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COVER: The National: The

Ine National. The long par 3 13th of The National Golf Club's Old Course. Comprising three distinct golf courses The National ranks as Australia's largest and most unique golfing facility. Photo:

Brett Robinson.



National treasure

Boasting three highly unique golf courses on some of the best golfing terrain in the country, the Mornington Peninsula-based The National Golf Club ranks as not only one of the most exclusive golf facilities in Australia but the largest as well. ATM editor Brett Robinson catches up with course manager Leigh Yanner and superintendents Darren Balfour and Scott Calder to take an exclusive look inside operations at The National to see what goes into maintaining this national icon.

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Marysville rises from the ashes

Having entered 2009 in probably the best condition of its proud history, Marysville Golf Club superintendent Rob Christie was looking forward to watching the small country gem continue to grow from strength to strength. Then came that fateful day in early February. ATM revisits the destruction wrought on Black Saturday which brought a course, its superintendent and a town to its knees and looks at the integral role the golf club is now playing as the community begins the long road recovery.



Kirby cultivates a Champion venue

After serving his apprenticeship at Narooma Golf Club on the NSW south coast in the late 1990s, Blair Kirby now finds himself in charge of the Champion Course at the PGA National Resort and Spa which hosts the US PGA Tour's Honda Classic. Ranking among the toughest tracks on the Tour, Kirby gives ATM an inside look into preparing the resort course for its showcase event each March.



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Beefing up the environmental credentials of the turf production industry and ramping up the marketing campaign to promote natural turf were among the key themes explored at the 2009 Turf Producers Australia Conference and Trade Expo held in March.

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ATM opened a veritable Pandora's box when it quizzed superintendents about their thoughts on green speed for The Pulse. All we can say is, let the venting begin...

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US researchers have found that irrigating creeping bentgrass at wilt, rather than daily to maintain moist soil, generally resulted in



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higher carbohydrate levels in leaves and roots, which may enable creeping bentgrass to better tolerate and recover from drought and other stresses.

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The Rights stuff

Plant Breeders Rights assessment work at the QDPI&F's Redlands Research Station began in 2000 and has significantly increased the efficiency of the process for turfgrass breeders within Australia. Matt Roche provides a background on the facility's PBR work and how it is playing an integral role in the future development of the industry.

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'We'll be back better than ever'

⁶⁶ D ear Rob, I pray this email gets to you. Are you able to give me an update as to whether you are okay and the condition of the golf/bowls club? Our thoughts are with you." That was the brief email I sent to Marysville Community Golf and Bowls Club superintendent and AGCSA member Rob Christie on Monday 9 February just a few days after the shocking Black Saturday bushfires. I'm not a religious man by any stretch of the imagination but after five phone calls failed to draw a response I was starting to think the worst. Eleven days later, at 10.35pm on Friday 20 February, this email dropped into my inbox.

"Hi Brett. Thanks for your concern. Fortunately my family and I and our house are all safe... The township has basically been wiped off the map with a handful of buildings still standing, but that is all. There is a huge amount of work to be done and that helps to take our minds off the lives that have been lost, although it is extremely difficult as my apprentice lost his mother and younger brother. The golf and bowls club was lucky to save the clubhouse, which we are intending to convert into a community facility to give locals a base to meet up with friends, and hopefully convert our practice fairway to a temporary housing site while the housing reconstruction process continues.

All our work sheds have been completely destroyed along with every single piece of machinery and equipment, chemicals and fertilisers. My office with 12 years of plans, maps, records, everything, is now a pile of ash. The course is understandably suffering, as we no longer have a water supply. We had just upgraded our irrigation system this summer to a Hydrovar pumpset combined with a Rain Bird MDC decoder control system, all connected to the town's reclaimed water storage. No more reclaimed water and no more pump system! We are in the motions of setting up a temporary diesel pump from the river to connect to our system, but many broken pipes need to be repaired before the system can be operational, not to mention melted wiring and valves.

The back nine holes will also be unplayable until the six burnt out bridges crossing the river have been rebuilt. I am estimating that at this early stage at least four greens will need to be reconstructed. A huge number of trees are down with a similar number still to be felled as they are badly burnt and unsafe. If you have played at Marysville before you would appreciate the size of the gum trees here and the task ahead.

We are bearing up pretty well and we would like to pass on our deepest gratitude to all the individuals, clubs and organisations that have been overwhelming with offers of support. It will take some time, but we will be back better than ever."

That email was nearly three months ago and since then Rob, his apprentice Kellan Fiske and a swag of volunteers both local and from golf clubs, trade companies and turf industry associations, have been working around the clock to help get the course back to the picturesque gem it once was. The process is far from over but as I write 15 greens have been ripped up, re-turfed and topdressed which is a significant step forward.

Along with AGCSA general manager John Neylan I was able to visit Marysville nearly a month to the day after the fires ripped through the region. It was a trip I will never forget. Meeting with Rob I was humbled to hear his story and to witness first hand the resilience and determination that he and the club have to restore their pride and joy back to its former glory. Following on from last edition's look at the devastation wrought on Horsham Golf Club, ATM recounts, with Rob's blessing, the Marysville story and looks at how he and his small team are rebuilding a community facility that is set to play an integral role as residents start rebuilding their lives.

Enjoy the read.





Fires, floods and resignations - what a start to '09

n the previous edition of Australian Turfgrass Management journal I reflected on Australia's weather extremes and the broader ramifications of fires and floods, and even as I write for this edition heavy rains and floods are still causing chaos in northern parts of the country. The resignation of two of the industry's most senior and experienced golf course superintendents has also added to the intrigue of the year and one has to wonder how much more can we expect in 2009.

Australia's climate has sorely tested the resolve of golf course superintendents and turf managers as they struggle to minimise damage to turf areas and to rectify any damage as quickly as possible. What I have seen as the most heartening fact has been how quickly fellow turf managers have volunteered to assist in the recovery process. This has been most apparent at Horsham and Marysville golf clubs, both of which were severely damaged by fire.

Following the Black Saturday fires, the AGCSATech team was requested by Sport and Recreation Victoria (SRV) to inspect 26 sportsfields in fire-affected areas. The sportsfields were used as staging grounds for fire trucks, emergency services vehicles and safety refuges and consequently were damaged. As is the Australian spirit, the return of the community to their sporting pursuits is seen as an important part of their recovery.

The priority for SRV and the Victorian Country Football League was to get the football season underway on schedule. On Saturday 4 April, the round one fixture between Kinglake and Emerald was celebrated by the Kinglake



community as a small step in the recovery process and a return to normality. The opening of nine holes at Horsham Golf Club the week previous was also considered prominent enough to elicit two TV news reports, one showing volunteer greenkeepers hard at it and another on the first ball being hit onto a vastly changed golf course.

Australians are known for their love of sport and we must not take for granted the important role our profession plays in the health and welfare of our communities. Deakin University (Townsend et. al. 2002) has undertaken research on the range of benefits for the social wellbeing of the communities arising from sport and physical activity. They included sport as a source of social interaction for the community (across barriers of age, length of residence, economic status, etc.) in the face of a rapidly changing environment.

Sport was also seen as a means of fundraising for the community and support for community members who are experiencing difficult times and as we have seen in recent months sporting events have been used as a way to raise much-needed funds for the recovery process.

If Mother Nature hadn't provided enough drama, the golf course maintenance industry was then shocked to learn that two of the country's most prominent superintendents, Jim Porter (Royal Melbourne GC) and Peter Frewin (Barwon Heads GC), had resigned from their posts. I have been fortunate to know Jim and Peter over the past 20 plus years and it was with considerable surprise that they resigned within weeks of each other.

Both Jim and Peter have been custodians of two of Australia's oldest and most traditional golf courses and have been at their clubs for 19-and-a-half years and 20 years respectively. In an industry where longevity at one club is often a rarity, it is testament to their abilities as greenkeepers and managers that they have earned such great respect from their club and peers alike.

Jim and Peter have both been AGCSA board members. Jim was on the board in the mid-90's when it was still a developing association and finding its feet in the wider golf industry, while Peter was president between 1996 and 2001, a time when the AGCSA was changing its direction and expanding its member services.

I am sure that Jim and Peter will not be lost to the industry as we cannot afford to lose their collective experience. Change from the familiar is always difficult to cope with, however, on reflection it offers new opportunities for others. As Jim and Peter move on there will be movements within the industry that provide other superintendents and 2IC's the chance to move into new positions and potentially to allow for other staff members to move into more senior roles. As the movements begin, we wish everyone good luck.



Covering more than 300 hectares and boasting three championship golf courses, The National Golf Club is without peer in Australia. The country's largest golfing facility, the 54-hole complex is guided by a management philosophy that puts the courses first and as such demands exacting standards of those employed to maintain three extremely challenging and inherently different layouts. In this edition's cover story ATM editor Brett Robinson visits Victoria's famed Mornington Peninsula and catches up with The National's management trio of Leigh Yanner, Darren Balfour and Scott Calder to see just what goes into making a national golfing icon tick.

t's hot. Bloody hot. After two days in excess of 43 degrees, the second to last day of January 2009 is quickly heading the same way. By 8am it is already 33 degrees and by the time midday comes and goes the weather station at The National Golf Club on Victoria's Mornington Peninsula will have registered another 40+degree day.

Some 50 ringtail possums, ironically drenched from the previous night's irrigation cycle, lay scattered indiscriminately around the Old Course having expired from the oppressive heat that has proved too much to bear in recent days. A lone tiger snake is feeling the effects too and slithers out of the rough on to the 7th fairway of the Ocean Course in desperate search of some relief, prompting a few alarmed golfers to keep their distance.

A fleet of knockers works overtime and as The National's three championship layouts continue to bake, course manager Leigh Yanner frequently checks the stats coming through from the weather station. He's not alone and members of staff returning from their course duties drenched in sweat take the opportunity to steal a look as they seek some temporary respite in the air conditioned control room.

Not long after midday the call goes out. For the second time in as many days Yanner radios lieutenants Darren Balfour and Scott Calder telling them to bring the troops in. With the temperature officially above 38°C, the club's OH&S policy has kicked in and its time to down tools.

Leaning back in his chair Yanner puts in a call to the general manager to inform him what is happening. When asked what the temperature is, Yanner quips that it's a beautiful 18 degrees where he is sitting – less than two metres away from an air conditioner which has been red-lining for the best part of two days. Remarkably, just a few hours later the wind picks up off the ocean and the



Since May 2007 Leigh Yanner (left) has been course manager at The National, making the move across from Moonah Links after the club went back to an in-house maintenance set-up. Yanner relies heavily on superintendents Darren Balfour (centre) who oversees the Moonah and Ocean courses and Scott Calder (right) who calls the day-to-day shots on the Old Course

temperature drops back to a balmy 29. Just another glorious summer's day on Victoria's famed golfing peninsula...

IN A LEAGUE OF ITS OWN

Without reservation The National Golf Club rates as Australia's most exclusive golfing establishment. Starting as an 18-hole complex in the 1980s, The National has grown to encompass three contrasting championship golf courses each of which have found their niche among Australia's most respected layouts.

The brainchild of late entrepreneur David Inglis, the man behind the Australian Masters, and developer Laurie Curtis, plans for The National Golf and Country Club as it was then known were first unveiled in 1985. Highly sought after US architect of the time Robert Trent-Jones Jnr was enlisted and his job was The National Golf Club on Victoria's Mornington Peninsula rates as Australia's most exclusive golfing establishment. Starting as an 18-hole complex in the 1980s, The National has grown to encompass three contrasting championship golf courses. Pictured is the par 5 2nd of the Moonah Course crafted by Greg Norman Golf Design

National treasure

to design an 18-hole course which would be routed through some of the Mornington Peninsula's most spectacular terrain.

Necessitating the clearance of 40 hectares of vegetation, Trent-Jones Jnr crafted a monster, the like of which had not been seen before in Australia. Opening in March 1988, the brutal layout proved rather symbolic of the bold venture that was at the time the first large scale golf development on the peninsula.

Plunging and soaring through more than 95 hectares of prime Cape Schanck real estate, the Old Course afforded Kodak moment views of the peninsula, Bass Strait and Port Phillip Bay. The bentgrass/*Poa* greens were vast undulating canvases, none more stunning than what is now the 10th/14th double green, while the carries to the Santa ana fairways were dramatic and required an iron nerve from the tee. As Paul Daley expounds in the Ross Perrett-Kimbal Baker book 'Golf Courses of the Mornington Peninsula' (Eagles Nest Publishing, 2005), "There are no competitions in this book but the vistas encountered on the Old Course would probably win hands down. The seventh hole sends golf writers scurrying towards the nearest thesaurus, seeking new ways to describe its beauty."

Indeed when this particular scribe walked onto the seventh tee complex for the very first time this January past there was a certain feeling of envy directed towards the sole figure 139m away whose job it was to prepare the hole for play that day. The view across from any one of the four teeing areas to the 7th green and ocean beyond is simply majestic and if that particular greenkeeper wasn't pinching himself, then there must surely be something wrong. For nearly 13 years The National was a one course club, but that changed in the mid-1990s when the board of the time acquired the grazing land adjacent to the Old Course. Raising the needed finance, it earmarked the addition of two links-style courses on the land – the Ocean Course and the Moonah Course. The former was to be the domain of Thomson Wolveridge Perrett (TWP), while Greg Norman Golf Design would oversee the latter. Despite the Moonah Course starting a fraction ahead of its sibling, both were opened on Boxing Day 2000.

The Moonah Course has since established itself as a perennial entrant among Australia's top 10 courses – it currently ranks eighth – and features one of the hardest finishing stretches (16-18) of any course in the country. Although regarded as probably a gentler test of golf than its neighbour, the Ocean Course too has

BY THE NUMBERS – COURSE MAINTENANCE THE NATIONAL WAY

o how do you manage course maintenance operations at a 54-hole complex like The National? Well, when the club's philosophy is to have three distinct courses presented in the best possible condition 24-7, 365, it helps to have a dedicated crew and a degree in logistics.

Course manager Leigh Yanner can call on a crew of 31 full-timers plus two casuals. Yanner has two course superintendents directly underneath him who call the day-today operational shots on the three courses.

Darren Balfour, who spent over 14 years at Moe Golf Club before joining The National in 2000, oversees the Moonah and Ocean courses, while Scott Calder, formerly Yanner's Open Course assistant at Moonah Links, was appointed Old Course superintendent in September 2007 following an 18-month stint as assistant at Sanctuary Cove. Each course has an assistant superintendent with Mat Hose (Old), Rick Lee (Moonah) and Russell Dixon (Ocean) filling these crucial positions.

Another key figure in maintenance operations is office manager Michelle Williams. Following Yanner across from Moonah Links, Williams deals with the huge amount of paperwork a facility the size of The National generates and is also in charge of OH&S protocols across all courses.

The National crew operates out of two maintenance facilities. The Old Course crew shares a compound with the neighbouring RACV Cape Schanck course maintenance team headed by Lincoln Coombes. While they each have a separate shed and staff amenities, both crews share a washdown facility and will often borrow products or equipment from time to time.

The National's primary maintenance facility was constructed with the arrival of the Moonah and Ocean courses in 2000. Balfour is essentially in charge of that compound which also houses the main workshop run by head turf technician Steve Duke. The equipment set up is another unique feature and all course machinery is owned and maintained by BSF Golf Management.

Arriving at The National in May 2008, Yanner immediately made a number of changes from the existing structure employed by Scotch Grange. The most significant was increasing Balfour's area of responsibility to incorporate both the Ocean and Moonah courses. Under Scotch Grange Balfour oversaw just the Ocean Course while the Moonah was supervised by Kyle Wilson who is now superintendent at Moonah Links. If this member of The National crew isn't pinching himself, then something must be amiss



"I think it has been good for me to be able to work under a contracting system and now back in an in-house set up," says Balfour. "I have found the transition back has been very smooth and I'm enjoying working back for the club where the direction is coming straight from the club rather than a third party which created a few grey areas.

"I always knew there would be a restructure once Scotch Grange left. It was something that I was always open to and I think the changes made have been for the best. In the Scotch Grange days there was a lot or rivalry between the two sheds and we were very much separate crews. Now coming under the one banner of The National Golf Club we have tried to gel everyone and I think there is now a greater sense of ownership among the staff."

Yanner attends weekly management meetings with the general manager, assistant manager and golf operations manager. Following that Yanner will meet with Balfour, Calder and Duke to discuss any issues management has raised and then look ahead to the week's schedule, in particular what the machinery requirements are for each course.

Planning ahead is a vital task as a lot of machinery is shared between the sheds, especially sprayers, tractors and renovation equipment. Balfour and Calder need to know what machinery is available to them each day and, just as important, Duke needs to know what set ups are required.

At the start of each month the entire crew meets for a barbecue lunch in the main maintenance facility followed by a meeting chaired by Yanner in which staff are encouraged to provide feedback or suggestions. It also gives Yanner the opportunity to run through an update of operations across all three courses so everyone is aware of what is going on and can respond if a member inquires of them out on the course.

Not wanting to generate too much rivalry between the sheds Yanner makes a point of highlighting any positives that have been achieved by both crews, but if there is something in particular that one crew has accomplished he will emphasise that and use it as motivation for the other to aspire to.

At the start of every Monthly Medal, Yanner, Balfour and Calder will go around all three courses as a group to change holes which not only gives them on opportunity to discuss upcoming work and maintenance practices, but also gives Balfour and Calder a chance to see what the other is achieving with their course(s).

"The staff is definitely the biggest plus here," says Yanner. "Having the ability to move staff between the two maintenance facilities means we can accommodate many projects and get things done a lot quicker than normal.

"Essentially my role is supervision. I deal with all the budgets and sales reps, but as far as the courses go the three of us will sit down on a regular basis and discuss everything from budget requirements, OH&S issues and irrigation practices through to various management aspects such as fertiliser and pesticide applications. At the end of the day, though, it's my responsibility if something goes wrong out on the course.

"I guess some of the more arduous tasks of a superintendent Darren and Scott don't have to worry so much about, but on the flip side there is more onus on each of them as they are out on the course more and need to be across everything. They are my eyes and ears." won its share of admirers and regularly ranks among Australia's top 50 courses.

Greens locations, contouring and bunkering set the Ocean and Moonah courses apart, with the Moonah boasting more rugged traps as opposed to the unmistakable TWPstyle bunkers of the Ocean. Also contrasting are the turf varieties. The Ocean Course greens sport A1, the Moonah greens A4. The tees are all Wintergreen couch, but it's on the fairways where the biggest difference lies.

Initially sown with Greg Norman's CT2 common couch variety, the Moonah fairways struggled in their early days, especially in winter, so the club decided to oversow them with fine fescue. Despite that adding some significant management challenges, the fescue has given the course an even greater links feel and is in total contrast to the tight Legend couch lies of the Ocean Course fairways.

A NEW REGIME

For the best part of two decades, first when it was just 18 holes and then as the current 54-hole operation, Bruce Grant and his company Scotch Grange cared for The National under a contract maintenance arrangement. In 2007 the contract expired and to the surprise of some Grant didn't seek to renew it. Deciding to go back to an in-house maintenance set-up, The National offered all existing Scotch Grange employees their positions under the new regime and duly advertised for a new course manager. Receiving applications from far and wide, the club ended up needing to look just a few kilometres down Trueman's Rd for their chosen man – then Moonah Links superintendent Leigh Yanner.

Having helped grow-in and then bring Moonah's Open and Legends courses up to championship standard, Yanner had a track record that ticked all the boxes. His ability to produce some of the best turf surfaces in the country was widely acknowledged and most recently had the 2003 and 2005 Australian Opens under his belt. He also had an intimate knowledge of managing courses within the unique peninsula environment so it was little surprise that in May 2007 he was offered what many rate as the top job in the Australian golf course maintenance profession.

"It depends on what you classify as top," Yanner responds diplomatically when asked if he thinks he has the industry's plum job. "Is it running 54 holes next to the ocean; is it being on the Melbourne sandbelt; is it being in charge of a course which hosts tournaments? Every superintendent is different. "I applied for the job because it was 'The National'. I can remember playing my first round on the Old Course when I was in the second year of my apprenticeship at Kingswood Golf Club and just being blown away. I thought how the hell could you mow the greens and fairways given the incredible undulations.

"I was very excited to get (The National) job. It's such a beautiful location and to manage three fantastic golf courses which are known far and wide is a privilege. Going through my course inspections as part of the interview process it was amazing to walk around the top course (Old Course) and feel out of my comfort zone and then head down to the bottom two courses (Ocean and Moonah) and feel like I was back at Moonah Links.

"Because I was used to 36 holes plus the AIS facility at Moonah I didn't have a fear of maintaining three courses. I was also confident of my skills and past ability to produce surfaces on the peninsula. I always said when I was at Moonah that after finishing there I would go back to an 18-hole course, but I've ended up going the other way!

"One of the things I have liked since starting at The National is that I've had to draw on all my past experiences to help manage



the three courses. I'm taking bits and pieces from everywhere – how we managed bent/ *Poa* greens when I was at Kingswood through to what we did with Santa ana while being assistant at Metropolitan."

BALANCING ACT

Coming up to his two year anniversary, Yanner says the transition into the course manager role has gone smoothly and he has enjoyed getting a handle on the intricacies of each course and the club's management philosophy.

To say that managing course operations at The National is a challenge would be an understatement, particularly when the overriding tenet is that each course should be unique in the way it presents and plays. With the different turf varieties across all three courses requiring unique management inputs and practices to perform at their best, living up to club's demanding standards requires a year round balancing act. Helping Yanner achieve that is his crew of 31 and the expertise of deputies Darren Balfour (Ocean Course and Moonah Course superintendent) and Scott Calder (Old Course superintendent).

"Having the three courses with different varieties and different philosophies certainly makes it a challenge," reflects Yanner. "I don't think it was a deliberate philosophy, rather that when the club chose designers it was their thinking at the time that these particular grasses would suit their layout. Obviously the fescue fairways of the Moonah Course were the exception and came later on because of the problems they had with the CT2.

"Given that club wants each course unique it's a lot more difficult to micro-manage,



Greg Norman's Moonah Course layout may have won acceptance as the club's most enjoyable course to play, but its clever design and undulating beauty mask the fact that of it is the most management-intensive off all the three courses. Pictured is the sweeping par 5 15th

especially given the vast size of the property. But in saying that, there are some things which make the job easier. I have a very good management team on the ground, the club has the financial resources to do things and because it has the goal of being the best golf club in Australia means the courses will always come first.

"But we're just like any other golf club in many respects. There will always be a complaint about one of the courses which is probably the hardest thing to deal with. You may have two courses in superb condition but then something negative pops up about the other course. "The main philosophy which I have tried to bring on board is that all three golf courses are as important as each other and that they should be in peak condition all the time. Just because the members prefer the Old Course doesn't mean we should have just the Old Course in top condition at the expense of the other two. The National is about all three courses."

So what are The National's management challenges? Or should that be management predicaments. Well, to start with on the Moonah and Ocean you're killing *Poa*, while on the Old you're maintaining it. On the Moonah and Ocean courses you have Penn series bent greens which have never been cored, while on the Old you have two-decade-old bent/ *Poa* greens with an organic matter layer that in some spots can be up to 150mm deep.

On the Moonah Course you have fescue fairways that require a completely different set of management techniques and increased inputs. On the Old Course you have three very distinct soil types, ranging from pure sand through to rocky areas where using a vertidrain is out of the question.

The bunkering styles of each course demand distinct management approaches and to top it all off a 100m fall in elevation from the Old Course to the Moonah Course means a range of microclimates exist. From a turf management perspective it means that while one particular technique may work gangbusters on one course it could be a flop on the other two.

In regards to renovations, the club stipulates that only one course should be in 'maintenance mode' at any one time, so if



The Ocean Course, designed by Thomson Wolveridge and Perrett, sports A1 greens and Legend couch fairways



The original 18 of The National, the Old Course, is without doubt the members favourite. The Old Course plunges through more than 95 hectares of prime Cape Schanck real estate and affords spectacular view of the peninsula, Bass Strait and Port Phillip Bay

the Old Course is closed for coring nothing can be undertaken on the Ocean or Moonah courses. That means renovations aren't always performed at the ideal time, fairway scarifying being the classic example. Although Yanner would ideally like to rip into the couch surfaces in December, he is restricted to doing just one course.

The hardest management challenge that Yanner pinpoints is green speed. Having three different greens turf varieties which grow differently and behave differently to certain management practices and the climate, Yanner says it is almost impossible to micro-manage the surfaces to the point where they are all consistent.

