisture level.

Specifications for a USGA green require that the sandy rootzone mixture be at a uniform depth of 300mm plus or minus 25mm across the entire surface.

If greens lacked slopes there is little doubt that most, if not all, USGA greens would perform well. However, with the slopes present on greens today, USGA greens do not always perform ideally.

USGA spec greens function very well on a level surface (Taylor et al., 1993); however, when the green has undulating areas, moisture extremes in the rootzone can lead to turfgrass decline (Prettyman and McCoy, 1999). Two conditions associated with this are localised dry spot (LDS) and black layer.

Moisture extreme problems on USGA greens could be attributed to the uniform depth of the rootzone layer. In theory, on a level surface, there is minimal lateral flow of water within the rootzone and the green drains at a uniform rate.

However, Nektarios et al. (1999) has shown that drainage in the rootzone is not always uniform. In an unsaturated putting green rootzone, water does not drain from the rootzone into the gravel layer, thereby allowing water to move laterally along the rootzone/gravel layer interface to lower elevations in the green. The resultant problems associated with this down slope water movement are particularly evident at the higher elevations of the green where hand syringing is often necessary to prevent turf loss.

Research was initiated to investigate if altering the rootzone depth, decreasing it in high areas and increasing it in low areas, will increase the water content near the soil surface in high areas and decrease the water content near the soil surface in low areas. Our research objective was to determine if modifying the rootzone depth increases soil moisture uniformity across the slope of an undulating USGA putting green.

MATERIALS AND METHODS

A sloped USGA green was constructed at the Hancock Turfgrass Research Center at Michigan State University in 1998. The green was designed for monitoring the down slope movement of water in the rootzone. Time domain reflectometry (TDR) instrumentation was installed to monitor soil volumetric water content (VWC).

The green was constructed with a summit 0.37m in height, with two downhill slopes of different magnitude (Fig. 1). The peak of the summit was constructed 7.9m from the northern edge of the green, and 16.7m from the southern edge. North of the summit, the green had a seven per cent slope (north slope) to the level north toe slope. South of the summit, the putting green had a gradual three per cent slope (south slope) to the level south toe slope. These gradients were chosen to represent average and extreme slopes that occur on modern greens.

The green was divided into 12 plots, 2.4m wide and 24m long. Six test plots were built to standard USGA specifications consisting

of a uniform depth (300mm) rootzone. The remaining six test plots were built with variable depth rootzone – 200mm at the summit and gradually increasing in depth to 400mm at the toe slopes (Fig. 1).

Three rootzone mixes were used in the construction of the test plots. Four plots of each construction method (standard or modified USGA) were built with a sand rootzone, four plots were built with an 85:15 sand/peat (reed-sedge) rootzone, and four plots were constructed with an 85:15 sand/soil rootzone.

Prior to construction, rootzone materials were tested for particle size distribution, organic content, and soil physical properties following USGA guidelines. The sand/peat rootzone mix conformed to USGA specifications but the sand/soil and sand rootzone mixes did not conform (Table 1). The sand/soil rootzone did not conform because of particle size distribution. The sand rootzone mix did not conform for hydraulic conductivity and per cent capillarity.

After the construction of the green, 108 TDR probes were buried to measure volumetric soil moisture at four locations within each plot – probe location 1 at the base of the north slope, probe 2 at the summit, probe 3 at the base of the south slope, and probe 4 in the middle of the south toe slope (Fig. 1).

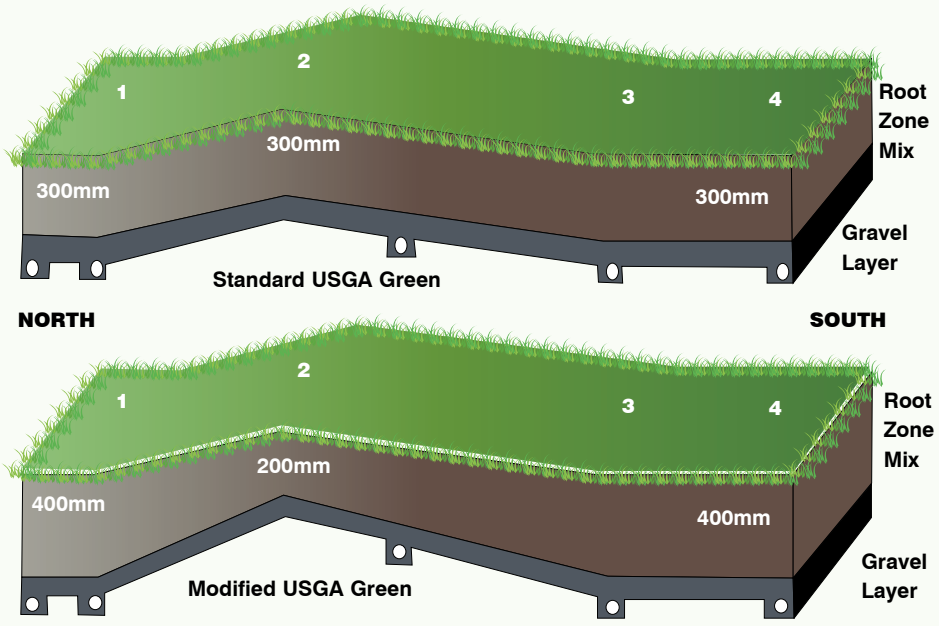

Figure 1. Cross section three-dimensional view of standard and modified construction types with TDR probe locations (1-4)

The TDR probes were positioned in the soil at a 45-degree angle to measure VWC at depths of 100mm-200mm, 200mm-300mm and 300mm-400mm. A hand-held TDR recorded VWC at the four locations of the surface (0mm-100mm). After installation of the probes in the summer of 1998, the green was seeded with L93 creeping bentgrass. To evaluate soil moisture relationships, the green was subjected to 'dry ▶

TABLE 1. ROOTZONE MIX PHYSICAL PROPERTIES AND PARTICLE SIZE DISTRIBUTION.

PHYSICAL PROPERTIES	USGA RECOMMENDATION*	ROOTZONE MIX SAND	SAND/PEAT	SAND/SOIL
Organic Matter (%)	1-5	1.2	3.2	2.0
Hydraulic Conductivity (cm hr^{-1})	Minimum 15	86.2	27.9	15.7
Bulk Density (g cm^{-3})	N/A	1.75	1.57	1.74
Particle Density (g cm^{-3})	N/A	2.64	2.35	2.66
Porosity:				
Total (%)	35-55	35.2	42.8	36.0
Capillary at 40 cm tension (%)	15-25	8.9	16.7	15.8
Air Filled at 40 cm tension (%)	15-30	27.3	26.1	20.2
Particle Size (mm)			**%**	
2.0 - 3.4†	Maximum	0.1	0.1	0.8
1.0 - 2.0	10	7.6	7.3	12.0
0.5 - 1.0	Minimum	26.0	25.4	24.6
0.25 - 0.50	60	45.4	46.6	36.8
0.15 - 0.25	Maximum 20	19.1	18.3	16.6
0.05 - 0.15‡	Maximum 5	0.6	1.1	1.3
0.002 - 0.05‡	Maximum 5	1.2	1.2	7.9
0.002‡	Maximum 3			

*The USGA Green Section Staff, 2004
† Maximum of 3%, preferably none.
‡ Maximum of 10% total between the three categories.

down' cycles, four cycles in each year from 2000 through 2002.

Dry down cycles were scheduled during dry periods without rainfall, and no irrigation was applied to the green. During each cycle, VWC was monitored daily. VWC was recorded at each location at depths of 0mm-100mm and 100mm-200mm. At the locations where depths were present, VWC was recorded at 200mm-300mm and 300mm-400mm.

Each dry down cycle began with uniform, healthy turf across the entire surface. To establish near field capacity soil moisture content, irrigation (25mm) was applied the night before each cycle, and the morning of 'day 0' (12.5mm). After morning irrigation, TDR readings were taken on each individual plot. The TDR readings were taken at 24-hour intervals for the length of the cycle. Each dry down cycle was ended after three or four days at which time there were visible signs of severe turfgrass moisture stress on the sand rootzone plots at the peak of the summit.

Statistical analysis was conducted independently for each day and for the measurement depths 0mm-100mm and 100mm-200mm, as these were the only depths present at each location within each test plot. Coefficient of variation (CV) was calculated for VWC data in each plot and analysed for treatment differences. The CV is a relative measure of variation in the data. For our purposes, the CV will be used to assess the uniformity, or lack thereof, in VWC across the slope of the putting green.

RESULTS

DIFFERENCES IN ROOTZONE TYPE

VWC for rootzone type, when averaged across the two construction types, was significantly different throughout the dry down cycles in 2000 and 2002. For the 0mm-100mm depth, for the majority of sampling days there were no differences in VWC among the sand/soil and sand/peat rootzones (Table 2). The sand rootzone consistently had the lowest VWC among the rootzones.

For the 100mm-200mm depth, the result was similar. There were no differences among VWC for the sand/soil and sand/peat rootzones, and the sand rootzone had the lowest VWC. The results indicate that regardless of construction type, the water holding capacity of the rootzone mixes containing soil or peat is higher than the sand rootzone. Sand rootzones with peat or soil added should reduce the extremes in VWC that are often encountered in 100 per cent sand rootzones.

TABLE 2. MEAN PER CENT VOLUMETRIC WATER CONTENT FOR THE DIFFERENT ROOTZONE TYPES.

	SAND	SAND/SOIL %	SAND/PEAT
0mm-100mm depth			
Aug. 23, 2000	15 B†	25 A	27 A
Aug. 24, 2000	14 C	21 B	24 A
Aug. 25, 2000	13 C	18 B	23 A
Aug. 26, 2000	12 C	18 B	23 A
July 23, 2002	18 C	25 A	27 A
July 24, 2002	17 B	23 A	27 A
July 25, 2002	14 B	20 A	21 A
July 26, 2002	12 B	18 A	21 A
Sept. 28, 2002	20 B	27 A	29 A
Sept. 29, 2002	16 B	22 A	25 A
Sept. 30, 2002	18 B	24 A	25 A
Oct. 1, 2002	13 C	21 B	24 A
100mm-200mm depth			
July 10, 2002	17 B	20 A	22 A
July 11, 2002	15 B	19 A	20 A
July 12, 2002	14 B	18 A	20 A
Sept. 28, 2002	18‡	20	31
Sept. 29, 2002	15 B	19 AB	22 A
Sept. 30, 2002	16	19	21
Oct. 1, 2002	15 B	17 AB	21 A

† Means in a row followed by the same letter are not significantly different according to t-test (p=0.05).
‡ Data not followed by letters are not significantly different.

