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MANAGEMENT

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- *The Perks and Pitfalls
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- *The Warringah Verdict
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volume 6.6

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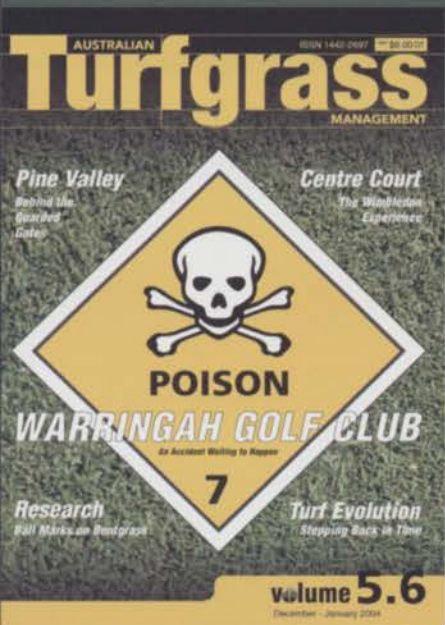
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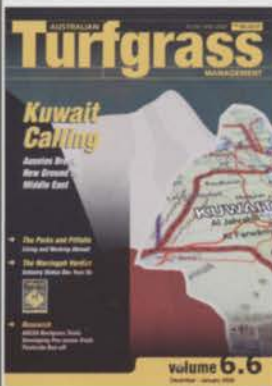
When Mick Kelly was approached by Troon Golf to be construction superintendent of the first ever all-turf golf course in Kuwait, he thought they were joking. They weren't. So Kelly thought if he was going to swelter in 50-degree heat, why not bring another Australian superintendent along for the ride.

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Living and Working Abroad: The Perks and the Pitfalls

Working overseas these days is commonplace for Australian superintendents, with many finding gainful employment in exotic locations such as South East Asia, the Middle East and the Caribbean. But how do they cope with life outside of work? ATM talks to Australian superintendents Brad Burgess, Mick Kelly and Simon Edmonds about their worldly experiences.

Warringah One Year On: Industry Status Report 18

It was exactly one year ago that ATM ran an exclusive feature looking at the Warringah Golf Club verdict and the ramifications the landmark decision would have on the industry. One year on, environmental consultant and former EPA investigator Terry Muir looks at how the industry has responded to the changing face of golf course environmental management. Accompanying Muir's article, Newcastle Golf Club superintendent Guy Thomas outlines the raft of changes made at his club (page 20), and the AGCSA's introduction of mock spill exercises to be conducted across Australia.



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Best Management Practices to Reduce Pesticide Runoff from Turf 38

Pesticide runoff is an important issue that golf course superintendents must be aware of and recognise where potential problems exist. US researchers have been studying best management practices to reduce the amount of pesticide leaving treated turf. The findings mean turf managers can help protect surrounding surface waters from pesticide contamination.

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Broadening horizons



BRETT ROBINSON
EDITOR

Seashore paspalum has gained wide acclaim in recent years as the turfgrass of the future. Its ability to tolerate high saline conditions while at the same time providing an excellent quality playing surface, given precise management practices, has generated plenty of interest within the industry and slowly but surely its usage is becoming more prevalent.

The Middle East is one such region where this turfgrass is becoming an increasingly popular choice, and in this edition of Australian Turfgrass Management we travel to the former war-torn nation of Kuwait to feature the groundbreaking work at the new Sahara Golf Club.

At the time of writing, Sahara is purported to be the first course in the world to use the seashore paspalum variety Sea Isle 2000 wall-to-wall, and there playing a critical role in the course's construction and grow-in are two Australian superintendents Mick Kelly and Simon Edmonds.

Both have had the opportunity to work with seashore paspalum on a number of different projects and in our cover story we look at their work in Kuwait, the trials and tribulations they have encountered and the benefits and limitations in using paspalum according to their experiences.

Complementing this feature in Tech Talk, Andrew Peart looks at the developing use of seashore paspalum on the back of the recent visit by Dr Bob Carrow and Professor Ron Duncan to Queensland.

While seashore paspalum is being touted as the next big thing, the love/hate relationship turf managers and superintendents have with *Poa annua* continues and in this edition Professor David Huff, a visitor to Australian shores in recent years, outlines the extensive research that Penn State University has conducted over the past 10 years.

Speaking of research, AGCSATech manager John Neylan furnishes readers with the latest data from the association's extensive couchgrass and bentgrass variety trials being conducted around Australia, while from America, researchers from the University of Illinois divulge their efforts into best management practices for reducing pesticide runoff from turf.

One year on from ATM's exclusive feature looking at the Warringah Golf Club verdict, we revisit the issue and gauge the industry's movement in terms of environmental management practices. Terry Muir gives us his thoughts while NSW superintendent Guy Thomas outlines the major environmental management changes adopted at his club.

Accompanying the main feature on Sahara, Mick Kelly and Simon Edmonds join with Jakarta based superintendent Brad Burgess to take a look at what it takes to not only work overseas as a turf manager but how to cope with life outside work. Some of the stories that Brad in particular has to impart will make many superintendents out there take a deep breath.

As this is our final edition for 2004, I would like to thank all contributors and those involved in the production of the magazine who have helped make this publication such a success. I look forward to bringing you more cutting edge turfgrass research and feature articles come 2005, but until then I wish all a Merry Christmas, a safe New Year and a productive (and hopefully not too dry) summer.

Enjoy the magazine.

Brett Robinson

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Billy Hamshire (VGA)
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Foreword Thinking

With the end of another year just round the corner it's a good time to reflect on where the AGCSA has come within the past year. The association has actively sought to improve its services to members and has made significant moves to further the cause of the industry in both the environmental and education arenas.

In June industry members converged on Melbourne for what transpired to be the largest turf industry gathering ever held in the Southern Hemisphere. With streams covering golf course, sportsfield, bowling and turf mechanics, the format proved to be hugely successful and the tradeshow, which attracted over 70 of the industry's foremost companies, was a highlight for many.

One of the main achievements during 2004 has been the formulation of the Environmental Working Group, which since its formation at the 20th Australian Turfgrass Conference has worked diligently to finalise the draft Golf Environmental Management Policy with all state and national golfing bodies.

One of the major initiatives of this policy is the introduction of a number of full-scale exercises that involve simulating an actual spill event in a real-time exercise.

These exercises demonstrate the AGCSA's desire to achieve environmental excellence. A full report on this and how the industry has fared one year on from the Warringah verdict is included within this edition (turn to page 18).

Mirroring the achievements of the environmental working group, the National Turfgrass Education Committee officially launched the Certificate 3 Horticulture Delivery and

Assessment Guides. This was a great achievement by the group and a tribute to their passion and professionalism that they were able to achieve so much in the first 12 months.

I congratulate all members of these working groups for the efforts and input, and I am sure they will forge ahead to achieve more in 2005.

The association also welcomed a new president in the form of Jeff Gambin (Gold Coast Burleigh Golf Club) and new board member Jon Penberthy, both of whom I have enjoyed working with since their elections in June.

From a membership point of view, 2004 saw the long-awaited launch of the new AGCSA website which has revolutionised the way the association communicates with its members. The website has a host of new features and going by the traffic statistics it is proving a real hit among members.

Coinciding with the new website has been the start of the fortnightly Turf News email newsletter, and who can forget the trials and tribulations of the inaugural footy tipping competitions. The friendly rivalry generated between sheds has been one of the big talking points.

The future of the industry also received a major boost this year when the AGCSA and Toro signed a unique agreement – the Next Generation – to help foster the next generation of superintendents and turf managers.

Under this initiative, Toro has agreed to pay half the price of a student membership to the association. Signed in early July, the program is expected to develop a national turf management career day, access to overseas exchange programs, tournaments and regular educational tours.



AGCSA chief executive, Steven Potts

And to top the year off, we will be releasing the first AGCSA turf diary for all members. For more information on this, turn to page 50.

2005 promises to be another year of growth and development for the AGCSA, with a focal point again being the June conference. While not on the same scale as Melbourne, the 21st Australian Turfgrass Conference heads to Echuca/Moama. It is hoped that the smaller format and location will make it easier for regional superintendents and their staff to attend. A first-rate calendar of social activities has already been planned and it is shaping up to be a major highlight.

Before signing off for 2004, I would like to pay tribute to the dedicated and talented staff at the AGCSA. They are a terrific bunch and nothing is ever too much trouble. As an association we are lucky to have their talents working for all members.

On that note I wish all superintendents and turf managers the best for the summer season. Let's hope that some of the rains experienced in spring continue through into summer, and to those superintendents hosting tournaments all the best for your preparations. ■

Steven Potts,
Chief Executive Officer, AGCSA



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Kuwait Calling

Breaking New Ground in the Middle East



Kuwait lies in the northwest corner of the Arabian Gulf and shares borders with Iraq and Saudi Arabia. Kuwait would fit almost 13 times within the state of Victoria and 45 times within NSW

Fifteen years ago, good mates Mick Kelly and Simon Edmonds could never have imagined where their turf management careers would take them. In fact, talk to them now and both will tell you they still aren't quite sure how they got to where they are. What is sure, however, is the pivotal role they are playing in a groundbreaking project to construct the first all-turf golf course in Kuwait. Yes, you read right – Kuwait.

On 2 August, 1990, the world stopped to focus on Kuwait. It was on that day Iraq invaded its oil-rich neighbour triggering what came to be known as the Gulf War.

Iraq occupied Kuwait for seven bloody months before a UN coalition of 35 countries, led by the USA, liberated the tiny Middle East nation on 26 February, 1991.

While retreating, however, Iraqi forces blew up oil installations and set 727 oil wells (about 80 per cent of Kuwait's total) on fire, causing oil

related losses of about US\$75 billion. As well as being financially crippling, the oil fires caused catastrophic environmental damage, the remnants of which are still visible today.

It has been well over 14 years since those dark days and little of the physical evidence of the war remains. Most parts of the country's capital, Kuwait City, have been repaired and infrastructure rebuilt, while industry is back to full production and new developments are mushrooming.

One such development is a major new recreation facility, the Sahara Golf Club, and it is here that two Australian superintendents are playing a unique role in establishing what will be the very first all-turf golf course in Kuwait's history.

The course is designed by Peter Harradine, a Swiss national based out of Dubai, and is an 18-hole, 6103m, par 70 facility located 20 minutes out of Kuwait City at the exclusive Hunting and Equestrian Club.

Nine holes and the driving range are floodlit, while there is an extensive practice area and a large clubhouse with amenities including indoor and outdoor swimming pools, a health centre and restaurants. Incredibly, there is also a shopping mall which houses an indoor ski slope and ice-skating rink.

The history of golf in Kuwait

The development of golf in Kuwait came hand in hand with the discovery of oil in the 1930s. Developers brought with them a desire to play golf and the first sand course was built near oil company headquarters and residences in a town called Al Maqwa south of Kuwait City.

In the late 1940s it was decided to relocate the oil company 12km south to an elevated area known as Al Ahmadi, and nine years later a golf course architect company from Great

Britain was engaged to design a new sand course there.

An 18-hole course was designed, but only nine holes were constructed at the time. It took a further 10 years before all 18 were completed. The course is still operational today and is home to the Kuwait Open which has been held since 1966.

In the 1970s two other sand courses were built. The first was in Mina Abdulla. Built by staff working at a nearby oil refinery, it eventually closed in 1981 as the course fell into the expanded refinery. The second was a desert course located on the outskirts of Kuwait City, but was closed when the Bayan Palace was built on the site.

In 1974 the Hunting and Equestrian Club built a sand course within its racecourse and this is now the location for the bold new Sahara Golf Club development.

A couple of good mates

And this is where Mick Kelly and Simon Edmonds come into the equation, two Australian superintendents who over the past 15 years have been fortunate enough to ply their trade around the world in some pretty exotic locations. Ask both of them back in 1990 that 14 years later they would end up in Kuwait and both would have thought you were a few tinnies short of a six-pack.

Back when Kuwait and Iraq were dominating the world headlines, both Kelly and Edmonds had just embarked on their turf management careers. Kelly did his apprenticeship at Nambucca Heads Island Golf Club, and moved onto Cypress Lakes in the Hunter Valley where he was assistant superintendent for four years. It was there he met Edmonds who had started his apprenticeship at Longyard Golf Club in Tamworth.

At the time Edmonds was in the process of completing his apprenticeship at Horizons Golf Club, Port Stephens. From there both Kelly and Edmonds took up positions with Watchman Golf overseas.

"It was a great opportunity as we were both single and had no commitments keeping us in Australia," Kelly recalls. "Both of us agree that we were lucky to have been given the opportunity we were at that time."

Edmonds was sent to Timika, Irian Jaya, Indonesia or West Papua as it is now known. The first year there he experienced 11 metres of rainfall.

Kelly also took up a similar position in Sarawak, Malaysia, building a Neil Crafter-designed golf course deep in the jungles of Borneo.

From Malaysia Kelly spent a couple of years in Cairo, Egypt before moving to Trinidad and Tobago to spend 18 months completing the grow-in of Tobago Plantations Golf and Country Club.

He then moved to Greece to complete a refurbishment of Porto Carras, a golf course originally built in the 1960s. It was after this



Australian superintendents Simon Edmonds (left) and Mick Kelly have played pivotal roles in the development of the Sahara Golf Club, Kuwait's first all-turf golf course

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Due to extreme day-time temperatures in Kuwait, most sprigging was carried out late in the day and at night time

that Kelly headed to the Middle East and ended up at Ras al khaimah in the United Arab Emirates, his first experience of growing Sea Isle 2000 and Sea Isle 1 using saline irrigation water.

It was during his time there that Troon Golf approached Kelly to grow-in and maintain their new Sahara course in Kuwait.

Edmonds, on the other hand, had stayed in South East Asia working as a construction superintendent on numerous projects in Indonesia, Singapore and the Philippines, and has now been involved with the construction of nine courses designed by the likes of Greg Norman, Jack Nicklaus, Gary Player, Coore and Crenshaw, and Nelson and Haworth.

Into the unknown

Kelly arrived in Kuwait in July 2004 and not surprisingly admits to being slightly doubtful about his new posting.

"Troon had seen the work that I was doing in Ras al khaimah with the turf there and approached me to see if I would be interested in being their superintendent in Kuwait," Kelly says.

"I was a little bit apprehensive at first but after an initial visit to the site I decided to accept the position. It was a great opportunity, both to work with Troon and also to expand my knowledge working with Sea Isle 2000.

"No grassing had started when I arrived, the main earthworks had been completed and the drainage, irrigation, sand capping and finishing were all well under way.

"There were a few problems though. This was the first golf course that the local contractor had done and it was showing.

"After arriving on site, the construction company told me they were looking for an

experienced construction supervisor. That's when I rang Simon."

Kelly had kept in touch with Edmonds and although they hadn't seen each other for some five years, Kelly decided to ask Edmonds if he would be interested in joining him in Kuwait to help make sure all construction aspects were finished and tied in correctly.

"After some initial reluctance I was able to convince Simon it was a safe place to work and that he would enjoy the experience," recalls Kelly.

"I forgot to tell him that it would be the peak of the summer where daytime temperatures are over 50 degrees and the nights are not much cooler. I figured that he was a tough country boy and could handle it.

"I am sure that there is a definite payback coming my way in the years to come and I will always have to be on my guard. But hey, what are mates for if not to share an experience with and I figured as long as I was going to be hot, someone else should be as well."

Adds Edmonds: "Both Mick and I had stayed in contact and we knew what each other was up to. However, this was the first time that we had actually seen each other in five years and we couldn't even enjoy it with a beer!

"When I first heard that Mick was heading to Kuwait I thought to myself, "You crazy bastard". Then he calls me and says they need some help for a few months to get things going in the right direction. Judging from my first thoughts, you can now officially say we both must be crazy.

"Actually, Kuwait has been a great experience for me. It's the first time I have been to the Middle East. It has been a pleasant surprise and a classic example of why you don't believe everything you see on TV or in the media."

Construction extremes

Conditions that greeted Kelly and Edmonds upon arrival in Kuwait were extreme to say the least.

Kuwait's summers are very hot with maximum temperatures soaring to 50 degrees and above regularly throughout July and August (pretty extreme when you consider that the hottest temperature ever record was 57.8 in Libya) and minimum temperatures around 34 during the same period.

Winters, on the other hand, are mild with day-time temperatures ranging from a low of eight to highs in the mid-20s. Moderate rainfall can happen over the winter months although can be irregular and at times non-existent.

As with most areas in Kuwait, the site on which the course was constructed was largely flat and sandy.

Before construction started the Kuwait army did a sweep of the area for any unexploded ordnance. Such remnants from the Gulf War are a constant reminder and this practice is mandatory before every new development goes ahead.

Initial earthworks began in November 2003 and in March 2004 drainage, irrigation installation, sand capping, and amendment incorporation were started in earnest. To help aid water retention, Aquafeed was amended into the sand as well as a bio-organic conditioner.

"This was one aspect of the job that proved extremely difficult due to the prevalent conditions at the time of application," says Kelly.

"The peak of summer is extremely hot, dry and very windy. This was bad enough but considering we had the equestrian club next door it made it even more difficult due to the dust created from the amendment blowing a continuous cloud in their direction.

"I would strongly advise if you are ever in the Middle East to never upset any Sheiks as they can be a law unto themselves. We either had to wait for windless days or hope the wind changed direction. Needless to say it was a slow and tedious job."

After initial problems procuring machinery and the inevitable delays, progress was lagging and together with Edmonds and a few other key specialists the 18 holes had to be sand capped, amendment spread and incorporated, and fine shaping completed in three months. The only thing in their favour was there were no rain delays.

"He may have complained about how hot it was but Simon was instrumental in completing the finishing works in the three months allocated for it," says Kelly. "And we have since had comments to say that it is of a very high standard."

Grassing started on 12 August, and at the time of writing Kelly was hoping to have the whole course completed by the middle of November.

Sprigging was carried out at night due to the extreme daytime temperatures although as the season changed Kelly was able to revert back to a more normal schedule.

Twelve of the holes are located inside the Hunting and Equestrian Club racetrack, which meant the designers had to cut 800,000m³ from the centre of the track to ensure that spectator views of the track were not obstructed.

The resulting earthworks have created a course with a lot of movement, and there is 15m in elevation difference from the 12 holes inside the track to the remaining six outside.

The holes on the outside of the race track are landscaped densely with palm trees and cornacprus trees lining the fairways, while inside the track there are pennisetum, bougainvillea and other landscape shrubs.

Working with seashore paspalum

Sea Isle 2000 seashore paspalum was selected as the prime grass variety for the course and at the time of writing Kelly believes it is the first golf course in the world to use this variety of paspalum wall-to-wall.

"This is one of the reasons why Troon approached me in the first place as I had experience with this grass in the United Arab Emirates and found it produced a beautiful surface, if maintained correctly," says Kelly, who sourced turf from Ras al khaimah in the UAE, Southern Turf in the USA and Saudi Arabia.

"I have now worked with paspalum on three different courses and I am very enthusiastic about its future.

"Simon and I debated its pros and cons as he has also had the opportunity to work with it on two projects. We both feel that if



Twelve holes of the new Sahara Golf Club are situated inside the Hunting and Equestrian Club's racetrack

maintained properly it produces a great surface that is a deep green colour, stripes very easily and uses a lot less fertiliser than couch to maintain this colour and striping effect.

"However, if fertility is not managed properly you will very quickly have a thatch problem. Even with a good fertility program thatch still needs to be monitored and controlled.

"Simon noted that as the levels of nitrogen increase it becomes very susceptible to diseases such as brown patch and its recovery from this and any pest infestation can be hindered.

"Another drawback is that you must take care when lowering the height of cut. You can't

assume that it will recover from scalping like couch; it won't. Its recovery from scalping is very slow, so you have to be cautious if intending to lower the height of cut.

"As with any turf it is important that cutting units are kept sharp at all times and this is very true for paspalum. A unit not sharp or adjusted correctly will tear and bruise the tip increasing the chances of salt burn."

Kelly says that the most important thing to remember when using paspalum is that it is salt tolerant and not salt resistant.

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The contoured 14th hole at Sahara six weeks after establishment. The course, at the time of writing, is the first in the world to use Sea Isle 2000 wall-to-wall

irrigation water, it becomes more complex. Salt build up in the profile can become a huge issue if the course isn't constructed with leaching in mind.

"This is one of the main reasons that it is becoming a popular grass in the Middle East as the water here is predominately high in salts. As the total dissolved salts (TDS) levels increase in the irrigation water, larger quantities of water will be required for proper leaching.

"On the positive side, fungicide, herbicide and insecticide use can be reduced. Due to its higher saline resistance paspalum also allows courses to be built in areas that you would have previously thought impossible due to the quality of the water.

"When I was in the UAE I was using irrigation water with a TDS level of 12,000ppm, for 18 months and I didn't spray fungicide, herbicide or insecticide even once, although I had to increase the frequency of fertilising to every 10 days.

"My experience has been gained in the Middle East where rain is really non-existent and if this grass was used on a golf course that was well drained, had good percolating profiles and had the luxury of a fresh water flush occasionally from rain or separate irrigation system, the soil profiles and salt levels would become much more manageable."

Irrigation issues

While turf was one issue that needed addressing, irrigation was another issue high on Kelly's list of priorities.

Water is a valuable commodity to any golf course, but in Kuwait water is a valuable commodity full stop. Seventy-five per cent of Kuwait's potable water is either imported or processed by some of the largest and most sophisticated desalination facilities in the world.

"Water usage on the golf course here can be double what would generally be used in Australia," says Kelly. "This can vary a lot due to local site conditions such as drainage, sand/silt content and thatch layer, but we are working on applying 12mm of irrigation every night.

"With this in mind, treated effluent water is supplied to the course via a government line, although it hasn't been the most reliable source and certain modifications have been made to increase the supply.

"The legality of this is yet to be fully explained to me, but as Schultz says in Hogan's Heroes ... "I know nothing", and that's my story. I guess there are some benefits to building the first grass course in Kuwait and this is one of them.

"I get even more confused when I am told that there is about 60,000m³ of treated effluent

pumped into the ocean each day. It makes me wonder why we can't get enough, although I have been reliably informed as the infrastructure is improved the supply of treated effluent will be much more efficient for all areas of Kuwait."