BUNKER BATTLES

Aside form the heavily vegetated layout of the Old Course and the sweeping links land of the Moonah and Ocean courses, the bunkers are the main separation point between the courses. When Yanner first arrived at The National he took it upon himself to improve the bunkers and their presentation. That meant not only getting the right equipment for the job, but more importantly instilling a mindset among the staff that when they were on bunker detail that they went the extra mile. Yanner's solution to this was to get all staff involved in bunker maintenance, not just a select few.

"We have had to change our work practices a little to accommodate this and there is a bit more supervision required but I think the results speak for themselves," says Yanner. "We still rake bunkers just once a week but we make sure that we spend that extra time making sure they are of a higher standard.

"It is crucial that the bunkers are maintained to the complement the style of bunker. For instance the Old Course bunkers are more sandbelt in style where the faces needing to be smooth and edges trimmed and fly-mowed. We also have to move a lot of sand around the bases of the Old Course bunkers because the course is affected more by the wind.

"The bunkers on the Moonah Course by contrast have to be of a natural rugged appearance but at the same time fair to play a ball from. Even though they are more low maintenance than the Old Course bunkers they still have their requirements and occasionally we will have to thin the edges out and remove plants or else we start to lose the look of the bunker."

LOVE-HATE RELATIONSHIP

While Calder can probably claim to be under the microscope more managing the Old Course, which ranks as the sentimental favourite among the members, Balfour can rightly claim to have the most challenging course to manage in the Moonah. Greg Norman's layout may have won acceptance as the club's most "enjoyable" course to play, but its clever design and undulating beauty mask the fact that of all the three courses it is the most management-intensive.

The poor performance of the CT2 couch a year or so after opening meant the club decided to oversow all fairways with fine fescue which brought with it a whole new





set of management headaches. Controlling *Poa* sits high atop that list while watering in summer takes on a new dimension (the Moonah Course will soak up more than twice that of the other two courses). The fairways are treated more like greens in terms of managing disease and are particularly prone to *pythium*, *leptosphaeria*, *dreschlera*, red thread and insect damage.

Because the fescue has such a fine leaf mowers need to be backlapped each time to ensure a quality cut, while mowing has to done early in the morning when there is still dew on the leaf. This in turn has implications on staff numbers and means Balfour has to constantly pull resources off the Ocean Course.

Minimising cart damage is another challenge with the fescue and both Balfour and Yanner are looking forward to this September when all carts will be banned on the Moonah Course through until the following May (only those with a medical certificate will be allowed use of a cart).

FUTURE IN MIND

As well as maintaining the three courses at optimum condition, Yanner is also very mindful of keeping The National moving forward and as such there are a number of projects either on the go or in the pipeline.

The club has recently finished constructing an impressive three-hectare practice facility on the eastern side of the clubhouse, while an intensive 10-year landscape master plan for the Ocean and Moonah courses is being finetuned which will see some dramatic revegetation work undertaken between the roughs and course boundaries. Bob Harrison, from Greg Norman Golf Design, has also tabled some minor changes to the Moonah involving additional bunkering to 'balance' the course more. Perhaps the most significant project mooted for the near future is the possible resurfacing of the Old Course greens. While the current Penncross/*Poa* surfaces have held up well and are probably among the best examples of their type in the country, the inherent problems associated with 20-year-old greens, in particular the build up of thatch, are becoming more apparent.

Although the idea is still to go before the committee, since July 2008 Yanner has been undertaking an intensive trial to assess the performance of three new generation bentgrasses – Mackenzie, 007 and Authority – under local conditions and management practices.

The trial, which is running on the Old Course's old chipping green next to the 5th green, is being used as a showcase to demonstrate to members what can be achieved with the new varieties (the plots are being mown six days a week at 3mm). The current trial is actually the second that Yanner has conducted, the first one being canned due to *Poa* contamination.

As well as the three varieties mentioned above, Tyee was also part of that initial trial but didn't perform and was subsequently left out of the new trial. Yanner had also wanted to trial Declaration, but was unable to get Customs clearance in time to include it.

"They were the newest varieties on the market, the next generation after the A and G series bents, so we thought it was a good opportunity to introduce another species that would better suit our climate," explains Yanner of his decision to trial the three varieties.

"With the old bent/Poa greens you can't work them as much without running the risk of opening them up to disease. The newer bents are much more tolerant and bred to withstand greater stresses which means you Following the initial poor performance of CT2, the club decided to oversow all the Moonah Course fairways with fine fescue, which despite providing enhanced linksstyle surfaces brought a whole new set of management headaches

don't have to work them as hard to get the desired surface.

"We could have used the G series which would have produced a good surface, but it was a good chance to trial the newer bents. I would also have been happy to put A1 or A4 but again it goes back to the philosophy of having three distinct courses and as such they were not considered.

"Because of the big slopes on the Old Course greens I think it does need a different grass. At this stage of the trial each grass does have its strengths and weaknesses but I would feel comfortable putting any of them down. The one that I'm probably favouring at this stage has a more upright growth habit and is quite fine, but in saying that it has also been hit hard by *Rhizoctonia*.

"It may be stating the obvious, but I didn't want to choose a grass that will cause me problems in the future. I want a grass that can, primarily, tolerate *Poa* and resist disease. I think in the past people have chosen grasses purely on their quality without taking sustainability into account. That is why we are conducting this trial over the long-term to see what can tolerate our conditions."

If the resurfacing programme does eventuate (Yanner is looking at 2011 as a possible target) it could also open up the opportunity of tweaking the design of a few greens. Yanner admits it would be a huge step for the club to take especially considering the members adore the Old Course greens and have an intimate knowledge of how they play.

"At this stage it will more than likely be just a resurfacing programme, but if we were going to make any changes to the greens shape and design I would like to see Robert Trent-Jones Jnr involved," says Yanner. "The Old Course greens are well loved by the members, but I think there could be some improvements made.

"I think it could be a good chance while Trent-Jones Jnr is still available to get his input and thoughts as to where the course should head for the next 20-30 years. The National is in unique situation in that we have all three course designers still alive and I think it's important that we get as much information out of them as possible for the future. My philosophy is that we need to keep moving forward and there should always be room and scope for change."

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You can't begin to imagine what golf course superintendent Rob Christie and his young apprentice Kellan Fiske have endured over the past three months since the devastating Black Saturday bushfires razed their home town of Marysville. If losing the lives of family and friends was tragic enough, the fires also forever changed the little patch of turf that has become their second home Marysville Community Golf and Bowls Club. In this follow up to last edition's report on Horsham Golf Club. ATM editor Brett Robinson visits Marysville to look at the massive rebuilding process which is now underway and the crucial role the club is playing in bringing the shattered yet resilient community of Marysville back together.

Marysville rises from the ashes

t was meant to be their last family holiday together, a chance for Rob Christie and wife Jill to steal some precious time away with daughter Sheridan and son Daniel. As golf course superintendent at Marysville Community Golf and Bowls Club, Christie had never taken a holiday over summer before. With just one apprentice on staff and the help of a few member volunteers, taking time off during the growing season was, well, never even considered.

This past summer, however, things were different. The picturesque country course was looking its best in years thanks to a new irrigation and pump system which had been connected to the town's treatment plant. The

Marysville superintendent Rob Christie stands on the site of his old office which along with his machinery shed was destroyed in the fires



course had for the first time in its proud history an unlimited supply of irrigation water and the native couch/cool-season mix fairways and bentgrass/*Poa* greens were bouncing out of the ground in response to some consistent drinks.

Christie also knew that it was now or never. With both Sheridan and Daniel nearing completion of their studies, it wouldn't be long before they were off down their own career paths and time would become an even rarer commodity. So the moment was ripe and it was decided that for a week the Christies would jet off to Hong Kong, a place where Rob and Jill had spent a memorable vacation some 23 years earlier.

Flying out of Melbourne late on 5 February, Christie was confident that things were in hand. Apprentice Kellan Fiske was looking forward to the responsibility of being in charge of the golf club while the boss was away and was even house sitting the Christie's 4.5 hectare property on the outskirts of Marysville.

Before leaving Christie had caught a glimpse of the weather forecast which predicted a scorcher that weekend, but given the course had survived three consecutive days of 43°C-plus temperatures the week before, he wasn't too concerned with the 46 forecast that Saturday.

Less than 48 hours after lifting off the Melbourne Airport tarmac, however, that feeling began to change. On Saturday afternoon, Australian time, Daniel started receiving text messages from mates back home telling him that fires had broken out near Narbethong, some 10 minutes south west of Marysville. Thinking it was a hoax the Christies ignored Just as the Black Saturday bushfires forever changed the picturesque Victorian community of Marysville, so too did they impact the Marysville Community Golf and Bowls Club. If wiping out the course maintenance sheds and downing a significant number of trees wasn't bad enough, the most devastating loss was the new pump shed. Having no water for the best part of two months meant a total of 15 greens suffered severe drought stress resulting in the need for them to be ripped up

the messages and continued to enjoy their day sightseeing around Hong Kong.

The messages didn't stop however and heading back to the hotel their worst fears were realised. Flicking on the television the BBC World News was airing graphic footage of the bushfires which by this stage had razed thousands of hectares of country Victoria including reports that Marysville was one of the worst affected.

The mood in their little hotel high above the bustling streets of Hong Kong quickly turned to one of complete despair. The relaxing carefree holiday they had hoped for had been turned on its head. Now the Christies were comforting each other and trying not to think the worst – were their friends alive, was their home a pile of rubble, did their beloved dog Sophie and the other animals survive? For Christie his thoughts also turned to the golf course – were the sheds still intact, was the new pump system spared, was there fire damage to the greens and fairways, how many trees were down, was the clubhouse still standing?

After a sleepless night, the tortuous task of calling home to get some answers to these agonising questions began the next morning. By this stage aerial images of the devastated remains of Marysville were being aired on BBC World News which only added to the cavernous feelings of loss and hopelessness.

The first call Christie made was to his young apprentice to see not only if he was okay but to get an indication if their property was intact and how the golf course had fared. Kellan, a CFA volunteer, was pretty sure the house was still standing but couldn't be certain as he had received a call out from the CFA when the fires descended. When he did leave the house all was okay and he made sure to leave the back door open just in case the animals needed somewhere to shelter.

Kellan relayed that the work ute was okay – he was in charge of that too while the boss was away – but that the course had been hit hard with the machinery shed destroyed and trees down. At that stage Christie thought it was just the machinery shed that was gone and that the second shed containing his office was still standing.



Then in Kellan's next breath, the enormity of the situation back home suddenly hit. Kellan had lost not only his home but tragically his mother Liz and younger brother Dalton had also perished. The news hit Christie like a Mack truck. He couldn't continue the conversation. Handing the phone over to Jill, Christie just sat there in the hotel room and silently screamed.

TURNING A CORNER

In many ways Marysville was Christie's dream job. A late entrant into the turf industry, Christie was 30 when he was employed as a groundsman at Box Hill Golf Club. Prior to that he had spent over a decade working in the banking industry. Giving that the flick he went contracting picking up railway sleepers around Victoria and for a period drove a truck.

Working on a golf course, however, was something Christie had always aspired to do and with the support of his family made the bold move to try and catch a break in the golf course maintenance industry, no easy feat when you're unqualified and have a young family to support. Box Hill gave him that chance, however, and for nine years Christie was part of the crew at the east Melbourne course during which time he gained his ticket.

Unsuccessfully applying for a few jobs late during his time at Box Hill, one day in 1997 Marysville Community Golf and Bowls Club advertised for a course superintendent. The thought of being superintendent of a small country course was what initially prompted Christie to get into the industry, that and a love of working outdoors and being able to play a game he loved on a course which he had helped to present. After two interviews the job was his.

Machinery replacement figures alone come in at over \$655,000, but with insurance likely to only cover a third of that the club is hoping for some government assistance "I fell in love with the place," recalls Christie. "It's such a picturesque area and with the kids being primary school aged at the time it was just an ideal place to bring them up in. The quality of lifestyle and living away from the rat race of Melbourne was the real appeal, but also being in charge of my own course and having the ability to make the calls and decisions based on how I wanted the course was ideal.

"It had its ups and downs initially and I must admit there were occasions when I did question why I had made the move. Some of the equipment and management practices were antiquated and a day wouldn't go by where something wouldn't break down.

"It was also quite an adjustment for the family. While the kids made friends easily Jill left a secure job in Melbourne and initially had no employment or a circle of friends. After a few months we had settled in and now we wouldn't leave Marysville for the world."

When Christie arrived at Marysville he set about making adjustments to some "interesting" existing maintenance practices as AGCSA general manager John Neylan surveys the destruction on the 13th hole. Access to the 12th and 13th holes along with two other greens across the river has been restricted as the fire wiped out five wooden bridges and partially damaged a sixth

well as trying to replace some of the prehistoric machinery. Christie recalls how previously the club would fertilise greens with a Pivot 20-0-20 which if not washed in properly caused massive scald marks.

Working within the confines of a shoestring budget inherent of so many country courses and with a staff of just one apprentice and a few member volunteers, the focus of most work over the past decade has been on maintenance. A few major projects have been completed over the years, the most significant being the reconstruction of four tees and rebuilding three greens.

As with most country courses, however, the drought had started to bite in recent times. The club had its licence to divert water from the river which flows through the course slashed and it was only through a temporary transfer of 16M from an old disused timber mill that the club was able to trickle feed greens and tees. Fairways unfortunately went without and were reliant solely on Mother Nature.

Over the last 18 months however, the situation had started to improve significantly. The club had received around \$80,000 from the first and third rounds of the Federal Government's Community Water Grants scheme and combined with some financial assistant from Goulburn Valley Water it was able to extend and upgrade the irrigation and pump system as well as connect to the water authority's new Class B recycled water facility last spring.

"Having a virtual unlimited supply of water meant the course was looking in the best condition it had been in for many years,"



says Christie. "The fairways in particular had responded remarkably. We do get some reasonable rainfall during the year, but the whole place was starting to transform thanks to that additional water.

"It was starting to look a picture and everything was looking up. Green fee takings were on the rise. People were coming back as word got around that the course was improving. We now had a guaranteed water supply at a time when a lot of other courses were struggling and I guess we were a green oasis of sorts. The place had definitely turned the corner. But that has all changed and the fires have set us back on our knees again."

PARADISE LOST

Returning home from their holiday, the Christie's could only imagine what was in store for them. While in Hong Kong they agonised whether to cut their trip short early and return home, but once they discovered that their house and property were intact (thanks in no small part to a neighbour who had set out sprinklers around their house on the morning of the fires) they decided to stick it out and salvage what they could from their holiday.

Arriving home a week after leaving, the family stayed with Jill's parents in Melbourne

initially. After a couple of phone calls to the local police to see if they could get access to their property, the Christies began the long trip back to their shattered township. With the road from Healesville to Narbethong closed, they were forced to go the long way, up the Melba Highway and down from Alexandra.

"I guess that drive conditioned us," recalls Christie. "It first hit us going up through Yarra Glen and Dixon's Creek. Part of the highway goes through the Kinglake forest and the damage was indescribable. Alexandra was all right but once we hit Taggerty that's when it started to get bad. We could have turned off at Buxton to head to Marysville but we would have had to drive through the middle of town to get to our property and we weren't ready to face that yet. We went the long way round and into Marysville from the Narbethong side. It was devastating seeing all the properties left in piles of rubble and the trees black and desolate. It was pretty ordinary."

Arriving at their property, which was inside the roadblocks set up on either side of Marysville the Christies unpacked, collected their thoughts and began to clean up. All the paddocks around their property were black and the thick smoke was a constant reminder of what had taken place while they were away. "It was very isolating initially because when we got back there were only a handful of locals still living in the township. Those who had lost their homes had moved to surrounding towns. The only way for people to meet up was to go outside the roadblocks and luckily the Narbethong Hotel and a few other places had get togethers and meetings in those initial weeks which gave us an opportunity to catch up with friends. Being inside the zone too you weren't supposed to go outside your own property so that added to the isolation.

"It was a very weird feeling. Given that our house was intact and most of the township had been destroyed you had an overwhelming sense of guilt. We felt guilty for not being there when the fires hit and not going through the suffering that the rest of the community was. Our only inconvenience was being without power for five days which seemed completely insignificant.

"In saying that though we are very grateful. Some of the stories we have heard from friends have been horrendous and you can't begin to imagine what it must have been like. (Bob Emblin, life member of Marysville Community Golf and Bowls Club and one of Christie's stalwart volunteers, managed to escape the fires by the skin of his teeth and recalled that



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seeing the fire consume the township, and surrounding hills was akin to watching a lava flow.)

"It was nightmare material what went on that day and we are extremely grateful that we weren't here because there were no guarantees that our family would have survived. We would have been separated in different areas of town – I would have been down at the golf course, Jill would probably be at home and Daniel would have been working in the middle town in a building that was burnt to the ground. There's no telling what would have happened if we hadn't have been away."

Still unable to bring himself to drive through town, Christie went the long way around to view the golf course for the first time. As it came into view around a sweeping bend of the Marysville-Buxton Road about a kilometre out of town, Christie's first thoughts actually bordered on upbeat. The fairways were still green, as were the greens, and the clubhouse was, miraculously, still standing. Miraculous given that less than 25m away in the club's car park was the burnt out hulk of a logging truck, the driver of which had parked it there thinking it would be safe.

Around the course numerous giant gum trees and mountain ash had dropped, while those still standing were an eerie mix of sepia-toned scorched foliage and blackened trunks. Proving just how indiscriminate the inferno was, Christie's machinery shed and office, just 100m away from the untouched clubhouse, were a pile of steel and molten aluminium. Likewise, the small machinery shed next to the club's Tifdwarf bowling green and the cart shed just a 15 second stroll from the clubhouse were in ruins.

In an ironic twist of bad luck the minidigger which the local plumber was storing temporarily next to Christie's office was also a write off. Six bridges which provided access to the two holes and four greens across the river were burnt out, but the real kick in the guts was the loss of the pump shed.

"As far as damage to the turf we escaped pretty well," says Christie. "There was significant damage to the trees which will alter the layout of the course somewhat, but for the most part it has been all the after effects which have knocked us for six. Having no equipment was bad enough, but losing the pump station was devastating.

HORSHAM'S AWESOME FOURSOME CAN SEE THE LIGHT

n Volume 11.2 (March-April 2009) ATM reported on the massive clean-up process that had begun at Horsham Golf Club which, like Marysville, was gutted by the Black Saturday bushfires. Since then superintendent Tim Warren and his crew of David Gove (assistant) and apprentices Mick Warren and Nathan Turner (who have been dubbed the 'awesome foursome') have been working around the clock along with contractors to get the course back on its feet.

Providing a major boost was the assistance of about 20 fellow Victorian greenkeepers who descended on the course on 19-20 March. Nathan Bennett, superintendent at The Sands, Torquay, organised a busload of volunteers and equipment to head to Horsham and during the two days that crew managed to lay around 400m² of turf, oversow tees and collars as well as edge and tidy up all bunkers.

Volunteers came from The Sands, Anglesea Golf Club, Metropolitan Golf Club, Huntingdale Golf Club, Keysborough Golf Club, Sanctuary Lakes, Portarlington Golf Club and Eastern Bowling Club and Warren reckons what would have taken him and his crew a month to complete was achieved over those two days. The working bee even got some media coverage with ABC TV airing a report on its Friday evening news bulletin.

"We had an excellent couple of days with Nathan's posse from down south and I was actually able to get home at 3.15pm that Friday for the first time in weeks," says Warren. "We were extremely grateful for their support and it meant we could keep moving forward in a positive direction. It's a very



different Horsham Golf Club from the one I knew [just after the fires] and we are starting to see a light at the end of the tunnel."

Shortly after that work was completed the club opened nine holes for its annual Extravaganza fundraiser and a few weeks later the remaining nine holes were opened. Warren says while it has been good to get golfers back on the course and see the place return to some form of normality, the added task of preparing the course for play has detracted somewhat from the recovery work. The extra traffic has also caused a few wear issues but Warren says that overall the course is in good nick, thanks in no small part to the cooler weather, and the new turf is knitting together well.

Irrigation issues are still creating a few headaches – a couple of valves are sticking which has caused a few bunker washouts – but Warren has been on to Toro who are looking at fixing the problem. When ATM called Warren had also just taken delivery of a new greens mower and rough cutter and was hoping to have a full complement of new machinery by early May. A temporary clubhouse was delivered prior to Easter, but as far as a new maintenance facility is concerned there hasn't been much movement yet. Warren and the crew are currently based out of a temporary office which was donated, while shipping containers are being used to house equipment. Warren is pushing for the new maintenance facility to be constructed adjacent to the 1st fairway (the old compound was located in the middle of the course) which will provide easier access for deliveries and course access for staff.

"We (the crew) are all holding up pretty well and we have all managed to have some time off work recently which was much needed," says Warren. "We'll be one down for a little while as Nathan is about to go in for a double hip replacement.

"Architects Neil Crafter and Paul Mogford have begun the Master Plan process and are salivating at the potential before them given that nearly 90 per cent of our trees have gone. There's still a lot to do, but if we can get through the next couple of months without any issues arising we'll be looking good."



"That has had the biggest impact on the condition of the course. Our initial priority was getting water on to the greens, but with no pump system that was near impossible. We spent a few thousand dollars on hoses and sprinklers but it was just a token gesture and in the end we were fighting a losing battle."

The clean up of the course began in earnest shortly after the fires with loggers from the local timber mill spending 10 days removing trees and felling those that were considered dangerous. After initially thinking he would need to rip the tops off just a handful of the worst affected greens, that figure would eventually blow out to 15, with only the three greens Christie had reconstructed – 3, 4 and 9 – being salvageable. Of the six bridges across the river, only one was able to be repaired quickly with the other five wooden bridges needing to be completely rebuilt (something Christie was hopeful of having completed by the end of April). The lack of water has tied Christie's hands significantly in the aftermath and has been one of a number of frustrations he and the club have had to go through the motions with. The red tape surrounding getting government assistance from appeal monies raised has tested their patience, while residents – and Christie for that matter – are growing wearisome of the time it is taking to get their sites cleared.

Then of course there has been the arduous task of putting together an insurance claim. The machinery replacement figure (new for old) alone comes in at over \$655,000, but with insurance likely to only cover a third of that the club is hopeful of getting some government assistance.

In the meantime Christie has had to rely on the generosity of other golf clubs and the likes of Toro and John Deere (Glenmac) who have loaned the club equipment until it gets back on its feet.

In an effort to get any amount of water on the course in the weeks after the fires, the club spent money on hoses and sprinklers but it proved to be a token gesture

As this edition was going to print, Christie was hopeful of getting the front nine holes (temporary greens) open for play by the first weekend of May. The remaining nine holes will be a few months away yet as access across the river remains restricted and there is still a large amount of debris to be removed. A diesel pump has been hooked up to the irrigation system but without a control system is providing just temporary relief.

RISING FROM THE ASHES

Despite running on adrenaline for the best part of three months and with a long road still ahead, Christie can take heart in a number of things. The first has been the overwhelming support he and the club have received from the entire golf and bowls industry. Christie cannot talk highly enough of the offers of labour, machinery and monetary support that has flooded in (one club in South Australia sent a \$25,000 cheque) which has made the rebuilding process so much easier.

Aside from the many donations of machinery – Kingston Heath Golf Club donated a Toro workman, Sorrento Golf Club offered hand tools and PPE equipment, Centenary Park Golf Club offered a topdresser and Portland Bowling Club a greens mower – perhaps the biggest boost for Christie was the help he received getting the 15 greens ripped up, re-turfed and topdressed.

In early April staff from BSF Golf Management, Greenmakers and Box Hill GC assisted Christie in taking the tops of those greens and preparing them for re-turfing. Shortly after, through the assistance of the AGCSA and VGCSA, two teams of volunteers spent a day on two consecutive weeks laying

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Volunteers numbered over 40 and came from Sandhurst Club, Eastwood GC, Greenmakers, Box Hill GC, Turf Renovation Australia, Golf Buying and Services Australia, Medway GC, Royal Melbourne GC, Moonah Links, Devil Bend GC, RACV Cape Schanck, Peninsula CGC, Victoria GC, Spring Valley GC, Centenary Park GC and the AGCSA. Even recently retired NMIT chief turf lecturer Phil Ford donned a pair of overalls.

Elsewhere the likes of Globe, Simplot and Nuturf have donated pesticides and fertilisers, while the Alexandra Rotary Club donated and erected a 6m x 10m temporary maintenance shed. Bluescope Steel is supplying the steel to rebuild the five bridges free of charge.

"The whole golf and bowls community has been fantastic with offers of support and as a club we really can't emphasise how much we appreciate this," says Christie. "We have also just put on a third member of staff which will help us immensely and we are hoping to keep him at least for the next 12 months."