Among the standard USGA greens, the sand rootzone had the highest CV, indicating that the sand rootzone green had the greatest variation in VWC across the slope of the green (Table 3). Generally, for the USGA greens there were either no differences in CV among the sand/soil and sand/peat rootzones, or the sand/peat rootzone had the lowest CV. For the modified USGA greens there were either no differences in CV among the rootzones or the sand rootzone had the highest CV.

DIFFERENCES IN CONSTRUCTION

Comparisons between the two construction types reveal that the standard USGA sand greens had a higher CV than the modified USGA sand greens on almost all dates (Table 3). For the sand/soil greens, there were no differences between the construction types in 2000, but in 2002 the modified USGA greens had a lower CV on three of four dates. The sand/peat rootzones did not have a different CV regardless of construction type. The CV data supports our hypothesis that by altering rootzone depth, the variability in VWC across the slope of the green, especially for the sand rootzone greens, can be greatly reduced.

TABLE 3. COEFFICIENTS OF VARIATION FOR VOLUMETRIC WATER CONTENT FOR CONSTRUCTION AND ROOTZONE TYPE, 0mm-100mm. ROOTZONE DEPTH.

2000	CONST. TYPE	SAND	SAND/SOIL	SAND/PEAT
		COEFFICIENT OF VARIATION		
Aug. 23: *Day 0*	Standard	31	12	9
	Modified	12	11	9
Aug. 24: *Day 1*	Standard	44 A†a‡	15 Ba	20 Ba
	Modified	20 Ab	18 Aa	16 Aa
Aug. 25: *Day 2*	Standard	38	16	13
	Modified	29	16	25
Aug. 26: *Day 3*	Standard	43 Aa	19 Ba	16 Ba
	Modified	11 Ab	17 Aa	15 Aa
2002				
July 23: *Day 0*	Standard	24 Aa	24 Aa	8 Ba
	Modified	14 Aa	10 Ab	14 Aa
July 24: *Day 1*	Standard	30	21	10
	Modified	10	12	12
July 25: *Day 2*	Standard	45 Aa	35 Ba	15 Ca
	Modified	32 Ab	19 Bb	19 Ba
July 26: *Day 3*	Standard	42 Aa	32 Ba	22 Ca
	Modified	22 Ab	13 Bb	16 ABa

† Means in a row followed by the same upper case letter are not significantly different according to t-test (p=0.10).
‡ Means in a column, for each date, followed by the same lower case letter are not significantly different according to t-test (p=0.10). Data not followed by letters are not significantly different.

TABLE 4. MEAN PER CENT VOLUMETRIC WATER CONTENT FOR THE 0mm-100mm DEPTH, 2000-2002.

	LOCATION			
DAY 0	**1**	**2**	**3**	**4**
USGA Sand	21	15	21	20
USGA Sand/Peat	30	26	28	27
USGA Sand/Soil	29	23	27	25
Modified Sand	16	17	18	17
Modified Sand/Peat	26	28	24	24
Modified Sand/Soil	24	26	22	22
DAY 3				
USGA Sand	17	7	18	18
USGA Sand/Peat	27	20	26	25
USGA Sand/Soil	27	16	24	21
Modified Sand	11	11	12	11
Modified Sand/Peat	21	22	18	19
Modified Sand/Soil	18	19	16	15

MEAN VWC: CONSTRUCTION TYPE AND SOIL TYPE

Mean VWC for all dry downs and years is presented in Table 4 and explains the differences in CV for construction and soil types. The consistency of VWC data for the modified USGA greens for all rootzone mixes is clear. On day zero, the greatest difference in VWC among sampling locations for all rootzone mixes within the modified USGA greens was 4 per cent. On day three, the greatest difference among sampling locations was still 4 per cent. Differences in VWC among locations remained consistent as the green dried down.

In contrast, for the USGA greens the greatest difference in VWC among locations on day zero was 6 per cent and for day three was 11 per cent. The differences between the standard and modified USGA construction types on day zero was small (2 per cent) but by day three was large (7 per cent). This data further supports our conclusions that for the modified USGA greens the VWC was more uniform across the slope of the green.

Also, the difference in VWC among the sampling locations explains the high CV of the standard USGA greens. For the standard USGA sand greens on day 3, the range in VWC was a low of 7 per cent at location 2 (summit of slope) and a high of 18 per cent at location 3 and 4 (base of south slope and south toe slope) (Fig. 2). In contrast for the modified USGA sand greens, there was only a 1 per cent difference in VWC among the locations.

CONCLUSIONS

The USGA specifications for putting green construction were designed to improve the quality of greens. Although the USGA has published several revisions, most recently in 2004, the recommendation for a uniform 300mm rootzone layer has remained unchanged. The layering of a sand-based rootzone mix over a gravel layer maintains optimum moisture across the putting green on a level-putting surface, however, in areas of undulation the uniform rootzone depth can result in moisture extremes at the different elevations.

Our research confirmed that the addition of peat and/or soil to the rootzone mix increased the water holding capacity. Modifying the depth of the sand rootzone mix greens improved the uniformity of VWC across the surface of an undulating green. When soil or peat was added to the sand rootzone mix, extremes in soil moisture content between the high and low elevations were reduced regardless of construction type.

For greens constructed with a 100 per cent sand rootzone, it would be beneficial to modify the depth of the rootzone to maintain uniform soil moisture content across the surface of the putting green. The uniformity of soil moisture content within the modified USGA greens was due to the variable depth rootzone.

Even if greens are not constructed with a variable depth rootzone this research reveals the importance of closely following rootzone depth specifications during construction.

In certain situations rootzone material might be excavated from lower areas and moved to other regions of the green to increase elevation changes. The result is the green would have a shallower rootzone depth in low areas and rootzone depths in excess of 300mm in higher areas. This research emphasises the importance of closely monitoring construction activities to ensure that at the minimum, the rootzone is a uniform 300mm depth from low to high areas.

ACKNOWLEDGEMENTS

A full list of references can be obtained from the AGCSA. The AGCSA and ATM magazine are grateful to the authors and USGATERO for allowing publication of this research (Vol 4, No. 11, June 1, 2005).

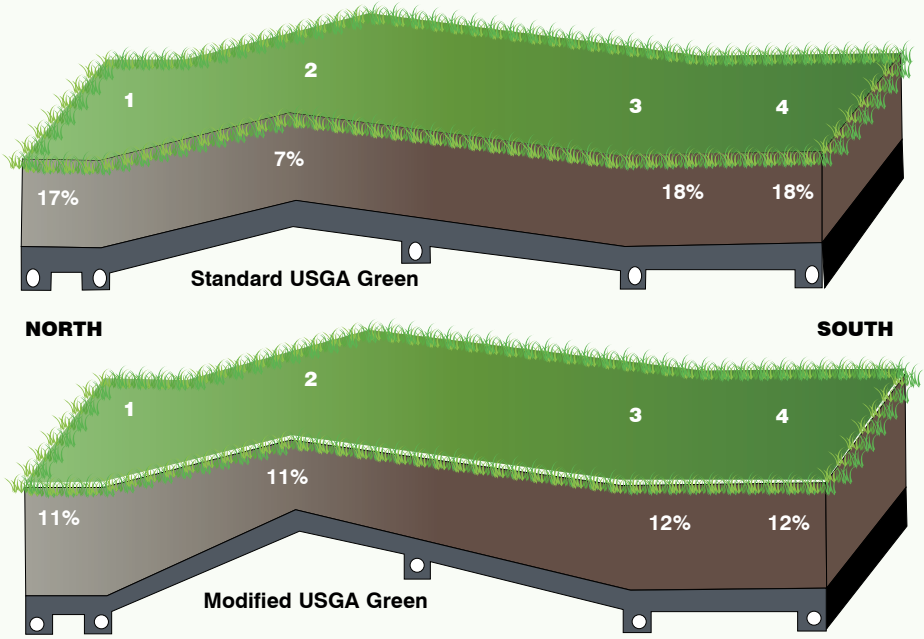

Figure 2. Mean per cent volumetric water content for the 0mm - 100mm. depth rootzone for the standard and modified USGA sand rootzone on day 3 of the dry downs, 2000 - 2002

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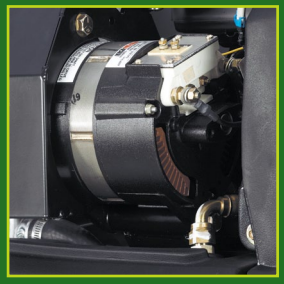

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In this current climate of water restrictions and strict water management practices, irrigation system efficiency is a crucial component for any turf facility

Irrigation efficiency of AFL Queensland grounds

Research conducted by the Queensland Department of Primary Industry and Fisheries on irrigation systems at nine AFL Queensland sports fields in south-east Queensland has discovered some major inefficiencies.

With more and more sports fields being irrigated, increasing urban water restrictions emphasise the need to irrigate in an efficient manner. An important component of improving irrigation efficiency is evaluating system performance of application infrastructure.

In a project to improve condition on community-level playing surfaces, the Queensland Department of Primary Industry and Fisheries evaluated systems on nine AFL Queensland sports fields in south-east Queensland. Underpinning the need for evaluation and on-going maintenance, we found all fields were operating at less than optimum efficiency and needed on-field maintenance.

As many curators and clubs across the country are aware, a considerable amount of money is becoming available for new turf irrigation infrastructure. State and Commonwealth bodies are administering some of the funds as grants, while improvement programs administered by local councils are also providing means to upgrade or install irrigation systems.

Considering new irrigation systems are worth $30,000 and upwards, and represent a sizeable increase in the capacity of a club to provide a quality turf surface, it is prudent to investigate the efficiency with which any new system is working.