Irrigation water is stored in a huge tank under the clubhouse car park and is pumped to the course via a flowtronex pump station which can deliver 2500gpm.

There are also a couple of bores on site that feed the lakes and this water can be pumped back to the main storage tank allowing the treated effluent and salt to be mixed to any ratio required.

Looking ahead

Once the grow-in phase has been completed, Kelly says a staff contingent of 20 Filipinos will take over the day-to-day running of the course.

"These experienced staff will be required to teach 20 Indian staff who will make up the rest of the workforce," says Kelly.

"I have had to do this due to availability and also budgetary considerations. Basically, Indians work for much less than the Filipinos but have little to no experience on golf courses."

Toro will represent the bulk of the machinery on course, with other specialised machinery including Graden dethatchers, Dakota topdressers, Redexim vertidrain, Club Car carryalls, Massey Ferguson tractors and Bernhard grinders.

While Kelly says there have been plenty of challenges in getting the course to its current stage, the next big challenge is to get the local population to take up golf.

"While not long at 6103m, the course has plenty for the average golfer and, let's face it, spending too long in extremely hot temperatures can be trying even for the fittest of us," says Kelly.

"With this in mind, nine holes are lighted to take advantage of the cooler evenings during the summer months and to encourage the golfer to bring along their family to enjoy the other facilities while he or she maybe out playing golf.

"The facilities are quite incredible and it's all nestled in and around a fully operational horse racing track. It's a sporting mega complex.

"It's just a shame that you can't gamble or drink here, as it will be one hell of a place to visit!" 🍷



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HOW AGRISPON® WORKS

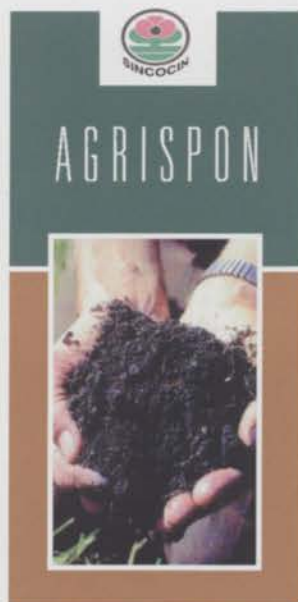
Microbial activity is necessary to transform nitrogen, sulphur and phosphorus into more plant available forms. However, modern day agronomic practices can quite often lead to conditions that are highly detrimental to microbial activity. This in turn can limit nutrient availability and in turn restrict turf growth even if adequate fertiliser has been applied. Root building phosphorus is especially dependant on microbes for its release into the soil especially in high or low pH conditions

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Have You Got What it Takes?

Living and working abroad: The pitfalls and the perks



Australian superintendents are forging careers in some pretty far-flung countries these days

So you think you have what it takes to work as a turf manager overseas? In previous editions of ATM we have featured articles about superintendents working abroad and the unique challenges they encounter from a turf management perspective. But how about life outside of work? ATM talks to three Australian superintendents – Brad Burgess, Mick Kelly and Simon Edmonds – about their worldly experiences and what it takes to deal with some of the more unusual and at times life-threatening situations.

In Volume 6.5 (October-November 2004) of Australian Turfgrass Management magazine we reported on Australian superintendent Brad Burgess's near-miss when the Australian Embassy in Jakarta, Indonesia was bombed in September.

The incident brought home the reality that Australian interests are a real target for terrorists, and that it is easy for those back home to forget that around the world Australian superintendents and turf managers

are forging their careers in some far-flung countries, some of which have been designated high-risk.

What follows is an interview conducted with Burgess shortly after the bomb blast, and rather than delving into his work situation, examines the personal side of taking up employment overseas and what sort of character it takes to be able to do so.

To recap briefly, Burgess had been at the Australian Embassy literally minutes before the

September 9 bomb blast. Burgess was registering the birth of his newborn son Chadd James but was informed he didn't have all the correct information. As a result, Burgess left the Embassy earlier than expected and was two kilometres down the road when the bomb was detonated. Despite him and his family being well and safe, the incident not surprisingly left Burgess harbouring plenty of doubts.

Since leaving Australia almost a decade ago as a wide-eyed 23-year-old, Burgess has gone

on to work in some pretty exotic locations and currently finds himself as superintendent of the Cengkareng Golf Club in Jakarta. Burgess, who together with his Indonesian wife Diratursina have recently started a family, took up the position in April 2004 after a stint at The Glades Golf Club in Queensland.

Also in an extension of the Sahara Golf Club article featured earlier in this edition, fellow Australians Mick Kelly and Simon Edmonds give their thoughts on what it is like to work abroad and impart some useful hints on how best to cope both at work and outside work.

ATM: Brad, outline some of the different countries you have worked in.

Brad Burgess: My first overseas experience was living in an air-conditioned container in a jungle camp outside of a small town called Timika, in Irian Jaya, Indonesia. I was 23, single and it was a shock to the system.

Fortunately it was easy to adapt, as there were many other Australians living in the same or other camps that were working on the mining and new town infrastructure project. We worked 13-day fortnights, and had two weeks

holiday every 12 weeks, with pay. I originally went to Irian Jaya on a nine-month contract and ended up spending almost five years there.

The golf course was designed by Ben Crenshaw and Bill Coore, and was carved out of the virgin rainforest. During the first year of construction in 1995 we endured over 15 metres of rain. After watching your efforts get washed away day after day was tough, although after three years and an intensive drainage system it proved to be a success.

My next move was to the Egyptian desert on the edge of the Red Sea where I spent 15 months working on a resort/residential project called Soma Bay that included a Gary Player course. During the entire time we never had one drop of rain although sand storms and constant strong winds were major problems.

Our accommodation was a five star resort that included the full use of the resort's facilities. Unfortunately the wind drove me mad and we (my wife Dira and I) decided to move back to Australia to start a family.

After a year back in the Hunter Valley as construction manager at The Vintage Golf Club, our first son Brandon was born. I then moved



Brad Burgess with wife Dira and son Brandon outside the Summer Palace in Beijing, China

up to Beijing, China where I was to complete a 27-hole golf course that was surrounded by a replica of the Forbidden City.

On the whole site that consisted of over 15,000 construction workers, I was the only foreigner there, and apart from my assistant and secretary, the only English speaking person. Language was a major issue.

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Have You Got What it Takes?

Living and working abroad: The pitfalls and the perks

hot and humid, and in winter temperatures got down to -15. The ground froze almost one metre deep. As winter set in, we had to soak the course to get the best freeze possible, then blow all of the water out of the irrigation system using large air compressors before the water froze in the pipes and caused them to burst. Layers of straw mats were used to protect the tees and greens over winter.

I then spent a year at The Glades in Queensland and the whole time there I could not wait to move abroad again. Fortunately the position at Cengkareng Golf Club came up and here I am. I hope to stay here for some time as moving from one country to another is a huge task, especially now with a young family.



The Top City course in Beijing where Brad Burgess was superintendent.

ATM: You've obviously worked and travelled quite extensively. How long does it take to adjust to a new country?

B.B.: The first time you leave Australia it certainly takes some time to adjust. You miss your family, friends and everything you are used to. You need to adjust to new living conditions, which could be a hotel, apartment, housing or camp, as well as adjusting to different food, television and means of transport.

At the same time you also have to adjust immediately to a new work place, new people, new culture, new procedures, which is hard enough at home dealing with your own people. While this can be difficult, there is usually always someone assigned to assist you with settling in.

ATM: For the first-timer what are the biggest hurdles to overcome?

B.B.: In most cases not being able to get the food you like can be trying, although you soon find something locally that suits you. Cultural differences don't affect you too much but it is a bit of a shock at first. You quickly find out how things work, accept them, and fit in the best you can.

You also cannot turn the TV on and watch your favourite shows, although pay TV is

readily available and you can buy cheap copies of the latest movies on DVD.

Security issues can play on your mind particularly when you have your family with you and in this day and age you must be cautious everywhere you go. Anyone concerned about housing security can always find secure townhouses and apartments.

ATM: Does it get easier the more countries you work in?

B.B.: Definitely. You tend to be able to prepare yourself for the various differences, knowing there will be many. You know what questions to ask, where to start looking for what you need to make your new home and work place as comfortable as possible.

ATM: What sort of character/personality does it take to be able to work overseas?

B.B.: It helps if you are someone who has plenty of patience (which I don't have), someone who is not easily frustrated when things don't go the way you want them to. The saying 'patience is a virtue' takes on new meaning. Fortunately for me, most of my overseas employers know what issues will confront you as you try and get the job done.

They don't expect miracles overnight. Most of the time they tell you to relax and keep plugging away. A common phrase is "don't worry, this is the way it is over here". As long as you persevere and know what you are doing is making a difference, it keeps you going.

As a general rule of thumb, be open-minded and prepare for change. Be patient and try to fit into their way of life and way of doing things.

ATM: Does it get frustrating either from a professional or personal point of view?

B.B.: It sure does. You can put everything you can into training the staff how to carry out certain procedures and techniques, and the moment you start to relax it will all turn sour in a heartbeat.

You just can't let it get to you, you have to remind yourself that the staff up here are not as fortunate as us, their education is limited (for example I have always had quite a high number of employees who cannot read their name on their time card) plus healthcare is poor and wages are low, so you learn to accept this is normal and just do the best you can.

Getting your hands on products can also be a challenge.

Although products are available, most are labelled for agricultural use and the length of time it takes to get imported products can be from one month to a year.

I once missed a whole growing season in Egypt waiting for my Scotts fertiliser to get through Customs.

ATM: Is it important to know the language and understand the culture before you go?

B.B.: It's not necessary. The company will always provide you with a translator if needed, although that in itself becomes frustrating because you are never sure if you are getting the correct message across. Life is easier if you can learn as much of the language as possible. If not surround yourself with English speaking people.

The locals see foreigners as successful people, therefore most of them warm to you. You definitely immerse in their culture if you marry one of them (as I have), although this is only to a degree.

ATM: Some countries, particularly strict Muslim countries, have a zero tolerance on alcohol. How does an Aussie cope?

B.B.: (Laughs) Fortunately I have always been able to get a beer everywhere I've worked. I would like to see what Mick Kelly has to say about this seeing he is in Kuwait!

ATM: What have been some of the more harrowing situations you have been in?

B.B.: There have been a few but one that really comes to mind was an accident I had in Timika, Irian Jaya. Although it was not my fault, the locals then reacted angrily, threatened me with rocks and knives, and as I drove off they started to trash the car. I spent the night at a local police station for my own protection.

The family involved demanded I give them US\$1000 and it would be forgotten. Whether it was my fault or not, it is always the driver who has to pay; if it's a foreigner, it's a bonus for them.

I was also in Jakarta at the time of the 1998 riots the week before President Soeharto stepped down. As things started to get out of hand I was due to fly out that evening. I took a taxi and a ride that would normally take 30 minutes took five hours. My fearless taxi driver took the option of driving up the wrong side of the road straight into oncoming traffic, at night! That day was also my birthday.

In Irian Jaya there were also various riots where office buildings were burnt to the ground, some were trashed with rocks, and there was one case of a 10-year-old driving a D10 bulldozer back to his local village.

In another incident they overran the airport and no one could get a flight out. During these riots, we were always confined to our camp where we were living at the time, although a few of us managed to sneak over to the golf course to remove all the batteries from the trucks, loaders, dozers and excavators, plus play a few holes.

Due to the high military presence in Irian Jaya, there were also issues with soldiers. If you didn't stop to give them a lift or overtook a vehicle they were in, they would put a few

Have You Got What it Takes?

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warning shots over your head just to remind you to give them a little more respect.

We also had an incident at the airport hanger where our turf farm office was located. Early one morning a soldier went berserk with his machine gun, killing and wounding up to 20 of his own platoon and airport personnel; a New Zealand friend of mine (a pilot) was unfortunately a casualty. If Brad Leahey, another Australian superintendent - who was the turf farm manager at the time - had not been out on leave during the incident, he may have been a casualty as well.

I also contracted malaria following a fishing trip with an Aussie mate of mine Jack Trahair. According to the doctors I came to within 12 hours of lapsing into a coma or dying. I lost 11kgs, Jack ended up losing 20kgs and was in intensive care for a week. It took both of us three months to fully recover.

Driving anywhere overseas can be an experience but at night in Egypt was always a worry. The Egyptians only drive with their parking lights on, even on the long desert roads. And if it's a full moon, you don't even need the parking lights!

ATM: What are the most rewarding aspects personally of working in such far-flung countries?

B.B: I find training the local staff how to carry out construction and maintenance techniques as well as the daily operations of a golf course the most rewarding, especially in countries and provinces where the locals do not even know what golf is. Then to move on, look back and know that they can take care of it themselves with the skills I have helped to impart.

ATM: Are the salaries that good?

B.B: Salaries are all tax-free, paid in US dollars and can range well into the six figures. Along with this, you (and your family in some cases) are given housing including utilities, full medicals, meals, a vehicle and driver, plus flights to and from your point of hire. The companies employing you are generally responsible for arranging your visas and work permits, and cover all associated costs.

The tax-free money is certainly nice, plus you can afford to employ full-time nannies and maids to make life a little easier for as little as US\$100 a month. People think you are exploiting the labour here but in fact you are providing enough money to support a whole family.

ATM: Do you socialise just with other ex-pats/ex-pat superintendents. Do you keep in regular contact with other overseas-based superintendents?

B.B: To answer the first part, no. In time you build strong friendships with local people whom you meet on the golf course as well when you're doing business with them.

Ex-pat superintendents do keep in touch with each other, on a social and professional level, and especially with today's technology it is easier to stay in touch. Unless you are stationed in the same area as another superintendent, most tend to meet up at the golf shows in Australia or the US.

Indonesia has formed its own superintendent's association that was founded by some Australians, one of which was Paul Lierse (who was the superintendent at Cengkareng Golf Club before me). This association is very professional and hosts regular meetings and training seminars in various locations.

Since I got married and had children I have started to register with Australian embassies. They often have network gatherings and it's a great reason to attend and enjoy a cold beer.

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Living and working abroad: The pitfalls and the perks

ATM: You have a young family. How do they cope with all the moving around?

B.B: Yes, my wife Dira is Indonesian, so my current location is not a problem. Dira enjoyed Beijing and Egypt and would not hesitate to relocate to any other country.

ATM: One thing about Australia you miss/don't miss?

B.B: I miss the hunting and fishing trips with family and friends. I don't miss paying tax and bills.

ATM: You are currently based in Jakarta which has experienced its share of terrorist activity in recent times. The bombing of the Australian Embassy in September came pretty close to home for you.

B.B: It did. I was at the Australian Embassy the morning of the bomb registering the birth of our second child. I arrived there at about 9.45am but ended up leaving earlier than expected as I didn't have all the correct documentation. I walked back up the road to the car and left the parking lot at 10.15am (the time was printed on the parking ticket). The bomb was detonated at 10.27am.

ATM: Does an event like this rattle you and make you question whether working overseas is worth the risk.

B.B: You could say it rattled me. To leave an area and have it blown up behind you is an unusual experience. But we can't live in fear; that is what the terrorists want. I feel extremely lucky. I guess my time is not up yet.

I enjoy working and living abroad, particularly in Asia. There are only a handful of people out there dumb enough to carry out cowardly terrorist acts. No matter where we live these days, they will affect us somehow or somewhere and we just need to prepare ourselves.

After something like this it definitely makes you reassess what things are most important in your life and in today's world how easily all of that can be taken away from you.

I did ask myself a few questions - will this problem escalate, how much at risk are my family, should we move back to Australia etc... We know things like this will happen again but when you look at the size of Jakarta who knows where. Chances are we don't frequent the target areas that we have been warned to stay away from, we have a good lifestyle, good job and can leave at any time if we choose. I know my parents want us to move back. After something like that, they always bring up the subject of coming home.

Mick Kelly (Construction superintendent, Sahara Golf Club, Kuwait)

Previous countries worked: Malaysia, Egypt, Trinidad and Tobago, Greece, United Arab Emirates and Kuwait.

"As Brad has already mentioned, I think patience is critical to succeeding overseas. You will encounter things that will send you temper soaring.

Driving in most countries I have worked is completely out of control. There seems to be no law and it can be quite intimidating at first, particularly the Middle East countries. I still get nervous while driving on the freeways in Kuwait and I see on average four or five serious accidents weekly.

I have been overseas for almost 10 years, and have lived in six different countries. I had never planned to go down this track, but have found one job and another country flow into each other.

It's a great experience and I have no plans to relocate back 'home' yet, but I'm sure the day will come. I meet a lot of people who wish they

could emigrate to Australia and look at me like I'm mad for working overseas. The one thing that is very comforting for me is I know I can always come home."

Simon Edmonds

Previous countries worked: Indonesia, Singapore, Philippines and Kuwait.

"I think that working overseas can be a very rewarding experience both professionally and also personally.

I would encourage anyone who has just finished their trade and is looking to further their careers, or would just like the opportunity to travel, to give it some thought especially while they are young and single.

While it's never too late to start it can be difficult if you already have a family as moving them every other year is not something I would look forward to.

The first two years are normally the most difficult as it is hard to get used to the different culture and lifestyle. Something as basic as food can be a real nightmare if you are not careful and it can take about six months before your stomach gets used to the different cuisines.

Knowing what to do and where to go are things that take time in any country and the best way is to just get out and meet people and ask questions. This is all part of the fun of being in a foreign country especially one that does not have English as its main language.

In just a short time you will be surprised by the amount of funny stories you will gather from constantly getting lost, to walking in uninvited on a wedding ceremony, driving on the wrong side of the road or meeting people who speak no English but want to have a beer with you so they can practice their 'English' on you. Hospitality is the same all over the world and a friendly smile and personality go a long way.

Professionally the experience you gather is invaluable to your career as most postings overseas are not easy and they all have their own unique set of troubles. It can be very demanding at times; 65-70 hour weeks are the norm rather than the exception and your patience can be pushed to the limit.

If you can learn or even attempt to learn the local language it's a definite advantage as by just speaking a simple phrase can open doors to you that were previously closed.

I had both my workers and myself in fits of laughter at work as my pronunciation was atrocious at times, but the effort I was making was appreciated and I found that I was getting more effort out of them as time went on. ☺



The Middle East has proven to be a popular destination. Just a shame about the driving.



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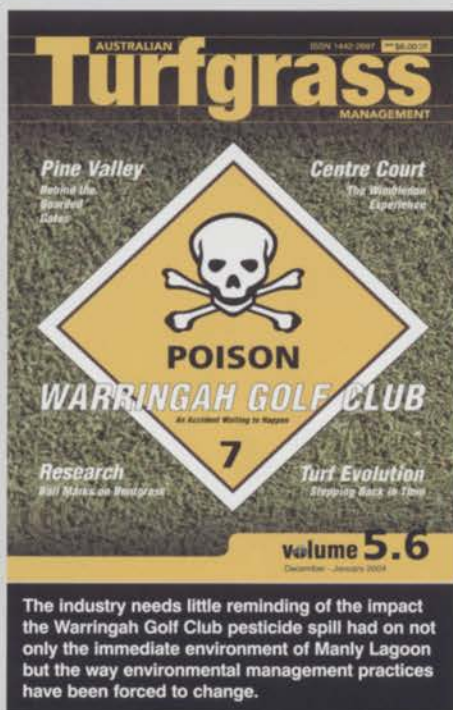
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Warringah One Year On: Industry Status Report

The Leaders and the Laggards



One year ago in Volume 5.6 of Australian Turfgrass Management magazine, we featured an exclusive look at the landmark Warringah Golf Club verdict which has irreversibly changed the face and future of golf course environmental management in Australia. A year on, the industry has made a number of significant moves to improve its environmental awareness and compliance, but as Terry Muir comments there is still plenty of room for improvement.

are in compliance or working towards compliance and others are simply sitting on their hands under-performing?

It appears the golfing industry is not immune to having both leaders and laggards. Unfortunately, there are too many clubs lagging in their environmental effort. Over the last 18 months I have identified a number of characteristics of both the leaders and the laggards, and the factors the laggards perceive to be obstacles to effective environmental performance.

The laggards tend to make less effort than the leaders to have or change operating procedures and they have significantly fewer programs to communicate environmental responsibilities to their staff. They lagged behind in environmental training and they received less technical training about the environment, environmental policy and administration of their environmental commitment.

The laggards tend to be characterised by many obstacles including budgetary constraints, marginalised superintendents and a lack of an environmental protection culture.

Maintenance activities were under-funded and inadequately staffed, restricting their ability to design and implement effective environmental actions. Still with the laggards, senior management did not emphasise the environment and assigned more priority to economic considerations, and had low environmental awareness.

Some superintendents' environmental initiatives appear also to be constrained by the presence of specific institutional mechanisms that prevent environmental opportunism.

Some clubs operate primarily according to the personality of one or two of the club's board or senior management rather than according to the mission or purpose of the club. This can be loosely related to Founder Syndrome in that when first starting their organisation, founders often

have to do whatever it takes to get the organisation off the ground, including making seat-of-the-pants decisions in order to deal with frequent crises that suddenly arise in the workplace.

As a result, founders often struggle to see the larger picture and to be able to effectively plan in order to make more proactive decisions. Consequently, the organisation gets stuck in a highly reactive mode characterised by lack of funds and having to deal with one major crisis after another.

Environmental action now and in the future will reflect the game's ability to accommodate issues such as climate change, depletion of the ozone layer, and declining air, soil and water quality. The form of intervention necessary with political, moral and ethical overtones is not beyond the capacity of the golfing industry. The Australian golfing industry's response strategy is targeting all clubs (the leaders and the laggards), all members, and decision makers to improve environmental performance.

More than a containment strategy or a holding operation, the new environmental management approach is to be a national model that forces responsibility for action into the hands of those people who can make change. It will commit golf clubs to a vision of what golf course environmental management 'ought' to be.

An environmental model, one that develops a concept of the golf course in participatory terms which fosters diversity, is most relevant to improving environmental outcomes. This runs counter to the wisdom of many who claim golf courses are a source of ill health and pose a threat to the environment.

It is arguable that like any development or industry, a golf course is often as much a gift to the ecology of a landscape as it can be a potential harm. Collectively the industry must do more to manage and minimise that potential for harm.