The second thing Christie can draw strength from is the fact that together with apprentice Kellan and the likes of volunteers such as Emblin, Christie is playing an integral role in helping the devastated community return to some form of normality. Getting the golf club back and fully functional isn't just for the sake of the club's 130-odd members and the occasional green fee player from Melbourne; rather it's for the whole Marysville community.

Since the fires the golf club has, by default, become a focal point for the community and its many displaced residents. Given that it was the only facility of its type left standing, the club has become a crucial hub, giving locals a place to catch up with family and friends. That role will only increase in the coming months and years as the temporary housing estate for those who lost their homes and businesses is being constructed opposite the golf course. Such an important role has provided a focus for Christie and his team and gives them a boost when it all gets a little too hard to handle.

"It has been a harrowing time," reflects Christie. "The first views of the township were pretty emotional but you tend to shut that out now when driving through. You have your good days and bad days and there have been a few times where I've struggled, but you just have to grin and bear it. "It has been pretty hard recently with the number of memorial services and funerals. They do take their toll and at one stage we had eight funerals in 10 days. Quite a few of those services have been held at the golf club and we have erected a marquee on the first tee.

"I think immersing ourselves in work has probably helped on the emotional side, both for me and for Kellan who is bearing up well despite what has happened to him and his family. Having the focus of getting the course back up and running means you don't have time to dwell on things which is fortunate.

"I find it hard to get a good night sleep every now and then, but that's more to do with constantly thinking about planning ahead and what needs to be done at the club. I guess it would be worse if I was sitting around with nothing to do.

"Our only fear at this stage is that people will forget our predicament in a few months time. Once we are back up and running we will need people to come back so it's important we are not forgotten. There is still a lot more work to be done and even though it will take a couple of years for the community to get back on its feet, you can be sure we'll bounce back better than ever."







Over 40 volunteers from Victorian golf clubs, turf industry companies and organisations helped to rip the tops off and returf 15 greens in April which has provided a significant boost in the rebuilding process. A total of 4500m² of G2 bentgrass turf was laid over two days

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Kirby cultivates a Champion venue

The PGA National Champion Course plays host to the US PGA Tour's Honda Classic which is held in the first week of March. Originally designed by Fazio it has since been redesigned by Jack Nicklaus and is now regarded as one of the most challenging layouts on Tour

y career in turf management began at the age of 16 when I started an apprenticeship at Narooma Golf Club in 1996 under superintendent Richard Goodridge. After five years at the NSW south coast club and having completed my turf qualifications through the Canberra Institute of Technology, I had a chance conversation with Royal Canberra Golf Club superintendent Michael Waring about the Ohio State Program (OSP) which a number of Australian greenkeepers were involved with in the US.

Earlier, in 1999, I had visited family in New York where I was able to play some great courses in and around the state. Since that trip I harboured a desire to head back to work and after completing my studies and talking it through with my family I decided to sign up to the OSP. I thought when I left Australia I would be gone for only 18 months and had every intention of coming back home to pursue my career. That was over seven years ago.

Leaving Australia in April 2002 the first port of call on my internship was Chicago and having left Australia during a warm autumn I happened to arrive during one of the worst spring seasons on record. One thing I learnt very quickly was the difference between degrees Celsius and degrees Fahrenheit. One morning I looked out the window and saw crystal clear skies with the TV weather report When Blair Kirby left Australia in 2002 bound for the US, little did he know that some seven years later he would find himself still ensconced Stateside and superintendent of a golf course which hosts a US PGA Tour event. Having recently prepared the course for the \$US5.6million Honda Classic, Kirby recounts what goes into presenting a layout which is regarded as one of the toughest

tracks on the Tour.

forecasting 40°F. Thinking I was in for a hot one, I chucked on a pair of boardies and shirt and headed outside. Needless to say I didn't make that mistake again as 40°F equates to about 4°C. I spent the next 10 months working at Cog Hill Golf and Country Club in the suburbs of Chicago, which for 20 years hosted the Western Open. Like a lot of courses in the northern reaches of the country Cog Hill had bentgrass tees, fairways, greens and bluegrass/fescue roughs. For the first couple of months I would do a little dance in my head every time I played the course because I couldn't believe I was hitting off bent surfaces.

In autumn 2002 I moved south to Naples, Florida and went to work at Twin Eagles where I finished up my Ohio internship. At the end of my time I asked my boss about sponsorship opportunities and as luck would have it when I made the switch over to my new visa I was offered an assistant superintendent position. I spent four-and-a-half-years at Twin Eagles during which I was the assistant for four Champions Tour events and involved in the construction and grow-in of a new Seadwarf paspalum course.

Having earned my stripes at Twin Eagles, in the summer of 2007 I took over as course superintendent of the Champion Course at the PGA National Resort and Spa. The PGA National in south Florida shares the property with the Professional Golfers' Association of America and along with the Champion Course there are four other 18-hole courses – the Haig, Squire, Palmer and Estate courses. Century Golf manages maintenance operations across the entire PGA National complex. Director of golf maintenance is John Andersen and under him are the five course superintendents. We each have a crew of around 12 and we also have a dedicated horticulturalist, irrigation tech and turf technician assigned to each course.

TOUGH TRACK

The Champion Course at PGA National was originally built in 1981 and designed by Tom Fazio. It was rebuilt by Jack Nicklaus in 1990 and in 2001 a further \$US4 million was spent tweaking the layout. The Champion Course has had numerous events during its history including the 1983 Ryder Cup and 1987 PGA Championship. From 1982-2000 it was also home of the Seniors PGA Championship.

It is traditionally known as one of the tougher tracks on the Tour and last year ranked ninth out of 54 in difficulty. The course incorporates the now famous 'Bear Trap' grouping of holes (15, 16 and 17) – a par four bookended by two par threes all which feature significant water hazards – which has proved the ruin of many a tournament contender.

Since the Honda Classic moved to the course in 2007 we have undertaken a range of improvements in conjunction with the Nicklaus design team. In the first year we incorporated six new tees which added about 180 metres to the course and rebuilt a putting green. Last year, in response to the increased driving distances being achieved by the pros, we relocated three fairway bunkers to bring them more into play off the tee. This past summer was pretty quiet but we still rebuilt a section of our 10th green to allow for more pin placements and rebuilt a tee on the tough par 3 5th that was added for the first Classic.

Turf varieties on the Champion Course are pretty standard for the south Florida region – TifEagle greens and Tifsport tees, fairways and roughs – and in the cooler months (December-

"No inflated marketing & handlers fees"



March) we oversow with ryegrass. A number of Florida courses will generally oversow greens as well but because we host a PGA Tour event we don't touch the greens.

The rates we use are quite heavy with tees, fairways, collars and approaches seeded at 600lbs per acre (6.8kg/100m²) and the roughs at 400lbs per acre (4.5kg/100m²). We water for 10 days and start to back off after seven days. About 10 days after germination, when the rye is starting to tiller to a second and third leaf stage, we apply a 24-4-11 granular fertiliser to give it a good boost and avoid any potential plant stress.

With five courses at PGA National there is always something going on and it is organised chaos to say the least, but with four other superintendents and a director of agronomy we all lend a hand if the other courses are hosting events or undertaking major turf management operations.

We perform two major aeration regimes across the course which we do in-house. In spring we verticut greens initially at 0.250" (6.35mm) and tees and fairways at 0.500" (12.7mm). At the same time we start to aerate the tees and fairways with tractor-mounted Toro 880s and when things start to dry we drag

From serving his apprenticeship at Narooma Golf Club on the NSW south coast, Blair Kirby now finds himself in charge of one of the US's top resort courses in Florida

tees and fairways to incorporate the corings as a light topdressing.

Once we have the greens, tees and fairways aerated we verticut tees and fairways to help break up the cores and sweep the greens. We then topdress greens the following day to make sure we have sufficient time to come back and do a light dusting once the sand starts to settle in the holes. I also roll for four to five days with a one-and-a-half ton roller to try and smooth the greens back out.

Once we have put one or two rolls onto the greens we will apply a starter and potassiumbased granular fertiliser. At seven to 10 days after punching the greens we will come back and do a second verticut, but it will not be as aggressive – usually about 0.080" (2.0mm) – which helps with the bridging of holes.

Some facilities have the luxury of topdressing fairways in the last renovation period which usually falls in September or October. At a cost of between \$US30,000-\$US40,000 it is not feasible at the PGA National and it has been a line item that has dropped out of a lot of budgets this year because of the current economic climate.

In April or May, depending on our scheduling, we will apply an insecticide that targets mole crickets and grubs to about 60 acres (24ha) of the golf course and spot treat outer areas as needed. We also apply two pre-emergents, one usually in the spring around March-April and then another in August. Because we oversow wall-to-wall we cannot apply a third in autumn because of the residual. As a result we are always chasing weeds around the property but we have found a good mix of herbicides to help combat them.

This year we had some very healthy ryegrass which while looking great on TV for the Honda Classic is a double edged sword

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Turf varieties on the Champion Course are standard for the south Florida region -TifEagle greens and Tifsport tees, fairways and roughs. In the cooler months all surfaces, except greens, are oversown with ryegrass

come transition time. As I write this we have stopped irrigation and are slowly scalping the rough down to stress the rye out and get some light in to help the couch come through.

When it comes to fertility we try to aim for an application about every two months once the tournament is over to promote the couch. The ultradwarf greens grasses such as TifEagle are very big users in minor nutrients and as a result we spray our greens every seven days with a minors package which contains;

- Manganese;
- Iron sulfate;
- Liquid minors;
- Primo (rate depends on time of year);
- Liquid molasses and humates;
- A soluble fertiliser usually 10-20-30 to give us 1/16 pound (0.3kg) of N; and
- A buffering agent because the irrigation water usually runs at a pH of 8+.

We also use a water treatment amendment called pHairway once a week during the dry months (March-June). Made from sulphuric acid it helps flush our greens and brings water pH down to our target levels of between 6.5-7.5. It also helps combat bad water quality and deals with bicarbonates and sodium which lock up nutrients in the profile. We also apply between 20-35lbs/1000sq ft (9.8-17.2kg/100m²) of gypsum in the spring and autumn.

During the summer we verticut, topdress and granular fertilise the greens every fortnight depending on the weather and what tournaments are on. I try to apply 3-6lbs N/1000sq ft (1.5-3kg N/100m²) per year and 20-40lbs/1000sq ft (9.8-19.5kg N/100m²) potassium to keep the greens healthy. This may seem pretty extreme but over here it is a standard practice as the ultradwarfs do not have the deepest of root systems.

CHALLENGES

While there are plenty of management challenges on course, there are also a few off



course issues which have reared their head in recent times, water management and the use of certain products being among them.

Golf courses in the Florida region are pretty fortunate as the state sits atop an aquifer that also feeds Lake Okeechobee, the second largest freshwater lake in the US. Although we get summertime rains like they do up in Queensland, we went through a scare about 12 months ago when our water allocation, which is set by the South Florida Water Management District, was cut by 45 per cent. Water allocations are a little crazy in Florida in that we get the most water allocated in the summer months, when we don't need as much, and the least in the winter, when we do. This is somewhat frustrating from a turf management perspective and something the authorities are trying to change.

Georgia, which is the state directly above Florida, has been in serious drought and there was footage recently of one of the state's major lakes which had extremely low levels. There is currently a lawsuit between the state of Georgia and the US Federal Government to force the state to release water downstream.

Other issues facing the US golf course maintenance industry include the use of MSMA which is going back and forth from being pulled off the market. Nemacur has also been taken off the market and while there are other products in the development stage they are still another year from getting onto the market.

Another issue to raise its head here last summer was the price of fertiliser. While the price of nitrogen has started to return to normal now, the price of phosphorus is still up around where it was last season. Such increases start to raise the issue of golf course maintenance expectations and sustainability and you really have to start thinking outside the box to explore all possible avenues to keep your course presentable.

GEARING UP FOR HONDA

Without doubt the big event for us is the \$US5.6million Honda Classic which is played in the first week of March and all the maintenance practices mentioned above are geared to peak the course for this week.

To aid in preparations for each Tour event, the US PGA has a number of regional Tour agronomists who make three scheduled site visits a year. They will also spend the week before the tournament (which is known in the industry as Advance Week) with the superintendent/director of golf going through any issues that may arise.



During the Honda Classic greens are cut a 2.9mm, fairways 12mm and roughs up to 102mm by the end of the tournament

Considerable attention is paid to the Champion Course's 78 bunkers to make sure all the faces and bases have consistent depths and moisture levels before and during the Honda Classic

Our Tour agronomist this year was Dennis Ingram. Dennis has a wealth of experience having been superintendent for 39 US PGA and Nationwide Tour events as well as a US Open so I was quick to pick his brain on pretty much everything. He has also worked in Asia and the Caribbean and had worked with a number of Australians before and liked the odd nip of Bundy. We got along famously!

Advance Week starts with a ride around the course to show what we have been doing since the PGA's last visit at the start of January. We walk all the greens and greens complexes and Dennis will point out any work that he thinks needs to be done prior to the tournament. The following day we start taking green speed readings to make sure that all are a consistent speed (this year we found that a couple of greens were about a foot quicker than the rest).

By this stage we are in full tournament prep mode which gives Dennis the chance to oversee our daily maintenance practices that we have set in place for the tournament. For



the rest of Advance Week we spend our time grooming as well as a considerable portion working on the bunkers (there are 78) to make sure all the faces and bases have consistent depths and moisture levels (and I thought they were supposed to be hazards!).

That week we also meet the Tour rules officials to see what green speeds they want, what height they want the roughs and any other small issues that have been raised by the players (the pros have little issue telling the officials what they think is wrong about any facility).

During the actual week of the tournament, if Mother Nature doesn't throw anything untoward into the mix it is generally a lot easier than Advance Week. Also my job is made considerably easier with up to 80 staff plus volunteers at my disposal. I must admit though it is still quite a spectacle seeing the procession of workers and machinery heading out of the maintenance compound first thing in the morning.

During the 2009 tournament our mowing heights were:

- Greens 0.115" (2.9mm);
- Tees 0.420" (10.7mm);
- Fairways 0.500" (12mm);
- Approaches 0.450" (11.4mm);
- Collars 0.375" (9.5mm);
- Roughs: Advance Week 3" (76mm). By the end of the tournament 4" (102mm);
- Walkway to the fairways and intermediate rough 1" (25.4mm);

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At the top end of the Gianni Ferrari range is the Turbo 6, in a class of its own in the Wide Area Mower market. The Turbo 6 is capable of reaching productivity in the region of 14 acres per hour. In this market segment the primary focus is on cutting as much grass as you can in as little time as possible - it's all about productivity, and nothing does it as well as the Turbo 6. Some of the features that bring productivity to the fore in this machine are truly ingenious in their concept and application. A prime example of the forward thinking engineers, is the development of the "Side-Shift" function of the wing decks. This feature allows each wing deck to independently move inward or outward, varying the cutting width. The benefits are manifold and significant, and among other things means the operator no longer needs to drive around trees - simply drive up to the tree, shift the wing inward and then shift it out again once the tree has passed. All this is accomplished on-therun; truly a time-saving (productivity enhancing) feature, and that's only one of about 20 other patented features competitor offerings can't match.



Our aim is to have green speeds between 10'6" and 11' because of the spring time winds. If you get them too quick and you get strong winds which are very typical for that time of year, the potential of suspending play will dramatically increase which the Tour wants to avoid as much as possible. Additional maintenance practices employed include:

- Two granular applications to the tees, fairways and rough – the target is ½lbN/1000sq ft (0.25kgN/100m²);
- Average one tank of 20-0-0 with 1 per cent iron fertigation to keep everything in check and maintain colour; and
- During Advance Week we will apply a wetting agent and a broad spectrum fungicide to cover all our bases.

With the number of Australians on the Tour nowadays I have been able to touch base with a few of them. It is great to see the number of Aussies increasing and in recent tournaments I have had the opportunity to briefly talk with Peter Lonard (we both support the Bulldogs in the NRL) and Aron Price who is the younger brother of a mate that I grew up with back home. Other than that when the pros start to roll into town we are in the middle of Advance Week and I'm running around like a chook with its head cut off.

Last year to my surprise the rules officials and PGA Tour agronomist organised to have all the Australian players sign a tournament flag for me. I did not even know about it until they presented it to me at our Sunday morning meeting where we were discussing the final round and possible scenarios if a playoff eventuated.

A CHAMPION EXPERIENCE

I could go on forever about some of the adjustments I've had to make since moving to the US, but most are personal rather than

The Champion Course is one of five 18-hole courses that forms part of the PGA National Resort and Spa complex professional. They have the same grasses over here, just different varieties. The biggest thing I had to come to terms with initially was not being able to get my hands on a sausage roll or a steak/sausage/rissole sanga whenever I wanted one!

My accent is another source of amusement. I'm told constantly that I've got an accent but my reply has always been that everyone else has an accent to me. Every now and then I'll throw a little Aussie slang into the conversation and it's quite a laugh to see the 'Roo in the headlights' look I often get in return.

The majority of golf course maintenance crews in America are made up of Hispanics. Their culture is tremendous and they are very hard workers but the majority speak very little English. Likewise I knew no Spanish when I came to the US but when I was in Naples I had one crew member from Guatemala whom I dubbed 'Professor Antonio'.

He would come into my office at lunch and just start pointing at things and tell me what they were in Spanish. It got to the point where we would be out on the course and he would be quizzing me about certain things. This was great for both of us because I was able to

During summer the Champion Course greens are verticut, topdressed and fed with a granular fertiliser every fortnight

communicate a little better with the crew and he took pride in teaching me. Over time I have learnt Spanish but when you throw an Aussie accent into it I may as well be speaking a completely different language, but I think most have got used to it now.

At the Honda Classic I had the PGA Tour's rules official guru Slugger White (yes, that's his real name) teaching me how to speak Southern. Mind you this was over the Tour radio which at any given time has between 50-70 people listening in to. In return I taught him some Aussie sayings which he and the other rules officials got a laugh out of.

As far as management styles are concerned there are a few differences between Australia and America, but the one thing that stands out is the laid back approach that Australians naturally seem to possess. I have seen some pretty severe tongue lashings handed out during my time in the US and some of the littlest things can set people off. I guess I have my parents to thanks for instilling in me the ability to take everything in my stride, both good and bad, and adapting to each situation as it comes along.

Looking back on the past seven years I would not trade any of it back. I have meet some wonderful people, been to some incredible places and tested my abilities as a turf manager which was my aim when I first jetted across. I do get homesick every now and then but then I think of what and where I've come from and realise that I'm in a fortunate situation. Not many people get the opportunity that I have had and if I do find myself pining for home a quick phone call to the family to tell them what a great time I'm having quickly brings me back in line. \pm



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The country's sod producers meet in Melbourne in late March for the Turf Producers Australia Conference and Trade Expo and as ATM editor Brett Robinson discovered the industry is set to kick off a major marketing campaign that aims to reposition turf as contemporary and environmentally responsible.



Greener pastures for Australian turf producers

B eefing up the environmental credentials of the turf production industry and ramping up the marketing campaign to promote natural turf were among the key themes explored at the 2009 Turf Producers Australia (TPA) Conference and Trade Expo held in Melbourne in late March.

Over 230 turf producers and trade representatives converged on Melbourne for the two-day event which kicked off on Monday 23 March with a morning of presentations at Crowne Plaza Hotel followed by an afternoon tour of Melbourne's premier sporting facilities. Day two of the expo was held at Anco Seed and Turf's Cranbourne West facility where a range of companies exhibited their products and machinery companies undertook demonstrations of sod harvesting equipment.

Guest speaker for the conference was Turf Producers International (TPI) president Randy Graff. Graff, who was on his third trip Down Under, started Graff's Turf Farm with wife Betsy in 1979 northeast of Denver, Colorado. Since then the farm has grown to 440 acres (176 hectares) and is one of the frontrunners in the US sod production industry growing turf for playing fields, commercial sites, golf courses and stadium projects.

Graff has been a member of the TPI since 1980 and served as the association's Colorado state representative from 1988 to 1992. He was elected to the TPI Board of Trustees in 2002 and at the beginning of 2008 was elected president. At the 2007 TPI AGM he also received the esteemed President's Leadership Award for demonstrating exemplary dedication and performance to the association. Only four other turf producers have been honoured with the same award over the past 40 years.

As one of the leading figures in the sod

production industry, Graff gave a sobering account of the current market in the US which he described as "going into hibernation". Like many other industries, turf production is feeling the full impact of the current global economic crisis and Graff detailed that while some states were experiencing good times, the majority of turf farms in the US were having to tighten their belts thanks to an across industry downturn of around 15 per cent.

One of the hardest hit states was Michigan where a number of turf farms had closed their gates, while in other states some farms were selling turf for as little as 6 cents US a square foot. Indeed, Graff could only admire what Australian turf farmers were currently getting and made a point of affirming that Australia had some of the best prices in the world.



Earlier in proceedings recently elected TPA president Lynn Davidson kicked off Monday's plenary session with somewhat of a call to arms, impressing upon those turf farmers gathered the need for the industry to take stock and look at its markets, particularly in light of the growing synthetic market. The industry he said needed to enhance the image of natural turf and that it was up to all growers to spread the word.

John Lloyd, chairman of Horticulture Australia Ltd's (HAL) Industry Advisory Committee, followed Davidson with an update on the turf levy which has now been in place for a couple of years. Lloyd highlighted that the levy was performing above expectations and was 16 per cent up on 2008 figures with a target sum of \$750,000. Lloyd impressed, however, the need for more information form the industry in regards to the number of hectares under sod production and also the number of growers.

Lloyd also outlined a three-year strategic plan for the industry which included four key areas:

- Building the environmental credentials of the turf production industry through the development of environmental management systems, such as e-par;
- Influencing consumer and other specific markets;
- Driving profitability and professionalism; and
- Encouraging industry best practice.

Turf Producers International president Randy Graff was guest of honour at the TPA conference and gave a sobering account of the current market in the US which he described as going into a state of hibernation

GROWING GREEN

Perhaps the most exciting announcement to emerge from the conference was the start of an intensive marketing campaign to boost the image of natural turf.

Following Lloyd's presentation HAL representative Stuart Burgess outlined the new 'Turf Australia - Grow Green' campaign which aims to drive home the benefits of turf to the wider public. To help steer the campaign a marketing committee has been formed which comprises HAL industry development manager Greg McPhee, Bruce Stevens (Anco Seed and Turf), Tony Cross (Caboolture Turf), Greg Miller (Miller's Turf) and Gavin Rogers (TurfCo).

As the recent TPA-funded study by Peter McMaugh and Dr Ross Higginson highlighted there are still many misconceptions about natural turf both among the public and in the media and it is hoped that an intensive marketing push will help to strengthen natural turf's credentials as the preferred option over synthetic turf (for more information about the McMaugh-Higginson study see ATM Volume 11.1 – January-February 2009).

The Turf Australia campaign will be officially unveiled on 13 May and its central theme is celebrating the great Australian backyard and



how Aussies love their patch of turf. To drive home this message the campaign will be launched with the public turfing of the entire forecourt area of Sydney's Customs House.

By no means a new idea (those in the industry will recall a similar stunt in Melbourne back in 1985 when 11,000m² of Swanston Street was solid turfed), it is hoped that by turfing the forecourt, which receives a huge volume of foot traffic each day, members of

The conference included a tour of three of Melbourne's premier sporting facilities – the MCG, Flemington and Telstra Dome. At the MCG delegates got the chance to see areas of the ground being re-laid in preparation for the opening round of the AFL season

the public will be able to 'feel the grass' under their feet which will in turn encourage them to 'reclaim their back yards'. To add weight to this message the Turf Australia campaign has been bolstered by the ambassadorial skills of popular celebrity landscape gardener Justin Hodges from Channel 7's Better Homes and Gardens who will be at the Sydney launch.

The second arm of the campaign focuses on turf growers themselves and their ability to promote the benefits of turf. Turf producers who attended the conference received a folder containing marketing material, including a CD ROM of information that Turf Australia has produced.

The materials have been designed for use by turf producers to help grow their business and present a unified front to the Australian public. When used according to the recommendations set out by Turf Australia, they aim to assist growers in the promotion of turf products, increase sales and improve business.





As part of this information Turf Australia has developed a brochure and series of information sheets designed to coincide with each stage of the consumer's interaction with turf. For consumers who may need to be reminded of the value and the general benefits of turf, Turf Australia has put together a fourpage brochure titled 'Turf – A vital part of life' highlighting the social, environmental and physical benefits of turf.