A key set of easily made checks, most of which are components of an irrigation system audit, can help any irrigator to identify if their system is working appropriately. These checks would include sprinkler health (apparent working condition of the sprinkler), mainline/underground leakages, pressure (static and dynamic), pressure variation and head to head coverage.

A component of the joint Sureplay research project (principally funded by Horticulture Australia, Department of Primary Industries and Fisheries, AFL Queensland and Brisbane Lions) investigated the status of existing or new irrigation systems installed on nine of the 11 fields included in the overall study. The fields are community based, on which AFL (from junior to premier league) is played.

In 2004, project staff audited the field irrigation systems. The fields supplied by town water are irrigated at night to take advantage of the usually higher water pressure available after peak community usage has ceased. The audits were therefore conducted during the night to simulate normal operating conditions of the irrigation system.

To conduct the irrigation audits the research team recorded;

- The health and pressure of each sprinkler on each field;
- The static and operating mainline pressure of each system;
- The static flow rate and the flow rate of selected operating stations; and

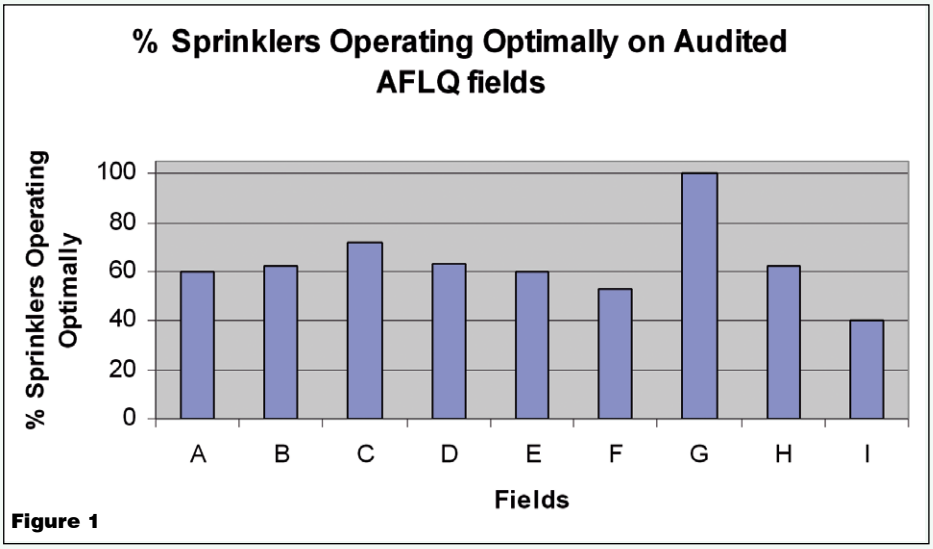


Figure 1

Figure 1. Only two of nine fields had more than 65% of sprinklers functioning optimally.

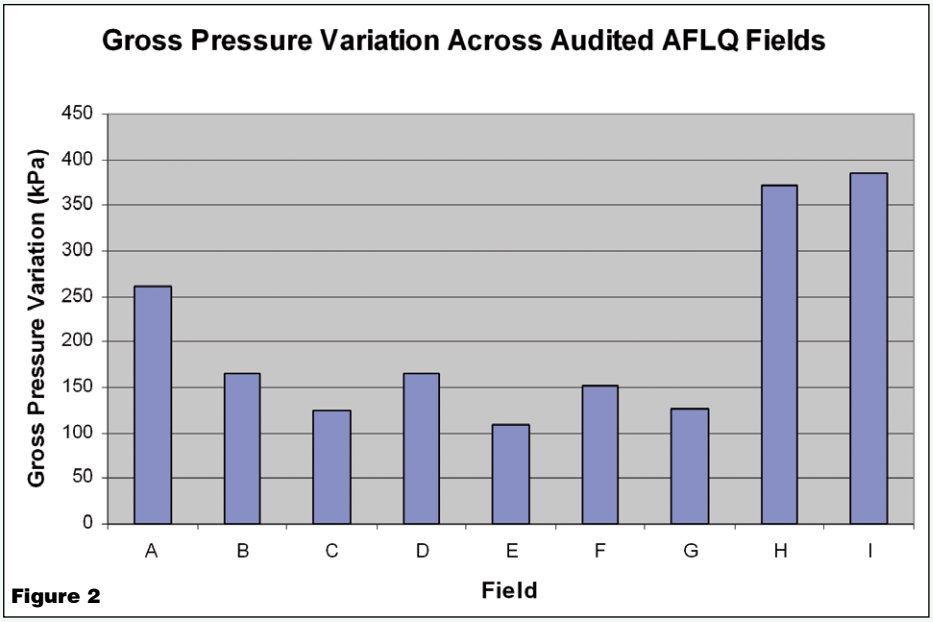


Figure 2

Figure 2. Sprinkler pressures across fields varied enormously.

- The precipitation over a defined area around a selected sprinkler (used to calculate the average precipitation rate over an area and the DU over that area).

THE FINDINGS

Our findings from auditing the nine fields are consistent with results of researchers and irrigation audit experts across Australia – most irrigation systems on community based sports fields are operating at significantly less than optimum efficiency.

A need for significant sprinkler maintenance was identified across eight of the nine fields. It was in fact unusual if more than approximately 60 per cent of the sprinkler heads were in apparently optimal working order (Figure 1). Pressure at sprinkler heads varied considerably within and between fields (Figure 2).

The percentage variation in sprinkler pressure across each field was divided between the variation due to the system design (e.g. length and size of piping, distance from mainline entry, number of sprinklers in a station) and the variation from system malfunctions (e.g. sprinklers sunken or broken, line blockages).

On most fields, the variation due to system malfunction was equal to or greater than inherent systemic pressure drops, indicating system efficiencies could be improved simply by conducting regular sprinkler maintenance checks (Figure 3).

A key consideration of system installation is the pressure available from the water source. Clearly if a pump and tank system is used, available pressure will not limit system efficiency. Where the AFLQ irrigation systems were operated on town pressure, even at night, a general lack of operating pressure was identified. The mainline supply on two of the ▶

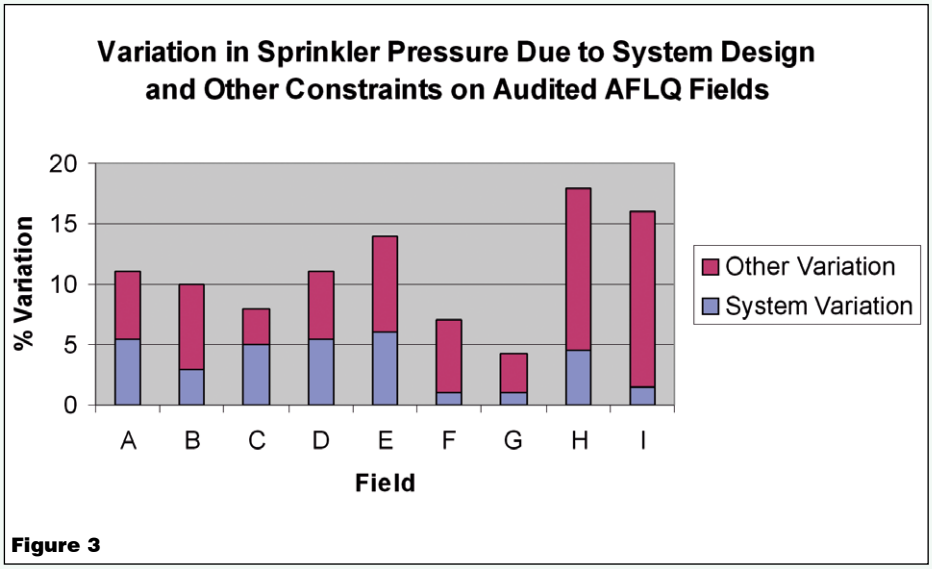


Figure 3

Figure 3. Sprinkler pressure variability due to both systemic pressure drops and individual sprinkler malfunction.

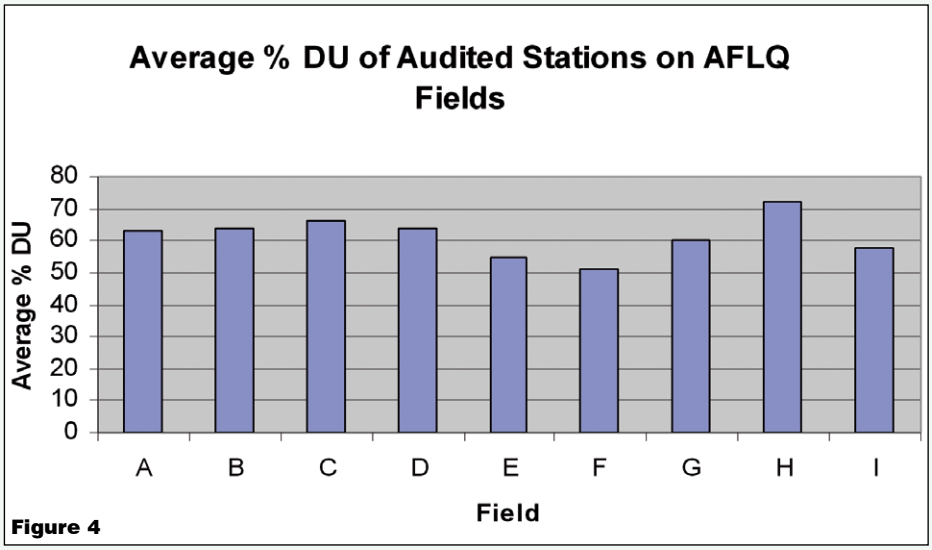
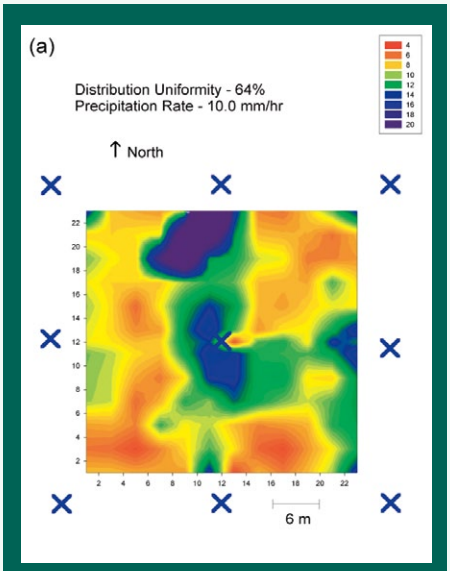


Figure 4

Figure 4. Average distribution uniformities across eight of nine fields were less than 65%.