Since the Warringah Golf Club verdicts were handed down in the NSW Land and Environment Court in September 2003, the ability of a golf course superintendent to unite and condition his board, club members and staff to change behaviour and embrace strategies to improve environmental outcomes has perhaps become one of their biggest challenges.

Unfortunately, these proposed social changes required at many clubs may extend beyond the sphere of influence of individual superintendents.

Driven by Warringah or not, the industry's environmental commitment is evolving and it has certainly gained momentum over the last 12 months. Key motivators of this enlightenment include not only the Warringah findings but also the increased regulatory scrutiny that followed the case.

There are also some key initiatives such as the establishment of the AGCSA's Environment Working Group and the 20th Australian Turfgrass Conference held in Melbourne that have contributed to this enlightenment.

Leaders and laggards

It should therefore be reasonable to conclude that across the industry awareness of environmental compliance has grown. However, the evidence also suggests that actions to improve compliance have remained somewhat steady.

Why is it that some clubs have adopted significant measures for pollution control and

The age of change

Golf courses are a remarkable human creation and they now present great potential as arenas for new environmental strategies; ones that will give the game a new meaning, a new politics, a new sense of direction and a uniquely ethical and ecological approach.

This new model must alter the charters of many clubs and provide for environmental management under club control with national reporting on performance. It will sharpen a club's awareness of its sense of natural place as well as social place and set the agenda for an ecological concept of golf.

The domain of golf course environmental management in Australia is only beginning to set its boundaries. The AGCSA must continue to encourage its members to actively develop, maintain and build their environmental programs and to be more aware and conscientious in their responsibilities to the environment.

It's absurd to think that golf or any industry can rid itself of environmental impact but it makes good sense to take actions that will lessen the environmental stresses. Golf course environmental management is a step in the right direction. However, the ability of a lone entity - the superintendent - to unite and condition his board, club members and staff to change behaviour and embark on more cautious environmental strategies requires industry-wide initiatives and support mechanisms.

There is most definitely a role for environmental management as a means of furthering the ideals of golf's environmental agenda. The AGCSA is making a worthwhile contribution in supporting and promoting environmental management - simulated chemical spill exercises are being programmed across the country (see accompanying article, page 21), while a robust environmental policy statement has been developed and the industry is in discussion with the Commonwealth Department of Environment and Heritage.

It is now time for the development of a common agenda to challenge environmental laggards. The extent to which the golfing industry is environmentally healthy and self-regulatory will depend on conditions within the environmental niche it has carved to accommodate itself. That niche is not one of a reactive natural resource consumer dominated by environmental laggards but is one of a proactive industry committed to environmental excellence.

Too many clubs are not moving away from the presumption that they can grow and mow and clean up later if something goes wrong. Despite an impressive array of environmental regulations across the country, environmental compliance for some clubs is still some time away. There is still a pre-occupation with economic goals and the industry must act to ensure clubs are made aware that their economic goals are not distinct from and independent of environmental goals.

Not enough clubs are investing in environmental protection. No longer can protection of the environment be considered a secondary objective that can be dealt with after 'real' problems are attended to. Protection of the environment must become a policy goal.

While voluntarily going green for some clubs continues to have limited corporate appeal, the golf industry has produced pockets of environmental success and many clubs have made inroads by employing environmental practices.

Recently I was involved with Pittwater Council during audits of the six clubs in the council's regulated area. Following the audits the council chaired a workshop and all clubs are now working towards compliance and best practice.

At the present time too many clubs do not understand;

- Their past environmental practices may have made sense, but now they have to move away from that current state;

- What makes the change necessary;
- The consequences of not changing; and
- The advantages of changing.

Post-Warringah golf club decision makers have virtually been bombarded with information on environmental risk management. Unfortunately most clubs have not perceived or understood the risk while others now boast appropriate environmental management strategies that spell out the who, what, when, where, why and how the club should deal with any environmental crisis.

Too many clubs have not committed to consistent achievement of regulatory standards as an essential business goal. There are negative attitudes toward many regulatory requirements and the approach to comply only to avoid costly enforcement actions is misguided.

In contrast, some clubs have actively sought to meet the minimum regulatory requirements and at the top end of the spectrum some clubs are acting strategically and proactively to build a positive environmental reputation for their club and the industry.

In the past, organisations concentrated on the economic bottom line to the detriment of non-financial requirements. Warringah put the environment in the mainframe and all clubs need to embrace the industry's long-awaited environmental initiatives.

Ad hoc reactive environmental management has lost its legitimacy and the laggards are putting themselves at significant risk of damaging the environment and the game.

Acknowledgements

Terry Muir was an investigating officer with the EPA at the time of the Warringah Golf Club pesticide spill in 2001. He now runs his own environmental management consultancy Environmental Business Solutions and was a keynote speaker at the 20th Australian Turfgrass Conference in Melbourne. ■

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Warringah One Year On: Industry Status Report

Environmental Training Case Study: Newcastle Golf Club

“ Like most superintendents I am well aware of the need to protect the environment. I know the risks we take regarding chemical use and storage and the washing of our plant and equipment.

To better manage that risk I wanted to ensure that we had an appropriate chemical store and washdown bay and that staff were trained. Also, past practices of storing chemicals in an old shipping container with inappropriate containment and washing plant equipment in an uncontained area was presenting a significant legal and environmental liability.

I communicated my concerns to the board and then came the incident at Warringah Golf Club that made more than one club director around the country become a little anxious about their liability in this situation.

We engaged an environmental consultant to cast his eye over these areas. He presented his findings to the club based on an environmental performance score of where we were at that time. He also detailed where we needed to be environmentally.

Our environmental performance score was low, confirming we needed to be more proactive. Being made aware of our environmental status and the corrective actions required, the board actioned the audit's recommendations.

The club now has before council plans for a contained washdown area and chemical store. Our wastewater will be managed and disposed of appropriately and any spills during storage or mixing can be managed.

The washdown area will have an underground tank system with a submersible pump that irrigates all the wastewater onto the practice fairway via a stand sprinkler. We expect project completion at the end of summer 2005.

Apart from capital works, we also addressed the issue of staff training. In the workshop we have introduced emergency spill kits that enable

staff to react to spills using the correct products and procedures.

At both ends of the maintenance shed we have a General Purpose 120 spill kit that contains PPE equipment, absorbent, plug and dike kit, k-sorb, pillows, floor sweep, bale pads and contaminated waste bags. All of this is contained in a wheelie bin that allows rapid deployment anywhere on site. The kit contains a range of bio-active and synthetic absorbents and provides protection from a wide range of liquid spills. We have also included spill kits on our machinery (Turn to page 44, The Innovative Way, for more on this measure).

When these spill kits were purchased from Brett Lee of Envirosolutions we also received training on how to use them and how to respond to a spill. All of the staff were involved in these information/training sessions. It seemed that one staff member was always missing when this was scheduled so as soon as they returned they were inducted and all other staff members were given a refresher. As a group we have now had three spill kit training sessions.

To document our staff had received appropriate training and instruction I developed a training register that all staff signed and dated to acknowledge they had been trained.

There are seven steps to cleaning up spills at Newcastle Golf Club - assess, contain, PPE, absorb, dispose, report and restock. I did say to my staff that this training may require us to respond to something in two days or two years time, if at all, but let us be prepared.

Sure enough two days later a leak was detected in the chemical store. At the time I was out on the course. I received a radio message alerting me to the spill and staff members then executed the correct procedure without any problems.

Although this leak was minor it was very pleasing and reassuring to know that my staff

can react to a spill event. The contaminated waste from the spill was placed in appropriate waste bags. We contacted Brett Lee who disposed of the waste and replaced the used product from the spill kits to ensure we were ready to respond should we have another spill.

Our environmental improvement program also extended to the workshop. We have a banded recycled plastic pallet that now holds and contains the 208-litre drums of oil that were previously unbanded. We also purchased a banded flammable goods cupboard to store all other fuels and oils such as 2-stroke and transmission.

We have been chipping away in the areas that were identified as being environmentally deficient. We have embraced a staged program of environmental improvement.

Compliance can't be achieved over night but we are aware of our responsibility and the potential legal exposure for environmental under-performance. I don't know when we will be able to say that we do comply with everything but it is something we are working towards.

To keep us moving forward we will undertake constant independent reviews to monitor and report on our performance. What we are trying to show is due diligence. Those are the key two words when you speak to any regulator in the workplace at the moment. I am not too keen on polluting the environment or on being prosecuted.

If anyone is unsure about environmental issues don't sit on your hands. As a superintendent you could be faced with a 'please explain' from the EPA or the local council. Seek advice, confirm your current status and have some formal documentation prepared to communicate to the board.”

Guy Thomas
Superintendent, Newcastle Golf Club

WARRINGAH ONE YEAR ON: INDUSTRY STATUS REPORT Simulated spill exercises to boost environmental awareness

As part of the Australian golfing industry's commitment to environmental excellence, the Australian Golf Course Superintendents Association is introducing a number of full-scale real-time exercises that involve simulating a chemical spill.

The intent of the exercises is to showcase some of the specialised equipment and the

expertise and procedures required to mitigate and contain spills on golf courses.

The exercises will be based on a chemical spill that makes its way towards a local waterbody on a course. The exercise will see the activation of the club's spill response procedure as well as the deployment of specialised spill containment and management equipment, recovery of spill material and the disposal of waste material.

The primary objectives of the simulated spill exercises are to facilitate improved preparedness for, and response to, spill

incidents and to encourage golf clubs to develop and maintain an adequate capability to deal with pollution emergencies.

The broad objectives of the exercise are to conduct a safe and professional exercise which will test the following:

- A golf club's chemical spill contingency plans, practices and procedures;
- The efficiency, effectiveness and co-ordination of response management activities;
- The understanding of roles and responsibilities at the club in response to a spill;

- Lines of communication and the exchange of information between club staff, management and regulatory bodies;
- Specific operational activities, including physical transportation of spill control equipment and the deployment of the equipment;
- The mobilisation of on site response personnel; and
- Waste handling, temporary storage, transport and final disposal arrangements.

The exercise will provide information to enable attendees to assess their club's spill response status; determine their vulnerability should a spill occur at their club; and implement appropriate spill response strategies at their clubs.

The scenario

The mock environmental spill exercise will take place at a nominated golf course and will be staged by the AGCSA along with EBS and Envirosolutions.

A contractor will deliver a 205-litre container of a nominated chemical to the club. The drum will be placed outside the club's maintenance shed where it will be inadvertently knocked over by a staff member driving a golf cart. At this point the mock spill will see the activation of the club's spill response and management program.

A post-incident debriefing will be conducted and will include a review of the actions undertaken by the response team; the effectiveness of the actions undertaken; how the response could have been more effective (environmentally and cost); volume of contaminated materials recovered; disposal options; residual contamination remaining; a restoration plan for environmental damage; lessons learned; and a plan outlining the action that should be taken to prevent future spills of a similar kind/type.

The critique as a minimum will evaluate whether personnel know who is in charge when a spill occurs; are all personnel aware of the notification procedures (who and when to

notify and what information to provide); were safe, proficient procedures in place to identify the spilled substance; staff knowledge of when and how to use various spill containment options; use of personal protective equipment; and evacuation procedures in response to a spill event.

A number of agencies will be involved in the exercises either as part of the steering committee (AGCSA), as role players (the nominated golf club) or as members of the spill response (golf club staff). The exercise will be umpired by a mixed team of people from government and industry (EBS, Envirosolutions, EPA officers, local council officers, OH&S representatives).

At the time ATM went to press, exact dates and times for the exercises had yet to be finalised. The AGCSA will release these dates once they are confirmed. ▀

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Seashore Paspalum

From Establishment to Maintenance



With careful management, seashore paspalum will produce a high quality playing surface

In this instalment of Tech Talk, Andrew Peart takes a close up look at seashore paspalum and its ability to produce a high quality playing surface.

Seashore paspalum (*Paspalum vaginatum*), sometimes referred to as saltwater couch, could become a major turfgrass species in the forthcoming decades.

With the advent of warmer summers, less rainfall and the reliance of, in many cases, high saline irrigation water, many sporting facilities are looking towards grasses that are better adapted to these conditions.

Originating on the sand dunes of South Africa, this warm-season creeping perennial grass, with both stolons and rhizomes, is naturally accustomed to high salinity, low nutrient levels and continual sand topdressing. Having a variety of cultivars with differing leaf textures and mowing height tolerances allows seashore paspalum to be utilised in all turf situations.

Establishment

Seashore paspalum does not produce highly viable seed and therefore must be established

by either sod or sprigs. In many cases seashore paspalum will be established on sites that are saline, sodic (contain high levels of sodium) or saline-sodic. Although the grass will tolerate these conditions it is important that soil amendment procedures are implemented before grass establishment.

On saline sites this procedure would involve leaching and flushing the salts from the top 50mm of the profile with high volumes of irrigation water. This is particularly important in weather conditions that favour high levels of evaporation that will cause salts to rise to the surface.

For sodic soils, high rates of gypsum (25-50kg/100m²) should be applied and incorporated into the top 50-75mm two to three weeks prior to establishment. Preferably this should be followed by one or two high volume irrigations to dislodge sodium ions from the soil.

The main aim of any soil management activity is to keep salts moving down.

Sprig establishment is similar to many warm-season species with soil to sprig contact vital for successful establishment. Topdressing after sprigging is also very beneficial with paspalum sprigs, as this would mimic a sand dune situation.

During establishment it is preferable to use a higher quality irrigation source as high saline water at establishment time will severely retard the paspalum's establishment. Juvenile roots on all turfgrasses are susceptible to salt levels greater than 1500ppm. Once the roots are greater than 75mm in length their tolerance to saline water is greatly increased. If high saline water is to be used initially then high volumes must be applied periodically to flush some of the accumulated salts from the rootzone.

During the establishment phase the interval between irrigation cycles should be increased therefore forcing the roots deeper into the profile.

The fertiliser regime during the establishment phase is heavily slanted towards applications of phosphorus and potassium, for rhizosphere development. Ratios of 1:2:3 or 1:3:4 (N:P:K) at 250g N/100m² every two weeks is recommended for the first month. When stolon growth begins higher rates of nitrogen can be applied. Paspalum is particularly responsive to calcium nitrate and other soluble forms of nitrogen.

Once stolons start growing it is also the time to implement verticutting to promote a dense sward. When mowing commences only a small amount of leaf must be removed in an attempt not to scalp the turf.

Creating a dense surface is initially more important than cutting the height down. If irrigating with saline water, some browning may occur after verticutting due to the exposed turfgrass cells coming in direct contact with the salts in the water.

Scalping

Unlike couchgrass, seashore paspalum does not tolerate scalping. The recovery period may be 4-6 weeks due to the plant re-establishing its root and rhizome system in preference to the shoots. Once the root system is restored recovery of the shoots is then quite rapid.

Softening of the turf canopy is the major reason for scalping to occur. Due to the soft nature of a paspalum canopy, as opposed to a couchgrass canopy, the potential for scalping is increased. This is further heightened with excessive nitrogen, excess irrigation, poor drainage or insufficient topdressing.

Excess nitrogen is the major cause for scalping of seashore paspalum as it leads to not only excessive growth but also succulent leaves. Seashore paspalum will retain excellent colour

even under low nitrogen fertility and nitrogen should only be applied to regulate shoot growth rates.

Potassium is one of the key elements to apply to seashore paspalum. It ensures the maintenance of high leaf turgor pressure, root system development and functionality and is the first line of defence against many leaf spot diseases.

Scalping will be most likely during the transition period from grow-in to maintenance when the initial fertility regime has been high to produce maximum growth rates. Mowing heights should be lowered by about 0.5mm every 2-3 days once the fertility regime has been reduced.

An indicator when nitrogen levels are becoming too low is when the onset of Dollar Spot disease is observed.



Interest in seashore paspalum is growing

The most effective fertility regime is applications of nitrogen, potassium, magnesium and manganese.

Scalping is less likely to occur if adequate sand topdressing or dustings have occurred during the grow-in phase. Inadequate dustings will produce a surface that is puffy due to the accumulated thatch layer. If a firm surface has not been achieved by the time grow-in has been completed then reducing the mowing heights to enable play will be far slower to avoid scalping.

While seashore paspalum can tolerate prolonged wet soil profile conditions it also increases the likelihood for scalping due to generally softer surfaces and traffic related grooves in the surface.

Frequent light watering rather than longer infrequent watering can also produce succulent and excessive growth that can lead to scalping susceptibility. Longer watering will also train roots deeper into the profile enabling far greater drought tolerance.

The choice of mower can also greatly affect scalping incidence. A dual roller mower is far less likely to scalp the turf than just a single roller mower. Blade sharpness as well as brushers vs groomers can also affect scalping.

A typical response after scalping has occurred will be to apply a suitable fungicide if

disease is present to stop it spreading. Aeration followed by topdressing and then an application of cytokinins and potassium will help restore the root system and lead to a hormonal shift toward new shoot production. Using cytokinins on salt affected sites is essential due to salt acting like a growth regulator and slowing recovery.

Shade management

Seashore paspalum has relative poor tolerance of tree shade akin to couchgrass. However, seashore paspalum seems to outperform couchgrass if it can receive about six hours of sunlight per day, if placed in a similar situation. It has good tolerance to low light intensity caused by overcast conditions or smoggy and foggy weather.

Fertiliser requirements

The fertility requirements of seashore paspalum are vital if it is to thrive under saline conditions. Below is a recommended range of plant tissue nutrient levels.

N	- 2.8-3.5%	Fe	- 50-500ppm
P	- 0.3-0.6%	Zn	- 20-250ppm
K	- 2.0-4.0%	Mn	- 50-300ppm
Ca	- 0.25-1.5%	Cu	- 5-50ppm
Mg	- 0.25-0.6%	B	- 5-60ppm
S	- 0.2-0.6%	Mo	- 0.5-1.0ppm

Cultivars

Two cultivars have Australian proprietary and are Saltene and Velvetene. However, the two most well known cultivars of seashore paspalum are Sea Isle 1 and Sea Isle 2000.

Sea Isle 1 is a selection from Argentina and was developed for use on golf tees, fairways and roughs with an optimal mowing height from 7-25mm. Sea Isle 2000, a selection from Florida, was developed for use on golf greens. The optimal mowing height for this cultivar is 3-4mm.

Other cultivars include Salam, traced to Sea Island, Georgia and introduced into Hawaii during the 1980's. Durban CC is a cultivar that originated from the greens at Durban Country Club in South Africa. SeaWay, SeaGreen and SeaDwarf all originate from Alden Pines Country Club on Pine Island, Florida.

Salt tolerance

Some cultivars of seashore paspalum can be managed long term with seawater at 34,000ppm. However, management is the key. For seashore paspalum to be grown successfully in saline situations the major maintenance requirement is to keep the salts moving down.

Seashore paspalum will provide the turf manager with the flexibility to manage salts far greater than other species, however, if salts are not managed and not kept moving down then ultimately the turf will fail.

Growing seashore paspalum in saline sites with saline irrigation water is not just about managing the grass but just as important is to manage the salts, keeping them moving down. This is obviously far easier on sandy sites however not impossible either on heavier textured soils.

Conclusion

Due to the tolerance of seashore paspalum to high saline situations it must not be treated as a utopian grass.

It requires careful management and adherence to strict management guidelines. If these parameters are followed it will provide turf managers with a high quality playing surface where other grasses would fail. ♣



Colour and striping ability are strengths

SEASHORE PASPALUM: THE PROS AND CONS

Attributes

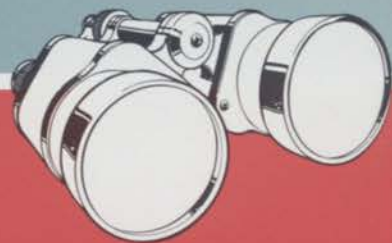
- Wide soil pH range
- Alternative water use
- High root volume
- Low mowing height tolerance
- Efficient nutrient uptake/utilisation
- No grain in greens
- Minimal morning dew
- Shiny dark green hue
- Aerenchyma in roots
- No mutations

Limitations

- Minimal tree shade tolerance
- Cold hardiness similar to hybrid couchgrasses
- Winter dormancy emergence
- Establishment with saline water
- Seedhead persistence
- Does not like to be scalped
- Lack of management knowledge
- Few pesticide labels

Toro Turf Tour

Location: Capital Golf Club, Melbourne, VIC



Capital Golf Club's brains trust – superintendent Graeme Rogers (right) and assistant Dave Bentley with the Toro Workman 4300-D spray unit

TORO

www.toro.com.au

It's a well-known fact that Melbourne's sand belt region is home to many of Australia's finest and most prestigious golf courses.

Clubs in this famous golfing region have played integral roles in the development of the game of golf, and have continually set new and exacting standards in golf course maintenance and presentation.

Once such course is Capital Golf Club located in the suburb of Heatherton. While it can be

considered a mere baby to the likes of some of its established neighbours, in the eight years it has been operational Capital has developed a reputation as being one of the most meticulously maintained courses in the country.

Designed by Lloyd Williams, the course has won many accolades, none more glowing than from former five-times British Open champion Peter Thomson.

"What Williams fashioned at Capital was

remarkable," says Thomson. "It is stunning, intriguing and underneath an astonishing engineering achievement. Capital is arguably Australia's finest course which makes it in turn one of the top courses in the world."

"It has modernity in plenty, measuring a length which stretches the top players, it has all the features of bunkers, rough and hazards that any world standard course would offer. In Capital's case the whole landscape is complete.



"All this is under a maintenance program that offers a set of holes in immaculate condition. Tees, fairways and greens have a smoothness and quality that touches the incredible. It is almost too good."

Responsible for the pristine look Capital prides itself on is superintendent Graeme Rogers. For the past 11 years Rogers has called Capital home, and has been there pretty much from day one. Assistant superintendent Dave Bentley has also been there since the early days and has been working under Rogers since the course was officially open in 1997.

Because of its exclusive nature, course maintenance at Capital is pretty strenuous and particularly during the growing season mowing regimes are very rigorous.

It's not surprising then that Rogers places a huge emphasis on quality and reliability when it comes to his machinery and it is here that Toro fits the bill perfectly.

"Maintaining Capital is a lot of work," says Rogers.

"Frequency of mowing is pretty high. In the growing season we are mowing greens every day, tees five times a week, fairways five or six times a week, short rough two or three times a week and the long rough about two times a week."