The two-page PDF format information sheets each deal with a specific area and are designed to assist growers in the sale and post-sale process. The areas include:

- Environmental benefits cooling, filtering, CO₂ sequestration, noise reduction;
- Health benefits quality of life, aesthetic appeal;
- Turf varieties choosing the right variety for your environment and lifestyle;
- Installation how to get the best from your new lawn; planning, preparation, caring for new lawns;
- Watering waterwise lawns, how much, how often and when; and
- Maintenance effective mowing, weeding and fertilising practises.

CALL TO ACTION

To brand the Turf Australia campaign a new logo has also been developed. The 'Grow Green' logo has been devised to present a centralised brand to both the consumer and other markets and is designed to reposition turf as contemporary and environmentally responsible.

To promote the benefits of turf to the wider public, an intensive marketing campaign is set to kick off in May. The campaign is branded 'Turf Australia - Grow Green' The supporting tagline 'Grow Green' is designed to act as a subtle call to action, conveying the dual meaning that all Australians deserve and can have an aesthetic, naturally green surface and that buying and growing turf is a simple and environmentally-friendly activity.

All marketing and communications activities will be conducted under this brand and Turf Australia is encouraging growers to use the logo in all their marketing and communications activities side by side with their own company/brand logo.

Acting as a portal for the Grow Green campaign is the new Turf Australia website - www.turfaustralia.com.au. Split into three distinct areas, the website can be used by growers, residential consumers and professional turf users, and Turf Australia has recommended that growers include the website on all marketing and customer communications, including advertising, to engage consumers and create further interest in the campaign.

The consumer and professional sections of the website provide an information hub for turf and grass in Australia and include advice for customers on the benefits of turf,



Day two of the TPA conference expo was held at Anco Seed and Turf's Cranbourne West facility where a range of companies undertook demonstrations of sod harvesting equipment



The Turf Australia campaign will be officially launched on 13 May with the solid turfing of the entire forecourt area of Sydney's Customs House

its maintenance, varieties and installation. A custom turf pricing calculator is also housed within the consumer and professional sections, allowing customers to choose a variety, access recommendations based on location, view maintenance instructions and calculate prices.

The growers section provides access to a myriad of turf industry information and news and houses all Turf Australia marketing materials for download and use. Sections for growers include information on Turf Producers Australia, turf levy updates, news and events, marketing materials and a growers' message board where they can buy/sell equipment and post job ads.

SHEARER NAMED 'FUTURE LEADER'

As part of its drive to improve the image of turf production and to help nuture those involved in the industry, Turf Producers Australia has launched its Future Leaders Programme. The first recipient of the award was announced at the recent TPA conference in Melbourne with home state sod producer Brad Shearer from Coolabah Turf in Echuca winning that honour.

Shearer received his award during the conference's dinner held on Monday which featured former Essendon AFL coach Kevin Sheedy as guest speaker. In winning the award Shearer receives an all expenses paid trip to attend the TPI Conference in Michigan next year where he will also get the opportunity to visit a number of turf farms in the area.



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MARKED AGCSATECH UPDATE

With a number of new bentorass varieties hitting the market in recent years, the AGCSA is embarking on a trial to assess their management and performance under Australian conditions. In this instalment of AGCSATech Update John Neylan looks at this three-year project as well as Curvularia and summer bentgrass decline.

he AGCSA has an ongoing priority to foster research in golf turf maintenance including the evaluation of new turfgrass varieties. Since 2000. AGCSATech has been involved in several turfgrass cultivar trials including the evaluation of new bentgrass cultivars, the selection and evaluation of bentgrass off-types, the selection and evaluation of hybrid couchgrass off-types and the evaluation of new hybrid couchgrass and seashore paspalum cultivars for greens.

The AGCSA bentgrass cultivar trials that started in 2000 were completed in 2005. Since that time there have been several new bentgrass cultivars bred in the USA and in the 2003 National Bentgrass Test (US National Turfgrass Evaluation Program) there were 16 new cultivars tested.

With the bentgrass cultivars that have been available over the past 10 years, most turf managers would be well satisfied with their performance and see little or no need for change. Turfgrass breeders are forever looking for improvements, whether it is better disease tolerance, reduced inputs (e.g.: fertiliser and chemicals) or improved local adaptation.

The observation has been made by Bigelow (July 2007, TurfGrass Trends - www. turfgrasstrends.com) that many of the new cultivars appear to have narrower regions of adaptation with some cultivars performing very well in certain regions but not in other locations. In the 2000-2005 AGCSA bentgrass trials undertaken in three states, it was demonstrated that the best performers generally topped the rankings at each location, however, there was often one or two cultivars that exhibited superior characteristics in one state but not in others.



AGCSA trial to assess new bent varieties Know-how for Horticulture"

The bentgrass breeding programmes have all had different objectives in terms of turf characteristics. Bentgrasses are most commonly selected for greater turf density, reduced spiking, lower cutting height, increased salt and heat tolerance and increased disease resistance. The most obvious changes in characteristics have been in turf density and vigour. While the bentgrasses have become denser and produce smoother and faster putting surfaces, they require more frequent cutting, dusting and thatch removal.

As part of its research activities the AGCSA has established a new bentgrass trial in Victoria, NSW and South Australia to objectively assess the growth and performance characteristics of the new grasses under local conditions. The project, which has begun this autumn and is jointly funded by AGCSATech and Horticulture Australia Ltd, is to evaluate the performance and maintenance requirements of the new strains of bentgrass compared to the established industry standards.

The AGCSA has been working with the Australian Seed Federation in contacting the relevant seed companies to enable them to submit cultivars, if they so wish. The varieties that have been submitted for establishment at each site are detailed in Table 1. The plots will be assessed for the following parameters:

- Turf quality;
- Turf density;
- Incidence of disease and pests;
- Thatch depth;
- Wear tolerance four times a year (VIC site onlv):
- Spiking tolerance four times a year (VIC site only); and
- Green speed using a modified stimp.

TABLE 1. BENTGRASS VARIETIES SUBMITTED AS PART OF 2009-2011 AGCSA TRIAL

HAL

Company	Variety
Advanced Seed	Туее
	007
	Dominant Xtreme
	SR1150
	SRP1RH93
Simplot	T-1
Heritage	Penn G2
	Authority
	Penn A1
DLF Seeds	Cobra 2
	CY 2
Seed Force	Shark
PGG Wrightson	Declaration
	Mackenzie
	SRP1GMC
	Mariner*
AGCSA	AGCSA1
	(vegetative selection)

*Adelaide only

The three trial sites - Keysborough Golf Club (VIC), Royal Adelaide Golf Club (SA) and Cromer Golf Club (NSW) - were sown in April and once they are established there will be field days held in each state and regular updates in ATM.

CLIMATE OF SYDNEY COURSES

The past summer has provided yet another example of the influence Mother Nature has over our ability to produce high quality playing surfaces on Australian golf courses. The fickle nature of the Australian climate this summer not only demonstrated the extremes from one

end of the country to the other, but on a local basis the variations were also considerable. The greater Sydney area is a typical example of the localised extremes and in particular the difference between courses along the coast compared to those several kilometres inland.

During the summer AGCSATech was required to investigate the factors affecting the health and condition of bentgrass greens on Sydney metropolitan inland golf courses compared to their metropolitan coastal counterparts. The climatic differences between the coast and the inland have often been discussed with the general observation being that the climate was cooler and less humid along the coast. With many golf courses having on-site weather stations it was possible to gather comparative data and to examine whether this observation was correct.

Weather data was collected from several on-site weather stations as well as the official Bureau of Meteorology weather station at Observatory Hill. The data collected demonstrates that on many occasions the coastal courses did not reach the same maximum temperatures as often as the inland golf courses did due to afternoon sea breezes that provide cooler conditions. Temperature data is provided in Figures 1 and 2 and demonstrates the marked differences between the coastal and inland environments. Table 2 provides a summary of temperature data.

A large amount of weather data from various sources was reviewed and an effort has been made to standardise and summarise it. In examining the maximum temperature across several key dates (Figure 2) it can be seen that the inland golf course environment is considerably hotter.



In terms of relative humidity, the inland golf course environment has very high humidity levels when compared to the coastal environment (Figure 3). The open conditions on the coast allow the winds to moderate the temperatures and can move the saturated air mass. With an inland environment, often with an expansive treescape, the air movement is poor and the atmosphere tends to remain at a higher humidity. These contrasting conditions have a dramatic effect on the maintenance and presentation of bentgrass putting greens.

SUMMER BENTGRASS DECLINE

Maintaining creeping bentgrass in a transitional climate is a challenge during high temperatures and humidity, particularly when there is an expectation for firm, fast putting surfaces. Given the potential for contrasting climatic conditions from course to course, it is timely to review our knowledge of creeping bentgrass and its performance as it relates to climate.

Creeping bentgrass is a cool-season grass and the optimum temperatures for growth are

TABLE 2: DAILY MAXIMUM TEMPERATURE COMPARING THE WEATHER STATIONS AT AN INLAND GOLF COURSE, OBSERVATORY HILL (BOM SITE) AND TWO COASTAL GOLF COURSES

Date	Sydney inland golf course	Observatory Hill (BOM site)	Sydney coastal golf course	Northern coastal golf course
5/1/09	35	28	25.6	27.9
6/1/09	36	29	28.1	27
7/1/09	39	33	26.6	27.9
14/1/09	37	29.7	28.5	29
15/1/09	42	33	33.3	35.5
23/1/09	34	32	32.6	
24/1/09	40	41	41.1	
25/1/09	26	26	33.8	
5/2/09	34	29	27.7	
6/2/09	37	30	28.3	
7/2/09	38	34	31.2	
8/2/09	35	29	30.9	

16-24°C for shoot growth and 10-18°C for root growth (Beard, 1973). As temperatures increase above this optimum range, the bentgrass is under increased stress. Once temperatures exceed 29°C ambient and soil temperatures are greater than 24°C, particularly for extended periods, bentgrass is under very high stress.

With prolonged periods at these temperatures, bentgrass will effectively shut down its growth with a loss of turf density and root mass. Under these conditions the plant is more susceptible to damage from diseases such as *Pythium* sp. The new cultivars such as the Penn series bentgrasses have improved heat stress tolerance, however, even they will struggle at temperatures exceeding 30°C for extended periods.

Summer bentgrass decline is a well documented malady in transitional zones that experience hot and humid summers. Thinning of the turf canopy, yellowing of leaves, and death of roots and die back of the bentgrass are the most common symptoms. The cause of summer bentgrass decline has been attributed to numerous factors with high temperature and high relative humidity being the main causes (Carrow, 1996).

High temperature is the primary factor leading to summer bentgrass decline and in particular high soil temperatures. It tends to be a greater problem on sites with reduced evapotranspirational cooling due to poor air circulation and high humidity. These factors all contribute to soil heat retention, and therefore higher soil temperatures at night. These are typical conditions experienced on many courses that have extensive treescapes.

Cool-season grasses cool themselves through evaporative cooling and as the plant heats up, the water in the plant absorbs much of this heat. As the moisture moves out of the plant through transpiration, air movement (wind) across the turf canopy takes this moisture away thereby cooling the turf. Where there is high humidity and poor air movement, the zone immediately above the



canopy remains saturated with moisture and consequently the plant continues to heat up.

The main effect of summer bentgrass decline is a reduction in the root system which results in the plant having less ability to tolerate hot and dry conditions. Carrow (1996) discusses the break down of the root system which forms a gelatinous substance in the rootzone that retains water, reduces infiltration rates, reduces soil oxygen and forms an impervious layer. To produce firm and fast greens under these conditions often requires the surface to be dried out, including the upper rootzone, which under summer stress conditions will invariably result in turf loss.

On many US golf courses fans are used to modify the environment (by removing the saturated air from the leaf canopy) and therefore resulting in improved turf growth and health. Here in Australia, Avondale Golf Club in Sydney has been trialling a fan on a heavily shaded green (the 10th) that sits in a depression where there is very little natural air movement and there has been a substantial improvement in plant health, turf density and quality of the playing surface. This demonstrates the importance of something as simple as good air flow across a turf surface in maintaining good turf health.

Bentgrass can survive Australian summers with the correct management, however, the maintenance strategies need to alter depending on temperature, humidity and the local microclimate. The typical strategies of lifting cutting heights, increasing soil aeration using solid tines and the hydroject and maintaining adequate soil moisture are keys in summer bentgrass survival. The use of subsoil aeration systems can also improve the levels of oxygen in the rootzone and improve soil cooling. However, this is often at the expense of speed and firmness of greens.

CURVULARIA

During the recent prolonged wet weather in Queensland, in particular the tropical north, an old yet damaging disease reared its head as hybrid couchgrasses struggled in low light and low growth conditions.

The disease pathogen most prevalent was the leaf disease *Curvularia* spp. According





to Smiley et.al. (2007), *Curvularia* spp. are pathogenic to plants weakened by heat or drought stress, though a range of conditions such as high numbers of root feeding nematodes, insects and fertility imbalances can predispose the plant to disease. In warm, wet weather infections can spread rapidly.

There are several species of *Curvularia* that result in what can be termed as *Curvularia* blight. They are all active colonisers of thatch and leaf litter which serves as the principal source of inoculum for the initial outbreaks of the disease. Penetration of the plant is accomplished by growth of mycelium and spores through cut leaf tips, leaf and crown surface wounds and Helminthosporium-incited lesions (Couch, 1995).

Curvularia blight is particularly favoured by conditions that cause accelerated leaf aging (senescence). Any factors that causes plant stress and die back in the leaf tissue that weakens the plant and allows the fungi to penetrate the leaf tissue assists in generating an infection. *Curvularia* diseases are also favoured by prolonged leaf wetness, poor air movement and high humidity. These conditions are typical of those experienced in the tropical north and other parts of Queensland during summer. Physiological changes in the plant that increase susceptibility includes low light, low cutting heights and excessive thatch.

As with most turfgrass diseases, effective control is best achieved when growing conditions are at an optimum. Adequate thatch control, keeping cutting heights up during high stress periods, improving air movement and compaction control are all critical factors. Contact fungicides such as mancozeb, iprodione, chlorothalonil and thiram are all very effective in controlling *Curvularia*. However, where there are prolonged periods of wet weather the contact fungicides may only have a short-term effect and repeated applications will be required.

REFERENCES

A full list of references can be obtained from the AGCSA ph (03) 9548 8600.



John Neylan and Andrew Peart

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Tech

In this instalment of Tech Talk AGCSATech agronomist John Geary looks at sand slit drainage systems and discusses the pros and cons of this cost-effective method of improving turf surface quality.

Sand slit



and underlying soil structure and underlying soil structure

hile discussion on climate change continues unabated, the facts are that weather patterns across Australia have changed dramatically over the past 10 years. Rainfall can be highly variable and national trends indicate that there has been a significant reduction in winter rainfall in south-west Western Australia since the 1970's, while rainfall on the east coast, particularly in southern and central Victoria, has experienced a sharp decline over the last decade.

Scientists also predict that climate change will lead to more frequent extreme weather events such as tropical cyclones, severe storms and bushfires, with rainfall modeling for northern NSW and Queensland indicating the likelihood of rainfall intensity increasing in the coming years. Tragically the events of February 2009 reinforce this with a number of catastrophic bushfires experienced in Victoria and severe flooding in Queensland.

From a soil perspective high rainfall (or for that matter over irrigating) expose a soil's ability or inability to shed excess water. This is especially true when heavier soils with low infiltration rates are used to construct a playing surface, be it a sports field, a golf course fairway, a tee or similar. The aim is to provide good growing conditions for the turf to thrive but this can be a challenge given these soils are prone to compact, especially when the fields are used during rainfall or when the soil is saturated. Significant damage to the turf and underlying soil structure can result, which can

Figure 1. Interceptor drains are subsurface drains with a permeable sand trench backfill designed to intercept water runoff. Source: Ford and Thomas 2003 be directly attributed to the failure to remove excess surface water.

While turf managers may prefer to reconstruct surfaces using free-draining sands, the reality is this type of construction can be costly. An alternative is to install subsurface drains otherwise known as interceptor drains to capture any surface runoff.

INTERCEPTOR DRAINS

By way of definition, interceptor drains (Figure 1.) are subsurface drains with a permeable sand trench backfill designed to intercept water runoff as it moves across the surface. (P. Ford and G. Thomas 2003). Thus, for interceptor drains to be effective good surface falls are imperative – the greater the surface slope, the greater the removal of surface water will be. If the surface is relatively flat, the network of interceptor drains will be less effective.

A common mistake made by many is to assume that once water enters the soil profile it will drain laterally into the interceptor drains. While some water will move sideways though the topsoil, this water moves extremely slowly as the only force moving it is gravity. In many cases its contribution to drainage can be ignored, particularly when there are no drain



pipes or where drains are spaced too far apart (McIntyre and Jakobsen et al., 1992).

The aim of interceptor drains is to remove as much excess water before it has a chance to infiltrate into the native soils between the drains. If there is insufficient surface slope or the drains are spaced too far apart water will have to pass down through the profile which can often take weeks to dry out. So it is important to reinforce the message that for interceptor drains to be effective they rely on surface slope to move water across the native soil surface into the interceptor drains.

SAND SLIT DRAINAGE

So, how do you remove excess water off a surface with little or no surface fall? One method which has grown in popularity over the past 30 years is to install an intensive network of sand filled trenches.

Sand slitting, which is also known as sand grooving, sand banding or sand injection, is a term used to describe a "series of closely spaced, vertical channels of highly permeable material connecting with the surface and passing through the topsoil. The slits usually connect with gravel backfill overlying a system of lateral interceptor pipe drains situated deeper in the profile." (W.A. Adams and R.J. Gibbs, 2006).

The final component of a sand slitting programme is to heavily topdress the area with sand to a depth of 25mm which is aimed at protecting the integrity of the slit drains. This is sometimes referred to as sand carpeting and once this process has been undertaken an ongoing sand topdressing programme needs to be implemented to avoid any layering of the soil profile. It is worth noting that sand slit drainage still relies on surface slope to move water sideways on the surface, but due to the sheer number of trenches combined with their close spacing, the bulk of the surface water should find its way into the network of drains.

Sand slit drainage comes in many variations but generally consists of:

- Major drainage lines (inceptor drains at 5-8m spacings);
- Secondary excavated sand trenches which have a large capacity to transmit water (e.g.: 50mm wide, 300mm deep trenches at 1-2m spacings backfilled with sand, gravel and small diameter drainage pipe at right angles to the interceptor drains);
- Sand grooves, which are often installed on a more intensive basis than excavated secondary trenches due to their lower cost per unit length (e.g.: 25mm wide, 100mm deep and at 0.2m spacings at right angles to the secondary sand trenches).

DESIGN CRITERIA AND INSTALLATION

Gibbs (2003) states that sand slit drainage systems can be thoroughly tested on paper using a modified form of Hooghoudt's steady rate drainage equation. This calculates the design drainage rate from variables such as the hydraulic conductivity and depth of the permeable backfill used, the lateral pipe drain spacing, and slit drain width and spacing, all of which are juggled to achieve the desired outcome.

McIntyre (1993) recommends installing sand slit drains at 2m spacings while Adams



(1986) recommends that 50mm wide sand/ gravel slit drains at 2m centres with lateral pipe drains at 15m centres seemed to be the minimum intensity worthy of installation.

Given the number of variables which need to be taken into account at each site such as depth of drains, backfill material to be used, drain spacings as well as the existing soil and weather conditions, it is important not to forget how practical the system will be to install.

Like any renovation or construction project, quality control of the works is imperative. The selection of appropriate sands and gravel is critical. All sands and gravel intended for use should be tested for particle size analysis and hydraulic conductivity while the tests should be undertaken by an accredited laboratory.

Since the 1980s the majority of slit drainage works have been carried out by contractors with highly specialised equipment which removes the spoil and inserts the sand/ gravel all in one pass.

This has revolutionised drainage installation allowing large areas to be drained in a short time frame as well as improving the overall quality of installation. But it is still



Sand slitting has become a popular method to remove excess water off surfaces with little or no fall

important to closely project manage works to ensure standards are high.

THE PROS AND CONS

Before deciding on the installation of an interceptor and or a sand slit drainage system a number of limiting factors need to be taken into consideration. Possibly the most important factor to consider is that the efficiency of the drainage system will deteriorate over time. This is inevitable as the surface of the trenches seal over.

The timeframe can vary depending on what sport is played and depending on the quality of the installation but remedial works will need to be carried out every couple of years. Works aimed at improving the infiltration rate over the trench lines such as hollow tining or verti-draining need to be regularly scheduled. In relation to the interceptor drains, works may include removing the existing sod over the trench lines, removal of soil back to clean sand, topping up the sand and re-establishment with seed or washed sod.

Second, different management techniques need to be adopted for the two different soil types. This is especially so during grass establishment as the sands have little nutrient and water holding capacity requiring greater inputs. Seed or washed sod should only be used to establish a grass cover. If there is any soil on the sod the infiltration rates of the top of the trenches will be reduced dramatically.

Finally, it is critical to identify how much play is anticipated during periods of rainfall as high intensity use during these conditions can lead to slippery, muddy conditions which in turn can lead to the drainage lines being sealed off. This is particularly relevant for ovals which host activities such as football and soccer.

On the up side, Gibbs (2003) states that "the relative cost of installing a conventional slit drainage system into a existing poorly drained, soil-based field will vary, but is likely to be around 25 per cent of the cost of a complete profile reconstruction. Sand slit systems are an attractive option to total re-construction as they can be tailored to meet both budgetary constraints and site conditions.

REFERENCES

A full list of references can be obtained from the AGCSA ph (03) 9548 8600.

Figure 2. A typical sand slit drainage system. Figure adapted from Natural Turf for Sport & Amenity: Science & Practice.

The Pulse

If there is one thing guaranteed to raise the blood pressure of superintendents it is green speed. Indeed when ATM sent out its customary email to superintendents asking to contribute to this edition's Pulse topic the response was so overwhelming that we obviously touched a bit of a nerve. As a result we have decided to expand the usual double page Pulse spread for this edition to accommodate this wealth of feedback which includes some rather interesting tips on what and where a stimpmeter should be used. The question posed was... "Do you lose any sleep (or hair) over the speed of your greens." Let the venting begin...

ALLAN DEVLIN Secret Harbour Golf Club, WA



I certainly have not and never will lose any sleep or hair over the subject of green speed. This ridiculous obsession with green speed has had no positive effect on the

condition and management of golf courses whatsoever. Since Edward Stimpson, the 1935 Massachusetts Amateur, invented the stimpmeter it has been used, incorrectly, as a green speed tool instead of a tool to produce consistent putting surfaces on all 18 greens. This incorrect use has done nothing but cause many greenkeepers to come under unnecessary pressure to produce faster and faster greens with undue stress to the plant and in some cases impossible surfaces to play on. When used correctly the stimpmeter is an excellent addition to a maintenance programme to ensure all your greens are playing consistently at a respectable speed.

Over the years we have all heard of the unfortunate greenkeeper who has lost his job through unsustainable demands from members and committees for ever increasing green speeds that the turf simply cannot handle. You very rarely hear of the greenkeeper who has lost his job because his greens are a bit slow or have too much grass on them!

Much of this green speed obsession has been caused by televised golf events, in particular the US Masters, where the greens are prepared to ridiculous speeds of 13 and 14 feet on highly undulating greens. This, on many occasions, makes the stars of the game look like fools and turns the putting aspect of the game into a lottery.

I have no demands from my owners for a particular green speed; in fact they like our greens to be a medium pace as most of our clientele are corporate golfers and public players. I am sure if you asked most members of private clubs what their preference for green speed is the majority would opt for a medium pace green where putting is fair and reasonably skilful. It is also much less stressful to have your turf maintained at a height and speed that at least gives the plant a chance of better survival. I have definitely found that this scenario works for me, with no complaints regarding green speed in the last 15 years.

I once asked a very high profile US superintendent where the best place was to keep a stimpmeter? He replied... 'At the bottom of the nearest lake!'

CHARLIE GIFFARD Indooroopilly Golf Club, QLD



I'll always remember a comment from Pebble Beach superintendent Mark Michaud who I met while on a tour to the US in 1995. When questioned on the use of the stimpmeter

for gauging green speed his immediate retort was that the only thing it was good for was to 'pound nails in with'.

That made me think. In that one utterance, he basically shot down the holy order on the importance of green speed over everything else. The mentality of green speed at all costs that often presides at 'exclusive' golf establishments can also be the downfall of many a good practitioner if they are forced to comply. I see it as another tool to be used in conjunction with other measuring implements and as only that. To hold it as the only yard stick is to do so at your own peril.