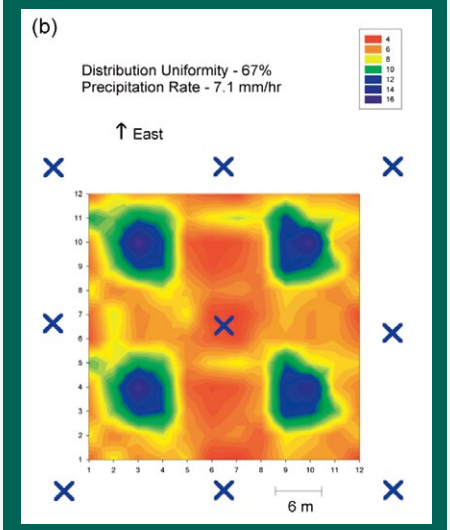


Figure 5. Precipitation patterns with (a) faulty sprinkler rotation or (b) systemic problems with sprinkler coverage.

nine fields was insufficient to raise sprinkler operating pressures to the manufacturer's sprinkler specifications. Under-pressured sprinklers contribute to low distribution uniformities and decreased precipitation rates.

Calculating distribution uniformity (DU), a measure of how evenly the water applied is distributed over the turf surface, is useful when investigating the efficiency of irrigations systems.

High DU indicates the water is being applied evenly to the surface and increases the ability of the system operator to apply specific amounts of water to their surface and to produce a surface of even quality. It is therefore accepted the higher the DU of one's system the better, though realistically a DU of 85 per cent is the highest expected DU of a pop-up rotor sprinkler system.

While it seems low, the reality is that few installed systems reach 70-75 per cent DU. The average DU values of the audited AFLQ fields ranged from 51-72 per cent, with most between 55-65 per cent (Figure 4). The irrigation system of one of these fields was only months old (DU 55 per cent), underscoring the need to check new systems.

In addition to DU, the catch can (precipitation) data was plotted to visually represent the precipitation over the area around each sprinkler. The patterns of precipitation for a dysfunctional sprinkler (ceased rotating occasionally), and systemic problems with sprinkler coverage, are clearly demonstrated in Figure 5. The plots illustrate classical dry areas around sprinklers and wet areas where all the contributing sprinklers overlap.

The Sureplay team carried out an experiment on one of the fields to investigate the effect of conducting basic maintenance (raising or straightening sprinklers) and of changing nozzles to those more appropriate to the available pressure and found doing so raised the DU from 61 per cent to 76 per cent.

CONCLUSION

Our work has shown most sports field irrigation systems are working at below capacity and would recommend conducting the key checks discussed to help identify problems or maintenance issues, to increase the working efficiency of the system, the improved distribution uniformity across the field and the subsequent quality of the field surface.

ACKNOWLEDGEMENTS

Kaylene Bransgrove is a scientist and Craig Henderson the principal horticulturist at the Queensland Department of Primary Industries and Fisheries.

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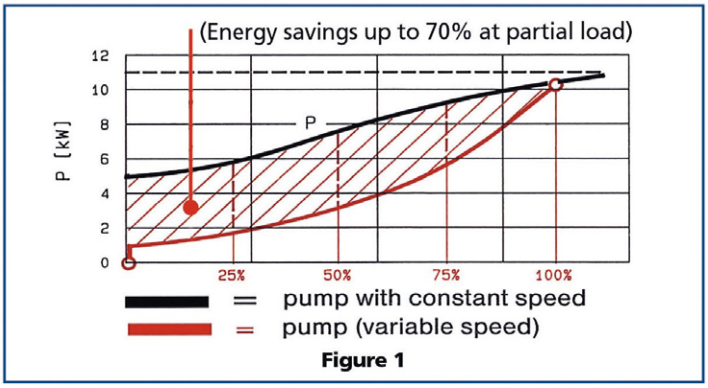

Figure 1

What is a Hydrovar?

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The water runoff research site at Oklahoma State University

Managing golf course rough to reduce run-off

Researchers at Oklahoma State University found that using vegetative buffers maintained at multiple mowing heights improved the ability to limit both nitrogen and phosphorous run-off compared to buffers maintained at a single height of cut.

There were approximately 16,000 golf courses in the United States in 1999 and on average, each course maintained approximately 14 hectares of fairways. Golfers prefer excellent playing conditions and in some cases, demand them. Therefore, golf course fairways tend to be highly fertilised compared with most turfgrass areas to promote good turf cover, high turf density, and minimal weed encroachment.

There is a slight, but nonetheless dangerous, possibility that a small portion of the fertilisers applied to these fairways could dissolve in surface water runoff and contaminate lakes, streams, and other water features. There is a need for superintendents to practice turf management procedures that can maintain adequate playability but reduce the potential for nutrient run-off.

Consequently, it is necessary for turf scientists to pursue and investigate management methods that help superintendents develop environmentally sound practices that reduce the potential for nutrient run-off.

Environmentally sound golf course management is a major factor in most superintendents' maintenance programs and the danger of nutrient run-off is small but nonetheless, present. For instance, fertilisers are not applied to saturated soil because those conditions promote nutrient losses to surface run-off. Most turfgrass sites such as home lawns and parks are not irrigated so it is a common practice to apply fertiliser just prior to predicted rainfall. This can be dangerous to the environment because the first rainfall event following fertilisation is the most likely event to produce nutrient run-off (Shuman, 2004).

Fairways, on the other hand, are usually irrigated. Consequently, superintendents do not apply fertiliser when rainfall is predicted. Instead, they fertilise during dry periods and use light irrigation to water in the fertiliser. This practice substantially reduces potential nutrient losses in run-off (Shuman, 2004).

The higher-cut golf course rough that commonly surround fairways acts as a vegetative or buffer that reduces run-off (Cole et al, 1997). Research suggests that the higher the buffer, the longer the period between rainfall initiation and run-off and the more likely that run-off will be eliminated or reduced by a particular rainfall event (Easton and Petrovic, 2004). Turf density on the fairway or in the rough also has an impact on run-off (Easton and Petrovic, 2004 and Linde et al, 1994).

Superintendents strive to maintain full turf cover and maximum turf density reducing the likelihood that run-off will occur. The presence of turf is a strong deterrent to run-off even if additional run-off management is not performed.

Although nutrient run-off may only occur a few times each year, that run-off can be very detrimental to surface water, particularly through eutrophication. Eutrophication is a process of oxygen depletion caused by algal growth that is encouraged by N and P. This oxygen-depleted water cannot support plants and fish. Although excess N is important, it appears that P may be the element most responsible for encouraging eutrophication (Sharpley et al, 2000).

Although superintendents tend to be good environmental stewards and employ several management practices to reduce run-off, some

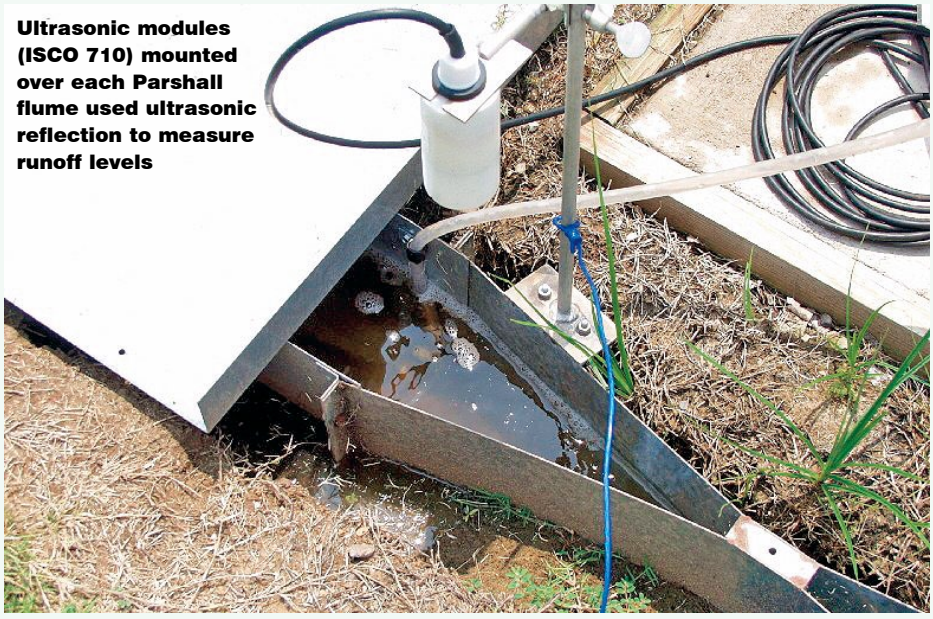
of the fertiliser applied to golf course turf is still lost to surface water. The search for management practices that further reduce nutrient run-off from fairways and other turf areas continues to be necessary.

The search for management practices that reduce nutrient run-off is conspicuously important to the turfgrass industry and to golf courses in particular.

Based on previous research, we reasoned that it is difficult for water to flow through the dense system of shoots formed by closely-mowed turf (Easton and Petrovic, 2004 and Linde et al, 1994). Consequently, because turf density tends to increase with decreasing mowing height, a low mowing height should be more effective than a higher one for providing resistance to flow.

That may be the case for turfgrass stands of a single mowing height but did not prove correct for turfgrass stands that include vegetative buffers (Baird et al, 2000). When run-off flows from a low cut turf to a higher cut turf, its passage is further restricted (Cole et al, 1997). Based on the density principle, water flowing from a short mowing height to a taller mowing height should pass easily through the relatively low density of the higher height of cut. Research indicates, however, that this does not occur. Buffers of 38mm did not restrict flow as effectively as buffers of 76mm (Baird et al, 2000).