Just over a year ago Rogers made the switch to Toro equipment and brought in a range of machinery to his shed including six 2110 Workmans, one of two 4300-D sprayers, a 4500-D Groundsmaster and four 3250-D triplex greens mowers.

"We got them all in one big hit," says Rogers.

"We were really dilapidated to be honest so we bolstered up the shed with those additions."



The Capital Golf Club maintenance facility - quickly becoming a 'red shed'

Capital's ever-expanding Toro fleet includes:

- Six 2110 Workmans;
- Four Greensmaster 3250-D two for tees and two for greens;
- Greensmaster walk-behinds;
- One 4500-D Groundsmaster;
- Two 4300-D Workman spray units;
- Two Reelmaster 3100-D (Sidewinder); and
- Toro LTC Irrigation System (with mix of 7 and 8 series heads).

While many superintendents would say Toro's greens and surrounds mowers are their favourite piece of red machinery, Rogers has a

slightly different opinion. Don't get him wrong, however. Rogers is a big fan of the mowers and their industry acclaimed cutting units, but it is another Toro workhorse that gets the big thumbs up.

"I love our two 4300-D Workman spray units. They are fantastic," says Rogers.

"For spray accuracy, ease of use, 4WD and operator comfort, it's the full package."

"The boys almost don't mind spraying now with the 4300-D. Spraying is the worst job in the world but the Workman sprayers make the job bearable and almost enjoyable."

Rogers doesn't mince words when asked what it is about Toro that impresses him,

Continued next page

Toro Turf Tour

Location: Capital Golf Club, Melbourne, VIC



With high mowing frequencies, the Toro Groundsmaster 4500-D gets a good workout every week at Capital



Rogers recently purchased four Greensmaster 3250-D triplex mowers

"I love the thought that Toro is selling Toro. To me that's a big thing," says Rogers.

"Toro is probably the best out of any company I have dealt. Their national centre is just around the corner from us, which is handy, but it's their overall range of products and excellent service."

Slowly but surely Rogers is expanding his fleet of Toro equipment and has his eagle eye on purchasing a few more essential maintenance items.



The versatile Reelmaster 3100-D Sidewinder

"I'm putting the screws on them at the moment," laughs Rogers. "I keep telling Toro we want to be a red shed. We are always looking to get more Toro equipment in, no doubt about that."

"I would like to get another couple of the 3250-D greens mowers to replace some of the older machinery we have in the shed, and I would really love another spray unit which would mean we could get around the whole place in a day."

The Greensmaster 3250-D is powered by a 21hp Briggs and Stratton/Daihatsu diesel engine and comes with optional three-wheel drive and optional leak detector.

Mechanics and superintendents alike appreciate the service-friendly design of the Greensmaster. The new cutting units virtually eliminate daily maintenance and an available onboard backlapping kit helps keep the blades sharp. Service points are readily accessible and designed for quick adjustments without special tools.

The Greensmaster cutting units are literally at the cutting edge of technology. The dual point adjustment simplifies the bedknife-to-reel alignment process. A clicking dial on each side of the cutting unit adjusts and holds the bedknife in exact increments. The bedknife

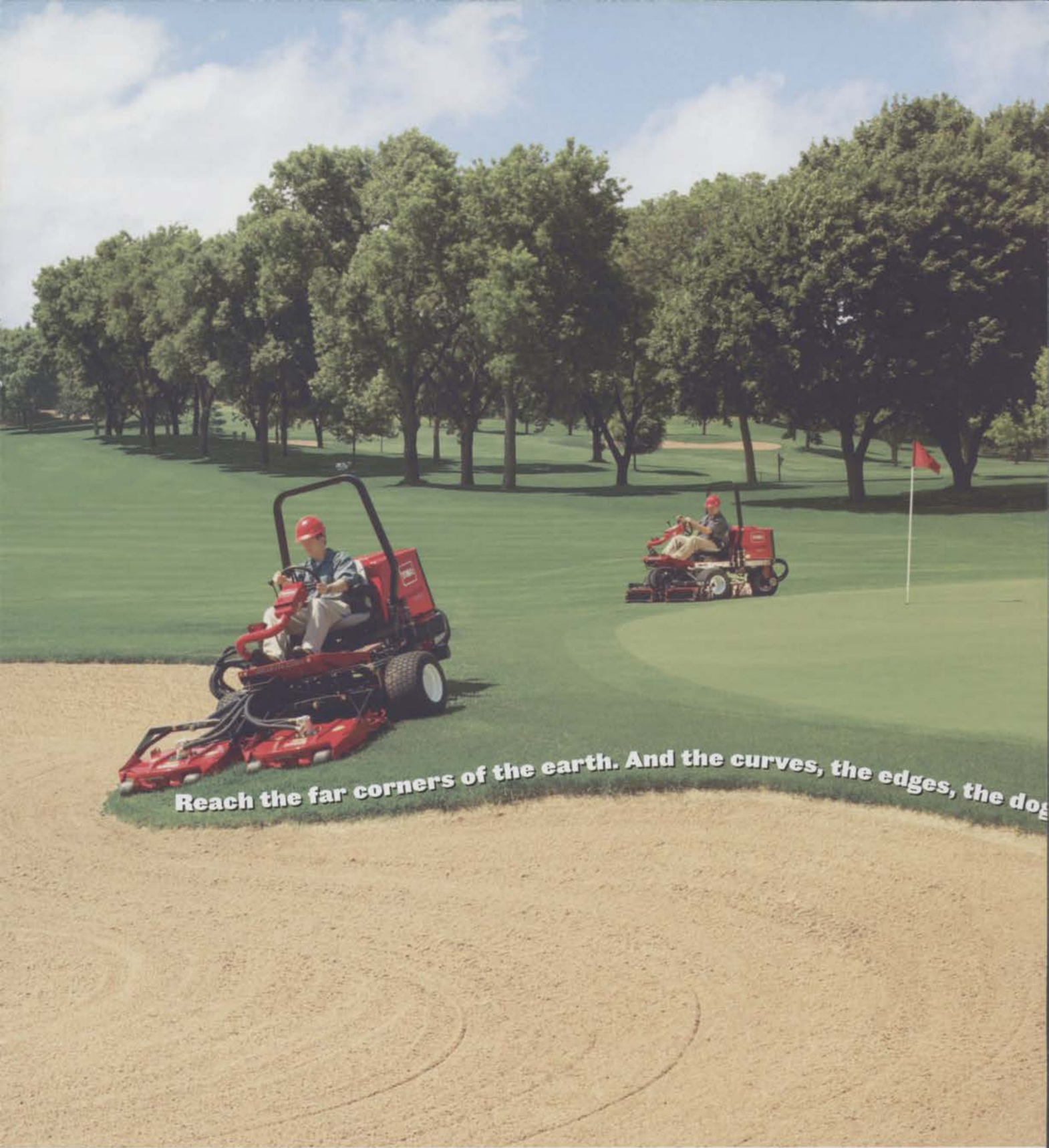
maintains a consistent angle throughout the life of the reel, providing the same quality of cut every time.

Daily maintenance on the new cutting units has never been easier. Sealed bearings are maintenance free and eliminate spills on greens due to over-greasing. The precisely manufactured rollers remain level without adjustments and the bedknife removes easily for sharpening. The new cutting unit design features a die-cast aluminium frame that increases the torsional strength of the cutting unit and protects against erosion.

The Toro triplex design, with its unique placement of the cutting units, offers numerous advantages. The low-mounted engine and hydraulic components provide excellent hillside stability, while the large flotation tyres disperse the weight of the mower for a lighter footprint.

To find out more about the 3250-D or any of Toro's other range of golf course maintenance equipment, log on to www.toro.com.au





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Bentgrass trials at Kingston Heath Golf Club

In this instalment of AGCSATech Update, John Neylan talks about the ongoing Horticulture Australia funded bentgrass and couchgrass trials.

A key area of turf management and in particular golf course management is the selection and maintenance of the most appropriate turfgrass species and cultivars for the particular site conditions.

With the available turfgrass cultivars (both bentgrass and couchgrass) used on golf course putting greens being almost exclusively from the USA, there has been a lack of local data to support their management under Australian conditions. There is also a lack of turfgrass cultivars for putting greens that have been selected and bred under Australian conditions.

In Australia there is good anecdotal evidence, supported by very limited trial data, that there are local ecotypes of both bentgrass and couchgrass in putting greens that exhibit very good performance characteristics that are potentially superior to the more established turf cultivars.

In the USA, the new generation bentgrasses and to a lesser degree the new couchgrass hybrids have come from selecting individuals from greens that have exhibited segregation or some form of mutation.

The selection and development of superior Australian couchgrass cultivars such as Wintergreen, Windsorgreen and Legend for use on golf course fairways and sportsfields, has demonstrated the success of selecting and developing local ecotypes.

Golf courses are facing increasing environmental pressures, with reduced water availability and increasing water salinity being two of the main concerns. The development of new cultivars that have improved heat, drought and salt tolerance, while providing good playing surfaces will be critical for the long term sustainability of the golf course industry.

Bentgrass and couchgrass collection

Given the occurrence of superior ecotypes in golf greens that exhibit improved heat and salinity tolerance and greater resistance to pests and disease, a research project was commenced in 2000 to collect and evaluate these ecotypes and to assess the potential for developing Australian cultivars adapted to Australian conditions.

The objectives of this project were;

- To select and evaluate off-types from old bentgrass putting greens that have exhibited segregation, with the long-term aim of developing a bentgrass variety that is suited to growing in Australia;
- To select and evaluate off-types from well-established couch greens on Queensland golf courses that have exhibited segregation, with the long-term aim of developing a couchgrass variety that is suited to growing in sub-tropical and tropical Australia; and
- To evaluate existing commercial bentgrass and couchgrass cultivars.

Bentgrass and couchgrass plants were collected from old and well established golf greens where there was segregation and individual ecotypes exhibited one or several of the following characteristics: excellent turf quality; high density; tolerance to low mowing; putting characteristics; minimal spiking; disease resistance; competition against *Poa annua* invasion; a dense root system; heat tolerance; and salinity tolerance.

There were over 450 bentgrass plants collected from Victoria, NSW, South Australia, Western Australia and southeast Queensland, and 93 couchgrass plants collected mainly from Queensland with some from northern NSW. Most of the plants collected were planted into a spaced plant nursery. The bentgrasses were planted into a nursery at Kingston Heath Golf Club and the couchgrasses at Lakelands Golf Club.

There was considerably more variation observed among the bentgrasses compared to the couchgrasses. Bentgrass is established from seed and all cultivars are multiple parent clones, thereby increasing the opportunity for segregation to occur over time due to climate and management practices. The couchgrasses used on putting greens are sterile hybrids that are vegetatively propagated and any segregation is due to either genetic mutation (a rare event) or contamination.

The bentgrasses and couchgrasses were assessed for various characteristics including quality, density, height of plant, stolon number and vigour, growth rate (growth rate was measured as plant diameter determined from the tip of the longest stolon through the center of the plant core), and seed/flowerheads (the



seed/flowerheads were assessed as the proliferation of seed/flowerheads and the height of the flowerhead).

Of the bentgrasses, 100 were selected and established in a putting green trial where 12 have been identified as having characteristics as good as or better than the industry standards incorporated into the trial. There were 10 couchgrass selections identified as having characteristics that were as good as or better than the industry standards.

An expression of interest was advertised for interested parties to utilise the bentgrass selections. Sydney University provided the most comprehensive plan of how the plant material would be incorporated into their breeding program and an agreement is presently being finalised.

Several of the best bentgrass selections produce very few seed heads, which reduces their commercial viability as a seeded cultivar. As a result the viability of vegetative propagation is being pursued as an alternative means of introducing new cultivars.

The best of the couchgrass selections will be incorporated into a couchgrass evaluation trial being undertaken by the Queensland Department of Primary Industry (QDPI) and provide the next step in developing a new commercial cultivar(s).

Bentgrass and couchgrass cultivar trials

Bentgrass cultivar trials were established in Victoria, NSW, South Australia and Western Australia to assess the qualities of the new bentgrass cultivars and their maintenance requirements.

The new bentgrass cultivars and in particular the Penn A and G series bentgrasses are very high density and produce excellent putting surfaces, but do not necessarily demonstrate greater green speeds. Their high tiller density and upright growth habit provides a smooth putting surface that exhibits excellent wear tolerance.

The main management issue with these new bentgrasses is the rapid development of thatch which necessitates regular sand dustings from early establishment to dilute the accumulated organic matter.

Selected data for the bentgrass trials are presented in tables 1-5. The data for Lake Karrinyup Country Club involved four assessors and the results are presented for each. Thatch data has also been detailed and it is interesting

Table 1: Kingston Heath GC turf quality and turf density after intensive wear (August 2004)
0=worst 9=best

VARIETY	Turf quality		Turf density	
	Pre-wear	Post-wear	Pre-wear	Post-wear
Penncross	6.0	5.5	6.2	5.5
Egmont	6.0	6.3	6.8	6.7
PENN A1	7.5	7.0	7.5	7.2
PENN A4	7.2	7.0	7.2	7.0
PENN G2	6.8	6.5	7.0	6.7
PENN G6	6.7	6.3	6.7	6.3
Cato	6.8	6.2	7.0	6.3
Pennlinks	6.0	5.3	6.2	5.3
L93	7.0	6.7	6.8	6.8
Dominant	7.0	6.7	7.2	6.8
SR7200	5.7	5.7	7.5	7.2
LSD (P<0.05)	0.9	0.8	0.8	0.7

Table 2: Kingston Heath GC - Thatch depth (mm)

VARIETY	9/10/01	8/05/02	27/2/03	21/01/04	30/9/04
Penncross	12.0	7.3	12.7	12.7	18.7
Egmont	10.0	9.0	11.0	17.3	21.0
PENN A1	12.3	12.3	18.0	18.7	22.0
PENN A4	12.0	10.0	16.0	18.7	22.7
PENN G2	11.3	10.3	16.7	18.0	24.0
PENN G6	13.0	9.0	17.3	17.0	21.7
Cato	11.3	10.3	17.3	19.3	22.3
Pennlinks	12.7	8.7	11.7	19.0	22.3
L93	13.3	8.7	15.3	17.7	21.7
Dominant	11.3	9.0	16.3	17.0	20.7
SR7200	12.3	8.7	18.7	18.0	21.3
LSD (P<0.05)	NS	2.5	NS	3.4	NS

Table 3: Glenelg GC - Turf Quality 0=worst 9=best

VARIETY	1/12/03	1/02/04	1/03/04	1/04/04	1/06/04	1/08/04
Penncross	5.0	5.0	6.0	5.7	5.3	5.0
Egmont	4.0	8.0	7.0	7.0	4.0	4.0
Penn A1	8.3	7.7	7.7	8.7	8.0	6.7
Penn A4	5.7	6.3	7.0	7.3	6.7	5.3
Penn G2	7.3	6.7	7.0	6.7	6.0	5.7
Mix	5.3	6.0	7.3	5.7	5.7	4.7
Cato	6.3	5.7	6.3	6.0	5.3	4.7
Pennlinks	6.0	5.7	7.3	6.3	6.7	5.3
L93	6.0	5.7	7.0	6.7	7.0	5.3
Dominant	6.3	6.3	8.0	7.0	6.3	5.7
RA1	7.0	8.0	8.5	8.0	7.0	5.0
RA2	7.0	7.3	7.7	8.0	6.7	5.7
Mariner	6.7	6.3	7.0	6.3	5.7	5.3
LSD (P<0.05)	NS	0.8	NS	0.9	NS	NS

Table 4: Lake karrinyup CC - Turf quality
 0=worst 9=best

CULTIVAR	A1	A2	A3	A4
Penncross	6.2	5.9	5.0	6.2
Penn A4	6.5	8.2	7.0	8.0
SR 1019	6.7	7.1	6.7	7.3
Penn A1	7.5	9.3	7.3	8.5
Crenshaw	6.3	5.7	6.3	6.8
Penn G2	6.5	6.8	6.3	7.8
Cato	6.2	6.8	6.7	7.0
L93	6.8	7.9	6.7	7.3
Putter	6.8	7.4	6.3	7.0
Penn G6	7.0	7.0	6.3	8.3
SR 1020	6.5	7.0	6.0	6.8
T1	6.3	8.1	8.7	7.0
T2	6.0	8.0	8.3	7.7
LSD p<0.05	NS	1.9	1.8	1.2

A1 - A4 = assessor 1 - 4

Table 5: Castle Hill CC - Turf quality and thatch depth

VARIETY	Turf quality 0 = worst 9 = best			Thatch depth (mm)	
	23/12/03	16/03/04	26/05/04	10/09/03	10/08/04
	Penncross	5.4	5.7	6.0	4.0
Penn A4	7.8	8.1	7.5	4.0	12.3
Penn A1	8.1	7.8	7.7	3.3	13.7
Suttons	2.1	3.9	6.0	3.3	13.7
Grand Prix	6.9	7.2	6.8	3.3	15.3
Dominant	6.0	6.6	6.5	2.8	12.3
Pennlinks	7.2	6.9	6.8	2.7	11.7
Penn G2	6.9	7.5	7.5	2.7	11.3
Blend	6.3	7.2	6.3	2.3	12.0
L93	6.6	7.2	6.7	2.0	13.3
LSD (p<0.05)	1.1	0.9	0.7	1.2	NS

to note that over time the difference between cultivars becomes less significant. The main observation is that the new cultivars tend to accumulate thatch very quickly and emphasises the importance of introducing thatch control measures such as dusting as early as possible.

Various couchgrass cultivars were established in large plots at Lakelands and provided an excellent opportunity to observe some of the new couchgrass introductions under intensive golf course maintenance conditions (tables 6 and 7). New cultivars such as Tifeagle, Supersport and Tifsport all exhibit very good surface qualities, whereas the seeded couchgrass cultivars were generally inferior to the vegetative cultivars.

Conclusions

The bentgrass and couchgrass collection project has provided an opportunity to collect ecotypes of these species that exhibit outstanding qualities. The assessment of these collections demonstrates that there are ecotypes that have characteristics that are as good as or superior to the established commercial cultivars.

The results clearly indicate that there is excellent potential for developing new cultivars that are better adapted to Australian conditions.

Acknowledgements

The AGCSA is grateful for the funding received from Horticulture Australia Limited. The AGCSA is also grateful to the seed and turf companies that have


 Table 6:
 Lakelands GC - Turf quality at a cutting height of 2.6 mm (putting green turf)
 0=worst 9=best

VARIETY	2/10/01	24/7/02	17/9/02	26/11/02	20/4/04	21/9/04	4/10/04
Tifeagle	*	8	8	8	8.5	7	8
Penn A4**	6	6	7	6	*	4	*
Penn G2**	6.5	7	8	6	*	3	*
Tifdwarf	6.5	7	8	7	7.5	7.5	7.5
Conquest	6	6	6	*	6	6.5	5
Super Sport	6	7	7	*	6	7	5.5
Tifgreen	6	7	5	8	6.5	8.5	7.5

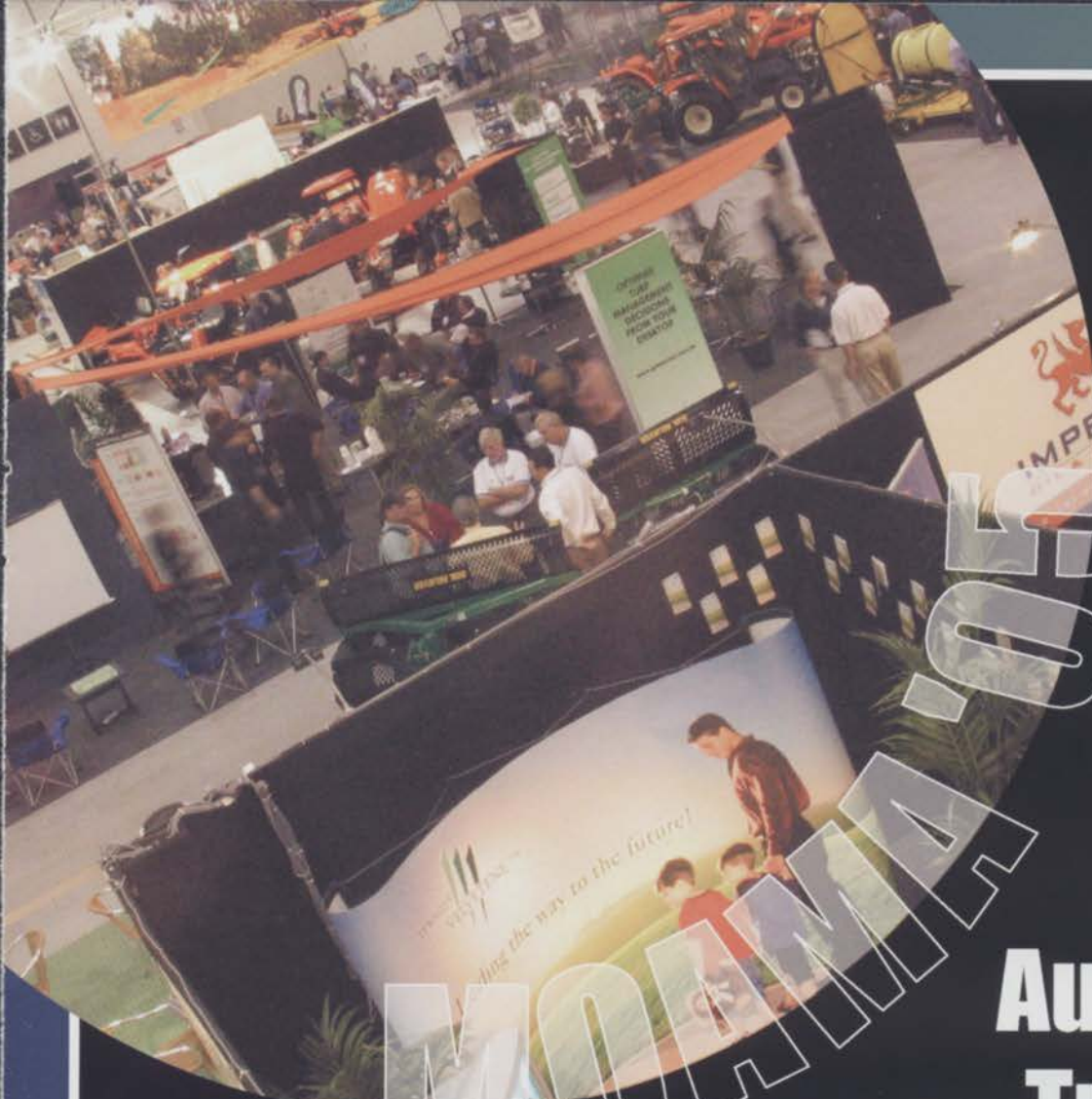
* = no data ** = creeping bentgrass

 Table 7:
 Lakelands GC - Turf quality at a cutting height of 7 mm (fairway/tee)
 0=worst 9=best

VARIETY	2/10/01	24/7/02	17/9/02	26/11/02	20/4/04	21/9/04	4/10/04
Conquest	6.5	6	8	6.5	6.5	7	5.5
Super Sport	6	6	7	rg	7	7	6
Tifgreen	6.5	8	8	rg	7.5	8.5	7.5
CT-2	6.5	7	7	7	7	7.5	7
Tifsport	*	6	8	7	7	7	7
Greenleas Park	5.5	6	7	rg	6	6.5	5
Wintergreen	6.5	8	7	6	7	6.5	6
Legend	7	7	7	rg	6.5	8	6
Santa Ana	7.5	8	8	rg	6.5	7	6.5
Sydney	5.5	6	4	6	*	*	*
Mowhawk	5.5	6	4	6	*	*	*
Princess	6	6	6	6.5	5.5	6.5	5.5
Plateau	6.5	7	6	rg	7	6	5.5

* = no data rg = regrowth following heavy scarifying

supplied the varieties for this project - Heritage Seeds, Nuturf, Globe Australia, Turf and Irrigation, Valley Seeds, Advanced Seed, Wrightsons, Simplot, Evergreen Turf, Jimboomba Turf, Twin View Turf, StrathAyr Turf, Peter Brown and Associates and Tropical Lawns. These projects would not be possible if not for the support of the superintendents and their clubs at each of the trial sites - Martyn Black, Daryl Sellar, Martin Greenwood, Trevor Strachan, Darren Moore and Stephen Marsden, Chisholm TAFE College, Rosebud Campus - Barry Fraser and Bruce McPhee. Particular thanks to Cassandra and Michael Neylan for their assistance in establishing the plants collected and maintaining the propagating nursery. 🌱



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MORE INVOLVEMENT



Developing Annual Bluegrass Cultivars for Putting Greens



Poa annua exhibits a range of perennality as shown by the number of daughter tillers produced at the time of first flowering of the parent tiller. The number of daughter tillers, from left, are 3, 6, 9, 11, 13, 16, 52 (dihaploid plant)

Work continues at Penn State University to tame this highly variable species into cultivars for high quality putting surfaces.