Here at Indooroopilly, turf health and consistency are paramount, which, if done well, leads to good fair playing surfaces. There is always a percentage of 'good' golfers at any club that bang on about the speed of greens, usually while the silent majority are reasonably content to have the 'slower' greens presented on most other occasions. I believe as a service provider you have to cater for the largest client



AGCSA advice for to improve



base and in most clubs these are the golfers with handicaps between 15 and 25.

Green speeds around 8.5-9 feet are adequate to keep most players happy. You still need to be able to 'pull the trigger' and speed up greens for particular events, but always with a wary eye on how these extra stresses impact the turf. Of course there exists a range of factors that influence how fast the greens should be, slope and exposure being among them. At the end of the day, it really gets down to good communication and education from the superintendent and their staff to get the message across that to achieve a consistent, healthy playing surface is really due to an holistic approach and not to simply hang it all on the one indicator. Ju

DAVID WARWICK Avondale Golf Club, NSW



Avondale Golf Club is located 15km north of Sydney in a heavily treed environment. All greens were recently reconstructed over a six year period and sown with G2 bent

and in regards to green speed we have some major problems when it comes to producing firm fast surfaces. Due to the long construction time frame we have varying maturity of greens, while on the back nine we have heavy shade issues which impacts on root development and photosynthesis. There is also a lack of sufficient air movement which affects turf cooling and we suffer general summer bentgrass decline through high soil temperatures.

When you look at the various factors above and take into consideration the hot humid Sydney climate, you can understand the limitations of producing fast greens. The way we manage our greens to get through year round is not conducive to producing fast greens (for instance raising the height from 3.0mm to 3.5mm which makes a huge difference in stress tolerance; less rolling, particularly on hot days; using a smooth front roller on the greens mower; and missing a mow on days when there is not much on).

One of the other major problems is that members frequently play other good courses around Australia or coastal courses in Sydney where the limitations aren't as severe, hence they experience firm fast greens elsewhere and we have all heard the comment 'Other courses can do it, why can't we?' In short, some member education would assist.

Why do we produce firm fast greens of tournament standard on a daily basis? Because we can. Grasses, maintenance practices and technology have all improved but more than anything expectations have increased. These driving forces do not consider the added human stresses or, for that matter, plant stresses. My wife and kids are so used to me dropping into work during the afternoon on the weekends that our social life is somewhat planned around it – how is that for training! If you look at the golfers that regularly play your courses – average age, handicap – you must ask, is it worth the sleepless nights.

JASON FERRY Queanbeyan Golf Club, NSW



Due to the consistently fast green speed we generate all year round through our regular maintenance practices, I lose very little sleep or hair. Since starting as the superintendent

at Queanbeyan Golf Club the committee/ golfers have never complained about slow greens, and on occasions we have been told to slow them down. We are able to run our greens at around 10 on the stimpmeter and this is achieved without any turf loss. For our tournament play we can produce speeds of up to 12 feet although this begins to stress the turf and some loss may occur. We are able to produce these speeds through monthly grooming (5mm,) monthly Primo applications, regular double cutting and brooming/sweeping and the occasional light roll. This is combined with balanced fertilising and deep cycle watering. We get regular feedback from golfers, reps and other supers telling us we have the best around.

TIM HICKS **Thurgoona Golf Club, NSW**



I don't loose any sleep over green speed. The lowest I cut my greens is 3mm. My committee are happy if the greens roll true and consistent. Most practices that are used to

increase green speed are detrimental to the health of the turf (e.g.: extremely low cutting, consistent rolling, drying greens) and just creates problems. It's harder to maintain cover through the summer and in the winter your thinner bent areas allow *Poa* to invade, along with increased moss and disease issues. My greens profile is quite heavy (loam/clay) so I don't roll very often. Moderation as far as green speed is concerned will yield healthier turf.

I believe the golfing world has gone mad with green speed. In my view it has become a case of keeping up with the Jones's. Clubs are trying to outdo each other and last year's event by having quicker greens. Many a brilliant round has been robbed by super quick greens. The stimpmeter to my understanding was introduced in the 70's to quantify green speed for the sake of consistency. When used for its intended purpose it is a valuable tool.

Most of our members and visiting golfers are not low handicappers. They want to be able to control the ball and have an enjoyable round. Happy golfers will come back and invest in your club. That is what we want.

I find it best to educate members as to why I have the greens the way I do. We have

superintendents and clubs golf course maintenance practices



▲ a quarterly newsletter that goes out to all our members and that is a good platform to explain the why behind the what. Also when golfers are interested do yourself a favour and explain with facts what you're doing. Other clubs can go for speed and that's fine by me. It's not something we plan on becoming obsessed with. July

PHIL SOEGAARD Lakelands Golf Club, QLD



I am fortunate in that my general manager and current committee do recognise the importance of turf health. A mutually beneficial arrangement between myself

and the club captain has been established whereby we have an annual meeting at which the following year's fixtures are arranged around my cultural plan. In return, I aim to peak the greens for select special events.

When it comes to ball speed, here at Lakelands I am extremely fortunate to have Tifdwarf couch on my greens. It requires less effort to produce the desired green speed than the more commonly used Tifgreen 328 in Queensland. The downside with Tifdwarf is that it is slow to recover from tournament stresses such as reduced fertility, moisture stress, lower cutting heights, excessive grooming and rolling. Generally once an event is over the heights come back up and the greens are given whatever is needed to recover.

We have found the most effective practices for improving speed and the putting surface are fortnightly verticutting through the growing months and monthly dusting. I have found dusting more frequently than this impedes the regular verticutting, wears bedknives, makes mess and upsets the odd golfer. The regular use of potassium silica and light rates of Primo Maxx has also enabled the height of cut to be increased, reducing stress yet still maintaining adequate ball speeds.

In the past we have cut as low as 2.2mm to meet expectations but now we generally cut between 2.8mm and 3.4mm with good results. With the Tifdwarf we can often get away without cutting on certain days and just giving them a roll. The roller is probably the easiest and most effective way of increasing ball speed and we have found we can pick up about half a foot on the stimpmeter by rolling after cutting. In summary, having a strong root system and knowing what stresses your greens can handle is most important. Ultimately I lose less sleep having the odd complaint about slow greens than I would do having stressed unhealthy turf.

STUART GILL Terrey Hills GCC, NSW



At Terrey Hills there is a heavy emphasis placed on green speed, so much so that I have been given a KPI to keep green speed within 9-11 feet at all times, although 11 would still

be considered by most members to be slow. It is the belief of the members, the committee and of course the pro shop staff that the faster and firmer the greens are the better the condition they are in. How far from the truth can this be? The greens here are nearing on 20 years old and yet the expectations are those of four-year-old greens, so what is the limit? Are we turning greens into a German autobahn where the only speed limit is fear?

I believe in consistency over speed. I'd rather have consistent greens running at 10 feet rather than inconsistent greens topping 12 on the stimp. In my earlier days of greenkeeping back in Scotland the greens at Loch Lomond were consistently running at 8.5 yet were considered to be some of the best in the country. Fast greens mean slow play as far as I am concerned – the faster the greens are the more putts you will take, especially with the undulations on some of the greens at THGCC. Fast greens also reduce the amount of available pin placements; pins near any undulation would be acceptable if the greens were slower. And one of the more concerning issues I associate with quick greens is the increased recovery time from pitch marks and hole changes.

In saying that green speed is an issue that cannot be ignored and we therefore have certain strategies in place that I find works for us at THGCC. We spray plant growth regulator in early spring then follow up with Primo every three weeks to counter balance increased shoot growth. We use groomers once per week to help remove excess leaf tissue and provide truer ball roll. A light dusting of dry sand at the beginning of the week helps smooth out and firm up the greens surface. Although speed is reduced for the first few days I have found that increased speed will return by the end of the week. We have recently purchased four new Jacobsen Eclipse walk behind mowers with floating units which has allowed us to reduce the height of cut to 2.8mm. We roll the greens twice a week and sometimes for big corporate events. We take stimp readings on the greens at least twice per week. So, do I lose any sleep over green speed? Not when it's raining! 业

MARTYN BLACK Castle Hill Country Club, NSW



The issue of green speed at Castle Hill is debated all year round. As practitioners who work with nature, course superintendents through experience understand that

their putting surfaces will change in morphology throughout the year. The conundrum as I see it for supers is how we convey the message to committees and the playing membership that inevitably the speed of the greens will vary during the year.

MEMBERSHIP RENEWALS FOR 2009-2010 FAST APPROACHING

ALL MEMBERS – renewal packages will be sent out in mid-May so remember to keep your contact details up to date. SUPERINTENDENTS – for the first time ever you will receive renewal information on behalf of your staff to provide you with immediate assistance for your budget planning – let us know what you think.

APPRENTICES – the AGCSA requires some information about your studies; your renewal package will include this information. QUERIES? Contact AGCSA on (03) 9548 8600 and ask for membership manager Pip Dudley, or email info@agcsa.com.au



I certainly don't lose sleep or hair over the speed (or usually the lack of it) of my greens and I must confess I quite enjoy the sometimes heated debate with golfers who live the vast majority of their lives in their air conditioned home, their air conditioned car and their air conditioned office. In its essence golf is a game of skill and those who invented it, the Scottish, are renowned for being a tough and resilient race. They saw and accepted the ability to gauge differing green speeds during their round as an integral component of the skills required to excel at the game.

But now we have the stimpmeter! With the apparent obsession by some Americans to sterilise the game beyond recognition, I feel for any Australian supers who must adhere to unrealistic demands from their boards to have the greens at 10 feet for the monthly medal or 11 feet for the club champs because as we all know you could suffer detrimental effects on turf quality as a result. Fortunately for me I have now chalked up 20 years at Castle Hill unscathed. Most of my enemies are either now sick or dead and the bulk of the membership understand that the greens will on average be slower in the summer than they are in the winter! After all, it ain't rocket science... or is it?

Retired Huntingdale superintendent John Spencer once told me "if your greens are a bit slow, lift the stimpmeter up quicker!" w

JEFF LANE Paradise Palms Country Club, QLD



Thankfully, I have never lost hair or sleep over green speed... there are enough things more important to do that. I love fast greens, the faster the better. As a player there is nothing

more exciting than putting on fast greens; as a spectator the thrill is even more magnified. I think the US Masters has categorically confirmed that. I have studied a bit of the psychology behind this and although it may seem commonsense, the longer something takes to happen, the more the drama or tension builds up. Is there anything more pleasing in golf than watching a 15-footer take an eternity to get to the hole and then drop in? Maybe it's just me as I don't hole very many 15 footers.

There is no doubt though that fast greens are generally smoother and, if not necessarily always the case, certainly help to emphasise the smoothness. Nearly all of the best greens I have ever putted on have generally been super fast and they were an absolute joy to play on. I also don't believe that turf quality should be sacrificed just in order to gain extra speed and most of the time it doesn't need to be. Looking back at old tournament footage, it is easy to see that speed and quality generally go hand in hand but obviously not always.

I don't think there is anything sinister about wanting to have fast greens. It is human nature to want to improve all the time. One of the hardest parts of a superintendent's job though is communicating to committees why the greens may not necessarily be the speed they want at that particular time. It's best to give the committee an annual plan of how you see the green speed changing through the year. Perhaps even put a graph up on the notice board with a curve on it showing the expected variation in speed through the course of the year. Like most of our problems, it always seems to be communication that is the key. \underline{w}

CALLUM HITCHING Bunbury Golf Club, WA

When there are only four staff on deck green speed tends to go out the window. As I write this I have two blokes away at TAFE, my 2IC is about to start mowing 40ha of golf course and we have also been putting out Tupersan to stop serious encroachment issues. On top of this I'm trying to put together a conference presentation and then we have renovations!

I had some of the GCSAWA boys and trade here last week (late March). The greens had been double cut Tuesday through Friday at 1.6mm as I like running them on the bottom blade and thinning them out before renos. They were certainly running around 12 and have been 10.5-11 consistently since October renos. I do not own a stimpmeter but as a golfer you can feel these speeds.

As someone who plays his own course regularly I know that the greens are good and kept at a decent pace at least 40 weeks of the year. Stephen Leaney is a member here and he tells me that we play on greens which are in better nick, smoother and faster than a lot of what is dished up on the European Tour. I never lose sleep over speed. The most important thing is smoothness of ball roll; a golfer can adjust for speed but cannot allow for bounce and bump.

SEAN STUCHBERY Bundaberg Golf Club, QLD

Green speed? Well, what is the right answer for a small country club with 75 per cent of the members being older golfers that find it hard to stop the ball of firm fast greens. As a new course superintendent I find myself asking myself regularly, faster, healthier or picture perfect greens with not much speed. You have your good golfers that love to be able to pick a line and get it rolling, then you have the high handicappers that can never judge speed.

The health of your greens will be tested with regular low mowing and rolling, but I believe it is far better than having slow greens that look hairy! You will always have comments and it's hard to keep everyone happy. I love a fast green but you have to work with what your members are happy with. There is no point having greens at 13 when your members are three and four putting them regularly.



Over a two-year period researchers at the University of Maryland in the US investigated carbon metabolic responses to deep and infrequent versus light and frequent irrigation in Providence creeping bentgrass.

Here they present their findings.

US researchers have found that invigating creeping bentgrass at wilt, rather than daily to maintain moist soil, generally resulted in higher carbohydrate levels in leaves and roots, which may enable creeping bentgrass to better tolerate and recover from drought and other stresses

Carbohydrate metabolism in creeping bentgrass as influenced by irrigation practices

areful water management is critical to growing quality creeping bentgrass during summer stress periods, especially in sand-based rootzones. Many golf course superintendents irrigate creeping bentgrass greens either light and frequent or deep and infrequent.

Light and frequent irrigation involves applying water before wilt is evident and maintaining soil moisture at or near field capacity (4). Deep and infrequent irrigation is defined as irrigating at the first signs of leaf wilt to replenish the rootzone with water (4). Deep and infrequent irrigation generally is recommended for maintaining cool-season grasses in summer (1, 4).

Carbohydrate metabolism in leaves and sheaths, including photosynthesis, respiration, and carbon translocation are major physiological processes that form the basis of healthy plant function. Creeping bentgrass summer performance may be improved by maximising carbohydrate production through photosynthesis, while minimising carbohydrate consumption from respiration (12).

Total non-structural carbohydrate (TNC) availability has been widely used as a physiological measure of stress tolerance, because carbohydrates provide energy and solutes for osmotic adjustment. The major total non-structural carbohydrate found in grasses include water soluble (i.e., glucose, fructose, sucrose) and storage (i.e., starch and fructan) sugars.

Understanding the many physiological factors affecting rooting is critical, since roots can be a nutrient sink and obviously contribute to overall plant health maintenance. Efficient carbon allocation to roots might increase the probability of plant survival during periods of drought stress (2). Several investigations have found that turfgrass plants subjected to drought stress accumulate more carbohydrates in leaves, stems, and roots, compared to wellwatered plants (2, 8, 9, 10).

Soil drying reduces the proportion of newly photosynthesised carbon allocated to leaves, while increasing the proportion of carbon allocated to tall fescue (*Festuca arundinaceae* Schreb.) roots (8, 10). This allocation of carbon to roots occurred to a greater extent in the more drought tolerant tall fescue cultivars evaluated (10). Similarly, DaCosta and Huang (2) reported that newly photosynthesised carbon increased during the early phase of drought stress in creeping bentgrass roots, but not in leaves and stems.

We are not aware of any field studies that have investigated carbon metabolism in creeping bentgrass maintained as a putting green in response to summer irrigation practices. Therefore, the objectives of this field study were:

- To quantify canopy net photosynthesis and whole respiration rates; and
- To quantify water soluble carbohydrates, storage carbohydrates, and total nonstructural carbohydrate levels in creeping bentgrass grown in a sand-based rootzone in response to light frequent versus deep infrequent irrigation in the summer.

MATERIALS AND METHODS

This study was conducted on a research green built to USGA recommendations at the University of Maryland Turfgrass Research Facility in College Park in 2006 and 2007. Soil was a modified sand mix (97 per cent sand, 1 per cent silt, and 2 per cent clay) with a pH of 6.5 and 1.0 per cent organic matter.

In September 2005, the study site was treated with glyphosate (Round-up) and the sod was removed to expose bare ground. The area was seeded with Providence creeping bentgrass in September 2005. A total of 250 kg ha⁻¹ N was applied between 20 September and 11 November 11, 2005. The bentgrass was fertilised biweekly with 4.9 kg ha⁻¹ N from urea between 1 May and 7 June and then weekly through 24 August for a total of 78.4 kg ha⁻¹ N during the experimental period in 2006.

In autumn 2006, the bentgrass was fertilised to provide a total of 71 kg ha⁻¹ N. In 2007, the bentgrass was fertilised weekly with 4.9 kg ha⁻¹ N from urea between 30 April and 27 August to provide a total of 88.2 kg ha⁻¹ N during the experimental period.

Iprodione (Chipco 26019) was applied biweekly in 2006 and 2007 to control dollar spot (*Sclerotinia homoeocarpa* F.T. Bennett) and brown patch (*Rhizoctonia solani* Kuhn). Deltamethrin (Deltaguard) was applied on 26 July and 24 August, 2006 and 18 July, 2007 to control sod webworm (*Crambus* spp).

Turf was mowed to a height of 4mm about five times weekly and clippings were removed. Each plot (1.8m x 2.4m) was bordered by fibreglass edging set 10cm deep in soil to minimise lateral movement of water. There also was a 60cm creeping bentgrass perimeter border separating each individual plot.

Each plot was individually irrigated between 7-8am using a hand-held hose. The quantity of water applied was monitored with a digital flow meter attachment. The two irrigation regimes assessed were light and frequent versus deep infrequent. In the light and frequent irrigation regime, water was applied daily to replace moisture lost due to evapotranspiration (ET). This ensured that soil was maintained in a moistened state to a depth of 4-6cm each morning. Evapotranspiration was estimated every 24 hours.

In the deep infrequent irrigation regime, water was provided at the first visual sign of leaf wilt as determined by the appearance of a bluish-grey leaf colour. The frequency of irrigation was variable and depended on weather conditions. Therefore, deep infrequent irrigation frequency was sometimes as often as every three days or as infrequently as seven days.

Since soil was dried to about the same level at wilt, a standard amount of water (11.6mm) was applied to each deep infrequent irrigated plot when irrigated. This amount of water wetted soil to a depth of 6-8cm within five minutes, and water penetrated to a depth of 24cm within 20 minutes after irrigation ceased. On sunny days, plots were hand syringed about three times daily depending on weather conditions.

To minimise the impact of rain, two tarps

TABLE 1. PHOTOSYNTHESIS AND RESPIRATION IN RESPONSE TO LIGHT AND FREQUENT (LF) VERSUS DEEP AND INFREQUENT (DI) IRRIGATION IN 'PROVIDENCE' CREEPING BENTGRASS IN 2006 AND 2007.

2006						
Treatments	7 June	21 June	4 July	26 July	16 Aug	7 Sept
		Photosy	ynthesis rate	e (µmol s⁻¹ m⁻	²)	
LF ×	6.7 a ^z	5.3 a	5.6 a	6.6 a	6.8 a	8.4 a
DI ^y	5.1 b	3.5 b	3.5 b	4.0 b	5.5 b	7.6 b
		Respira	tion rate (µr	nol s ⁻¹ m ⁻²)		
LF	10.7 a	10.7 a	8.6 b	10.3 a	7.9 a	6.7 a
DI	10.5 a	8.8 b	9.9 a	9.5 a	6.6 a	7.3 a
			2007			
Treatments	31 May	2 July	24 July	14 Aug	6 Sept	
		Photosy	ynthesis rate	e (µmol s ⁻¹ m ⁻	²)	
LF	4.1 a ^z	6.2 a	6.5 a	6.8 a	4.1 a	
DI	2.2 b	3.6 b	5.1 b	5.0 b	4.3 a	
Respiration rate (mmol s ⁻¹ m ⁻²)						
LF	11.5 a	8.8 a	8.7 a	8.9 a	9.8 a	
DI	10.1 a	8.8 a	8.2 a	7.6 b	10.2 a	

* Light and frequent (LF) irrigation was performed daily in the absence of rain to wet soil to a 4 to 6 cm depth.

^y Deep and infrequent (DI) irrigation was performed at leaf wilt to wet soil to a depth of 24 cm. ^z Means in a column within each parameter followed by the same letter are not significantly

different based on Fisher's protected least significant difference test (P≤0.05).

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RESEARCH

Canopy net photosynthesis and whole respiration including plant and soil microbe respiration were measured using a portable gas exchange system

were used to cover all eight plots prior to the onset of rain between 22 May and 31 August 31, 2006 and 2007. However, some rain events occurred before plots could be covered. On those days, light infrequent irrigated plots were not irrigated.

Canopy net photosynthesis (Pn) and whole respiration (Rw) including plant and soil microbe respiration were measured on two to three week intervals between 7 June and 7 September, 2006 and on three to four week intervals between 31 May and 6 September, 2007 using a portable gas exchange system (LI-6400).

Clippings were the source of mostly leaf plus some sheath tissue used to measure water soluble carbohydrate and storage carbohydrate levels. Clippings were collected two to nine days following deep infrequent irrigation on 15 June, 13 July, 8 August and 7 September, 2006 and 1 June, 28 June, 17 July, 15 August and 6 September, 2007.



Roots also were sampled by removing four soil cores (2.5cm diameter x 20cm deep) from each plot on the same dates. Tissues were analysed for carbohydrates as described in Fu and Dernoeden (5).

RESULTS

Creeping bentgrass subjected to deep infrequent irrigation had a lower canopy net photosynthesis on all six measuring dates in 2006, compared to light frequent-irrigated bentgrass. Deep infrequent irrigated bentgrass had a lower whole respiration on 21 June, but a greater whole respiration on 4 July, 2006, compared to light and frequent irrigated

TABLE 2. WATER SOLUBLE CARBOHYDRATE (WSC), STORAGE CARBOHYDRATE (SC), AND TOTAL NON-STRUCTURAL CARBOHYDRATE (TNC) IN 'PROVIDENCE' CREEPING BENTGRASS LEAF TISSUE.

2006					
Treatments	15 June	13 Ju	ly	8 Aug	7 Sept
		WSC [gluo	cose (mg.g⁻¹ dı	y wt)]	
LF ×	39.9 a ^z	48.6 a	L	39.4 b	40.4 b
DI ^y	34.5 a	50.4 a	L	52.6 a	44.1 a
-		SC [gluco	se (mg.g⁻¹ dry	wt)]	
LF	70.6 a	73.9 a	L	33.1 a	47.4 b
DI	70.9 a	70.5 a	L	33.8 a	52.7 a
		TNC [gluc	ose (mg.g ⁻¹ dr	y wt)]	
LF	110.5 a	122.5	а	72.6 b	88.0 b
DI	105.4 b	120.9	а	86.5 a	96.9 a
			2007		
Treatments	1 June	28 June	17 July	15 Aug	6 Sept
		WSC [gluc	cose (mg.g-1 d	ry wt)]	
LF ×	43.6 a ^z	43.1 a	36.4 b	33.4 b	44.0 a
DI ^y	43.2 a	40.7 a	38.8 a	38.7 a	43.5 a

SC [glucose (mg.g ⁻¹ dry wt)]						
LF	83.4 b	88.4 a	101.0 a	88.6 a	79.7 b	
DI	90.7 a	87.9 a	100.4 a	87.8 a	83.6 a	
TNC [glucose (mg.g ⁻¹ dry wt)]						
LF	127.1 b	131.5 a	137.3 a	122.1 a	123.8 a	
DI	133.8 a	128.2 a	139.1 a	126.4 a	127.1 a	

× Light and frequent (LF) irrigation was performed daily in the absence of rain to wet soil to a 4 to 6 cm depth.

^y Deep and infrequent (DI) irrigation was performed at leaf wilt to wet soil to a depth of 24 cm. ^z Means in a column within each parameter followed by the same letter are not significantly different based on Fisher's protected least significant difference test ($P \le 0.05$). bentgrass (Table 1). No differences in whole respiration were observed on the other four measuring dates between the two irrigation regimes in 2006.

In 2007, canopy net photosynthesis was lower on four measuring dates (31 May, 2 and 24 July and 14 August) in deep infrequent versus light and frequent irrigated bentgrass. No difference in canopy net photosynthesis was observed between regimes on 6 September. Except on 14 August, 2007 when whole respiration was lower in deep infrequent irrigated bentgrass, there were no differences in whole respiration between irrigation treatments in 2007.