When surface run-off from a fairway encounters rough, it tends to slow and puddle until sufficient energy builds to allow the water to flow through or over the higher height of cut. The higher cut turf forms a barrier to gravitational flow that must be overcome before the surface run-off continues down the slope providing more time for the run-off to infiltrate the thatch and soil.



Ultrasonic modules (ISCO 710) mounted over each Parshall flume used ultrasonic reflection to measure runoff levels

Therefore, a graduated system of rough such as apron to first cut to primary rough would provide three heights of cut resulting in three barriers. Since wider buffers do not seem to deter run-off with greater effectiveness than shorter ones (Cole et al, 1997) and since exceptionally high mowing heights could negatively affect playability, this multiple-barrier strategy could provide the best alternative to reducing nutrient run-off from fairways.

The objective of this research was to effectively compare this multiple-barrier strategy with the single-buffer strategy that is already known to be effective.

THE RESEARCH SITE

The water run-off research site at Oklahoma State University consisted of three irrigation blocks with two 12.2m x 24.4m plots per block for a total of six plots on 0.18ha. The site is mature common couchgrass (*Cynodon dactylon*) on compacted silt loam soil with a surface infiltration rate of less than 13mm per hour. The turf irrigation system delivers a precipitation rate of 51mm per hour and a series of 18 time domain reflectometer probes monitor soil moisture. The turf was mowed at 13mm across the upper sections of each plot three times per week to simulate golf course fairways.

The fairway sections were 12.2m wide by 18.9m long and were bordered by rough 12.2m wide by 5.5m long at the bottom of the slope. The single-barrier rough was mowed at 51mm for the full 5.5m length from fairway to collection trough and the multiple-barrier rough was mowed at increasingly higher heights every 1.8m down the slope. The mowing heights for the multiple-barrier rough increased from 25mm at the highest surface elevation to 38mm then to 51mm at the lowest elevation. The buffers were mowed once each week.

Covered troughs collected runoff water

FERTILISER, PRECIPITATION AND SAMPLE COLLECTION

To test run-off, urea and triple super phosphate fertiliser were applied at 49kg/ha^{-1} (N) and 24kg/ha^{-1} (P) four hours before irrigating and again following irrigation events to await natural rainfall. The fertilisers were applied as granules and were not 'watered in' so that the study represented worst-case conditions. Fertilisers were applied to the simulated fairway area six times in 2001 and six times in 2002. Fertiliser was not applied to the rough.

Covered troughs collected run-off water from each plot and channelled it through calibrated Parshall flumes by gravity flow. Ultrasonic modules (Isco 710) mounted overeach Parshall flume used ultrasonic reflection to measure water level. Isco 6700 portable samplers were secured to concrete platforms located between each experimental block.

The samplers were programmed to determine water flow rate from these water level measurements based on a pre-determined calibration of each flume and to collect run-off samples every five minutes for 60 minutes. These samples were tested to determine the amount of N and P in the run-off. The time from the beginning of precipitation to the beginning of run-off was also measured for each plot during each event.

Run-off caused by irrigation was collected three times in 2001 and three times in 2002. Natural rainfall run-off was collected once in 2001 and three times in 2002.

Each time precipitation occurred, multiple samples of the irrigation or rainfall were collected and the concentrations of N and P in the samples were determined. Background concentrations were subtracted from the nutrient concentrations in the runoff to determine the actual amount of N and P removed from the turf.

The irrigation system provided precipitation at 51mm per hour resulting in applications of 8510l/ha^{-1}/min^{-1}). The coefficient of uniformity for the system averaged 81 per cent (one trial per plot = six trials) compared with 95 per cent for natural rainfall calculated as the average of four natural rainfall events.

Run-off during irrigation events began slowly reaching an average maximum flow rate of 3677l/ha^{-1}/min^{-1} at 45 minutes after run-off began (Table 1). (See page 48)

RESULTS

RUN-OFF RATE

During irrigation, the multiple-barrier rough reduced the peak run-off rate by 14 per cent compared with the single-barrier rough and reduced the total run-off in 60 minutes by 16 per cent.

By contrast, peak run-off occurred more rapidly during the natural rainfall events producing an average 4777l/ha^{-1}/min^{-1} at 10 minutes after run-off began (Table 1). The multiple-barrier rough did not significantly affect the peak natural rainfall run-off rate but did significantly reduce the cumulative run-off volume by 19 per cent during 60 minutes of run-off.

TIME TO RUN-OFF

The multiple-barrier rough significantly delayed the time from the beginning of precipitation to the beginning of run-off compared with the single-barrier rough during both irrigation and natural rainfall.

The multiple-barrier rough delayed run-off initiation by approximately four minutes during irrigation and by two minutes during natural rainfall. The average time to initiation of run-off during irrigation events was 20 minutes for the multiple-barrier rough and 16 minutes for the single-barrier rough. Time to runoff for natural rainfall events was 39 minutes for the multiple-barrier rough and 37 minutes for the single-barrier rough. Both results were significantly different ($P < 0.05$).

The delay from the beginning of precipitation to run-off of four (irrigation) or two (rainfall) minutes resulted in a minor reduction in nutrient losses compared with the reductions resulting from lower run-off volumes.

FERTILISER LOSSES

Fertiliser losses in run-off were small compared with fertiliser applied. On average, across treatments, 1.5 per cent of N applied was lost to irrigation run-off and 0.5 per cent to natural rainfall run-off during 60 minutes of run-off. Irrigation run-off caused a 5.5 per cent loss of applied P and natural rainfall run-off caused a 3.3 per cent loss of applied P during 60 minutes of run-off.

These results compare favourably with the results of other researchers and further support the contention that turf has a positive influence on the reduction of nutrient losses from run-off (Easton et al, 2004 and Walker et al, 1992).

WORST-CASE CONDITIONS

Fertiliser application methods applied to irrigation experiments in this study were established to provide worst-case conditions. Shuman, 2004 demonstrated that light irrigation following fertilisation reduced nutrient losses. Walker and Branham, 1992 stated that as the period between the first runoff event and fertiliser application is extended, a greater proportion of nitrogen will be immobilised by plants or soil or leached past the active mixing zone reducing nitrogen run-off.

Because of these and other recommendations, superintendents generally do not apply fertiliser within 48 hours prior to predicted rainfall and nearly always 'water in' the fertiliser to minimise possible losses. The nutrient losses in this study are representative of a worst-case scenario and are likely to be more severe than what typically occurs.

NUTRIENT LOSSES

The reduced run-off volume resulting from the use of the multiple-barrier rough compared with the single barrier rough caused a significant reduction in the amount of N and P lost to both irrigation and natural rainfall run-off (Table 1).

The multiple-barrier rough reduced the amount of N lost to 60 minutes of irrigation run-off by 18 per cent and the amount of N lost to 60 minutes of natural rainfall run-off by 17 per cent. The multiple-barrier rough reduced the amount of P lost to irrigation run-off by 14 per

cent and the amount of P lost to natural rainfall run-off by 11 per cent during 60 minutes of run-off.

This study found the same run-off activity – high nutrient runoff concentrations in the early stages of run-off followed by declining concentrations with time – suggested by Walker and Branham, 1992. The N concentrations in both irrigation and natural rainfall accelerated rapidly from five to 25 minutes and were highest between approximately 25 to 35 minutes, causing rapid nutrient losses early in the run-off events (Table 1). The P concentrations also accelerated rapidly and were highest in both forms of precipitation at approximately 20 to 35 minutes (Table 1).

The rapidly accelerating nutrient losses during the beginning of run-off overcame the delay in time to run-off between treatments and effectively neutralised the beneficial effects of the multiple-barrier rough during the initial stages of run-off.

After 20 to 25 minutes of run-off, nutrient losses were nearly equal among treatments in spite of the average four or two minute delay in time to run-off caused by the multiple-barrier rough and the greater volume of irrigation run-off from the single-barrier rough (Table 1).

Consequently, the multiple-barrier rough did not affect nutrient run-off significantly for the first 30 to 35 minutes of run-off but maintained an advantage following 35 minutes and until at least 60 minutes of run-off during both irrigation and natural rainfall.

Assuming an average 37 minutes from the beginning of precipitation to run-off and sufficient precipitation to cause run-off, a rainfall event would have to last at least 72 minutes (37 min time to run-off + 35 min to significant run-off results) for the multiple-barrier rough to make a significant difference in the amount of nutrient run-off that occurred.

"A multiple-barrier rough strategy could reduce nutrient run-off while maintaining playability"

RUN-OFF REDUCTION

As expected, the multiple-barrier rough caused significant delays in time to run-off and lower run-off volume regardless of whether the run-off occurred as a result of irrigation or natural rainfall. These results agree with our hypothesis that mowing at multiple heights results in multiple-barriers that reduce run-off.

A turfgrass stand is very dense, generally including 300 shoots or more per square metre. Because of this shoot density, multiple researchers have demonstrated and recommended grass buffers along crop production fields to reduce run-off. The dense shoot system in a grass buffer creates considerable resistance to water passage.

A simple observation of turf following a severe rainstorm will indicate that run-off not only occurs through the shoots but also occurs over the leaves. Areas of severe run-off are identified by the prostrate appearance of the turf. When run-off water from bare soil encounters a grass barrier, the run-off slows due to shoot resistance until sufficient volume accumulates to provide the energy necessary to bend the shoots and the lower leaves ▶

TABLE 1. THE MEAN RUN-OFF FLOW RATE, AMOUNT OF N AND P, AND N AND P CONCENTRATIONS DURING FIVE-MINUTE INTERVALS IN RUN-OFF PRODUCED BY SIX IRRIGATION EVENTS AND FOUR NATURAL RAINFALL EVENTS.