P*oa annua* L., the Latin name for annual bluegrass, has long been recognised to provide high quality turf of fine texture and high shoot density that is uniform and tolerant of close mowing (1).

In 1927, legendary USGA agronomists Piper and Oakley (14) described the value and high quality of *Poa annua* for golf course putting greens. More recently, Warwick (16) observed that if grown in a monoculture, *Poa annua* provides an excellent putting surface.

However, not everyone reached the same conclusion concerning the utility of *Poa annua*. Thus, while some turfgrass agronomists have encouraged the use and cultivation of *Poa annua* as turf (7, 15, 17), others have focused on its eradication as a weed (2, 12).

In fact, most instances of *Poa* literature describe the grass as an invasive weed whose eradication should be pursued at all costs.

This article focuses on the utility and genetic improvement of *Poa annua* for use as putting surfaces.

Variable with a world-wide distribution

Poa annua is one of the world's most widely distributed invasive weed species. *Poa annua*, in all its forms, is found on every continent of planet Earth. From Europe to Asia, from South Africa to Alaska, from the searing heat of Arizona to the bitter cold of Antarctica barrier islands, *Poa annua* is present.

The mechanisms that enable this grass species to so widely disseminate its progeny and enable it to survive, adapt, and persist in such a wide range of environmental conditions are currently not known.

One thing that is known is that *Poa annua* is a highly variable species. It contains forms that behave as annuals and other forms that behave as long-lived perennials.

Traits typically associated with either annual or perennial forms are listed in Table 1.

Basically, the annual form has a bunch-type, upright growth habit of low shoot density and is found in open fields, orchards, and meadows. Plants of the annual form tend to behave more

as annuals in that they are non-creepers and are prolific seed producers.

The perennial form has either an upright growth habit of diminutive stature or a more prostrate, spreading growth habit capable of rooting and producing new shoots from the upper nodes of the decumbent shoots. In addition, the perennial form produces a high shoot density which contributes to the appearance of a rather tight turf.

The perennial biotype of annual bluegrass is also more restricted in the timing of seed formation than the annual form, and allocates more of its resources (photosynthates) into vegetative growth rather than seed production.

As a result, the perennial form is almost exclusively found growing in closely mowed turfs such as old, established golf greens.

Thus, one's perception of whether it is a weed (either annual or perennial forms) or a valuable putting surface (a highly evolved perennial form) depends on which form is present in the turf.

Table 1. Comparison of characteristics typically associated with either the annual or perennial forms of *Poa annua*

'Annual' annual bluegrass	'Perennial' annual bluegrass
Favoured by constant surface disruption	Favoured by surface stability (little disruption)
Produces lots of seed	Produces little to no seed
Dominates soil seed bank	Scarce in the soil seed bank
Quick to germinate, quick to flower	Slower to flower
Extremely sensitive to environmental stress (heat, cold, drought)	Likely more tolerant of environmental stresses (heat, cold, drought)
Easier to kill with chemicals, although numerous reports of evolved resistance.	More likely to tolerate herbicides
Individuals reproduce throughout a growing season	Individuals reproduce during a specific period during a season (typically spring only)
Most individuals die within a season	Most individuals live multiple seasons and perhaps some are long-lived
Lots of small lime-green tufts on a golf green	Lots of variable-size, variable-colour patches on a golf green
Tolerates close mowing heights	Adapted to close mowing heights
Low shoot density, coarse texture, tall stature	High shoot density, fine texture, short stature
Ugly, Bad	Beautiful, Good

Annual or perennial?

The problem in designating an annual bluegrass plant either an annual or a perennial is that there is a range or spectrum of variability of what ecologists call 'life-history characteristics' that exists within the species.

One way to measure the perennial nature of a particular *Poa annua* plant is to determine if it grows faster than it dies. In other words, one needs to consider if a growing shoot (also known as a tiller, the basic unit of a grass plant) replaces itself before it flowers, because once a tiller flowers, it dies. And if it does, how many replacements does it produce?

If a tiller replaces itself with just a single daughter tiller before it flowers (i.e., a one-to-one replacement), that would seem to be a precarious position for a perennial to be in because any number of mishaps or events would easily eliminate the one vegetative offspring.

In addition, most of the tiller's energy would be invested in seed versus a single vegetative tiller offspring and so the parent tiller would likely be survived by its seed progeny and not by its only vegetative tiller. This tiller would be behaving as an annual plant. However, if a tiller



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Table 2.
Number of daughter tillers produced at the time of flowering (anthesis) of the parent tiller

Source	Daughter tillers
Rough	1-3
Fairway	4-8
Greens	>9

were to produce many tillers before it flowered (i.e. many-to-one replacement), it would be behaving as a perennial plant.

In experiments conducted at Penn State University, a range of annual bluegrasses were measured for this trait by counting the number of daughter tillers produced at the first sign of flowering (anthesis) of the parent tiller.

The results are presented in Table 2 and indicate that *Poa annua* plants evolve an increasingly perennial nature as the level of turfgrass management increases. This process continues on the golf green until eventually plants become entirely perennial and lose the ability to set viable seed all together (see photo page 32).

It is these later classes of evolutionary products, those that still set viable seed and are highly perennial and those that do not set viable seed and are entirely vegetative, that have served as the raw material for cultivar development in the Penn State *Poa annua* breeding program.

Penn State's breeding program

When the annual bluegrass breeding program was initiated in July, 1994, thousands of *Poa annua* samples were collected from existing golf course greens.

To date, the project has collected and evaluated tens of thousands of *Poa annua* plants. These early selections exhibited a wide range of genetic variation in nearly every imaginable trait including tiller density, colour, seedhead production, disease resistance, and environmental stress tolerance. Subsequent collections have yielded similar variability.

Improvements to these initial collections have been achieved by successfully applying several fundamental principles of plant breeding. Primarily, the breeding process has improved turf quality regarding not only shoot density, colour, and uniformity of appearance, but also in increased tolerance to several biotic (disease) and abiotic (environmental) stresses.

Currently, the breeding program has designated a set of the 'top-12' cultivars. These cultivars are currently being evaluated on various golf courses and university research facilities around the world.

The encouraging news from preliminary reports is that these cultivars are performing well, even better than expected. For instance, at a trial established at Barwon Heads Golf Club in Victoria, Australia, one-half the plots were irrigated with potable (drinkable) water while the other half were irrigated with effluent water that was high in salinity as a result of high levels of sodium and chloride.

Planted along with the Penn State annual bluegrasses were plots of the local, native *Poa annua*, and several cultivars of creeping bentgrass including Penn A-4, Seaside II, Mariner, and Penncross. *Poa annua* is known for its inability to tolerate high saline conditions, whereas bentgrasses are known for their ability to tolerate high saline conditions.

The first year's data from this multiple year study (courtesy of the AGCSA's John Neylan) indicates that the Penn State annual bluegrasses are not only surviving the high salinity of the effluent water source, but are demonstrating higher turf quality than bentgrasses in many instances during the growing season.

Moreover, during the late summer of 2004 (Feb-Mar), the effluent water line broke and the plots were unwatered for 10 days.

The Penn State annual bluegrasses fully recovered, while the local native annual bluegrasses all died, demonstrating improved drought resistance of this highly variable species.

Stress tolerance

Stress tolerance is an important factor which contributes to perenniality. After all, does it really matter how much better turf quality specific selections may have if the plants have little or no inherent ability to tolerate environmental and biological stress?

In order to be perennial, turfgrasses must be able to survive and persist month after month, season after season, year after year, through all kinds of heat, cold, disease, and traffic stresses, whereas plants with annual life cycles can simply die and survive these stressful periods as seed.

Most of what is known about *Poa annua* is based on the annual or less-evolved perennial types. For example, both high and low temperatures represent the major environmental limitations to distribution and growth of *Poa annua*. It is generally believed that this lack of tolerance to extreme temperatures makes *Poa annua* a weak turf for at least some part of the year in most locations.

Despite this general observation, strains of *Poa annua* have been observed to perform well in irrigated turf areas subjected to the desert heat of Arizona (D. Kopec, 1998, pers. com.). Duff (4) also reported significant differences among strains for heat tolerance. At the other temperature extreme, Dionne et al. (3) reported finding significant differences among strains for tolerance to freezing temperatures.

Poa annua is also widely known for its susceptibility to many turfgrass diseases, including dollar spot (*Sclerotinia homoeocarpa*), anthracnose (*Colletotrichum graminicola*) and pink snow mold (*Monographella nivalis*). However, the *Poa annua* breeding program at Penn State has identified strains exhibiting excellent field resistance to anthracnose and dollar spot (6, 8).



Initial collections of *Poa annua* early in the Penn State breeding program exhibited a wide range of genetic variation in nearly every trait



Penn State's test site at Nevellwood Golf Club near Pittsburgh. The breeding program has made improvements in greens-type *Poa annua* in overall turf quality (primarily shoot density, colour, uniformity of appearance) and in several biotic and abiotic stress tolerances

Thus, while most scientific efforts regarding *Poa annua* have been directed towards its eradication, control, or lack of stress tolerance, those research efforts aimed at determining and identifying strains possessing improved stress tolerances have generally been successful.

Invade and adapt

The evolution of *Poa annua* from wild, weedy, annual forms to the perennial forms adapted to golf, lawn, and athletic field turf has been documented by plant ecologists and plant evolutionists as a classic example of rapid microevolution (10, 11, 13).

When *Poa annua* first invades a turf area, it typically does so as seed of the annual form. The seedlings become established in damaged or weakened open areas of turf and through phenotypic plasticity, adapt to the given management conditions of that particular turf (i.e. mowing height, moisture availability, and fertility).

Poa annua has a unique ability to adjust the height of its flowering culms such that it is capable of flowering and setting seed under nearly any mowing height (i.e. as low as 25mm).



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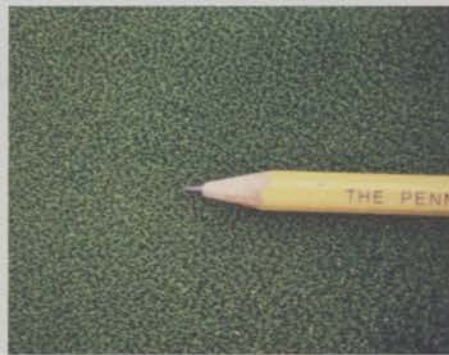
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AGCSA agronomist John Neylan rates evaluation trials established at Barwon Heads Golf Club. Planted along with the Penn State annual bluegrasses were plots of the local, native *Poa annua*, and several cultivars of creeping bentgrass



Dihaploid *Poa annua* represents some of the densest, finest, and highest turf quality strains yet observed

Cross-pollination events among annual bluegrass parents produce a range of genetically based morphological variation.

Turf management programs act as powerful selection forces. Over time, subsequent generations of *Poa annua* begin to take on the characteristics of a perennial form and ultimately adapt to the particular turfgrass management program. Thus, with every generation, *Poa annua* evolves and adapts in response to the specific cultivation and management practices of a given turf.

On old golf course putting greens this evolutionary process results in strains of highly-evolved perennial annual bluegrasses that are becoming known as 'greens-type' *Poa annua* (3, 6). These greens-type *Poa annua* are perennials that possess a short stature, extremely high shoot densities, and are vegetatively aggressive.

Seedhead production may be a fact of life in any future commercial cultivar of greens-type *Poa annua*. The main problem, currently, is not the production of seedheads, but rather the lack of any seed supply of an improved *Poa annua* for golf green use.

Greens-type *Poa annua* may begin to appear on golf greens as young as 10 years old. Such a 'rapid' evolutionary event is an indication of the extreme selection forces existing by golf greens (primarily mowing height and wear). The selection pressures of the green environment are so intense that on 60-year-old greens it is common to observe a special type of *Poa annua* known as dihaploids.

Dihaploids occasionally produce a flower stalk, but are absolutely seed sterile and thus exist entirely as vegetative perennials. Such dihaploids represent some of the densest, finest, and highest turf quality strains yet observed (8).

Realising the potential

Over the years and throughout the world, turfgrass scientists and geneticists have described the potential to breed improved strains of *Poa annua* for the golf industry (4, 10). This is due to the high turf quality and the enormous amount of morphological variation present in the perennial forms of *Poa annua*.

However, the main obstacles that need to be overcome for the successful cultivation of *Poa annua* seed for the commercial market are;

- Low seed yield;
- The indeterminacy of seed maturity; and
- The control of undesirable forms of *Poa annua* within seed production fields.

Overcoming the first two obstacles has been among the goals of the Penn State breeding program with some limited successes to date. Overcoming the third obstacle through reliance on chemical control may only delay the problem as several herbicide resistances have been reported among plants of the annual form (5, 9).

Penn State has thus been researching production practices (i.e. rotating seed production field on an annual cycle) that will reduce this obstacle to an acceptable level.

Without doubt, the cultivars perennial greens-type *Poa annua* will have their share of unforeseen problems and the breeding program will continue its search for genetic solutions. The focus is to develop commercial seed supplies for those golf courses that either have or would like to have annual bluegrass greens. Currently, golf courses that have annual bluegrass greens do not have an adequate seed source for use in routine maintenance, renovations, or new construction.

The ultimate goal of Penn State's greens-type *Poa annua* breeding program is not to replace creeping bentgrass as a golf green putting grass, but rather to offer an alternative for those situations where annual bluegrass is simply a better choice. ■

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Best Management Practices to Reduce Pesticide Runoff from Turf



Researchers at the University of Illinois constructed plots to investigate several best management practices to limit pesticide runoff

US researchers have been studying best management practices to reduce the amount of pesticide leaving treated turf. Turf managers can use their findings to help protect surrounding surface waters from pesticide contamination.

Golf turf management has made huge strides over the past 40 years that have allowed golf course superintendents to achieve near-perfect turf quality. However, achieving these very high levels of turf quality requires numerous inputs including fertilisers, irrigation, topdressing, cultivation, wetting agents, biostimulants and pesticides.

While practices such as topdressing, cultivation, and wetting agents are considered environmentally benign, fertilisers and pesticides have received much scrutiny since these products can move off the turf and into ground and surface water.

Pesticide leaching from turf has been intensively studied (1,5,6,9), and while in row

crops pesticide leaching is a major problem, leaching of pesticides from turf presents much less risk than previously suspected.

Pesticide leaching in turf is a much smaller problem than in row crops for two primary reasons. First, the hectareage treated with pesticides on golf courses is a drop in the proverbial bucket compared to row crop agriculture, while a second reason is the turf itself.

A previous USGA-funded research project examined the effect of turf on pesticide movement and degradation (2,3,4). It was found that when pesticides are applied to turf, leaching is reduced and degradation rates are

increased, when compared to the same pesticides applied to bare soil (common for row crops).

These two differences have led many to conclude that the risk of ground water contamination from turfgrass pesticides is low, but not non-existent.

Proper management is still key, and on certain sites, particularly those with sandy soils, shallow ground water, and proximity to water bodies, turf managers need to pick the pesticides they do use with care.

Pesticide runoff, however, is a completely different issue. Whereas pesticide leaching is mostly a threat to ground water (although the use of tile drains can also threaten surface waters with pesticide leachate), pesticide runoff is a threat to surface water.

Most golf courses have some water features associated with them and often streams, rivers, or storm drains are used to accept runoff from golf courses.

Some initial research has shown that pesticide runoff can be significant with some researchers reporting as much as 10 per cent of the applied pesticide transported in runoff (7).

Investigating runoff

With this background in mind, research was undertaken to examine some management practices that might reduce the concentration of pesticides when runoff does occur on a golf course.

First, a site was constructed to conduct runoff research. This site was sloped, but did require some modification to produce a plot area with a uniform 5 per cent slope that was about 45m x 10m in area. A mist irrigation system was installed that could provide two intensities of simulated rain events.

After constructing the plots in autumn, they were left to settle over the winter, and were sodded the next spring with creeping bentgrass. Runoff collection equipment was then installed and by the end of the summer a test run was conducted.

Experiments began in summer of 2003 with three possible strategies to reduce pesticide runoff evaluated.

- Can irrigation applied a short time after pesticide application significantly reduce pesticide runoff? By washing the pesticide

off the leaf surface and deeper into thatch and soil, can the concentration and total quantity of pesticide in runoff be reduced?

- The length of time between runoff event and pesticide application. Some turf managers use natural rainfall in place of irrigation. That is, if rain is forecast an application of pesticide or fertiliser may be applied and the rain is used in place of irrigation to 'water-in' the product. Of course if the rain produces runoff, the loss of pesticide could be quite high. Can you reduce the runoff potential by applying a small amount of irrigation prior to the runoff event and thus reduce pesticide runoff?
- Clipping management. Turf is a unique crop in that each pesticide application is made directly onto the foliage. Even when a pesticide is primarily root absorbed, a significant quantity of the pesticide will adhere to leaf tissue. The first mowing following a pesticide application effectively 'frees up' a significant portion of the pesticide application. If a rain event moves these clippings, a significant amount of pesticide will be transported as well. An even thornier issue will result when clippings are collected. If the clippings are

composted, rapid degradation of the pesticide residues will result, but care must be taken to prevent rainfall from leaching pesticides from the clippings. If the clippings are simply scattered in the rough, turf managers may be unintentionally producing areas with high concentrations of pesticides that may be susceptible to leaching or runoff.

Experimental procedures

In each experiment, pesticides were applied as a three-way tank mix. Pesticides were selected based upon their water solubility and ease of analysis by high performance liquid chromatography (HPLC) (Table 1).

Table 1. Pesticides used in runoff studies at the University of Illinois

Common Name	Water solubility (mg/L)
mefanoxam	26000
propiconazole	110
paclobutrazol	35
chlorothalonil	0.6
pendimethalin	0.3



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Best Management Practices to Reduce Pesticide Runoff from Turf



Following pesticide application, irrigation was applied until all plots produced at least 40 litres of runoff

Each tank mix contained a pesticide classified as having high, medium, or low water solubility. Water solubility plays a dominant role in the availability of the pesticide for runoff. Pesticides with high water solubilities are more readily moved with flowing water. Pesticides with very low water solubilities will move in lower concentrations in water. Best management practices may need to be modified based upon water solubility, that is, what works best to reduce runoff of a highly water soluble pesticide may not be as effective with a water insoluble pesticide.

Following pesticide application, the mist irrigation system was turned on, at the appropriate time for each experiment, to produce runoff. Irrigation was applied until all plots produced at least 40l of runoff.

In each experiment, approximately two hours of irrigation was applied. From each 40l runoff sample, a four litre subsample was collected into amber glass jugs. The jugs were stored in a 4°C cooler until they could be filtered to remove sediment. All samples were filtered within 24 hours of collection (typically within 2-8 hours of sample collection).



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Following filtration, 500mls of the sample was passed through 500mg column of cross-linked polystyrene, which is a very non-polar sorbent that will extract non-polar analytes from water. This step removes and concentrates the pesticides from the runoff water. The pesticides were eluted from the columns using an organic solvent and then analysed by HPLC to determine the amount of each pesticide present in the water samples.

Results

The first experiment examined the effectiveness of post-application irrigation in reducing pesticide runoff. Three pesticides (chlorothalonil (Daconil Ultrex), paclobutrazol (Trimmit) and mefenoxam (Subdue MAXX) were applied and 5mm of post-application irrigation was hand-applied at 0.25, 1, 4, 8, or 24 hours after application. The simulated runoff-producing rain event was initiated at 25 hours after pesticide application, i.e. simulated rainfall began one hour after the last pesticide washoff treatment was applied.