Water soluble carbohydrate content in leaf tissue was similar on 15 June and 13 July, and greater on 8 August and 7 September, 2006 in deep infrequent irrigated versus light and frequent irrigated creeping bentgrass (Table 2). Creeping bentgrass subjected to deep infrequent irrigation had similar soluble carbohydrates levels in leaf tissue between 15 June and 8 August, 2006 and greater soluble carbohydrates in leaf tissue on 7 September compared to light and frequent irrigated bentgrass.

Total non-structural carbohydrate content in leaf tissue was less on 15 June, similar on 13 July and greater on 8 August and 7 September, 2006 for deep infrequent irrigated versus light and frequent irrigated bentgrass. On the final rating date in 2006, water soluble carbohydrate, storage carbohydrates, and total non-structural carbohydrates were greater in bentgrass leaf tissue subjected to deep infrequent irrigation than bentgrass receiving light frequent irrigation.

In 2007, deep infrequent irrigated bentgrass had greater water soluble carbohydrate in leaf tissue on two (17 July and 15 August) out of five measuring dates and similar water soluble carbohydrate on three dates (1 and 28 June and September 6) compared to light and frequent irrigated bentgrass (Table 2). Storage carbohydrate levels in leaf tissue were similar between 28 June and 15 August, 2007 and greater on 1 June and 6 September in deep infrequent irrigated versus light and frequent irrigated bentgrass.

Creeping bentgrass subjected to deep infrequent irrigation had a greater amount of leaf total non-structural carbohydrate on 1 June, but similar total non-structural carbohydrate levels on all other measuring dates compared to light and frequent irrigated bentgrass. Unlike 2006, only storage carbohydrate levels were higher in deep infrequent irrigated bentgrass on the final measuring date.

Creeping bentgrass subjected to deep infrequent irrigation had a greater water



soluble carbohydrate and total non-structural carbohydrate content in roots on all four measuring dates in 2006 compared to light and frequent irrigated bentgrass (Table 3). Storage carbohydrate levels in roots were similar on 13 July and 8 August, 2006, but greater on 15 June and 7 September, 2006 compared to light frequent irrigated bentgrass.

In 2007, root water soluble carbohydrate was greater on 1 June in deep infrequent irrigated versus light and frequent-irrigated bentgrass (Table 3). No differences in root water soluble carbohydrate, however, were observed on the other four measuring dates between the two irrigation regimes in 2007.

Creeping bentgrass subjected to deep infrequent irrigation had greater storage carbohydrate and total non-structural carbohydrate levels in roots on four (1 June, 17 July, 15 August and 6 September) out of five 2007 measuring dates compared to light and frequent irrigated bentgrass.

DISCUSSION

During the study period in both years, soil moisture at the 0 to 10cm depth averaged 9.3 per cent and 15.7 per cent in deep infrequent irrigated and light and frequent-irrigated plots, respectively. Data showed that deep infrequent irrigation reduced canopy net photosynthesis in both years, but generally had no effect on whole respiration.

It is likely that light and frequent irrigation encouraged more shoot growth, which would have resulted in a greater leaf surface area. A greater leaf area at the time of measurement may account for the higher canopy net photosynthesis rate in light and frequent irrigated versus deep infrequent irrigated bentgrass. Hence, photosynthesis was more sensitive to soil drying than respiration.

Huang and Fu (8) previously reported that photosynthesis decreased in Kentucky bluegrass (*Poa pratensis* L.) and tall fescue plants subjected to complete drying of the soil profile in a greenhouse study. In a field study, however, it was shown that the canopy net photosynthesis rate in creeping bentgrass was similar, regardless of being irrigated three times per week at 40, 60 or 100 per cent of actual evapotranspiration (3).

In the current study, only light and frequent irrigated plots were irrigated to 100 per cent ET on rain-free days. While whole respiration remained similar between irrigation regimes in our study, Huang and Fu (8) reported that respiration decreased in Kentucky bluegrass

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and tall fescue nine days after imposing drought stress in a greenhouse study.

Maintaining healthy turf under limited water conditions may depend on the availability of carbohydrates. Leaf tissue from deep infrequent irrigated bentgrass contained higher levels of water soluble carbohydrates and total non-structural carbohydrates than light and frequent irrigated bentgrass on the final measurement date in 2006, whereas storage carbohydrate levels in leaf tissue were higher on the final date in both years.

On the final measurement dates in September 2006 and 2007, soluble carbohydrates and total non-structural carbohydrate levels in roots were higher in deep infrequent irrigated than in light and frequent irrigated bentgrass. Root storage carbohydrate levels were on average 39 per cent (2006) and 15 per cent (2007) higher on the final measurement date in each year in deep infrequent irrigated versus light and frequent irrigated bentgrass. On the final measurement date in each year, root total non-structural carbohydrate levels were 9 per cent to 20 per cent higher in deep infrequent irrigated bentgrass. DaCosta and Huang (2) subjected creeping bentgrass to drought stress for 6-18 days in a greenhouse and observed that the proportion of newly produced total nonstructural carbohydrate carbon was highest in roots, intermediate in stems, and lowest in leaves within 12 days of inducing drought.

The present study showed that creeping bentgrass subjected to deep infrequent irrigation had root total non-structural carbohydrate levels averaging 23 per cent higher in both years compared to light and frequent irrigated bentgrass. Therefore, although total nonstructural carbohydrate levels were greater in leaves, roots accumulated more total nonstructural carbohydrate when grown under deep infrequent irrigation. Hence, the results from our field studies are in agreement with greenhouse studies that have shown the total non-structural carbohydrate levels in both leaves and roots increase in response to soil drying (2, 8, 9).

While not quantified, it is very likely that creeping bentgrass leaf growth was restricted more in deep infrequent-irrigated than light and frequent-irrigated plots. Since canopy net photosynthesis was less in deep

TABLE 3. WATER SOLUBLE CARBOHYDRATE (WSC), STORAGE CARBOHYDRATE (SC), AND TOTAL NON-STRUCTURAL CARBOHYDRATE (TNC) LEVELS

2006						
Treatments	15 June	13 July	8 Aug	7 Sept		
-		WSC [glucose (mg	g.g ⁻¹ dry wt)]			
LF ×	36.0 b ^z	22.4 b	44.4 b	41.4 b		
DI ^y	54.2 a	57.6 a	50.6 a	47.6 a		
-		SC [glucose (mg.	g ⁻¹ dry wt)]			
LF	15.8 b	10.0 a	9.2 a	10.8 b		
DI	21.8 a	11.6 a	10.6 a	15.0 a		
TNC [glucose (mg.g ⁻¹ dry wt)]						
LF	51.6 b	32.6 b	53.6 b	52.2 b		
DI	75.8 a	69.0 a	61.2 a	62.8 a		

2007						
Treatments	1 June	28 June	17 July	15 Aug	6 Sept	
-		WSC [gluc	ose (mg.g ⁻¹ dry w	t)]		
LF ×	23.6 b z	24.0 a	17.5 a	17.7 a	20.3 a	
DI ^y	26.8 a	22.0 a	17.1 a	17.4 a	20.8 a	
-	SC [glucose (mg.g ⁻¹ dry wt)]					
LF	34.0 b	28.0 a	23.1 b	29.8 b	21.8 b	
DI	44.5 a	28.2 a	28.5 a	33.3 a	25.1 a	
TNC [glucose (mg.g ⁻¹ dry wt)]						
LF	57.6 b	53.0 a	40.7 b	47.6 b	42.1 b	
DI	71.6 a	49.2 a	45.6 a	50.7 a	46.0 a	

* Light and frequent (LF) irrigation was performed daily in the absence of rain to wet soil to a 4 to 6 cm depth.

^y Deep and infrequent (DI) irrigation was performed at leaf wilt to wet soil to a depth of 24 cm. ^z Means in a column within each parameter followed by the same letter are not significantly different based on Fisher's protected least significant difference test ($P \le 0.05$). infrequent irrigated bentgrass, the increases in carbohydrate levels of deep infrequentirrigated bentgrass leaves and roots likely were a result of a reduction in plant growth. That is, since growth was restricted by dry soil conditions, plants utilised less carbohydrate.

Maintenance of a favourable water status is essential for plants adapted to conditions with limited water availability. Osmotic adjustment is an important physiological mechanism of water retention and cell turgor maintenance. The accumulation of solutes such as water soluble carbohydrate is associated with active osmotic adjustment when plants are subjected to soil water deficits (11). DaCosta and Huang (2) reported that creeping bentgrass plants osmotically adjust to dehydration stress by accumulating water soluble carbohydrate.

In this study, higher levels of water soluble carbohydrate were observed in leaves in 2006 (8 August and 7 September) and 2007 (17 July and 15 August). Higher water soluble carbohydrate levels also were observed in roots of deep infrequent versus light and frequent irrigated bentgrass on all dates in 2006 and on 1 June, 2007. These water soluble carbohydrate data suggest that creeping bentgrass plants subjected to deep infrequent irrigation were adapting to drought stress.

In summary, this field study showed that creeping bentgrass exhibited reduced canopy net photosynthesis, but generally unchanged whole respiration rates in response to deep infrequent irrigation. Deep infrequent irrigation resulted in higher levels of water soluble carbohydrate, storage carbohydrate and total non-structural carbohydrate in creeping bentgrass leaves in 2006 and higher soluble carbohydrates and total non-structural carbohydrate levels in roots in both years. Carbohydrates accumulated more in deep infrequent irrigated bentgrass since plant growth was restricted by frequent periods of wilt stress.

Higher water soluble carbohydrate levels in tissues of deep infrequent irrigated creeping bentgrass likely contribute to improved drought tolerance by providing for a more negative osmotic pressure in tissues in response to prolonged periods of wilt stress. Accumulated total non-structural carbohydrate also would be available to assist plants in their recovery from wilt and other stresses.

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HG TURF 2008 – A year in review

Alexandra Farm increases warm season turf capacity

As a reflection of the changing climate and customer requirements, HG Turf's farm has transitioned itself to 90% warm season turf and only 10% cool season turf. Farm Manager, Peter Roberts along with the guidance of Director, Gavin Sutherland, undertook the conversion over three years. Today HG Turf has 1.5 million square metres of turf in production. Retail Sales Manager, Peter van Leeuwen and Commercial Sales Manager, Daniel Copsey are in charge of sales and diligently monitor quality, supply and customer service. HG Turf has large plantings of Santa Ana Couch and Kikuyu and also has plantings of Wintergreen Couch and CT-2 Couch. The grasses are used in various forms; sprigging or line-planting, washed turf or solid turf; giving customers great flexibility to meet their respective budget and water supply constraints. In recent years HG Turf has converted many sports fields from cool season turf to warm season turf and had them playable within months. The successful and economical methodology includes; topping, laser levelling and sprigging (rather than traditional line planting). HG Turf has also converted many sports fields using either washed turf or solid turf where the sports field must be back in play sooner and the budget permits. HG Turf can supply turf in maxi rolls or standard rolls.

AMI Stadium New Zealand

In October 2008 HG Turf commenced the field reconstruction of AMI Stadium, Christchurch, New Zealand. The project was completed in two months and included excavation of the existing field and installation of new drainage, irrigation, profile and Motz Stabilized Turf. HG Turf's Managing Director, Hamish Sutherland planned the project for two years with AMI Stadium Manager, Chris Lewis.

"We used a Leica Total Station to set-out and survey the works and to facilitate 3D laser levelling of the base, gravel and sand layers. The technology gave us great flexibility and allowed us to complete the works before time and below budget" Hamish said.

"It was different to our previous field reconstructions because stadium management and staff worked with us on the job and in so doing they learnt first hand about the new field system" Hamish said.

"This relationship allowed us to value-add to the project; in addition to supplying a new field system we also upgraded their warm-up facility (background) and created a new turf nursery on site. The stadium also agreed to install a synthetic turf road around the boundary of the field. Our FIFA and IRB approved synthetic turf products are popular and clients are keen to use them, either along side the natural turf or as a stand alone synthetic field."

The new AMI field system was put to the test for its first fixture following a downpour of rain. Chris Lewis commented "Had the ground not been completely replaced prior to Saturday's one day cricket international between New Zealand and West Indies it would have been a washout ... this is the way of the future for multi-purpose sports grounds ... we have to have the best possible surface so we can host many different types of events at any time," Chris said.

Waikato Stadium – HG scores again in NZ

In addition to HG Turf's successes at AMI Stadium and Eden Park, the Hamilton City Council recently awarded HG Turf the contract to grow 12,000m2 of Motz Stabilized Turf for installation in Waikato Stadium. Waikato Stadium is situated in Hamilton, New Zealand and is a host stadium for Super 14 Rugby. In readiness for World Cup Rugby in 2011 management decided to replace the existing turf with Motz Stabilised Turf. In its assessment, Hamilton City Council scored HG Turf highest in all categories including; relevant experience, track record, technical skills, resources, management skills, quality assurance and methodology. The turf has been planted in Eden Park's nursery and Eden Park's Ground Manager; Mark Perham will assist HG Turf with its maintenance. In late 2009 the turf will be harvested and installed in Waikato Stadium.

Australian Institute of Sport ongoing upgrades

Back in 2007, the Australian Sports Commission awarded HG Turf the contract to progressively convert the AlS's cool season turf fields to warm season turf fields. The AlS is limited in how many fields it can take out of play and for how long. With proven methodology and a team led by HG Turf Sports Turf Installation Manager, Mathew Woolfe, two of the four fields have been successfully converted and the third conversion scheduled for November 2009. That will be three fields in three years with the fourth planned for November 2010. The new turf variety is CT-2 couch grass, an improved couch cultivar that is also used in ANZ Stadium, Canberra Stadium and the MCG.

Skilled Stadium makes it a trio of Victorian AFL Stadiums to install HG Turf

At the end of 2008, the City of Greater Geelong Council awarded HG Turf the contract to grow and supply 18,000m2 of wintergreen couch for Skilled Stadium. The turf was planted prior to Christmas 2008 at HG Turf's Alexandra farm and is being maintained by HG Turf's Sports Turf Production Manager, Brad Kidd. Harvest and installation of the turf into Skilled is scheduled for late 2009. The turf will not be supplied as washed turf but rather "sod in sand" and it will be harvested and laid in maxi rolls.

AFL Turf Replacements

In 2008, HG Turf assisted a number of stadiums and sports fields with their annual turf replacements needs. HG Turf supplied replacement turf to ANZ Stadium, Canberra Stadium, MCG, Skilled Stadium, Subiaco Oval and Telstra Dome. HG Turf's turf replacement product is Motz Stabilized Turf (TSIII). HG Turf's Managing Director, Hamish Sutherland notes "since its first installation in 1999, the product has been researched and developed and we are now installing third generation product".

For more information Call us on 1800 622 340 or visit us at hgturf.com.au



Free call 1800 622 340



Since 2000 the Queensland Department of Primary Industries & Fisheries Redlands Research Station has been a centralised test centre for conducting Plant Breeders Rights assessments. Here senior scientist for turf Matt Roche provides a background on the facility's PBR works and how it is playing an integral role in the future development of the Australian

turf industry. Mueensland Government

he growth of Australia's \$450 million per annum turf production industry can primarily be attributed to the breeding, development and rollout of new turfgrass cultivars. The development cost for new cultivars is high, but this can be offset after release by royalty streams available to breeders of Plant Breeder's Rights (PBR) protected cultivars.

This by no mean implies that non-PBR or older varieties are not useful or do not have a place within today's turf industry. However, it is imperative for turf researchers and breeders to continue to develop further and to enhance key turfgrass traits to meet Australia's harsh environmental conditions, developing varieties that more closely match client needs, which, in turn, will sustain a viable Australian turfgrass industry into the future.

Cultivars are protected for 20 years following the grant of PBR. If a turfgrass cultivar is sold or marketed illegally during this time, the title holder may initiate legal action. The PBR title holder is entitled to seek damages or an account of profits, which can range from \$55,000 for individuals to \$275,000 for companies.

An application for PBR on a new variety in Australia is based on a 'breeder testing' system. The applicant, in conjunction with a nominated 'qualified person', establishes, conducts and reports on a comparative

growing trial to demonstrate that the new (candidate) variety is distinct, uniform and stable, hence the term a 'DUS trial'.

Under PBR regulations introduced in 1996. establishments designated as centralised test centres (CTCs) may be officially authorised by IP Australia (the Federal Government agency responsible for administering PBR) to conduct comparative growing trials on behalf of a wider group of breeders.

The turforass CTC located at the Queensland Department of Primary Industries and Fisheries (QDPI&F) Redlands Research

PBR assessments at the QDPI&F's Rediands **Research Station began in 2000 and has** significantly increased the efficiency of the PBR process for turfgrass breeders within Australia

Station near Brisbane focuses predominantly on warm-season species. A second CTC associated with the Pastoral and Veterinary Institute at Hamilton in Victoria does conduct growing trials on cool-season grasses (perennial ryegrass, tall fescue, etc), but essentially works only with cultivars for pasture use.

PBR assessments started in 2000 at Redlands. Under the CTC model, this service has significantly increased the efficiency of the PBR process for turfgrass breeders within Australia. To date, the QDPI&F have processed 25 turfgrass cultivars under the CTC model - 80 per cent of all turfgrass registrations in Australia from 2000 to 2008 (Table 1).

A major benefit of a CTC is that it enables a larger number of candidate varieties to be tested in a single comprehensive DUS trial with a larger number of comparators or varieties of common knowledge. To this end, Redlands Research Station boasts a 'living library' of turfgrasses - an in-ground collection of 138 warm-season turfgrasses grown in unreplicated observational plots measuring 3 x 2.5 metres.

Genus/group	PBR Registrations (pre-2000)	Total PBR Registrations (2000-08)	Descriptions from QDPI&F Redlands (2000-08)
Axonopus	0	1	1
Bothriochloa	1	0	0
Buchloe	1	0	0
Cynodon	5	12	12
Digitaria	0	1	0
Panicum	1	0	0
Paspalum	2	0	5
Pennisetum	0	1	0
Poa hybrid	0	1	1
Stenotaphrum	2	7	2
Zoysia	0	7	4
Total	12	31	25

TABLE 1. CUMULATIVE NUMBERS OF PUBLISHED PBR DESCRIPTIONS OF TURFGRASS CULTIVARS IN AUSTRALIA (TO JUNE 2008).

Current Stenotaphrum secundatum (buffalograss) spaced plant field trial at Redlands

When new cultivars are released within Australia, or overseas cultivars have been imported through the Australian Quarantine Inspection Service, these new cultivars need to be incorporated into the 'living library' to keep it up to date. In such cases, older or less favoured turfgrass varieties may be removed from the field plots to make room, but are then planted in backup 40-litre tubs for future access.

Currently, over 100 genotypes are kept in the backup collection and, together with the unreplicated field plots, provide a valuable source of material for use in PBR and/or other funded trials undertaken by the QDPI&F Turf Team.

DUS trials generate comparative data on different varieties. This is also useful in developing a better understanding of the plants' growth habits and required management practices. For example, a researcher may observe that a particular cultivar spreads faster laterally and produces more branches along its stolons in a spaced plant trial. These data are useful to turf managers wanting to know the likely timeframe that a turf divot may take to repair, or to turf farmers trying to predict the maximum number of harvests per year for the new cultivar on a commercial sod farm.

A CTC also provides greater scientific rigour and instrumentation. Independent field or glasshouse tests are conducted, if necessary, with the benefit of specialised facilities and equipment. Field trials enable the qualified person to observe and record morphological and developmental characteristics of the candidate variety against (generally) multiple comparator varieties grown as spaced plants and as swards.

Most of the descriptive data required for PBR registration are generated through spaced plant trials, which allow inherent plant traits to be more fully expressed than in a sward trial. In these trials, 30 plants (for vegetative turfgrasses) or 60 plants (for crossbreeding seeded varieties) are grown in a minimum of three replicates for later statistical analysis of the data.

For spaced plants, the minimum set of descriptors that should be measured is usually 10. These descriptors include assessing the plant's development (lateral spread, growth habit, days to flower), internode lengths and diameters on stolons and flowering tillers, leaf length, width and sheath characteristics on stolons and tillers, and inflorescence (seed head) characteristics. For sward experiments, the minimum set of descriptors may also



include measurements of the unmown plant height and inflorescence density, as well as inflorescence, stem and leaf measurements.

A replicated field trial enables a qualified person to establish the individuality of the new (candidate) cultivar and to generate the documentation needed for a grant of PBR. The field trial provides an opportunity for QDPI&F researchers to measure and record up to 27 turfgrass characteristics (Table 2) for each variety being tested.

These descriptors, along with ground and air temperatures and differences in the incidence of pests and disease, contribute to developing a better understanding of the cultivar and how best to manage it. The extensive list of descriptors measured provides comprehensive DUS data, which also strengthens the legal right of the plant breeder should a future dispute arise.

Morphological characteristics, especially those least affected by environmental factors are preferred. Performance attributes can also be included as distinguishing characteristics provided they are clear and consistent. Clear repeatable varietal differences must be demonstrated.

While comparative DNA testing can be an important and useful adjunct to those primary tests, such information is only accepted by IP Australia and the International Union for the Protection of New Varieties of Plants (UPOV) as secondary (or supporting) data for the purposes of PBR.

DNA testing of plant material is relatively costly. However, QDPI&F and University of Queensland scientists have been collaborating to develop standard extraction and testing protocols and a reference library of varietal DNA fingerprints to make this technology more affordable and convenient for breeders in the future.

For further information on PBR or DNA testing through the QDPI&F turf research group, visit www.dpi.qld.gov.au/turf or contact Matt Roche, (PBR qualified person) on (07) 3286 1488.

TABLE 2. TURFGRASS DESCRIPTORS (CHARACTERISTICS) RECORDED IN SPACED PLANT TRIALS AT REDLANDS RESEARCH STATION.

Whole plant measurements

- Diameter of spread
 - (4 measurements per plant) Growth habit
- Davs to first flower

Stolon measurements

- Number of branches at nodes 2, 3, 4, 5 and 6
- Fourth internode length,
- diameter, colour
- Fourth internode leaf length (L), width (W) and L:W ratio
- Fourth internode sheath length

Flowering tiller measurements

- Flag leaf length, width and L:W ratio
- Flag leaf sheath length
- Fourth leaf length, width, L:W ratio and colour

Inflorescence measurements

- Peduncle length, diameter
- Spike length(s)
- Number of spikes present
- Inflorescence density

Having a tailored preventive maintenance programme will not only help golf course operations function more efficiently but also reduce emergency repairs and costs

Winter workshop **tune-up**

W ith the frantic pace of the growing season finally beginning to ease and the latest round of turf renovations all but complete, it's time to start planning for a busy and productive winter in the workshop. Particularly here in the southern states, the lull in mowing schedules affords us a little more time to catch up on a few of the more labourintensive tasks, but where to start?

Without doubt, the business end of the mowers is high atop the list, particularly as they're all in need of some TLC after the recent coring and topdressing taking place around the course. Cutting cylinders and bedknives need to be ground or replaced, along with the inspection and or replacement of cylinder bearings, roller bearings, groomer or power brush bearings and seals if fitted.

During this time I like to take the opportunity to inspect the condition of the frame and adjusters for cracks or broken welds and a tap or die nut run over a well used adjusting thread at this point will save plenty of frustration later in the year. Checking over pivot pins and bushes is well worth the effort as well.





With winter about to descend it signals the start of a productive period for those employed to maintain a golf club's fleet of specialised turf care machinery. A winter preventive maintenance programme is a crucial component in the smooth running of any golf course maintenance operation and here Royal Melbourne Golf Club turf technician Luke Spartalis looks at some key areas to target.

Of course, the overhaul of cutting units is futile if the traction unit fails to deliver. Reasons for prime mover failure can be numerous but hydraulic and electrical system problems seem to provide the most issues during the year.

Regardless of whether the machine contains biodegradable oil or not, a failure with the hydraulic system spells disaster out on the golf course. As part of the major service, obviously the hydraulic oil and filters need to be replaced, however, at this point oil coolers and radiators should also be removed and the fins thoroughly cleaned with low pressure compressed air, especially on rough mowers.

The daily cleaning received as part of normal golf course operations isn't really adequate due to access restrictions and really does necessitate the removal of the oil cooler and or radiator for a thorough cleaning to be carried out.

Checking fittings for tightness, along with the inspection of reel motors and actuators for signs of leakage, particularly around shaft and wiper seal areas, will pay dividends later on.

Of course, most hydraulic leaks are the result of a ruptured hose. Overlooking a worn hose and having it fail will surely cost more than a replacement hose. Having a turf surface destroyed by the oil is but one aspect of this cost. Machine down time, along with any collateral damage to components must also be taken into account. Hose manufacturers estimate that 80 per cent of hose failures are attributed to external damage caused by pulling, kinking, crushing and abrasion. A hose rubbing against another hose or surrounding surface is a typical cause of this damage and can be eliminated with the use of an inexpensive polyethylene wrap.