TIME	FLOW RATE		N LOST TO RUN-OFF		P LOST TO RUN-OFF		N CONC.		P CONC.	
	MULTIPLE	SINGLE	MULTIPLE	SINGLE	MULTIPLE	SINGLE	MULTIPLE	SINGLE	MULTIPLE	SINGLE
min	*gal/ac/min*		*lb/ac/min*				*ppm*			
IRRIGATION RUN-OFF										
5	62	73	0.0005	0.0005	0.0015	0.0010	1.0	0.7	2.9	*1.7
10	151	182	0.0018	0.0015	0.0050	0.0043	1.4	*1.0	4.0	*2.8
15	234	*286	0.0046	0.0042	0.0120	0.0122	2.3	1.7	6.2	5.1
20	285	*345	0.0075	0.0081	0.0185	0.0204	3.2	2.8	7.8	7.1
25	313	*381	0.0093	0.0112	0.0215	0.0254	3.5	3.5	8.2	8.0
30	334	*398	0.0102	*0.0126	0.0221	*0.0260	3.6	3.8	7.9	7.8
35	347	*412	0.0102	*0.0128	0.0207	*0.0243	3.5	3.7	7.1	7.1
40	348	*422	0.0097	*0.0126	0.0180	*0.0220	3.4	3.6	6.2	6.3
45	363	*423	0.0096	*0.0122	0.0164	*0.0197	3.2	3.5	5.4	5.6
50	365	*412	0.0090	*0.0113	0.0144	*0.0172	3.0	3.3	4.7	5.0
55	354	*406	0.0082	*0.0105	0.0125	*0.0150	2.8	3.1	4.2	4.4
60	341	*406	0.0074	*0.0102	0.0104	*0.0135	2.6	*3.0	3.6	4.0
NATURAL RAINFALL RUN-OFF										
5	284	277	0.0037	0.0034	0.0090	0.0061	1.6	1.5	3.8	*2.6
10	512	508	0.0073	0.0066	0.0205	0.0145	1.7	1.6	4.8	*3.4
15	349	409	0.0057	0.0057	0.0188	0.0183	2.0	1.7	6.5	5.3
20	191	*266	0.0034	0.0041	0.0124	0.0160	2.1	1.8	7.8	7.2
25	153	*195	0.0027	0.0033	0.0104	0.0127	2.1	2.0	8.1	7.8
30	170	*198	0.0029	0.0035	0.0107	0.0127	2.0	2.1	7.6	7.7
35	157	*218	0.0026	*0.0039	0.0091	*0.0130	2.0	2.1	6.9	7.1
40	126	*194	0.0019	*0.0033	0.0064	*0.0102	1.8	2.1	6.2	6.3
45	82	*143	0.0012	*0.0023	0.0037	*0.0066	1.7	2.0	5.3	5.5
50	45	* 93	0.0006	*0.0015	0.0017	*0.0038	1.6	1.9	4.6	4.9
55	18	* 55	0.0002	*0.0008	0.0006	*0.0020	1.5	1.8	4.0	4.4
60	11	* 33	0.0001	*0.0005	0.0003	*0.0011	1.4	1.8	3.4	3.9

* Indicates a significant difference between the multiple-barrier and single-barrier rough ($P<0.05$) N.B: Figures in this table are given in US measurements

allowing the run-off to flow over or around.

We hypothesised that when the water encounters a second mowing height, a similar resistance occurs and sufficient volume must be accumulated to overcome this second barrier.

During the study, a puddle of water formed each time the run-off encountered a buffer. The puddling was most noticeable at the interface of the fairway and initial buffer but also occurred at the interface of each height increase in the multiple height buffers.

Although turf density can be expected to increase with lower mowing height and have a negative effect on run-off (Easton and Petrovic, 2004 and Linde et al, 1994) the work of Baird et al, 2000 indicated that when a buffer strategy is employed, the shoot height of the buffer vegetation had a greater effect on run-off than turf density.

Baird et al, 2000 reported that a 76mm buffer height was more effective for reducing water run-off than a 38mm buffer in spite of the tendency for increasing turf density with decreasing mowing height. Multiple mowing heights result in multiple barriers that slow run-off and reduce run-off volume.

PRACTICALITY

According to Baird et al, 2000, increasing the height of a vegetative buffer from 38mm to 76mm reduces run-off. Consequently, increasing the height of the multiple-barrier rough may cause higher reductions in run-off compared with those reported by this study. However, increasing the mowing height of couchgrass golf course rough to 76mm or more is not always practical.

A survey of 47 Oklahoma golf courses in 2004 indicated that the maximum mowing height of couchgrass rough ranged from 19mm to 102mm with only six courses mowing rough at 76mm or more. The remaining courses maintained a mean maximum mowing height of 49mm and a median mowing height of 51mm in couchgrass rough.

Although high cut couchgrass rough could effectively reduce water run-off, golf courses must also maintain adequate playability. Dense rough mowed at more than 51mm makes finding golf balls difficult and slows play considerably. The multiple-barrier rough described in this study could reduce nutrient run-off while maintaining playability.

ACKNOWLEDGEMENTS

Funding for this research was provided by the USGA, Oklahoma Turfgrass Research Foundation and The Oklahoma Agricultural Experiment Station. Associate professore Greg Beel and graduate student Justin Moss hail from The Department of Horticulture and Landscape Architecture, Oklahoma State University. A full list of references can be obtained from the AGCSA. The AGCSA and Australian Turfgrass Management magazine are grateful to the authors and USGATERO for allowing publication of this research (Vol 4, No. 12, June 15, 2005).

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CENTENARY'S MULTI-MILLION DOLLAR TEE-OFF

One of Melbourne's longest-serving superintendents Chris Bardsley could be in line for a hectic couple of years if plans for a multi-million dollar upgrade of Centenary Park Golf Course go ahead.

Frankston Council is considering a master plan put forward by Golf Strategies which recommends major upgrading of the course in stages over the next few years including enlargement of all greens to twice their current size, bigger, longer tees, more bunkers and the redesign of several holes. Fairways would also be improved, beautified and resown with Santa ana couch in line with other fairways which have been successfully converted.

Other major changes recommended are the redesign of the present 445m par five 4th, into a par four to stop mishit golf balls causing problems to passing traffic. It is also recommended that the present 15th, a 510m par five be lengthened by more than 30m, making it one of the longest in Australia and Centenary Park's signature hole.

So that the course can maintain 18 playable holes, the master plan also includes the construction of a new par three, with a synthetic green on the present practice area abutting the pro shop to be used while other holes are being reconstructed.

Frankston Council's general manager of planning and development, Peter Fitchett said Golf Strategies' principal architects Paul Mogford and Neil Crafter had inspected the course hole by hole earlier this year as part of the master planning process.

"They were very impressed with the course and suggested how it could be improved and these are included in the master plan," Fitchett said.

Bardsley, who has been superintendent at Centenary Park for 30 years, said improvements recommended in the master plan would make the course a first-class facility and he hoped the council would commit funding.

"Over the years I have been involved with many improvements, but these are easily the most exciting" he said. "The council has continually put money back and has spent thousands on drainage, upgrading fairways, beautification works and tree planting.

TURF'S TOP TIPSTERS

September saw the conclusion of yet another highly successful and tightly contested AGCSA footy tipping competition. Presented in association with Nuturf, the respective AFL and NRL competitions drew a record number of punters with nearly 1000 taking part each week.

Both competitions went right down to the wire with the winners only decided following dramatic final rounds. The AFL finished in a tie with Robert Ryan, (Beaconhills Golf Club) sharing the spoils with a fast-finishing Shannon Nicholls (The Groundsman).

In the NRL, the Lakelands Golf Club shed had a season to remember, collecting a grand total of $1500 after winning not only the overall competition by a single point, but the inaugural shed v shed competition as well.

The AGCSA thanks everyone who took part and to Nuturf for sponsoring the competition.

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TGAA WA


New WACA curator Cameron Sutherland

Our Annual General Meeting was held in July at Maylands Peninsula Golf Course and was well supported by members. I'd like to welcome Ian Clark from St Mary's Anglican Girls School on to the committee as events officer.

The TGAA (WA) committee for 2005/06 is as follows:

President: Peter Ruscoe
Vice-president/Treasurer: Tony Guy
Secretary: Peter Maclachlan
Events Officer: Ian Clark

I was pleased to announce at the AGM that all 18 existing sponsors renewed their sponsorship of the association for 2005/06. The revised constitution received unanimous approval by members at the AGM and has now been registered.

Membership of the association continues to grow and at last count we had 156 members. We will produce a new member's directory for 2005/06, issue membership cards and update the membership list on our website.

The WACA turf wicket seminar was held in early September. I'd like to thank John Airey for coordinating the day's activities and the groundstaff at the WACA for their assistance. It has been very encouraging to have members come forward and offer their support to help with the organisation of events.

The winner of the TGAA (WA) 'Lin Hambleton Bursary Award' is Patrick O'Leary from Aquinas College. Patrick will be undertaking part-time turf studies at Challenger TAFE, Murdoch in 2006, sponsored by the association.

Finally, congratulations to Cameron Sutherland on his appointment as head curator at the WACA. Cameron has been a TGAA (WA) member for four years in his position as principal of Plant and Soil Management, a sports turf contracting and consulting business based in Perth.

PETER RUSCOE,
PRESIDENT, TGAA (WA).

GCSAQ

All of the Queensland golf industry conveys its condolences to our esteemed president Rod Cook and his now Globe representative brother and GCSAQ member Russell and their entire family network on the recent passing of their father.

There has been a flurry of activity in the sunny northern state of late with a number of events drawing excellent attendances and providing members with great educational and entertaining opportunities.

Of course, one of the highlights of the year is our annual bus trip and this year was no exception. The stories are many and varied and a great report is available on the AGCSA website under the GCSAQ banner.

Suffice to say that a fantastic time was had by all and it is still the best value $120 can buy. Those who missed out can only plan to join the fun next year, and our organiser of the weekend, Barry Cox, deserves all the accolades he receives for a fantastic job.

The last issue of ATM carried an excellent report on the massive rain event that engulfed the Gold Coast in late June and broke records for 24-hour rainfall totals across the region. There was even a chance for a compo claim for a strained back emptying the rain gauge! Seriously, do you know how much 450mm weighs in a rain gauge??

In August I had the pleasure of playing three of the worst hit courses – The Glades, Arundel Hills and Lakelands – and it is a testament to the respective superintendents and their staff on the fantastic condition of the golf courses. Losing all the sand from your bunkers to scraping mud off greens seemed a world away as we enjoyed pristine golfing conditions. Congratulations to these guys and to those other supers and staff who took it all in their stride and got their courses back to normal in no time at all.