The results were slightly disappointing. No matter how the data was examined, there were few meaningful differences. The largest point from the trial was that post-application irrigation was not effective in reducing the amount of pesticide available for runoff.

Closer inspection of the data yielded one significant finding. Chlorothalonil runoff was reduced by post-application irrigation at 15 minutes after pesticide application. This may make sense from a pesticide chemistry viewpoint.

Chlorothalonil is very water insoluble with a commonly accepted water solubility of 0.6PPM (8). Products with water solubilities this low are usually applied as an emulsion in water in order to get the product into a sprayable form. Once the spray dries on the leaf surface, the emulsifying characteristics are lost and the pesticide behaves according to its natural water solubility.

A pesticide, or any organic chemical, with water solubility below 1PPM will be very strongly sorbed (a term that describes substances that can be both adsorbed or absorbed) to the wax and other non-polar compounds of the leaf surface. Once these pesticides dry on the leaf surface, they're literally stuck there.

By applying irrigation soon after application, some of this drying will be prevented and a larger mass of the pesticide can be moved deeper into the turf profile. Once a water-insoluble pesticide has dried on the leaf surface, post-application irrigation will not be very effective in moving the pesticide off the leaf.

With the fungicide chlorothalonil, post-application irrigation immediately after application would not be a good practice since the product needs to be on the leaf surface to exert its fungicidal activity.

However, if the intended site of action is the soil or thatch surface, as, for example, pre-emergence herbicides, these products should receive post-application irrigation as soon as the application is completed. This not only reduces the amount of pesticide available for runoff, it also increases the amount of pesticide reaching the soil or thatch surface.

The second experiment examined the impact of the interval between pesticide application and runoff event. In this experiment, pesticides were applied at 12, 24, 48, or 72 hours prior to the runoff event. The pesticides applied were pendimethalin (PreM), propiconazole (Banner), and mefenoxam (Subdue).

In this experiment, the results were dramatic. Regardless of water solubility, the longer the time between pesticide application and runoff, the less pesticide was detected in runoff. While this would be expected, what was interesting was that, in general, the differences in runoff were significant between runoff at 12 hours following application versus 24, 48, or 72 hours after application. In other words, if runoff occurs one, two or three days following application, there is not a great difference in the amount of pesticide that runs off.

But, if the runoff event occurs at 12 hours or less after application, there will be a substantial increase in the amount of pesticide runoff that occurs. For example, on a mass basis, 8.9mg of pendimethalin was recovered in runoff water when the plots were irrigated 12 hours after application, but only 1.5, 1.6 or 1.2mg of runoff occurred at 72, 48, or 24 hours following application, respectively. Similar results were obtained for the other two pesticides in this study.

One surprising result of this trial was that, on a mass basis, there was more propiconazole in the runoff than mefenoxam. This result was counter to the hypothesis that the more water soluble a pesticide, the more susceptible it is to runoff. In general, the initial concentration of mefenoxam in the runoff was higher than propiconazole, but as more runoff came off the concentration of mefenoxam decreased while that of propiconazole did not decrease appreciably.

Perhaps since mefenoxam is much more water soluble (see Table 1), some of it may move into the soil and thatch much more readily with the onset of precipitation, whereas, propiconazole, which is less water soluble, may remain in the upper canopy where it can continue to partition into water flowing across the turf surface.

The third experiment evaluated the effects of removing clippings on pesticide runoff. On golf course greens, tees, and fairways, pesticides are applied as often as once every two weeks during the summer. A significant portion of the pesticide application is deposited on the leaf tissue and much of the application will remain sorbed to the leaf tissue.

In this study, the experiment was simplified so as to compare only two treatments, clippings removed versus clippings returned. In this experiment, pesticides were applied at 9am one day and the plots mown the following day at the same time. The runoff event was initiated one hour later at 10am by simulating runoff via irrigation.

As might be expected, removing clippings reduced pesticide runoff (Table 2). When examining the data on a mass basis, i.e. the total quantity of pesticide removed, the data must be considered in view of several important factors.

First, an important factor in reducing pesticide runoff (as well as other forms of off-site transport) is to use pesticides that require smaller amounts of active ingredient. On a mass basis, more chlorothalonil was lost than either of the other two pesticides.

However, on a per cent of applied basis, chlorothalonil lost much less than the other two pesticides (Table 2). Chlorothalonil is an older product that requires higher use rates than many newer pesticides. Even though chlorothalonil is very water insoluble and less likely to runoff (as shown by the percentage data), more chlorothalonil was recovered in runoff because it was applied at rates of 16 to 44 times higher than the other two pesticides.

Second, pesticide mass is the product of pesticide concentration in runoff and the total volume of runoff collected. The plots used in this trial were developed to be as uniform as possible and yet there were still large differences in runoff volumes between plots. This directly affects the runoff mass and can make the data difficult to interpret.

Table 2. Mass of pesticide loss during runoff - effect of clipping removal.

Pesticide	Application Rate (lbs ai/A)	Clipping Treatment	Total mass lost (mg)	Per cent of applied
Mefenoxam	0.7	Removed	21.3	0.98
		Returned	37.2	1.70
Paclobutrazol	0.25	Removed	8.3	1.06
		Returned	12.7	1.62
Chlorothalonil	11.2	Removed	65.4	0.19
		Returned	153.7	0.44

Clipping management can have a big impact on pesticide runoff. Pesticide runoff was reduced by 34-57 per cent by removing clippings. It is doubtful that the higher mass of pesticide runoff where clippings were returned can be attributed to clippings in the runoff. While some clippings in the runoff water were observed, the clippings were removed by filtration prior to analysis.

The mass of pesticide found on the sediment (clippings and other particles) was a small fraction of the amounts recovered from the runoff water. Thus, the reduction in pesticide runoff where clippings were removed is most likely a direct result of the decrease in the amount of pesticide available when the runoff occurs.

However, while the reduction in pesticide in the runoff was substantial, it begs the question of what happens to the clippings? If the clippings are simply deposited elsewhere on the golf course, then the runoff problem hasn't necessarily been reduced, just redistributed.

Lessons learned

The purpose of this research was to develop best management practices to reduce pesticide runoff. The most effective practice was to remove clippings, but the clippings themselves contain a significant amount of pesticide and these must be dealt with responsibly.

The turf in the field represents what is termed a non-point source pollution problem, that is, the potential pollutants are distributed across a large area at low concentrations. Collecting clippings and putting them in a pile would essentially create a point source pollution problem. However, creating a compost pile of clippings should permit relatively rapid degradation of the pesticides in the pile, and if drainage is controlled, this would be a particularly good option.

Regardless of whether clippings are removed as part of a best management program to reduce pesticide runoff, this research illustrates that clippings can be an important source of pesticides.

Whether clippings are returned or collected, be aware that clippings harvested immediately following a pesticide application will contain a significant quantity of pesticide. Returning those clippings to the turf would be valuable particularly in the case of soil active pesticides such as pre-emergence annual grass control herbicides and root-absorbed products such as the plant growth regulators paclobutrazol or flurprimidol.

Pesticide application within 12 hours of an expected rain event should be avoided, if possible. Runoff occurring at 24-72 hours after pesticide application is considerably reduced versus runoff that occurs within 12 hours of a pesticide application.

Choosing pesticides that require low active ingredient application rates dramatically reduces the amount of pesticide runoff. Many newer pesticide chemistries have application rates of 30-120 gms ai/A (-0.1-0.3 lbs ai/A).

The best way to reduce pesticide runoff or leaching is to not use a pesticide. The second best way is to choose a pesticide with good environmental properties, and one of the best is a low application rate.

Lastly, the use of buffer strips is a best management practice. A buffer strip is a vegetated strip that is not treated with pesticide. In our runoff experiments, the pesticides were applied within 60cm of the runoff collection apparatus. Any increase in the length of untreated turf or other landscape plantings between the treated turf and the point where runoff water would enter a stream, drain, or other direct access to water will dramatically reduce pesticide runoff.

This occurs for two reasons. First, turf will remove some of the pesticide that is flowing across it, that is some pesticide will absorb to the turfgrass plants. Second, as runoff-containing pesticide enters the buffer strip where no pesticide is present, simple dilution will reduce the concentration of pesticide that ultimately enters the water body.

Pesticide runoff is an important issue that golf course superintendents must be aware of and recognise where potential problems exist. Bodies of water flowing through the golf course need to be protected. Even if a golf course does not have a surface water feature, care must still be exercised.

Many superintendents use surface drains to remove excess water from low-lying or poorly drained areas. Often these drains ultimately lead to a surface water body. So pesticides applied to a fairway, may be readily moved off the golf course if surface drains are used to remove excess water. ☘

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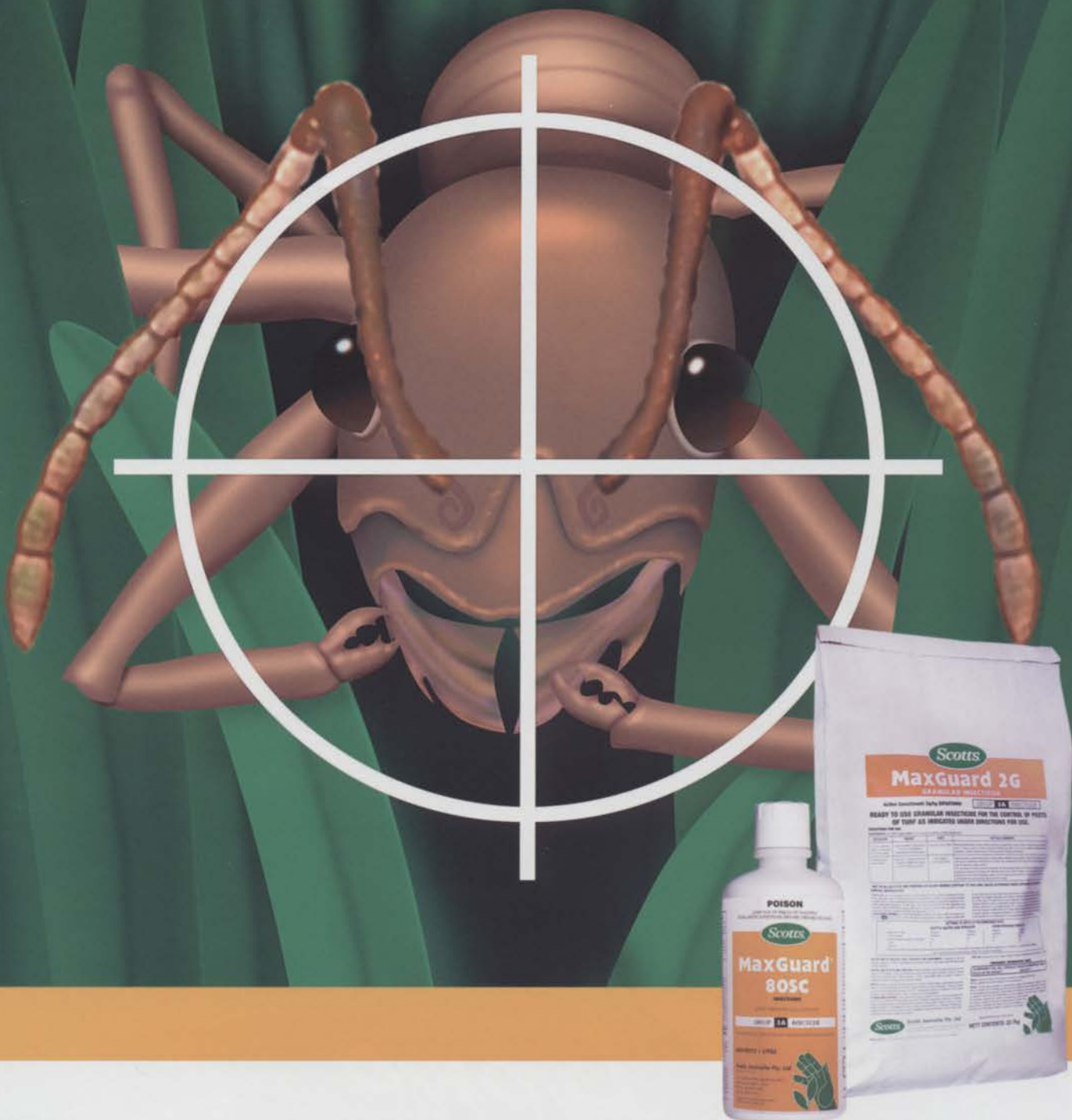
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As well as spill kit training, mobile spill kits are provided on turf maintenance vehicles

MOBILE SPILL KITS

Ever since the Warringah Golf Club pesticide spill and resulting verdict in the NSW Land and Environment Court, golf clubs more than ever before have been made acutely aware of their environmental responsibilities and the impacts they can have on the immediate environment.

The industry has made steps to improve its environmental stewardship and courses are slowly but surely coming up to speed and implementing strategies to comply and combat any possible environmental accidents on course.

As reported earlier in this edition, Newcastle Golf Club superintendent Guy Thomas has had consultants in to undertake a complete

environmental audit of the club. From that a number of initiatives have been implemented, one of which includes this simple yet innovative idea which could easily be taken on board by superintendents across the country.

As well as having a General Purpose 120 spill kit in a wheelie bin in the maintenance shed containing a range of equipment to deal with major spills, Thomas has also taken to providing vehicle spill kits that accompany the machines when staff are carrying out their daily tasks.

The compact, mobile kits, which are fitted to whatever piece of machinery it is designated for, enable staff to respond quickly and effectively to any spill event on the course.

"On the Cushman spray unit we have a hydrocarbon vehicle spill kit and mowing machinery that work in tandem have one spill kit between them," says Thomas.

"These vehicle spill kits enable the operators to contain a spill then communicate to the shed if they need the larger 120 spill kit to clean up."

When the spill kits were purchased Thomas had all staff members trained in their use, and to document that staff have received appropriate training and instruction, Thomas developed a training register that all staff signed and dated to acknowledge they had been trained.

Syngenta recognises our innovative superintendents and is proud to present Guy Thomas of Newcastle Golf Club with a \$150 AGCSA book voucher.

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Wannambool superintendent David Mason

Full Name: David Mason
Nickname: Mace
Age: 28
Family: Wife Cindy, daughter Zoe
Years as a superintendent: 6 months
Years as an AGCSA member: 2 years
Previous Clubs: Metropolitan Golf Club
Years at Wannambool Golf Club: 6 months
Number of staff: 4 and 2 Work for the Dole
Course specs: 18-holes, 5780m, par 72; Poa/bent greens; Couch/kikuyu/rye/Poa fairways
Favourite piece of machinery: Stihl MS 361 Chainsaw.
Funniest moment you have seen on course? Seeing one of our 'lovely' lady members using a

putter to get out of a greenside bunker and taking three shots to get out!
Plans for the course over the next two years? Awaiting council permit to rebuild a number of holes. Possible tee reconstruction and installing tee irrigation.
Best advice you have received on the job? Golf greens are like a dog - when they are thirsty you give 'em water!
One aspect of the job you would change? Sun during the day, rain at night.
Best part about being a superintendent? Being able to make major decisions and accomplish the changes. Walking the course at the end of the day and seeing the fruits of your labour but also the potential for more improvements.
Worst excuse from a staff member? I'm sure I set the alarm!
Favourite spot on your course? 5th tee looking over the dunes to the sea.
Career highlight? Being part of the Accenture World Matchplay in 2001 at Metropolitan.
The overseas course you'd most like to visit? Merion Golf Club.
What book are you reading now? The Spirit of St Andrews (Alister MacKenzie).
Favourite movie?

The Blues Brothers.
Name 3 CDs you could not live without? Midnight Oil, Queen, Blues Brothers.
If you could be any musician, who would you be? Billy Joel.
Food you could not live without? Mexican, Indian, Thai, roasts, pavlova - you name it, I'll eat it.
Favourite sporting team? North Melbourne Kangaroos
Sporting team you despise? Collingwood.
Dream car? Hummer.
Irritations? Television commercials
Come the revolution, which celebrity would be first before the firing squad? Eddie McGuire. 🍷



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A dumbfounded Pakenham Golf Club superintendent Rick McHugh on the 16th green where the offensive message was carved into the turf

DISBELIEF AS VANDALS ATTACK PAKENHAM GREEN

Superintendents are forever putting up with acts of mindless vandalism to their courses, but not even Pakenham Golf Club superintendent Rick McHugh could quite believe his eyes when he turned up for work one Saturday in mid September.

In the early hours of the 18th, vandals carved an offensive message into the 16th green, digging up to 20cm deep into the turf to form the message "F*** You!"

The senseless act, at a time when the club is considering plans to relocate, made page three of the local Pakenham-Berwick Gazette, with this accompanying picture taking up almost half a page.

The attack occurred just hours before the club was due to host its monthly medal competition, and the club has estimated that over \$5000 worth of damage was caused.

McHugh, who has been superintendent at the club for the past three years and worked at the course for 17 years, says it was the worst act of vandalism he has ever seen and that the incident made him feel sick to the stomach.

"I guess most superintendents have seen their fair share of vandalism but I've never seen something like this," said McHugh.

"Our apprentice was mowing greens that morning when he came across it. He rang me up and told me we had a 'problem'. I couldn't believe it when I got there.

"We've had flags stolen before and divots out of greens, but this was far beyond that. I'd never seen anything like it. So much work goes into the greens. It's pretty hard to take and a real kick in the guts.

"About six years ago we arrived at work to find a stolen car upside down in one of the bunkers. They obviously didn't see the bunker at night while they were doing their donuts on the green and ended up in the bunker."

Police were called into investigate the latest incident and have since stepped up patrols around the area.

"It was done with a garden spade in the middle of the night on the most isolated green on the course," McHugh said. "The letters were so deep and neat that it was obviously premeditated. It would have taken a couple of hours to do; they've obviously taken a fair bit of pride in their work."

The newspaper article speculated that the act was done in response to the club's earlier announcement of plans to relocate under a land deal with the local Cardinia Shire Council.

According to the Gazette, several residents in the area have opposed the move, which would see a new course built in a new location and the existing course redeveloped as a mix of public open space and residential housing.

McHugh believes the attack may have been motivated by the publicity of the proposal to relocate, which has been well documented in the local press.

However, residents opposing the plan said they were disgusted by the attack. Residents' group spokesman Greg Studd was dismayed by the news, describing it as a shameful and idiotic act.

McHugh and his complement of four staff spent the best part of a day cleaning up the debris left on the green by the vandals.

"Rather than buy new turf, we salvaged what we could and patched it back up," McHugh said. "You can still see the outline of the wording, and it's a bit rough, but with continual topdressing we will be able to smooth it over in time." ❏

This article has been adapted with permission of the Pakenham-Berwick Gazette, 22/9/04. Original story and picture by Paul Dunlop, South East Newspapers.

TPA MOVES FOR LEVY

The AGCSA is backing a move by the Turf Producers Association (TPA) to institute a statutory levy to help secure the future sustainability of the Australian turf industry.

If successful the move would bring the turf industry into line with other horticulture industries which are levy based, and the TPA says it is a vital investment needed to ensure the industry's future.

The TPA is proposing a levy of 1.5 cent per square metre on every turf producer selling more than 20,000 square metres. The levy would be collected at the first point of sale and levy funds for research would be matched dollar for dollar.

The TPA says such a levy could be used to employ industry development officers at state level and a national industry development manager. ❏

DÉJÀ-VU AT JOHN DEERE TOURNAMENT

The Newcastle region continues to dominate the John Deere Teams Championship with Branxton Golf Club winning the 2004 Australian final.

Containing superintendent Aaron Ling, the Branxton team nudged out Western Australian representatives Secret Harbour Golf Club at the final held at Moonah Links in mid September.

It is the second year in a row that a team which has made it through from the Newcastle qualifying event has won the national final. Last year Heritage Green Golf Club secured the honour by beating another Newcastle qualifier Tuggerah Lakes.

Heritage Green again made it through to the final 12 this year after finishing runner-up to Branxton at the Newcastle qualifier.

However, it was Branxton's day on Moonah's Open Course, venue for last year's Australian Open, and won the privilege of representing Australia at the world final of the John Deere Teams Championship in the US.

The Branxton team was joined by Trent Bolton from local John Deere dealer Sharpes Tractor Centre, to play against teams from around the world at the international final held at the Grayhawk Country Club in Scottsdale, Arizona, in mid November.

Branxton finished ahead of Secret Harbour, which was led by superintendent Allan Devlin, a former winner of the AGCSA Golf Championships.

Developed as a way of building relationships in the golf and turf industries, the tournament brings together the four main decision-makers within a club – the superintendent, club captain/president, manager and professional.

The championship is also run in conjunction with the AGCSA, and John Deere contributes \$25 for each team that competes to the association for its various research projects conducted across the country.

The other finalists for 2004 were Kooyonga, Gawler, Lakelands, Brisbane, The Sanctuary Golf Resort, Richmond, Highlands, Anglesea and Rosedale Golf Clubs. 🏌️



JOHN DEERE

FLAT PIPE TRIALS

Over the past two years, Northern Melbourne Institute of TAFE (NMIT) turf students have been engaged in a trial drainage project using a new product called Megaflo.

The drainage system involves a pipe that can be laid flat on the sub-base, avoiding the need for trenching and with the gravel layer installed directly over the top.

Sometimes called trenchless construction, the United States Golf Association specification for greens construction now allows this method of flat pipe drainage as an option.

Earlier this year the USGA released its revised guidelines and at the 20th Australian Turfgrass Conference in Melbourne Jim Moore outlined these changes.

Previous versions of the guidelines prohibited the use of 'flat pipe'. The 2004 guidelines allow the use of such materials, as opposed to round pipe, as long as they meet the ASTM 7001 standard, are not covered with a 'sock' or geotextile sleeve, and are a minimum of 12 inches (300mm) in width.

The new Megaflo product being trialed by NMIT conforms to this specification. NMIT turf teacher Phillip Ford said while the product was more expensive, the time and money saved by not having to construct trenches made it an attractive option and efficient for most constructions.

"Our students have built two sand-based constructions using the product. Our current construction project (supported by the Victorian Golf Association and the Victorian Greenkeepers Association) will use Megaflo in both a perched water table and California method constructions."

Ford added the trial would also be assessing several warm-season grasses cut at greens height and two types of soil sensor.