Clamps should be kept secure to eliminate any movement and careful attention paid to the routing of any hoses replaced. Particular attention should be given to high pressure hoses as the bending of a hose in more than one place can severely reduce its life expectancy.

Steel lines should be inspected for corrosion and any debris cleaned away. Light surface rust can be neutralised and a protective coating applied to prevent further deterioration, however, significant rusting or pitting cannot be ignored and the lines will need to be replaced. I also remove the small factory fitted aluminium identification tags from steel lines as the accumulation of sand between the tag and steel line is abrasive enough to penetrate the line.

The electrical system should also receive its fair share of attention at this time. It seems that no matter how well a compartment seems to be sealed, debris and moisture get in. Connectors, fuse blocks, relay and switch terminals should be inspected for loose or corroded connections and tightened or replaced if necessary.



It is estimated that 80 per cent of hose failures can be attributed to external damage caused by pulling, kinking, crushing and abrasion. Some simple polyethylene wrap (right) can help eliminate wear caused by hoses rubbing together

Care should be taken with cleaning of electrical components. Specialised products such as Wurth contact OL electrical cleaner should be used along with compressed air. A protective spray or non-conductive grease should be used to waterproof switches.

Any exposed wiring, particularly under the machine should be inspected for signs of wear and repaired or replaced if necessary. To access parts of the wiring loom, some panels will probably need to be removed. The extra effort now will pay off later on.

Generators, vibrating plates and other seldom used equipment should also be

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Control Systems

inspected at this time, draining the fuel tank completely and running the engine until it stops will prevent starting problems next time they're needed.

The slow growth season allows us to finally catch up with those elusive brushcutters and hover mowers which seem to be continually out on course during the summer. Pull start cords should be inspected and replaced if necessary. Blades should be sharpened as well as drive boxes greased and on/off switches checked. Engine cowlings should be removed and the cooling fins cleaned of debris as this build up of grass can cause engine cooling problems. Winter is also an opportune time to fine tune your preventive maintenance programme. Records kept of repairs and maintenance performed during the past 12 months can be scrutinised and the data used to try and streamline the maintenance programme. With each course having its own distinct operating conditions, particular maintenance intervals listed in the workshop manuals may need to be adjusted to suit.

Having a tailored preventive maintenance programme will help the entire facility function more efficiently, reducing emergency repairs, increased workloads and cost.

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Full Name: Gregory John Burgess. Nickname: Burgo.

Age: 34.

Period as a superintendent: Six months. Years as an AGCSA member: Eight years.

Previous clubs: Urunga Bowling Club (apprentice 1996-1999); Eastlake Golf Club (greenkeeper 2000-2001, 31C 2001-2003); Mona Vale Golf Club (assistant superintendent 2003-2008).

Current club: New Kuta Golf & Ocean View, Bali, Indonesia (6 months).

Number of staff: 98 (golf course maintenance). Course specs: 18-hole championship course designed by Ronald Fream, David Dale and Kevin Ramsey. 6832m from the black tees. Evergreen ultradwarf couch greens (1.7ha). Tees (3ha), fairways (18ha), aprons (3ha) and roughs (16ha) are Saltene seashore paspalum. Total land area is about 70ha.

Turf qualifications: Certificate III Hort (Hunter Institute of Technology); Certificate of Proficiency Bowling Greenkeeping; Certificate IV Hort (Northern Sydney Institute of TAFE); Graduate Diploma in Agriculture Science (Turf Management), University of Sydney. Currently completing Master of Agriculture Science (Turf Management) through University of Sydney.

Congratulations on your recent appointment as superintendent at New Kuta. Tell us a bit about your background in turf management and why you moved to Bali.

I started my greenkeeping career as a casual labourer at Urunga Bowling Club (a small town 20km south of Coffs Harbour) in 1994. A few years later I successfully gained an apprenticeship with the club as a bowling greenkeeper under the direction of Alan Irving.

After successfully completing the apprenticeship I applied for a position with Eastlake Golf Club in Sydney where I was appointed greenkeeper, and after 12 months rose to 3IC under superintendent Andy Hugill. From there I ventured with Andy to Mona Vale Golf Club on Sydney's northern beaches as 3IC and then rose to the position of assistant. While at Mona Vale I had the opportunity to further my knowledge and skills by undertaking the Masters Degree in Turf Management at the University of Sydney.

The position in Bali came about from an advertisement on the AGCSA website through Sports Turf Solutions on behalf of New Kuta Golf & Ocean View. I felt that it was time for a new experience and challenge to further my greenkeeping and life skills. I had mixed emotions when the position was offered to me, but a new challenge, lifestyle, cultural experiences and a bit of travelling sounded appealing. I later found out that New Kuta



Greg Burgess - New Kuta Golf & Ocean View, Bali, Indonesia

Want to know the best way to test your greenkeeping credentials? Try moving to a new country where you don't speak the lingo and have the prospect of taking charge of a course just three months out from a co-sanctioned Asian and European Tour event. That was the scenario facing Greg Burgess who since starting at New Kuta Golf and Ocean View six months ago has had what can be described as a Bali baptism of fire.

would be hosting the 2009 Indonesian Open 2009 (a co-sanctioned Asian and European Tour event) which made the decision to relocate easier.

What have been some of the main challenges in making the move?

The challenges in moving to Bali, Indonesia have been varied. I had never been overseas for a lengthy period of time before and did not know exactly what to expect. The language difference obviously has been a challenge. I have adjusted by learning basic Bahasa – Indonesian and Balinese – to communicate with staff. Hand actions and drawings have also helped. I am lucky enough that my assistant Engkos speaks and reads basic English which has helped immensely.

The biggest adjustment I have made is communicating and thinking outside the square. I have found that not everything goes according to plan so you must find another way to get the job done. With a staff of 98, the job might sound easier. I can now say this is not the case. Dealing with such a large number of staff takes patience which has been hard to adjust to.

What do you hope to achieve during your time as superintendent there?

As superintendent at New Kuta I would like to accomplish many tasks. First and foremost would be producing a quality golf course to the best of my ability that would be recognised as a major championship venue in south east Asia. I also would like to learn a bit more about myself and my capabilities.

The one thing you miss about your old job at Mona Vale and Australia. What are some of the perks of the new job?

There are a few things I miss about my old job at Mona Vale, mostly the team environment and professionalism from management and staff. Also the Toro machinery! Perks of the new job include sensational duty meals, getting paid in \$USD and the afternoon surfing sessions behind the 14th, 15th and 16th holes – world class waves!

Take us through your operations at New Kuta. Where is the club at in regards to its turf management practices?

Being a relatively new golf course in Bali, the operations are widespread in relation to managing the business. Golf course maintenance is one part that is broken down into several areas – superintendent, assistant superintendent, administration, chief machinery operator, machinery operators, mechanics, irrigation specialists, landscape and maintenance labourers (ladies). I have basically taken what I have learnt at Mona Vale and employed similar schedules and operations so that every department runs as smoothly as possible.

Turf management and maintenance practices are ongoing. I have concentrated mainly on these two issues since the start of my employment at New Kuta. It has been tough and strenuous to put into practice, but the staff is more than co-operative and the best thing is they are willing to learn and have a go.

What are some of the major turf management issues there and how are you and the club planning to meet those challenges?

There are numerous turf management issues here. The irrigation water, which is drawn from several deep wells and gravity fed into the main holding dam, contains high levels of bicarbonates and sodium. The paspalum tolerates the water quality to a point, but the Evergreen couch can only take so much. This is particularly a problem during the dry season where there might not be any rain for up to 6-8 months. Also dealing with the local soil types is a challenge. The quantity of available water is also limited. Proper irrigation scheduling will be a high priority as well as a 100 per cent operational irrigation system.

Army worm has been a major problem over the wet season period. The available insecticides within Indonesia to control this pest are very limited and hard to source. I have used the local wildlife, namely chickens and roosters wandering around the golf course, as a tool for identifying outbreaks of armyworm. If I see a group feeding in a particular area, I know two or three days later I will have a real problem in that area.

Water is obviously a critical issue in Australia. Are there similar issues for golf courses in Bali?

There are a lot of issues regarding available water, especially on golf courses during the dry season. Bali's population booms with tourists at this time of year which puts increased demand on golf courses to provide quality playing surfaces for their international guests. Desalination and waste water treatment plants are now being sourced as another option to provide quality water to golf courses in the region. The only drawback is the high cost involved in setup and treatment.



Any other management issues which the club is actively looking at?

We are currently looking at implementing and updating OH&S procedures and environmental procedures in reference to the golf course and clubhouse throughout 2009/10.

The course hosted the 2009 Indonesian Open not long after your arrival. It must be a thrill to have a Tour event at the course?

To say the least, it was the biggest challenge I have faced in my career to date. To get this course up to a standard that was acceptable for a Tour event and given only three months to do so was a mammoth task. When I first arrived in Bali it was towards the end of the dry season. The turf surfaces were in pretty bad shape due to a number of reasons, but the main culprit was poor quality irrigation water (8000ppm).

I basically had no time to adjust to my new surroundings. I had to take a full on approach

OFF THE COURSE

Favourite movie? Dirty Rotten Scoundrels. A classic! Name 3 CDs you could not live without. Pearl Jam – Ten: Powderfinger – Double

Allergic; The Killers – Sam's Town.

If you could be any musician, who would you be? Eddie Vedder.

Food you could not live without? Vegemite on toast and bananas.

Favourite sporting team? Canterbury Bulldogs

Sporting team you like to dislike? Manly Sea Eagles without question.

Dream car? A limousine with driver.

Irritations? Fuel and hydraulic oil spills on turf surfaces.

What book are you reading now? A guide to Bali.

Favourite golfer? Tiger Woods (male) and Anna Rawson (female).

Golf handicap? 11.

Favourite Bali hangout to date? Bliss massage and Nasi Padang (food).

What do you do to get away from it all? Go surfing of course! Clears the mind well. to get the golf course up to an acceptable standard. My first task was to prioritise a list of works (renovations) and minor repairs. The first month was tough and I questioned being here several times. I basically had to believe in myself and my capabilities. The support from fellow colleagues was also invaluable and their guidance was very much appreciated.

After I had sorted myself out, improvements on the golf course started to take effect week after week. I tried not to think about the Tour event being held here, but concentrated on delivering acceptable turf playing surfaces. Two weeks prior to the event I was starting to get nervous, but in a good way. All the turf surfaces were now in good condition and the golf course was playing well. The focus was then motivating staff to continue their hard work to deliver the course in best possible condition for the Open.

The event was a success and management were extremely happy with the outcome. Looking back at preparations I may have implemented things a little bit differently, but that is all part of the learning experience. I had seen this move to Bali as a challenge, but didn't quite envisage it being as big as it was but glad I had the opportunity.

What was the most important thing you learned at Mona Vale which you have taken with you to Bali?

Step back, take a deep breath and think.

If you could change one thing about your job what would it be?

I would change working hours to accommodate surfing in the morning at Dreamland.

Most embarrassing moment as a new superintendent/assistant?

The most embarrassing moment would have to be when I was introducing myself to the maintenance labourers (who are all Balinese women) here at New Kuta. I had noticed all the ladies had smiles on their faces and hints of laughter were starting to surface. I didn't think anything of it at the time until it was brought to my attention that my zipper was fully open. A bit embarrassing... 4

Giving credit where credit **should** be due

Dear Editor,

After reading Michael Picken's excellent article (*The right of reply – ATM Vol 11.1, Jan-Feb 2009*) I have decided to put my story out there on the assurance from colleague and good friend Pat Pauli that the younger members of our profession can learn something. If they do then it will be worthwhile. My story is similar to Michael's as far as a couple of newer directors at my previous club did not want to give me any credit for what I had done in my 14-and-a-half-years' service.

I feel my downfall began in December 2007 when I began to request in my monthly greens reports that my three-year employment agreement, along with that of my assistant and turf technician, would be up at the end of the financial year and that we should begin discussions as it was going to be a busy year for the club with the building of a new clubhouse, practice green and surrounds.

It took until early June 2008 to have my first meeting with the president and manager where I was told that I would not be getting any increase in remuneration and just a one year agreement. I told them that I would take the offer as an insult (I had been getting CPI for the previous 14 years) and that I would stay until my anniversary (February 2009), take my long service leave and then make a decision if I wanted to return.

In hindsight I should have not said anything other than question why, when CPI was 4.2 per cent (the highest by far in my time there) that I was not getting anything, especially when we were assured that all finances were in place for the above mentioned projects. As it turned out the manager was able to get them to agree on a new three-year employment agreement with minimum CPI being reintroduced the following year.

On the greenkeeping side of things, the drought definitely broke on the Gold Coast and we all had to remember how to manage our golf courses in wet humid conditions. For some reason several of our greens had been getting really badly infected with Crowsfoot (strangely it started in the drought period). I had been trialling a pre-emergent on some of the worst effected tees fairways and roughs with great results. After speaking to a colleague who had been using it on bent greens for *Poa*



(NB: label warns about not using on greens) I decided to trial it on our couch greens without much success in the first year. After more research it was suggested that in southeast Queensland you needed to start your monthly applications in July, at the reduced rate of 1I/ ha. This is what was approved at greens and board meetings to trial.

This might be the time to detail what the greens and board meetings directed me to do against my wishes. We all know how important it is to keep records and it has sure helped me over the years. I was directed to reduce our monthly summer de-thatch and topdress by one programme. Our autumn renovation programme that was always scheduled for the second week in March was moved to the first week in April (we then had a cold snap during that week). Our annual Pro-Am was moved from mid-September to mid-July without any discussions. On top of all this we had one of the wettest and coldest winters on record for the Gold Coast and I was not allowed to raise greens mower heights.

When I first started at the club the Board of the day allowed me to continue what was a tradition by oversowing the greens at autumn renovation. It was a lot of hard work but the results were worth it. I was pretty gutted when directed that we had to stop and I continually asked about allowing it on problem greens and tees.

The bottom line to all this was thin areas of couch grass on several greens. We ended up rolling more than mowing. I was accused of killing these areas with chemicals. I explained that I actually sprayed the greens myself and went to the trouble of applying it by hand with high volume to avoid any potential overlapping problems (as well I was hoping it would get into the soil more). I also explained that the thin areas were already there because I did not make my first application until the end of July as agreed (after doing my research).

I believe that we simply wore the turf out. The pre-emergent did a great job of not allowing the *Poa* to germinate as it was the first time that we did not have to spray a postemergent since we stopped oversowing. I only applied two monthly applications as it was pointed out to me that the continued use of the pre-emergent would slow the couch roots down when the soil temperature warmed up.

So the trial against Crowsfoot in greens did not get a fair test. The one thing I did regret doing was spending a lot of money on applying a liquid charcoal to wash through any remaining traces of the pre-emergent. This definitely opened the door for the poisoning of greens accusations. It was also difficult to apply and did not speed up recovery.

We got through our senior Pro-Am with comments like 'the greens are not green but they putt fine' (and the scores reflected that). Also, in the first round of club championships one of the young guns equalled the course record, but the bar flies did not play so well so guess whose blood they were after.

I am not sure if it was because I didn't have the weight of the AGCSA presidency on my shoulders, or if it was because I had just MC'd my beloved Nanny Peg's funeral, or the concerns I had about the individual who was running for club president – he was going around handing out brochures saying that if he was voted in he would save the club thousands of dollars by bringing in contractors – I decided that I'd had enough.

I had a meeting with the president (my previous greens chair) and told him how I was feeling. I have no doubt that he thought with me out of the way it would improve his chances of getting in again. Fortunately for me he agreed to give me a week's pay for every year of my service, which took me up to my official anniversary date, which gave me my full long-service and annual leave entitlements. Unfortunately for him and the club he missed out on the president's position by a handful of votes. Also, the manager was dismissed after returning from Christmas break. So begins another chapter of a new Board running a golf club.

In closing, the question has been asked about how long you should stay at one club? It's very difficult to answer, due to individual circumstances, but I am definitely leaning more to what Doug Robinson once told me and that was five years.

> Jeff Gambin Immediate Past President, AGCSA

ON THE MOVE

Victoria has been a hotbed of superintendent movement in recent times with two more of the industry's biggest names moving on. As reported in the last edition of Australian Turfgrass Management, Jim Porter handed in his resignation at Royal Melbourne and departed at the end of March. Just days before Porter bid farewell to the sandbelt icon after nearly 20 years' service, it was announced that Metropolitan Golf Club superintendent **Richard Forsyth** would be his replacement, effective from 29 June.

Forsyth agreed to the position on 27 March and finishes up at Metropolitan on 26 June before starting at Royal Melbourne just a few days later. Forsyth heads to Royal Melbourne after serving nearly 15 years as superintendent at Metropolitan. During that time Forsyth has prepared the sandbelt course for numerous tournaments, including the 2001 World Matchplay Championships which many regard as having set the benchmark for tournament preparation in Australia. Most recently the course hosted the 2009 Australian Women's Open won by Brit Laura Davies.

"I'm very honoured to get the nod and excited about the challenges ahead," says Forsyth. "As a young apprentice you always aspire to work on the best courses and Royal Melbourne has always been the best. Metropolitan has been a very integral part of my life for so long and that of my family's and it was a very hard decision to leave. We have lived on the course and I have raised my family there so it's not just about moving on from a job it's also about moving our lives as well."

Forsyth started his career as an apprentice at Riversdale Golf Club in Melbourne before moving up to the Murray. He spent threeand-a-half years as assistant at Yarrawonga and Border Golf Club before heading to Murray Downs where he was construction superintendent and then maintenance superintendent all up for nearly six years.

In taking over the top job at Australia's number one ranked golfing facility, Forsyth has the immediate concern of getting Royal's Composite Course ready to host the 2011 Presidents Cup. That task has been aided substantially after the Victorian Government granted the club a special water exemption which will allow 70 megalitres of potable water to be used per year on the Composite Course in the lead up to the tournament.

If Jim Porter's decision to leave Royal



Melbourne wasn't enough to shock the Victorian superintendent community, weeks later highly-respected superintendent **Peter Frewin** announced that he is to leave Barwon Heads Golf Club. Frewin, who was AGCSA president from 1996-2001 will finish up on 1 June, nearly 21 years to the day after arriving from The Lakes Golf Club in Sydney.

Frewin says that after more than two decades at the course it was time to look at something else, although at this stage isn't quite sure what that will be. He is, however, relishing the prospect of being able to spend more time with wife Katrina and children Mitchell and Bridie and was enjoying a round of golf at Royal Melbourne with his 15-yearold son when ATM called.

Frewin, a long-time member of the AGCSA, has overseen some dramatic changes at Barwon Heads during his tenure, particularly in regards to water management with the use of reclaimed water and the installation of an RO plant. From 2000-2005 the club was the venue for the AGCSA's trial to monitor the effects of using reclaimed water bentgrass and *Poa annua*.

Despite some of the excellent environmental advances made at Bargara Golf Club in recent



Richard Forsyth will start as new Royal Melbourne superintendent on 29 June

times, superintendent **Wayne Marshall** has decided to pull the pin. Marshall, winner of the 2007 GCSAQ Environmental Award and runner-up in the 2008 AGCSA Claude Crockford Award, is hoping to continue working locally in the environmental sector and will remain an active member of the Moneys Creek Rehabilitation Group which he and the golf club played a key role in establishing.

Elsewhere in Queensland, **Dean Henderson** has been appointed the new superintendent at Hyatt Regency Coolum, venue for the Australian PGA Championship. Henderson moves to the Sunshine Coast from Sanctuary Cove where he takes over from Darryl Edwards who is now at Gold Coast Burleigh Golf Club. At Brisbane's Indooroopilly Golf Club superintendent Charlie Giffard has promoted **Joel Leth** and **Duncan Alexander** to the joint 2IC role at the 36-hole facility. Former Indooroopilly assistant **Brendan Clark** has headed to country SA where he has taken over as superintendent at Mount Gambier Golf Club.

Mark Yates is settling into his new position as superintendent at the scenic Kiama Golf Club, situated about an hour and half south of Sydney. Yates, who was Wayne Marland's former assistant at Port Kembla Golf Club just a few clicks north of Kiama, takes over from **Scott McLaurin** who has joined the team at Nuturf.

Following David Mason's recent departure to Riversdale Golf Club, Warrnambool Golf Club has appointed **Mark Thomson** as its new superintendent.

Sanctuary Lakes superintendent Peter Jans has elevated leading hand **Aidan Murphy** to assistant superintendent at the west Melbourne course. Murphy, who replaces **Simon Commisso**, started his apprenticeship as part of the Sanctuary Lakes course maintenance team before heading across to the estate maintenance team for a year as a leading hand. He then returned to the course as a leading hand before being appointed assistant at the start of April.

Peter Frewin is set to depart Barwon Heads Golf Club just shy of 21 years



After a relatively strong winter in most parts of the northern hemisphere golf course superintendents are looking forward to the growing season. For some the winter thaw needs a bit of a helping hand and as this photo demonstrates some US superintendents have come up with unique ways of removing ice from their turf surfaces.

This snap was taken at The Country Club at Castle Pines in Castle Rock just south of Denver. Maintenance staff at the Jack Nicklaus signature course use a Verti-Drain on low lying areas of their fairways to help break up ice which forms from snow melt.

The tines on the Verti-Drain are set at minimal penetration to crack the ice so that it can be easily removed. The removal of the ice is important in order to prevent damage to the creeping bentgrass turf which if left covered for a too long will die off and need to be replaced.

RAIN BIRD TO HOLD PROFESSIONAL IRRIGATION TRAINING CAMP

The science and methodology involved in the irrigation of reserves, ovals, golf courses, nurseries, farms and other large irrigated areas has progressed at a rapid pace during the last few years with the introduction of better techniques and sophisticated computerised irrigation technology.

To keep abreast of the latest development and product knowledge Rain Bird Australia will hold a series of training sessions and classes specifically designed to supplement the knowledge of those already experienced in professional irrigation and to introduce newcomers to the industry.

The Rain Bird Academy Professional Irrigation Training Camp will be held at Holiday Inn Surfers Paradise, Queensland from 15-19 June and is targeted at golf course supervisors, irrigation contractors and dealers, council employees, horticulturists, farmers and anyone who is responsible for maintaining and managing large tracts of irrigated areas.

The camp will cover areas such as basic design principles, wire tracing and general troubleshooting through to certified training, knowledge of decoders and an operator's course on all Rain Bird's central control systems. Seven new additions to the course this year will be on basic golf central control, advanced golf central control, golf irrigation technician short course, site control software basic and advanced, IQ Central software and irrigation efficiency course level two.

A registration form can be downloaded from www.rainbird.com.au or call 1300 362

656 for enrolment, travel and accommodation information. An early bird discount of 7.5 per cent on course fees is offered for those who enrol before 15 May.

GLOBE EXPANDS NSW TEAM



Globe Australia has appointed two new members to its NSW sales team. Caine James and Andy Stankovic have joined

the company and will continue to service their client base in Newcastle, Hunter Valley, North Coast and country NSW.

James and Stankovic join Jeff Bowtell based out of Globe's Newcastle branch. Jeff Bowtell can be contacted on 0438 011 045, Caine James on 0437 972 356 and Andy Stankovic on 0408 498 800.

TORO, GRADEN ROLL FORWARD



Having recently joined forces with Melbourne based turf equipment company Graden, Toro has added the company's new GSR 1200 greens roller to its distribution portfolio.

From humble beginnings in Melbourne, Graden has grown to be a leading supplier of rollers and turf equipment worldwide and last year signed a distribution deal with Toro. This will now see its leading greens roller turn the classic Toro red colour.

Featuring a built-in trailer, universal tow hitch, dual drive chain and operator friendly steering, Graden's GSR 1200 is the lightweight alternative to regular rollers. Favoured by many superintendents, light weight rollers significantly enhance green speed for tournament play, improving playability and creating firm putting surfaces.

The GSR 1200 roller features a Honda GX200 engine and comes with four smoothing rollers for a wide rolling swath of four feet. Further enhancing the benefits are the overlapping steering heads with split rollers which allow the machine to move evenly along undulating surfaces at a faster pace, while simultaneously eliminating any ridging which can occur on softer surfaces. The split rollers also make the steering lighter and there is no chance of the roller tearing the grass while turning.

For more details about the Graden GSR 1200 rollers and renovation equipment, contact your nearest Toro Commercial Dealer or Golf Equipment Specialist, or go to www.toro.com.au

TURF CULTURE LAUNCHES CARBON TRADER

Turf Culture has released a new product called Carbon Trader. The product is a high loading formulation of carbon that also contains urea. The product is ideal for use on turf to improve turf colour, turf health, and appearance. Carbon Trader is also ideal for turf going dormant as it can help turf hold its colour throughout dormancy. Carbon Trader is now available through Turf Culture agents.