There was a great turnout at our recent AGM at Virginia Golf Club where Barry Lemke not only turned on the weather (well we are in Queensland) but provided a pristine course. Full results will be available on the website soon but suffice to say that joint winners of the day Barry Cox and Russell Millner tore the layout apart to just pip Duncan Lamont in A Grade. Murwillumbah's Brian Cox (no relation they tell us) won B Grade with Brad Butler blitzing C Grade. Trade winner was Paul McLean who fell in from Brendon Hill from Country Club International.

The GCSAQ committee for the next 12 months has one new face with Gainsborough Greens superintendent Justin Kelly coming onboard. The line-up is:

President: Rod Cook
Vice-president: Barry Cox
Secretary: Peter Lonergan
Treasurer: David Morrison
Committee: Colin Caulfield, Jason Foster, Justin Kelly, Scott McKay.

A very big thank you is extended to Darren Moore from Lakelands GC for his contribution to our association over the past year, but a promotion, study and a young family has prompted Darren to hang up the boots, but he has promised he will be back.

Our next GCSAQ day is the annual Turf Research Golf Day, which is to be held at Arundel Hills on Monday, 7 November. All indications are that we will book out very early so don't delay in getting your entries in.

Okay, I can hear you gossipmongers looking for the juice on the bus trip so here are three morsels. If you want more, then make sure you are on board for next year's tour.

- Quote of the weekend goes to the buck who having been helped out of an establishment after several hours on Saturday night arrived at the same place on Sunday night and spluttered, "Gee what a great place, I haven't been here before".
- Golf shot of the week belongs to Twin View Turf's John Shaw who had a fresh air! Sorry, I know what goes away stays away, and names shouldn't be mentioned, but a fresh air from Shawy? Priceless! And he kept it very quiet… until now.
- Conundrum of the week belongs to our host superintendent at Laidley Golf Club Danny Gowing who is not only superintendent but also club president! And the plot thickens as at one stage prior to being president, Danny's 2IC on the course was actually the club greens chairman!

Scott McKay and Barry Cox were two very happy men following the recent AGCSA financial management workshop and they are already employing everything that presenter Rod Dell put across. Let's hope Rod knows what he is talking about or the boys might be looking for a loan. All reports were of another successful day with all those attending suitably impressed.

PETER LONERGAN,
SECRETARY, GCSAQ.

GCSAWA

With another AGM over, it would be fair to say it has been a busy year again for all of us, and a year of consolidation for the GCSAWA after a couple of years of expenditure on various major projects.

We are comfortable again this year in terms of meeting our objectives as an executive committee, particularly in providing our members with vital technical assistance in the form of the Chemical Induction Training and Risk Assessment Manual for Golf Clubs, hosting of regular social networking opportunities and honouring those people who have professionally excelled or given so much to the turf industry in WA.

It has been a great year with good support by members to most events and hopefully the support for the format will continue and improve again in this coming year.

The executive committee for the coming year is:

President: Brad Sofield
Vice-president: Craig New
Treasurer: Jeff Lane
Secretary: Darren Wilson
Golf Secretary: Andrew Fortune
Co-opted Trade Delegate: Geoff Kirk
Co-opted Committee Person: Michael Dennis

The AGM, hosted at Joondalup Resort and kindly sponsored by Toro, was well attended by members who enjoyed a fabulous 18 holes and a tidy lunch and beer or two to top it off. Joondalup again demonstrated why it is the number one resort course two years running and we thank them very much. Many sincere thanks to Peter Black and Robert Rein from Toro for sponsoring this event.

The GCSAWA was proud to announce David Higgins as the 2005 Best Indentured Award Winner. David, a greenkeeper at Meadow Springs Country Club, was selected out of 15 applicants and was previously recognised by Challenger TAFE Murdoch as winner of the Lecturers Award - Turf Management in 2004. We look forward to hosting David at Margaret River next year, and without question expect him to be a valuable contributor to turf management in the future.

The day was also special as I was able to honour a gentleman with a Distinguished Service Award on behalf of the GCSAWA. Lin Hambleton was the cornerstone for the development of turf management training programs in WA with over 30 years service to training and R&D. Through his ambition and commitment to build a new industry that would be regarded and respected by others for being driven by trained professionals, Lin can be acclaimed for the early informal formation of several state based turf associations.

To the future, the GCSAWA looks forward to the successful completion of this year's Golf Masters Cup format. Plans are also under way for the 2006 Southwest Conference in Margaret River in late August and we look forward to another few days of educational excitement and guest speakers.

BRAD SOFIELD,
PRESIDENT, GCSAWA.

NSWGCSA

A dry and windy greeting to members leading into the busy spring period. Renovations are in full swing and before we know it summer and the hectic pace of maintenance will be with us. Hopefully by the time you read this we have all received some widespread soaking rains.

BOARD NEWS

Another two members of the Board have resigned their positions in what has been a year of change. In the last report I mentioned Richard Kirkby and now Guy Thomas has decided to step down.

Guy served five years, the majority of which was spent managing the newsletter and more recently field days. He brought some valuable humour and interest to the newsletter albeit while frying a few of his fellow members.

Guy has decided to take on the ex-president on the road in his new role at Maxwell and Kemp. On behalf of the members and Board I would like to thank Guy for his time and professionalism.

FIELD DAYS

A very successful day again at Cypress Lakes Resort this year with the 124 limit to the field leaving some members without a game.

The education day at Pennant Hills on 24 October is also shaping up well. All members will be asked to bring someone from their club's management to take part in the day. The theme for the day is 'Better Management' with forums and presentations from leading superintendents on outsourcing, labour requirements and management systems.

Speakers include John Neylan, John Odell, David Scaife and Mark Parker. Richard Kirkby and Peter Watts will give a presentation on their visit to the US including the conference, golf courses and other facilities.

WATER

Level 4 restrictions are likely in spring if substantial rain does not eventuate. Sydney Water has been monitoring the use of water by all golf clubs and it appears some clubs are flouting the exemption conditions and risking large fines, loss of supply and possible damaging effects for the whole industry.

I urge all members to adhere to the restrictions and the exemptions provided. We need to be responsible as an industry or risk the consequences. If you have problems working with the exemptions provided, contact John Ethel from Sydney Water.

WATER SAVINGS PLANS

Many clubs may have received a letter from Sydney Water regarding a Water Savings Plan. All high energy or water users must submit a Savings Plan by March 2006 with affordable initiatives implemented by 2007.

Completing the plan involves identifying the club's use and ways of reducing use and increasing efficiency. This applies to all businesses and local government in the high use category.

EDUCATION

Education convenor Andy Hugill and myself recently visited the facilities at Kurri Kurri TAFE near Newcastle. After being evicted from the Charlestown campus with little warning, the new facilities are evolving very well. A golf hole, cricket pitch, bowling green and turf plots are already established. They have excellent equipment and facilities including a soil laboratory.

It has taken a huge effort by head teacher Kevin Johnston and his staff to get the facilities up and running which now provide an excellent location for turf education. There is also accommodation on site for their block release students.

The board of the NSWGCSA is holding its next meeting at Ryde TAFE to meet with teachers and discuss training of our staff and the facilities at Ryde campus.

DEC TRIALS

The organic trial being run by Tony Hodgins from the DEC should be up and running very soon. Participating clubs are Muirfield, Northbridge, Kiama, and Vineyards.

MICHAEL BRADBERY,
PRESIDENT, NSWGCSA.

TGAA NSW

Hello to everyone from TGAA NSW. In August we held our Sydney TGAA Seminar at the Sydney Showgrounds with some 200-plus patrons and sponsors enjoying a very relaxed and informed day. Our special guest for the day was former New Zealand rugby league great Gary Freeman who provided some entertaining stories.

The speakers covered some hot topics including turf management for golf courses and sports fields, WorkCover issues, risk management, and assertiveness in the workplace which proved to be a real eye-opener. To all the presenters we thank you - Peter Devlin (North Sydney Oval), Terry Muir (EBS), Darren Jones (St Michael's Golf Club), Terry Palmer (Insight Consulting Partners) and Bruce Marshall (WorkCover NSW). I would like to thank all the sponsors for their support towards making the day a success.

There have been some strong messages at recent industry seminars about safe work practices – OH&S and WorkCover related issues. These items have been a timely reminder to all of us about our duty of care to all fellow staff members, our places of employment and the general public and environment.

We should all take it upon ourselves to be responsible for all the acts covered under these bodies. These items should not be feared or ignored but simply used as part of our management systems and continually implemented and improved as often as possible.

The unusually warm approach to spring we have been experiencing has been great for turf growth, however, we all know that unless we receive some much needed rainfall we are going to face a very long and tough summer. But be warned about the false start to summer as in previous years a sudden cold snap seems to hit, slowing down the breaking of couch dormancy.

Graham Logan, Gary Freeman, Peter Devlin and John Purtell

TGAA NSW is now focusing on its biggest event of the year – the Sportsman's Charity Luncheon on Friday, 18 November at Canterbury Hurlstone RSL Club – and we are anticipating a crowd in excess of 400. I look forward to seeing you there.

GRAEME LOGAN,
PRESIDENT, TGAA (NSW).

NZGCSA

Greetings from across the Ditch. We have just gone through a quiet period in the golf turf industry here in New Zealand. The dust has well and truly settled after the conference and everybody has gone about their winter chores with a fair amount of ease.

Most, if not all of New Zealand, has been experiencing record low rainfall as well as record sunshine hours. Parts of the South Island are already recording near drought conditions with varying degrees of fire bans in place. It has also been reported that some wells are nearing 50-year lows.

It doesn't look that great for the summer at the moment but the weather in New Zealand can be fickle given that the country is a relatively narrow land mass and the weather can and does change. We just have to look at the weather patterns of the last 12 to 18 months - floods in January and superintendents irrigating in August!

There has been a bit of movement among superintendents in recent times with the most recent and noteworthy that of Brian Hinton from Paraparaumu Beach Golf Club just north of Wellington.

Brian has been superintendent at Paraparaumu for 35 years and in that time he has prepared the course for over 10 New Zealand Opens, the most recent when Tiger Woods played in 2003.