Results will be assessed over three years with a report prepared. Megaflo is marketed in Australia by Geofabrics (www.geofabrics.com.au)

For further information about this trial, contact the NMIT turf department on (03) 9269 8823. 🏌️

APPOINTMENTS

Craig Rice has moved across the border from Bonville International Golf Club to take up the superintendent posting at Boomerang Farm Golf Club.

As ATM went to press Goonawarra Golf Club in Melbourne was close to hiring a new superintendent following the departure of David Sinclair after two and a half years. Assistant Nick Dodd has been acting chief while the club has sought a new superintendent.

Also close to making new appointments are Bankstown Golf Club (superintendent) and Ashlar Golf Club (assistant superintendent).

Peter Carey has been promoted to superintendent at the Windsor Country Golf Club northwest of Sydney. Carey, the former assistant, replaces Stephen Seckold who has relocated to Melbourne after 13 years at the club. Former 3IC Peter Monardo has taken the assistant superintendents position.

*Know of any new appointments?
Then contact Brett at the AGCSA on
(03) 9548 8600 or brett@agcsa.com.au*



Turf Management Training in 2005

NMIT's Fairfield campus is offering the following courses in 2005:

Traineeship (Level 2): one year part-time by day or block release

Apprenticeship (Level 3): by day or block release

Recreational Turf Management (Level 3): for those who already have several years of practical experience. Can be done as a one year program at Fairfield (Monday, 5pm-9pm) or as a two year flexible delivery program.

Diploma (Level 5): a three year program, either by weekly attendance (Tuesday, 2pm-8.30pm) or by flexible delivery.

NMIT's Fairfield campus has excellent facilities, including new laboratories, extensive library and computer facilities and practical areas that include two 9 hole golf courses we maintain. NMIT also produce comprehensive module books for student purchase.

For further information contact the TURF department

p: (03) 9269 8823
e: peterf-hrt@nmit.vic.edu.au OR
e: philf-hrt@nmit.vic.edu.au

Northern Melbourne Institute of TAFE





The new John Deere 3235C lightweight fairway mower

JOHN DEERE'S HEAVYWEIGHT LIGHTWEIGHT

John Deere has introduced the new C-Series lightweight fairway mowers to its range of turf machinery.

The 3235C is equipped with a three-cylinder, 48.5hp, liquid-cooled turbo-charged diesel engine, a mowing width of 2.54m and a 68-litre fuel capacity that allows for all-day operation. Maximum mowing speed is 11kph with a transport speed of 18kph.

For comfort, the command arm puts the key switch, mow switch, throttle lever and raise/lower lever at the operator's fingertips, while the patented White Box controller is easily viewed from the operator's seat.

The controller also offers quick on-board electrical diagnosis, providing less downtime for the operator, while an increased number of hard lines in the hydraulic system reduces the possibility of leaks.

Cutting units on the C-Series mowers are lifted and lowered by a single lever joystick. The 3235C comes standard with 50-watt halogen headlights for increased visibility during early morning hours, as well as tilt steering. Options for both units include cruise control and 4WD. 🍌

For more information on this and other John Deere products, contact your local dealer on FREECALL 1800 800 981, or log on to www.deere.com.au

KIWI JOINS PGG SEEDS

New Zealand Sports Turf Institute (NZSTI) agronomist **Bill Walmsley** has ended 26 years of service at the institute to become an agronomist for PGG Seeds.

Walmsley started work with the NZSTI in Palmerston North in 1977 before moving to Canterbury.

Walmsley began work with PGG Seeds in mid-November and will be a regular visitor to Australia conducting and supervising turf trials, speaking at seminars and generally supporting PGG Seeds products and distributors in the marketplace.

Meanwhile, in other movements within the industry, **Matthew Scott** has been named as the new manager of Simplot Australia, while the South Australian turf industry has farewelled 20-year stalwart and trade icon **John Cooper** who has departed Nuturf. 🍌

BLACK BEETLE AND BILLBUG BEGONE!

Syngenta's Meridian is a new generation insecticide that provides highly efficacious control of African black beetle (*Heteronychus arator*) and billbug (*Sphenophorus brunnipennis*).

Developed in partnership with Nuturf, Meridian contains a novel active ingredient not seen in the Australian turf or agricultural industries before.

Its attributes include:

- Effective and long-lasting activity on soil and thatch based pests;
- Suitability for integrated pest management due to specific mode of action;
- Highly soluble formulation for deep penetration of the soil profile;
- Excellent turf safety on any variety; and
- Odourless, non-dangerous good classification.

Once applied, Meridian quickly penetrates the thatch layer and enters the soil to give rapid knockdown with extended residual control of subsequent egg hatchings. Uptake of the product by plant leaves, stems and roots ensures that pests are comprehensively targeted through systemic plant action.

Meridian is best applied when the pests are actively laying eggs. Turf destruction is avoided as the insect is unable to develop into the damaging larval stages. 🍌

For further information on Meridian, call Nuturf on 1800 631 008, or visit www.greencast.com.au

NEW WARM-SEASON VARIETIES

Advanced Seed has announced some new additions to its range of turf seed from Seed Research of Oregon. With high emphasis on water conservation throughout the country, Advanced Seed has introduced three warm-season grass types.

Companion zoysiagrass

Companion is an advanced generation cultivar with superior turf quality that offers better wear tolerance than many other grass types on the market. Companion oversown with tall fescue will provide a year round surface with minimal input. Companion is an ideal grass type for fairways, sportsfields, and recreation venues where there is high traffic and minimal maintenance provided.

Yukon bermudagrass

Bred in conjunction with the USGA, Yukon has the ability to tolerate extreme weather conditions. It demonstrates early spring green-up, a fine-medium texture and excellent winter hardiness. It is suitable for fairways, tees, premium sportsfields and turf amenities.

LaPrima bermudagrass blend

Blended to provide the ultimate combination of two single varieties - LaPaloma and SR9554 - which offers greater diversity in performance. It is suitable for golf fairways, sportsfields and landscaped areas. 🍌

For technical sheets on any of these varieties, contact Advanced Seed on (03) 94620340



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AGCSA Member Benefits...



MEMBERSHIP BENEFITS

The AGCSA is committed to providing greater resources to enhance its leadership, unification and professional development of the Australian turfgrass industry and its members.

Membership of the AGCSA enables golf course superintendents as a collective unit to have their say on matters such as education, turf research, legislation and industry development.

So far during 2004, the AGCSA has undertaken a major redesign of its website for the use of all members of the turf industry.

The AGCSA believes that this medium is becoming a vital communication tool for the industry and something which members need to become familiar with.

The new-look website features a special 'Members Only' section, where special offers available only to AGCSA members will appear. Members will also be able to update their contact details in this area.

Now up and running, it is envisaged more services will be added in the coming months.

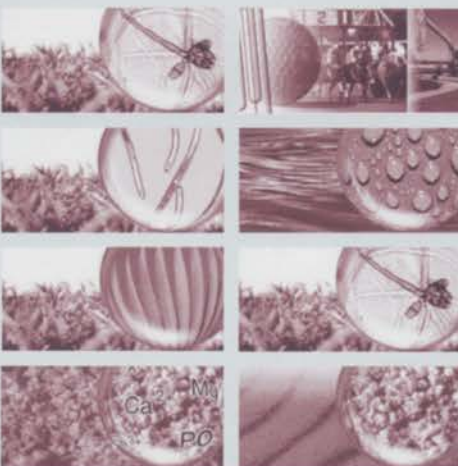
As well as the AGCSA website, there are many other benefits being an AGCSA member.

The AGCSA and Toro Australia recently signed a unique agreement to help foster the next generation of superintendents and turf managers.

Toro has put its name to the Next Generation membership program which will provide numerous incentives for student members of the AGCSA.

As it stands, the price of an AGCSA student membership is \$77 per annum. However, under the Next Generation membership scheme, existing and new student members of the association will only pay half that amount (\$38.50), with Toro footing the balance.

Signed in early July, the program is expected to develop a national turf management career day, access to overseas exchange programs, tournaments and regular educational tours.



MEMBER BENEFIT FOCUS 2005 AGCSA Turf Diary



In recent editions of Australian Turfgrass Management magazine we have highlighted the numerous benefits that come with being a member of the AGCSA.

Throughout 2004 the AGCSA has enhanced its delivery of membership benefits through a number of avenues including the introduction of the fortnightly Turf News email newsletter, a new and improved website featuring a range of innovative services, and, of course, who can forget the very successful inaugural AFL and NRL tipping competitions.

With the end of another year approaching quickly, the AGCSA is busy looking ahead to improving its services to members for 2005, and following feedback will be launching its inaugural 2005 Turf Diary.

The turf diary is not like any other diary. It is specifically tailored and each day's entry includes tables and check boxes which will help superintendents keep a track of what work has been done around the course, whether it be changing holes, mowing, bunker maintenance, chemical and fertiliser applications, or irrigation application and maintenance.

There will also be room to record weather data (temperature, wind direction, rainfall, humidity)

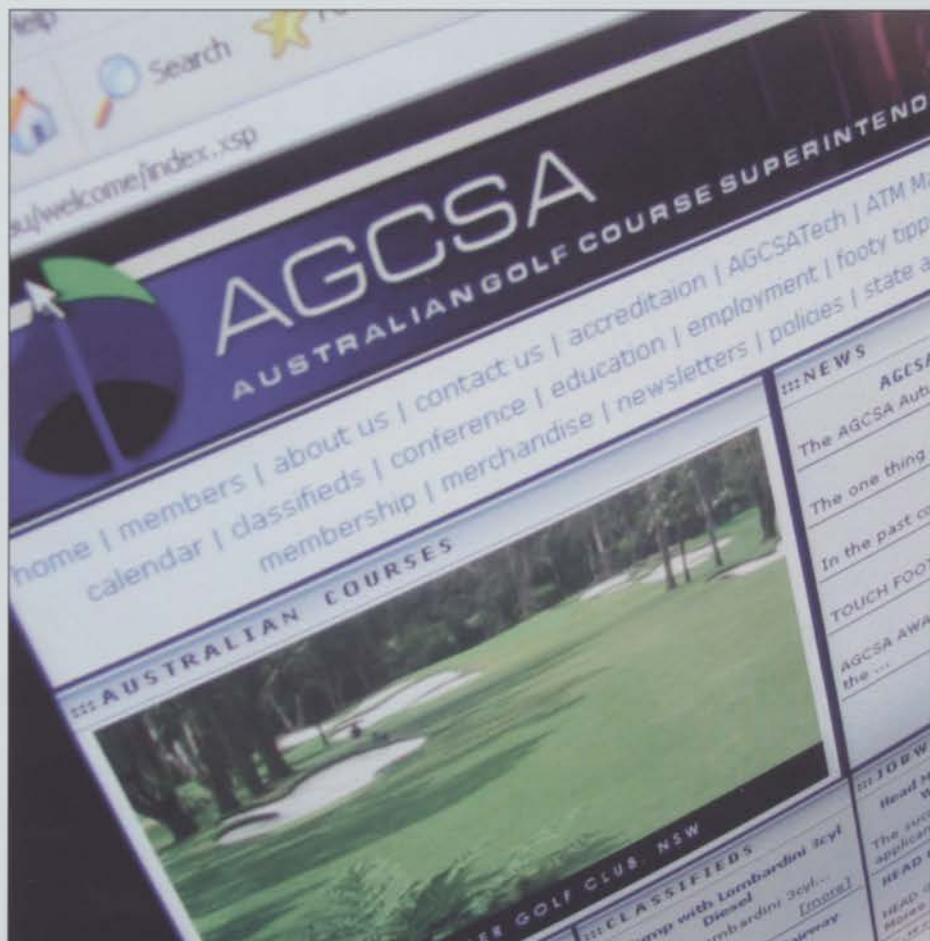
general comments about maintenance and course preparation, through to logging contractors who come on course.

Throughout the diary there will be pages where superintendents can record course and staff incidents, greens committee meetings, external meetings, industry workshops and environmental reports. Contact information for the various state superintendent associations and the AGCSA will also be included as will conversion tables and a list of important dates.

More importantly the diary can help facilitate the start of a regular documentation process, which in this day and age of OH&S and heightened environmental awareness is an important part of a superintendent's job.

In time the AGCSA hopes the turf diary will become an essential tool for superintendents and will be looking for feedback to help improve the diary's content from year to year.

The 2005 diary is currently in production and the AGCSA is looking forward to sending out a copy to every member in due course. 📄





Secure your career in the turf industry...

- enhance your job security
- promote your professionalism
- receive peer support and free legal advice
- gain access to a range of educational opportunities and AGCSA publications

Other AGCSA membership benefits include:

- Six editions of the bi-monthly AGCSA journal Australian Turfgrass Management magazine, the No.1 turf industry publication;
- AGCSA yearly wallplanner;
- AGCSA members hat;
- Access to the AGCSA 'Members Only' and Online Auction sections of the AGCSA website;
- Regular AGCSA ACTION Newsletter;
- Turf News email newsletter;
- Reduced registration fees to the AGCSA roving workshops and conferences;
- Receive member discounts on soil and water testing, disease diagnosis and other analytical services through AGCSATech;
- Discounted books from the AGCSA Bookshop;
- Discounted merchandise from the AGCSA website;
- Free legal service provided by Madgwicks Solicitors providing up to half an hour free legal advice on any subject;
- Regular mail-outs of positions vacant within the industry. Job Watch email alert service;
- Access to AGCSA Contracts of Employment;
- Regular opportunities to meet with your peers and the allied turf trades;
- Access to AGCSA Skills Recognition Program, Accreditation Program and AGCSA endorsed qualifications;
- Opportunity to be involved in the Australian Open Course Quality Officials program.
- Clearmake Industries offers AGCSA members a 10 per cent discount on all products and services company-wide. Products available include oil water separators, water recycling plants, gross pollutant traps, rope mop oil skimmers and diversion and spill control valves.

If you have any questions or queries about becoming a member of the AGCSA, or about any of the listed membership benefits, please do not hesitate to contact Jane Phelan, membership services and administration co-ordinator, on (03) 9548 8600 or email info@agcsa.com.au.

You too can discover how the AGCSA can assist and make a difference in your future endeavours within the turf industry. 🌱



Australian Golf Course Superintendents Association



AGCSATech

AGCSA Membership Classes

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Golf Course Maintenance Company.....	\$310
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Associate Membership

Sports Turf Manager.....	\$277
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Ground Staff – Non Golf.....	\$130

The Next Generation (Student Membership)

Golf and Non Golf.....	\$38.50
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Membership payments for any of the above classes are to be sent to the AGCSA.

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Send completed application form and payment to:

AGCSA: Suite 1, Monash Corporate Centre, 752 Blackburn Rd, Clayton North, 3168, Vic

Phone: 03 9548 8600 Fax: 03 9548 8622 Email: info@agcsa.com.au

TURF INDUSTRY BOOKSHOP

A Field Guide to Australian Frogs	\$ 49.50	Native Plants of the Sydney District	\$ 88.00
A New Tree Biology & Dictionary (Two book set)	\$ 170.50	Natural Turf for Sport & Amenity	\$ 121.00
A Practical Guide to Ecological Management on the Golf Course	\$ 60.50	Noxious Weeds of Australia	\$ 220.00
An Illustrated Guide to Pruning	\$ 50.70	Nursery & Landscape Weed Control Manual	\$ 88.00
And If You Play Golf, You're My Friend	\$ 25.00	Organic Control of Weeds	\$ 17.60
Arboriculture - 3rd Edition	\$ 115.50	Picture Perfect	\$ 82.50
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Best Golf Course Management Practices	\$ 209.00	Practical Greenkeeping	\$ 181.50
Biological Control of Weeds	\$ 44.00	Proceedings - 2002, 18th Australian Turfgrass Conference	\$ 20.00
Bird Conservation on Golf Courses	\$ 66.00	Proceedings - 2003, 19th Australian Turfgrass Conference	\$ 25.00
Color Atlas of Turfgrass Diseases	\$ 187.00	Rough Meditations (HB)	\$ 65.50
Color Atlas of Turfgrass Weeds	\$ 187.00	Salt-Affected Turfgrass Sites - Assessment & Management	\$ 152.90
Compendium of Turfgrass Diseases	\$ 104.50	Sands for Sports Turf Construction & Maintenance	\$ 55.00
Confessions of a Chairman of Green	\$ 60.00	Seashore Paspalum	\$ 148.50
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Cricket Grounds	\$ 132.00	Guide to all Turf Protection Products	\$ 220.00
Cricket Wickets - Science vs Fiction	\$ 78.00	Sports Turf & Amenity Grasses	\$ 85.00
Crop Weeds	\$ 71.50	Sports Turf - Science, Construction & Maintenance	\$ 159.50
CSIRO Handbook of Australian Weeds	\$ 55.00	Spotting Soil Salting	\$ 27.50
Destructive Turf Insect	\$ 155.00	Superintendents Handbook of Financial Management	\$ 88.00
Destructive Turfgrass Insect - Biology, Diagnosis & Pests	\$ 163.90	The Care of the Golf Course	\$ 104.50
Discovering Donald Ross	\$ 187.00	The Committed to Green Handbook for Golf Courses	\$ 33.00
Diseases of Turfgrasses	\$ 264.00	The Golden Age of Golf Design	\$ 148.50
Disease, Insect & Weed Control in Turf	\$ 65.45	The Golf Course - Planning, Design, Construction and Maintenance	\$ 148.50
Drainage for Sportsturf and Horticulture	\$ 38.50	The Good Doctor Returns	\$ 49.50
Ecological Golf Course Management	\$ 137.50	The Life & Work of Dr. Alster Mackenzie	\$ 135.00
Effluent Water for Turfgrass Irrigation (leaflet)	\$ 5.50	The Links	\$ 132.00
Encyclopaedia of Australian Plants Vol 1	\$ 99.00	The Mathematics of Turfgrass Management	\$ 88.00
Encyclopaedia of Australian Plants Vol 2	\$ 143.00	The Sand Putting Green - Construction & Management (leaflet)	\$ 19.80
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Field Guide to Eucalyptus - Vol 2 - S.W. & S. Australia	\$ 104.50	Turf Irrigation Manual	\$ 137.50
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Golf Facility Planning	\$ 170.50	Waterplants in Australia	\$ 49.50
Golf Has Never Failed Me	\$ 66.00	Weeds an Illustrated Guide to Weeds of Australia	\$ 115.50
Grasses	\$ 24.20		
Grasses of New South Wales	\$ 39.60	VIDEO	
Grasses of Temperate Australia	\$ 59.95	Golf Course Maintenance for the Environment	
Growing Australian Native Plants from Seed	\$ 24.20	- A Strategic Approach	\$ 110.00
Growing Media for Ornamental Plants and Turf	\$ 55.00		
Guide to Golf Course Irrigation Systems Design & Drainage	\$ 170.50		
Handbook of IPM for Turf & Ornamentals	\$ 231.00		
Human Resource Management for Golf Course Superintendents	\$ 88.00		
International Turf Management Handbook	\$ 209.00		
IPM Handbook for Golf Courses	\$ 137.50		
Links Golf - The Inside Story	\$ 60.50		
Management of Native Vegetation on Golf Courses (leaflet)	\$ 20.00		
Management of Turfgrass Diseases	\$ 209.00		
Managing Bermudagrass Turf	\$ 154.00		
Managing Turfgrass Pests	\$ 209.00		
Managing Wildlife Habitat on Golf Courses	\$ 104.50		
Manual of Grasses	\$ 99.00		
Masters of the Links	\$ 60.50		
Modern Arboriculture	\$ 141.90		

Please note: All prices include GST.
Prices are subject to change without notice.

Best Golf Course Management Practices: Second Edition

By L.B. McCarty (Pearson Prentice Hall, 2003)

Golf courses are continually increasing in number, as well as sophistication in terms of design, management, and increased scrutiny from the general public and regulatory agencies.

Golf course management quality and intensity range from very low-maintained facilities to exquisite, highly maintained courses which host major tournaments. Many resort courses rely on the tourist industry; however, on other courses, membership and daily fees are relied on, meaning that the year-round condition of the course becomes very important.

This second edition of Best Golf Course Management Practices is intended as a reference guide for superintendents, assistants, club managers, greens committee members, students and regulatory agencies.

The hard cover book, which stretches well beyond 850 pages, provides information and tips on growing turf with minimum inputs, and included are chapters on best turfgrasses for golf courses; preventing and managing environmental stresses; golf course design and

maintenance considerations for environmentally friendly turf; pest management; and irrigation water quality and quantity.

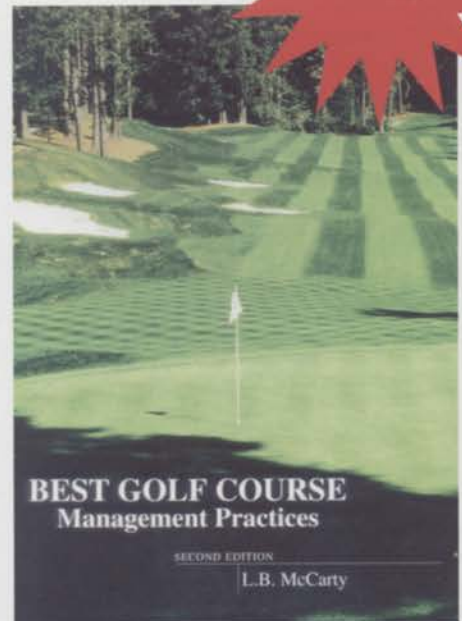
The latest research and applied trends on pest control, soils, and solid amendments, fertilisers and fertilisation strategies, drainage, greens construction, and bentgrass/Poa and couchgrass management are also included.

New chapters have been included that address budget and personnel management, the latest updates on integrated pest management (IPM) strategies and procedures as well as revised photographs.

The author, Bert McCarthy is professor of horticulture specialising in turfgrass science and management at Clemson University, South Carolina.

His other works include co-authoring the Color Atlas of Turfgrass Weeds (as reviewed in ATM Vol 6.4) and Managing Bermudagrass Turf (as reviewed in Vol 6.1). For his latest offering, McCarty is joined by a host of fellow contributing authors including Fred Yelverton, Tim Murphy and Jeffery Higgins. ♣

\$209



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GCSAQ

The long dry spell that has persisted through winter and spring has finally given way to some good falls of rain along the coastal areas of the state. While the Gold Coast recorded 80-160mm, down at Murwillumbah they coped 360mm in 24hrs, which is probably why they then suffered extensive flooding.