Turf Culture agents are now also distributing a new calcium product called CalSap Turf. CalSap's unique source of calcium is calcium carboxylate and is 340 times more soluble than some of the other calcium sources.

To view a list of Turf Culture distributors go to www.turfculture.com.au

RAIN BIRD AND ARCHITECTS PARTNER UP IN EDUCATION

The American Society of Golf Course Architects (ASGCA) and Rain Bird will team up over the next three years to create educational programmes and other resources aimed at a better understanding of water management issues among golf course architects, their clients and the golf industry.

The major partnership level of support will help the association's members work more effectively in golf course development and remodelling. Rain Bird and ASGCA are currently planning a variety of initiatives covering water management issues and solutions.

"We understand and support the focus that ASGCA has on educating its members and advancing the industry," notes Rain Bird Golf Division leader Michael Roberts. "This partnership is a good match as we share that focus and have the research and resources regarding water management to help provide ASGCA members and others with information that contributes to the creation of great courses that demonstrate good stewardship of the environment."

IWT LINKS UP WITH TORO



Irrigation and Water Technologies (IWT) has partnered with Toro Australia to distribute its KISSS technology to the Australian irrigation market. KISSS – Capillary Irrigation Subsurface Systems – was developed over a 10-year period in collaboration with the CSIRO, Charles Sturt University and the University of Queensland.

The patented system introduces a new irrigation approach that matches water delivery to the capillary action of the soil. A unique

geotextile fabric allows water to move through the material at a rate that matches the soil's ability to absorb it. Water is delivered directly to the root zone and held there in a unique wetting pattern - rather than draining away and out of reach of the plant's roots. KISSS can be used with potable, grey and recycled water and uses less water than drip irrigation and significantly less than sprinkler systems.

IWT selected Toro drip technology for the polyethylene tubing component of KISSS. Under the new marketing arrangement Toro will promote and distribute KISSS nationally.

Ken Woods, Toro's Irrigation divisional manager says: "The association is a logical fit with our own operation and adds to our portfolio of water smart products. There is no doubt that all irrigators in this country, including both municipal and commercial operations, will increasingly be held accountable for efficient water use."

CHANGES TO COLISEUM LABEL

The APVMA has recently approved additions to the label for the Group B herbicide Coliseum. Sir Walter Buffalo has been added as a host grass (Situation), while Ryegrass has been added as a pest (Weeds Controlled) @ 120g/ ha. The updated label can be viewed in full at www.turfculture.com.au.

Achieving Par Finding the balance

🇑 Course Health

- 🖗 Budget Management
- **Marsonal Well Being**
- 🕼 Staff Health 🖉 🗖



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The AGCSA has an extensive range of books that can ordered through the AGCSA website, and also through the accompanying order form.

Postage: \$9.90 for first book and \$1.10 for every book after.

All About Bowls: The History, Construction and Maintenance of Bowling Greens Edited by Jeff Perris

STRI, 2008

he game of bowls is one of the most popular participatory sports the world over and has an impressive history that dates back centuries. In Australia the first recorded game was back in 1845 in Sandy Beach, Tasmania where one T. Burgess defeated F. Lipscombe. Just one year later the first ever bowling club was formed at the same location and nowadays Australia has over 2000 bowling clubs across the country.

The art of bowling green construction and maintenance is a precise one and in 1988, on the 400th anniversary of Sir Francis Drake's famous game of bowls on Plymouth Hove, the UK's Sports Turf Research Institute published 'Bowling Greens – Their History, Construction and Maintenance', a book that went on to become something of a bible for those in the industry.

With the rise of new technologies and practices over the past 20 years, the STRI decided to revise the book (which had been out of print for the past four years) and through editor Jeff Perris, a consultant agronomist of 42 years, has fully updated its content. The new offering, published in hardback and in full colour, also has a new title – 'All About Bowls -The History, Construction and Maintenance of Bowling Greens'. Launched at SALTEX 2008, the annual tradeshow for the UK grounds care and sports facilities sectors, the new-look 222-page tome is an indispensable aid to all bowling clubs and greenkeepers providing a comprehensive guide to year round management and maintenance of greens.

The first 50 pages of the book look back at the history of the game (the legend of bowls being first played by a bloodthirsty medieval king who used the severed heads of prisoners is unfortunately dismissed) and the evolution of bowling green maintenance practices. This section includes some fascinating facsimiles of old posters and advertising material from the 1800s and early 1900s including the very first Buddings lawn mower, patented in 1830 and manufactured by Ransomes from 1832.

After looking at bowling green evolution up to the present day, the book then launches into the construction of modern day bowling greens covering in detail grading, drainage, ditch formation, rootzone mix and turf establishment.

Chapters five through 10, which comprise the bulk of the book, deal with specific modern day bowling green maintenance techniques. Playing characteristics, sward composition (NB: the majority of the book deals with cool-

All About Bowls THE INSTORY CONSTRUCTION & MAINTENANCE OF BOWLING CREEKS	
EDITED BY JEFF PERRIS	
	This book
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season grasses) and soil profile are discussed in the opening section which also includes a handy greenkeeping calendar (although Australian readers will need to keep in mind that the book is written primarily for northern hemisphere readers).

Chapters on fertility and topdressing, mechanical work (i.e.: mowing, aerating, scarifying, rolling and brushing) follow before the topics of water and irrigation are presented. Over 30 pages are also devoted to the control of weeds, moss, pests and diseases. The final maintenance chapter looks at other areas unique to bowling greens including rink management and the care of ditches. The book concludes with three technical appendices, acknowledgements and a page on the work of the STRI.

As mentioned above this book is produced by the STRI and concentrates primarily on the UK industry, its management practices and cool-season turf, but despite this the Down Under bowls practitioner will find this book highly relevant and informative.

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STA QLD 👁

he working group to set up the Queensland division of the Sports Turf Association (STA) first met in late February 2008 at the STA/Turf Grass Association of Australia (TGAA) national executive meeting held in Brisbane.

Since then an informal meeting was held on 29 April 2008 by 10 enthusiasts including Terry Barr (Rural Buying Services), Malcolm Caddies (Suncorp Stadium), Bob Cray (Princess Turf), Peter Cronin (Skilled Park), Steve Hampton (Grow Solutions), Barry Howard (Nuturf), Jason Pollard (Maxwell & Kemp), Andrew Kolbee (Nuturf), Matt Roche (Department of Primary Industries and Fisheries) and Scott Wallis (Ballymore) in an effort to get STA QLD off the ground. Until now things have been a little on the quiet side.

VGCSA 🗢

ost superintendents in Victoria are glad that summer is behind us with record temperatures and minimal rainfall which lead to the disastrous bushfires that wiped out townships across the state with massive loss of lives, homes and livelihoods.

For those in our industry who have been impacted by the events of 7 February, the VGCSA has got in behind our members and offered help in any possible capacity. As you will have read in the last edition of ATM Tim Warren from Horsham Golf Club was one of the worst affected clubs and a team of 25 Vic greenkeepers, led by Nathan Bennett from The Sands, Torquay, headed up to Horsham to assist Tim and his team with getting Horsham back on track. Many thanks to the clubs and superintendents who allowed their staff to help with this.

Marysville Golf Club is another club that was severely damage by the bushfires and when superintendent Rob Christie is ready for support we will send another group of guys to help him with his rebuilding. A special mention must go to Darren Wilson and GCSAWA committee for their donation to the clubs that were affected by this tragedy.

Those members who made the effort to go down to Leongatha Golf Club to support our recent Globe sponsored country meeting enjoyed a relaxed atmosphere. The course was in fantastic condition and all credit has to go to superintendent Steve Earle for his hard work and dedication given the limited budget and resources.

The 2009 VGCSA AGM, sponsored by

At this year's national executive meeting which was held in Perth on 10-11 February committee members from ACT, VIC, SA, NSW, QLD and WA met. The latter state hosted what was two brilliant days which provided the opportunity for members of the respective state and territory associations to brainstorm with other attendees in an effort to foster the development of turf professionals at a national level. Discussions also included support being provided from the various state and territory STA/TGAA associations to get STA QLD up and running.

The development of STA QLD will provide its members with a great networking opportunity to share knowledge and ideas and further their education, fostering the development of the wider turf industry. The STA QLD working group last met on 3 March 2009 to discuss the particulars of our first informal get together for people who are interested in becoming a member of STA QLD. The specific details (these were not yet confirmed at the time of publication) of this day/afternoon will be listed on both the STA website (www.sportsturf.asn.au) and TGAA website (www.tgaa.asn.au) and will no doubt spread quickly around the industry.

Should you have any questions or would like to contact us direct to find out more about the day, please contact either Malcolm Caddies mcaddies@suncorpstadium.com.au or Matt Roche Matt.Roche@dpi.qld.gov.au.

MATT ROCHE STA QLD



Toro, will be held at Yarra Yarra Golf Club (superintendent Paul Holmes) with a shotgun start at 7:30am followed by a two course lunch. Former St Kilda AFL coach Grant Thomas has been confirmed as guest speaker and with golf at one of the Melbourne sandbelt's great courses scheduled this meeting will be well attended so make sure you book early to avoid disappointment.

As my period as VGCSA president winds down, I would like to thank the board members that I have worked with over the past seven years. I have enjoyed my time on the committee and would encourage superintendents to give to this organisation. Over this period of time I have developed many friendships with past and current committee members that I wouldn't have if I didn't make the effort to join such a well organised association. To Lesley Mitchell who is the backbone of the association, many thanks for your support and tolerance and also to our past president who I have relied on for advice and support.

Over the past seven years I'm proud of the changes to the association with more focus on education at meeting, the professional development of the newsletter thanks to Brett Chivers and the OH&S DVD which has been extremely well received by other state associations. Many thanks to NSWGCSA, SAGCSA, GCSAWA and Toro Australia for supporting this safety DVD which is relevant to our industry.

MICHAEL FREEMAN PRESIDENT, VGCSA

SAGCSA

amie Butterfield hosted a very successful SAGCSA meeting on 26 February at AAMI Stadium. The theme of the day was skin cancer prevention and we had the Cancer Council of South Australia along to give a really informative awareness session on skin cancer.

We all had the opportunity to look into a mirror under UV light and I think most of us got a bit of a shock to see the sun damaged skin on the face staring back. Brian Goodridge introduced us to some new Toro machinery and Paul Dugmore from Bio Turf Australia introduced the Floratine range.

Jamie Butterfield was a tremendous host on the day and found time in his very busy schedule to make sure that we were accommodated well and that the day ran smoothly. Members were shown through the new maintenance facility at AAMI and were all



February SAGCSA meeting 7

suitably impressed with the site including the 5-star lunchroom and staff amenity facilities. Great to see another site using a recycle wash facility. Jamie ran through some recent works on the playing surface and spoke of some of the difficulties he experiences when the oval gets used to stage concerts and other events.

Upcoming member meetings include Willunga Golf Club (30 April) and the 18 June AGM at the Glenelg Golf Club. It would be great to see recent high attendances continue at these meetings. The Willunga meeting will focus on water use and irrigation and the AGM will give members an opportunity to have a look at the ASR project at the bay.

We have had a good influx of new members recently with a good proportion joining as trade members. If you see some new faces at our meetings try to introduce yourselves and make them feel welcome. I would like to wish our newest superintendent Brendan Clark, who has recently been appointed at Mount Gambier Golf Club, all the best in his new role and welcome him also as an SAGCSA member.

South Australia has remained very dry through late summer and early autumn and indications are that this will be the trend for the remainder of autumn. Several clubs are embarking on water harvesting schemes which will help them secure more water in what has been a really difficult time for them. Let's hope the predictions are inaccurate and that we see some good rains heading into winter.

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t's starting to cool down in the national capital and by the time this goes to print we will have had a few frosty mornings. The region has experienced a few thunderstorms over the past month or so but we missed out on the good rain that has drenched the coast further north.

The Living Turf Apprentice of The Year award night was held at the Queanbeyan Bowling Club with Wade Williams winning the prestigious award. Wade capped off an outstanding few years with excellent study results and is sure to become an integral member of the team at Federal Golf Club. Wade has also started casual teaching at the CIT School of Horticulture further highlighting his passion for the industry. Congratulations to Wade and thanks to Rob Cooper of Living Turf for his continued support of this award.

The couch trials at Royal Canberra are going well with establishment information being evaluated at the moment. Plot consistency was thought to be an issue in the early stages of the trial development but Michael Waring and co have done a lot of work to ensure the best possible results can be achieved. Irrigation information will be gathered and evaluated over the winter months before the turf gets going again in spring.

The theme for the 2009 TGAA seminar is 'Diversity in Turf Management'. The seminar this year will be suited to turf managers from a range of areas and disciplines. A workshop will be held on 28 July in conjunction with the

seminar on 29 July. This will be a 'hands on' workshop and will be held at the CIT School of Horticulture at Weston. The two topics being covered are irrigation and treatment of disease. The workshop will be run by industry professionals and will be a great source of information for anyone in the turf industry. Any enquiries should be forwarded to Michael Waring rcgcsuper@royalcanberra.com.au.

The date for the TGAA Golf Day has changed from 7 May to 14 May. Gold Creek Country Club is still the venue and any enquiries can be directed to Scott Harris 0420 362 002 or Stuart Miller 0407 100 222.

BROCK WESTON COMMITTEE. TGAA ACT

NSWGCSA

he next meeting for the NSWGCSA board of directors is set for 4 May at Carnarvon Golf Club (host superintendent Steve Jacobsen). With new board members fitting into their roles well, the year ahead is going to be one with some fresh ideas which will show in our upcoming association events.

Secretary Ryan Fury has recently become a committee member on the NSW Golf Association Planning Committee which is part of the sponsorship and marketing sub committee. The focus of this committee is to have good representation from the turf sector to help improve education of club members, board members and golfers in general regarding turf management issues. Although still in the early days this is a great step for our association and we look forward to being a part of this.

Our thoughts have been with those in Victoria following the devastating Black Saturday bushfires and now with those up north in the areas surrounding Coffs Harbour which have been affected by major flooding for the second time in six weeks. This great country of ours can really be quite unpredictable.

Our now annual 2IC education day is currently set down for Monday 25 May with a confirmation flyer to follow shortly. Our thanks to Wes Saunders (St Michael's Golf Club) and Jason Martin (Manly Golf Club) for their involvement in organising this day. On 15 June we return to The Vintage for the annual Ambrose event which I am sure will see the gun teams ready to try and tear this great golf course apart.

TGAA WA@

n February, TGAA WA hosted a national meeting of TGAA/STA regions in Perth. We had representatives from QLD, NSW, VIC, ACT and SA attending the meeting at the WACA. On the following day we held our annual President's Breakfast at Kings Park which was attended by over 50 members, patron Geoff Marsh, along with our interstate visitors. We enjoyed a BBQ breakfast and a guided tour of Kings Park with turf manager Vinny Kapur. We also attended the University of WA turf research open day where we

GCSAQ

he devastating occurrences in Victoria with the fires and the floods affecting Queensland and more recently northern NSW have been well documented and I don't think we on the outside can begin to comprehend the enormity of these tragedies. Congratulations to the supers, clubs and companies who have rallied and assisted those courses affected get back on their feet.

For our part the rain just continues to fall in Queensland, particularly in the coastal areas. A total of 32 inches (813mm) fell on my course in the first three months of 2009, with more forecast on the way. Interestingly it hasn't stopped the golfers with nearly record numbers registered for the same period.

On the GCSAQ front we have got most of the year planned out now with the following dates confirmed. David Golf and Engineering will once again conduct the 2IC Challenge Golf Day at Indooroopilly Golf Club on Monday 11 May. All queries can be directed to Lance Coventry on 0438 662 770.

The very next day, on Tuesday 12 May,

STA NSW 💿

The Sports Turf Association recently held its annual golf day at Magenta Shores on the NSW Central Coast. The magnificent course was a great challenge for the golfers on the day and many thanks must go to course superintendent Kenton Boyd and his staff for presenting a fantastic course. Thanks also to the staff at Magenta Shores for their great hospitality and faultless service. As always this day wouldn't be possible without our sponsors and the players.

As this edition goes to print the STA was finalising the Sydney Sports Turf Seminar in late April. A full report will be included in the inspected the kikuyu trial site to see the latest results from the water repellence study.

Our next event in February was a seminar on environmental management systems (EMS) at Piney Lakes Environmental Education Centre, presented by Jason Hatton and Ray Moir from Environmental Care, the WA representatives for e-par. In April we held an educational workshop on soils and drainage at Guildford Grammar School. We are currently organising the TAFE turf industry awards dinner at the WACA in May. The workforce situation has changed quite dramatically in WA over the last six months. I'm getting reports from organisations that were previously losing staff on a regular basis and unable to fill positions, are now retaining a full quota of grounds staff. The challenge is to increase the skills base of workers in the turf industry through further training.

PETER RUSCOE PRESIDENT, TGAA WA

Redlands Research Station will be hosting us to view the turfgrass plots that are currently under assessment. The opportunity to see the trials first hand at Redlands and hear first hand accounts of the experience some of the supers conducting trials have had is an opportunity not to be missed.

Globe Australia will sponsor the GCSAQ education day at Peregian Springs Golf Club on Monday 18 May and will be demonstrating a range of machinery as well as providing first class information from the likes of Peter Kirby, Paul Jackson and Jyri Kaapro. Jyri will be giving a presentation on the new fungicide for the control of the dreaded ERI fungi which should ensure a full house.

The 2009 Country Bus Tour is on the weekend of 20-22 June which this year finds us heading to the north coast of NSW and staying in Lismore on the Saturday night and Byron Bay on Sunday. Golf will be at Chris Haselden's Lismore Workers Golf Club on Saturday and Monday has Shaun Cross hosting us at Byron Bay. Skirmish will be available on the Sunday as will a game of golf at Wayne Tickle's Ballina Golf Club.

There has been a little movement on the super's merry-go-round in the north with Wayne Marshall deciding to pull up stumps at Bargara Golf Club. Following on from his 2007 GCSA Environmental Award, Wayne is weighing up his options, hopefully with a move to an environment-based position with local council on the cards. There has also been a bit of movement in the Troon ranks with Geoff Bennell shifting to Brookwater, Dave Lunardelli taking over at Hope Island and Kelvin Nicholson replacing Geoff at Pacific Harbour.

And following the departure of Richard Phillips from Ocean Shores, Duncan Lamont returns south to take over the reins and Dean Henderson has moved from Sanctuary Cove to take over from former boss Darryl Edwards at Hyatt Coolum.

PETER LONERGAN PRESIDENT, GCSAQ

next edition. Plans are also well underway for our other events later in the year including the Regional Seminar at Kurri Kurri TAFE on 18 August and the Sportsman's Charity Luncheon at Parramatta Leagues Club on 13 November.

The STA & TGAA state associations got together in February in Perth for a national meeting. We were spoilt with such great hospitality from our WA colleagues and thank them very much for their support. The meeting was held over two days with the first day spent at the WACA reviewing the operations of each state and the development of other regions such as Queensland and Tasmania. The second day started with the annual TGAA WA President's Breakfast at Kings Park and included a tour of the park before heading off to Subiaco Oval and the University of WA research facility. This meeting was very productive and continues to strengthen our associations and thanks must go to Peter Ruscoe and his crew for a great time. If you want more information on STA please check out the website www.sportsturf.asn.au

GRAEME LOGAN PRESIDENT, STA NSW

GAA VIC

ith the launch of TGAA Victoria's accreditation programme at our Summer Seminar last November, our members are now being recognised for years of commitment to TGAA but also for professionalism within the turf industry.

This programme caters for members on two levels - professional turf manager and experienced turf person. TGAA VIC rewarded Matthew Dowlan for being the first applicant in the programme at a special presentation on 16 February. Matthew has been a member for several years and is currently employed with the City of Glen Eira.

Recent TGAA VIC events included the regional seminar at Morwell Football and Netball Club. This day was a great success with plenty of positive feedback and appreciation from local Gippsland turfies. Next year we plan on heading to the state's west. The most recent meeting was the biennial Australian School Bursars & Administrators day which was held on 16 April at The Peninsula School in Mt Eliza. Rob Gell and Greg Champion were guest speakers on the day and we thank them for their attendance.

GCSAWA

ost of us here in the West are glad to see the back of a hot dry summer which saw temperatures average over 30 degrees with just 14mm or rain recorded over four days since Christmas. Ouch! This is one of the driest summers I have seen for a while but we are getting used to it.

The GCSAWA committee is more than happy with registrations for the 2009 Margaret River Conference which will be held in the first week of May. Over 50 delegates, the majority superintendents and assistants, had registered as this edition was going to print. A special thank you must go out our events coordinator Glenn Cross and treasurer Craig New for organising the conference and events. A full report will follow in the next edition.

The 2009 Golf Masters Cup has started with Cottesloe and Busselton putting on some great weather for the hackers. Watching Josh from Nuturf stagger up the 9th at Cottesloe had me reaching for the defibrillator but he recovered okay to win the day! The Busselton day proved to be a winner for the clubs down south with the hometown lads cleaning up.

Numbers have been below expectations to date and to ensure this format continues encourage more superintendents to L

ch of TGAA Victoria's be held on 24 June at the MCG. This is our major annual event focusing on turf wickets and as always we gratefully acknowledge Cricket Victoria's sponsorship.

> Recently, this country of ours has been through some tough times. The ferocious fires in Victoria certainly have taken a huge toll on both property and life but we have started the recovery process. The floods in Queensland are not to be forgotten too and Victoria can only hope for some of this rain to fall south of the border. We have had some rain but dam 🗏 levels are still very low.

> Finally, TGAA VIC president Rob Sundblom had an unexpected stay in hospital recently. Rob wishes to express his appreciation for all the well wishes that he has received. It has \equiv been a very stressful time for Rob and I am sure all the kind words and flowers have put a smile back on his face. We wish him a speedy recovery and look forward to seeing him back cracking the whip soon.

participate. If you can't make it, send your 2IC as they will greatly benefit from the experience.

Congratulations to Daniel Zoccoli from Mt Lawley Golf Club on winning the GCSAWA Best Indentured Apprentice for 2009. Daniel was a standout and also won the 2009 TAFE Horticulture Apprentice of the Year. I'm sure he \equiv will acquit himself well in the national awards.

By now all superintendents should have received their safety DVD. We see this as a very important part of staff management and encourage you to set aside some time for your staff to watch the DVD and also induct new staff. A special thank you to the VGCSA for producing a great resource.

The GCSAWA committee looks forward to catching up with all members throughout the year especially in Hobart for the national conference and at various functions throughout the year. We have again secured The Vines Resort for our AGM this year so ensure you come along. Also a quick get better soon to Norm Ashlin who had a fall from a ladder and is off work for some time. Take it easy Norm and we hope you have a speedy recovery.

DARREN WILSON

e finally have an autumn with some arowth! The rain we received in March has been really beneficial for all areas around the state with Hobart

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lark Pot

recording 70.8mm (more than double than was recorded for the same period a year ago) and Launceston 50.6mm.

The TGCSA had its first meeting of the year at Riverside Golf Club on 18 March. The day included a fairway scarifying demonstration and a walk around the course with superintendent Tom Crawford who showed us a fairway he had recently sprayed with Round-up and then tilled and re-seeded.

The day ended with a BBQ on the club's balcony overlooking the course. Tom is carrying out a lot of course improvements at the Launceston based course and we wish him all the best in these endeavours.

Many of you have probably seen Mark Potter travelling around the state. Mark, the former superintendent at Claremont Golf Club in Hobart, is working for TAS Skills Institute (the old TAFE) and is resurrecting the greenkeeping/turf courses in Certificate 2, 3, 4 and Diploma levels.

Mark is doing a great job sorting this all out and employers are now starting to take on apprentices again. Mark is also attending some of the TGCSA committee meetings to get feedback on what is required in the turf industry. If you wish to contact Mark about any training issues phone 0438 305 145.

The next TGCSA meeting is back at Riverside on 3 June. The day will include the Reg Roberts Trophy. We will also be able to view the ongoing course work Tom has been undertaking.

This will be the last TGCSA meeting until after the 25th Australian Turfgrass Conference and Trade Exhibition in Hobart from 13-17 July. Don't forget to get your Early Bird registration in for the Hobart conference as it closes on 1 May, so take advantage of the significant discount on offer.

This is a great opportunity for all turf related areas to take advantage of a high class conference so close to home and to see the good work of Tasmanian superintendents.

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