Brian has also hosted various other New Zealand golf tournaments over the years and was presented with the NZGCSA Distinguished Service Award in 2001 in recognition of his 30 years continual service at Paraparaumu. At a recent dinner held by the Wellington Golf Course Superintendents' Association in Brian's honour, he was bestowed with a life membership of the WGCSA.

Brian has attended many conferences and been very prominent in the industry given his employment at a club with a profile such as Paraparaumu.

I'm sure everybody involved in the golf turf industry in New Zealand will want to wish Brian all the best for the future.

As always we seem to get through one conference and plans are already being made for the next one. So it is timely to let those that are interested know about the two regional fine turf seminars to be held in May 2006.

The Otago GCSA is hosting the South Island Fine Turf Seminar during the first week in May. This will be held in Queenstown with a full program that will suit everybody. The Central North Island Turf Managers Association is hosting the North Island Fine Turf Seminar in Tauranga in the last week of May and they too will have a very full and informative program.

The NZGCSA fully endorses these seminars and encourages all members to take part and extends an offer to Australian superintendents to make the trip across.

Planning is also underway for the next New Zealand Turf Conference to be held in Wellington in 2007. More information will be provided on all three events in Vol 7.6.

Finally, it wouldn't be a New Zealand report without mentioning the recent success of the mighty All Blacks. We now have a very full trophy cabinet with the Bledisloe Cup and the Tri Nations Cup, but alas there is still one missing and it's the one that every red blooded Kiwi wants. Roll on 2007!

BRETT BURGESS,
PRESIDENT, NZGCSA.

NZGCSA

TGAA ACT

Turf managers throughout the district, and I suspect throughout NSW, are welcoming spring with mixed emotions. After a good post-renovation period with excellent results, turfies are preparing for a possible extended drought that may continue to affect NSW.

Currently within the ACT, public/private recreational and sporting grounds are encouraged to reduce town water consumption used in reticulated systems to irrigate turf. What this means for turf managers is the need to format viable water reduction plans which can be implemented while maintaining quality playing surfaces.

In local association news, the recent AGM held at Weston Creek Bowling Club was an informative night enjoyed by all. Guest speaker was MCG curator Tony Ware who shared his long experience with turf management and gave the audience a serious but sometimes comic view of greenkeeping and pitch preparation at the highest level.

Recent enthusiasm shown by turfies to be involved with the association has seen an increase in committee members nominated for positions this year. We have always encouraged new ideas and fresh blood into the association. Many thanks go to those committee members who continue to provide an invaluable service and welcome any new committee members.

The recent feedback from those delegates and sponsors who attended the mid-year seminar has been positive and constructive, and we are taking any ideas for improvement on board, so please don't hesitate to contact a committee member.

If there are any greenkeepers out there, or if you have recently completed a trade certificate in turf management, you may be interested in continuing your studies and improving your qualifications. The Canberra Institute of Technology (CIT) School of Horticulture in Weston is considering offering various courses at the certificate and diploma level for 2006.

The future of these tertiary courses is dependent on the number of enrolments. Expressions of interest by anyone interested in furthering their skills in turf management should contact CIT. On the same note, the CIT also conducts regular chemical training courses (AQF Level 3).

Best of luck to all over the summer months and keep your eye out for the latest up to date news and information around the district.

JUSTIN HASLAM,
COMMITTEE, TGAA (ACT).

TGAA ACT

VGCSA

On Sunday, 7 August a large contingent of members ventured to Horsham Golf Club for the VGCSA's annual country meeting.

We all gathered at the golf club for dinner and witnessed an almost impossible comeback by the Australian cricket team over England - I never knew we had so many cricket experts in our association. The 30 members, eight partners and nine children all enjoyed the hospitality shown by Horsham Golf Club and we appreciate them staying a little later than normal to host us on a Sunday evening.

The next day golf club president Bob Hayes welcomed everyone to the meeting and voiced his appreciation that we were at Horsham.

We then went on a thorough course inspection conducted by host superintendent Tim Warren. With cobra/*Poa* greens and the development of Santa ana fairways, the recently increased staff of four has to be congratulated for the end product they produce. Horsham was all we have heard about and we thank Tim, Bob and the whole golf club for a terrific two days where the hospitality and sunshine were turned on.

A special mention must be made of the superintendents from the local area and Melbourne for attending. To potential new members in Peter McCall from Stawell, Brendan Murphy from Warracknabeal, Shane Grover from Nhill, Cameron Gordon from Bacchus Marsh and Steve Birchett from Chalambar, it was great to see you all in attendance and Bill Reid and Col Winterton as usual. A special mention also to John Stapleton, who made the long haul from Lakes Entrance Golf Club.

A GOOD NEWS STORY

In late March 2005, after attending a VGCSA committee meeting, Trevor U'ren from Devil Bend Golf Club spent the following days in hospital while his wife Kelly gave birth to their daughter 24 weeks premature.

For those of you who saw the story on Seven news in late August, their fit and healthy daughter Ella is coming home to play with her brother after spending five months in hospital. We wish the proud parents all the best.

SPONSORSHIP PACKAGES

All trade members were recently notified in regards to new sponsorship packages available for 2006. We believe we have catered for all trade members in the flexibility of packages available.

We are pleased to announce that those that have proudly sponsored the VGCSA in the past are again onboard. We have several new sponsors that have accepted our sponsorship packages and they will be listed once all details have been finalised. We thank you all for your support of this growing association.

UPCOMING MEETINGS

Sanctuary Lakes Golf Club (superintendent Peter Jans) will host the next VGCSA meeting on 22 November. Enter a team of four from your club to have a go at the major prize – a trip to the AGCSA conference in Brisbane in July 2006 – proudly sponsored by Bayer and the VGCSA. Sandhurst Golf Club (superintendent Chris Grumelart) will host the final meeting of the year on 12 December.

GET WELL

And finally, Colin Cowden, superintendent at Rossdale Golf Club, is resting in hospital after surgery. Our thoughts and best wishes are with Colin and his family. Colin was rewarded with life membership at the VGCSA's AGM at Peninsula Country Golf Club and has been superintendent at Rossdale since 1969.

MARK PROSSER,
PRESIDENT, VGCSA. VGCSA

VGA

The VGA held its AGM and seminar day on 24 August at the East Malvern RSL Bowling Club. Those attending enjoyed three informative talks from Phil Ford (NMIT), Alan Stobbie (MCG) and Gary Vankessel (Webbcona Bowling Club).

The new 2005/06 VGA committee consists of:

President: Doug Agnew
Vice-president: Shane Harling
Secretary: Andrew Kent
Treasurer: David Sharp
Committee: Greg West, Darren Martin, Greg Dunn, Gary Vankessel, Adrian Marston and Bill Hamshere.

During the AGM, the VGA's two most prestigious awards were announced with Mark Vezey from Heathmont Bowling Club winning the Victorian Greenkeeper of the Year, while Keith Fleetwood was awarded the VGA's Distinguished Service Award. Both recipients thoroughly deserve their awards and are popular and ardent supporters of the VGA.

A big thank you to those who attended the AGM and I wish all greenies smooth sailing for the upcoming season.

BILL HAMSHERE,
COMMITTEE, VGA. VGA

SAGCSA

Spring is now with us all, so let's hope that the rain keeps tumbling down well into the season as our reservoirs are only at 70 per cent capacity. For us South Australia this will mean water restrictions again this summer, but to what degree only Mother Nature knows.

Speaking of the dear old lady, she certainly let us know who is boss with a severe storm ripping through Adelaide at the end of winter, bringing down many trees which made life difficult for crews across the state.

The recent golf managers and superintendents two-day seminar was held at Clare Golf Course. The two 'Johns' held the floor on day one, with John Odell (who is fast becoming an honorary South Aussie) speaking to the group on managing structures and strategies in golf clubs. John Neylan then led a discussion on budget levels verses sustainable levels of course presentation.

Day two saw South Lakes Golf Club general manager Alan Tarry speak on the different levels of planning used in golf clubs. Alan drew on his years in the Air Force to detail the different levels of planning needed to achieve common goals.

While in Clare it was terrific to catch up with superintendent Kevin Clarke. Kevin is to retire in November and will be hitting the road with the caravan. Kevin will become one of the few supers to retire on their own terms which is testament to Kevin's skill and dedication as a super. We wish Kevin all the best for the future and hope his car is gas powered!!

Our next meeting will be our country visit to Naracoorte (host superintendent Paul Clarke) on 10 October, not 10 August as was my mistake in the last ATM magazine. See you all there.

PETER HARFIELD,
PRESIDENT, SAGCSA. SAGCSA

TGAA VIC

Spring has sprung and we're all very busy once again. Since our last report we can confirm our re-appointment as Cricket Victoria's turf wicket consultants for the next 12 months. In this role we can continue to assist and offer advice on wicket problems and preparation to any CV affiliated club.

The 2005/2006 committee has been elected following the September AGM at Blackburn Bowling Club. The new-look committee is Bill Turner, Ian Beel, Ted Boltong and Ron McCartney. Anthony Uhr-Henry continues as president, with Steve West and Michael Holohan stepping up to vice-president roles. We also welcome new appointees Nathan Tovey (Mt Scopus) and Matt Hanrahan (Geelong Grammar).

Jim Marchbank and Gavan Hegan have stepped down and we thank them immensely for their time and effort. Jim has worked tirelessly over the past five years, the last three as vice-president. Jim has agreed to remain as a TGAA representative at VICSWU and we are sure he will continue to help out behind the scenes. Gavan departs after two years and was the driving force behind the Sports Celebrity Lunch.

At the AGM, the TGAA VIC also honoured two of its most repected members. Craig Berwick (Kooyong Lawn Tennis Club) and Bill Turner (Royal South Yarra Lawn Tennis Club) were awarded honorary life member status for their many years dedicated service to the profession. Craig and Bill become the third and fourth life members respectively and join Bill Lawry and Ross Moloney.

Finally, we hope your spring renovations are a success, spring rain falls in the catchment areas, and that you back a winner during the Spring Carnival.

SIMONE STAPLES, TGAA (VIC).

TGAA VIC

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