There were plenty of people very relieved to finally get the rain but going from one extreme to the other can be heartbreaking.

The news footage of the half way house at Bellingen Golf Course with a flowing river up to the roof marks, you wonder what they found when the floods subsided. Last time Bellingen was badly flooded the riverbanks eroded and took a large slice of the golf course with it.

Further inland some decent falls were recorded but the dry grounds soaked up plenty before any runoff became available. Through Brisbane, 80mm seemed to be the norm while on the Sunshine Coast there was 60mm over four days. Let's hope we get a steady rain pattern developing.

There have been a few movements around the Queensland industry with Brett Morris leaving Brisbane Golf Club to work with Professor Peter Martin in Sydney and explore the development of kikuyu turf strains.

Brett has done a great job with Brisbane Golf Club taking the club to another level of excellence and will leave some big shoes to fill. Stepping up to take on the challenge is Ben Cavanagh, the current assistant superintendent who has been working with Brett for the last few years and has a wealth of experience and a good crew to back him up.

Over at Indooroopilly Golf Club, assistant superintendent Steve Buttigeig has decided to make a move to Mount Warren Park Golf Club to be closer to home. Steve takes over from one of the great characters of the industry, Gary Flood - fisherman, raconteur, and big band drummer.

Congratulations also to Craig Rice for moving over the boarder from Bonville International to take up the superintendents position at Boomerang Farm Golf Club. Craig is taking over from Adrian Young who spent around 10 years caring for this treasure.

Meanwhile Steve Moncreiff, the long time Gold Coast T&I man has decided to move on and will be sorely missed. Big Daryl Edwards, the Sanctuary Cove superintendent has recently taken a break trekking through Europe, and while in Spain found time to get married. Congratulations hombre!

In late September Bob Carrow and Ron Duncan conducted two very successful workshops on seashore paspalum, disease and weed control and the latest trends in turf management overseas.

The GCSAQ organised two venues for these workshops - Lakelands and Twin Waters - and both were well attended with plenty of enlightening discussion on a wide variety of issues. Our thanks go to the Jimboomba Turf Group for bringing out the two US experts.

Brisbane Golf Club also hosted a field day that included nine holes of golf. Sponsors for the day were BHM Machinery, Country Club International and David Hamby Hydropumping and Controls. Participants were treated to nine holes of golf on superb greens, equipment field demonstrations by the sponsors and a review of Brisbane's ultra dwarf greens trial program. Brett Morris reviewed his thesis work on topdressing as a means of thatch control on TifEagle, and handed out part of his testings and research thesis work.

The Turf Research Fundraising Day saw course superintendent Scott McKay once again present his course in magnificent condition for a fine event that was hotly contested by teams from all over Queensland and the Northern NSW area. Thanks to all those who helped sponsor the day and make it a success. Major sponsors for the day were Black Kubota and Twin View Turf.

While on turf research, the Redlands Turf Research Station is constructing a USGA spec green so as all of the greens grade grasses can be tested at greens height. These will be put into the green in 6mx3m plots. We also have a couple of clubs around the traps that have a number of different greens grade grasses under trial conditions in their putting greens and nurseries.

Up and coming events include the blue ribbon Scotts Australia Wet 'n' Wild Christmas Party and the infamous SSSC. The Superintendent's Speed Slide Challenge is back after last year's controversial wet track decision, to find the fastest super on water. The shindig will be on 4 December at Wet 'n' Wild and a full report on all the action and spills will be forthcoming in the next issue! 🍷

Rod Cook,
President, GCSAQ.



GCSAWA

You will have to excuse a brief state presidents report, but at the time of writing I am up to my elbows in nappies. That's right, for those of you who didn't know I have procreated (**The marvels of modern science never cease to amaze – Ed**). Now I know what all those fella's were talking about.

I feel just like a work experience kid – buggler-all experience and lumped with all the shitty jobs. Mum and baby are both in fine health and it was extremely warming to receive many best wishes and support from mates around Western Australia as well as nationally. Thank you all very much.

It has been a steady couple of months since my last report, with the growing season

returning to everyone's delight. With rainfall all but over, this winter/spring period has been disappointing again. This year we fell 80mm short of our average, and our dams at 37 per cent are holding marginally less water at the end of this winter period compared to last year.

With this knowledge and in light of recent media reports concerning the re-assessment of ground water allocations over the Jandakot and Gnangara mounds, it is vitally important for every turf manager to constantly monitor their usage and foster and improve water conservation strategies on their site. This will mean, in most cases, re-educating golfers that all golf club stakeholders have responsibilities and no one more so than you.

Unfortunately most water conservation strategies go against the grain of what most WA golfers demand from their courses, i.e. replacement of passive irrigated turf with rough local plant species, returning ornamental ponds to dry seasonal wetlands and, most hardest to swallow, less than succulent green grass.

We must all remember that no one owns ground water, and a ground water allocation license is never 100 per cent secure. We must at all times be proactive in improving our water conservation strategies and lead by example for the rest of the horticultural industry.

We are totally responsible for the guidance and sustainable management of our golf courses and this limited free resource. Most obviously we are torn between our accountability to the environment and its associated watchdogs and the constant demands from members for perfection, but one thing for certain is that we will always stand alone when it comes to the crunch. That's our job, to guide the club and manage its resource.

On a GCSAWA note, I am again mystified by another poor attendance at the recent AGCSA roving workshop Latest Strategies for Disease and Pest Control. I wish I could say that the 16 blokes that turned up and enjoyed the event were all our members, but it was the TGAA WA that came to the rescue.

Thanks to the four other superintendents who supported the AGCSA/GCSAWA. It is an unfortunate occurrence when superintendents in WA are left off the educational calendar because we cannot and have not supported such events, but this is what I believe could happen.

On a more positive note, I am glad to hear that the University of Western Australia's recent turf research seminar was successfully held at Turfest. The GCSAWA looks forward to monitoring the progress of the kikuyu nutrient and renovation management research over the coming months and I hope as many members can honour our small commitment to support this project through the provision of manpower when required.

Very soon all GCSAWA members will receive a package in the post providing each golf club and turf facility a Procedure for Handling Hazardous Substances. I would like to thank

John Forrest and those members who provided feedback. As indicated before, the GCSAWA is committed to assisting members in developing golf course related safety procedures and forms for their staff and would appreciate feedback and ideas for future projects.

Additionally, each club will receive the final copy of the Waste Audit for Golf Clubs which has been finalised. Keep your eyes posted in Divots for some helpful technical info relating to this audit.

Other recent events included the Melbourne Cup golf luncheon at Joondalup Country Club, while the GCSAWA Christmas function will be at Rosemount Bowl in December. All the best for the New Year. 🍷

'Pop' Sofield,
President, GCSAWA.



NSWGCSA

Finally the September rains that we are all so familiar with have blissfully swept over the parched fairways of NSW golf courses, much to the relief of those superintendents that have not witnessed decent spring rainfall for a good three years.

Many courses were then lucky to receive follow-up soakings during the early stages of October. This rare occurrence has briskly awoken course maintenance staff from their winter slumber. Many superintendents will be summoning their mechanics to retrieve the forgotten outfront slasher from underneath the blanket of cobwebs.

This scenario has been in direct contrast to the past two seasons where spring rainfall was measured in drops and not millimeters. Even the umbrella-covered catchment areas couldn't dodge the rain this time with approximately 50mm of rainfall dropping over the Warragamba Dam catchment areas.

Rainfall also fell in crucial areas west of the Divide and saturated both the north and south coasts regions, which is extremely pleasing for our industry. One can only hope that this trend continues throughout the season. It would be extremely gratifying to write reports to the greens committee requesting extra funds for PGR's and extensions to irrigation systems rather than explaining the frightfully obvious reasons for diminished playing surfaces.

Despite the rainfall, the Warragamba is currently running at 42 per cent capacity, which means we won't be far away from the negotiation table regarding category three restrictions. I recently spoke to water restriction officers at Sydney Water and they remarked that they were currently evaluating the impact the latest rainfall had on dam levels before issuing any statements. The NSWGCSA will keep all interested parties posted when news comes to hand of any impending changes.

On the legislative front, the DEC is wrapping up its end of the voluntary golf course

environmental audit assessment. All findings of non-compliance during the auditing stages have been forwarded in report form to the course's respective local council environmental officer to be dealt with in accordance with the golf course compliance priority register.

Overall, this project has been enlightening for both the DEC and the golf course industry. The DEC is impressed that the golf course industry is, in many respects, a progressive, well-informed and forward operating entity with much to offer similar industries.

From the golf course maintenance industry's perspective, we feel the NSWGCSA has progressed firmly towards bridging the compliance ambiguity gap. As a result of NSWGCSA actions we now possess an environmental assessment guideline/template that was never on offer before.

Both Kate Lowe and Peter Brown must be congratulated for all the fine work they have put into this project. We thank Frouke de Reuver for her unwavering support to ensure that this project was fruitful and provided positive outcomes for both parties. I understand a full report on the project will be included within ATM in a coming edition.

On a personal note, congratulations to past NSWGCSA president and Concord Golf Club superintendent Mark Parker. His wife Rebecca has recently given birth to a baby girl. We sincerely wish you and your new family all the very best of health and happiness.

The NSWGCSA has also welcomed back vice president Richard Kirkby from his long service and overseas stint. His graceful presence at meetings and the AGM were sorely missed.

In early November the NSWGCSA held its educational day at Andy Huggill's Mona Vale Golf Club. Collins Sand and Soil and Grundfos Pumps were sponsors for the day and the theme was golf course design, conception, construction and creation.

Finally, what a great response we received for the 'Around the traps' segment of the NSWGCSA newsletter last quarter. Please keep it up. Guy Thomas continues to do a great job with the newsletter, which has gone from strength to strength under his captaincy.

May summer be kind to us all. 🍷

Craig Easton,
President, NSWGCSA.



NZGCSA

Greetings once again from across the Tasman. The NZGCSA has been through a quiet period of late as the spring growth period has kicked in and every available body throughout the country is sitting on a mower and getting through as much grass as an eight-hour day will allow.

As I'm sure is the case across in Australia, spring is a busy time with renovations happening all over the place, and a number of clubs, particularly in Auckland, are heavily into construction work.

The NZGCSA management committee met in Christchurch in early October. Also invited were representatives from the Sports Turf Industry Training Organisation (STITO) and moderators to discuss training issues over the last 12 months and ways to further increase the quality of training in this country.

The NZGCSA has a contract with STITO where every site in New Zealand that has a turf management trainee, whether it is a golf club, a sports ground, or bowling club, is visited once a year by an STITO accredited moderator. A check is done of training documents and whether training is being delivered to an acceptable standard. All the moderators are practising superintendents from clubs throughout New Zealand.

Following this meeting the executive and the management committee met to finalise the program for our May 2005 conference. We have put together quite a comprehensive program that has been submitted to the conference organisers for them to contact the designated speakers and finalise details. Once the program is finalised I encourage all Australian superintendents interested to come across.

All regional associations have held successful education days over recent months which have covered a host of topics. These have been well patronised and are vital in furthering the education of turf practitioners.

For more information about the NZGCSA and our 2005 conference, log on to www.nzgcsa.org.nz. A couple of other New Zealand websites worth looking at are the New Zealand Sports Turf Institute website www.nzsti.org.nz, while to find out more about our trainee system visit www.nzstito.org.nz.

Finally as this will be the last column for 2004 I take the opportunity to wish everybody in the turf industry in Australia a very Merry Christmas and a prosperous New Year. 🍷

Brett Burgess,
President, NZGCSA.



SAGCSA

With Christmas fast approaching it's time to reflect on where the hell 2004 has gone!

After great winter rainfall across the state, Huey flicked the switch at the start of October and said no more. So it has been serious irrigation for most managers since the start of October. At least with dams full at the start of the season we can only hope for a few showers from time to time during summer to lighten the load on our precious water reserves.

The Department of Conservation and Land Management recently placed a two-year moratorium on the further development of dams and bores on the western slope of the Mt Lofty ranges. This move has only reinforced the need for all SA turf managers to adopt irrigation best practice methods (if they already haven't). This I see is the only way forward for the future. More on this in upcoming editions of ATM.

On a disappointing note for all state members, I am saddened to report that local identity, turf industry icon and all round good bloke John Cooper has departed Nuturf. I hope that John's cheerful face and 'can do' attitude to the customer will not be lost to the SA turf industry.

'Coops' has supported the local industry like no other for the best part of 20 years, and without making this sound like an obituary, the local turf scene will not be the same without John's positive input. Good luck for whatever you do in the future John.

The last SAGCSA meeting was a joint gathering with the TGAA, which incorporated the AGCSA spring roving workshop with Professor Karl Danneberger. The day was held at AAMI Stadium with Jamie Butterfield our host.

The idea for a joint workshop in SA had been floated for a while, and judging by the turnout this concept has merit, and with the right content would be an outstanding day for all turf managers.

Getting the right workshop topics has always been difficult. It is hard to please everyone, but if members would like something covered by a roving workshop in SA, please don't hesitate to contact me and I will pass these on to the AGCSA.

Back to the day itself, the morning started with Kevin Handreck's workshop on hands-on testing for turf managers. This covered some of the techniques for field testing for pH and EC, dispersion tests as well as the soil infiltration rate, followed by some lively debate dealing with commercial soil testing methods and interpretations of these results.

Following smoko where the fire alarm went off for a good 20 minutes, the roving workshop with Prof Danneberger took centre stage. Following that, 30 members enjoyed a barbecue lunch in the outer stand. The stadium looked in fantastic condition only two days out from Port Adelaide's home preliminary final against St Kilda.

After lunch Jamie Butterfield took the assembled gathering on an informative tour of AAMI stadium. It was interesting to see that as different a surface as a football oval may be compared to surfaces on a golf course, we share many of the same challenges, with the one constant being *Poa* control. Thanks to Jamie for the use of a great venue.

In closing, I would like to thank our hard working committee members for all their efforts throughout the year. I wish all members of the turf industry a safe and joyous Christmas and a prosperous and damp(?) 2005. 🍷

Peter Harfield,
President, SAGCSA.



TGAA (ACT & Surrounding Region)
Christmas and New Year is always a hectic time for all and the TGAA ACT would like to wish everybody a happy and merry festive season.

The mild spring was well received by everyone involved in the care and maintenance of turf areas throughout our area. Excellent rainfalls and cool temperatures have seen outstanding results post-renovation.

It is during this time that a comprehensive machinery maintenance and service schedule becomes essential due to the added workload.

If there are any greenkeepers out there, or if you have recently completed a trade certificate in turf management, or you may be interested in continuing your studies and improving your qualifications, the Canberra Institute of Technology (CIT), School of Horticulture in Weston is considering offering various courses at the certificate and diploma level for 2005.

The future of these courses is dependent on the number of enrolments. Expressions of interest should be forwarded to CIT. On a similar note, the CIT also conducts regular chemical use and handling training courses (AQF Level 3).

Finally, on behalf of the TGAA ACT I would like to congratulate long time greenkeeper, committee member and local superintendent Peter Ingram who has fulfilled his ambitions to become a firefighter.

Peter has recently left the trade to join one of the local fire stations. Well done 'Fat Neck'; we wish you all the best.

Till next time, agrostologists! 🍷

Justin A K Haslam,
(Committee, TGAA ACT & Surrounding Regions).



TGAA NSW

Well, what a great start to spring we have had in the Sydney region with some great quantities of rain recorded. Hopefully more will fall in the Sydney catchments where it is desperately needed.

The weather and temperatures are about as predictable as this year's NRL competition. Extreme hot for two or three days then overcast winter conditions straight after.

This sort of weather has been a prime disease environment catalyst with pythium, helmo and smutty mould being fairly active. Controlling irrigation practices can greatly reduce the risk.

On to water issues, it is highly unlikely we will ever return to the water use levels we were once afforded, so careful water usage and strategies will become, if not already, a major factor. Put your thinking caps on.

Renovation time is well and truly underway or complete by now and this looks like being the best start to a summer we have had for a while so good luck.

Looking back at 2004, it has been a great year for the TGAA NSW, with a tremendous annual turf seminar held at the Sydney Showgrounds, Homebush Bay and our charity Sportsman's Luncheon in mid-November which was a sell-out weeks in advance. Some 370

people attended the luncheon and it is certainly becoming one of the most popular events on our calendar.

To all the committee, sponsors, helpers and Jen Zadro (who is really the boss), thank you for your work and support throughout a very successful 2004. All the best for the festive season.

For further details on TGAA NSW, log on to www.tgaa.asn.au, phone 0408 441 119 or email tgaansw@bigpond.com.au 🍷

Graeme Logan,
President, TGAA NSW.



VGCSA

As is often the case, this report begins with details on the lifeblood of our industry – water.

Much of Victoria has recently been inundated with heavy deluges that were so clearly televised throughout the world during the Melbourne Cup. That trend has continued, leaving in its wake flooding, or at the very least, saturated parks, sportsfields and golf courses.

Naturally, given that October was reasonably dry, there are many curators and superintendents quietly pleased with prospects of a wet November and a more predictable summer.

It is also pleasing to hear that our northern mates have also finally experienced some respite with good rainfalls recorded.

On matters pertaining to the local industry, the VGCSA recently conducted a meeting at Waverley Golf Club situated in the southeast suburbs of Melbourne.

Of particular interest is the situation superintendent Mark Schroder finds himself in with the club having agreed to sell the property and relocate. Unfortunately, but not surprisingly, outside forces have intervened to delay the move, leaving the club in a position of limbo. To Mark's credit the course was in first-rate order and 50-odd of his Victorian counterparts joined him on the course inspection.

The remainder of the day was taken up with presentations from Textron and Work Safe Victoria who we thank for their time and effort.

On a personal note, it has to be pointed out that AGCSA chief executive Steven Potts has a darker side to that light-hearted personality he displays to all of us.

As time has moved on I am pleased to say Steve and I have developed a good friendship but all was put to the test when, during Steve's AGCSA presentation to the meeting, he chose to reveal to all that a certain individual had just turned 50.

Now for anyone who has mixed with superintendents enough, can I state that the last place one wants to be, is chairing a meeting with a room that consists of former association presidents and fellow turfies with that sort of information floating around.

The highlight would have had to be when Bill Stevens gave advice on the dos and don'ts

to me as a consequence of that major turning point. Many thanks to Steve and be sure there will be reprisals!

On the topic of recent course developments, may I take this opportunity to congratulate two good friends of mine on their respective efforts in putting together two very contrasting golf courses.

John Geary at St Andrews Beach and Chris Grumelart at the Sandhurst development have both put together packages they can be proud of. For those keen to see the best of what Victoria has to offer, contact either of them and take in what will be seen in the near future as two of our country's best.

The final VGCSA meeting for the year is in December and will be held at Southern Golf Club, home to well known superintendent Greg Rooke.

This gathering is always a bit of fun being held late in the day with golf taking centre stage. Added to this will be the interest created by Southern's new clubhouse which is getting positive reviews.

All the best for the summer months, and on behalf of the VGCSA I wish all superintendents a happy, safe and productive festive season. 🍷

Michael Picken,
President, VGCSA.



The Victorian Greenkeepers Association along with the Victorian Golf Association and Northern Melbourne Institute of TAFE will be conducting trials on warm-season grasses at NMIT's home base in Fairfield.

As we all know, Tifdwarf can be successfully grown in southern Victoria and these trials are



The VGA together with the Victorian Golf Association and Northern Melbourne Institute of TAFE will be conducting warm-season grass trials at NMIT's Fairfield campus

about maybe finding a superior grass that will be more suited to our climate.

Some of the grasses to be trialled are TifEagle and MS Supreme (an ultradwarf couchgrass) Champion, Conquest and Velvetene and Sea Isle 2000 (new paspalum vaginatum cultivars.)

All grasses will be put under the day-to-day stresses of playing conditions such as cutting and rolling, as well as irrigation, by NMIT staff and students.

We should start to see results by mid February or earlier depending on Victoria's fickle weather. Funding for these trials has been made possible by the three bodies mentioned above.

I urge all greenkeepers both local and interstate to start planing for next year's Federation Week in Bendigo.

It's a great week to catch up and talk shop with other interstate greenies as well as grudge matches on the green and plenty of sightseeing for partners and non-bowlers.

The VGA is working extremely hard to make this week in May a huge success.

Due to Federation Week, the VGA has put on hold its mini carnival week and sponsors days will be held at a number of different venues throughout the year.

The program for the remainder of 2004 and looking ahead to 2005 is:

- Oasis Turf (100 UP) - Wednesday, 15 December, 1pm, Bundoora Bowling Club.
- Globe Australia (singles) - Thursday, 16 December, 1pm, Camberwell Bowling Club.
- T&I (triples) - Thursday, 3 February, Ballarat.
- K&B Adams (pairs) - Thursday, 14 April, Port Melbourne Bowling Club. 🍷

Billy Hamshere,
Committee, VGA.

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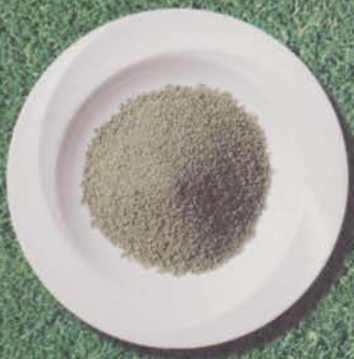
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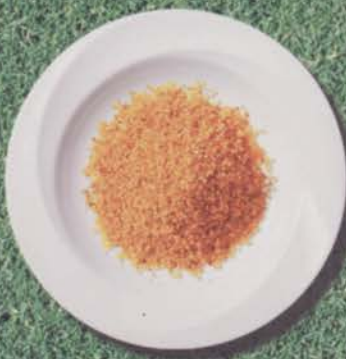
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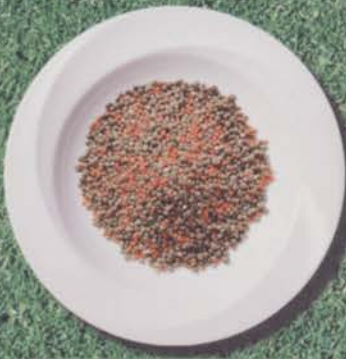
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